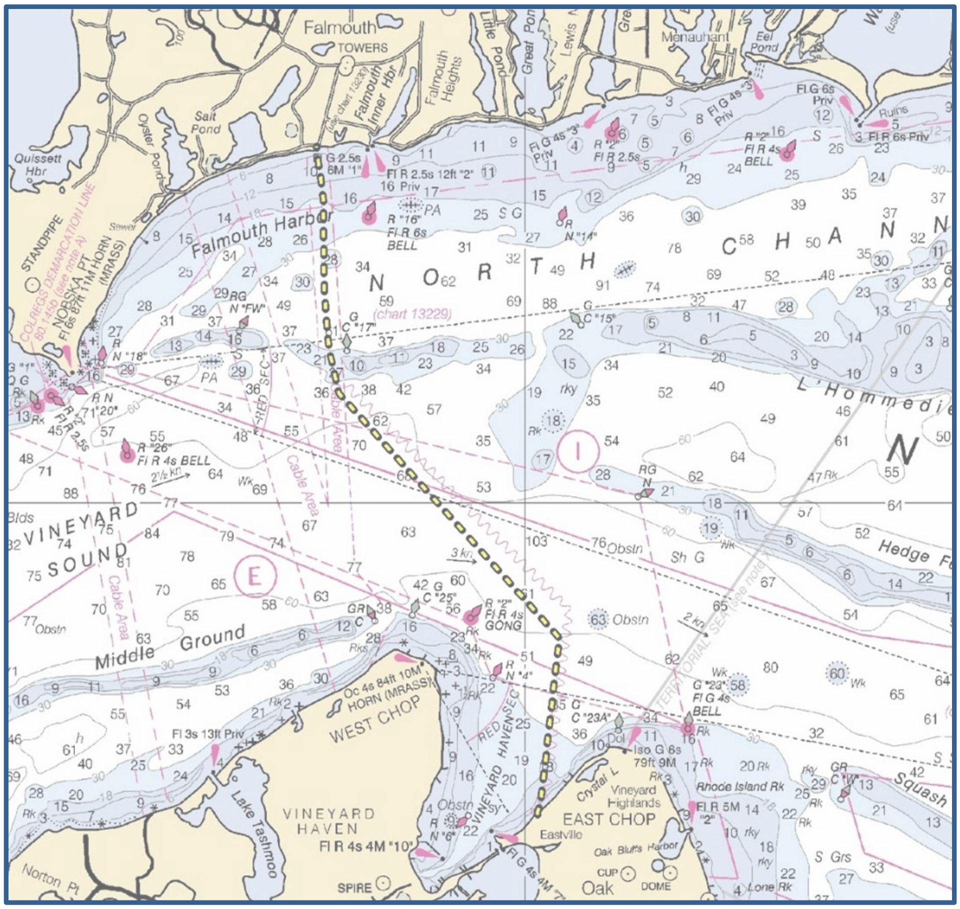
EXPANDED ENVIRONMENTAL NOTIFICATION FORM
and
PROPOSED ENVIRONMENTAL IMPACT REPORT

Martha's Vineyard Reliability Project
New Distribution Cable from Falmouth to Oak Bluffs



Submitted to:
Executive Office of Energy and Environmental Affairs |MEPA Office
100 Cambridge Street, Suite 900
Boston, Massachusetts 02114

Submitted by:
NSTAR Electric Company d/b/a Eversource Energy
247 Station Drive
Westwood, MA 02090

Prepared by:
Epsilon Associates, Inc.
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EVERSOURCE

Epsilon ASSOCIATES INC.

May 16, 2022

Projects:\6097\MEPA\ENF

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May 13, 2022

Secretary Elizabeth Card
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Subject: Martha's Vineyard Reliability Project, Falmouth and Oak Bluffs, MA
Dual Expanded Environmental Notification Form / Proposed EIR
NSTAR Electric Company d/b/a/ Eversource Energy – Proponent

Dear Secretary Card:

On behalf of NSTAR Electric Company, d/b/a Eversource Energy ("Eversource"), Epsilon Associates, Inc. ("Epsilon") is pleased to submit the enclosed dual Expanded Environmental Notification Form / Proposed Environmental Impact Report ("EENF/PEIR") for the proposed Martha's Vineyard Reliability Project (the "Project"). We respectfully request review of this Project as a Rollover EIR pursuant to 301 CMR 11.06(13), which reads in part:

> *"Rollover EIR. For any Project that is required to file an EIR in accordance with 301 CMR 11.06(7)(b), and has submitted a dual Expanded ENF and Proposed EIR in accordance with 301 CMR 11.05(9), the Secretary may allow a rollover EIR, provided that the Secretary finds that the dual Expanded ENF and Proposed EIR: …"*

The proposed Project meets the ENF review threshold for alteration of ½-acre or more of "other" wetlands [301 CMR 11.03(3)(b)1.f.]. Review of this Project as an EIR is required pursuant to 301 CMR 11.06(7) because it is located within 1-mile of Environmental Justice ("EJ") Populations. Whereas proximity to EJ Populations is the sole EIR trigger, we respectfully request MEPA review as a dual ENF/PEIR in lieu of the traditional ENF and EIR review process.

Presently Martha's Vineyard ("Vineyard" or "Island") is supplied by four submarine electric distribution cables. The year-round population on Martha's Vineyard is approximately 17,000 but increases to approximately 200,000 during the summer months. As such, electric consumption surges in the summer and the four existing submarine cables cannot reliably meet the Island's peak demand. When demand exceeds the capacity of the four existing submarine cables, Eversource relies on five diesel generators located in Oak Bluffs and Vineyard Haven, which combined provides approximately 12.5 megawatts of supplemental power to the Island. The proposed Martha's Vineyard Reliability Project involves laying a fifth submarine distribution cable from Falmouth to Oak Bluffs to: (1) meet current and future electrical demand, and (2) increase the reliability of the grid-based electrical service on the Island. In addition to meeting the project purpose and need, the following benefits will be realized:

- The electric distribution system on Martha's Vineyard can be reconfigured to allow for an incremental increase in distributed energy resources (e.g., roof top solar photovoltaic units, wind generating units, etc.) on Martha's Vineyard.

- The Project will allow Eversource to decommission the five existing diesel generators, thus reducing fossil fuel use on the Island and reducing combustion emissions and emissions of greenhouse gases on the Island.

- There are EJ populations on Martha's Vineyard within 5-miles of the existing diesel generators. Decommissioning these generators is expected to benefit those populations relative to air emissions and related environmental burden.

- Connecting at the Stephens Lane substation in Falmouth, the source of the electricity moving through the fifth cable, the Project can increase penetration of renewable energy on the Island as Eversource transitions its energy sources on the mainland to renewables.

The proposed Project includes the following components:

- Aa approximate 6.24-mile submarine cable across Vineyard Sound from a landfall site off of Surf Road in Falmouth to a landfall site on Eastville Avenue in Oak Bluffs.

- An approximate 2.7-mile duct bank and manhole system (2.32 miles of new duct and 0.38 miles of existing duct in Surf Drive) which will house the onshore distribution cable from the existing Eversource substation #933, at the end of Stephens Lane in Falmouth to the submarine cable landfall on Surf Drive.

- An approximate 0.25-mile duct bank and manhole system which will house the onshore distribution cable from the submarine cable landfall site on Eastville Road in Oak Bluffs to an existing Eversource parcel off of Eastville Road near County Road.

- Installation of new equipment at the existing Eversource Substation #933.

- Installation of a new driveway, manholes and equipment on the Eversource-owned parcel off of Eastville Avenue in Oak Bluffs.

The attached dual EENF/ PEIR along with the supporting documentation was prepared in accordance with the MEPA Regulations and presents:

- A complete description and analysis of the Project and its alternatives, and an assessment of its potential environmental and public health impacts and mitigation measures sufficient to allow a Participating Agency to make a permitting decision.

- Demonstrates that the Project will not materially exacerbate any existing unfair or inequitable Environmental Burden and related public health consequences impacting nearby EJ Populations, and will not result in a disproportionate adverse effect or increased climate change effects on nearby EJ Populations.

- Describes measures by the Proponent to provide meaningful opportunities for public involvement by EJ Populations before filing the dual EENF/PEIR, and continuing through Project design, permitting and construction phases.

We look forward to working with the MEPA staff on this important project. Please contact me at ddunk@epsionassociates.com, or Mr. Matthew Waldrip at matthew.waldrip@eversource.com, with any questions or comments on this project and to schedule the MEPA consultation session. Copies of the ENF may be obtained from Ms. Corinne Snowdon at (978) 897-7100 or via email at csnowdon@epsilonassociates.com.

Sincerely,
EPSILON ASSOCIATES, INC.

Dwight R. Dunk, LPD, PWS, BCES
Principal

encl.

cc: M. Waldrip, Eversource
K. Cook, Eversource
ENF Distributions List

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Environmental Notification Form

Commonwealth of Massachusetts

Executive Office of Energy and Environmental Affairs
Massachusetts Environmental Policy Act (MEPA) Office

Environmental Notification Form

For Office Use Only

EEA#: ____________________

MEPA Analyst: _____________

The information requested on this form must be completed in order to submit a document electronically for review under the Massachusetts Environmental Policy Act, 301 CMR 11.00.

Project Name: Martha's Vineyard Reliability Project		
Street Address: New distribution cable in existing right-of-way and Vineyard Sound from #933 Stephens Ln. Substation in Falmouth to an equipment yard off Eastville Ave. in Oak Bluffs		
Municipality: Falmouth, Tisbury and Oak Bluffs	Watershed: Vineyard Sound	
Universal Transverse Mercator Coordinates: Northing 4600244; Easting 365178 (UTM Zone 19N) (Falmouth Landfall Site)	Latitude: N 41° 32′ 33″ Longitude: W 70° 36′ 59″ (Falmouth Landfall Site)	
Estimated commencement date: Q4 2022	Estimated completion date: Q1 2025	
Project Type: Utility	Status of project design: 30 %complete	
Proponent: NSTAR Electric Company d/b/a Eversource Energy		
Street Address: 247 Station Drive		
Municipality: Westwood	State: MA	Zip Code: 02090
Name of Contact Person: Dr. Dwight R. Dunk, PWS, BCES		
Firm/Agency: Epsilon Associates, Inc.	Street Address: 3 Mill & Main Place, Suite 250	
Municipality: Maynard	State: MA	Zip Code: 01754
Phone: (978) 897-7100	Fax: (978) 897-0099	E-mail: ddunk@epsilonassociates.com

Does this project meet or exceed a mandatory EIR threshold (see 301 CMR 11.03)?
☐Yes ☒No

If this is an Expanded Environmental Notification Form (ENF) (see 301 CMR 11.05(7)) or a Notice of Project Change (NPC), are you requesting:

a Single EIR? (see 301 CMR 11.06(8))	☒Yes	☐No
a Rollover EIR? (see 301 CMR 11.06(13))	☒Yes	☐No
a Special Review Procedure? (see 301CMR 11.09)	☐Yes	☒No
a Waiver of mandatory EIR? (see 301 CMR 11.11)	☐Yes	☒No
a Phase I Waiver? (see 301 CMR 11.11)	☐Yes	☒No

(Note: Greenhouse Gas Emissions analysis must be included in the Expanded ENF.)

Which MEPA review threshold(s) does the project meet or exceed (see 301 CMR 11.03)?

11.03(3)(b): 1.f. alteration of ½ or more acres of any other wetlands (Land Under the Ocean), and 3. dredging 10,000 or more cubic yards of material.

Which State Agency Permits will the project require?
Massachusetts Department of Environmental Protection ("MassDEP"): (1) Sec. 401 Water Quality Certification; (2) Chapter 91 Waterways License; and (3) Ch. 91 Dredge Permit.

Massachusetts Department of Transportation ("MassDOT"): Access Permit and Easement Agreement.

Identify any financial assistance or land transfer from an Agency of the Commonwealth, including the Agency name and the amount of funding or land area in acres:

The Project does not require any financial assistance from an Agency of the Commonwealth. Eversource is seeking easement rights along the Shining Sea Bike Path.

Summary of Project Size & Environmental Impacts	Existing	Change	Total
LAND			
Total site acreage	652.6 ac (1)		
New acres of land altered		0.51 ac (2)	
Acres of impervious area	9.8 ac	0.35 ac (3)	10.15 ac
Square feet of new bordering vegetated wetlands alteration		0	
Square feet of new other wetland alteration		9.62 ac (4)	
Acres of new non-water dependent use of tidelands or waterways		0	
STRUCTURES			
Gross square footage	15,000 s.f.	360 s.f.	15,360 s.f.
Number of housing units	N/A	N/A	N/A
Maximum height (feet)	40 ft (5) (Falmouth) 0 ft (Oak Bluffs)	0 ft 10 ft	40 ft 10 ft
TRANSPORTATION			
Vehicle trips per day	N/A	N/A	N/A
Parking spaces	N/A	N/A	N/A
WASTEWATER			
Water Use (Gallons per day)	N/A	N/A	N/A
Water withdrawal (GPD)	N/A	N/A	N/A
Wastewater generation/treatment (GPD)	N/A	N/A	N/A
Length of water mains (miles)	N/A	N/A	N/A
Length of sewer mains (miles)	N/A	N/A	N/A

Has this project been filed with MEPA before?
☐ Yes (EEA #__________) ☒No

Has any project on this site been filed with MEPA before?
☒ Yes (EEA #s below) ☐No

16379 Construction of a Shared Use Path Along Beach Road;
14755 Comcast Fiber Optic Cable;
14729 Town of Falmouth 10 Year Comprehensive Permit for Dredging and Beach Nourishment;
13049 Shining Sea Bikeway Phase II and IIB

NOTES:

(1) Total site acreage is existing public rights-of-way in which the duct will be installed in Falmouth (8.25acres) and Oak Bluffs (1.1 acres) plus the 1,000-ft wide surveyed submarine cable corridor (641.2 acres) plus the new equipment yard off Eastville Avenue in Oak Bluffs (0.69 acres), and the existing #933 substation off Stephens Lane in Falmouth (1.34 acres).

(2) This refers to the land to be cleared to install the equipment and gravel driveway off Eastville Avenue in Oak Bluffs.

(3) This refers to pervious cover converted to impervious surface (transformer pads) at the equipment yard in Oak Bluffs, and the widening if the Shining Sea Bike Path in Falmouth.

(4) This refers to work in LSCSF (the 4-ft wide duct & manholes, HDD workspace, and portion of the equipment yard) and LUO (12-ft wide trough along the submarine cable alignment).

(5) Additionally, a 100-ft lightning mast is present at the Falmouth substation

GENERAL PROJECT INFORMATION – all proponents must fill out this section

PROJECT DESCRIPTION:

The proposed Martha's Vineyard Reliability Project (the "Project") involves constructing a fifth cable from Falmouth to Oak Bluffs to improve the reliability of grid-based electricity on Martha's Vineyard (or the "Island"). The Project also will allow Eversource to retire five standby diesel generators on the Island which are currently used to provide power during times of peak demand.

Describe the existing conditions and land uses on the project site:

Figure 1, USGS Locus Map and Figure 2, Aerial Locus Map in Attachment B, depict the Project corridor for the new distribution cable extending from the existing Eversource substation #933 off Stephens Lane in Falmouth on Cape Cod to the new equipment yard site off Eastville Avenue in Oak Bluffs on Martha's Vineyard. The Project is located in the Towns of Falmouth, Tisbury (in Vineyard Sound), and Oak Bluffs. Presently, grid-based electricity is delivered to Martha's Vineyard by four submarine cables each operating at 23kV, and installed across Vineyard Sound from Cape Cod to Martha's Vineyard. Those four cables are depicted on Figure 3 in Attachment B, and are identified as the following:

Cable #75 – buried cable from Falmouth to Tisbury installed c. 2013 (EEA No. 14755)
Cable #91 – direct lay cable from Falmouth to Tisbury installed c. 1986
Cable #99 – direct lay cable from Falmouth to Oak Bluffs installed c. 1996
Cable #97 – direct lay cable from Falmouth to Tisbury installed c. 1990

In Falmouth, the cable will be housed underground in a duct and manhole system installed within existing public rights-of-way ("ROW") and the Shining Sea Bikeway. Land uses along the corridor generally include residential and business, with pockets of undeveloped, industrial, and institutional uses. There are areas of protected public open space (Article 97 Lands) abutting the Project corridor and owned by the Town of Falmouth along the Shining Sea Bikeway and Salt Pond along Mill Road. An existing Contractor's yard is located north of the #933 substation off Stephens Lane and the submarine cable landfall site is proposed in the public parking lot at the intersection of Shore Street and Surf Drive.

In the Town of Oak Bluffs, land uses from the landfall site to the equipment yard include beach and dune along the shoreline, with residential and institutional (Martha's Vineyard Hospital) properties along Eastville Avenue.

The corporate boundary for the Town of Tisbury extends into Vineyard Sound, and the segment of the cable corridor in Tisbury is located entirely within Vineyard Sound.

Natural resources associated with Vineyard Sound include Land Under the Ocean ("LUO"), Coastal Beach, Coastal Dune, Barrier Beach and floodplain (regulated and Land Subject to Coastal Storm Flowage "LSCSF"). In addition to the flowed tidelands there are discrete areas of filled tidelands (as per the MassGIS datalayer) along Mill Road and Surf Drive in Falmouth.

There are Environmental Justice ("EJ") Populations, as defined in Massachusetts law, within 1-mile of the Project corridor both on Cape Cod and Martha's Vineyard. Please refer to the narrative provided in Attachment A, Section 8.6 for a description of the outreach activities and analysis of potential impacts on these EJ populations.

Describe the proposed project and its programmatic and physical elements:

The Project involves installing a new distribution cable from Town of Falmouth, across Vineyard Sound, to the Town of Oak Bluffs. The Project purpose is to improve reliability on the Island with increased grid-based electric service to meet current and future electricity demand.

The Project is comprised of: (1) an approximately 2.7-mile duct and manhole system for the onshore cable in Falmouth (2.32 miles of new duct and 0.38 miles of existing duct in Surf Drive) , (2) an approximately 6.24-mile (from landfall to landfall) buried submarine cable across Vineyard Sound, (3) an approximately 0.25-mile duct and manhole system in Oak Bluffs, (4) upgrades to the existing Eversource #933 Substation off Stephens Lane in Falmouth, and (5) installation of six pad-mounted transformers at the Eversource-owned parcel off Eastville Avenue in Oak Bluffs ("equipment yard") to integrate this fifth distribution cable into the Island's electrical system. In addition to providing more reliable grid-based electrical power for the Island, other benefits from the Project include the decommissioning of five diesel generators located in Oak Bluffs and Vineyard Haven on Martha's Vineyard, and the ability to better integrate distributed renewable electrical power into the Island's system.

To avoid altering shoreline and intertidal habitats, the submarine cable will be installed using Horizontal Directional Drilling ("HDD") at the landfall sites in Falmouth and Oak Bluffs. The submarine cable will be buried 6- to 10-feet under the seabed of Vineyard Sound by hydroplow (or jetplow).

On land, the underground duct and manhole systems are located within existing ROW and the bikeway in Falmouth, and in ROW in Oak Bluffs. The duct and manhole systems will be constructed using open trenching and backfill construction techniques. All disturbed work areas will be restored to pre-construction grades and surface conditions.

Locus maps showing all elements of the proposed Project are provided on Figures 1, 2 and 3 in Attachment B. For additional detail regarding these project activities, please refer to the EENF Project Narrative and Proposed Environmental Impact Report ("PEIR") provided in Attachment A. The Project's direct and indirect impacts are discussed in Section 5 of Attachment A.

NOTE: The project description should summarize both the project's direct and indirect impacts (including construction period impacts) in terms of their magnitude, geographic extent, duration and frequency, and reversibility, as applicable. It should also discuss the infrastructure requirements of the project and the capacity of the municipal and/or regional infrastructure to sustain these requirements into the future.

Describe the on-site project alternatives (and alternative off-site locations, if applicable), considered by the proponent, including at least one feasible alternative that is allowed under current zoning, and the reasons(s) that they were not selected as the preferred alternative:

Eversource evaluated various alternatives to address Martha's Vineyard electrical reliability and demands (existing and future) to determine the approach that best balance's system reliability, cost, and environmental impacts. Section 2.0 in Attachment A identifies and evaluates alternative means of meeting the Project purpose and need. Alternatives evaluated included: (a) the no-build alternative, (b) on-Island generation, and (c) on-Island storage capacity. Additionally, landside cable routing alternatives from the landing sites were evaluated as well as submarine cable routes. As described in Section 2.0, Eversource dismissed the no-build alternative because it would not meet the identified project purpose and need. There is no feasible or practical on-Island electrical generation alternative, therefore that was not considered beyond the conceptual stage. On-Island battery storage was evaluated, and preliminary study, design and costs were developed. Those assessments determined that on-Island battery storage was too costly and furthermore, it would not meet the long-term demand needs or be able to integrate dispersed renewable generation into the Island's electrical system, therefore on-Island battery storage was removed from further consideration.[1] Based on the alternatives assessment, the option of constructing a fifth cable to Martha's Vineyard was selected as the preferred alternative.

In Falmouth four landside cable routes were evaluated to connect the cable from the existing Stephens Lane Substation to the waterfront in an underground duct and manhole system. That evaluation identified the route along Jones Road, the Shining Sea Bikeway, Mill Road, and Surf Drive as the preferred route. This route minimizes construction-period disruptions to the built and natural environments.

Please refer to the narrative provided in Attachment A, Section 2.0 for a discussion of the alternatives considered. As described in the narrative, Eversource's analyses show that construction of the Project is the best approach to meeting the identified need based on balancing system reliability, cost, and environmental impact.

NOTE: The purpose of the alternatives analysis is to consider what effect changing the parameters and/or siting of a project, or components thereof, will have on the environment, keeping in mind that the objective of the MEPA review process is to avoid or minimize damage to the environment to the greatest extent feasible. Examples of alternative projects include alternative site locations, alternative site uses, and alternative site configurations.

[1] DPU 21-30 – NSTAR Electrical Co. d/b/a Eversource Energy 202 Grid Modernization Annual Report (dated May 17, 2021)

Summarize the mitigation measures proposed to offset the impacts of the preferred alternative:

The selected construction methods described in Attachment A, Section 3.0 are themselves the primary mitigation to avoid and minimize potential Project impacts. Once installed, the buried landside and submarine cable impacts will be negligible, therefore this assessment focuses on mitigating construction-period impacts.

Avoiding and Minimizing Coastal Resources: The use of HDD at both landfalls avoids altering intertidal, coastal beach and eel grass beds along the Falmouth shoreline, while in Oak Bluffs it avoids intertidal, coastal beach, and dune. The use of hydroplow construction to bury the cable below the seabed is a less disruptive construction technique than traditional trench and backfill construction. The use of these two construction techniques are themselves measures to mitigate alterations to coastal resources. Furthermore, the Project will observe time-of-year ("TOY") restrictions as may be developed by the Massachusetts Natural Heritage and Endangered Species Program ("NHESP"). Eversource will consult with NHESP via MEPA review and during Project permitting to identify the appropriate TOYs to avoid a "take."

Underground distribution line construction is proposed to be conducted between September (after Labor Day) and May (before Memorial Day), which is the off-season for communities on Cape Cod and Martha's Vineyard. This proposed construction schedule will minimize impacts to the neighboring residential homes, seasonal guests and minimize traffic related impacts.

As part of construction activities, temporary impacts (e.g., traffic congestion during construction, construction stormwater runoff, fugitive dust, noise, etc.) will likely occur. Once constructed, the Project will have no ongoing impacts. Eversource has identified several mitigation measures that will minimize construction related impacts. These mitigation measures are summarized as follows:

- The landside routes are located in previously developed and paved surfaces for the majority of their length in Falmouth and Oak Bluffs. Siting the cable in this manner avoids and minimizes the potential for erosion and transport of sediment from the work zone.
- Eversource will develop and maintain a Stormwater Pollution Prevention Plan ("SWPPP") for the Project that will identify controls to mitigate the potential for erosion and sedimentation from disturbed soil surfaces during construction.
- Fugitive dust will be controlled at work sites by implementing appropriate methods, such as covering truck beds transporting soil, and covering temporary soil stockpiles at staging and laydown areas, as applicable. Anti-track pads will be installed, as appropriate, to avoid tracking soil onto streets, and regular sweeping of paved surfaces adjacent to work zones during construction will be performed to minimize dust and control sedimentation.
- Construction equipment will comply with requirements for using ultra-low sulfur diesel ("ULSD") in off-road engines. The construction contractor will be encouraged to use diesel construction equipment with exhaust emission controls such as oxidation catalysts or particulate filters on their diesel engines.
- Compliance with the five-minute idle law and turning off construction equipment when not in use to minimize vehicle idling to the extent practicable.
- Waste materials excavated along the routes during duct and manhole system construction will be promptly removed and re-used or properly managed at a suitable permitted facility.
- Eversource will implement appropriate dewatering protocols based on site specific factors at the time of construction to ensure no adverse impacts to groundwater and surface waters.
- The construction equipment used with underground cable construction is like that used during typical public works projects (e.g., storm drain, sewer and water line installation). The timing and sequencing of the work will be coordinated to minimize potential noise impacts consistent with applicable local regulations and ordinances.
- Eversource will take measures to minimize and mitigate potential impacts to traffic during construction, including specifically multimodal forms of transportation (bikes, pedestrian access, etc.). Eversource will implement traffic management plans ("TMPs") that consider the routing and protection of pedestrian, vehicular, and bicycle traffic; adherence to reasonable work hours; maintaining access to homes,

businesses and institutional facilities throughout construction; limiting the occupancy of the street layout, always maintaining emergency access; avoiding impacts to school bus routes; and clear and regular communications to the community during construction.

In addition to the above, specific discussions of mitigation measures for other potential environmental impacts, such as project activities near EJ Populations, are described in the narrative provided in Attachment A, Sections 5.0, 8.0, and 9.0.

If the project is proposed to be constructed in phases, please describe each phase:

The Project is not a "phased project" per se, however, the project is expected to be constructed in phases as the two construction techniques –buried terrestrial cable and buried submarine cable– are distinct construction techniques with specific requirements. The current plan is to install the landside duct and manhole system first, followed by the submarine cable, then the installation of the landside cable in the duct and manhole system.

The project will be constructed over a 2- to 3-year period. The estimated in-service date of the submarine cable is December 2024. The submarine cable for this Project is manufactured on a project-specific basis based on design specifications. Due to submarine cable specifications and the world-wide demand for submarine cable, the cable for the Martha's Vineyard Reliability Project is being procured and the final installation schedule will be determined based on delivery date. The Proponent proposes to initiate landside cable construction in Falmouth in the fall of 2022, followed submarine cable construction starting in the fall of 2023. The sequence for the cable construction is presently planned as follows:

- Install the landside duct and manhole system in Falmouth, start autumn 2022;
- Advance the two HDD reaches in Falmouth and Oak Bluffs, leaving a high-density polyethylene ("HDPE") liner in place, start autumn 2023;
- Install manholes / vaults at the landing for each HDD;
- Install the cross-sound buried submarine cable by hydroplow construction, diver assisted burial at the hydroplow and HDD interface will be required;
- Leave the capped cable ends in the two submarine terminal manholes;
- Construct the landside duct and manhole system in Oak Bluffs, start autumn 2023;
- Install the cable in the duct and manhole system;
- Construct substation improvements in Falmouth;
- Install the equipment at the Eastville Avenue equipment yard in Oak Bluffs; and
- Test the new system, and put it into service.

The Eversource contract for the diesel generators on Martha's Vineyard expires in May 2025.

Construction will be sequenced and timed to meet TOY requirements that may be developed by NHESP and to avoid the busy summer traffic period. Landside underground duct and manhole construction is scheduled to avoid the busy summer traffic period, with no work planned between Memorial Day and Labor Day. These restriction times will be developed in conjunction with the municipalities, and local and state agencies during the permitting process.

AREAS OF CRITICAL ENVIRONMENTAL CONCERN:

Is the project within or adjacent to an Area of Critical Environmental Concern?

☐Yes (Specify___________________________________)

☒**No**

if yes, does the ACEC have an approved Resource Management Plan? ___ Yes ___ No;
If yes, describe how the project complies with this plan.

Will there be stormwater runoff or discharge to the designated ACEC? ___ Yes _X **No**;
If yes, describe and assess the potential impacts of such stormwater runoff/discharge to the designated ACEC.

RARE SPECIES:

Does the project site include Estimated and/or Priority Habitat of State-Listed Rare Species? (see http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/priority_habitat/priority_habitat_home.htm)

☒**Yes** (Specify: See below) ☐No

The majority of the submarine cable route is mapped Priority Habitat ("PH") 2158 and Estimated Habitat ("EH") 1366. Based on initial coordination with the NHESP this area is designated as habitat for: Common Tern, Roseate Tern, and Least Tern. See Attachment F, NHESP Tracking No.: 21-40597. During the permitting process Eversource will consult with the NHESP to establish construction protocols and other measures to minimize and avoid potential impacts to rare species and their habitats.

HISTORICAL/ARCHAEOLOGICAL RESOURCES:

Does the project site include any structure, site or district listed in the State Register of Historic Place or the inventory of Historic and Archaeological Assets of the Commonwealth?

☒**Yes** (Specify: See below) ☐No

The proposed routes pass through Districts and Areas listed on the National and State Registers of Historic Places and included in the Inventory of Historic and Archaeological Assets of the Commonwealth. However, the proposed routes will be underground within established roadways or other previously disturbed areas and will not have an impact on above ground historic resources.

If yes, does the project involve any demolition or destruction of any listed or inventoried historic or archaeological resources? ☒Yes (Specify: See below) ☐No

The proposed routes pass through archaeological sites included in the Inventory of Historic and Archaeological Assets of the Commonwealth. However, the proposed routes will be underground within established roadways or other previously disturbed areas and are not anticipated to have significant impacts on archaeological sites.

WATER RESOURCES:

Is there an Outstanding Resource Water (ORW) on or within a half-mile radius of the project site? _Yes **X No;** if yes, identify the ORW and its location. ______________________________

(NOTE: Outstanding Resource Waters include Class A public water supplies, their tributaries, and bordering wetlands; active and inactive reservoirs approved by MassDEP; certain waters within Areas of Critical Environmental Concern, and certified vernal pools. Outstanding resource waters are listed in the Surface Water Quality Standards, 314 CMR 4.00.)

Are there any impaired water bodies on or within a half-mile radius of the project site? **X Yes** _No; if yes, identify the water body and pollutant(s) causing the impairment:

Tisbury and Oak Bluffs, Martha's Vineyard:

- Vineyard Haven Harbor (State Waterbody ID: MA97-09) – fish, other aquatic life and wildlife (estuarine bioassessments) and shellfish harvesting (fecal coliform)
- Lagoon Pond (State Waterbody ID: MA97-11) – fish, other aquatic life and wildlife (dissolved oxygen, estuarine bioassessments, total nitrogen, and nutrient/eutrophication Biological Indicators)

Is the project within a medium or high stress basin, as established by the Massachusetts Water Resources Commission? ___Yes ___No Unknown, insufficient data for Cape Cod.

STORMWATER MANAGEMENT:

Generally describe the project's stormwater impacts and measures that the project will take to comply with the standards found in MassDEP's Stormwater Management Regulations:

During Construction:

Eversource will develop and maintain an Erosion and Sedimentation Control Plan pursuant to the Stormwater Regulations 310 CMR 10.05(6)(k). Additionally Eversource will prepare a SWPPP for the project that will identify controls to be implemented to mitigate the potential for erosion and sedimentation from soil disturbance during construction. The SWPPP will be adhered to by the contractor during all phases of construction in accordance with the general conditions prescribed in the U.S. Environmental Protection Agency's ("U.S. EPA") Stormwater Construction General Permit ("CGP").

Post Construction:
In Falmouth, no new impervious cover, nor new or modified drainage systems are proposed, thus the other Stormwater Management Standards are not applicable.

In Oak Bluffs, construction of the new equipment yard will covert pervious cover to impervious cover. Compliance with applicable Standards will be met primarily through low impact development ("LID") techniques. Details will be advanced for the Notice of Intent.

MASSACHUSETTS CONTINGENCY PLAN:
Has the project site been, or is it currently being, regulated under M.G.L.c.21E or the Massachusetts Contingency Plan? Yes ___ **No X**; if yes, please describe the current status of the site (including Release Tracking Number (RTN), cleanup phase, and Response Action Outcome classification):__________________

Is there an Activity and Use Limitation (AUL) on any portion of the project site? Yes ___ **No X**;
if yes, describe which portion of the site and how the project will be consistent with the AUL: ______________.

Are you aware of any Reportable Conditions at the property that have not yet been assigned an RTN?
Yes __ **No X**; if yes, please describe:___________________________________

SOLID AND HAZARDOUS WASTE:

If the project will generate solid waste during demolition or construction, describe alternatives considered for re-use, recycling, and disposal of, e.g., asphalt, brick, concrete, gypsum, metal, wood:

The Project will involve open trenching through existing roadways and an existing paved bikeway. Following saw cutting, the existing pavement will be removed and loaded into a dump truck. Pavement will be handled separately from soil and will be recycled at an asphalt batching plant. Packing crates and wood from equipment shipments will be reused or recycled to the extent practicable or will be disposed of appropriately.

(NOTE: Asphalt pavement, brick, concrete and metal are banned from disposal at Massachusetts landfills and waste combustion facilities and wood is banned from disposal at Massachusetts landfills. See 310 CMR 19.017 for the complete list of banned materials.)

Will your project disturb asbestos containing materials? Yes ___ **No X**;
if yes, please consult state asbestos requirements at http://mass.gov/MassDEP/air/asbhom01.htm

Describe anti-idling and other measures to limit emissions from construction equipment:

During project construction, Eversource and its contractors will turn off construction equipment when not actively in use and will minimize vehicle idling in accordance with Massachusetts' anti-idling law, (G.L. c. 90, § 16A, c. 111, §§ 142A–142M, and 310 C.M.R. 7.11), and construction equipment engines will comply with requirements for the use of ULSD in off-road engines. The construction contractor will also be encouraged to use diesel construction equipment with installed exhaust emission controls such as oxidation catalysts or particulate filters on their diesel engines.

DESIGNATED WILD AND SCENIC RIVER:

Is this project site located wholly or partially within a defined river corridor of a federally designated Wild and Scenic River or a state designated Scenic River? Yes ___ **No X**; if yes, specify name of river and designation:

If yes, does the project have the potential to impact any of the "outstandingly remarkable" resources of a federally Wild and Scenic River or the stated purpose of a state designated Scenic River?
Yes ___ No ___ ; if yes, specify name of river and designation: _____________;
if yes, will the project will result in any impacts to any of the designated "outstandingly remarkable" resources of the Wild and Scenic River or the stated purposes of a Scenic River.
Yes ___ No ___ ; if yes, describe the potential impacts to one or more of the "outstandingly remarkable" resources or stated purposes and mitigation measures proposed.

ATTACHMENTS:

1. List of all attachments to this document. Please see the Table of Contents.

2. U.S.G.S. map (good quality color copy, 8-½ x 11 inches or larger, at a scale of 1:24,000) indicating the project location and boundaries. See Attachment B, Figure 1.

3. Plan, at an appropriate scale, of existing conditions on the project site and its immediate environs, showing all known structures, roadways and parking lots, railroad rights-of-way, wetlands and water bodies, wooded areas, farmland, steep slopes, public open spaces, and major utilities. See figures provided in Attachment B, the Project Map Set in Attachment C and the Project Plans in Attachment N.

4 Plan, at an appropriate scale, depicting environmental constraints on or adjacent to the project site such as Priority and/or Estimated Habitat of state-listed rare species, Areas of Critical Environmental Concern, Chapter 91 jurisdictional areas, Article 97 lands, wetland resource area delineations, water supply protection areas, and historic resources and/or districts. See Attachments B and C.

5. Plan, at an appropriate scale, of proposed conditions upon completion of project (if construction of the project is proposed to be phased, there should be a site plan showing conditions upon the completion of each phase). See Attachments B and C.

6. List of all agencies and persons to whom the proponent circulated the ENF, in accordance with 301 CMR 11.16(2). See Attachment D.

7. List of municipal and federal permits and reviews required by the project, as applicable. See Attachment A, Section 1.5.

8. Printout of output report from RMAT Climate Resilience Design Standards Tool, available here. See Attachment L.

LAND SECTION – all proponents must fill out this section

I. Thresholds / Permits

A. Does the project meet or exceed any review thresholds related to **land** (see 301 CMR 11.03(1)
___ Yes **X No**; if yes, specify each threshold:

II. Impacts and Permits

A. Describe, in acres, the current and proposed character of the project site, as follows:

	Existing	Change	Total
Footprint of buildings	**N/A**	**N/A**	**N/A**
Internal roadways	**0**	**+0.6[1]**	**0.6**
Parking and other paved areas	**9.8**	**+360 s.f.[2]**	**9.8**
Other altered areas	**0.15[3]**	**0**	**0.15**
Undeveloped areas	**0.69[4]**	**-0.5[5]**	**0.19**
Total: Project Site Acreage	**651.8**	**0**	**651.8**

[1] The gravel driveway that will be installed at the Oak Bluffs equipment site

[2] Area of new transformer platforms at the Oak Bluffs equipment site

[3] The unpaved area at the Oak Bluffs landing site

[4] The total area of the undeveloped Oak Bluffs equipment site parcel

[5] The area of land to be cleared on the Oak Bluffs equipment site

B. Has any part of the project site been in active agricultural use in the last five years?
___ Yes **X No**; if yes, how many acres of land in agricultural use (with prime state or locally important agricultural soils) will be converted to nonagricultural use?

C. Is any part of the project site currently or proposed to be in active forestry use?
__ Yes **X No**; if yes, please describe current and proposed forestry activities and indicate whether any part of the site is the subject of a forest management plan approved by the Department of Conservation and Recreation:

D. Does any part of the project involve conversion of land held for natural resources purposes in accordance with Article 97 of the Amendments to the Constitution of the Commonwealth to any purpose not in accordance with Article 97? ___ Yes **X No**; if yes, describe:

E. Is any part of the project site currently subject to a conservation restriction, preservation restriction, agricultural preservation restriction or watershed preservation restriction?
__ Yes **X No**; if yes, does the project involve the release or modification of such restriction?
__ Yes __ No; if yes, describe:

F. Does the project require approval of a new urban redevelopment project or a fundamental change in an existing urban redevelopment project under M.G.L.c.121A? ___ Yes **X No**; if yes, describe:

G. Does the project require approval of a new urban renewal plan or a major modification of an existing urban renewal plan under M.G.L.c.121B? Yes ___ **No X**; if yes, describe:

III. Consistency

A. Identify the current municipal comprehensive land use plan

Falmouth: Falmouth Local Comprehensive Plan, 2016

Oak Bluffs: Oak Bluffs Comprehensive Master Plan, Second Draft February 2019, Effective May 2019

B. Describe the project's consistency with that plan with regard to:

Falmouth Local Comprehensive Plan

1) economic development

The Town of Falmouth's Local Comprehensive Plan is intended to enhance well-established sectors of the local and regional economy and encourage emerging sectors in order to increase the economic opportunities available to residents while responsibly managing growth to ensure that the local economy is sustainable, resilient, adaptable and innovative to maximize the quality of life, remaining a viable community for all demographic groups. The duct and manhole system in the Town of Falmouth proposed as part of the Project is within existing rights of way. This system will be sized to accommodate additional line(s) for future electric cable(s).

2) adequacy of infrastructure
The Project will not place additional burdens on Town infrastructure. Eversource is transitioning to clean electric generation sources, consistent with the Plan goals. The duct and manhole systems installed for this project can be used for future Eversource projects to ensure the region has a reliable and flexible electric grid that can accommodate clean electric generation sources. By installing an underground duct and manhole system rather than using overhead powerlines, this project increases coastal resiliency, another goal of the Plan, and minimizes visual impacts.

3) open space impacts
The proposed distribution line is located underground, predominantly in public roadways, paved bikeways, and other developed areas, and will not result in long-term open space impacts. Upon completion of construction, Eversource will restore all altered areas associated with the Project to preexisting conditions. Eversource is coordinating with Town officials and stakeholders to minimize construction-period impacts in the Shining Sea Bikeway and the Surf Drive Beach Parking Lot.

4) compatibility with adjacent land uses
The Project will not permanently affect adjacent land uses as the cable will be installed entirely underground. Temporary impacts to residences, businesses and sensitive receptors during construction may include traffic disruption and noise. These types of impacts will be minimized with proper construction best management practices ("BMPs"), traffic management plans ("TMPs"), and restricted workdays or hours. Temporary alterations during construction are generally limited to workspace areas for duct and manhole system installation and the HDD at the landfall site. The proposed landfall site in Falmouth was selected largely based on compatibility with adjacent land uses and environmental features. The HDD installation will be sufficiently deep and upon completing work, all areas altered by the Project will be restored to preexisting conditions. The Project will have no permanent impacts on adjacent land uses.

Oak Bluffs Comprehensive Master Plan

1) economic development
The Project is consistent with the economic goals set forth in the Plan in that it will enhance the Island's electrical system and improve its reliability. Having a consistently reliable grid-based electrical system that can accommodate clean, renewable electric generation sources now and in the future supports economic growth and development in Oak Bluffs and Martha's Vineyard at-large.

2) adequacy of infrastructure

The Plan encourages sustainable growth that can be maintained by the Town's infrastructure and encourages compact and focused development in areas sustained by infrastructure. The Island is presently served by four submarine electrical cables which is augmented by five on-island diesel generators for peak demand loads. This system, though adequate, is not as reliable as it could be. Constructing this fifth cable to the Island will increase the reliability and distribution of electricity in Oak Bluffs and the Island at large, the Town, consistent with the Plan goal of strengthening the Island's electrical system. The Project involves the installation of an underground duct and manhole system, consistent with the Plan goal of seeking ways to put more utility lines underground.

3) open space impacts
The Plan encourages the preservation of open space and visual beautification. The proposed cable is located underground, predominantly in Eastville Avenue. The Project will not result in permanent impacts to open space and will not have any significant impacts on visual aesthetics. Upon completion of construction, Eversource will restore all altered areas associated with the Project to preexisting conditions.

4) compatibility with adjacent land uses
The Project will not permanently affect adjacent land uses as the cable will be installed entirely underground. Temporary impacts to residences and sensitive receptors during construction may include traffic disruption and noise. These types of impacts will be minimized with proper construction BMPs, TMPs, and restricted workdays or hours. Temporary alterations during construction are generally limited to workspace areas for duct and manhole system installation and the HDD at the landfall site. The proposed landfall site in Oak Bluffs was selected largely based on proximity to the existing electrical connection in Oak Bluffs and compatibility with adjacent land uses and environmental features. The HDD installation will be sufficiently deep and upon completing work, all areas altered by the Project will be restored to preexisting conditions. The Project will have no permanent impacts on adjacent land uses.

C. Identify the current Regional Policy Plan of the applicable Regional Planning Agency (RPA)
RPA: **Cape Cod Commission**
Title: **Cape Cod Regional Policy Plan**
Date: **December 2018; amended effective March 30, 2021**

Describe the project's consistency with that plan with regard to:

1) economic development
The RPP focuses on development in Economic Centers, Villages, and Industrial and Service Trade Areas. The Project is consistent with the RPP and will not alter the pattern of economic development.

2) adequacy of infrastructure
The RPP seeks to encourage adequate and reliable infrastructure throughout Cape Cod. The proposed duct and manhole system will be able to be accommodate future electric cable(s) which can increase the reliability of electricity on the Cape and the Island. The project also improves the ability of the Eversource Substation #933 in Falmouth to connect to renewable energy sources through installation and reconfiguration of equipment at the substation.

3) open space impacts
The RPP seeks to protect open space and natural resources from development. The proposed cable will be installed underground, predominantly in public roadways, an existing paved bikeway and other developed areas. The Project will not permanently impact open space or natural resources, and the landfall site in Falmouth was selected in large part to avoid any such impacts. Temporary impacts to open space during construction will be minimized with

proper construction BMPs, TMPs, and restricted workdays or hours. Temporary alterations during construction are generally limited to workspace areas for duct and manhole system installation and the HDD at the landfall site. Upon completion of construction, Eversource will restore all altered areas associated with the Project to preexisting conditions.

RPA: **Martha's Vineyard Commission**
Title: **Martha's Vineyard Island Plan ("The Island Plan")**
Date: **Adopted by the Martha's Vineyard Commission on December 10, 2009**

1) economic development
The Island Plan seeks to stimulate a diverse, vital, and balanced local economy that attracts and sustains businesses. By improving the reliability of the Island's electrical system will increase the Island's desirability for residents and supports the business community.

2) adequacy of infrastructure
The Island Plan encourages development in areas with adequate infrastructure. Electrical infrastructure is present in the area of the landfall site because another cable currently comes ashore in this area. The Project purpose is to improve the reliability of grid-based electrical service on Martha's Vineyard, as described in the narrative included as Attachment A.

3) open space impacts
The Island Plan encourages development within compact village centers. The Proposed distribution line installation work is located underground, in the Eastville Avenue right-of-way and Eversource owned property, thus will not result in open space impacts. Use HDD is proposed to avoid the natural resources along the shoreline. Temporary alterations during HDD construction are limited to the workspace area. Upon completion of work, Eversource will restore all altered areas associated with the Project to preexisting conditions.

RARE SPECIES SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **rare species or habitat** (see 301 CMR 11.03(2))? ___ Yes **X No**; if yes, specify, in quantitative terms:

(NOTE: If you are uncertain, it is recommended that you consult with the Natural Heritage and Endangered Species Program (NHESP) prior to submitting the ENF.)

B. Does the project require any state permits related to **rare species or habitat**? __Yes _X_ **No**

Following MEPA review, Eversource will engage NHESP by filing a Joint WPA-MESA Notice of Intent during the permitting process. Consistent with the previous NSTAR cable project the Proponent intends to schedule work around time of year restrictions to avoid the need for a Conservation and Management Permit.

C. Does the project site fall within mapped rare species habitat (Priority or Estimated Habitat?) in the current Massachusetts Natural Heritage Atlas (attach relevant page)? _X **Yes** __ No.

See Attachment B, Figure 23.

D. If you answered "No" to all questions A, B and C, proceed to the **Wetlands, Waterways, and Tidelands Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Rare Species section below.

II. Impacts and Permits

A. Does the project site fall within Priority or Estimated Habitat in the current Massachusetts Natural Heritage Atlas (attach relevant page)? _X_ **Yes** ___ No. If yes,

1. Have you consulted with the Division of Fisheries and Wildlife Natural Heritage and Endangered Species Program (NHESP)? _X **Yes** ___No; if yes, have you received a determination as to whether the project will result in the "take" of a rare species? ___ Yes _X_ **No**; if yes, attach the letter of determination to this submission.

The majority of the submarine cable route is mapped Priority Habitat ("PH") 2158 and Estimated Habitat ("EH") 1366.

2. Will the project "take" an endangered, threatened, and/or species of special concern in accordance with M.G.L. c.131A (see also 321 CMR 10.04)? ___ Yes _X_ **No**; if yes, provide a summary of proposed measures to minimize and mitigate rare species impacts

Following MEPA review, Eversource will engage NHESP by filing a Joint WPA-MESA Notice of Intent during the permitting process. Consistent with the previous NSTAR cable project the Proponent intends to schedule work around time of years restrictions to avoid the need for a Conservation and Management Permit.

3. Which rare species are known to occur within the Priority or Estimated Habitat?

Based on initial coordination with the NHESP this area is designated as habitat for the state-listed species: Common Tern, Roseate Tern, and Least Tern. See Attachment F, NHESP Tracking No.: 21-40597

4. Has the site been surveyed for rare species in accordance with the Massachusetts Endangered Species Act? ___ Yes _X_ **No**

5. If your project is within Estimated Habitat, have you filed a Notice of Intent or received

an Order of Conditions for this project? ___ Yes _**X**_ **No**; if yes, did you send a copy of the Notice of Intent to the Natural Heritage and Endangered Species Program, in accordance with the Wetlands Protection Act regulations? ___ Yes ___ No

B. Will the project "take" an endangered, threatened, and/or species of special concern in accordance with M.G.L. c.131A (see also 321 CMR 10.04)? ___ Yes ___ No; if yes, provide a summary of proposed measures to minimize and mitigate impacts to significant habitat:

Following MEPA review, Eversource will engage NHESP by filing a Joint WPA-MESA Notice of Intent during the permitting process. Consistent with the previous NSTAR cable project the Proponent intends to schedule work around time of years restrictions to avoid the need for a Conservation and Management Permit.

WETLANDS, WATERWAYS, AND TIDELANDS SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **wetlands, waterways, and tidelands** (see 301 CMR 11.03(3))? **X Yes** ___ No; if yes, specify, in quantitative terms:

- Alteration of approximately 9.62 acres of any other wetlands (Land Under the Ocean and Land Subject to Coastal Storm Flowage) – 9.11 ac temporary + 0.51 ac. LSCSF Permanent
- Dredging (repositioning) of approximately 20,695 cy to 53,800 cy of material depending on final burial depth and plow trough width.

B. Does the project require any state permits (or a local Order of Conditions) related to **wetlands, waterways, or tidelands**? **X Yes** ___ No; if yes, specify which permit:

Orders of Conditions from Falmouth, Tisbury and Oak Bluffs Conservation Commissions, Chapter 91
Ch. 91 Waterways License and Dredge permit
Section 401 Water Quality Certification

C. If you answered "No" to both questions A and B, proceed to the **Water Supply Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Wetlands, Waterways, and Tidelands Section below.

II. Wetlands Impacts and Permits

A. Does the project require a new or amended Order of Conditions under the Wetlands Protection Act (M.G.L. c.131A)? **X Yes** __ No; if yes, has a Notice of Intent been filed? __Yes X No; if yes, list the date and MassDEP file number: ____; if yes, has a local Order of Conditions been issued? ___ Yes ___ No; Was the Order of Conditions appealed? __ Yes __ No. Will the project require a Variance from the Wetlands regulations? __Yes **X No**.

B. Describe any proposed permanent or temporary impacts to wetland resource areas located on the project site:

The Project will require temporary construction-period alteration to LUO for submarine cable installation and temporary alteration in LSCSF for: (1) HDD operations in Falmouth and Oak Bluffs, and (2) installing portions of the duct and manhole system in Mill Road in Falmouth and Eastville Avenue in Oak Bluffs. No permanent alterations of LSCSF are proposed or anticipated from HDD operations, or duct and manhole construction.

Submarine cable installation and installation of the underground duct bank and manhole system routes and include:

- The submarine cable installation in LUO, using cable plow construction, will alter approximately 370,220 square feet[2] (8.5 ac.). The impacts by municipality are:
  approximately 137,280 s.f. in Falmouth waters,
  approximately 82,160 s.f. in Tisbury waters and
  approximately 150,780 s.f. in Oak Bluffs waters.

  Alteration of Land Containing Shellfish mirrors LOU impacts because Land Containing Shellfish overlaps LOU.
- The HDD exit holes in LOU (and Land Containing Shellfish) are included in the LOU (and Land Containing Shellfish) impact calculations. However, means to contain drilling fluids that may be

[2] This is based on a 12-foot wide plow corridor (skid to skid inclusive of the plow trough) times 27,935 feet across Vineyard Sound yields 335,220 s.f (7.7 acres) plus 35,000 s.f. (0.8 acres) anchor sets yields 370,220 s.f (8.5 acres) total.

released out of the exit hole include installing a 20-foot by 20-foot gravity cell at the exit. This yields 800 s.f. of temporary alteration of LOU.

- Work on the Falmouth waterfront at the Surf Drive Beach parking lot is required for the HDD and to connect the submarine cable to the transition manhole in the parking lot. This landfall site is an existing paved parking lot within LSCSF. The HDD entry pit and trenching to connect the underground cable to the transition manhole will alter approximately 5,960 square feet of LSCSF. The disturbed parking area will be backfilled and re-paved to match pre-construction grades and surface. No permanent alteration of LSCF is proposed or anticipated.
- In Falmouth, the new underground duct and manhole system Mill Road in the Town of Falmouth will temporarily alter approximately 14,415 square feet[3] of LSCSF all within existing paved roadways. See Attachment C Project Maps.
- The Oak Bluffs HDD staging area and underground cable construction in Eastville Avenue will temporarily alter approximately 3,240 square feet of LSCSF. These work zones will be restored to pre-construction grades and conditions after cable construction is completed. This work will not result in any permanent alteration of LSCSF.
- Portions of the equipment yard in Oak Bluffs, as depicted on Attachment B, Figure 20 - FEMA Q3 Flood Zones–Oak Bluffs Landing Site, are located within LSCF. Installing the equipment will alter temporarily approximately 22,000 s.f. of LSCSF to install underground cable, equipment pads and access driveway. Upon completion the impervious cover area of the pads will total approximately 200 s.f.

See Sections 4.0 and 5.0 through in the Project Narrative (Attachment A) for additional details pertaining to the wetland resource areas located in the Project corridor, potential impacts and proposed mitigation measures.

C. Estimate the extent and type of impact that the project will have on wetland resources, and indicate whether the impacts are temporary or permanent:

Coastal Wetlands	Area (square feet) or Length (linear feet)	Temporary or Permanent Impact?
Land Under the Ocean	370,220 sf	Temporary
Designated Port Areas	0 sf	
Coastal Beaches	0 sf	
Coastal Dunes	0 sf	
Barrier Beaches	0 sf	
Coastal Banks	0 sf	
Rocky Intertidal Shores	0 sf	
Salt Marshes	0 sf	
Land Under Salt Ponds	0 sf	
Land Containing Shellfish	370,220 sf	Temporary (same as LUO)
Fish Runs	0 sf	
Land Subject to Coastal Storm Flowage	26,515 sf / 22,000 sf	Temporary / Permanent
Inland Wetlands		
Bank (lf)	0 lf	
Bordering Vegetated Wetlands	0 sf	
Isolated Vegetated Wetlands	0 sf	
Land under Water	0 sf	
Isolated Land Subject to Flooding	0 sf	
Bordering Land Subject to Flooding	0 sf	
Riverfront Area	0 sf	

[3] This is based on a 4-foot wide trench and 8- x 14-foot manholes in LSCSF, in the ROW within LSCSF.

D. Is any part of the project:

1. proposed as a **limited project**? **_X_ Yes** ___No; if yes, what is the area (in sf)?

The Project is a limited project under 310 CMR 10.24(7)(b)
The Project involves approximately 370,200 s.f. of LUO, and 42,100 s.f. of LSCSF.

2. the construction or alteration of a **dam**? __ Yes **_X_ No**; if yes, describe:
3. fill or structure in a **velocity zone** or **regulatory floodway**? **_X_ Yes** ___ No

The cable sections in both Falmouth and Oak Bluffs in mapped FEMA flood zones will be buried below grade.

4. dredging or disposal of dredged material? **X Yes** ___ No; if yes, describe the volume of dredged material and the proposed disposal site:

The Project involves "dredging" of up to approximately 37,250 c.y. (range of 20,695 cy to 53,800 cy) of material, depending on final burial depth and plow trench width. Dredging as defined in 314 CMR 9.00 includes the "repositioning of sediment." Cable construction by hydroplow will cause the temporary repositioning of sediment, however no permanent removal of bottom sediments is required to construct the submarine cable. See the EENF Project Narrative and PEIR in Attachment A for additional details.

5. a discharge to an **Outstanding Resource Water (ORW)** or an **Area of Critical Environmental Concern (ACEC)**? ___ Yes **X No**
6. subject to a wetlands restriction order? ___ Yes **X No**; if yes, identify the area (in sf):
7. located in buffer zones? **_X_ Yes** ___No; if yes, how much (in sf):

15,600 s.f. (13,300 s.f. in Falmouth and 2,300 s.f. in Oak Bluffs)

E. Will the project:

1. be subject to a local wetlands ordinance or bylaw? **_X_ Yes** ___ No
2. alter any federally-protected wetlands not regulated under state law? ___ Yes **_X_ No**; if yes, what is the area (sf)?

III. Waterways and Tidelands Impacts and Permits

A. Does the project site contain waterways or tidelands (including filled former tidelands) that are subject to the Waterways Act, M.G.L.c.91? **X Yes** __ No; if yes, is there a current Chapter 91 License or Permit affecting the project site? **_X_ Yes** __ No; if yes, list the date and license or permit number and provide a copy of the historic map used to determine extent of filled tidelands:

DEP Lic. 4142	9/30/1994	Commonwealth Electric Company	Place and maintain a 6.0-inch diameter electric cable with appurtenant duct banks and conduits in and over the waters of Vineyard Sound from Falmouth through Tisbury to Oak Bluffs.
DEP Lic. 6007	10/17/1996	Commonwealth Electric Company	Install and maintain a 23kv submarine electric power cable and an integrated fiber-optic cable in, under and over the waters of Vineyard Sound and Vineyard Haven Harbor
DEP Lic. 13588	11/4/2013	Comcast and NSTAR Electric Company	Construct and maintain an approximately 4.5 mile long electric transmission and communications cable and to dredge in flowed tidelands of Vineyard Sound in the Towns of Falmouth and Tisbury

B. Does the project require a new or modified license or permit under M.G.L.c.91? **X Yes** ___ No; if yes, how many acres of the project site subject to M.G.L.c.91 will be for non-water-dependent use? **Current 0** **Change 0** **Total 0**

As an infrastructure crossing facility, the Project is a water-dependent use.

If yes, how many square feet of solid fill or pile-supported structures (in sf)?

C. For non-water-dependent use projects, indicate the following:
Area of filled tidelands on the site:____________________
Area of filled tidelands covered by buildings:___________
For portions of site on filled tidelands, list ground floor uses and area of each use:
____
Does the project include new non-water-dependent uses located over flowed tidelands? Yes ___ No ___
Height of building on filled tidelands_______________

Also show the following on a site plan: Mean High Water, Mean Low Water, Water-dependent Use Zone, location of uses within buildings on tidelands, and interior and exterior areas and facilities dedicated for public use, and historic high and historic low water marks.

D. Is the project located on landlocked tidelands? __ Yes **_X_ No**; if yes, describe the project's impact on the public's right to access, use and enjoy jurisdictional tidelands and describe measures the project will implement to avoid, minimize or mitigate any adverse impact:

E. Is the project located in an area where low groundwater levels have been identified by a municipality or by a state or federal agency as a threat to building foundations? ___Yes **_X_ No**; if yes, describe the project's impact on groundwater levels and describe measures the project will implement to avoid, minimize or mitigate any adverse impact:

F. Is the project non-water-dependent **and** located on landlocked tidelands **or** waterways or tidelands subject to the Waterways Act **and** subject to a mandatory EIR? Yes __ **No X**; *(NOTE: If yes, then the project will be subject to Public Benefit Review and Determination.)*

G. Does the project include dredging? _X[4]_ **Yes** ___ No; if yes, answer the following questions:
What type of dredging? **Improvement** _X_ Maintenance ___ Both ____
What is the proposed dredge volume, in cubic yards (cys)
37,250 c.y. (20,695 cy to 53,800 cy) depending on final burial depth and plow trench width
What is the proposed dredge footprint 27,935 length (ft) 10-12 width (ft) 6-10 depth (ft);
Will dredging impact the following resource areas?
Intertidal Yes__ **No** _X_; if yes, ___ sq ft
Outstanding Resource Waters Yes__ **No** _X_; if yes, ___ sq ft
Other resource area (i.e. shellfish beds, eel grass beds) **Yes** _X_ No__; if yes _370,220_ sq ft (Land Containing Shellfish)
If yes to any of the above, have you evaluated appropriate and practicable steps to: 1) avoidance; 2) if avoidance is not possible, minimization; 3) if either avoidance or minimize is not possible, mitigation?
If no to any of the above, what information or documentation was used to support this determination?

No impacts to the specified resource areas are anticipated from "dredging" because cable installation is located offshore and HDD construction is proposed to avoid intertidal zones and eelgrass beds. The submarine cable plow alignment was identified to avoid, to the extent practicable, hardbottom and complex seafloor as mapped. In 2021 the Proponent performed marine surveys to identify resources, including eelgrass. Subsequent to the 2021 marine surveys performed by the Proponent, the hardbottom maps revised as per the Ocean Management Plan were issued in January 2022.

This Project avoids eelgrass habitat mapped in 2021 and cannot avoid the identified hardbottom and complex seafloor which crosses the route in an east-west orientation. Submarine cable installation, including dredging, may result in some temporary impacts to shellfish in the area immediately along the installation path. Impacts are temporary and the habitat will become re-established and biota are expected to re-colonize the disturbed path.

Provide a comprehensive analysis of practicable alternatives for improvement dredging in accordance with 314 CMR 9.07(1)(b). Physical and chemical data of the sediment shall be included in the comprehensive analysis.

Sediment Characterization
Existing gradation analysis results? _X_ **Yes** ___No: if yes, provide results.
Existing chemical results for parameters listed in 314 CMR 9.07(2)(b)6? _X_ **Yes (as applicable)** ____No; if yes, provide results.

Sediment removal is not required or proposed. Physical and chemical analysis results are presented in Attachment A Section 4.0. The sediments along the hydroplow path are primarily coarse grained sediment.

Do you have sufficient information to evaluate feasibility of the following management options for dredged sediment? If yes, check the appropriate option.

Hydroplow cable installation does not require sediment removal, therefore no dredge material disposal is required or proposed.

[4] 314 CMR9.02 defines dredging as, "*The removal or repositioning of sediment or other material from below the mean high tide line for coastal waters and below the high water mark for inland waters. Dredging shall not include activities in bordering or isolated vegetated wetlands.*" Hydroplow cable installation involves the repositioning of sediment but **will not** involve sediment removal.

Beach Nourishment ___
Unconfined Ocean Disposal ___
Confined Disposal:
    Confined Aquatic Disposal (CAD) ___
    Confined Disposal Facility (CDF) ___
Landfill Reuse in accordance with COMM-97-001 ___
Shoreline Placement ___
Upland Material Reuse____
In-State landfill disposal____
Out-of-state landfill disposal ____
(NOTE: This information is required for a 401 Water Quality Certification.)

IV. Consistency:

A. Does the project have effects on the coastal resources or uses, and/or is the project located within the Coastal Zone? **X Yes** ___ No; if yes, describe these effects and the projects consistency with the policies of the Office of Coastal Zone Management: See Section 6.2 in the Project Narrative provided as Attachment A.

B. Is the project located within an area subject to a Municipal Harbor Plan? ___ Yes **X No**; if yes, identify the Municipal Harbor Plan and describe the project's consistency with that plan:

WATER SUPPLY SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **water supply** (see 301 CMR 11.03(4))? ___ Yes **X No**; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **water supply**? ___ Yes **X No**; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Wastewater Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Water Supply Section below.

II. Impacts and Permits

A. Describe, in gallons per day (gpd), the volume and source of water use for existing and proposed activities at the project site:

	Existing	Change	Total
Municipal or regional water supply	________	________	________
Withdrawal from groundwater	________	________	________
Withdrawal from surface water	________	________	________
Interbasin transfer	________	________	________

(NOTE: Interbasin Transfer approval will be required if the basin and community where the proposed water supply source is located is different from the basin and community where the wastewater from the source will be discharged.)

B. If the source is a municipal or regional supply, has the municipality or region indicated that there is adequate capacity in the system to accommodate the project? ___ Yes ___ No

C. If the project involves a new or expanded withdrawal from a groundwater or surface water source, has a pumping test been conducted? ___ Yes ___ No; if yes, attach a map of the drilling sites and a summary of the alternatives considered and the results. ______________

D. What is the currently permitted withdrawal at the proposed water supply source (in gallons per day)? ______Will the project require an increase in that withdrawal? ___Yes ___No; if yes, then how much of an increase (gpd)? ____________________

E. Does the project site currently contain a water supply well, a drinking water treatment facility, water main, or other water supply facility, or will the project involve construction of a new facility? ___ Yes ___No. If yes, describe existing and proposed water supply facilities at the project site:

	Permitted Flow	Existing Avg Daily Flow	Project Flow	Total
Capacity of water supply well(s) (gpd)	______	________	________	______
Capacity of water treatment plant (gpd)	_______	________	________	______

F. If the project involves a new interbasin transfer of water, which basins are involved, what is the direction of the transfer, and is the interbasin transfer existing or proposed?

G. Does the project involve:

1. new water service by the Massachusetts Water Resources Authority or other agency of the Commonwealth to a municipality or water district? ___ Yes ___ No
2. a Watershed Protection Act variance? ___ Yes ___ No; if yes, how many acres of alteration?
3. a non-bridged stream crossing 1,000 or less feet upstream of a public surface drinking water supply for purpose of forest harvesting activities? ___ Yes ___ No

III. Consistency

Describe the project's consistency with water conservation plans or other plans to enhance water resources, quality, facilities and services:

WASTEWATER SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **wastewater** (see 301 CMR 11.03(5))? ___ Yes **X No**; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **wastewater**? ___ Yes **X No**; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Transportation -- Traffic Generation Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Wastewater Section below.

II. Impacts and Permits

A. Describe the volume (in gallons per day) and type of disposal of wastewater generation for existing and proposed activities at the project site (calculate according to 310 CMR 15.00 for septic systems or 314 CMR 7.00 for sewer systems):

	Existing	Change	Total
Discharge of sanitary wastewater	________	________	________
Discharge of industrial wastewater	________	________	________
TOTAL	________	________	________

	Existing	Change	Total
Discharge to groundwater	________	________	________
Discharge to outstanding resource water	________	________	________
Discharge to surface water	________	________	________
Discharge to municipal or regional wastewater facility	________	________	________
TOTAL	________	________	________

B. Is the existing collection system at or near its capacity? ___ Yes ___ No; if yes, then describe the measures to be undertaken to accommodate the project's wastewater flows:

C. Is the existing wastewater disposal facility at or near its permitted capacity? ___ Yes___ No; if yes, then describe the measures to be undertaken to accommodate the project's wastewater flows:

D. Does the project site currently contain a wastewater treatment facility, sewer main, or other wastewater disposal facility, or will the project involve construction of a new facility? ___ Yes ___ No; if yes, describe as follows:

	Permitted	Existing Avg Daily Flow	Project Flow	Total
Wastewater treatment plant capacity (in gallons per day)	_______	________	________	________

E. If the project requires an interbasin transfer of wastewater, which basins are involved, what is the direction of the transfer, and is the interbasin transfer existing or new?

(NOTE: Interbasin Transfer approval may be needed if the basin and community where wastewater will be discharged is different from the basin and community where the source of water supply is located.)

F. Does the project involve new sewer service by the Massachusetts Water Resources Authority (MWRA) or other Agency of the Commonwealth to a municipality or sewer district? __ Yes __ No

G. Is there an existing facility, or is a new facility proposed at the project site for the storage, treatment, processing, combustion or disposal of sewage sludge, sludge ash, grit, screenings, wastewater reuse (gray water) or other sewage residual materials? ___ Yes ___ No; if yes, what is the capacity (tons per day):

	Existing	Change	Total
Storage	________	________	________
Treatment	________	________	________
Processing	________	________	________
Combustion	________	________	________
Disposal	________	________	________

H. Describe the water conservation measures to be undertaken by the project, and other wastewater mitigation, such as infiltration and inflow removal.

III. Consistency

A. Describe measures that the proponent will take to comply with applicable state, regional, and local plans and policies related to wastewater management:

B. If the project requires a sewer extension permit, is that extension included in a comprehensive wastewater management plan? ___ Yes ___ No; if yes, indicate the EEA number for the plan and whether the project site is within a sewer service area recommended or approved in that plan:

TRANSPORTATION SECTION (TRAFFIC GENERATION)

I. Thresholds / Permit

A. Will the project meet or exceed any review thresholds related to **traffic generation** (see 301 CMR 11.03(6))? ___ Yes **X No**; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **state-controlled roadways**? ___ Yes **X No**; if yes, specify which permit: MassDOT Construction Access Permit and Easement Agreement

C. If you answered "No" to both questions A and B, proceed to the **Roadways and Other Transportation Facilities Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Traffic Generation Section below.

II. Traffic Impacts and Permits

A. Describe existing and proposed vehicular traffic generated by activities at the project site:

	Existing	Change	Total
Number of parking spaces	N.A.	N.A.	N.A.
Number of vehicle trips per day	N.A.	N.A.	N.A.
ITE Land Use Code(s):	N.A.	N.A.	N.A.

B. What is the estimated average daily traffic on roadways serving the site?

Roadway	Existing	Change	Total
1.			
2.			
3.			

C. If applicable, describe proposed mitigation measures on state-controlled roadways that the project proponent will implement:

The Project will not permanently impact traffic, transit, or transportation facilities. Temporary impacts will occur during construction across state roadways in Falmouth but will be mitigated through implementation of a traffic management plan and other requirements that may be prescribed by MassDOT and Falmouth DPW during permitting. Work will not occur between Memorial Day and Labor Day. The altered roadways will be restored to their preexisting condition or better in consultation with the municipalities and state agencies having jurisdiction.

D. How will the project implement and/or promote the use of transit, pedestrian and bicycle facilities and services to provide access to and from the project site?

N.A. The Project involves underground electric infrastructure and will not result in increased traffic. Eversource will widen the Shining Sea Bikeway along the conduit to route from 10-feet to 13-feet wide to improve the use for pedestrians and bicyclists. Eversource will also re-locate 15 utility poles on Palmer Avenue to increase sidewalk clearance.

C. Is there a Transportation Management Association (TMA) that provides transportation demand management (TDM) services in the area of the project site? __ Yes _**X**_ No; if yes, describe if and how will the project will participate in the TMA:

D. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation facilities? _**X**_ Yes _**X**_ No; if yes, generally describe:

Landside work will not occur in active water, rail or air transportation facilities. The Shining Sea Bikeway is a "rail trail" and a use easement is being sought to install and maintain the underground duct and manhole system.

In-water work will occur in the vicinity of ferry routes serving Martha's Vineyard. Eversource is coordinating with Steamship Authority and will coordinate with the Harbormaster and USCG prior to starting in-water work.

E. If the project will penetrate approach airspace of a nearby airport, has the proponent filed a Massachusetts Aeronautics Commission Airspace Review Form (780 CMR 111.7) and a Notice of Proposed Construction or Alteration with the Federal Aviation Administration (FAA) (CFR Title 14 Part 77.13, forms 7460-1 and 7460-2)? N.A.

III. Consistency

Describe measures that the proponent will take to comply with municipal, regional, state, and federal plans and policies related to traffic, transit, pedestrian and bicycle transportation facilities and services:

The Project will not permanently impact traffic, transit, or transportation facilities. Eversource will work closely with Falmouth, Oak Bluffs and MassDOT to develop traffic management plans during construction. Based on discussions to date no work is proposed between Memorial Day and Labor to avoid the high traffic season ion Cape Cod and Martha's Vineyard. Topics to be addressed in the traffic management plans will likely include:

- Width and location of the work zone to minimize impacts to all roadway users;
- Work schedule and duration of lane closures, road closures, or detours (where applicable) and details of notification to abutters, including posting on the Project website and use of fliers to notify local abutter of traffic routes and the expected duration;
- The use of traffic-control devices such as advance warning signs, traffic regulation signs, reflectorized drums and cones, sequential flashers, detour signs, and other protective devices to be placed as shown on plans and as approved by municipalities and state agencies;
- Routing and protection of pedestrian and bicycle traffic;
- Communication with adjacent businesses and property owners, to limit impacts such as critical product deliveries or access;
- Notification to municipal officials, state agencies, local businesses, and the public of the timing and duration of closed curbside parking spaces and travel way restrictions; and
- Coordination between Eversource and police and fire departments to ensure that emergency access through the route is always provided.

TRANSPORTATION SECTION (ROADWAYS AND OTHER TRANSPORTATION FACILITIES)

I. Thresholds

A. Will the project meet or exceed any review thresholds related to **roadways or other transportation facilities** (see 301 CMR 11.03(6))? ___ Yes **X No**; if yes, specify, in quantitative terms: MassDOT Construction Access Permit and Easement Agreement

B. Does the project require any state permits related to **roadways or other transportation facilities**? _X_ Yes __ No; if yes, specify which permit: MassDOT Construction Access Permit and Easement Agreement

C. If you answered "No" to both questions A and B, proceed to the **Energy Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Roadways Section below.

II. Transportation Facility Impacts

A. Describe existing and proposed transportation facilities in the immediate vicinity of the project site:

Existing state roadways are Route 28 (Palmer Avenue) in Falmouth. The Cape Cod Regional Transit Authority operates one bus route known as the "Sealine" route between Woods Hole and Hyannis. The Martha's Vineyard Transit Authority operates four bus routes in the vicinity of the Project.

B. Will the project involve any

1. Alteration of bank or terrain (in linear feet)? **No**
2. Cutting of living public shade trees (number)? **No**
3. Elimination of stone wall (in linear feet)? **No**

III. Consistency -- Describe the project's consistency with other federal, state, regional, and local plans and policies related to traffic, transit, pedestrian and bicycle transportation facilities and services, including consistency with the applicable regional transportation plan and the Transportation Improvements Plan (TIP), the State Bicycle Plan, and the State Pedestrian Plan:

Temporary impacts will occur during construction but will be mitigated through implementation of traffic management plans. Topics to be addressed in the traffic management plans are as described in the preceding section.

ENERGY SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **energy** (see 301 CMR 11.03(7))? ___ Yes **X No**; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **energy**? ___ Yes **X No**; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Air Quality Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Energy Section below.

II. Impacts and Permits

A. Describe existing and proposed energy generation and transmission facilities at the project site:

	Existing	Change	Total
Capacity of electric generating facility (megawatts)	________	______	________
Length of fuel line (in miles)	________	_______	________
Length of transmission lines (in miles)	________	_______	________
Capacity of transmission lines (in kilovolts)	________	_______	________

B. If the project involves construction or expansion of an electric generating facility, what are:

1. the facility's current and proposed fuel source(s)?
2. the facility's current and proposed cooling source(s)?

C. If the project involves construction of an electrical transmission line, will it be located on a new, unused, or abandoned right of way? ___Yes ___No; if yes, please describe:

D. Describe the project's other impacts on energy facilities and services:

III. Consistency

Describe the project's consistency with state, municipal, regional, and federal plans and policies for enhancing energy facilities and services:

AIR QUALITY SECTION

I. Thresholds

A. Will the project meet or exceed any review thresholds related to **air quality** (see 301 CMR 11.03(8))? ___ Yes **X No**; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **air quality**? ___ Yes **X No**; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Solid and Hazardous Waste Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Air Quality Section below.

II. Impacts and Permits

A. Does the project involve construction or modification of a major stationary source (see 310 CMR 7.00, Appendix A)? ___ Yes ___ No; if yes, describe existing and proposed emissions (in tons per day) of:

	Existing	Change	Total
Particulate matter	________	________	________
Carbon monoxide	________	________	________
Sulfur dioxide	________	________	________
Volatile organic compounds	________	________	________
Oxides of nitrogen	________	________	________
Lead	________	________	________
Any hazardous air pollutant	________	________	________
Carbon dioxide	________	________	________

B. Describe the project's other impacts on air resources and air quality, including noise impacts:

III. Consistency

A. Describe the project's consistency with the State Implementation Plan:

B. Describe measures that the proponent will take to comply with other federal, state, regional, and local plans and policies related to air resources and air quality:

SOLID AND HAZARDOUS WASTE SECTION

I. Thresholds / Permits

A. Will the project meet or exceed any review thresholds related to **solid or hazardous waste** (see 301 CMR 11.03(9))? ___ Yes **X No**; if yes, specify, in quantitative terms:

B. Does the project require any state permits related to **solid and hazardous waste**? __ Yes **X No**; if yes, specify which permit:

C. If you answered "No" to both questions A and B, proceed to the **Historical and Archaeological Resources Section**. If you answered "Yes" to either question A or question B, fill out the remainder of the Solid and Hazardous Waste Section below.

II. Impacts and Permits

A. Is there any current or proposed facility at the project site for the storage, treatment, processing, combustion or disposal of solid waste? ___ Yes ___ No; if yes, what is the volume (in tons per day) of the capacity:

	Existing	Change	Total
Storage	________	________	________
Treatment, processing	________	________	________
Combustion	________	________	________
Disposal	________	________	________

B. Is there any current or proposed facility at the project site for the storage, recycling, treatment or disposal of hazardous waste? ___ Yes ___ No; if yes, what is the volume (in tons or gallons per day) of the capacity:

	Existing	Change	Total
Storage	________	________	________
Recycling	________	________	________
Treatment	________	________	________
Disposal	________	________	________

C. If the project will generate solid waste (for example, during demolition or construction), describe alternatives considered for re-use, recycling, and disposal:

D. If the project involves demolition, do any buildings to be demolished contain asbestos?
___ Yes ___ No

E. Describe the project's other solid and hazardous waste impacts (including indirect impacts):

III. Consistency

Describe measures that the proponent will take to comply with the State Solid Waste Master Plan:

HISTORICAL AND ARCHAEOLOGICAL RESOURCES SECTION

I. Thresholds / Impacts

A. Have you consulted with the Massachusetts Historical Commission? __X__ **Yes** ____ No; if yes, attach correspondence.

See Attachment F for copies of correspondence with the Massachusetts Historical Commission ("MHC").

For project sites involving lands under water, have you consulted with the Massachusetts Board of Underwater Archaeological Resources? __X__ **Yes** ____ No; if yes, attach correspondence

See Attachment F for copies of correspondence with the Massachusetts Board of Underwater Archaeological Resources ("MBUAR").

B. Is any part of the project site a historic structure, or a structure within a historic district, in either case listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth? __X__ **Yes** ___ No; if yes, does the project involve the demolition of all or any exterior part of such historic structure? ___ Yes __X__ **No**; if yes, please describe:

C. Is any part of the project site an archaeological site listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth? __X__ **Yes** __ No; if yes, does the project involve the destruction of all or any part of such archaeological site? __X__ **Yes** __ No; if yes, please describe:

Proposed routes 1, and 2 in Falmouth intersect the mapped unit of 19-BN-495. Proposed route 4 passes through the mapped units of sites 19-BN-508 and 19-BN-507. All routes also pass in close proximity, but not through to the mapped unit of OAK.HA.23.

All routes follow areas of previous disturbance including existing roadways, existing duct bank and an existing bike path. Further, impacts to sites 19-BN-508 and 19-BN-507 are unlikely as the route intersects small portions of the mapped units, previously impacted by the construction of the railroad line, which later became an asphalt paved bike path. 19-BN-495 is located in a densely developed area with existing buildings and infrastructure and the proposed routes will be located in previously disturbed areas. Impacts to OAK.HA.23 will be avoided as the routing will proceed eastward of the site location.

D. If you answered "No" to all parts of both questions A, B and C, proceed to the **Attachments and Certifications** Sections. If you answered "Yes" to any part of either question A or question B, fill out the remainder of the Historical and Archaeological Resources Section below.

II. Impacts

Describe and assess the project's impacts, direct and indirect, on listed or inventoried historical and archaeological resources:

No impacts to marine archaeological resources are anticipated. The marine archaeological reconnaissance survey concluded that substantial portions of the proposed route were found to be eroded. While the area was considered sensitive for Pre-Contact Native American period sites, no direct evidence of Pre-Contact human habitation was identified. Geophysical data do indicate the presence of potentially preserved submerged, ancient landforms that are of a potentially archaeologically sensitive nature to be present. The marine archaeologist recommends that no bottom-disturbing activity should occur within 50 meters (165 feet) of a shipwreck. The Project

Proponent anticipates that possible shipwreck sites will be avoided.

No significant impacts to terrestrial archaeological sites are anticipated. The project includes an underground distribution line within existing roadways, an existing paved bikeway, an existing ductbank and previously disturbed areas. Only proposed routes 1, 2 and 4 intersect the mapped units of archaeological sites and those affected areas are previously disturbed and/or the outer limits of the mapped units.

The proposed routes pass through several areas in the Inventory, State Register, and National Register including Falmouth Village Historic District (FAL.AG), Palmer Avenue Streetscape (FAL.AB), Falmouth Village Green District (FAL.AQ), and Falmouth Village (FAL.AM). In addition, the proposed routes pass adjacent to other numerous historic resources illustrated in Attachment B, Figures 7 and 9. However, as the proposed routes are underground within existing roadways and a bike path, no impacts to above ground historic resources are anticipated and the routes will not be visible.

III. Consistency

Describe measures that the proponent will take to comply with federal, state, regional, and local plans and policies related to preserving historical and archaeological resources:

The Project will undergo review by the Massachusetts Historical Commission ("MHC") under Section 106 of the National Historic Preservation Act (36 CFR 800), Massachusetts General Laws Chapter 9, Sections 26-27C (950 CMR 70-71), and MEPA (301 CMR 11). A copy of this EENF/PEIR is being filed with the MHC concurrent with the MEPA office.

Given the Project's installation underground and predominantly within existing roadways and an existing paved bikeway and previously developed areas, there is unlikely to be any adverse impacts on terrestrial historic resources. Potential impacts to shipwrecks from the submarine cable are anticipated to be avoided by complying with the minimum distance recommended by the marine archaeologist.

CLIMATE CHANGE ADAPTATION AND RESILIENCY SECTION

This section of the Environmental Notification Form (ENF) solicits information and disclosures related to climate change adaptation and resiliency, in accordance with the MEPA Interim Protocol on Climate Change Adaptation and Resiliency (the "MEPA Interim Protocol"), effective October 1, 2021. The Interim Protocol builds on the analysis and recommendations of the 2018 Massachusetts Integrated State Hazard Mitigation and Climate Adaptation Plan (SHMCAP), and incorporates the efforts of the Resilient Massachusetts Action Team (RMAT), the inter-agency steering committee responsible for implementation, monitoring, and maintenance of the SHMCAP, including the "Climate Resilience Design Standards and Guidelines" project. The RMAT team recently released the RMAT Climate Resilience Design Standards Tool, which is available here.

The MEPA Interim Protocol is intended to gather project-level data in a standardized manner that will both inform the MEPA review process and assist the RMAT team in evaluating the accuracy and effectiveness of the RMAT Climate Resilience Design Standards Tool. Once this testing process is completed, the MEPA Office anticipates developing a formal Climate Change Adaptation and Resiliency Policy through a public stakeholder process. Questions about the RMAT Climate Resilience Design Standards Tool can be directed to rmat@mass.gov.

All Proponents must complete the following section, referencing as appropriate the results of the output report generated by the RMAT Climate Resilience Design Standards Tool and attached to the ENF. In completing this section, Proponents are encouraged, but not required at this time, to utilize the recommended design standards and associated Tier 1/2/3 methodologies outlined in the RMAT Climate Resilience Design Standards Tool to analyze the project design. However, Proponents are requested to respond to a respond to a user feedback survey on the RMAT website or to provide feedback to rmat@mass.gov, which will be used by the RMAT team to further refine the tool. Proponents are also encouraged to consult general guidance and best practices as described in the RMAT Climate Resilience Design Guidelines.

Climate Change Adaptation and Resiliency Strategies

I. Has the project taken measures to adapt to climate change for all of the climate parameters analyzed in the RMAT Climate Resilience Design Standards Tool (sea level rise/storm surge, extreme precipitation (urban or riverine flooding), extreme heat)? **_X_ Yes** __ No

Note: Climate adaptation and resiliency strategies include actions that seek to reduce vulnerability to anticipated climate risks and improve resiliency for future climate conditions. Examples of climate adaptation and resiliency strategies include flood barriers, increased stormwater infiltration, living shorelines, elevated infrastructure, increased tree canopy, etc. Projects should address any planning priorities identified by the affected municipality through the Municipal Vulnerability Preparedness (MVP) program or other planning efforts, and should consider a flexible adaptive pathways approach, an adaptation best practice that encourages design strategies that adapt over time to respond to changing climate conditions. General guidance and best practices for designing for climate risk are described in the RMAT Climate Resilience Design Guidelines.

A. If no, explain why.

B. If yes, describe the measures the project will take, including identifying the planning horizon and climate data used in designing project components. If applicable, specify the return period and design storm used (e.g., 100-year, 24-hour storm).

Underground distribution line design and installation is inherently adaptive and resilient to the potential effects of climate change. For example, most of the adverse weather conditions, e.g., wind and precipitation, that traditional overhead distribution line infrastructure are exposed to can be avoided by utilizing underground infrastructure. While an overhead line typically takes less time to repair than an underground line in the event of an outage (days rather than weeks), an underground distribution line generally alleviates the need for more frequent investments in distribution infrastructure maintenance and repairs. The expected benefits would include a more secure energy supply with fewer instances of weather-related power outages.

Please refer Attachment A - Project Narrative, Section 7.0 for a discussion of climate change adaptation and resiliency measures implemented by Eversource for the Project.

C. Is the project contributing to regional adaptation strategies? **X Yes** __ No; If yes, describe.

The Martha's Vineyard Reliability Project will improve grid-based reliability on Martha's Vineyard and concurrently will meet current and future electricity demand. Other benefits of this Project include:

- Accommodating existing and future demand of electricity. A driver of future demand is the increased load needed to charge electric vehicles ("EVs"). This Project will support that demand.
- Providing adequate electricity will support increased use of EV's on the island.
- The project and modifications to the Island's distribution system will accommodate interconnections from distributed renewable generation on the Island, which includes residential-scale generation.
- Increasing grid-based electricity distribution to the Island will allow Eversource to decommission the five peaker diesel generators on the Island, thus reducing fossil fuel use and reducing emissions (including CO2) on the Island.

II. Has the Proponent considered alternative locations for the project in light of climate change risks? **X Yes** ___ No

A. If no, explain why.

E. If yes, describe alternatives considered.

Please refer Attachment A – Project Narrative, Section 2.0, Alternatives Analysis.

III. Is the project located in Land Subject to Coastal Storm Flowage (LSCSF) or Bordering Land Subject to Flooding (BLSF) as defined in the Wetlands Protection Act? **X Yes (LSCSF)** ____No

If yes, describe how/whether proposed changes to the site's topography (including the addition of fill) will result in changes to floodwater flow paths and/or velocities that could impact adjacent properties or the functioning of the floodplain. General guidance on providing this analysis can be found in the CZM/MassDEP Coastal Wetlands Manual, available here.

Both landfall sites in Falmouth and Oak Bluffs are located in areas of LSCSF. Approximately 3,255 linear feet of the buried duct and manhole system route in Falmouth is located within LSCSF and approximately 635 linear feet of the buried duct and manhole system route in Oak Bluffs is located within LSCSF. The underground distribution line is not affected by flooding and will not cause flooding or exacerbate existing flooding. The Project does not involve any fill or permanent aboveground structures in the 100-year floodplain in Falmouth, resulting in no loss of flood storage or redirection of flood flow; and in Oak Bluffs permanent changes in the 100-year floodplain are limited to three equipment pads, resulting in de minimus loss of flood storage in the coastal floodplain and to changes to floodwater flow paths.

ENVIRONMENTAL JUSTICE SECTION

I. Identifying Characteristics of EJ Populations

A. If an Environmental Justice (EJ) population has been identified as located in whole or in part within 5 miles of the project site, describe the characteristics of each EJ populations as identified in the EJ Maps Viewer (i.e., the census block group identification number and EJ characteristics of “Minority,” “Minority and Income,” etc.). Provide a breakdown of those EJ populations within 1 mile of the project site, and those within 5 miles of the site.

The project is located within 1 mile of the following census block groups on the EJ Maps Viewer:

Block Group 3, Census Tract 149 in Falmouth with the EJ criteria “Income”

Block Group 1, Census Tract 148 in Falmouth with the EJ criteria “Income”

Block Group 3, Census Tract 148 in Falmouth with the EJ criteria “Income”

Block Group 4, Census Tract 2002 in Oak Bluffs with the EJ criteria “Income”

Block Group 2, Census Tract 2002 in Oak Bluffs with the EJ criteria “Minority”

Block Group 1, Census Tract 2001 in Tisbury with the EJ criteria “Income”

In addition to the groups listed above, the project is located within 5 miles of the following census block groups on the EJ Maps Viewer:

Block Group 3, Census Tract 145 in Falmouth with the EJ criteria “Income”

Block Group 2, Census Tract 146 in Falmouth with the EJ criteria “Income” and “Minority”

Block Group 2, Census Tract 144.02 in Falmouth with the EJ criteria “Minority”

Block Group 4, Census Tract 2001 in Tisbury with the EJ criteria “Income”

Block Group 2, Census Tract 2002 in Oak Bluffs with the EJ criteria “Minority”

Block Group 2, Census Tract 2003 in Edgartown with the EJ criteria “Minority”

B. Identify all languages identified in the “Languages Spoken in Massachusetts” tab of the EJ Maps Viewer as spoken by 5 percent or more of the EJ population who also identify as not speaking English “very well.” The languages should be identified for each census tract located in whole or in part within 1 mile and 5 miles of the project site, regardless of whether such census tract contains any designated EJ populations.

Within 1 mile of the Oak Bluffs project area, the following languages are spoken by 5 percent or more of the population: Census Tract 2001 in Tisbury: Portuguese or Portuguese Creole: 8.4%

C. If the list of languages identified under Section I.B. has been modified with approval of the EEA EJ Director, provide a list of approved languages that the project will use to provide public involvement opportunities during the course of MEPA review. If the list has been expanded by the Proponent (without input from the EEA EJ Director), provide a list of the additional languages that will be used to provide public involvement opportunities during the course of MEPA review as required by Part II of the MEPA Public Involvement Protocol for Environmental Justice Populations (“MEPA EJ Public Involvement Protocol”). If the project is exempt from Part II of the protocol, please specify.

The project will use the following languages to provide public involvement opportunities during the course of MEPA review:

- English
- Portuguese/Portuguese Creole

II. Potential Effects on EJ Populations

A. If an EJ population has been identified using the EJ Maps Viewer within 1 mile of the project site, describe the likely effects of the project (both adverse and beneficial) on the identified EJ population(s).

As identified above, the Project is located within 1- and 5-miles of EJ populations in Cape Cod and Martha's Vineyard. Attachment A - Project Narrative, Section 8 - Environmental Justice, identified existing environmental burdens and assessed potential impacts on EJ populations. Attachment A Section 9 - Draft Section 61 Findings and Mitigation identifies measures to mitigate potential environmental impacts.

In the built condition, the underground cable will have no effect on EJ populations or non-EJ populations as the cable does not generate any air emissions, generate or release pollutants, generate noise, or increase traffic. Therefore, it is not expected to materially exacerbate any existing unfair or inequitable environmental or public health burden on the EJ populations in the Designated Geographic Area ("DGA").

Potential construction-period effects on EJ and non-EJ populations are related to air emissions, fugitive dust, noise and traffic related the HDD operations at the landfall sites and construction of the duct and manhole systems. The assessment presented in Attachment A, Section 8 concludes that construction period impacts will not materially exacerbate any existing unfair or inequitable environmental or public health burden on the EJ populations in the DGA.

Benefits from this Project include:

1) The fifth cable and Martha's Vineyard electrical system improvements will better accommodate integration of distributed renewable power generated on the island, benefiting EJ and non-EJ populations alike
2) After the fifth cable is in service, Eversource will cease using the five on-Island diesel peaking generators which will reduce fossil fuel use and avoid air emissions from those decommissioned generators. The 5-mile radii from these generator sites are depicted in Attachment B, Figure 26 which suggest that this project element will benefit air quality for EJ populations within the 5-mile radii of the two generator sites.
3) The Shining Sea Bikeway will be widened, improving recreational and exercise opportunities for area residents and visitors.
4) The Proponent will relocate 15 utility poles on Palmer Avenue to increase sidewalk clearance and improve pedestrian passage.
5) The Proponent will install electric vehicle charging stations at the Palmer Avenue lot and other locations in Falmouth.

B. If an EJ population has been identified using the EJ Maps Viewer within 5 miles of the project site, will the project: (i) meet or exceed MEPA review thresholds under 301 CMR 11.03(8)(a)-(b) __ Yes _X_ **No**; or (ii) generate 150 or more new average daily trips (adt) of diesel vehicle traffic, excluding public transit trips, over a duration of 1 year or more. ___ Yes __X__ **No**

C. If you answered "Yes" to either question in Section II.B., describe the likely effects of the project (both adverse and beneficial) on the identified EJ population(s).

III. Public Involvement Activities

A. Provide a description of activities conducted prior to filing to promote public involvement by EJ populations, in accordance with Part II of the MEPA EJ Public Involvement Protocol. In particular:

1. If advance notification was provided under Part II.A., attach a copy of the Environmental Justice Screening Form and provide list of CBOs/tribes contacted (with dates). Copies of email correspondence can be attached in lieu of a separate list.

   A copy of the EJ Screening Form and supporting materials are provided in Attachment M.

2. State how CBOs and tribes were informed of ways to request a community meeting, and if any meeting was requested. If public meetings were held, describe any issues of concern that were raised at such meetings, and any steps taken (including modifications to the project design) to address such concerns.

   Section 8 of the EJ Screening Form stated:

   > *"The Community can reach out to the Project Team via a hotline number 800-793-2202 or email ProjectInfo@eversource.com to request a meeting to discuss the project and to request accommodations that may be needed for that meeting e.g. timing, locations, need for interpreter."*

   Thus far, no meetings have been requested by recipients of the EJ Screening Form.

   A detailed schedule of public meetings is presented in Attachment A, Section 8.6.

   Summaries of discussions at public outreach meetings and concerns raised are presented in Attachment M. Select issues of concern at public meetings include

   - Multiple Falmouth residents had concerns about the future of the bike path. Eversource explained that work would be done in the off season, and the bike path would be restored and widened in some areas once the project was completed. Residents responded positively to this information.
   - Multiple Falmouth residents had concerns about the impacts to the Surf Drive Beach parking area. Eversource explained that work would be done in the offseason, and the end result would be additional manholes in the parking area with no permanent above ground structures. Residents responded positively to this information.
   - An Oak Bluffs resident was concerned about traffic during construction, but agreed the project was necessary to increase electricity reliability
   - An Oak Bluffs resident was concerned that that the removal of the diesel generators would mean there was no backup power on the Island if the power from the mainland went down. Eversource explained that the generators are not used for backup power, and that storm response teams are activated to restore power.

3. If the project is exempt from Part II of the protocol, please specify.

   Not applicable.

B. Provide below (or attach) a distribution list (if different from the list in Section III.A. above) of CBOs and tribes, or other individuals or entities the Proponent intends to maintain for the notice of the MEPA Site Visit and circulation of other materials and notices during the course of MEPA review.

In addition to the EJ form distribution list, several recipients were added to the CBO list that will receive updates during the course of MEPA review. An updated list is provided in Attachment D.

C. Describe (or submit as a separate document) the Proponent's plan to maintain the same level of community engagement throughout the MEPA review process, as conducted prior to filing.

The Proponent intends to implement a community outreach program and will continue to advise those on the EJ Reference List as well others who express interest of all developments throughout the local and state review processes.

A detailed schedule of public meetings is and future outreach strategies is presented in Attachment A, Section 8.6.

The Proponent will make their contact information readily available and will be available to meet directly with concerned citizens upon request to discuss the Project and any answer questions.

CERTIFICATIONS:

1. The Public Notice of Environmental Review has been/will be published in the following newspapers in accordance with 301 CMR 11.15(1):

   Cape Cod Times
   Vineyard Gazette
   Falmouth Enterprise

2. This form has been circulated to Agencies and Persons in accordance with 301 CMR 11.16(2).

   See **Attachment D – ENF Circulation List and Newspaper Notice** for the list of the ENF recipients and a copy of the newspaper notice.

13 MAY 2022	[signature]	13 MAY 2022	[signature]
Date	Signature of Responsible Officer or Proponent	Date	Signature of person preparing ENF (if different from above)

Matthew Waldrip
NSTAR Electric Company d/b/a Eversource Energy
247 Station Drive
Westwood, MA 02090

Dwight R. Dunk, LPD, PWS, BCES
Epsilon Associates, Inc.
3 Mill & Main Place, Suite 250
Maynard, MA 01754

Attachment A

Project Narrative

ATTACHMENT A - EENF PROJECT NARRATIVE AND PROPOSED ENVIRONMENTAL IMPACT REPORT

1.0 INTRODUCTION

This Expanded Environmental Notification Form ("EENF") / Proposed Environmental Impact Report ("PEIR") is being submitted on behalf of NSTAR Electric Company d/b/a Eversource Energy ("Eversource" or "Proponent") for the proposed Martha's Vineyard Reliability Project (the "Project"). The proposed Project's purpose and need is to improve the reliability of grid-based electricity on Martha's Vineyard (the "Island").

The Project is comprised of:

1. An approximate 2.7-mile underground duct and manhole system (2.32 miles of new duct and 0.38 miles of existing duct in Surf Drive) which will house the onshore 25 kilovolt ("kV") distribution cable from the existing Eversource substation #933 off Stephens Lane in Falmouth to the landfall site off Surf Drive in the Town of Falmouth on Cape Cod ("Falmouth cable route").
2. An approximate 6.24 mile submarine cable across Vineyard Sound (in the towns of Falmouth, Tisbury, and Oak Bluffs) from the landfall site off Surf Drive in Falmouth on Cape Cod to the landfall site off Eastville Avenue in Oak Bluffs on Martha's Vineyard ("submarine cable").
3. An approximate 0.25-mile underground duct and manhole system which will house the onshore distribution cable from the landfall site off Eastville Avenue to an existing Eversource parcel off Eastville Avenue near the intersection of Eastville Avenue and County Road ("Oak Bluffs cable route").
4. Installation of new and/or upgraded equipment within the existing Eversource substation #933 off Stephens Lane in Falmouth ("Stephens Lane substation").
5. Installation of a new driveway, manholes, and equipment within an undeveloped existing Eversource parcel off Eastville Avenue in Oak Bluffs ("Eastville Avenue equipment yard").

Additionally, the Project will also allow Eversource to decommission five existing diesel generators located in Oak Bluffs and Vineyard Haven on Martha's Vineyard. These generators are used during peak demand (typically summer months) to augment the grid-based supply on the Island.

The preferred methods of cable installation include:

1. Horizontal Directional Drilling ("HDD") at each landfall site, in Falmouth and Oak Bluffs, to avoid potential impacts to coastal wetland resource areas, intertidal resources and eelgrass (*Zostera marina*) – which is a Special, Sensitive, or Unique ("SSU") resource identified in the Massachusetts Ocean Management Plan ("OMP");
2. Trenchless cable construction between the two HDD exit points across Vineyard Sound, and

3. Open trench and back fill construction techniques for the Falmouth and Oak Bluffs cable routes.

The Project corridor is depicted on **Figure 1 - USGS Locus Map** and **Figure 2 - Aerial Locus Map**, found in **Attachment B.**

1.1 Project Purpose and Need

Currently, grid-based electricity is delivered to Martha's Vineyard by four submarine cables installed across Vineyard Sound from the Town of Falmouth on Cape Cod to Tisbury and Oak Bluffs on Martha's Vineyard. See **Attachment B, Figure 3 – Existing and Proposed Submarine Cable Routes**.

The year-round population on Martha's Vineyard is around 17,000 but increases to approximately 200,000 during the summer months. As such, electric consumption surges on the Island in the summer and the four existing submarine cables cannot reliably supply the peak demand. When demand exceeds the capacity of the existing submarine cables, Eversource relies on five diesel generators located in the towns of Oak Bluffs and Vineyard Haven, which provide approximately 12.5 megawatts ("MW") of supplemental power. The diesel generators were installed in the 1950s and are located at 70 Airport Road in Vineyard Haven and 200 Edgartown Vineyard Haven Road in Oak Bluffs. See **Attachment B, Figure 4 – Existing Peak Demand Generators Locus Map**.

In February 2020, Eversource representatives met with the Martha's Vineyard Commission, which has an established Climate Action Task Force ("CATF") to evaluate and develop a roadmap to reduce and potentially eliminate fossil fuel use on the Island and increase the amount of electricity use from renewable energy sources. These goals will increase the existing (base) 10-year load forecast for Martha's Vineyard, with most of the change arising from a higher penetration of electric vehicle ("EV") adoption. The load forecast of 70 MW by the year 2029 as an upper band to load growth covers the expected load increase that may arise from these goals.

The Project will meet this need by increasing grid-based power serving Martha's Vineyard, making it more robust and reliable. The addition of a new 5th cable, the Project, will enable the existing 23 kV electric distribution system on Martha's Vineyard to be reconfigured so that the electrical loading and total customer counts on all five cables are optimized to improve both capacity and customer reliability. The addition of the new 5th cable will also allow for an incremental increase in distributed energy resources ("DER") (e.g., roof top solar photovoltaic units, wind generating units, etc.) on Martha's Vineyard. Additionally, the Project will allow Eversource to decommission the five existing diesel generators, thus moving toward the CATF's goal of eliminating fossil fuel use on the Island. Further, by connecting to the Stephens Lane substation in Falmouth on Cape Cod, the source of the electricity moving through the new 5th cable can be supplied by renewable energy as Eversource transitions its energy sources on the mainland to renewables.

In summary, the Project purpose is to meet the electrical demands on the Island with reliable grid-based power, and the need is the current peak demands and future load growth to serve the Island as it transitions to a more electric centric energy supply.

1.2 Existing Submarine Cables

Eversource owns and operates four submarine cables installed across Vineyard Sound from Cape Cod and Martha's Vineyard. All four cables present operate at 23kV. These four cables are depicted on **Figure 3 in Attachment B**, and are identified as follows:

Cable #75 was installed as a 25kV buried cable from Falmouth to Tisbury installed c. 2013 (Energy and Environmental Affairs ["EEA"] No. 14755). This hybrid cable extends from the Falmouth substation on Stephens Lane to a public parking area at the intersection of Surf Drive and Mill Road, where it enters the water. The cable runs 5.5 miles from the landfall site in Falmouth underwater to the landfall site in Tisbury.

Cable #91 was installed as a 25 kV direct lay cable from Falmouth to Tisbury installed c. 1986. pursuant to DEQE License 3633. The existing cable replaced previous direct lay cables. The original line was installed in 1940 under Department of Public Works ("DPW") License 2169. The No. 91 cable extends from the intersection of Surf Drive and Elm Road in Falmouth to West Chop in Martha's Vineyard. The No. 91 Cable has experienced eight failures since it's installation in 1986; those occurred in 1991, 2002, twice in 2003, 2005, 2006, 2013, and July 2021.

Cable #97 was installed as a 25kV direct lay cable from Falmouth to Tisbury installed c. 1990. This 25kV cable shares it's landing sites, underwater route, and terrestrial routes in both Falmouth and Tisbury with the No. 91 Cable. This cable has not experienced any failures to date.

Cable #99 was installed as a 25kV direct lay cable from Falmouth to Oak Bluffs installed c. 1996. This cable was installed pursuant to DEP License No. 6007. It extends from the intersection of Surf Drive and Shore Street in Falmouth approximately 6.4 miles underwater to Eastville Avenue in Oak Bluffs. The cable has experienced four faults since it's installation in 1996, which occurred in 1997, 1999, 2003, and 2004.

1.3 Water-Dependency

The Project is an "Infrastructure Crossing Facility," defined in 310 CMR 9.02 which reads in part as

> *"…any infrastructure facility which is a bridge, tunnel, pipeline, aqueduct, conduit, cable, or wire, including associated piers, bulkheads, culverts, or other vertical support structures, which is located over or under the water and which connects existing or new infrastructure facilities located on the opposite banks of the waterway…"*

As an Infrastructure Crossing Facility that will cross the flowed tidelands of Vineyard Sound and that cannot be located away from those tidelands while achieving the Project purpose, the Project is classified as a "Water-Dependent Use" by the Waterways Regulations (310 CMR 9.12(2)(d)). The Project area includes filled tidelands along Mill Road, according to MassGIS data and the MassMapper.

1.4 Public Benefit Determination

In November 2007, the Massachusetts House and Senate passed An Act Relative to the Licensing Requirements for Certain Tidelands (HB 4324), which was signed by Governor Patrick on November 15, 2007 (Chapter 168 of the Acts of 2007) and is known as the “Landlocked Tidelands Legislation.” The legislation, among other things, names the Secretary of EEA as the “administrator of tidelands,” and requires the Secretary to conduct a “public benefit review” for projects located on tidelands and to issue a written determination, the Public Benefit Determination (“PBD”). Pursuant to 301 CMR 13.02(1), the Secretary is required to conduct a public benefit determination for any project that

1. files an Environmental Notification Form (“ENF”) after November 15, 2007,
2. is required to file an Environmental Impact Report (“EIR”), and
3. is completely or partially located in tidelands or landlocked tidelands.

Pursuant to 301 CMR 13.02(2), the Secretary may conduct a discretionary public benefit review for any project that

1. files an ENF after November 15, 2007,
2. is not required to file an EIR, and
3. is completely or partially located in tidelands or landlocked tidelands.

The approximately 6.24-mile submarine cable route crosses under jurisdictional flowed tidelands, and a short segment of the terrestrial route in Mill Road crosses through MassGIS identified filled tidelands; no landlocked tidelands are located in the Project area. The changes to the Chapter 91 legislation outlined above require analysis of a Project’s impacts on the public’s rights to access, use, and enjoy tidelands that are protected by Chapter 91 as well as the identification of measures to avoid, minimize, and mitigate any adverse impacts on such rights.

The standards that guide the Secretary in making the Public Benefit Determination are related to the water dependency of the project under review. Water-dependent projects are presumed to meet the criteria in 301 CMR 13.04 (see below) and provide adequate public benefit. For nonwater-dependent projects, the Secretary is required to consider the following criteria:

1. The purpose and effect of the project;
2. The impact on abutters and the surrounding community;
3. Enhancement to the property;
4. Benefits to the public trust rights in tidelands or other associated rights, including but not limited to benefits provided through previously obtained municipal permits;
5. Community activities on the site;
6. Environmental protection and preservation; and
7. Public health and safety, and the general welfare.

As described in **Section 1.3**, the Project is an Infrastructure Crossing Facility as defined in the Chapter 91 regulations, which by definition is a Water-Dependent Project, and hence is presumed to meet the criteria related to public benefit review. Nonetheless, a brief description of how the Project is consistent with the criteria is provided below.

1. *The purpose and effect of the project:* The Project is proposed to provide a redundant electric distribution cable to Martha's Vineyard, to improve the reliability of grid-based electricity to the Island, meet existing and projected load growth, and allow for better integration of distributed renewable power.
2. *The impact on abutters and the surrounding community:* The Project will have a positive effect on abutters and the surrounding community by: (1) providing more reliable electrical power, and (2) retirement of the five on-Island diesel peaking generators.
3. *Enhancement to the property:* Although the Project will not enhance conditions along the proposed route, the route selection and mitigation measures associated with construction will avoid adverse impacts to sensitive resources.
4. *Benefits to the public trust rights in tidelands or other associated rights including but not limited to, benefits provided through previously obtained municipal permits*: The proposed Project within Flowed Tidelands will provide a direct public benefit by enhancing the reliability of electrical power to Martha's Vineyard. Installing a segment of the cable in MassGIS identified filled tidelands is located in the Mill Road right-of-way ("ROW"). The cable will not change the public use of this municipal roadway.
5. *Community activities on the site:* Aside from temporary construction activities, the Project will not restrict or constrain activities along the proposed cable route.
6. *Environmental protection and preservation*: The Project will comply with the new standards of the OMP see **Section 6.3** and performance standards of the Wetlands Protection Act. In addition to avoiding SSU resources to the extent practicable, the Proponent has surveyed the proposed route to ensure that marine archaeological resources are not adversely affected by the Project, see **Section 4.1.4**.
7. *Public health and safety, and the general welfare:* The Project will have no adverse impacts on public health, safety, or general welfare.

1.5 Permitting and Regulatory Approvals

In addition to MEPA review, the Project will require permits and approvals from local, state, and federal agencies. The anticipated federal, state, and local permits, reviews, and approvals required for the Project are listed in **Table 1.1.**

Table 1.1 Anticipated permits, reviews, and approvals required for the Project.

Agency	Permit/Approval
Federal	
U.S. Army Corps of Engineers ("USACE")	Massachusetts General Permit (2018) authorized by Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899 Individual Permit
U.S. Fish and Wildlife Service ("USFWS") and National Marine Fisheries Service ("NMFS")	Consultation under Section 7 of the Endangered Species Act ("ESA")
Massachusetts Historical Commission ("MHC") State Historical Preservation Office ("SHPO") Massachusetts Board of Underwater Archaeological Resources ("MBUAR") Tribal Historic Preservation Office ("THPO")	Consultation pursuant to Section 106 of the National Historic Preservation Act ("NHPA")
U.S. Coast Guard ("USCG")	Notice to Mariners
State	
Massachusetts Office of Coastal Zone Management ("CZM")	Federal Consistency Determination
Massachusetts Department of Environmental Protection ("MassDEP")	Water Quality Certification ("WQC") pursuant to Section 401 of the Clean Water Act
	Chapter 91 Waterways License and Dredge Permit
Massachusetts Environmental Policy Act Office ("MEPA")	MEPA Certificate
Natural Heritage and Endangered Species Program ("NHESP")	Massachusetts Endangered Species Act ("MESA")
Massachusetts Department of Transportation ("MassDOT")	State Highway Access Permit and Rail Division Use and Occupancy License.
Local and Regional	
Falmouth Conservation Commission	Massachusetts Wetlands Protection Act ("WPA") Order of Conditions
Tisbury Conservation Commission	WPA Order of Conditions
Oak Bluffs Conservation Commission	WPA Order of Conditions
Cape Cod Commission ("CCC")	Development of Regional Impact ("DRI") Determination
Martha's Vineyard Commission ("MVC")	DRI Determination
Falmouth	Grant of Location and Street Opening Permit
Oak Bluffs	Grant of Location and Street Opening Permit

1.5.1 Chapter 91 Analysis

The Public Waterfront Act, M.G.L. Chapter 91 and its implementing regulations at 310 CMR 9.00 regulate activities located in, under, or over flowed tidelands, filled tidelands, Great Ponds and certain non-tidal rivers and streams on which public funds have been expended. These activities are broadly defined to include the placement or construction of new fill and/or structures, the demolition or removal of existing fill and/or structures, and/or the change in use of such fill or structures.

As described in **Section 1.3** above, the Project is an "Infrastructure Crossing Facility" and will cross flowed tidelands of Vineyard Sound as well as MassGIS identified filled tidelands along Mill Road.

There are several existing and historic Chapter 91 licenses in the vicinity of the proposed Project. Those previously licensed structures and uses are related to submarine cables, an old pile wharf, some fill within Salt Pond, and a jetty that was licensed proximate to the proposed Falmouth landing site. **Table 1.2** lists the Chapter 91 license history in the vicinity of the proposed Project. See **Attachment E – Chapter 91 Licenses** for copies of these Chapter 91 Licenses.

Table 1.2 Chapter 91 License history in the vicinity of the proposed cable route.

License #	Date	Licensee	Activity/Use
H&L 2334	2/21/1900	Southern Massachusetts Telephone Company	Lay a submarine cable across Vineyard Sound from a point near Nobska Point Lighthouse in Woods Hole to a point near West Chop on Martha's Vineyard.
H&L 3381	6/7/1909	J. Arthur Beebe	Build a pile wharf on Vineyard Sound in the town of Falmouth (west of Mill Road)
DPW 991	3/26/1929	New England Telephone and Telegraph Company	Lay and maintain a submarine cable upon the surface of the bottom of Vineyard Sound from Nobska Point at Woods Hole in the town of Falmouth to a cable house at Makonicky in the town of Tisbury on the island of Martha's Vineyard.
DPW 1833	11/27/1936	The Service Company	Fill solid in a part of Salt Pond at its property on Beach Street in the town of Falmouth (west of Mill Road)
DPW 1745	12/15/1936	Western Union Telegraph Company	Lay and maintain a submarine cable upon the surface of the bottom of Vineyard Sound from Nobska Point at Woods Hole in the town of Falmouth to a point on Norton Point in the town of Tisbury on Martha's Vineyard.
DPW 2161	2/26/1940	Cape and Vineyard Electric Company	Lay and maintain a submarine upon the surface of the bottom of Vineyard Sound from Shore Street in the town of Falmouth to a point 1600 feet westerly from West Chop Light in the town of Tisbury.
DPW 2169	3/20/1940	Cape and Vineyard Electric Company	Lay and maintain a submarine cable in, under and across Vineyard Sound from Shore Street in Falmouth to Squantum Avenue in Tisbury on Martha's Vineyard.

License #	Date	Licensee	Activity/Use
DPW 3602	12/28/1953	The Falmouth Associates, Inc.	Build a stone jetty in Vineyard Sound at property in Falmouth
DPW 3633	5/10/1954	Cape and Vineyard Electric Company	Lay a second submarine cable in Nantucket and Vineyard Sounds from Elm Road in the town of Falmouth to Squantum Avenue in the town of Tisbury on Martha's Vineyard.
DPW 4998	12/1/1965	West Chop Trust	Construct a stone groin in Vineyard Sound at property in Tisbury
DEP 4142	9/30/1994	Commonwealth Electric Company	Place and maintain a 6.0-inch diameter electric cable and a ¾-inch diameter fiber optic cable with appurtenant duct banks and conduits in and over the waters of Vineyard Sound from the Town of Falmouth through the Town of Tisbury to the Town of Oak Bluffs.
DEP 6007	10/17/1996	Commonwealth Electric Company	Install and maintain a 23kv submarine electric power cable and an integrated fiber-optic cable in, under and over the waters of Vineyard Sound and Vineyard Haven Harbor
DEP 13588	11/4/2013	Comcast & NSTAR Electric Company	Construct and maintain an approximately 4.5 mile long electric transmission and communications cable and to dredge in flowed tidelands of Vineyard Sound in the Towns of Falmouth and Tisbury

1.6 Outreach

The following agencies have been consulted. Communications with each agency are summarized below. See **Attachment F – Agency Communications** for copies of agency correspondence. Additionally, the community has been informed throughout the project using the methods summarized below.

1.6.1 Fedeal, State, and Regional Agency Meetings and Consultations

Throughout the planning and early design phase, the Proponent met with key federal, state, and regional regulatory agencies to introduce the Project's purpose and need, and to discuss environmental constraints, regulatory framework, and potential impacts and mitigation measures. **Table 1.3** below provides a record of agency meetings and consultations conducted by the Proponent. Due to the regulatory interrelationships between MassDEP, CZM, and the Department of Marine Fisheries ("DMF"), a joint pre-application meeting was conducted with those three agencies to gain feedback and guidance on the development of the Project and the permitting approach. The Proponent conducted two meetings and consultations with the EEA MEPA Office, one on September 14, 2021 for an introductory consultation regarding the Project, and the second on March 3, 2022 with the Environmental Justice Director to discuss Environmental Justice ("EJ") communities relative to the Project and to gain feedback given the geographic location of the Project relative to EJ communities.

The Proponent has incorporated the comments and guidance from these meetings and consultations into the preliminary design, approach for evaluating existing conditions, impact assessment, and developing mitigation measures. That guidance was used to develop this EENF/PEIR. Based on the March 3, 2022 MEPA EJ consultation, the Project requires an EIR due to its proximity to Environmental Justice Communities (see **Section 8** below). Therefore, the Proponent and MEPA discussed the preparation of an Expanded ENF and a Rollover EIR to avoid a Discretionary EIR.

Included as **Attachment F – Agency Communications** is agency correspondence to date, including the MBUAR Special Use Permit, NHESP Request for State-listed Species Information, and MassDEP regarding sediment sampling.

1.6.2 Local Municipality Meetings and Consultations

The Proponent has met frequently with representatives of the Town of Falmouth and periodically with representatives of the Town of Oak Bluffs. Topics of discussions at these meetings included, project scope, construction schedule and impact, coordination with the municipality and mitigation, among others.

Table 1.3 Record of Agency Communications

Agency	Date of Communication or Consultation
Federal	
U.S. Army Corps of Engineers	November 5, 2021
State	
Massachusetts Environmental Policy Act Office	September 14, 2021 March 3, 2022
Massachusetts Department of Environmental Protection	September 30, 2021
Massachusetts Office of Coastal Zone Management	September 30, 2021
Massachusetts Division of Marine Fisheries	September 30, 2021
Massachusetts Division of Fish & Wildlife, Natural Heritage and Endangered Species Program	October 28, 2021
Massachusetts Board of Underwater Archaeological Resources	August 3, 2021
Massachusetts Department of Transportation Highway Division	August 19,2021 and January 2022
Massachusetts Department of Transportation Rail Division	Nine meetings between December 2021 and May 2022
Regional	
Cape Cod Commission	November 22, 2021
Martha's Vineyard Commission	November 16, 2021
Local	
Town of Falmouth	16 meetings between June 2021 and April 2022
Town of Oak Bluffs	September 13, 2021 & April 16, 2022

1.6.3 Community Outreach Plan

Eversource's Project Services team developed an outreach plan to inform the communities of Falmouth and Oak Bluffs throughout the duration of the Martha's Vineyard Reliability Project. The goal of the outreach plan is to help ensure that the Project is executed in a manner that is least impactful and/or best mitigated with regard to the needs of EJ communities and other impacted communities. Outreach events strive to convey to stakeholders that Eversource is committed to permitting and constructing this and all projects in an environmentally responsible way, and through stakeholder feedback, will design a project and establish work methods that will avoid/minimize impacts to the community, the environment and other resources, to the greatest extent possible.

The following communication tactics are being used to inform and gain feedback from diverse audiences and community members

1. **Pre-Filing Briefings:** Keep local officials briefed on the overall construction process and timetable and provide updated project materials that they may use to communicate with constituents and other interested residents. Additionally, establish what information to include in regular updates throughout the life of the Project.

2. **Door-to-door outreach:** Outreach staff conducted door-to-door outreach while being mindful of the latest state/federal COVID-19 social distancing guidance to introduce the project to direct and expanded abutters of the Project route. Door hangers with fact sheets were distributed where possible. The outreach team will continue to drop leaflets ahead of planned construction activities including, but not limited to: site preparations, survey work, additional test pit work, manhole/vault installations, trench/pipe installations, cable pulling and cable splicing activities.

3. **Business Outreach:** Outreach is ongoing to all business that will be impacted by Project construction with in-person meetings; whenever possible.

4. **Open Houses:** Open houses were hosted in each community in the Spring of 2022 to introduce the proposed Project and solicit feedback from stakeholders. Additionally, a recorded presentation explaining the project will be placed on the Project website for stakeholders to view at their own convenience that will direct them to reach out to the Project Team should they have questions.

5. **Community Briefings:** Local pop-up events have been held in high traffic EJ areas in an effort to solicit feedback from a diverse cross-section of community members from the Project area. These events will continue throughout the life of the Project. A list of events that have been held to date is presented in **Section 8.6.**

6. **Website:** Content will continue to be regularly updated with the Project schedule, FAQ documents, Project-mapping, and other relevant material.

7. **Social Media:** Work with community partners to identify if there are opportunities to leverage their reach within the community to send out information for how stakeholders can learn more about the Project and provide feedback

8. **Advertising:** Work with Steamship Authority and Peter Pan Bus line to see if there are advertising opportunities for to keep the public informed during construction.

9. **Linguistic Services:** Employ resources to support translation of collateral and at in-person events for identified languages: Spanish, Portuguese and Portuguese Creole, which is spoken by 8.3 % of the EJ populations.

10. **Local Media:** Partner with Strategic Corporate Communications and place ads in local newspapers in Falmouth, Oak Bluffs and Tisbury, as needed.

Please see **Section 8.6** for more information on Eversource's Outreach Plan to inform EJ communities.

1.6.4 Stakeholder Meetings

Eversource has a working list of current and past events located at various community centers, public buildings, and local businesses where outreach is taking place. At each event, one or multiple Eversource employees are present to distribute information and answer questions about the project. All questions and feedback are recorded in a tracking matrix that documents the comment along with Eversource's response, how that response is communicated to the public, and how that response is communicated to the individual if contact information was provided.

Please see **Section 8.6.3** for more information on Eversource's Public Meetings to inform EJ communities.

2.0 ALTERNATIVES ANALYSIS

Eversource performed an alternatives analysis to determine the approach that best balance's reliability, cost, and environmental impact. The various alternatives considered in the analysis, the criteria under which they were evaluated, and alternative construction methods are discussed herein.

2.1 No-Build Alternative

The no-build alternative means that Martha's Vineyard Island would continue to rely on the existing four cables supplying the Island with grid-based electricity. Reliance on only four cables does not meet the Project purpose and need, i.e., to improved reliability of the Island's electrical system, meet future load growth, or be able to accommodate decentralized renewable power. Whereas the no-build alternative does not meet the project purpose and need it was not retained for further consideration.

Furthermore, for the no-build alternative Eversource would need to maintain peak demand generators for existing peak demand periods. Eversource evaluated amending the existing diesel generator contracts beyond the current term ending in 2025. As part of the review of that contract, which was recently sold to a new owner, Eversource found that there was an expectation that the operations cost would be significantly higher; that the diesel age will require significant investment in the future; and, that the motivation of the new generator owners was unclear going forward. It was also determined that spot generators are a viable, cost-effective alternative for emergency situations on the Island if necessary. Additionally, the no-build alternative does not provide an opportunity to integrate decentralized renewable energy. Therefore, Eversource determined it is in the best interest of customers to not extend the diesel generator contract beyond 2025 and instead seek an alternative method to meet energy needs on Martha's Vineyard.

2.2 Generation and Storage on Martha's Vineyard

The following options were considered to generate and store additional electricity on Martha's Vineyard without constructing a new submarine cable.

2.2.1 Diesel Generators

There are currently five diesel generators utilized by Eversource on Martha's Vineyard. One alternative to the Project would be to continue using these five generators, to increase the number of generators to accommodate increased demand, or replace the on-Island generators with newer, more efficient, and/or larger capacity generators. However, these options require ongoing operations and maintenance costs, create air emissions, and utilize diesel, preventing Martha's Vineyard for meeting their goal to reduce or eliminate the use of fossil fuels on the Island. Therefore, this alternative was excluded from further consideration.

2.2.2 Battery Storage Facility

In 2017 Eversource began pursuing a project to place a 4.9MW /20MWh Battery Energy Storage system ("BES") on the Eversource-owned parcel located on Eastville Avenue in Oak Bluffs. The primary purpose of the Martha's Vineyard BES project was to significantly reduce reliance on the five diesel-fired peaking generators used to supply power during high load conditions. The initial cost estimate for the BES project was $15M. During the project permitting process between 2017 and 2020, the cost of the project increased drastically. The Town of Oak Bluffs decided that due to perceived visual impacts, they would require Eversource to construct a building to house the storage system, rather than using the containerized solution proposed in the conceptual design. The cost of the building, foundations, required civil work and wall construction, plus the cost of obtaining the permits for the revised plan added $5M to the approved budget, and a ventilation system for additional fire safety protection added an additional $1M to the approved budget. Finally, construction bids in 2020 were received at three times higher than the expected amount. In total, the project was estimated at $8.5M higher than the originally approved $15M budget.

In February 2020, Eversource representatives met with the Martha's Vineyard Commission CATF and learned that that the load forecast of 70 MW by year 2029 as an upper band to load growth covers the expected load increase that may arise from their goals. Therefore, the BES system would not be sufficient to meet the Island's projected energy needs. Additionally, the BES alternative does not provide an opportunity to use decentralized renwable energy. Those factors coupled with the total BES project forecast increase to $23.4 million caused Eversource to discontinue the Martha's Vineyard BES project.[1]

The Martha's Vineyard BES, therefore, was not considered a long-term viable option to meet the Project purpose and need and therefore it was not carried forward for further consideration.

2.3 Fifth Submarine Cable to Martha's Vineyard

The option of laying a fifth submarine cable was explored. This involves laying a new 25kV cable from Cape Cod to Martha's Vineyard. This option will:

1. Meet current and future load expectations;
2. Replace the Martha's Vineyard BES;
3. Allow for the retirement of the diesel generators;
4. Accommodate decentralized on-island renewable electricity;
5. Allow for the future elimination of fossil fuel use on the island as the Eversource grid incorporates a greater amount of renewable electricity; and
6. Improve the reliability of grid-based power on the Island.

[1] A full description of the BES Project cancellation (DPU 21-30) is presnted in correspondence to the EFSB dated May 17, 2021

Because this option meets the Project purpose and need and has the added benefits of: (1) decommissioning the peaking generators, and (2) accommodating on-Island renewable electric generation, it was selected as the preferred alternative.

With the option of a fifth cable selected as the preferred alternative, the next step involved evaluating landing sites and submarine cable routes. On Cape Cod the logical starting point is Falmouth, because it is the shortest distance across Vineyard Sound to either Tisbury or Oak Bluffs. Furthermore, the existing substation #933, off Stephens Street, can accommodate a fifth distribution line with a modest reconfiguration of the station. On Martha's Vineyard, the logical landing sites are at Main Street/Squantum Street in Tisbury or Eastville Avenue in Oak Bluffs, because the existing four cables come ashore at these two locations and there is existing electrical infrastructure into which the fifth cable can connect.

The Proponent examined a number of locations on the mainland in Falmouth for landing sites of the fiber optic cable. Criteria considered during site selection included:

1. Ease of construction access;
2. The locations of wetland resource areas;
3. Existing electrical infrastructure; and
4. The ability to obtain easements (on public and private property).

Based on these criteria, the Proponent narrowed down the potential landing sites to a few locations on each side of Vineyard Sound, and then performed an evaluation of each potential site.

2.3.1 Falmouth Landfall Sites

Three landing sites were considered in Falmouth, all of which are the landing sites for existing submarine cables to Martha's Vineyard. See **Attachment B, Figure 5** – **Alternative Cable Landing Sites.** In addition to the alternatives described below, the Proponent also considered the area surrounding Woods Hole as a potential landing site on the mainland, since there is an existing single cable from Woods Hole to Martha's Vineyard. However, a congested harbor – USCG Station Woods Hole, Stream Ship Authority Ferry Terminal, Woods Hole Oceanographic Institution, Eel Pond anchorage, and other docks – with a high volume of boat traffic would complicate cable installation originating in Woods Hole. Therefore, this alternative was excluded from further consideration.

2.3.1.1 Shore Street

The easternmost landing site considered was the paved public beach parking area at the intersection of Shore Street and Surf Drive. This is the landing site for the existing #99 Cable. Due to the existing #99 Cable, the landing site for the fifth cable would need to located west of the existing cable. The parking lot would provide a laydown area during construction, and provided work is performed during the off-season then disruption to beach goers would be avoided. This landing area also positions the Falmouth side of the proposed cable near one end of a Cable Area designated on nautical charts to either West Chop (Tisbury) or East Chop (Oak Bluffs). This location allows for a submarine cable alignment west of the existing cable and avoids the fifth cable needing to cross the #99 Cable. See **Attachment B, Figure 3.**

2.3.1.2 Elm Road

The westernmost landing site considered was the intersection of Elm Road and Surf Drive. This is the landing site for the existing #91 and #97 Cables. Eversource pad-mounted equipment and riser poles are located within approximately 500 feet of the landing site. This alternative landing area is not heavily populated, however, wetland resource areas on either side of Elm Road constrain available workspace for HDD operations and a construction laydown area. Additionally, the presence of the #91 and #97 Cables causes significant infrastructure congestion at this location. Furthermore, this landing area would involve work on land owned by a local conservation organization. For these reasons it was not considered for further analysis.

2.3.1.3 Mill Road

The final landing site considered was the unpaved public parking area at the intersection of Mill Road and Surf Drive. This is the landing site for the existing #75 Cable. The HDD pit (and proposed manhole) could be located in the gravel parking lot owned by the Town of Falmouth. There is adequate space to HDD operations and a construction laydown area. This landing area also positions the Falmouth side of the proposed cable near one end of a Cable Area designated on nautical charts and provides for a nearly straight-line path across Vineyard Sound within the Cable corridor to West Chop, see **Attachment B, Figure 3**. This landing site is concurrently be evaluated for #91 Replacement Cable landing site.

2.3.1.4 Conclusion

After review of these landing sites, the Shore Street site was selected as the preferred alternative. This site offers adequate workspace for HDD operations while avoiding direct alteration of wetland resource areas. This location also offers alignment flexibility to either West Chop (Tisbury) or East Chop (Oak Bluffs) within or along established cable corridors across Vineyard Sound.

2.3.2 Martha's Vineyard Landfall Site

Two landing sites were considered on Martha's Vineyard, both of which are the landing sites for existing submarine cables. See **Attachment B, Figure 5**. In addition to the alternatives described below, there are commercial areas near the Vineyard Haven and Edgartown ferry docks that could conceivably be used as landing sites. However, given the difficulties of construction related to congestion of the harbor and the volume of boat traffic, those alternatives were excluded from further consideration.

2.3.2.1 Eastville Avenue, Oak Bluffs

The Eastville Avenue landing site on the Island is where the existing #99 comes ashore. Eversource infrastructure is present in the vicinity of this landing site. Eversource owns land off Eastville Avenue on which the new distribution equipment can be sited. This parcel was originally acquired for the BES project. This will integrate the new 5th cable along with the existing #99 Cable to the Island's electrical distribution network.

2.3.2.2 Squantum Avenue, Tisbury

An alternative landing site on the island is at Squantum Avenue in Tisbury. This is the landing site for the existing #75, #91 and #97 Cables. This landing site has adequate upland area to install a cable connection to the Squantum Avenue and Main Street intersection. However, the location is constrained for siting a new equipment yard for the equipment to integrate the new fifth cable into the Island electrical distribution network. Additionally, Eversource is in the planning stages to replace the #91 Cable, and because the existing #91 cable presently lands at this location, this is the leading site for the replacement cable landing site.

2.3.2.3 Conclusion

The Eastville Avenue landsite was selected as the preferred as the site on Martha's Vineyard for the fifth cable. This landing site is within approximately ¼-mile of Eversource-owned land in which the needed equipment yard can be located. This cable landing site can be sited to avoid Coastal Beach and Coastal Dune and the underground cable duct and manhole system can be located in the Eastville Avenue ROW to minimize impacts to the natural and built environment.

2.4 Submarine Cable Alignment

With the selection of the Shore Street landing site in Falmouth and the Eastville Avenue landing site in Oak Bluffs, the preferred route is depicted in **Attachment B, Figure 3**. The corridor for the fifth cable was selected to the west of the #99 Cable because:

1. This routing avoids crossing the #99 Cable at the Eastville Ave landing site;
2. This alignment locates the new cable within and adjacent to existing cable crossings as shown on the navigational chart and does not extend the cable corridors further eastward across Vineyard Sound; and
3. The planning and survey alignment was selected to avoid to the greatest extent possible mapped hard bottom and complex seafloor. When the corridor was chosen in summer/autumn of 2021, the 2015 GIS mapping series was the latest available mapped hard bottom data. As depicted in **Attachment B, Figure 13** this alignment avoided the previously mapped units except for one unavoidable unit in the middle of the Vineyard Sound. In early 2022, an updated data GIS set was released of data collected in 2021. When looking at the 2021 data in **Attachment B, Figure 3**, there is no reasonable alignment between Falmouth and Martha's Vineyard that avoids hard bottom and complex sea floor.

2.5 Landside Cable Routes in Falmouth

Four routes were examined for the new fifth cable from the Eversource Substation #933 at the end of Stephens Lane to the Shore Street / Surf Drive landing site. Routes from the substation to the landing site are described below and depicted in **Attachment B, Figure 6 – Environmental Constraints in Falmouth** along with the environmental constraints in the area. Land use between these locations includes densely populated areas, including Falmouth Center. Each of the Falmouth landside route alternatives are within 1 mile of the same environmental justice communities, which are identified for income. See **Section 8** Environmental Justice for more information regarding the nearby EJ populations.

2.5.1 Option 1 (Jones Road, Nursery Road, Katharine Lee Bates Road, & Walker Street

The total length of this route is approximately 2.2 miles. The route would require 11,550 feet of a new duct and manhole system to be constructed from the substation within the ROW of Stephens Lane, Jones Road, Nursery Road, Lakeview Avenue, Howes Lane, Katharine Lee Bates Road, Library Lane, Main Street, and Walker Street. The existing duct and manhole system in Surf Drive would be utilized. The route is through primarily residential land use, but includes an approximately 370 foot section in Main Street (Route 28) that is a dense commercial area with high traffic volume. This route also borders the edge of Shivericks Pond and passes through multiple areas on the National Register of Historic Places and the Local Historic District, see **Attachment B, Figure 7 – Historic Resources in Falmouth**.

2.5.2 Option 2 (Palmer Avenue, Main Street, & Walker Street)

The total length of this route is approximately 2.2 miles. This route would require 11,550 feet of a new conduit system to be constructed from the substation that would go down Stephens Lane, Jones Road, Palmer Avenue, Main Street, and Walker Street, and the existing conduit along Surf Drive would be utilized. About half of the land use along this route is residential, and a 1-mile section along Palmer Avenue and Main Street (Route 28) is a dense commercial area with high traffic volumes. This route passes through multiple areas on the National Register of Historic Places and the Local Historic District, see **Attachment B, Figure 7.**

2.5.3 Option 3 (Shining Sea Bikeway & Mill Road)

The total length of this route is approximately 2.5 miles. This route requires 12,030 feet of a new duct and manhole system from the substation in the ROW of Stephens Lane, Jones Road, the Shining Sea Bikeway, and Mill Road. From the intersection of Mill Road and Surf Drive, the existing duct and manhole system within Surf Drive will be utilized. Land use along this route is primarily residential, with some commercial and industrial uses along the Shining Sea Bikeway. The 100-foot buffer zone from wetlands extends from Salt Pond extends onto Mill Road, however, this route avoids the Barrier Beach mapped on Surf Drive.

2.5.4 Option 4 (Shining Sea Bikeway & Elm Road)

The total length of this route is approximately 3.3 miles, therefore making this the longest route and most expensive alternative. This route would require 13,610 feet of a new duct and manhole system to be constructed from the substation within the ROW of Stephens Lane, Jones Road, the Shining Sea Bikeway, Elm Road, and the western portion of Surf Drive. The existing duct and manhole system in the eastern portion of Surf Drive would be utilized. Land use along this route is primarily residential, with commercial and industrial uses along the Shining Sea Bikeway. In this route, the southern portion of the Shining Sea Bikeway and the western section of Surf Drive is located in buffer zone to wetlands and Barrier Beach.

2.5.5 Conclusion

Option 3, located primarily along the Shining Sea Bikeway and Mill Road, was selected as the preferred landside cable route for the fifth cable, because this route option:

- avoids wetlands and Barrier Beach;
- avoids cultural resource districts;
- minimizes work in public roads; and
- avoids the high traffic areas along Main Street (Route 28) and through downtown Falmouth.

2.6 Landside Cable Route in Oak Bluffs

There is only one feasible route from the Oak Bluffs landing site on Eastville Avenue to the Eastville Avenue equipment yard, and that is the approximately ¼-mile alignment in the Eastville Avenue ROW. The environmental constraints in this area are shown in **Attachment B, Figure 8 – Environmental Constraints in Oak Bluffs**, and historic resources are shown on **Attachment B, Figure 9 – Historic Resources in Oak Bluffs**. Therefore, no alternative cable routes were examined on Martha's Vineyard.

2.7 Installation Alternatives

The following methods were considered for cable installation.

2.7.1 Submarine Cable

Installation of the submarine cable could be completed via one of two methods: laying the cable on the seafloor, or burying the cable under the seafloor. Both of these alternative installation techniques have benefits and detriments, discussed below.

2.7.1.1 Direct Lay Method

Surface (or direct) cable laying is a common method for installing submarine cable. The cable is laid directly onto the seabed from a surface vessel equipped with either a static coil or a revolving turn carousel/turntable, depending on the characteristics of the cable. Equipment used to guide the cable overboard includes a cable pickup arrangement and associated cable trackway, which leads the cable through cable tensioners/engines and overboard through a cable chute/stringer, which is usually mounted at the stern of the vessel. In its post-construction condition, the cable is left lying on the surface of the seafloor.

Benefits of laying the cable on the seafloor bottom include a lower initial installation cost (relative to burial), a shorter installation schedule, less construction-period disturbance of the seafloor, and ease of access for making future repairs.

Detriments of this method are related to its exposed condition, because the surface-laid submarine cable is uncovered it is vulnerable to damage from human activities and/or events such as anchor drops, damage from fishing gear; as well as damage from natural processes such cable abrasion caused by currents moving the cable across the sea floor, and extreme environmental conditions.

2.7.1.2 Hydroplow Method

For this trenchless cable installation technique, a hydroplow (or often referred to as jet plow) is placed on the ocean floor to liquify a narrow section of sediment with water jets and concurrently lay the cable in the liquified sediment, then the cable is covered with the natural material as it settles back into place. There are essentially two types of trenchers: (1) a self-propelled (i.e., a remotely operated vehicle "ROV") trencher , or (2) a towed trencher is pulled along the bottom, by a system of anchors and winches, and . operated from a surface barge equipped with the fiber optic cable, navigation equipment, and pumps to power water through the jets on the plow. In the latter case, tugboats are used to move the anchors and barge. Throughout this EENF/PEIR the termed hydroplow is used generically to refer to trenchless construction by either an ROV or tethered jet plow.

Although an ROV trencher may be feasible for this Project, the impact assessment conservatively assumes that a system of anchors and winches will be used. For the tethered hydroplow equipment, the cable is strung overboard from the barge and fed through the hydroplow's hollow blade, or "stinger." As the plow moves along the seafloor, water is pumped out of jets positioned along the stinger to liquefy sediment directly in front of the blade, thus allowing the cable to settle into the seafloor. The cable is buried as the stinger moves along the liquified sediment settles back into the trough. See **Attachment B, Figures 10 and 11 – Photographs of Hydroplows and Figure 12 – Schematic of Hydroplow Installation Technique**. Burying the cable allows the overlying seafloor sediments to protect it against environmental damage or fouling by anchors, fishing gear, and other marine operations. For this reason, burying the cable is preferred to leaving it exposed on the seafloor.

Vineyard Sound is a dynamic morphological environment where sand waves on top Middle Ground, a shoal system located north of Martha's Vineyard, have been reported to be as large as 12 to 15 feet high. These sand waves actively migrate across Middle Ground with each tidal cycle. To avoid this rapidly changing geomorphology, the preferred cable alignment will proceed east of Middle Ground, where water depths are greater and sand waves are reportedly smaller or less dynamic. The current proposal is to hydroplow the cable to a depth of 6- to 10-feet below the seafloor. Nonetheless, it is conceivable that the migration of sand waves may periodically result in sections of the cable becoming uncovered. That condition, should it occur, is expected to be temporary and the majority of the cable should remain buried at any given point in time.

Hydroplowing disturbs only a small area of seafloor, and for this Project the liquefied trench will be approximately 3- to 4- feet wide and less than one foot deep. The proposed Project will have no adverse effects related to erosion, sedimentation, or scouring of seafloor along the cable route. Since the proposed cable route will pass through seafloor predominantly characterized by sand bottom, turbidity generated by the hydroplow is expected to be minimal in spatial and temporal extent.

The hydroplow installation method is the preferred installation method for this Project (with the exception of the two sections proposed for HDD installation). This technique was used successfully to install two electric cables to the island of Nantucket in 1996 and 2005-2006, and Eversource's No. 75 Cable installed between Falmouth and Martha's Vineyard (EEA No. 14755).

2.7.2 Terrestrial Cable

Two options, overhead powerlines and buried cables, were considered to install the cable from Substation #933 to shore Street/Surf Drive in Falmouth, and along Eastville Avenue in Oak Bluffs.

2.7.2.1 Overhead Powerlines

Advantages of overhead power lines include: lower installation and material cost, faults or damage in overhead lines can be easily located, and ease of maintenance. Detriments of overhead power lines include: aesthetic impacts, a continuous above ground pathway can create obstructions, and vulnerable to damage from lightning strikes, tree damage or vehicles.

2.7.2.2 Buried Cable

Advantages of buried cables include: coastal resilience, water resistance, improved reliability because it is not susceptible to wind/storm or vehicle damage, and no aesthetic impacts. Detriments of buried powerlines include: higher installation and material costs and higher maintenance costs.

The buried cable option was selected as the preferred as the landside cable option. Although it has higher costs the benefits of improved reliability, greater resiliency and reduced aesthetics outweigh the costs.

2.8 Equipment Sites

The fifth cable serving Martha's Vineyard needs to originate from the Eversource grid, and Substation #933 on Stephen's Lane in Falmouth has the capacity to feed the new distribution line and only needs minor reconfiguration to accommodate the fifth cable.

On Martha's Vineyard new equipment is needed to integrate the fifth line into the Island's distribution network. This equipment needs more space than is available in any of the powerline ROWs or easements. Eversource previously acquired land off Eastville Avenue for the BES project, and is suitable for the integration of the fifth able into the Island's grid. This parcel is approximately ¼-mile from the selected landing site.

2.9 Preferred Alternative

The preferred Project is depicted on **Attachment B, Figures 1 and 2**, and presented in more detail on the **Project Map Set** (18 sheets) found in **Attachment C**. The Project as proposed herein is considered the best approach to meeting the Project purpose and need, while concomitantly balancing reliability, cost, and environmental impact. This project and its components evaluated above were selected to minimize impact on the built and natural environment.

The landside cable will be installed below grade to improve reliability and minimize impacts to the public relative to aesthetics, to avoid obstructions, and improve is resiliency. The buried submarine was selected to likewise improve reliability of the fifth cable. It will be installed at the shorelines by HDD construction to avoid altering eel grass off Falmouth and intertidal resources along both Falmouth and Oak Bluffs shorelines. The buried submarine cable is more reliable than the direct lay option and this construction technique yields only temporary impacts to the substrate during construction.

The submarine alignment was selected to avoid crossing existing submarine cables and to avoid MassGIS mapped hard or complex sea floor (as mapped in 2015, see **Attachment B, Figure 13 – Hard/Complex Bottom and Eelgrass Areas**) to the extent possible. The revised GIS mapping, released in January 2022, shows a greater extent of hard bottom and complex seafloor in Vineyard Sound between Falmouth and Martha's Vineyard. Thus, crossing these substrate types is unavoidable. Project-specific marine surveys were completed in the autumn 2021 to document conditions along the submarine cable alignment.

3.0 PROJECT DESCRIPTION

The proposed Martha's Vineyard Reliability Project involves constructing a fifth cable from Falmouth to Oak Bluffs to improve the reliability of grid-based electricity on Martha's Vineyard. The Project also will allow Eversource to retire five standby diesel generators on the Island which are currently used to provide backup power during times of peak demand.

3.1 Submarine Cable

The electric distribution cable will connect to the onshore electrical grid using a single cable rated at 25 kilovolts ("kV") containing three power conductors, each 1250 kcmil Copper, two fiberoptic cable inserts, each with 48 fiber strands. The cable is jacketed in Ethylene Propylene Rubber ("EPR") insulation as a complete bundle approximately 5.5-inches in overall outside diameter with a weight of approximately 31.3 lbs/ft (46.6 kg/m). The submarine cable is approximately 6.24 miles long – comprised of 5.29 miles of cable installed by trenchless construction and approximately two 2,500 foot (0.47 mile) long HDD reaches at both landing sites.

3.2 Cable Installation

The Proponent selected submarine cable installation techniques that avoid and minimize potential adverse effects to the extent possible. Installation methods are summarized above in the alternatives analysis (see **Section 2.7.1**) and are discussed below.

3.2.1 Horizontal Directional Drilling Cable Installation

At the landing sites, off Surf Drive in Falmouth and Eastville Avenue in Oak Bluffs, the Proponent proposes to transition from the landside cable to the offshore cable using the trenchless technique of Horizontal Direction Drilling ("HDD"). The HDD installation is proposed to avoid altering the eel grass meadow, a Special, Sensitive, or Unique ("SSU") resource, located off the Falmouth shoreline (see **Attachment B, Figure 13**). Off Martha's Vineyard the HDD is proposed to avoid intertidal resources. The HDDs are approximately 2,500 from the entry hole to the exit hole in waters approximately 20 feet deep off of Falmouth and Oak Bluffs. Using HDD at each end of the proposed submarine cable route will eliminate the need to open-excavate Coastal Beach and Coastal Dune resource areas proximate to the landing sites.

Both proposed landing sites have sufficient space available for staging HDD cable installation equipment. The Proponent plans to conduct the HDD in the off-season and will maintain beach access throughout the operation. See **Attachment B, Figure 14 – HDD Schematic** for a schematic design of the HDD setup. Photographs of the existing Surf Drive Beach parking lot and Eastville Avenue landing site can be found in **Attachment B, Figures 15 and 16**, respectively.

HDDs will be performed and reamed to a diameter sufficient allow pullback of a 14-inch inner diameter bore high density polyethylene ("HDPE") casing conduit in which the cable will be installed. This minimum inner diameter for the bore casing has been designated by the cable manufacturer.

Prior to any installation work, the Proponent will also mark the existing NSTAR cables and any existing utilities to avoid potential impacts. The construction sequence for each portion of installation via HDD will consist of the following methods:

1. Approach Pit: Land-based HDD rigs are typically staged behind an approach pit, which for this Project will measure approximately 10 by 20 feet for the drill path entry point. The approach pit will provide the contractor with access to the proper trajectory for drilling and will also serve as a reservoir for drilling fluids (i.e., a slurry consisting predominantly of water and bentonite, a naturally occurring, inert and non-toxic clay) used to extract material from the drill head.
2. Pilot Hole: A small diameter pilot hole will be drilled from the approach pit to the pre-determined location offshore where typical offshore cable installation will terminate. The pilot hole will typically be drilled at an angle of 8 to 18 degrees so that it arcs down beneath the nearshore coastal resources and extends to a depth of approximately 25 to 35 feet beneath the surface of the seafloor. The path of the pilot hole will then arc back up towards the desired point on the seafloor, approximately 2,500 feet from the entry pit, which will be the transition point between offshore cable installation and the seaward end of the HDD. Drilling fluid (a bentonite slurry) will cool and lubricate the drill bit, stem, and other equipment, and will also serve to seal the sides of the bore. A comprehensive contingency plan for potential frac-out is outlined in **Attachment G – Preliminary Inadvertent Release Contingency Plan for Horizontal Directional Drilling**.
3. Surfacing of HDD Pilot Hole: To avoid potential release of drilling mud as the drill head cutting the pilot hole reaches the targeted HDD exit hole location, when the pilot hole approaches the exit hole location, the contractor will flush the drilling fluids and cuttings from the bore hole with water, and will use water in place of drilling fluid in the final stage of drilling. Given the sandy characteristics of the sediment expected at the HDD exit hole location and the small diameter of the pilot hole, a very minor and short-lived increase in turbidity is expected as the drill head reaches the seafloor surface.

   Although not anticipated, a small amount of bentonite clay could be released at the exit point of the HDD operation. Where the pilot hole exits the seafloor, it is expected that the contractor will lower a gravity cell (typically a 20-foot by 20-foot steel box, similar to a trench box) at the exit hole to retain any incidental bentonite drilling fluid released when the pilot drill "punches out."

   The drilling fluid (typically bentonite and water based with selected polymers/additives to improve and modify fluid and drilling properties to address site-specific ground characteristics) is pumped through nozzles in the drill head to support the hole and to hydraulically transport drill cuttings from the drill bit back to the entry pit. Environmentally acceptable polymers and additives may be used on this project. Bentonite clay is an inert, naturally occurring substance and is appropriate for use in sensitive environments because it poses minimal environmental risks; for this reason, bentonite is commonly used for the HDD process. Nevertheless, the contractor will minimize the amount of bentonite near the exit hole and will have controls near the exit hole to minimize and contain any bentonite. Any bentonite retained by the gravity cell will be removed before the gravity cell is removed.

4. Reaming and HDPE Conduit Insertion: After the pilot hole is established, the cutter head will be replaced with a larger diameter cutter head, or reamer. Upsizing of the bore hole is achieved by reaming the hole with successively larger cutter heads. The current plan is that the reaming passes will not punch out of the exit hole with each pass to minimize the volume of cutting fluids released during the reaming operation. Only for the final pass will the reamer punch out.

   A 12- to 18-inch HDPE conduit will be used maintain the hole and insert the cable through the conduit. The HDPE pipe lengths will be thermally fused and staged either onshore or offshore depending on the pulling direction for the pull-in. Lastly, the drill string is pulled back through the bore hole with the new interconnection HDPE conduit attached. The pullback will be one continuous until the lead end of the conduit reaches the entry pit.

5. Cable Insertion and Transition: Upon conclusion of the reaming and conduit pull-back, the end of the conduit will remain exposed on the seafloor. Divers will insert the submarine cable into the installed conduit, and it will be pulled through the conduit to the land connection. Divers will hand-jet a small area of the seafloor beneath the seaward end of the conduit to maneuver the cable into a position where it can be attached to a jet sled and subsequently plowed into the seafloor for the middle portion of the proposed cable route. Hand-jetting uses a narrow, high-pressure stream of water (or water-lifting i.e., a water eductor that would vacuum sediment from beneath the end of the conduit) is used to localized sediment excavation. Given that sediment at the transition area from HDD to hydroplow will likely be sandy, any turbidity caused by jetting should be minimal and of short duration. If water-lifting is performed, the entrained sediment will be discharged back onto the seafloor beneath a temporary layer of filter fabric to minimize turbidity. Due to the coarse sand nature of the sediments in the exit area, it is anticipated that these sediments would settle quickly to the bottom.

6. Disposal of drill cuttings and drill fluids: The HDD installation method will produce a slurry of two co-mingled byproducts: drill cuttings and excess drill fluids (water and bentonite clay). During drilling, this slurry will be collected from the reservoir pit and will be processed through a filter/recycling system where drill cuttings (solids) will be separated from reusable drill fluids. Non-reusable material consisting of drill cuttings and excess drill fluids will be trucked to an appropriate disposal site in accordance with local and state disposal requirements.

7. Landward Manholes and Infrastructure: The submarine cable will be pulled back through the conduit installed via HDD, from which it will enter the transition vault or manhole, where it will transition to onshore cabling.

8. Site Restoration: The contractor will restore the approach pit work area to match existing conditions. Any paved areas that disturbed for the HDD will be properly repaved, per the Company's agreement with the Towns of Falmouth and Oak Bluffs.

Throughout HDD operations, the Proponent will ensure shore-side site security and traffic control.

3.2.1.1 Monitoring and Mitigation Measures

The HDD installation processes are being designed to reduce the potential risk of an inadvertent release during construction (see **Attachment G – Preliminary Inadvertent Release Contingency Plan for Horizontal Directional Drilling**). During HDD activities, the HDD Contractor will employ means and methods to reduce the potential for drill fluid loss. These methods include, but are not limited to:

- Maintain clean and unobstructed drilling fluid handling equipment.
- Maintain clean and unobstructed borehole.
- Continuous monitoring of pressure to ensure that the minimum necessary pressure is used for HDD operations.
- Minimizing the speed of drill string advancement and retraction.
- Monitor and adjust drilling fluid viscosity as necessary to maintain minimum required annular pressure, but still allowing circulation back to the HDD entry point.

3.2.1.2 Inadvertent Release Contingency Plan

Normally, the drilling mixture of water and bentonite clay remains within the bore hole, including the surface entry and exit points, as it circulates during drilling. However, the drilling fluid can sometimes surface elsewhere through natural cracks or voids in subsurface soils. This is an unintended release of drilling fluid referred to as an inadvertent release or return. The drilling fluid itself is not considered toxic but if released to the surface or other sensitive environmental resource areas, the clay-based fluid can impact plants and less mobile benthic organisms, particularly in a marine environment like Vineyard Sound. To address this issue, Eversource has prepared a Preliminary Inadvertent Release Contingency Plan ("IR Plan") in the event this situation is encountered during construction (**see Attachment G**). The general information within this document covers BMPs and a contingency and response plan for inadvertent releases for use during the installation of the HDD pipe. The Preliminary IR Plan is provided for informational purposes only and will be updated with a project- and site-specific IR Plan prepared by the selected HDD contractor.

3.2.2 Hydroplow Submarine Cable Installation

For this cable installation technique, the hydroplow is placed on the ocean floor and is either self-propelled (i.e., a ROV is used); or the hydroplow (or jet plow) is towed along the seafloor, i.e., it is pulled along the bottom, by a system of anchors and winches. In the latter case, tugboats are used to move the anchors. Although an ROV may be feasible for this Project, the impact assessment conservatively assumes that a system of anchors and winches will be used.

The cable will be buried to a depth of 6- to 10-feet beneath the seabed. The Contractor will use a cable-laying vessel with "DP-2" dynamic positioning capability to ensure that the specified route is followed. The offshore cable will be installed within an approximate 12-foot wide corridor – from skid to skid, inclusive of the 3-5 foot wide plow trough[2]. An approximately 1,000-foot wide survey corridor was surveyed to evaluate conditions along the route and to select an alignment to avoid and minimize impacts to SSUs. The survey corridor is shown in **Attachment C**.

The main run of cable extending between the two HDD exit points will be laid along a surveyed track in one continuous length from an installation barge equipped for hydroplow or ROV. The plow will bury the cable to 6- to 10-feet. Because Vineyard Sound has active sand waves on the submarine banks, in the fall 2021, CR Environmental surveyed the route corridor (500 feet to either side of the centerline alignment). See **Section 4.1.1** for summary of survey results. Adjustments in the route can be made within this corridor to avoid such active sand waves. If avoidance is not feasible, a plow with a deeper burial capability would be sought to conduct the installation of the cable to protect it from damage or fouling by anchors, fishing gear, and other marine operations. Each end of the cable will be pulled onshore to shore-side manholes through the two HDPE conduits installed via HDD. Divers will hand jet, or water-lift, the cable into the seabed between the plowed section and the HDPE conduits to ensure uniform burial and protection of submerged cable.

Typical construction sequencing for the main run of submarine cable will consist of the following:

Mobilization of installation barge and plow burial system;

1. At the end of the first HDPE conduit, once the cable end is onshore and secure, installation will follow a pre-determined route and the plow will install and bury the cable as describe above. The plow stinger, with the cable leading down its back edge, will be pulled across the seabed by a barge kedging forward on anchors and winches. Water nozzles will liquefy a narrow zone of sediment approximately six to eight inches wide directly in front of the plow stinger, allowing the stinger to proceed through the liquefied sediment while laying down the proposed cable as the water nozzles and plow stinger continue forward. The narrow zone of liquefied sediment will close over the installed cable, protecting it under 6- to 10-feet of sediment. The hydroplow will typically ride lightly on skids that act much like snow skis, guiding the hydroplow over the bottom surface. The total width of temporary disturbance due to the combined fluidized trench and sleds will be approximately 10- to 12-feet wide. Since the total length of the hydroplow installation is approximately 27,935 feet, the total temporary disturbance associated with the hydroplow is anticipated to be 6.4- to 7.7 acres (279,350 s.f. to 335,220 s.f.). For purposes of LOU impact assessment, we are assuming a 12-foot wide trough (skid to skid). This disturbance will be temporary and minor given the use of best available measures to conduct the installation. The bottom sediments are coarse-grained, due to the dynamic marine environment in Vineyard Sound, and therefore they will settle to the bottom quickly after disturbed. Marine organisms in the area are adapted to the dynamic nature of this high current/coarse sediment substrate, thus

[2] Post-construction monitoring for the #75 Cable documented an approximately 10-foot-wide corridor created by the hydroplow.

impacts to them are anticipated to be temporary in nature with no longer-term adverse impacts. Cable installation speed will vary depending on bottom conditions, but it is anticipated to be at least 300 feet per hour for the plowed portion of the route;

2. Anchors may be necessary to advance the surface barge and to keep it on track especially with the strong currents present in this area of Vineyard Sound. The anchor spread impact area has been conservatively estimated to extend a maximum of 300 feet either side of the centerline of the cable route. Anchor impact includes the footprint of the anchors on the bottom and wire or chain sweep over the bottom. We have conservatively estimated a chain or wire length of 100 feet sweeping at angle of approximately 30 degrees across the bottom which would conservatively produce a total contact area of 2,500 feet per anchor set. We estimate that anchor sets would be approximately every 2,000 feet of the approximately 28,000 feet of hydroplow route for a total of 14 anchor sets. With a total of 14 anchor sets, this would yield approximately 35,000 s.f. (0.8 ac.) of temporary anchor contact.
3. Upon arrival at the second HDPE conduit, the cable end will be pulled inshore to the proposed manhole;
4. The cable between plowed section and HDPE conduit created previously via HDD will be buried via the hand-jet method;
5. A video inspection will be conducted after the installation to document the post-lay condition of the cable route

3.2.3 Onshore Upland Installation

The proposed underground distribution line will consist of the multiple sets triplexed (twisted three phase single) power cables in a concrete duct and manhole system. Generally, there are four principal stages of construction for an underground cable project: (1) manhole installation; (2) trench excavation and duct installation; (3) cable pulling, splicing, and testing; and (4) final surface restoration. Each of these stages is further detailed below. Several different stages of construction may be ongoing simultaneously in different sections of the route.

To minimize the potential for erosion and sediment migration during construction, temporary erosion and sediment control measures will be installed prior to the initiation of soil disturbing activities, as necessary.

Manhole Installation:

Pre-cast or cast-in-place concrete manholes will be installed prior to or in parallel with trenching and installation of the duct. Manholes facilitate cable installation and provide access for future maintenance. In general, each manhole is approximately 8-feet wide by 14-feet long by 8-feet deep (some deviations are shown on the Project Plans based on site conditions). Manholes are located underground with only the manhole covers and frame visible at ground level. The manholes are typically spaced approximately 400 to 700 feet apart, but could be located closer together, depending upon the physical conditions along the route and location of the duct. Existing utilities will be avoided, or may need to be relocated if unavoidable to create space for the new manholes –this would be determined during detailed design). Eversource will work with the local municipal officials and utility owners regarding these relocations on a case-by-case basis.

If contaminated soils, contaminated groundwater, or other regulated materials are encountered during manhole excavation, the contaminated soils/groundwater/materials will be managed pursuant to the Utility-Related Abatement Measure ("URAM") provisions of the Massachusetts Contingency Plan ("MCP"). Eversource will also contract with a Licensed Site Professional ("LSP") as necessitated by conditions, consistent with the requirements of the MCP at 310 C.M.R. 40.0460 *et seq*.

Trench Excavation and Duct Installation:

The primary method for underground duct construction in roadways is open cut and backfill construction, this will also be the case for the paved bikeway. The trench will be approximately 4 feet wide and generally 4- to 6-feet deep, though on occasion it may need to be wider and/or deeper to avoid utilities or other obstacles. For installation of the cable within roadways, the width of the trench will be marked on the pavement, Dig-Safe will be contacted, the location of existing utilities marked, and the pavement saw cut. Saw cutting provides a clean break in the pavement and defines the parameters of the trench for asphalt removal and trench excavation.

Following saw cutting, the pavement will be removed with a backhoe/excavator and loaded into a dump truck and removed from the site. Pavement material will be handled separately from excavated soil and will be recycled at an asphalt batching plant. Subsequently, a backhoe/excavator will excavate the trench to the required depth. In some areas, excavation may be done by hand or vacuum excavation to avoid disturbing existing utility lines and/or service connections. Soil removal will likely be a "clean trench" or "live loading" method in which soil would be loaded directly into a dump truck and transported to an off-site facility for recycling, reuse, or disposal. Soil will not typically be stockpiled along the edge of the roadway or bikeway, thus reducing the size of the required work area and the potential for sedimentation or the creation of nuisance dust. Any rock encountered during excavation will be removed by mechanical means and brought to an off-site facility for recycling, reuse, or disposal.

If contaminated soils, contaminated groundwater, or other regulated materials are encountered during trenching for the duct banks, the contaminated soils/groundwater/materials will be managed pursuant to the URAM provisions of the MCP as described above under manhole excavation.

Once a section of the trench is prepared, each of the conduit sections will be assembled inside the trench or pre-assembled at the ground surface and then lowered into the trench. The area around the conduit sections will be filled and protected with high-strength thermal concrete (3,000 pounds per square inch ("psi") at 28 days cured) to create a duct bank around the conduits. The trench will then be backfilled with fluidized thermal backfill and the pavement will be temporarily patched.

The pace of trench construction may be slower in areas of higher existing utility density or where unanticipated obstructions exist (such as ledge or rock), where an increase in the trench depth is needed, or where a roadway experiences higher traffic volume. During trench excavation, any rock encountered in the trench will be removed and any ledge encountered will be cut and removed. Voids in the bottom of trench from rock or ledge removal will be backfilled with common fill and compacted to specification to meet the trench design depth. Following this work, if needed, the duct and manhole construction will proceed as described above.

Upon Project completion, the affected roads and the bikeway will be restored as required by the respective town's Department of Public Works.

3.3 Eversource Substation #933 off Stephens Lane in Falmouth

All work at the existing Eversource Substation #933 off Stephens Lane in Falmouth will be performed within the existing facility fence line. The point of interconnection for the new cable will be the location of the current point of interconnection for the existing #91 and #97 cables that serve Martha's Vineyard. The point of interconnection for the existing #91 and #97 cables will be relocated within the Stephens Lane substation. The duct for the new cable will enter the substation site in the southeastern portion of substation site.

3.4 Eastville Avenue Equipment Site in Oak Bluffs

Work on the Eversource-owned Eastville Avenue parcel in Oak Bluffs will consist of clearing approximately 22,000 sq ft of the parcel. A gravel driveway will follow the southern site boundary. A duct and manhole system will be installed to connect the cable to 8 pad-mounted transformers that will convert and distribute power from the new cable to the existing Martha's Vineyard electrical network.

3.5 Project Schedule

The Proponent proposes to initiate landside cable construction in Falmouth in the fall of 2022, followed submarine cable construction starting in autumn 2023. The two HDD conduits would be installed first, followed by hydroplow cable construction. The project will be constructed over a 2- to 3-year period with substantial completion by December 2024. The Eversource contract for the diesel generators on Martha's Vineyard expires in May 2025.

<u>Duct and Manhole Construction:</u>

Construction in Falmouth is planned to start in autumn 2022, and will take 6- to 9-months depending on the number of crews working at any given time. Duct and manhole construction on Eastville Avenue in Oak Bluffs is a short segment, approximately ¼-mile and is expected to take approximately 15 working days. Landside underground duct and manhole construction is scheduled to avoid the busy summer traffic period, with no work planned between Memorial Day and Labor Day. Landside restriction times will be finalized in conjunction with the municipalities and local and state agencies during the permitting process.

Submarine Cable Construction:

Horizontal direction drilling at both the Falmouth and Oak Bluffs landfall sites is expected to take approximately 30-days at each location. Work at the landfalls will be sequenced and timed to meet TOY requirements as may be developed by NHESP for shorebirds. HDD operations is presently scheduled to begin in autumn 2023

The cable to be used for the Project is manufactured on a project-specific basis based on design specifications. Due to submarine cable specifications and the world-wide demand for submarine cable, the cable for the Martha's Vineyard Reliability Project is being procured and final installation schedule will be determined based on delivery date. Submarine cable construction is expected to require 20- to 30-days of active cable construction, depending on weather and sea state. Cable installation is a continuous activity, and once construction starts it is expected to be completed in approximately 15-days with no weather delays. A pre-pass contingency of 10-days is also included in the 30-day window. The pre-pass is expected to be quicker as no cable is being laid during the pre-pass. Total construction windows for hydroplow is a 3- to 4-month timeframe which includes mobilization, hydroplow cable installation, hand jetting for HDD-to-hydroplow transition and demobilization. This construction window is presently scheduled for September to December 2023.

Construction will be sequenced and timed to meet TOY requirements developed by NHESP for shorebirds and to avoid the busy summer traffic period. These restriction times will be developed in conjunction with the municipalities and local and state agencies during the permitting process.

Substation #933 Improvements and the Eastville Avenue Equipment Yard:

Work at the Stephens Lane substation and Eastville Avenue Equipment site will be performed concurrently after the cable has been installed, and will take approximately 12- to 18-months at Substation #933 and 6- to 9-months at the Eastville Avenue equipment yard.

3.6 Cable Monitoring

Following construction of the buried submarine cable failure or damage from a ship, vessel, or environmental conditions are not anticipated. Following construction, the cable will be ne monitored by Supervisory Control and Data Acquisition ("SCADA") telemetry monitoring to monitor the following:

- In Falmouth - Total MW, Total MVAR, Amps/phase, neutral current, and breaker status
- In Oak Bluffs - Volts/phase, kW/phase, kVAR/phase, Amps/phase and neutral Amps (through a D/A recloser).

Eversource is planning to conduct non-intrusive surveys, such as a multi-beam survey, of the cable corridor every five years to confirm the cable has remained buried.

3.7 Construction Contingency

Eversource's priority will be to achieve sufficient burial depth of the offshore cables and to reduce or avoid the need for any cable protection wherever possible. However, there remains a risk that sufficient burial may be unsuccessful in areas where the seafloor is composed of consolidated materials, submerged boulders, or stiff clays that would hamper cable burial, making cable protection (e.g., a layer of rock or concrete "mattresses") necessary. A plow pre-pass is planned to investigate if there are any locations where the hydroplow is unable to penetrate to the design depth. Then a determination will be made if the route can be adjusted to avoid an impenetrable area, or if the area is unavoidable and cable protection will be necessary, with the goal of minimizing potential impacts. If needed, the methods for cable protection are:

- Rock placement;
- Concrete mattresses (alternately, for smaller-scale applications the mattresses may be filled with grout and/or sand, referred to as grout/sand bags);
- Half-shell pipes or similar products made from composite materials (e.g., Subsea Uraduct from Trelleborg Offshore) or cast iron with suitable corrosion protection.

Cable protection, of approximately 10 feet (3 m) wide, will be sufficient to protect the cable should these measures be needed. The ability to adjust the alignment within the surveyed cable corridor will aid in minimizing the need for alternative protection measures. Areas requiring cable protection, if any, will be the only locations where post-installation conditions at the seafloor will permanently differ from existing conditions.

4.0 EXISTING CONDITIONS

The Project area encompasses portions of the town of Falmouth on Cape Cod, a corridor across Vineyard Sound in the Towns of Falmouth, Tisbury and Oak Bluffs, and portions of the town of Oak Bluffs on Martha's Vineyard. Overall, the Project corridor for the underground cable routes in Falmouth and Oak Bluffs generally consist of developed areas that include residential and business uses with pockets of undeveloped, industrial, and institutional uses.

4.1 Coastal and Marine Resources

The following studies were conducted to assess the presence of resources in the project area.

4.1.1 Marine Surveys

To understand the substrate conditions along the proposed submarine cable route, the Proponent performed bathymetric and geophysical surveys, a towed underwater video survey, and sediment sampling in a 1,000-foot-wide survey corridor the autumn of 2021. Surveys along the survey corridor were performed by CR Environmental, Inc. Sediment sampling was conducted in accordance with the procedures outlined in the Project-specific Survey and Sampling Plan ("SAP") that was approved by MassDEP on August 19, 2021 (See **Attachment F – Agency Communications**). The survey plan was developed in close coordination with MBUAR through application for, and issuance of, a Special Use Permit ("SUP") (refer to **Attachment F – Agency Communications**).

They survey corridor was developed to characterize the Project area extending 500 feet on either side of the proposed submarine cable route (i.e., a 1,000-foot survey corridor). Survey components included: towed underwater video; multibeam bathymetry and backscatter; side scan sonar; sub-bottom sonar; magnetometry; and sediment sampling. Hydrographic and geophysical operations were conducted first to support selection of sampling locations.

The survey and sampling efforts were executed between August 19 and November 22, 2021. Remote sensing data acquisition was completed on September 14, 2021. The underwater video survey was conducted between September 29 and October 1, 2021. Sediment sampling was conducted between November 17 and 22, 2021. Towed underwater video transects and sediment sampling locations were cleared by marine archaeologists at Gray & Pape, Inc. prior to work commenced.

The survey corridor was sited using the 2015 CZM Hard Bottom/Complex Seafloor data to avoid, to the extent practicable, the areas mapped as hard bottom or complex seafloor (refer to **Attachment B, Figure 13**). In January 2022, after completing survey activities, an updated version of this data layer was published by CZM and the Massachusetts Ocean Management Plan ("OMP") (refer to **Attachment B, Figure 13**). Therefore, based on this revised map set, and described below, the hard bottom/complex seafloor areas are unavoidable.

The following sections summarize the results of the bathymetric, geophysical, and underwater video surveys. Detailed information on the methodologies and results are provided in **Attachment H - Marine Survey Report.**

Bathymetry Results

Results of the bathymetric survey are depicted on **Attachment H – Marine Survey Report, Figures 2 through 8.** Seafloor elevations in the survey corridor ranged from -2.2- to -31.0-meters. Bathymetric relief indicated the presence of sand ripples, sand waves, sandy gravel waves, boulder fields, and portions of utility crossings (refer to **Attachment H, Figure 3**). The bathymetric surface of much of the survey area was relatively flat, with an average slope (i.e., degree departure from horizontal) of less than 2.5 degrees. Data show sand waves and large angular boulders were responsible for the highest slope values (refer to **Attachment H, Figure 5**).

Backscatter Results

Multibeam backscatter data allowed for mapping of surficial seabed features and textures without the positional uncertainties associated with towed sonar systems. The backscatter mosaic (refer to **Attachment H, Figure 8**) suggests the presence of eelgrass in the northernmost portion of the corridor extends approximately 400 m (1,312 ft) from the shoreline. The northern sand wave field which was visible in the bathymetric data exhibited the lowest backscatter suggesting the substrates in this area are likely composed of sand without epibiota. The highest backscatter was mapped in the southern sand wave field, suggesting a coarse sand, gravel and coble matrix without acoustic scattering associated with epibiota. Other portions of the survey corridor, including those dominated by large cobbles and boulders, possessed intermediate backscatter values suggesting the stable seabed may be covered with epibiota which scatters and absorbs acoustic signals, masking the reflectance of the geologic substrate.

Towed Side Scan Sonar Results

Towed side scan sonar data allowed a more refined inspection of surficial bottom features than MBES backscatter layers albeit with a minor degradation of positional accuracy associated with the towed and 2-dimensional nature of the data. High resolution images and descriptions of digitized seabed features (contacts) are presented in **Attachment H – Marine Survey Report, Appendix A** and the locations of the contacts are depicted on the sonar mosaic provided as **Attachment H, Figure 9**. Seventy-four digitized contacts were described in **Attachment H, Table 2**. Data was provided to Gray & Pape to aid their archaeological review of data.

Sub-Bottom Profiling Results

Each of the sub-bottom files was carefully inspected and the acoustic basement was interpreted and digitized. Examples of sub-bottom profiles over different substrate types from north to south along the proposed cable route have been annotated and depicted on **Attachment H, Figure 10 and Figures 11A-C.** These files were combined to create map of depth to acoustic basement (minimum sediment thickness) as provided as **Attachment H, Figure 12**. While sonar penetration was highly variable due to scattering by surface materials and sub-surface strata, the map conservatively depicts the interpreted sediment thickness. Sediment thickness estimates ranged from 0.6- to 5.6-m (2- to 18-feet) with a mean thickness of 1.8 m (6 ft). Sonar penetration was generally greatest in seabed dominated by sand, gravelly sand and pebble/granule substrates. Penetration was lower in coarser sediments (cobble/boulder) and in many areas of high topographic relief. Sonar penetration did not appear to be depth dependent and reached its minima in shallow waters dominated by *Crepidula* reef.

<u>Magnetometer Results</u>

Magnetometer results were provided to Gray & Pape to support their marine archaeological review. Refer to **Section 4.1.4** below for a summary of the archaeological analysis completed by Gray & Pape. These results are being provided to MHC and MBUAR concurrent with this EENF/PEIR submission.

The quality of the magnetometer data was adversely affected by the presence of electric utilities. Although some of these interferences caused magnetic interferences with magnitudes beyond the sensor's ability to record, CR's processing approach allowed accurate mapping and description of magnetic anomalies associated with ferrous materials and magnetic fields surrounding utilities.

CR digitized 174 magnetic anomalies (refer to **Attachment H, Figure 13, Appendix B, and Table 3**). An electric cable was mapped in the northern 3,300 m (10,827 ft) of the survey corridor, and data suggest an electric cable extending approximately 1,900 m (6,234 ft) from the southern limit of the survey corridor. In addition, a series of linearly arranged anomalies were observed over 850 m (2,789 ft) of the central boulder fields and may indicate a cable. Many of the large mapped individual anomalies are likely associated with electric cables.

Table 4 in Attachment H lists approximately co-located magnetic anomalies and corresponding side scan Contacts. Six of the anomalies were associated with the wreck in the southernmost portion of the survey corridor in Vineyard Haven Harbor. Eleven of the anomalies were co-located with fishing gear (e.g., conch traps). Two of the anomalies were co-located with boulders and one anomaly as co-located with unidentifiable debris.

<u>Underwater Video Survey Results</u>

The Coastal and Marine Ecological Classification Standard ("CMECS"), a hierarchical arrangement of biogeographic and aquatic setting units and components (water column, geoform, substrate and biotic), was used to describe ecosystem features along the cable corridor in Vineyard Sound (FGDC, 2012). Also provided are observation of any Massachusetts CZM SSUs such as, eelgrass beds, hard/complex seafloor, or commercially important species. In total forty-one (41) underwater video transects were conducted.

Table 6 in Attachment H provides the bottom substrate (depicted in **Attachment H, Figure 14** in for the dominant CMECS substrate classifications) and biotic components (depicted in **Attachment H, Figure 16** for the dominant CMECS biotic classifications) observed at each video transect. A list of flora and fauna observed by transects along with summary statistics of species observations by transect and frequency of observation across all transects and the subset with gravel pavement are provided in **Attachment H, Table 7. Attachment H, Appendix C** provides representative screen captures of bottom substrate and biota along each transect.

<u>CMECS Classification from Video Footage</u>

Visually estimated surficial substrates were primarily of geologic origin and consisted of coarse unconsolidated mineral substrate Grable Pavement dominated by Boulder, Cobble or Pebble/Granule bottom at 19 of the 41 transects, and fine unconsolidated substrates of Sand Waves, Sand Ripples, Gravelly Sand, or Sandy Gravel at 12 transects. Biogenic substrate of *Crepidula* Reef was observed at seven transects in Vineyard Haven Harbor and three transects in outer Falmouth Harbor. At the shallower inshore northern ends of the transects in outer Falmouth Harbor, the substrate transitioned to Gravelly Sand and Sandy Gravel (refer to **Attachment H, Figure 14**).

Biotic Groups and Sub-classes associated with the corridor are shown on **Attachment H, Figure 16**, and listed in **Section 3.6.1 of Attachment H**. Representative screen captures and classification of these aggregated CMECS units are provided in **Attachment H, Appendix D**. The screen capture water depths are relative to MLLW, and coordinates are provided in **Attachment H, Table 8** and their location plotted on **Attachment H, Figure 16. Table 4.1 - CMECS Biotic Classification and Special, Sensitive or Unique Areas** below provides additional information on the co-occurring elements and associated taxa for these CMECS units.

<u>Special Sensitive and Unique Species and Habitats:</u>

"Hard/complex seafloor is seabed characterized singly or by any combination of hard seafloor, complex seafloor, artificial reefs, biogenic reefs, or shipwrecks and obstructions. For the 2021 Ocean Plan, hard/complex seafloor was mapped using updated surficial seafloor sediment data and the same complex seafloor data used in the 2015 ocean plan. The locations of artificial reefs, biogenic reefs, and shipwrecks and obstructions to navigation were added to the SSU resource area" (EEA, 2021).

As mentioned previously, the 2021 survey activities were planned using the 2015 Ocean Management Plan Layer for hard/complex seafloor. Subsequent to the survey activities, the 2021 update was published which increased the areas identified as mapped hard bottom/complex seafloor. **Attachment B, Figure 13** depicts the survey corridor and mapped hard bottom/complex seafloor at the time of the survey design, and the 2021 mapped hard/complex seafloor with the CMEC substate classifications developed by CR Environmental. As such, the hard bottom/complex seafloor is unavoidable.

<u>Hard/Complex Seafloor:</u>

Nine of the twelve transects classified as Diverse Colonizers on Gravel Pavement of cobbles or boulders were in the vicinity of areas mapped by OMP as hard/complex seafloor. Four had boulder dominated substrate and the remaining cobble. The three additional cobble dominated areas with Diverse Colonizers at transects VS-4, VS-13 and VS-14 are potential SSUs.

Areas of coverage by Pebble/Granule Gravel Pavement were present at seven transects in the northern half of the cable corridor. These areas are not mapped as hard/complex seafloor by the OMP. Unlike Gravel Pavement of cobbles or boulders, these pebble-granule dominated areas had little relief, and low rugosity, slope, and slope of slope values indicating a lack of complexity (**Attachment H, Figures 4, 5, and 7).**

Biogenic *Crepidula* Reef was present at the northern and southern nearshore ends of the cable corridor in water depths from 15- to 23-ft below MLLW. Although a form of biogenic reef, these areas were not mapped by OMP as hard/complex seafloor, refer to **Attachment B, Figure 17 – Dominant CMECS Substrate Classification** and **Attachment H, Figure 18.** The *Crepidula* Reef seafloor has low relief as shown on the bathymetric figures for rugosity, slope, ruggedness, and slope of slope (**Attachment H, Figures 4, 5, 6, and 7**). *Crepidula* Reef to the south at the entrance of Vineyard Haven Harbor (transects CS-4 to CS-7) was covered by the co-occurring invasive *Codium fragile*. The northern *Crepidula* Reef had moderate bushy bryozoan and sparce benthic macroalga. Due to the presence of invasive algal cover, low relief and low density, these areas should not be mapped as SSUs.

The cable corridor crosses L'Hommedieu Shoal off outer Falmouth Harbor and a small sand shoal outside the mouth of Vineyard Haven Harbor. The sand waves and ripples are mapped as complex seafloor by the OMP. These shoals are coincident with areas mapped during the 2021 bathymetric survey of the 5th Cable corridor (**Figure 2 in Attachment H**) and assessments of the bathymetric rugosity, slope, and slope on slope (**Figures 4, 5 and 7, respectively in Attachment H**). Review of the NOAA DEM with CR's 2021 bathymetric data for L'Hommedieu Shoal indicated that the sand wave/ridge peaks are essentially permanent features, however the northern and southern tails of the waves/ridges may be more mobile.

Anthropogenic Cable geoforms were observed on nine underwater video transects, and the positions plotted to see if they aligned with any of the geophysical data. Video captures of extant cable(s) closely matched the positions of cable signatures observed in bathymetric data, and generally agreed with cable signatures in the side scan sonar records. Plates of screen captures are provided in **Attachment H, Appendix C**.

Sediment Sampling Results

Based on review of the geophysical data, sediment sampling was conducted at thirty-one (31) locations. Stations were located mid-corridor and spaced approximately 1,000 ft (305 m) apart along the length of the corridor roughly coincident with the planned underwater video transects. Vibracore and grab sampling was conducted over a 4-day period, November 17 through 22, 2021.

A plot of the 12 vibracore and 19 grab sampling stations along the 5th Cable corridor is provided in **Attachment H, Figure 15**. Sampling coordinates for grabs and cores, water depth, and core penetration and recovery are provided in **Attachment H, Table 5**. At six grab sampling stations (15, and 17 through 21) only a few cobbles, sponges and tunicates were collected, and no sediment was available for grain size analysis. Vibracore recoveries ranged from 0.7 to 6 feet.

Grain size analysis was conducted on each recovered sample, and the results are provided as **Table 4.2 - Sediment Grain Size Analysis Results** below. The grain size indicates that the vast majority of the stations contained primarily sand and gravel, with a low percent fines. In accordance with 314 CMR 9.07(2)(a) no chemical testing was required where the sediment contains less 10% fines. However, three stations (Stations 29, 30, and 31) were identified as having greater than 10% fines. Therefore, chemical testing was required for those three samples for the parameters identified in 314 CMR 9.07(2)(b)(6). Sediment was analyzed by R.I. Analytical Laboratories and those results are summarized in **Tables 4.2, 4.3 - Sediment Chemical Analysis Results,** and **4.4 - Sediment VOC Analysis Results** below. Included in the sediment chemical analysis are the S-1/GW-1 concentration thresholds (except for copper, for which the RCS-1 threshold concentration was used). Based on review of these results, no threshold concentrations were exceeded, with the majority of results below the detectable limit.

Due to the short hold time for Volatile Organic Carbons ("VOC") testing was conducted on all collected samples. The results for Stations 29, 30, and 31 are summarized below in **Table 4.4**. Based on review of the results, the only VOC identified as being greater than the detectable limit was methylene chloride for stations 29 and 30. However, in review of the remaining VOC results, two additional samples also exceeded the detectable limit for methylene chloride (Stations 4 and 6).

Based on the results of the project-specific SAP and sediment analyses, MassDEP provided written concurrence indicating that no further chemical testing was required (refer to **Attachment F – Agency Communications**).

Table 4.1 CMECS Biotic Classification and Special, Sensitive or Unique Areas

Video Transect ID	Minimum Measured Water Depths (MLLW m)	Minimum Measured Water Depths (MLLW ft)	CMECS Substrate Component	CMECS Biotic Class	CMECS Biotic Sub-class	CMECS Biotic Group	CMECS Biotic Community	Co-occurring Elements	Associated Taxa
VS-1B	10.2	33	Pebble/Granule in matrix Sandy Gravel	Faunal Bed	Attached Fauna	Attached Sea Urchins	Attached Sparse[3] *Arbacia punctulata*	**Sparse -** Tunicates (*Didemnum*); Benthic Macroalgae Crustose Algae (*Lithothamion*)	Mobile Arthopods - **Trace** (*Pagurus*)
VS-2	9.9	32	Gravel Pavement (Pebble/Granule)	Faunal Bed	Attached Fauna	Attached Sea Urchins	Attached Sparse *Arbacia punctulata*	**Trace** - Tunicates (*Didemnum*), (*Amaroucium*); **Moderate** Benthic Macroalgae Crustose Algae (*Lithothamion*)	Mobile Arthopods **Trace** (*Limulus*) Fish - **Trace** (*Prionotus*)
VS-3	14.9	49	Gravel Pavement (Pebble/Granule)	Faunal Bed	Attached Fauna	Attached Sea Urchins	Attached Sparse *Arbacia punctulata*	**Sparse -** Bryozoans (*Schizoporella*) (*Bugula*); Tunicates (*Didemnum*); Coral (*Astrangia*); Mollusks (*Mytilus*) (*Anachis*); and **Trace** Benthic Macroalgae Crustose Algae (*Lithothamion*)	Mobile Arthopods - **Trace** (*Pagurus*) Fish - **Trace** (Juvenile *Centropritis*)
VS-4	18.5	61	Gravel Pavement (Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate** - Sponges (*Cliona*) and Tunicates (*Amaroucium*); **Trace** - Bryozoan (*Schizoporella*) and Mollusks (*Mytilus*)	Fish - **Moderate** (Juvenile *Centropritis*), **Trace** (Adult *Centropritis*)
VS-5	10.1	33	Sand (Waves)	Faunal Bed	Soft Sediment Fauna				Fish - **Trace** (*Prionotus*) and Mollusks (*Loligo*), Mobile Crustacea (*Ovalipes*)
VS-6	9.1	30	Sand (Waves) Pebble/Granule in troughs	Faunal Bed	Soft Sediment Fauna / Attached Fauna (in troughs)		Attached Sparse (*Didemnum*), Trace (*Amaroucium*) in troughs	**Trace** - Mollusks (*Mytilus*) in troughs; Hydroid (*Hydrozoa*)	Mobile Arthopods - **Trace** (*Pagurus*)
VS-7	11.1	36	Gravel Pavement (Pebble/Granule)	Faunal Bed	Attached Fauna	Attached Sea Urchins	Attached Sparse *Arbacia punctulata*	**Sparse -** Tunicate (*Amaroucium*); Benthic Macroalgae Crustose Algae (*Lithothamion*)	Fish - **Trace** (Juvenile *Centropritis*)
VS-8	13.1	43	Gravel Pavement (Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Sparse -** Tunicates (*Amaroucium/Didendum*), Sponges (*Cliona*), Bryozoan (*Schizoparella*), Echinoderms (*Arbacia*), and Mollusks (*Mytilis*) (*Anachis*)	Fish - **Trace** (Juvenile *Centropritis*)
VS-9	19.2	63	Gravel Pavement (**Cobble**; Pebble/Granule)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate** - Sponges (*Cliona*) and Mollusks (*Mytilis*); **Sparse**- Tunicates (*Amaroucium/Didemnum*) and Echinoderms (*Arbacia*)**; Trace** - Coral (*Astrangia*)	Fish - **Trace** (Adult *Centropritis*)
VS-10	19.8	65	Gravel Pavement **(Pebble/Granule;** Cobble)	Faunal Bed	Attached Fauna	Attached Sea Urchins	Attached Sparse *Arbacia punctulata*	**Sparse -** Mollusks (Mytilis) (*Anachis*) **Trace -** Coral (*Astrangia*)	Fish - **Trace** (Juvenile *Centropritis*)

Video Transect ID	Minimum Measured Water Depths (MLLW m)	Minimum Measured Water Depths (MLLW ft)	CMECS Substrate Component	CMECS Biotic Class	CMECS Biotic Sub-class	CMECS Biotic Group	CMECS Biotic Community	Co-occurring Elements	Associated Taxa
VS-11	21.4	70	Gravel Pavement (Pebble/Granule)	Faunal Bed	Attached Fauna	Attached Sea Urchins	Attached Moderate *Arbacia punctulata*	**Moderate** - Tunicates (*Didemnum*); **Sparse** - Mollusks (*Mytilis*), and **Trace** - Bryozoan (*Schizoporella*)	Mobile Arthopods - **Trace** (Pagurus) Fish - **Sparse** (Juvenile Centropritis)
VS-12	19.6	64	Gravel Pavement (Pebble/Granule)	Faunal Bed	Attached Fauna	Attached Sea Urchins	Attached Moderate *Arbacia punctulata*	**Sparse** - Bryozoan (*Schizoporella*); Sponge (*Halichondria*); Mollusks (*Mytilus*) (*Anachis*) and **Trace** Coral (*Astrangia*); Sponge (Cliona),	Fish - **Trace** (Juvenile *Centropritis*)
VS-13	19.6	64	Gravel Pavement (Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate** - Tunicates (*Amaroucium*), Echinoderms (Arbacia); **Sparse** - Sponges (*Cliona*), (*Halichondria*), Bryozoan (*Schizoporella*) Mollusks (*Ananchis*); **Trace** - Coral (*Astrangia*) and Tunicate (*Didemnum*)	Mobile Arthopods - **Trace** (Pagurus); Fish - **Sparse** (Juvenile *Centropritis*) **Trace** (Spaeroides)
VS-14	20.6	68	Gravel Pavement (Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate** - Tunicates (*Amaroucium*), Sponge (*Halichondria*) and Mollusks (*Mytilis*); **Sparse** - Sponge (*Cliona*), Bryozoan (*Schizoporella*) and Echinoderms (*Arbacia*); **Trace** - Coral (*Astrangia*)	Mobile Arthopods - **Trace** (*Pagurus*) (Pycnogonida) Fish - **Moderate** (Juvenile *Centropritis*) **Trace** (*Spaeroides*) (*Stenotomus)*
VS-15	22.0	72	Gravel Pavement (Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate -** Tunicates (*Amaroucium*), (*Cliona*), and (*Halichondria*); **Sparse** - Bryozoan (*Schizoporella*), Coral (*Astrangia*), Mollusks (*Anachis*) and Echinoderms (*Arbacia*); **Trace -** Tunicates (*Didemnum*)	Fish - **Dense** (Juvenile *Centropritis*) **Trace** (Adult *Centropritis*); Mobile Arthropods - Trace (Pycnogonida)
VS-16	26.1	86	Gravel Pavement (**Boulder;** Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate** - Tunicates (*Amaroucium*), Sponge (*Cliona*); **Sparse -** Bryozoan (*Schizoporella*), Coral (*Astrangia*), Tunicates (*Didemnum*), Mollusks (*Anachis*); **Trace** - Echinoderms (*Arbacia*)	Mobile Arthopods - **Trace** (Pagurus) (Pycnogonida); Fish - **Dense** (Juvenile *Centropritis*), **Trace** (*Tautoga) (Tautogolabrus*)
VS-17	23.2	76	Gravel Pavement (Boulder)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate -** Tunicates *(Amaroucium*), Sponge (*Cliona)*, and Coral (*Astrangia*) ; **Sparse** - Bryozoan (*Schizoporella*), Mollusks (*Anachis*) and Echinoderms (*Arbacia*)	Fish - **Dense** (Juvenile *Centropritis*), **Trace** (*Tautoga);* Mobile Arthropods - *(Pycnogonida)*
VS-18	21.1	69	Gravel Pavement (**Boulder;** Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate** - Tunicates (*Amaroucium*) and Sponge (*Cliona*); **Sparse-** Sponge (*Halichondria*), Bryozoan (*Schizoporella*), Mollusks (*Anachis)* and Coral (*Astrangia*); **Trace** Tunicates (*Didemnum*)	Fish - **Dense** (Juvenile *Centropritis*); **Trace** (Adult *Centropritis*), (*Spaeroides), (Tautogolabrus*); Mobile Arthropods - **Trace** (Pycnogonida)

Video Transect ID	Minimum Measured Water Depths (MLLW m)	Minimum Measured Water Depths (MLLW ft)	CMECS Substrate Component	CMECS Biotic Class	CMECS Biotic Sub-class	CMECS Biotic Group	CMECS Biotic Community	Co-occurring Elements	Associated Taxa
VS-19	19.3	63	Gravel Pavement (**Boulder;** Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate -** Tunicates (*Amaroucium*) and Sponge (*Halichondria*) ; **Sparse** - Bryozoan (*Schizoporella*), Sponge (*Cliona*), Coral (*Astrangia*), Mollusks (Anachis) and Echinoderms (*Arbacia*); **Trace -** Tunicates (*Didemnum*)	Fish - **Moderate** (Juvenile *Centropritis*), **Trace** (*Tautoga*); Mobile Arthropods - Trace (Pycnogonida)
VS-20	20.9	69	Gravel Pavement (Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate** - Tunicates (*Amaroucium*) and (*Didemnum*); Sponge (*Cliona*), Coral (*Astrangia*), Mollusks (*Anachis*) and Echinoderms (*Arbacia*); **Trace -** Sponge (*Halichondria*), Bryozoan (*Schizoporella*)	Mobile Arthropods **Trace** (Limulus) (Pycnogonida); Fish - **Sparse** (Juvenile *Centropritis*), **Trace** (*Tautoga*)
VS-21	22.0	72	Gravel Pavement (Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate -**Tunicates (*Amaroucium/Didendum*); **Sparse** - Bryozoan (*Schizoporella*), Sponge (*Halichondria*) and Mollusks (*Anachis*); **Trace** - Sponges (*Cliona*), and Mollusks (*Mytilis*)	Mobile Arthopods - **Trace** (*Pagurus*) Fish - **Moderate** (Juvenile *Centropritis*)
VS-22	15.2	50	Sand (Waves); Pebble/Granule in troughs	Faunal Bed	Soft Sediment Fauna; Attached Fauna (in troughs)			**Trace-** Hydroid (*Hydrozoa*); Tunicate (*Didemnum*) in Sand Wave troughs	Fish - **Trace** (Juvenile *Centropritis)* (Adult *Centropritis*); Mobile Arthopods - (*Pagurus*) (*Ovalipes*)
VS-23	11.5	38	Sand (Waves); Pebble/Granule in troughs	Faunal Bed	Soft Sediment Fauna; Attached Fauna (in troughs)			**Sparse** Attached (*Crepidula*); **Trace** - Hydroid (*Hydrozoa*); Benthic Macroalgae Branching Red Algae (*Codium*) (*Sargassum*) in Sand Wave troughs	Fish **- Sparse** (*Prionotus*), **Trace** (Juvenile *Centropritis*); Mobile Arthopods - (*Limulus*), (*Pagurus*) (*Loligo*)
VS-24	13.6	45	Sand (Ripples); Shell Rubble in troughs	Faunal Bed	Soft Sediment Fauna; Attached Fauna in troughs			**Sparse** -Attached Tunicate (*Amoroucium*); Mollusks (Anachis); Benthic Macroalage Tube Worms in Sand Wave troughs	Fish - **Trace** (*Prionotus*) and (Juvenile *Centropristis*); Mobile Arthopods - (Pagurus)
VS-25	10.5	34	Sand (Ripples)	Faunal Bed	Inferred Fauna			**Sparse** fecal casts**, Trace** Polychaete (*Chaetopterus*)	Fish - **Trace** (Juvenile *Centropritis*) (*Prionotus)*; Mobile Arthopods (*Limulus*) (*Pagarus*)
VS-26	7.1	23	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Moderat**e - Bryozoan (*Bugula*); **Trace** - Leathery leafy algal bed (*Codium*)(*Sargassum*) (*Porphyra*)	Fish - **Sparse** (Juvenile *Centropritis*), **Trace** *Spaeroides*); Mobile Arthopods - **Trace** (*Limulus*)
VS-27	5.9	19	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/*Codium* Communities	**Moderat**e - Bryozoan (*Bugula*) and Benthic Macroalgae (*Porphyra*)	Mobile Arthopods - **Trace** (Limulus); Fish - **Trace** (Juvenile *Centropritis*)
VS-28	5.7	19	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/*Codium* Communities	**Moderate** - Bryozoan (*Bugula*) and Benthic Macroalgae (*Porphyra*) and Branching Red Algae	Fish - **Trace** (Juvenile *Centropritis*) (*Spaeroides*)

Video Transect ID	Minimum Measured Water Depths (MLLW m)	Minimum Measured Water Depths (MLLW ft)	CMECS Substrate Component	CMECS Biotic Class	CMECS Biotic Sub-class	CMECS Biotic Group	CMECS Biotic Community	Co-occurring Elements	Associated Taxa
CS-1	5.6	18	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Moderate** - Bryozoan (*Bugula*); **Sparse** Benthic Macroalgae (*Porphyra*) and Branching Red Algae	Fish - **Trace** (Juvenile *Centropritis*)
CS-2	6.0	20	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Moderate** Bryozoan (*Bugula*); **Sparse** Benthic Macroalgae (*Porphyra*) and Branching Red Algae	Fish - **Trace** (Juvenile *Centropritis*)
CS-3	5.5	18	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Moderate** Bryozoan (*Bugula*); **Sparse** Benthic Macroalgae (*Porphyra*) and Branching Red Algae	Fish - **Trace** (Juvenile *Centropritis*)
CS-4	5.0	16	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/*Codium* Communities	**Moderate** Bryozoan (*Bugula*); Benthic Macroalage **Sparse** (*Porphyra*) and **Trace** Branching Red Algae	Fish - **Trace** (Juvenile *Centropritis*)
CS-5	4.5	15	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/*Codium* Communities	**Moderate** Bryozoan (*Bugula*); Benthic Macroalage **Sparse** (*Porphyra*) and **Trace** Branching Red Algae	Fish - **Trace** (Juvenile *Centropritis*)
CS-6	5.8	19	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/*Codium* Communities	**Moderate** Bryozoan (*Bugula*); Benthic Macroalage **Sparse** (*Porphyra*) and **Trace** Branching Red Algae	Mobile Arthopods - **Trace** (Pagurus); Fish - (Juvenile *Centropritis*)
CS-7	5.8	19	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/*Codium* Communities	**Moderate** Bryozoan (*Bugula*); Benthic Macroalage **Sparse** (*Porphyra*) and **Trace** Branching Red Algae	Fish - **Trace** (Juvenile *Centropritis*)
EG-1	3.9	13	Gravelly Sand	Aquatic Vegetation Bed	Aquatic Vascular Vegetation	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	**Moderate** (Zostera marina) Bryozoan (Bugula) and **Sparse** Benthic Macroalgae (*Porphyra*) (*Sargassum*) and Red Branching Algae)	Mobile Arthopods - **Trace** (*Limulus*); Fish - (*Tautoga*)
	5.1	17	Crepidula Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Trace - Echinoderms (Arbacia); Sparse** Benthic Macroalgae (*Porphyra) (Codium) and* Branching Red Algae	
EG-2C	4.0	13	Gravelly Sand	Aquatic Vegetation Bed	Aquatic Vascular Vegetation	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	**Sparse** (Zostera marina) with Gastropod (Bittium); Moderate Bryozoan (Bugula) and **Sparse** Benthic Macroalgae (Branching Red Algae) and **Trace** (*Sargassum*)	Fish - **Sparse** (Juvenile *Centropritis*)
	5.1	17	Crepidula Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Sparse** Benthic Macroalgae (*Porphyra) and (*Branching Red Algae*); **Trace** (Ulva)*	
EG-3	4.4	14	Sandy Gravel	Aquatic Vegetation Bed	Aquatic Vascular Vegetation	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	**Moderate** (*Zostera marina*) and Bryozoan (Bugula), Sparse Benthic Macroalgae (Porphyra) and (Branching Red Algae) **Trace** (*Sargassum*)	Fish - **Trace** (Juvenile *Centropritis*)

Video Transect ID	Minimum Measured Water Depths (MLLW m)	Minimum Measured Water Depths (MLLW ft)	CMECS Substrate Component	CMECS Biotic Class	CMECS Biotic Sub-class	CMECS Biotic Group	CMECS Biotic Community	Co-occurring Elements	Associated Taxa
	5.1	17	Crepidula Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Moderate** Bryozoan (*Bugula*), and **Sparse** Benthic Macroalgae (*Porphyra*) and (Branching Red Algae)	
EG-4	4.2	14	Sandy Gravel	Aquatic Vegetation Bed	Aquatic Vascular Vegetation	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	**Moderate** (Zostera marina) with Gastropd (Bittium) and Bryozoan (*Bugula*); Sparse Benthic Macroalgae (*Porphyra*) and (Branching Red Algae) Trace (*Sargassum*)	Fish - **Trace** (Juvenile *Centropritis*)
	5.1	17	Crepidula Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Sparse** Bryozoan (*Bugula*); Benthic Macroalgae (Porphyra) and (Branching Red Algae)	
EG-5	4.1	13	Sandy Gravel	Aquatic Vegetation Bed	Aquatic Vascular Vegetation	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	**Moderate** (*Zostera marina*) with Gastropod (*Bittium*); Bryozoan (*Bugula*); **Trace** (*Chaetopterus*); **Sparse** Benthic Macroalgae (*Porphyra*), (*Ulva*) and (Branching Red Algae)	
	5.1	17	Crepidula Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Moderate** Bryozoan (*Bugula*); **Sparse** Benthic Macroalgae (*Porphyra)* and (Branching Red Algae)	Fish - **Trace** (Juvenile *Centropritis*)
EG-6	3.9	13	Sandy Gravel	Aquatic Vegetation Bed	Aquatic Vascular Vegetation	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	**Moderate** (*Zostera marina*) with Gastropod (*Bittium*); Bryozoan (*Bugula*) and **Sparse** Benthic Macroalgae (*Porphyra*) and (Branching Red Algae)	Fish - **Trace** (Juvenile *Centropritis*)
	5.1	17	Crepidula Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Sparse** Bryozoan (*Bugula*); Benthic Macroalgae (*Porphyra*), (Branching Red Algae) and **Trace** *(Sargassum)*	Fish - **Trace** (*Tautoga*)

Table 4.2 Sediment Grain Size Analysis Results

	Gravel	Sand	Silt	Percent by weight passing sieve							
Station ID	%	%	%	No. 4	No. 10	No. 20	No. 40	No. 60	No. 140	No. 200	Requires Chemical Testing (greater than 10% Fines)
1	29.4	69.27	1.33	70.6	51.34	37.48	21.90	8.83	7.42	1.33	No
2	15.02	83.04	1.94	84.98	73.13	57.03	35.20	15.60	9.76	1.94	No
3	18.2	80.81	0.99	81.80	69.59	62.03	53.23	33.27	5.62	0.99	No
4	30.5	68.89	0.61	69.50	59.00	52.64	41.01	13.95	11.08	0.61	No
5	48.63	50.66	0.71	51.37	45.47	39.28	29.83	7.03	6.95	0.71	No
6	63.13	36.28	0.59	36.87	33.05	28.64	18.96	3.30	3.19	0.59	No
7	0.03	99.91	0.06	99.97	99.04	93.67	11.42	0.35	0.33	0.06	No
8	24.69	75.17	0.14	75.30	71.25	68.70	51.25	5.43	5.20	0.14	No
9	55.39	43.98	0.63	44.61	33.05	25.74	11.15	3.13	3.07	0.63	No
10	58.25	40.83	0.92	41.75	32.54	23.49	9.59	3.17	3.12	0.92	No
11	60.98	38.16	0.86	39.02	29.53	19.8	8.23	3.30	3.22	0.86	No
12	57.69	41.37	0.94	42.31	34.81	25.59	9.79	2.92	2.88	0.94	No
13	48.83	50.59	0.58	51.17	45.51	26.49	5.17	1.48	1.45	0.58	No
14	67.94	31.12	0.94	32.05	25.43	15.46	6.68	2.46	2.40	0.94	No
15	-	-	-	-	-	-	-	-	-	-	-
16	86.45	12.07	0.48	13.55	6.61	4.17	2.01	1.10	1.08	0.48	No
17	-	-	-	-	-	-	-	-	-	-	-
18	-	-	-	-	-	-	-	-	-	-	-
19	-	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-	-

Station ID	Gravel %	Sand %	Silt %	Percent by weight passing sieve							Requires Chemical Testing (greater than 10% Fines)
				No. 4	No. 10	No. 20	No. 40	No. 60	No. 140	No. 200	
21	-	-	-	-	-	-	-	-	-	-	-
22	44.52	54.85	0.63	55.48	50.28	40.32	22.42	6.34	5.87	0.63	No
23	47.51	51.9	0.5	52.49	48.73	41.53	27.61	6.62	6.45	0.50	No
24	0.04	99.9	0.06	99.96	98.92	50.77	2.40	0.23	0.22	0.06	No
25	-	-	-	-	-	-	-	-	-	-	-
26	1.44	98.45	0.11	98.56	94.39	76.09	20.68	4.36	0.35	0.11	No
27	1.29	97.47	1.24	98.71	92.82	81.21	69.15	19.20	2.25	1.24	No
28	0.35	97	2.65	99.65	98.27	91.34	78.06	48.07	5.830	2.65	No
29	20.97	60.43	**18.6**	79.03	63.14	53.54	49.18	46.18	30.45	18.60	**Yes***
30	7.11	72.21	**20.68**	92.89	77.04	62.25	55.28	51.07	37.71	20.68	**Yes***
31	10.34	66.52	**23.14**	89.66	75.72	64.26	58.79	55.41	49.72	23.14	**Yes***

"-"denotes a station where sample collection was attempted at a minimum of three attempts with no sediment recovery
"*" denotes the samples containing greater than 10% fines and therefore chemical testing was required

Table 4.3 Sediment Chemical Analysis Results

Parameter	Method	S-1/GW-1	Units	R.I. Analytical Detectable Limit	Sample 1 (STA-31B)	Sample 2 (VC-30A)	Sample 3 (VC-29B)
Percent Moisture	SM2540G 18-21ed		%	-	37.2	77.5	45.4
Percent Solid	SM2540G 18-21ed		%	-	62.8	62.5	54.6
Total Organic Carbon			mg/Kg	-	2,920	4,540	3,520
Metals, Total	**SW-846 6010C**						
Arsenic		20	mg/Kg	4.0	<4.0	4.3	5.0
Cadmium		70	mg/Kg	0.4	0.5	0.7	0.7
Chromium		100	mg/Kg	2.4	14.0	17.0	18.0
Copper		1000***	mg/Kg	4.0	4.6	7.1	7.8
Lead		200	mg/Kg	3.2	<3.2	9.5	12.0
Mercury		20	mg/Kg	0.2	<0.16	<0.16	<0.16
Nickel		600	mg/Kg	1.6	6.6	8.1	8.7
Zinc		1000	mg/Kg	3.2	19.0	35.0	39.0
Metals, TCLP*	**SW-846 6010C**						
Arsenic		100	mg/l	1	<1	<1	<1
Cadmium		20	mg/l	0.05	<0.05	<0.05	<0.05
Chromium		100	mg/l	0.5	<0.5	<0.5	<0.5
Lead		100	mg/l	0.5	<0.5	<0.5	<0.5
Mercury		4	mg/l	0.0005	<0.0005	<0.0005	<0.0005

Parameter	Method	S-1/GW-1	Units	R.I. Analytical Detectable Limit	Sample 1 (STA-31B)	Sample 2 (VC-30A)	Sample 3 (VC-29B)
PAH	**SW-846 8270D**			**			**
Acenaphthene		4	mg/Kg	0.11	<0.11	<0.11	<0.12
Acenaphthylene		1	mg/Kg	0.11	<0.11	<0.11	<0.12
Anthracene		1000	mg/Kg	0.11	<0.11	<0.11	<0.12
Benz(a)anthracene		7	mg/Kg	0.11	<0.11	<0.11	<0.12
Benzo(a)pyrene		2	mg/Kg	0.11	<0.11	<0.11	<0.12
Benzo(b)fluoranthene		7	mg/Kg	0.11	<0.11	<0.11	<0.12
Benzo(ghi)perylene		1000	mg/Kg	0.11	<0.11	<0.11	<0.12
Benzo(k)fluoranthene		70	mg/Kg	0.11	<0.11	<0.11	<0.12
Chrysene		70	mg/Kg	0.11	<0.11	<0.11	<0.12
Dibenz(a,h)anthracene		0.7	mg/Kg	0.11	<0.11	<0.11	<0.12
Fluoranthene		1000	mg/Kg	0.11	<0.11	<0.11	<0.12
Fluorene		1000	mg/Kg	0.11	<0.11	<0.11	<0.12
Indeno(1,2,3-cd)pyrene		7	mg/Kg	0.11	<0.11	<0.11	<0.12
2-Methylnaphthalene		0.7	mg/Kg	0.11	<0.11	<0.11	<0.12
Naphthalene		4	mg/Kg	0.11	<0.11	<0.11	<0.12
Phenanthrene		10	mg/Kg	0.11	<0.11	<0.11	<0.12
Pyrene		1000	mg/Kg	0.11	<0.11	<0.11	<0.12
PCBs	**SW-846 8082A**						
Aroclor-1016			mg/Kg	0.1	<0.1	<0.1	<0.1

Parameter	Method	S-1/GW-1	Units	R.I. Analytical Detectable Limit	Sample 1 (STA-31B)	Sample 2 (VC-30A)	Sample 3 (VC-29B)
Aroclor-1221			mg/Kg	0.1	<0.1	<0.1	<0.1
Aroclor-1232			mg/Kg	0.1	<0.1	<0.1	<0.1
Aroclor-1242			mg/Kg	0.1	<0.1	<0.1	<0.1
Aroclor-1248			mg/Kg	0.1	<0.1	<0.1	<0.1
Aroclor-1254			mg/Kg	0.1	<0.1	<0.1	<0.1
Aroclor-1260			mg/Kg	0.1	<0.1	<0.1	<0.1

*Per 314 CMR 9.07(6) - TCLP testing is only required to be performed when sediment is to be managed in an upland environment. No sediments will be removed from Vineyard Sound.

** The Reporting Limit for Sample VC-29B is 0.12 mg/kg. R.I. Analytical PAH Reporting Limit is a volume-based extraction which includes the % solids in the analysis. Both values contribute to the final reporting limit; resulting in the different reporting limits.

*** No S-1/GW-1 threshold concentration was provided. We have input the RCS-1 value in place.

Table 4.4 Sediment VOC Analysis Results

Parameter	Method	Units	Sample 1 (STA-31B)		Sample 2 (VC-30A)		Sample 3 (VC-29B)	
Volatile Organic Compounds	SW-846 8260		Sample Specific Detectable Limit	Result	Sample Specific Detectable Limit	Result	Sample Specific Detectable Limit	Result
Benzene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Bromobenzene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Bromochloromethane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Bromodichloromethane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Bromoform		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Bromomethane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
n-Butylbenzene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Sec-butylbenzene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
tert-Butylbenzene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Carbon Tetrachloride		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Chlorobenzene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Chloroethane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Chloroform		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Chloromethane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
2-Chlorotoluene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
4-Chlorotoluene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Dibromochloromethane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
1,2-Dibromoethane(EDB)		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Dibromoethane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
1,2-Dichlorobenzene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35

Parameter	Method	Units	Sample 1 (STA-31B)		Sample 2 (VC-30A)		Sample 3 (VC-29B)	
Volatile Organic Compounds	SW-846 8260		Sample Specific Detectable Limit	Result	Sample Specific Detectable Limit	Result	Sample Specific Detectable Limit	Result
1,3-Dichlorobenzene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
1,4-Dichlorobenzene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Dichlorodifluoromethane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
1, 1-Dichloroethane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
1,2-Dichloroethane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
1,1-Dichloroethene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
cis-1 ,2-Dichloroethene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
trans-1 ,2-Dichloroethylene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
1,2-Dichloropropane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
1,3-Dichloropropane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
2,2-Dichloropropane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
1, 1-Dichloropropene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Ethyl benzene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Hexachlorobutadiene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Isopropyl benzene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
p-Isopropyl toluene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Methylene Chloride		mg/kg	0.77	<0.77	0.64	**11**	0.88	**12**
n-Propyl benzene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Naphthalene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Styrene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
1, I, 1,2-Tetrachloroethane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35

Parameter	Method	Units	Sample 1 (STA-31B)		Sample 2 (VC-30A)		Sample 3 (VC-29B)	
Volatile Organic Compounds	SW-846 8260		Sample Specific Detectable Limit	Result	Sample Specific Detectable Limit	Result	Sample Specific Detectable Limit	Result
1, 1,2,2-Tetrachloroethane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Tetrachloroethene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Toluene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
1,2,3-Trichlorobenzene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
1,2,4-Trichlorobenzene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
I, 1, I-Trichloroethane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
1, 1,2-Trichloroethane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Trichloroethene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Trichlorofluoromethane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
1,2,3-Trichloropropane		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
I ,2,4-Trimethylbenzene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
1,3 ,5-Trimethylbenzene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
Vinyl Chloride		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
a-Xylene		mg/kg	0.31	<0.31	0.25	<0.25	0.35	<0.35
m,p-Xylene		mg/kg	0.61	<.61	0.51	<0.51	0.71	<0.71
MTBE		mg/kg	0.31	<.31	0.28	<0.28	0.35	<0.35
2-Butanone(MEK)		mg/kg	3.1	<3.1	1.4	<1.4	3.5	3.5

1. * Both sample VC-30A and VC-29B were above the sample specific detectable limit for methylene chloride

4.1.2 Essential Fish Habitat

An Essential Fish Habitat ("EFH") Assessment was performed by RPS Group Inc. ("RPS"), presented in the report dated April 2022, found in **Attachment I – Essential Fish Habitat Report.** The report reviewed the habitat type, identified the EFH designated species, and evaluated potential effects to EFH.

Habitat identification was largely based on the marine survey performed by CR Environmental and summarized above in **Section 4.1.1**. The sediment in the Project footprint is patchy, with some areas dominated by sand, but many areas consist of coarser substrates, such as sandy gravel and gravelly sand, with cobble and boulder. Sand ripples, sand waves, sandy gravel waves, boulder fields, portions of surveyed area comprised of coarse sand and gravel, and cobble and boulder areas covered with epibionts were all found within the cable corridor. Sparse to moderate eelgrass was observed growing in gravelly sand and sandy gravel, in water depths less than 17 feet and extending just over 1,300 feet from the Falmouth shoreline.

Shellfish Habitat Suitability:

The proposed cable route crosses through habitat that is suitable for bay scallop (*Argopecten irradians*) near the landfall area in Falmouth, MA. It crosses through habitat that is suitable for both bay scallop and quahog (*Mercenaria mercenaria*) near the southern landing area on Martha's Vineyard. Shellfish Suitability and Designated Growing Areas are depicted on **Attachment B, Figure 18 – Shellfish Suitability and Designated Growing Areas**. It is important to note that these classifications only indicate potentially suitable habitat, not absolute presence in an area.

Fin Fish Habitat Suitability:

Twenty-eight fish species were identified as having EFH designated in the project area. These were further designated by life cycle stage. Habitat Area of Particular Concern ("HAPC") was identified for two species; Atlantic Cod and Summer Flounder. The mapped HAPC for Atlantic Cod overlaps the majority of the northern and southern portions of the cable route. HAPC for Summer Flounder is not mapped, but consists of areas of all native species of macroalgae, seagrasses, and freshwater and tidal macrophytes in any size bed, as well as loose aggregations, for adult and juvenile summer flounder. In addition to fish and invertebrate species with designated EFH, seventeen NOAA-trust resources (anadromous fish, shellfish, crustaceans, or their habitats) overlap the Project Area.

4.1.3 State Listed Species

The majority of the submarine cable route is mapped Priority Habitat ("PH") 2158 and Estimated Habitat ("EH") 1366. Based on initial consultation with the Natural Heritage and Endangered Species Program ("NHESP") this area is designated as habitat for the state-listed species: Common Tern, Roseate Tern, and Least Tern (see **Attachment F – Agency Communications** - NHESP Tracking No.: 21-40597). Following MEPA review, Eversource will engage NHESP by filing a Streamlined Wetlands Protection Act ("WPA") – Massachusetts Endangered Species Act ("MESA") Notice of Intent for review under the MESA. It is our understanding that the water surface provides feeding habitat for these two shore bird species. Consistent with the previous NSTAR cable project the Proponent intends to schedule landside work proximate to the beaches around time of year restrictions for these birds to avoid the need for a Conservation and Management Permit.

4.1.4 Marine Archaeology

A marine archeological resources assessment was conducted for the Marta's Vineyard Reliability Project, Vineyard Sound, Massachusetts. See **Attachment J – Marine Archaeology Report**. The Project area is within the study corridor across Vineyard Sound, with landfall locations in Falmouth, Massachusetts on Cape Cod and on Martha's Vineyard, in Oak Bluffs, Massachusetts. This proposed cable study corridor to evaluate marine archaeological resources is approximately 10.1 kilometers (33,145 feet) by 182 meters (600 ft) in width.

The purpose of the marine archaeological resources assessment was to identify archaeological resources in the study corridor and to assess the archaeological sensitivity of the study corridor to assist Eversource with the final siting of this new submarine cable. A literature review identified one previously recorded Pre-Contact, Native American archaeological site within 1.0 kilometers (0.62 miles) of the study corridor in both Falmouth and Oak Bluffs onshore. That literature review also identified ten onshore previously recorded Post-Contact, historical-period archaeological sites within 1.0 kilometer of both landfall locations. A review of extant shipwrecks and obstructions database revealed that one charted shipwreck is known within 1.0 kilometer of the study corridor within Vineyard Sound.

Additional review of high-resolution geophysical data collected by CR Environmental, Inc. within the study corridor revealed one previously unidentified shipwreck (SW-1) within 724 meters (2,375 ft) of landfall at Oak Bluffs on Martha's Vineyard, as well as multiple locations where shallowly buried, submerged landforms remain preserved offshore. All buried, submerged landforms were mapped, as well as the location of the newly detected shipwreck.

Overall, the substantial portions of the Eversource 5th Submarine Cable Project Area were found to be somewhat eroded, however the area is considered sensitive for Pre-Contact Native American period sites. Gray & Pape recommends that no bottom-disturbing activity should occur within 50 meters (165 ft) of the shipwreck near landfall at Oak Bluffs. All direct and indirect impacts should remain outside of this recommended avoidance zone. If avoidance of this shipwreck is not feasible, Gray & Pape recommends additional archaeological investigation to determine the source of the target. Additional investigations may include redefined HRG survey, diver/remotely-operated vehicle verification, and additional archival research. The purpose of those additional investigations would be to assess the integrity, significance, and eligibility of the resource for listing in the NRHP. All additional work would be conducted in consultation with appropriate consulting parties. At this time, the Project Proponent anticipates that both possible shipwreck sites will be avoided.

No direct evidence of Pre-Contract human habitation was identified. While seismic reflectors indicating a marine transgression ravinement surface can be seen, albeit discontinuously, across the Project area, geophysical data do indicate the presence of potentially preserved submerged, ancient landforms that are of a potentially archaeological sensitive nature to be present. SBP data indicated sub-seafloor features, including likely channels, lakes, and marshy environments that are of potential cultural significance. All of those features have could have encompassed diverse ecological resource attractive to past human populations, including freshwater access and access to both terrestrial and aquatic species capable of supporting subsistence activities. These features are also consistent with known archaeological trans onshore and therefore represent an extension of the known terrestrial archaeological record onto the continental shelf.

4.1.5 Coastal Wetland Resource Areas

Coastal wetland resource areas were assessed at each of the cable landing sites, including the paved Surf Drive Beach parking lot in Falmouth and the unpaved portion of Eastville Avenue in Oak Bluffs.

4.1.5.1 Falmouth

The jurisdictional wetland resource areas identified on or adjacent to the landfall site and underground cable route in the town of Falmouth include:

- Coastal Beach;
- Coastal Dune;
- Land Subject to Tidal Action; and
- Land Subject to Coastal Storm Flowage.

The proposed landfall site in Falmouth is located within an existing parking lot associated with a public beach at the intersection of Surf Drive and Shore Street. The landing site is proximate to Coastal Beach and Coastal Dune. Once onshore, the cable route will be installed in the ROW of Surf Drive, Mill Road, the Shining Sea Bikeway, Jones Road and Stephens Lane, ending at the electric substation #933 at the end of Stephens Lane. See **Attachment B, Figure 15 – Falmouth Landing Site Photographs** for photographs of the Falmouth landing site.

<u>Coastal Beach:</u> The Coastal Beach located south of the cable landing site is moderately sloped and is comprised predominately of sand of varying sizes and mixed cobble. The beach is bound seaward by the waters of Vineyard Sound, regulated as Land Under the Ocean. The landward edge of the beach is bound by a concrete seawall on the eastern portion of the parking area, and in the center of the parking area by a Coastal Dune seaward of a wooden fence adjacent to the paved parking area.

The Coastal Beach along Surf Drive is moderately sloped and is comprised predominantly of sand of varying sizes and mixed cobble. The beach is bound seaward by the waters of Vineyard Sound, regulated as Land Under the Ocean. The landward edge of the beach is bound by the Coastal Dune.

<u>Coastal Dune</u>: A relatively narrow strip of Coastal Dune is present south of the parking lot. The seaward face and crest of the dune is comprised of sand. The dune hosts a steep sloping backslope which is bordered by a wooden fence acting as a seawall adjacent to the paved parking lot. Vegetation observed on the dune included American beach grass (*Ammophila brevilgulata).*

The Coastal Dune along the southern edge of Surf Drive has a moderate to steep slope on the seaward face and is comprised predominantly of sand of varying sizes. The backslope of the dune is more moderate, and ends several feet from the edge of the paved travel way of Surf Drive. Vegetation observed on the dune included rugosa rose (*Rosa rugosa*), American beach grass, eastern red cedar (*Juniperus viriginia*), northern bayberry (*Myrica pensylvanica*), creeping juniper (*Juniperus horizontalis*), and soft rush (*Juncus effusus*).

Land Subject to Coastal Storm Flowage: LSCSF in the project area is shown by the mapped FEMA flood zones in **Attachment B, Figure 19 – FEMA Q3 Flood Zones (Falmouth)**. This includes the entirety of the Surf Drive Beach parking lot, which is paved with impervious asphalt. A stormwater system is present in the parking lot, as stormwater drains were observed in the area. Land use surrounding the parking lot is primarily residential, but also includes multiple hotels.

4.1.5.2 Oak Bluffs

The proposed landing site for the 5th Cable on Martha's Vineyard is located at the small unpaved parking lot / unpaved roadway extension of Eastville Avenue, proximate to the intersection of Eastville Avenue and Beach Road. The following resource areas are present in the vicinity of the landing site: Coastal Beach, Coastal Dune and LSCSF. An area of wooded upland, as well as the unpaved parking lot / roadway extends to the intersection of Eastville Avenue and Beach Street. Once onshore, the cable route will continue along Eastville Avenue to the Eversource owned parcel. Along Eastville Avenue there are several residential properties, Martha's Vineyard Hospital parking lots, and undeveloped wooded areas.

The jurisdictional wetland resource areas identified adjacent to the landing site and cable route to the substation includes:

- Land Under the Ocean;
- Coastal Beach;
- Coastal Dune;
- Land Subject to Tidal Action, and
- Land Subject to Coastal Storm Flowage.

Epsilon did not identify any Bordering Vegetated Wetlands ("BVWs") nor any other wetland resource areas within the Study Area. See **Attachment B, Figure 16 – Oak Bluffs Landing Site Photographs** for photographs of the Oak Bluffs landing site.

Coastal Beach: The Coastal Beach located along the northern portion of the landing site is moderately sloped and is comprised predominately of mixed cobble at varying sizes, sand, and pebble. The beach is bound seaward by the waters of Vineyard Haven Harbor, regulated as Land Under the Ocean. The landward edge of the beach is bound by the Coastal Dune and the unpaved parking area. Work will occur in the paved parking area that is within the 100-ft buffer for coastal beach.

<u>Coastal Dune</u>: The Coastal Dune located near the landing site is a relatively narrow strip of dune. The seaward face and crest of the dune is comprised of mixed cobble at varying sizes and transitions to a sand dune landward of the dune crest. The dune hosts a shallow sloping backslope which transitions into a vegetated upland area. Vegetation observed on the dune included rugosa rose, American beach grass, and eastern red cedar. Work will occur in the paved parking area that is within the 100-ft buffer for coastal dune.

Inland from the Coastal Dune, the vegetation supported woody shrubs such as groundsel bush (*Baccharis halimifolia*) and vines such as poison ivy (*Toxicodendron radicans*).

<u>Land Subject to Coastal Storm Flowage:</u> LSCSF in the project area is shown by the mapped FEMA flood zones in **Attachment B, Figure 20 – FEMA Q3 Flood Zones (Oak Bluffs)**. This includes the entirety of the unpaved portion of Eastville Avenue at the cable landing site. Land use surrounding the unpaved portion of Eastville Avenue is primarily residential, but also includes the Martha's Vineyard Hospital on the southern side of Eastville Avenue.

4.2 Terrestrial Cable Routes and Landfall Sites

Inland wetland resource areas were assessed along each of the terrestrial cable routes. In Falmouth this constitutes from the outer edge of the Surf Drive Beach parking lot in Falmouth down Surf Drive, Mill Road, the Shining Sea Bikeway, Jones Road, and Stephen's Lane, including the Eversource Substation #933 at the end of Stephen's Lane. In Oak Bluffs, this constitutes the paved portion of Eastville Avenue and the new equipment site parcel on Eastville Avenue.

4.2.1 Wetland Resource Areas

4.2.1.1 Falmouth

Jurisdictional inland wetland resource areas identified on or adjacent to the underground cable route in Falmouth includes:

- Bordering Vegetated Wetlands, and
- Land Subject to Coastal Storm Flowage.

<u>Bordering Vegetated Wetland</u>: A Bordering Vegetated Wetland is located north of an existing unpaved parking area at the intersection of Shore Drive and Mill Road. The BVW is present up to the edge of Salt Pond, and continues along the eastern margin of Salt Pond, west of Mill Road. The BVW is relatively narrow and is presumably constricted by the presents of Mill Road. A residential area is present east of Mill Road. Work will occur in the paved parking area that is within the 100-ft buffer for BVW.

<u>Land Subject to Coastal Storm Flowage:</u> LSCSF in the project area is shown by the mapped FEMA flood zones in **Attachment B, Figure 19**. This includes the entirety of Surf Drive and Mill Road. These areas are paved with impervious asphalt. Storm drains were not observed in Surf Drive or Mill Road. A man-made culvert was observed on Surf Drive that cut through the Coastal Dune to allow water flow from the north side of Surf Drive to the coastal beach area. A man-made drainage ditch was observed on the north and west sides of the parking area at the intersection of Surf Drive and Mill Road. This ditch connected to Salt Pond. Land use surrounding Surf Drive and Mill Road is primarily residential, but also includes multiple hotels and a conservation area north of Salt Pond.

4.2.1.2 Oak Bluffs

Jurisdictional inland wetland resource areas identified on or adjacent to the underground cable route in Oak Bluffs includes:

- Land Subject to Coastal Storm Flowage.

Land Subject to Coastal Storm Flowage: LSCSF in the project area is shown by the mapped FEMA flood zones in **Attachment B, Figure 20**. The paved portion of Eastville Avenue connected to the landing site, a portion of the undeveloped Eastville Avenue equipment parcel, and the paved portion of Eastville Avenue that borders it. While the FEMA maps show LSCSF covering the majority of the equipment site parcel, a site-specific survey was conducted to further refine the location of LSCSF, which is defined as the edge of el. 10. The mapped location of el. 10 as determined from this survey is shown on **Attachment N – Project Plans** and covers only the southeastern half of the parcel**.** Storm drains were not observed in Eastville Avenue. Land use surrounding Eastville Avenue is primarily residential, but also includes the Martha's Vineyard Hospital on the southern side of Eastville Avenue.

4.2.2 State Listed Species

There are no mapped Estimated Habitat or Priority Habitat overlapping or adjacent to the landside cable rote in Falmouth and Oak Bluffs.

4.2.3 Historic and Archaeological Resources

Portions of the upland route are located within areas included in the Inventory of Historic and Archaeological Assets of the Commonwealth or are listed in the State and/or National Registers of Historic Places (**Attachment B, Figures 7 & 9**). Work is proposed in previously disturbed areas such as, the existing substation, public roads, parking lot, and the Shining Sea Bikeway (a former railroad spur to Woods Hole).

4.2.4 Eversource Substation #933 in Falmouth

There will be no significant work required for the Project at the Stephens Lane substation. All work will be performed within the existing facility fence line. There are no wetland resource areas or areas mapped as Priority and/or Estimated Habitat for state-listed species on or proximate to the substation.

4.2.5 New Equipment Site in Oak Bluffs

The Eversource owned parcel on Eastville Avenue is currently a forested undeveloped parcel. While FEMA maps show the majority of this parcel is in the flood plain (defined as el. 10 feet NAVD 88), a site-specific survey showed that only the southeastern half of the site is below el. 10 feet NAVD 88, i.e., within the floodplain. No other wetland resources areas are present on the parcel.

5.0 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

This section addresses environmental considerations and potential impacts associated with the Project.

Installing the submarine cable work require work in the following wetland resource areas subject to protection under the Massachusetts Wetland Protection Act ("WPA"):

- Land Under the Ocean;
- Coastal Beach;
- Coastal Dune;
- Land Containing Shellfish; and
- Land Subject to Coastal Storm Flowage.

Work is also proposed within mapped Estimated and Priority Habitats. Though not a WPA resource area, the estimated and priority habitats are reviewed as part of the WPA review process as most resource areas are considered important to the interest of wildlife habitat.

Coastal wetland resource areas and potential impacts are summarized on the ENF Form and are shown on the Project Route Map Set in **Attachment C**. Pursuant to the Massachusetts WPA, the Proponent will file Notices of Intent with the Falmouth, Tisbury, and Oak Bluffs Conservation Commissions. Those filings will more thoroughly address the Project's potential wetlands impacts in terms of the protected interests of storm damage prevention, flood control, prevention of pollution, protection of land containing shellfish, protection of fisheries and protection of wildlife habitat. Because the Project consists of installing buried submarine and underground terrestrial cable, it will not have any permanent or significant impacts to these protected interests, nor will it have any temporary impacts to storm damage prevention or flood control. Project construction will have limited and unavoidable impacts to resource areas, but these will be temporary and minimized with appropriate mitigation measures.

The summary of wetland resource area impacts is presented in **Table 5.1** below.

No work is proposed on Coastal Beach or Coastal Dune, however the HDD entry pits and associated work areas are located within the 100-foot buffer zone to beach and dune in Falmouth and Oak Bluffs. Additionally, Land Containing Shellfish ("LCS") is coincident with Land Under the Ocean, thus the impacts to LCS are not quantified separately to avoid double counting.

Table 5.1 Anticipated Impacts to Land Under the Ocean and LSCSF

Activity		LUO Temporary Impacts	LUO Permanent Impacts	LSCSF Temporary Impacts	LSCSF Permanent Impacts
Falmouth					
Duct & manhole system		0	0	14,415 s.f.	0
HDD entry pit & work area		0	0	5,960 s.f.	0
Submarine Cable[1]		137,265 s.f.	0	0	0
Oak Bluffs					
Duct & manhole system		0	0	2,900 s.f.	0
HDD entry pit & work area		0	0	3,240 s.f.	0
Submarine Cable[1]		150,770 s.f.	0	0	0
Equipment Yard	*Land Clearing*	0	0	0	*22,000 s.f.*
	Impervious cover[2,3]	0	0	0	*200 s.f.*
	Gravel driveway[3]	0	0	0	*2,775 s.f.*
Tisbury					
Hydroplow[1]		82,150 s.f.	0	0	0
Totals					
Subtotal (s.f.)		370,185 s.f.	0 s.f.	26,515 s.f.	22,000 s.f.
Subtotal (Acre)		8.5 Ac.	0 Ac.	0.61 Ac.	0.51 Ac.
Total Wetland Impact Temporary and Permanent = 9.62 ac.					

1. Includes hand jetting at the HDD – Plow transition and anchor contact
2. Concrete equipment pads
3. Impervious cover and gravel driveway areas are within the area of cleared land

Following is a discussion of construction elements and anticipated impacts, followed by measures proposed to avoid impacts and measures to minimize unavoidable impacts.

5.1 Submarine Cable

The submarine cable construction proposed for the Project involves two distinct construction techniques:

- Horizontal Direction Drilling – described above in **Section 3.2.1**, and
- Hydroplow (or jetplow) – described above in **Section 3.2.2**.

Potential impacts associated with those methods are discussed below.

5.1.1 Horizontal Direction Drilling

Landside Construction:

In Falmouth, the HDD entry pit and associated construction laydown and workspace (near the intersection of Surf Drive and Shore Street) is located in the Surf Drive Beach Parking Lot. Siting the HDD entry pit and workspace are in the parking lot, this avoids work in Coastal Beach and Coastal Dune. The entry pit, workspace, transition manhole, and duct involves work in the 100-buffer to Coastal Beach and within LSCSF. The work area will be restored to pre-construction grades and stabilized (re-paved) to match pre-construction conditions resulting in no alteration of buffer zone or LSCSF, as compared to existing conditions.

In Oak Bluffs, the HDD entry pit and associated construction laydown and workspace is proposed in the ROW for Eastville Avenue north of Beach Road. This section of Eastville Avenue is unpaved. Siting the HDD entry pit and workspace in the ROW avoids work in Coastal Beach and Coastal Dune. The entry pit, workspace, and transition manhole and duct involves work in the 100-buffer to Coastal Beach and within LSCSF. The work area will be restored to pre-construction grades and stabilized will gravel to match pre-construction conditions resulting in no alteration to buffer zone or LSCSF, as compared to existing conditions.

In-Water Work:

HDD operations are described above in **Section 3.2.1**. Two HDD exit points (also referred to as punch out locations) from the two landside entry points are prosed approximately 2,500 feet offshore from the Surf Drive Beach in Falmouth waters and 2,500 feet offshore from the end of Eastville Avenue in Oak Bluffs waters. When the HDD exits the seafloor it will physically disturb the bottom. Further disturbance at both exit holes will occur when the cable is buried by diver assisted hand jetting for the HDD to hydroplow transition. This area of impact is accounted for (quantified) in the hydroplow impacts summarized in **Table 5.1** above.

During HDD operations, planned releases of drilling fluid may occur. Planned releases involve the amount of fluid that is released during HDD punch-out. The amount of planned release can be calculated pre-punch out, and methods employed to contain and remove the fluids. The main concern with releases of drilling fluids (bentonite clay) is smothering nearby sessile organisms. Unplanned releases of drill fluids during construction also may occur. Unplanned releases involve drilling fluids escaping through geologic fractures in the bore hole. A contingency plan, i.e., an Inadvertent Release Plan is developed to address unplanned releases. The area affected by planned and unplanned releases cannot be quantified, however measures are presented to mitigate such releases.

5.1.2 Hydroplow Cable Laying

Burying the submarine cable below the seafloor by hydroplow will be the source of the largest benthic habitat disturbance caused by this Project. As described above in **Section 3.2.2** above, the hydroplow is towed on the seafloor and consists of two skids that allow it to slide across the bottom and the articulated blade (i.e., the stinger) injects water into the sediment, greatly reducing the force needed to pull the plow forward. The water jetting also fluidizes the sediment as the plow is towed forward, cable unspools from the barge, down through the stinger, and the cable's weight allows it to sink through the fluidized sediment and is buried as the sediment returns to its pre-jetted condition. For this project, a pre-pass survey of the hydroplow will be performed to detect any sub-surface obstructions throughout the corridor as patches of hard bottom or boulders could limit burial in some areas.

The only points of bottom contact during hydroplow installation are the skids and blade. The most direct effect to the seafloor is caused by the hydraulic action of the stinger. Water jetting repositions a portion of surface and subsurface sediment, epifaunal and infaunal organisms, and flora immediately in front of the plow into the water column. The greatest indirect disturbances come from the effects of suspended sediments, which can affect water and sediment quality, and mobile and sessile organisms as suspended sediments settle over nearby undisturbed habitat types. The skids can also cause furrows in the sediment as they slide along the bottom. Given the coarse characteristics of the sediment along the cable corridor impacts are expected to be confined to a narrow path composed of 3- to 5-foot-wide trough caused by the stinger with furrows along the outer path margins. The total path is anticipated to be 12 feet wide along the cable alignment.[3] Area of temporary alteration of LOU from hydroplow construction is anticipated to be approximately 335,220 s.f. (7.7 acres) and that is a component of the total LUO included in **Table 5.1** above.

Hydroplow construction may contribute to temporary water quality impacts during construction activities through increase suspended sediments. The sediment across the Sound in this corridor is patchy, with some areas dominated by sand, but many areas consist of coarser substrates, such as sandy gravel and gravelly sand, with cobble and boulder. Due to the heavier grain sizes, it is expected that little material will be suspended and transported from the direct work area. Modeling of sediment for installation of cables during hydroplow activities in the waters of Horseshoe Shoal, near Barnstable Harbor, MA showed that deposition occurs close to the cable installation route at concentrations of 100 mg/L for 2- to 3-hour duration. Approximately 30% of the fluidized sediment, commensurate with previous studies, was assumed to be vertically distributed into the water column, with the remainder staying in the limits of the plowed trough. Sediment types observed in Horseshoe Shoal are similar to those in the Project area, indicating that suspended solids will likely be short-lived and localized during installation of the 5th submarine cable. Total suspended sediment ("TSS") levels will be below the threshold for adverse effects on fish (1,000 mg/l for most fish, and 200 mg/l for sensitive fish/invertebrate life stages) and benthic communities (390 mg/l). In conclusion, TSS plumes during cable installation are expected to be small and temporary; fish in the project area will be able to swim through the plume or avoid it by swimming away, with slow moving or sessile invertebrates not expected to be harmed because of the short duration and limited concentration of suspended sediment. See **Attachment I – Essential Fish Habitat Report** for more details.

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3 Post-construction surveys for the #75 Cable, installed from Falmouth to Tisbury in 2014, documented a 10-foot wide hydroplow path across the Sound with similar bottom substrate. (Epsilon Associates, Inc. and CR Environmental, Inc. 2015. Martha's Vineyard hybrid submarine cable post construction marine survey report.)

Anchors may be necessary to advance the surface barge and to keep it on track especially with the strong currents present in this area of Vineyard Sound. The anchor spread contact includes the area of the anchor and incidental chain (or cable) contact during placement and removal. Because the chain (or cable) is in tension no contact is expected during cable installation operations. We estimate that anchor sets (4 anchors per set) would be approximately 2,500 square feet per set, and with the cable corridor approximately 28,000 feet long a total of 14 anchor sets are anticipated. With a total of 14 anchor sets, this would yield approximately 35,000 sf (0.8 ac.) of temporary anchor contact –approximately 11,670 s.f. in each town. That is a component of the total temporary LOU alteration presented in **Table 5.1** above.

In addition to the seafloor disturbance from cable installation, other impacts associated with the submarine cable include increased vessel traffic and noise during cable installation, and electromagnetic fields ("EMFs") from the cable once in service. Mobile benthic fish and invertebrates may be displaced temporarily by noise, vessel traffic, and installation activities but will likely be able to escape harm by avoiding the Project Area during construction. There will only be a slight increase in risk from the few vessels added to baseline activity of the numerous existing vessels and ferries in the Project area. Any associated increase in risk of injury or mortality due to noise related to vessels will be too small to be detected or measured, and species in the Project area are acclimated to these levels, therefore effects to fishes are insignificant. Cable EMFs are likely less intense than the geomagnetic field of Earth and it is generally assumed that marine animals will not be able to detect these EMFs unless directly over the center of a cable. The installed cable will be encased in a protective sheathing and buried approximately 6- to 10 feet below the sediment and is expected to have low EMF detection levels. With no known studies to date of negative effects of EMF on marine organisms and the protection of the cable with sheathing and sediment, no EMF impacts are expected from this project.

5.2 Duct and Manhole System

The duct and manhole system is the underground conduit used to convey the cable from the Substation #933 at the end of Stephen's Lane to the Falmouth landfall site on Cape Cod; the conduit system along Eastville Avenue in Oak Bluffs on Martha's Vineyard. The construction of this system is described above in **Section 3.2.3**.

In Falmouth a new duct and manhole system will be installed in Stephen's Lane, Jones Road, the Shining Sea Bikeway and Mill Rod to the intersection with Surf Drive to accommodate the new fifth Martha's Vineyard Cable. This totals approximately 2.32 miles. The section of this system installed in Mill Road is located LSCSF. See **Attachment B, Figure 19**. A 100-foot buffer zone extending from BVW and bank associated with Salt Pond extends on to portions of Mill Road.

There is an existing duct on Surf Drive in which the fifth cable will be installed. This avoids excavation duct and manhole construction in Surf Drive, all of which is regulated and LSCSF and portions are Barrier Beach.

In Oak Bluffs the new duct and manhole system is approximately ¼-mile long and will be installed in the ROW of Eastville Avenue. This new conduit is located in LSCSF (see **Attachment B, Figure 20**) and the 100-foot buffer zone to Coastal Beach and Coastal Dune.

The new duct and manhole systems in Falmouth and Oak Bluffs as described in **Section 3.2.3** will involve, excavation, sol handling, and site restoration in LSCSSF and 100-foot buffer zones. The LSCSF impacts area is quantified in **Table 5.1** above.

5.3 Eversource Substation #933 and Eastville Ave Equipment Yard

All work at the existing Eversource Substation #933 off Stephens Lane in Falmouth will be performed within the existing facility fence line, with no impacts to regulated areas. The point of interconnection for the new cable will be the location of the current point of interconnection for the existing #91 and #97 cables that serve Martha's Vineyard. The point of interconnection for the existing #91 and #97 cables will be relocated within the Stephens Lane substation. The duct for the new cable will enter the substation site in the southeastern portion of substation site.

Work on the Eversource-owned Eastville Avenue parcel in Oak Bluffs will consist of clearing approximately 22,000 sq ft of the parcel. A gravel driveway will follow the southern site boundary. A duct and manhole system will be installed to connect the cable to six pad-mounted transformers that will convert and distribute power from the new cable to the existing Martha's Vineyard electrical network. This work will require tree removal plus clearing and grubbing, excavation to install new underground duct, establishing approximately 200 sf of impervious cover for the six concrete equipment pads, grading a gravel driveway. LSCSF alteration to construct this new equipment yard is presented in **Table 5.1** above.

5.4 Dredging

Dredging is defined in314 CMR 9.02 as,

> *"The removal or repositioning of sediment or other material from below the mean high tide line for coastal waters and below the high water mark for inland waters. Dredging shall not include activities in bordering or isolated vegetated wetlands."*

The Project does not include traditional dredging activities, i.e., excavation and removal of sediment from below mean high tide. Repositioning of sediment will result during hydroplow construction to achieve sufficient cable burial depth, thus dredging as defined in 314 CMR 9.02 is required. The stinger will reposition sediment in a trough 3- to 5-feet wide and bury the cable 6- to 10-feet below the seabed for approximately 27,935 feet across Vineyard Sound. Given these parameters hydroplow installation will reposition between 18,625 cy to 51,730 cy of sediment. The two hydroplow skids are expected to reposition sediment along two furrows each approximately 1-foot wide and up to 1-foot deep along the 27,935 foot long hydroplow path yielding up 2,070 cy of sediment to be positioned by the skips. In total hydroplow construction is expected to reposition between 20,695 cy to 53,800 cy of sediment depending on final burial depth and trough width.

As described above in **Section 4.1.1** sediment in the study corridor is very coarse-grained material and free of anthropogenic contamination, therefore no adverse water quality impacts are anticipated except for short-term and localized turbidity along the hydroplow alignment.

5.5 Cable Protection

The cable will be buried with naturally occurring sediments refilling the plowed corridor, therefore no cable protection is proposed or anticipated. A contingency plan for cable burial is provide in the **Section 3.7**, in the event cable protection is required. A pre-pass is proposed along the designed cable alignment to conform the hydroplow can install the cable to the design depths. Should the pre-pass identify any areas where the cable depth cannot be achieved and cable protection is required, that will be communicated with the appropriate regulatory agencies, e.g., Conservation Commissions, MassDEP and USACE for proper permit modifications, if required.

5.6 Shoreline Change

The Project is not expected to effect shoreline change. However, to evaluate any potential vulnerability of the underground ducts and manholes to shoreline change the Proponent evaluated the Massachusetts CZM Shoreline Change Project maps to understand the short- and long-term shoreline trends. The shoreline mapping is presented in **Attachment B, Figures 21A – Shoreline Change (Short-Term) Falmouth Landing Site and 21B – Shoreline Change (Long-Term) Falmouth Landing Site** for Falmouth and **Attachment B, Figures 22A – Shoreline Change (Short-Term) Oak Bluffs Landing Site and 22B – Shoreline Change (Long-Term) Oak Bluffs Landing Site** for Oak Bluffs. Review of those figures shows that immediately fronting the landfall sites in both Falmouth and Oak Bluffs the shoreline is relatively stable, with the rate of change being reported as -0.1 to 0.1 meters per year ("m/yr"). The shorelines adjacent to the landfalls, within approximately 250 either side of the landfall, similar stability is observed:

- Falmouth Short-term rates -0.1 to 0.1 m/yr
- Falmouth Long-term rates -0.1 to 0.1 m/yr
- Oak Bluffs Short-term rates -0.1 to 0.1 m/yr
- Oak Bluffs Long-term rates -0.1 to 0.1 m/yr and -0.3 to -0.1 m/yr

Based on these data the proposed infrastructure is not considered to be vulnerable to shoreline change.

5.7 Special, Sensitive, or Unique Estuarine and Marine Life Habitats

Special, sensitive and unique ("SSU") areas as defined in the Massachusetts Ocean Management Plan. SSUs mapped areas, as per MassGIS data, within the proposed cable corridor include:

- hard/complex seafloor, and
- eelgrass.

Video data collected within the 1,000-foot-wide study corridor during the 2021 marine survey were used to identify substrate and biotic components consistent with the Coastal and Marine Ecological Classification System ("CMECS") within the cable study corridor, and to aid in the interpretation of geophysical survey data. Mapped habitat roughness and complexity derived from geophysical data helped inform the CMECS classifications and identification of SSUs and habitats pursuant to the Massachusetts Ocean Management Plan.

As described previously, the survey corridor was designed using the 2015 CZM Hard Bottom/Complex Seafloor data to site and avoid, to the extent practicable, the areas mapped as hard bottom/complex seafloor. Subsequently, an updated version of that data layer was published in January 2022 which increased the extent of mapped hard bottom/complex seafloor. Therefore, the cable will be required to pass through areas mapped as hard bottom/complex seafloor as these areas are unavoidable within Vineyard Sound.

5.7.1 Hard Bottom and Complex Bottom

"Hard/complex seafloor is seabed characterized singly or by any combination of hard seafloor, complex seafloor, artificial reefs, biogenic reefs, or shipwrecks and obstructions. For the 2021 ocean plan, hard/complex seafloor was mapped using updated surficial seafloor sediment data and the same complex seafloor data used in the 2015 ocean plan. The locations of artificial reefs biogenic reefs, and shipwrecks and obstructions to navigation were added to the SSU resource area" (EEA, 2021). **Attachment B, Figure 13 (and Attachment H, Figure 17)** depict the mapped Massachusetts Ocean Management Layer for hard/complex seafloor in the vicinity of the cable corridor.

Overlay of the OMP mapped hard/complex seafloor with the CMEC substrate classifications shows that areas classified as Gravel Pavement dominated by boulders are mapped as well as some cobble dominated areas, and the northern and southern areas of Sand Waves (**refer to Attachment H, Figure 18 and Attachment B, Figure 17**).

Terrain ruggedness (**Attachment H, Figure 6**) indicates general concurrence with the areas of hard bottom mapped by OMP. Refer to **Section 4.1.1** for discussion of the hard/complex seafloor results of the marine survey, as well as **Attachment H –Marine Survey Report**.

Plots of rugosity, slope, and slope of slope (provided as **Attachment H, Figures 4, 5 and 7, respectively**) show the morphologically complex seafloor includes the northern and southern areas of sand waves/ridges. Refer to **Section 4.1.1** for a discussion of the hard/complex seafloor results of the marine survey, as well as **Attachment H –Marine Survey Report.**

Because these features extend across Vineyard Sound in an east to west orientation and the cable corridor is generally in a north to south orientation, these features cannot be avoided. Temporary alteration of theses bottom types will occur during hydrolpw construction. Hydroplow construction does not remove sediment and as described previously, dislodged sediment will settle back into the hydroplow trough resulting in no long-term loss or change of the hard or complex bottom types.

5.7.2 Eelgrass

Eelgrass SSUs are defined as "… areas that support communities of rooted eelgrass (*Zostera marina*)." (EEA, 2021).

Sparse to moderate eelgrass was observed in a Seagrass Bed growing in Gravelly Sand to Sandy Gravel at the northern inshore end of transects EG-1 through EG-6, seaward of the Falmouth landing site (refer to **Attachment H, Figure 16**). Eelgrass cover disappeared in water depths greater than 17 feet below MLLW where the seafloor transitioned to *Crepidula* Reef.

No impacts to eelgrass beds is anticipated because the HDD construction is being used to avoid eel grass and the HDD punchout is located 500-feet or more from the eel grass meadow margin.

5.8 Water Quality

The presence and operation of the underground terrestrial and buried marine cable will have no effect on water quality.

During hydroplow construction and the HDD punchout, temporary and localized increased turbidity is expected. Sediment analysis suggests there is no anthropogenic sediment contamination, thus any transport of sediment from the work zone will only result in transport of clean sediment and no transport of chemical contamination.

Additionally, during marine construction vessels and equipment will be operating on the water and have the potential for releases of fuel or other materials.

During landside construction: excavation to install the underground terrestrial duct and manhole system will expose erodible soils, and there is the potential need to re-water trenches; and during HDD operations drilling fluids have the potential to be released. Additionally, during landside construction –cable installation and HDD operations– vehicles and equipment working on land have the potential to release fuel and other materials.

Best Management Practices and other controls, described below in **Section 5.13**, will be employed to avoid these potential water quality impacts.

5.9 Historic and Archaeological Resources

Both the terrestrial routes and submarine cable corridor were evaluated for the presence of historic and archaeological resources.

5.9.1 Marine Archaeological Resources

No previously identified historic or archaeological assets are located within the submarine cable corridor. A marine archaeological survey was conducted pursuant to the Special Use Permit issued by the Massachusetts Board of Underwater Archaeology Resources ("MBUAR") to evaluate the 1,000-foot-wide study corridor for previously unidentified resources. Gray and Pape completed that assessment, and a copy is being provided to the Massachusetts Historical Commission ("MHC") and MBUAR concurrent with this EENF/PEIR submission to the MEPA Office. The submarine cable alignment was sited to avoid marine archaeological resources. A summary of the results of the marine archaeological survey is included in **Section 4.1.4**.

5.9.2 Terrestrial Historic and Archaeological Resources

Portions of the upland route are located within areas included in the Inventory of Historic and Archaeological Assets of the Commonwealth or are listed in the State and/or National Registers of Historic Places (**Attachment B, Figures 7 & 9**). There will be little change to the existing conditions of the areas resulting in no significant impacts to historic resources. A table and map of historic resources within the upland portion of the Project area is included in **Attachment K – Historic Resources Summary.**

The Project is subject to review under Section 106 of the National Historic Preservation Act (36 CFR 800) and State Register Review (95- CMR 71). Coordination with the USACE, as the lead federal agency, will be undertaken and both reviews will be undertaken concurrently. It is anticipated that potential effects, if any, to historic and archaeological resources will be addressed through those review processes.

5.10 State-Listed Species

As depicted on **Attachment B, Figure 23 – Natural Heritage and Endangered Species Program Mapping** the submarine cable corridor crosses Priority Habitats for State-Protected Rare Species (PH 2158) and Estimated Habitats for Rare Wildlife (EH 1366). Correspondence with the NHESP reported these polygons identify habitat for the following state-listed species:

Scientific name	Common Name	Taxonomic Group	State Status
Sterna hirundo	Common Tern	Bird	Special Concern
Sterna dougallii	Roseate Tern	Bird	Endangered
Sternula antillarum	Least Tern	Bird	Special Concern

Based on consultation for other projects in this area we understand that the water surface provides foraging habitat and that the cable laying construction is unlikely to adversely affect the habitat or birds. Similarly work along the has the potential to effect nesting, if these birds' nest in the nearby beaches. Thus, conducting the HDD operations near the beaches at both the Falmouth and Oak Bluffs landfalls outside of the nesting TOY would avoid potential effects to these species.

The projects schedule avoids nesting time of year and therefore n adverse effects to state-listed species are anticipated. Consultation with NHESP will be formally initiated via submission of a Joint WPA-MESA Notice of Intent.

5.11 Navigation and Traffic

Any potential Project-related impacts to navigation will be temporary in nature, limited to the construction period, and will only occur in the area of active cable installation. The construction schedule, discussed in **Section 3.5**, avoids the busiest periods of recreation and boating activities, which will help to minimize potential temporary restrictions to navigation in the vicinity of Project construction activities.

The Proponent's contractor will coordinate with the U.S. Coast Guard via the Local Notice to Mariners, and the Steamship Authority prior to initiating cable installation. This coordination will communicate in-water construction information –e.g., type of work, location of work (latitude & longitude), dates and time of construction, vessels / equipment at the construction location, radio hailing frequency, and vessel passing arrangements– to ferry operators, fishermen, commercial vessel operators, and recreational boaters.

Once installed, the proposed submarine cable will be located beneath the seafloor and will pose no hazard to navigation.

Landside work will involve work in ROWs to public roads, which can cause temporary interruptions to traffic during construction. Once installed the underground cable will have no traffic impacts.

5.12 Noise

On land and above water equipment, vehicle and vessels will generate noise during construction consistent with utility construction activities. Underwater noise will be generated by vessels and hydroplow activities. These too will be short-term, limited to the construction period, and similar to the vessel traffic and fishing activities in the Sound. Therefore, hydroplow underwater noise impacts are not expected to be more than existing background vessel noise from existing vessels and ferries in the area, and marine species in the Project area are acclimated to those levels.

5.13 Mitigation Measures

The most important mitigation measure for this Project is the careful siting of preferred cable route and selection of the least obtrusive construction techniques. As described in **Section 2.0**, the Proponent considered a number of alternative routes and construction alternatives, and determined that the Project meets the identified purpose and need while balancing system reliability, Project cost, and environmental impact.

Following are the measures to avoid and mitigate impacts identified in the preceding sections are summarized below:

5.13.1 Avoidance Measures

Horizontal Direction Drill: HDD is proposed at each of the landfall sites, in Falmouth and Oak Bluffs. Use of HDD avoids alteration of the following resources:

- Coastal Beach (Falmouth & Oak Bluffs),
- Coastal Dune (Falmouth and Oak Bluffs),
- Intertidal resources, and
- Eelgrass (Falmouth) and OMP SSU

Landside Cable Route Selection: The landside cable route was selected to pass through previously developed areas such as roads, parking lot, and the rail trail to avoid the following natural resources, cultural resources and built environment:

- Article 97 Lands,
- Known historic and archaeological resources, and
- Falmouth Center

Marine Archaeological Resources: The marine surveys and marine archaeological surveys completed for the Project were used to avoid marine archaeological resources.

State-Listed Species: Species identified to date are limited to shore birds. HDD operations will be performed to avoid shorebird nesting season in the event birds' nest on the nearby beaches.

SSU's: The cable survey corridor was selected in 2021 using the 2015 CZM Hard Bottom/Complex Seafloor data to site and avoid, to the extent practicable, the areas mapped as hard bottom/complex seafloor. That corridor avoided all but one area mapped as hard/complex bottom. Subsequently, an updated version of that data layer was published in January 2022 increased the extent of mapped hard bottom/complex seafloor. Therefore, based on that mapping, as confirmed by the geophysical data collected in the corridor, the cable cannot avoid hard bottom/complex seafloor as these areas are unavoidable within Vineyard Sound.

Traffic: Landside cable construction will not be constructed during the summer tourist season, Memorial Day to Labor, to avoid disrupting traffic during the summer season.

Navigation: In-water cable construction will be timed to avoid the summer recreational boating season to minimize impacts on navigation.

Air Quality: Long-term emissions will be avoided by de-commissioning use of the five on-Island peaking generators. These will no longer be needed after fifth cable is installed and in service.

5.13.2 Mitigation Measures

Hydroplow Cable Laying Method: Hydroplow construction technique will be used to bury the cable by making a temporary narrow trench or liquefied sediment zone into which the cable will be installed. The alternative would be a cut and cover technique, i.e., dredging a trench, sidecast sediment then backfill the trench. Hydroplow construction minimizes seafloor disturbance and construction duration.

SSUs: Use of hydroplow construction technique will temporarily affect complex and hard bottom area in Vineyard. However, because sediment liquified in place, and the sediments in the cable corridor are coarse sands to cobbles and boulders, the dislodged sediment is expected to settle back into the trough resulting in no loss or conversion of complex or hard bottom cover types.

Inadvertent Release Plan: During HDD planned and unplanned release of drilling fluids may occur. The planned release of drilling fluids is minimized by only punching out the drill head for the initial plot hole drilling. Reaming runs will not punch out until the final reaming run. A gravity cell, or similar measure will be used to contain the drilling fluids released at the exit hole. Unplanned release will be managed to minimize and clean-up releases. See the preliminary IR Plan in **Attachment G – Preliminary Inadvertent Release Contingency Plan for Horizontal Directional Drilling.**

Navigation: The marine contractor will coordinate with the U.S. Coast Guard via the Local Notice to Mariners, and the Steamship Authority prior to initiating cable installation. This coordination will communicate in-water construction information –e.g., type of work, location of work (latitude & longitude), dates and time of construction, vessels / equipment at the construction location, radio hailing frequency, and vessel passing arrangements– to ferry operators, fishermen, commercial vessel operators, and recreational boaters.

Essential Fish Habitat: Various fishes are preset in Vineyard Sound. The hard and complex bottom cover types may provide habitat to EFH species and/or NOAA Trust Species. Use of hydroplow construction will not result in the loss of conversion of these bottom types. Therefore, no long-term loss or impact is expected.

Traffic: A traffic management plan will be prepared and implemented to minimize traffic disruptions during landside construction. A key measure to minimize traffic disruptions, landside cable construction in Falmouth and oak Bluffs will not occur between Memorial Day and Labor to avoid the high summer season traffic period on Cape Cod and the Island.

Stormwater: Construction-period BMPs to manage stormwater will include measures such as: the use of silt fence and/or hay bales around the construction and temporary work areas including the HDD work zone, catch basin inlet protection for all catch basins that collect runoff from the works zones, and limiting the time exposed soils are exposed. The detailed sediment and erosion control plan will be developed pursuant to the Massachusetts Stormwater Management Standards, and the preparation of Storm Water Pollution Prevention Plan in accordance with US EPA Construction General Permit. BMPs will be maintained throughout construction until any disturbed surfaces have been stabilized. The Project will not result in any permanent changes in drainage patterns, runoff volume or rate.

Air Quality (Construction-Period): Construction equipment will comply with requirements for using ultra-low sulfur diesel ("ULSD") in off-road engines. The construction contractor will be encouraged to use diesel construction equipment with exhaust emission controls such as oxidation catalysts or particulate filters on their diesel engines.

Compliance with the five-minute idle law and turning off construction equipment when not in use to minimize vehicle idling to the extent practicable.

Noise: The construction equipment used with underground cable construction is like that used during typical public works projects (e.g., storm drain, sewer and water line installation). The timing and sequencing of the work will be coordinated to minimize potential noise impacts consistent with applicable local regulations and ordinances.

State-Listed Species: Species identified to date are limited to shore birds. HDD operations will be performed to avoid shorebird nesting season in the event birds nest on the nearby beaches. The Proponent will consult with NHESP during the permitting process to develop a schedule to avoid a Take of state-listed species.

Built Environment: The following measures were agreed upon in a Memorandum of Understanding between the Proponent and the Town of Falmouth in order to mitigate impacts of the Project to the built environment. Eversource will provide compensation for the Town of Falmouth to undergo the following activities:

- The restoration of Surf Drive
- Changes in connection with the disruption caused by Project activities in the Shining Sea Bikeway
- Restoration and pavement of the Depot Avenue parking lot
- Additional construction impacts such as traffic congestion, detours, and other economic impacts

Additionally, Eversource agrees to relocate 15 utility poles on Palmer Avenue to improve sidewalk clearances and install electric vehicle charging stations at the Palmer Avenue lot and other locations in Falmouth.

The Proponent is concurrently working on a MOU with the town of Oak Bluffs.

6.0 COMPIANCE WITH REGULATIONS

The Project was designed to meet state, regional and local requirements for work in and adjacent to regulated areas. Following is a review of how the Project complies with the applicable regulations and policies.

6.1 Wetlands Protection Act

The Massachusetts Wetlands Protection Act (G.L. c. 131 § 40) and implementing regulations (310 CMR 10.00) is a state law and regulation administered locally by Conservation Commissions. In addition to administering the WPA, the Conservation Commissions of Falmouth, Tisbury and Oak Bluffs administer local wetland bylaws: Falmouth Chapter 235 Wetlands Protection Bylaw, Oak Bluffs General Wetlands Bylaw, and the Tisbury General Wetlands By-Law. The WPA and bylaws require the preparation of a Notice of Intent for certain activities within a wetland resource area and/or work within 100 feet of certain wetland resource areas (i.e., the 100-foot Buffer Zone). The general performance standards for work or activities occurring within wetland resource areas are identified in the WPA and bylaws.

The Proponent will file NOIs for the Project with the Conservation Commissions in Falmouth, Oak Bluffs, and Tisbury. Those filings will more thoroughly address the Project's potential wetland impacts in terms of protected interests and the methods by which the Project will meet the performance standards for each resource area. As the Project involves a buried cable in both the marine and landside sections of the alignment, it will result in no permanent alteration of resource areas or adversely affect their presumed interests. Project construction requires unavoidable work in resource areas, but these will be temporary and minimized with appropriate mitigation measures.

6.1.1 Coastal Wetlands

Project work will be located in or proximate to the following coastal wetland resource areas or the 100-foot buffer zone to applicable resource areas:

- Land Under the Ocean;
- Coastal Beach;
- Coastal Dune;
- Barrier Beach;
- Land Containing Shellfish; and
- Land Subject to Coastal Storm Flowage.

As shown on **Attachment B, Figure 23,** the route across Vineyard Sound passes through NHESP Priority Habitats for State-Protected Rare Species and Estimated Habitats for Rare Wildlife. Accordingly, the Proponent will seek consultation with the NHESP via a Joint WPA-MESA Notices of Intent.

6.1.2 Compliance with Performance Standards

Cable construction is limited to work in Land Under the Ocean, Land Containing Shellfish and Land Subject to Coastal Storm Flowage. No work is proposed in the following wetland resource areas:

- **Barrier Beach:** There are Barrier Beach units present along Surf Drive. No new duct and manhole system is required in Surf Drive because the new cable will be installed in the existing duct system
- **Coastal Dune:** The use HDD construction avoids altering Coastal Dune in Falmouth and Oak Bluffs.
- **Coastal Beach:** The use of HDD construction avoids altering Coastal Beach in Falmouth and Oak Bluffs.

Following is a review of resource areas in which work will occur.

6.1.2.1 Land Under the Ocean

Land Under the Ocean is defined at 310 CMR 10.25(2) as: *"… land extending from the mean low water line seaward to the boundary of the municipality's jurisdiction…" The regulations at 10.25(1) also read that "When a proposed project involves the dredging, removing, filling or altering of land under the ocean beyond the nearshore area, the issuing authority shall presume that such land is significant to the protection of marine fisheries and, where there are shellfish, to the protection of land containing shellfish and that it is not significant to storm damage prevention, flood control or protection of wildlife habitat."*

The regulatory performance standards for work in Land Under the Ocean stipulate that: *"When land under the ocean or nearshore areas of land under the ocean are found to be significant to the protection of marine fisheries, protection of wildlife habitat, storm damage prevention or flood control, 310 CMR 10.25(3) through (7) shall apply:"*

10.25(3) Improvement dredging for navigational purposes affecting land under the ocean shall be designed and carried out using the best available measures so as to minimize adverse effects on such interests caused by changes in: the sub sections as specified in 10.25(3)(a) – (d).

Not Applicable. The Martha's Vineyard Reliability Project does not involve improvement dredging.

10.25(4) Maintenance dredging for navigational purposes affecting land under the ocean shall be designed and carried out using the best available measures so as to minimize adverse effects on such interests caused by changes in marine productivity which will result from the suspension or transport of pollutants, increases in turbidity, the smothering of bottom organisms, the accumulation of pollutants by organisms, or the destruction of marine fisheries habitat or wildlife habitat.

Not Applicable. The Martha's Vineyard Reliability Project does not involve maintenance dredging.

10.25(5) Projects not included in 310 CMR 10.25(3) or (4) which affect nearshore areas of land under the ocean shall not cause adverse effects by altering the bottom topography so as to increase storm damage or erosion of coastal beaches, coastal banks, coastal dunes, or salt marshes.

Complies. The proposed cable installation in nearshore areas involves burying the cable in natural sediments with no changes to the bottom topography and thus will not increase storm damage or erosion of coastal beaches or coastal dunes. There are no salt marshes or coastal banks at the cable landfall sites.

10.25(6) Projects not included in 310 CMR 10.25(3) which affect land under the ocean shall if water-dependent be designed and constructed, using best available measures, so as to minimize adverse effects, and if non-water-dependent, have no adverse effects, on marine fisheries habitat or wildlife habitat caused by:

a. alterations in water circulation;
b. destruction of eelgrass (Zostera marina) or widgeon grass (Rupia maritina) beds;
c. alterations in the distribution of sediment grain size;
d. changes in water quality, including, but not limited to, other than natural fluctuations in the level of dissolved oxygen, temperature or turbidity, or the addition of pollutants; or
e. alterations of shallow submerged lands with high densities of polychaetes, mollusks or macrophytic algae.

The submarine cable is a water-dependent use as defined in 310 CMR 9.02. Hydroplow or ROV cable construction techniques are the best available means of burying the submarine cable that minimizes the adverse effect on standards (a) through (e). More specifically use of either of these techniques will:

a. Not change bottom topography and therefore will not alter water circulation;
b. Use of HDD will avoid altering eelgrass;
c. Both techniques fluidize the sediment resulting in cable burial by the native extant sediment in the cable corridor thus not altering distribution of sediment grain size;
d. Once installed the presence o the buried cable will not change water quality. Turbidity during cable laying is expected. Sediment analysis indicates the sediment is free of anthropogenic contamination therefore any spread of suspended solids will not adversely affect water quality;
e. Marine surveys did not document the presence of high densities of polychaetes, mollusks or macrophytic algae.

10.25(7) Notwithstanding the provisions of 310 CMR 10.25(3) through (6), no project may be permitted which will have any adverse effect on specified habitat sites of rare vertebrate or invertebrate species, as identified by procedures established under 310 CMR 10.37.

Correspondence from the NHESP (refer to **Attachment F – Agency Communications**) indicate the state-listed species present in the area are shore birds. Work over open water will not disturb nesting, and the limited size of the work area as compared to the expanse of feeding habitat is de minimus. Work at the landfall sites in Falmouth and Oak Bluffs, proximate to beach and dune, is schedule outside of the nesting seasons to avoid adverse effects on these species.

6.1.2.2 Land Containing Shellfish

Land Containing Shellfish is defined at 310 CMR 10.34(2) as: *"land under the ocean, tidal flats, rocky intertidal shores, salt marshes and land under salt ponds when any such land contains shellfish."* Where mapped, Land Containing Shellfish is presumed significant to the protection of both shellfish and marine fisheries.

When a resource area, including land under the ocean, tidal flats, rocky intertidal shores, salt marshes, or land under salt ponds is determined to be significant to the protection of land containing shellfish and therefore to the protection of marine fisheries, 310 CMR 10.34(4) through (8) shall apply:

310 CMR 10.34 (4) Except as provided in 310 CMR 10.34(5), any project on land containing shellfish shall not adversely affect such land or marine fisheries by a change in the productivity of such land caused by:

a. alterations of water circulation;
b. alterations in relief elevation;
c. the compacting of sediment by vehicular traffic;
d. alterations in the distribution of sediment grain size;
e. alterations in natural drainage from adjacent land; or
f. changes in water quality, including, but not limited to, other than natural fluctuations in the levels of salinity, dissolved oxygen, nutrients, temperature or turbidity, or the addition of pollutants.

The use of a trenchless construction technique avoids permanent changes to the seafloor and prevents alterations to water circulation, bottom contours, sediment grain size or compaction, or water quality.

(5) Notwithstanding the provisions of 310 CMR 10.34(4), projects which temporarily have an adverse effect on shellfish productivity but which do not permanently destroy the habitat may be permitted if the land containing shellfish can and will be returned substantially to its former productivity in less than one year from the commencement of work, unless an extension of the Order of Conditions is granted, in which case such restoration shall be completed within one year of such extension.

The use of trenchless construction does not change the seafloor habitat and will not alter the long-term benthic productivity.

(6) In the case of land containing shellfish defined as significant in 310 CMR 10.34(3)(b) (i.e., those areas identified on the basis of maps and designations of the Shellfish Constable), except in Areas of Critical Environmental Concern, the issuing authority may, after consultation with the Shellfish Constable, permit

the shellfish to be moved from such area under the guidelines of, and to a suitable location approved by, the Division of Marine Fisheries, in order to permit a proposed project on such land. Any such project shall not be commenced until after the moving and replanting of the shellfish have been commenced.

Not applicable, mapping is based on MassGIS mapping.

(7) Notwithstanding 310 CMR 10.34(4) through (6), projects approved by the Division of Marine Fisheries that are specifically intended to increase the productivity of land containing shellfish may be permitted. Aquaculture projects approved by the appropriate local and state authority may also be permitted.

Not applicable this is not an aquaculture project.

(8) Notwithstanding the provisions of 310 CMR 10.34(4) through (7), no project may be permitted which will have any adverse effect on specified habitat of rare vertebrate or invertebrate species, as identified by procedures established under 310 CMR 10.37.

Correspondence from the NHESP (refer to **Attachment F – Agency Communications**) indicate the state-listed species present in the area are shore birds. Work in Land Containing Shellfish and over open water will not disturb nesting, and the limited size of the work area as compared to the expanse of feeding habitat is de minimus. Consultation with the NHESP will be pursued by filing a Joint WPA-MESA NOI for this project.

6.1.2.3 Land Subject to Coastal Storm Flowage

Land Subject to Coastal Storm Flowage is defined at 310 CMR 10.04 as "… land subject to any inundation caused by coastal storms up to and including that caused by the 100-year storm, surge of record or storm of record, whichever is greater." Although the regulations do not include performance standards for LSCSF, this resource area is generally presumed significant to storm damage prevention and flood control.

In the case of both landings, the proposed work will not alter the existing topography or land surface in LSCSF therefore will not increase the horizontal or vertical extent of flooding, and will not adversely affect the interests of storm damage prevention or flood control.

6.2 Coastal Zone Management Policies

The Massachusetts Office of Coastal Zone Management ("CZM") has the jurisdiction to review any project undertaken by a federal agency, requiring certain listed federal permits (such as a USACE Section 10/404 Individual Permit), requiring a federal offshore oil and gas lease, or receiving federal funding that is in or may affect the land or water resources or uses of the Massachusetts coastal zone. The Massachusetts coastal zone is the "*area bounded by the seaward limit of the state's territorial sea (generally 3 miles from shore) to 100 feet landward of specified major roads, railroads, or other visible right-of-way*." A CZM consistency review must be undertaken for any project triggering MEPA thresholds that requires a federal license or permit.

6.2.1 Jurisdiction for Federal Consistency Certification

The Project requires a federal consistency review and certification because it requires a federal action and may affect, and is located within, the coastal zone. The Project will require a permit from the USACE pursuant to Section 404 of the federal Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899. The official Massachusetts coastal zone includes the lands and waters within an area defined by the seaward limit of the state's territorial sea, extending from the Massachusetts-New Hampshire border south to the Massachusetts-Rhode Island border, and landward to 100 feet inland of specified major road, rail lines, other visible rights-of-way, or in the absence these, at the coordinates specified by CZM. The coastal zone includes all of Cape Cod, Nantucket, Martha’s Vineyard, and the Elizabeth Islands. As such, jurisdiction over this Project extends over all Project components, submarine cable corridor, associated landfall sites, underground cable routes in Falmouth and Oak Bluffs, upgrades at the existing Stephens Lane substation in Falmouth, and the new equipment site in Oak Bluffs.

The following section describes the Project’s compliance with the program policies and management principles of Massachusetts’ approved Coastal Zone Management Program Plan as set forth in the policy appendix at 301 CMR 21.98.

6.2.2 Consistency with MCZM Program Policies

The Proponent provides this review to document that the Project complies with the program policies of Massachusetts’ approved Coastal Zone Management Plan (“the Plan”) and will be conducted in a manner consistent with such policies.

The following sections list each of the Program Policies and Management Principles contained in the Plan and describe how the Project is consistent.

6.2.2.1 Coastal Hazards

Coastal Hazards Policy #1

> *Preserve, protect, restore, and enhance the beneficial functions of storm damage prevention and flood control provided by natural coastal landforms, such as dunes, beaches, barrier beaches, coastal banks, land subject to coastal storm flowage, salt marshes, and land under the ocean.*

The coastal wetland resource areas located in the Project area are generally not degraded and provide the beneficial functions that are protected interests of the WPA, including storm damage prevention and flood control. Through careful route selection and proper use of construction techniques such as HDD, the Project is designed to avoid coastal resource areas.

The transition from offshore to onshore cable both in Falmouth and Oak Bluffs would be installed via HDD to avoid impacts to Coastal Beach and Coastal Dune, plus intertidal habitats.

The underground cable route in both Falmouth and Oak Bluffs will require work within LSCSF. No above-ground structures or changes to topography are proposed in LSCSF, and the Project will have no effect on flood velocities or floodplain storage capacity, yielding no changes to the interests of storm damage prevention and flood control.

The submarine cable will be installed via hydroplow and will not alter bathymetry or cause and loss or conversion of hard/complex seafloor.

<u>Coastal Hazard Policy #2</u>

Ensure construction in water bodies and contiguous land areas will minimize interference with water circulation and sediment transport. Approve permits for flood or erosion control projects only when it has been determined that there will be no significant adverse effects on the project site or adjacent or down coast areas.

The Project will not adversely interfere with water circulation or sediment transport, because the cable installed by HDD and hydroplow will not alter the morphology or composition of the seafloor. The Project is not a flood or erosion control project.

<u>Coastal Hazard Policy #3</u>

Ensure that state and federally funded public works projects proposed for location within the coastal zone will:

- not exacerbate existing hazards or damage natural buffers or other natural resources;
- be reasonably safe from flood and erosion related damage;
- not promote growth and development in hazard-prone or buffer areas, especially in Velocity zones and ACECs; and
- not be used on Coastal Barrier Resource Units for new or substantial reconstruction of structures in a manner inconsistent with the Coastal Barrier Resource/Improvements Acts.

Not Applicable. The Project is not a state or federally funded public works project.

<u>Coastal Hazard Policy #4</u>

Prioritize public funds for acquisition of hazardous coastal areas for conservation or recreation use, and relocation of structures out of coastal high hazard areas, giving due consideration to the effects of coastal hazards at the location to the use and manageability of the area.

Not Applicable. The Project does not involve the use of public funds.

The Project does not propose any structures that will be subject to hazardous coastal conditions, because the cable will be buried beneath the seafloor and underground. Shoreline change rates, as reported by CZM, were evaluated at the landfall sites in both Falmouth and Oak Bluffs and the shoreline in these two areas has been relatively stable. The cable at both, the Falmouth and Oak Bluffs landfall sites are located within coastal floodplain, however they are not considered to be at undue risk since they will be buried below ground.

6.2.2.2 Energy

Energy Policy #1

For coastally dependent energy facilities, consider siting in alternative coastal locations. For non-coastally dependent energy facilities, consider siting in areas outside of the coastal zone. Weigh the environmental and safety impacts of locating proposed energy facilities at alternative sites.

As an infrastructure crossing facility, it is by definition a water dependent use (310 CMR 9.02) and also considered to be a coastally dependent energy facility. The Project purpose is to increase the reliability of grid-based electrical service on Martha's Vineyard and therefore cannot be located away from the coast.

Energy Policy #2

Encourage energy conservation and the use of alternative sources such as solar and wind power in order to assist in meeting the energy needs of the Commonwealth.

The new underground and submarine electric distribution cable will improve reliability with increased grid-based electric service to meet current and future electricity demands on Martha's Vineyard. The Project will also improve the ability to integrate dispersed renewable generation into the Island's electrical system.

6.2.2.3 Growth Management

Growth Management Policy #1

Encourage sustainable development that is consistent with state, regional, and local plans and supports the quality and character of the community.

The proposed submarine and underground cable and its landings in Falmouth and Oak Bluffs will not be visible and therefore will not alter the quality and character of the local communities. A review of the regional policies is provided below in **Sections 6.4 and 6.5.**

Growth Management Policy #2

Ensure that state and federally funded infrastructure projects in the coastal zone primarily serve existing developed areas, assigning highest priority to projects that meet the needs of urban and community development centers.

Not Applicable. The Project is not a state or federally funded infrastructure project.

Growth Management Policy #3

Encourage the revitalization and enhancement of existing development centers in the coastal zone through technical assistance and financial support for residential, commercial, and industrial development.

Not Applicable. This is not a revitalization project. This privately-funded Project will improve the reliability of Island's grid-based electrical system to meet current and future electricity, thus benefiting residents and businesses on the Island.

6.2.2.4 Habitat

Habitat Policy #1

Protect coastal, estuarine, and marine habitats—including salt marshes, shellfish beds, submerged aquatic vegetation, dunes, beaches, barrier beaches, banks, salt ponds, eelgrass beds, tidal flats, rocky shores, bays, sounds, and other ocean habitats—and coastal freshwater streams, ponds, and wetlands to preserve critical wildlife habitat and other important functions and services including nutrient and sediment attenuation, wave and storm damage protection, and landform movement and processes.

The Project is designed to avoid impacts to coastal habitats and wetland resource areas to the maximum extent practicable, and to minimize and mitigate unavoidable impacts in accordance with applicable federal, state, and local regulations. By complying with performance standards identified in the Massachusetts WPA, the Project will serve the protected interests identified in the statute.

The Project route will specifically avoid impacts to: eel grass, barrier beaches, salt ponds, coastal beaches, coastal dune, and freshwater wetlands. Use of the HDD installation technique at Falmouth and Oak Bluffs landing areas was specifically selected will avoid altering dunes, beaches, and eelgrass.

The submarine cable route will be located in Land Under the Ocean. As described in the ENF Form and herein, the submarine cable route crosses areas mapped shellfish suitability areas and hard/complex bottom. The submarine cable will be installed using hydroplow construction, and as described in the EFH Assessment no long-term effects on fish habitat is anticipated. No loss or conversion of hard/complex bottom is anticipated and therefore no changes to nutrient and sediment attenuation, wave and storm damage protection, and landform movement and processes is projected.

Temporary impacts along the underground cable routes in Falmouth and Oak Bluffs will be limited to LSCSF. No above-ground structures or changes to topography are proposed within LSCSF. The Project will have no effect on wave and storm damage protection, and landform movement and processes.

Habitat Policy #2

Advance the restoration of degraded or former habitats in coastal and marine areas.

Not Applicable. The Project is not a restoration project, however, it is designed to avoid alteration of coastal dune, coastal beach and eel grass.

6.2.2.5 Ocean Resources

Ocean Resources Policy #1

Support the development of sustainable aquaculture, both for commercial and enhancement (public shellfish stocking) purposes. Ensure that the review process regulating aquaculture facility sites (and access routes to those areas) protects ecological resources (salt marshes, dunes, beaches, barrier beaches, and salt ponds) and minimizes adverse effects on the coastal and marine environment and other water-dependent uses.

Not Applicable. The Project is not an aquaculture project.

Ocean Resources Policy #2

Except where such activity is prohibited by the Ocean Sanctuaries Act, the Massachusetts Ocean Management Plan, or other applicable provision of law, the extraction of oil, natural gas, or marine minerals (other than sand and gravel) in or affecting the coastal zone must protect marine resources, marine water quality, fisheries, and navigational, recreational and other uses.

Not Applicable. The Project does not involve the extraction of oil, natural gas, or marine minerals.

Ocean Resources Policy #3

Accommodate offshore sand and gravel mining needs in areas and in ways that will not adversely affect marine resources, navigation, or shoreline areas due to alteration of wave direction and dynamics. Extraction of sand and gravel, when and where permitted, will be primarily for the purpose of beach nourishment or shoreline stabilization.

Not Applicable. The Project does not involve offshore sand and gravel mining, beach nourishment or shoreline stabilization.

6.2.2.6 Ports and Harbors

Ports and Harbors Policy #1

Ensure that dredging and disposal of dredged material minimize adverse effects on water quality, physical processes, marine productivity, and public health and take full advantage of opportunities for beneficial re-use.

Dredging is defined in314 CMR 9.02 as, "The removal or repositioning of sediment or other material from below the mean high tide line for coastal waters and below the high water mark for inland waters. Dredging shall not include activities in bordering or isolated vegetated wetlands."

The Project does not include traditional dredging activities. Repositioning of will occur during hydroplow activities and to bury the cable at the HDD – hydroplow transition. Due to the coarse-grained nature of surficial sediments along the proposed cable route, any Project-generated turbidity related to hydroplow operation or the transition from HDD is expected to be temporary and limited in spatial scope. Repositioned sediments are expected to settle back in to the hydroplow trough.

Ports and Harbors Policy #2

Obtain the widest possible public benefit from channel dredging and ensure that Designated Port Areas and developed harbors are given highest priority in the allocation of resources.

Not Applicable. The Project does not involve the dredging navigation channels, nor is it located within a DPA or developed harbor.

Ports and Harbors Policy #3

Preserve and enhance the capacity of Designated Port Areas (DPAs) to accommodate water-dependent industrial uses and prevent the exclusion of such uses from tidelands and any other DPA lands over which an EEA agency exerts control by virtue of ownership or other legal authority.

Not Applicable. The Project is not located in a DPA.

Ports and Harbors Policy #4

For development on tidelands and other coastal waterways, preserve and enhance the immediate waterfront for vessel-related activities that require sufficient space and suitable facilities along the water's edge for operational purposes.

The Project will have no impact on the availability of the waterfront for vessel-related activities.

Ports and Harbors Policy #5

Encourage, through technical and financial assistance, expansion of water dependent uses in Designated Port Areas and developed harbors, re-development of urban waterfronts, and expansion of visual access.

Not Applicable. The Project is not located in a DPA, developed harbor, or urban waterfront. The cable will be buried resulting in changes to the aesthetics or views.

6.2.2.7 Protected Areas

Protected Areas Policy #1

Preserve, restore, and enhance coastal Areas of Critical Environmental Concern, which are complexes of natural and cultural resources of regional or statewide significance.

Not Applicable. The Project is not located within or in the immediate vicinity of an ACEC.

Protected Areas Policy #2

Protect state designated scenic rivers in the coastal zone.

Not Applicable. The Project is not located in or near any state designated scenic rivers.

Protected Areas Policy #3

Ensure that proposed developments in or near designated or registered historic places respect the preservation intent of the designation and that potential adverse effects are minimized.

For onshore areas, construction and operation of the Project will not affect any known historic places. The project includes an underground distribution line within existing roadways, paved bikeway, parking lot and previously disturbed areas. Potential effects, if any, to landside archaeological resources will be addressed with the MHC, as applicable, through Section 106 and the State Register Review processes.

No previously identified archaeological resources are located within the submarine cable corridor. Gray & Pape, Inc. conducted a marine archaeological survey in Vineyard Sound within the cable corridor. The Project is sited to avoid any marine archaeological resources.

6.2.2.8 Public Access

Public Access Policy #1

Ensure that development (both water-dependent or nonwater-dependent) of coastal sites subject to state waterways regulation will promote general public use and enjoyment of the water's edge, to an extent commensurate with the Commonwealth's interests in flowed and filled tidelands under the Public Trust Doctrine.

The Project does not involve development of a coastal site. The Project involves installing submarine cable across Vineyard Sound from a landfall site off Surf Drive in Falmouth to a landfall site off Eastville Avenue in Oak Bluffs. By definition, the Project is a water-dependent infrastructure project (310 CMR 9.02). All permanent structures will be buried and will not interfere with the public's interest in flowed and filled tidelands. See the Public Benefit Determination Review in **Section 1.4** above.

Public Access Policy #2

Improve public access to existing coastal recreation facilities and alleviate auto traffic and parking problems through improvements in public transportation and trail links (land- or water-based) to other nearby facilities. Increase capacity of existing recreation areas by facilitating multiple use and by improving management, maintenance, and public support facilities. Ensure that the adverse impacts of developments proposed near existing public access and recreation sites are minimized.

The Landfall Site in Falmouth is located within an existing paved parking lot at Surf Drive Beach in Falmouth public beach. It is anticipated that a portion of the parking lot will be closed during HDD activities, however, portions of the parking lot will remain available as will beach access. HDD construction activities are temporary and are expected to last for 3- to 4-weeks. Additionally, HDD activities will be performed during the off-season in Falmouth and Oak Bluffs (after Labor Day and before Memorial Day). As noted above, all structures will be located underground at the landfall sites and the work areas restored to pre-construction conditions yielding no change to public access to waterfront and recreational areas.

Public Access Policy #3

Expand existing recreation facilities and acquire and develop new public areas for coastal recreational activities, giving highest priority to regions of high need or limited site availability. Provide technical assistance to developers of both public and private recreation facilities and sites that increase public access to the shoreline to ensure that both transportation access and the recreation facilities are compatible with social and environmental characteristics of surrounding communities.

Not Applicable. See Public Access Policy #2. The Project does not involve any new or expansion of recreational facilities.

6.2.2.9 Water Quality

Water Quality Policy #1

Ensure that point-source discharges and withdrawals in or affecting the coastal zone do not compromise water quality standards and protect designated uses and other interests.

Not Applicable. The Project does not involve a new or reconstructed drainage system and does not require or propose any new point-source discharges. Limited withdrawals during construction may include water for cable installation (if jet-plow is used). These modest and temporary water withdrawals are not anticipated to have any meaningful impact on water quality.

Water Quality Policy #2

Ensure the implementation of nonpoint source pollution controls to promote the attainment of water quality standards and protect designated uses and other interests.

The Project will not alter existing stormwater volumes or drainage patterns, and will not result in any new nonpoint source pollution. Construction-period sedimentation and erosion controls summarized above are included in the Project design and will be implemented during construction. Because the Project will disturb more than one acre of land, a SWPPP will be developed for the Project and coverage under the NPDES Construction General Permit (GCP) for Stormwater Discharges from Construction Activities will be obtained.

Water Quality Policy #3

Ensure that subsurface waste discharges conform to applicable standards, including the siting, construction, and maintenance requirements for on-site wastewater disposal systems, water quality standards, established Total Maximum Daily Load limits, and prohibitions on facilities in high-hazard areas.

Not Applicable. The Project does not propose any subsurface waste discharges.

6.2.2.10 Conclusion

As described herein, the Project complies with the enforceable policies of Massachusetts' approved Coastal Zone Management Plan and will be conducted in a manner consistent with such policies.

6.3 Massachusetts Ocean Management Plan

On December 31, 2009, the EEA released the original Massachusetts Ocean Management Plan ("OMP"), which creates a framework for managing uses and activities within the state's ocean waters. As such, its geographic scope is broad and includes the ocean waters, seafloor, and subsurface. Jurisdiction covers the area from the seaward limit of state waters (generally three miles offshore) to a nearshore boundary that lies approximately 0.3 miles seaward from Mean High Water. The 2021 OMP is the current ocean plan, superseding all previous versions.

As stipulated in the Oceans Act of 2008, and described in Chapter 1 of the OMP, implementation is achieved through existing state review procedures, with all licenses, permits, and leases required to be consistent to the maximum extent practicable [emphasis added] with the OMP. The OMP will also be incorporated into the Massachusetts Coastal Zone Management Plan, meaning that all federal actions must also be consistent with the OMP to the maximum extent practicable. Any project that requires an EIR pursuant to MEPA is subject to the OMP, and the Plan's mapped resources (discussed below) will guide the scope of MEPA review.

The proposed Project is located in the "Multi-Use Area" of the OMP, which covers the majority of the jurisdictional planning area. In that area, proposed projects are subject to the siting and performance standards associated with allowable uses; those uses are governed by the Ocean Sanctuaries Act, as modified by the Oceans Act, and includes cables. A large part of the planning process was devoted to mapping and evaluating natural resources and existing water-dependent uses (e.g., navigation, fishing).

This resulted in a series of maps identifying SSU resources and existing water-dependent uses that are relevant for particular types of projects. The OPM's general siting and performance standards are directly tied to these SSUs and uses, and are discussed below.

6.3.1 Siting and Performance Standards

The OPM's siting and performance standards apply to any project that is required to develop an EIR pursuant to MEPA. Furthermore, all state certificates, licenses, permits, and approvals for any proposed structures, uses, or activities must be consistent with the OMP to the "maximum extent practicable". As stipulated in the Oceans Act, the OMP will also be incorporated into the Massachusetts Coastal Zone Management Plan, meaning that all federal actions will also need to be consistent with the OPM to the maximum extent practicable.

6.3.2 Special, Sensitive, and Unique Resources

Within areas mapped as SSUs, all uses are presumptively excluded, thus making the siting standard one of avoidance. This presumption can be overcome only by clearly showing that no alternative exists, the SSU will not be affected, or the SSU map is erroneous.

Any project meeting the siting standard must then comply with the performance standard by demonstrating that public benefits outweigh any detriments, that all practicable steps have been taken to avoid damage to SSUs, and that there will be no significant SSU alteration.

6.3.3 Existing Water-Dependent Uses

For projects located within areas mapped for the protection of existing water-dependent uses, the siting standard is to *"avoid, minimize, and mitigate impacts to the maximum extent practicable."*

Any project meeting the siting standard must then comply with the performance standard to meet all applicable permitting standards.

6.3.4 Cable Projects

Cables are allowed in the OMP Multi-Use Area, subject to the siting and performance standards above, as well as other applicable law.

The OMP identifies the following SSUs for cable projects:

- Core habitat of the North Atlantic right whale, fin, and humpback whales;
- Hard/complex seafloor;
- Eelgrass; and
- Intertidal flats.

These SSUs are depicted on **Attachment B, Figure 13** with Hard/complex seafloor and eelgrass being the only SSUs within the Project area.

In accordance with the siting and performance standards identified above, cables are presumptively excluded from any of these SSU areas and any cable project must demonstrate that its public benefits outweigh any detriments, it avoids damage to SSU resources, and it results in no significant alteration to SSUs.

The Plan does not identify any existing water-dependent uses for which cable projects must meet siting or performance standards.

6.3.5 Project Consistency

There are two SSU resources that exist in the cable corridor: eelgrass meadow and hard bottom/complex seafloor (see **Attachment B, Figure 13**).

Eelgrass Meadow

Consistent. The Project is designed to avoid eelgrass habitat. MassGIS mapping, and marine surveys conducted in autumn 2021 confirm, the presence of an extensive eelgrass meadow of the Falmouth coast. HDD construction will be used to install the cable under the eelgrass by drilling under the meadow rather than plowing through the meadow. See **Attachment C, Sheet 13 of 18** which depicts the HDD exits location offset more than 500 feet from the eelgrass margin.

Hard / Complex Seafloor

Attachment B, Figure 13 depicts the MassGIS hard/complex seafloor from the 2015 and 2021 data layer, and **Attachment B, Figure 3** depicts existing and proposed cables crossing Vineyard Sound from Falmouth to Martha's Vineyard.

The 2015 data has the only data layer available in the summer and early autumn of 2021 when the cable corridor and marine surveys were being planned. Thus, the selected cable corridor, as depicted on **Attachment B, Figure 13**, was selected to avoid all but one mapped SSU unit. Crossing that single unit is unavoidable due to the #99 Cable due east and the #75 Cable due west of that SSU unit, see **Attachment B, Figures 3 and 13.**

Subsequent to the marine surveys being completed, the 2021 MassGIS data layer was released in January 2022. That mapping depicts more extensive hard and complex bottom across the Sound as compared with the 2015 data layer. The marine surveys classify the bottom in accordance with the CNECS and those results are depicted on **Attachment B, Figure 17.** The marine surveys generally confirm the 2021 MassGIS data layer mapping.

The Proponent proposes to install the cable across the Sound by hydroplow construction method. As documented above in **Section 3.2.2**, this method will not result in the loss of these bottom types nor will it result in the conversion of these bottoms from a hard or complex bottom to some other bottom coverage. Therefore, this Project is presumed to be consistent with the OPM.

Furthermore, as demonstrated in the public benefits analysis in **Section 1.4,** the Project's public benefits are numerous while the potential impacts are few.

In summary, the Project is consistent with the OMP as demonstrated by compliance with the following management tools:

The Project is consistent with the siting and performance standards for cables;

- ♦ Through a rigorous process of site selection coupled with alternative installation techniques, the Project prioritizes the avoidance of any impacts to SSU resources;
- ♦ As described in **Section 2.4**, the proposed cable route is being located to avoid significant alteration to SSU resources –avoiding eelgrass and avoiding permanent alteration of hard/complex seafloor;
- ♦ As shown through the Alternatives Analysis, there is no less damaging practicable alternative to the Project (see **Section 2.0**); and
- ♦ The public benefits analysis described in terms of the public benefit determination demonstrates that the Project's public benefits outweigh any detriments (see **Section 1.4**).

6.4 Cape Cod Commission Regional Policy Plan

This section describes the Project's consistency with the Cape Cod Commission's Cape Cod Regional Policy Plan ("RPP"). The most recent version of the RPP is December 2018; amended effective March 30, 2021. The adopted goals and objectives are outlined in Section 6 of the RPP.

6.4.1 Natural Systems

The Natural Systems section of the RPP focuses on protecting and restoring the quality and function of the region's natural environment that provides the clean water and healthy ecosystems upon which life depends.

The Natural Systems section of the RPP contains the goals and objectives for water resources, ocean resources, wetland resources, wildlife and plant habitat, and open space on Cape Cod. Consistency with the applicable goals and objectives related to water resources, ocean resources, wetland resources, wildlife and plant habitat and open space are addressed below.

6.4.1.1 Water Resources

Goal: *To maintain a sustainable supply of high quality untreated drinking water and protect, preserve, or restore the ecological integrity of Cape Cod's fresh and marine surface water resources.*

Objective 1. *Protect and preserve groundwater quality.*

Complies. The Project involves the installation of a duct and manhole system within existing paved pathways. As discussed in **Section 3.2.3**, any dewatering required for the Project will be conducted in accordance with the requirements of the NPDES Construction General Permit. Compliance is considered to adequately protect receiving water quality.

Objective 2. *Protect, preserve and restore fresh water resources.*

Not Applicable. The duct and manhole system is being installed on in public ROWs in the coastal zone, no work is proposed in or proximate to fresh water resources. Work in Mill Road is proximate to Salt Pond, however it is limited to the existing roadway and with implementation of construction-period BMPs will have no impact on the pond.

Objective 3. *Protect, preserve and restore marine water resources.*

Complies. The Project involves HDD and trenchless construction activities in Vineyard Sound. Ocean Management Plan SSU resources in the cable corridor include eelgrass and hard/complex bottom. Use of HDD will avoid impacts to coastal beach, coastal dune and eelgrass by drilling underneath those resources. Trenchless construction was selected to minimize construction-period effects and have no long-term effects on the seafloor.

Objective 4. *Manage and treat stormwater to protect and preserve water quality.*

Complies. The Project does not change surface types and does not require a drainage system. During the construction-period Eversource will develop and implement storm water BMPS in the form of a SWPPP to control runoff and dewatering, and control erosion and sedimentation. Once constructed, the underground duct and manhole system will not create any new sources of stormwater runoff. As such, the Project meets this objective.

Objective 5. *Manage groundwater withdrawals and discharges to maintain hydrologic balance and protect surface and groundwater resources.*

Not applicable. The Project does not involve groundwater withdrawals and discharges. As discussed in **Section 3.2.3**, any dewatering required for the Project will be conducted in accordance with the requirements of the NPDES CGP and SWPPP.

6.4.1.2 Ocean Resources

Goal: *To protect, preserve, or restore the quality and natural values and functions of ocean resources.*

Objective 1. *Locate development away from sensitive resource areas and habitats.*

Not appliable. This is not a development project. The underground cable is located in public ROWs and the use of HDD avoid work insensitive resource Areas and the use of trenchless construction of the submarine cable minimize effects on the seafloor.

Objective 2. *Preserve and protect ocean habitat and the species it supports.*

Complies. The Project involves HDD to avoid intertidal resources, and trenchless construction in Vineyard Sound to avoid long-term changes to the seafloor.

Objective 3. *Protect significant human use areas and vistas.*

Complies. The burred cable is located in public ROWs and in existing cable corridors across Vineyard Sound. This alignment does not interfere with existing developed human uses, and burying the cables avoids aesthetic effects, i.e., changes to vistas.

Goal: *To protect, preserve, or restore the quality and natural values and functions of inland and coastal wetlands and their buffers.*

Objective 1. *Protect wetlands and their buffers from vegetation and grade changes.*

Complies. Work in buffer to bank, beach and dune is located in public ROWs and will not affect vegetation, and the buried cable will not change grades in the ROWs.

Objective 2. *Protect wetlands from changes in hydrology.*

Complies. The buried cable duct and manhole system will not change the hydrology along the route.

Objective 3. *Protect wetlands from stormwater discharges.*

Complies. Eversource will develop and implement the SWPPP to protect the receiving water quality during construction. The buried cable in the duct and manhole system requires no stormwater discharges.

Objective 4. *Promote the restoration of degraded wetland resource areas.*

Not applicable. The Project is not wetland restoration project. That said, the project is designed to avoid altering wetland resource areas.

6.4.1.3 Wildlife and Plant Habitat

Goal: *To protect, preserve, or restore wildlife and plant habitat to maintain the region's natural diversity.*

Objective 1. *Maintain existing plant and wildlife populations and species diversity.*

Complies. The land side cable route is located in existing public ROWs and paved parking area, thus will not affects existing plants, wildlife or diversity. The use of HDD at the landfall avoid altering eelgrass, beach and dune. The use of trenchless construction of across the Sound will temporarily alter the seafloor, but will have no long-term effect on the seafloor or benthos.

Objective 2. *Restore degraded habitats through use of native plant communities.*

Not applicable. This is not a restoration project. The Project however will have no permanent impacts to plant and wildlife populations on Cape Cod.

Objective 3. *Protect and preserve rare species habitat, vernal pools, 350-foot buffers to vernal pools*

Complies. As shown on **Attachment B, Figure 23**, the submarine route passes through NHESP Priority Habitat and Estimated Habitat for state-listed species. Previous correspondence with the NHESP identified this mapping demarcated habitat for state-listed shorebirds. Accordingly, the Proponent will consult with NHESP by submitting a Joint WPA-MESA Notice of Intent, and will work to design the Project to protect state-listed species and avoid a "take" of state-listed species.

The Project is not located within 350 feet of any vernal pools mapped by NHESP (**see Attachment B, Figure 23**).

Objective 4. *Manage invasive species.*

Not applicable. The Project is located in public ROWs, parking lot and in submarine habitats.

Objective 5. *Promote best management practices to protect wildlife and plant habitat from the adverse impacts of development.*

Complies. The use of HDD and trenchless submarine cable construction are the best practices to avoid and minimize effects on plants and wildlife. The terrestrial cable is located in previous developed area (i.e. public ROWs and paved parking lot).

6.4.1.4 Open Space

Goal: *To conserve, preserve, or enhance a network of open space that contributes to the region's natural and community resources and systems.*

Objective 1. *Protect and preserve natural, cultural, and recreational resources.*

Complies. Construction of the Project is scheduled to occur in the off-season to avoid conflict with recreational activities. The terrestrial cable route is located in develop public ROWs and a paved parking lot to avoid natural and cultural resources. The Proponent is coordinating closely with the Town of Falmouth officials and stakeholders to minimize construction-period impacts along the Shining Sea Bikeway.

The cable route in Falmouth does not pass through any mapped historical areas, and was chosen over alternative routes that passed through several mapped historical areas. The Massachusetts Historical Commission, MBUAR, and THPO will be consulted pursuant to Section 106 of the NHPA.

Objective 2. *Maintain or increase the connectivity of open space.*

Complies. The buried cable will not affect connectivity to any open spaces. Construction-period traffic management plans will be developed to avoid disruptions during construction. A key element of compliance is avoiding construction during the summer, i.e., no construction between Memorial Day and Labor Day.

Objective 3. *Protect or provide open space appropriate to context.*

Complies. The cable will be installed underground and underwater, and therefore will have no permanent impacts on open space.

6.4.2 Built Systems

The Built Systems section of the RPP focuses on protecting and enhancing the built environment and infrastructure necessary to support the region and healthy activity centers.

The Built Systems section of the RPP contains the goals and objectives for community design, coastal resiliency, capital facilities and infrastructure, transportation, energy, waste management, and climate migration on Cape Cod. Consistency with the applicable goals and objectives related to these subjects are addressed below.

6.4.2.1 Community Design

Goal: *To protect and enhance the unique character of the region's built and natural environment based on the local context.*

Objective 1. *Promote context sensitive building and site design.*

Not applicable This Project does not involve the construction of new buildings, and new equipment in the Eversource substation in Falmouth will be placed within the existing developed substation.

Objective 2. *Minimize the amount of newly disturbed land and impervious surfaces.*

Complies. Construction of the duct and manhole system is planned within existing paved areas, therefore this Project will not result in newly disturbed land or an increase in impervious surfaces on Cape Cod.

Objective 3. *Avoid adverse visual impacts from infrastructure to scenic resources.*

Complies. The Project involves constructing a submarine cable, a buried terrestrial cable, and minor equipment modifications in the existing Eversource substation #933 in Falmouth, therefore there will be no visual impacts to scenic resources.

6.4.2.2 Coastal Resiliency

Goal: *To prevent or minimize human suffering and loss of life and property or environmental damage resulting from storms, flooding, erosion, and relative sea level rise, including but not limited to that associated with climate change.*

Objective 1. *Minimize development in the floodplain.*

Complies. Work in the floodplain is limited to the underground duct and manhole system in paved roadways in paved parking lot. No new impervious cover or above ground facilities are in floodplain.

Objective 2. *Plan for sea level rise, erosion, and floods.*

Complies. The duct and manhole system was chosen partly because it is more resilient to sea level rise, erosion, and floods than a cable mounted on utility poles.

Objective 3. *Reduce vulnerability of built environment to coastal hazards.*

Complies. The underground duct and manhole system reduces the vulnerability of the cable to coastal hazards.

6.4.2.3 Capital Facilities & Infrastructure

Goal: *To guide the development of capital facilities and infrastructure necessary to meet the region's needs while protecting regional resources.*

Objective 1. *Ensure capital facilities and infrastructure promote long-term sustainability and resiliency.*

Complies. The purpose of the Martha's Vineyard Reliability Project is to improve the reliability of grid-based electrical service on Martha's Vineyard. The proposed terrestrial route will have the added benefit of system modification in Falmouth to improve the electrical service reliability for Falmouth Hospital.

Objective 2. *Coordinate the siting of capital facilities and infrastructure to enhance the efficient provision of services and facilities that respond to the needs of the region.*

Complies. See response to objective No. 1 above.

6.4.2.4 Transportation

Goal: *To provide and promote a safe, reliable, and multi-modal transportation system.*

Objective 1. *Improve safety and eliminate hazards for all users of Cape Cod's transportation system.*

Not applicable. This is not transportation project. However, during construction, a traffic management plan will be developed and implemented to maintain a safe traffic patterns around or through work zones.

Objective 2. *Provide and promote a balanced and efficient transportation system that includes healthy transportation options and appropriate connections for all users.*

Not applicable. This is not transportation project.

Objective 3. *Provide an efficient and reliable transportation system that will serve the current and future needs of the region and its people.*

Not applicable. This is not transportation project.

6.4.2.5 Energy

Goal: *To provide an adequate, reliable, and diverse supply of energy to serve the communities and economies of Cape Cod.*

Objective 1. *Support renewable energy development that is context-sensitive.*

Complies. Improvements to equipment on the Eversource substation in Falmouth will enhance Eversource's ability to connect to and distribute renewable energy.

Objective 2. *Increase resiliency of energy generation and delivery.*

Complies. This Project will improve the reliability of grid-based electricity delivered to Martha's Vineyard. This fifth cable will meet current and future demands on the Island, and improve the capacity of the Island's electrical system to accommodate on-Island distributed renewable electricity.

Objective 3. *Minimize energy consumption through planning and design (including energy efficiency and conservation measures).*

Not applicable. The Project will have no impact on energy consumption.

6.4.2.6 Waste Management

Goal: *To promote a sustainable solid waste management system for the region that protects public health, safety, and the environment and supports the economy.*

Objective 1. *Reduce waste and waste disposal by promoting waste diversion and other Zero Waste initiatives.*

Not applicable However, solid waste generated during construction will be disposed of in accordance with local and state regulations.

Objective 2. *Support an integrated solid waste management system.*

Not applicable. This Project will have no impact on the solid waste management system.

6.4.2.7 Climate Mitigation

Goal: *To support, advance and contribute as a region to the Commonwealth's interim and long-term greenhouse gas reduction goals and initiatives, including a state-wide net zero carbon target by 2050.*

Objective 1. *Promote low or no carbon transportation alternatives and technologies.*

Not applicable. This is not a transportation project.

Objective 2. *Promote low or no carbon technologies for building energy use, including appliances, lighting, and heating, ventilation and cooling ("HVAC") systems.*

Not applicable. This project does not require or include any new buildings.

Objective 3. *Promote carbon sequestration and other emissions removal practices and technologies as appropriate to context.*

Not applicable. However, construction of this fifth cable to Martha's Vineyard will enable the on-Island electrical system to better integrate distributed renewable energy.

Objective 4. *Promote low or no carbon energy generation technologies as appropriate to context.*

Not applicable. This is not an energy generation project. However, construction of this fifth cable to Martha's Vineyard will enable the on-Island electrical system to better integrate distributed renewable energy, and modification at Substation #933 in Falmouth will better enable the substation to distribute renewable electricity delivered to Cape Cod.

6.4.3 Community Systems

The Community Systems section of the RPP focuses on protecting and enhancing the linkages between society, the natural environment, and history vital to the way of life on Cape Cod by supporting development of amenities and life opportunities necessary to support vibrant and diverse communities.

The Community Systems section of the RPP contains the goals and objectives for cultural heritage, economy, and housing on Cape Cod. Consistency with the applicable goals and objectives related these subjects are addressed below.

6.4.3.1 Cultural Heritage

Goal: *To protect and preserve the significant cultural, historic, and archaeological values and resources of Cape Cod.*

Objective 1. *Protect and preserve forms, layouts, scale, massing, and key character defining features of historic resources, including traditional development patterns of villages and neighborhoods.*

Complies. This Project will have no impacts on forms, layouts, scale, massing, or key character defining features of historic resources in Falmouth.

Objective 2. *Protect and preserve archaeological resources and assets from alteration or relocation.*

Complies. The MHC SHPO, MBUAR, and THPO will be consulted pursuant to Section 106 of the NHPA. Additionally, the cable route in Falmouth was chosen to avoid mapped historical resources.

Objective 3. *Preserve and enhance public access and rights to and along the shore.*

Complies. Construction is planned in the off season to minimize temporary impacts to the public's access to the shore. The underground cable will have no permanent impacts to the public's access and rights along the shore.

Objective 4. *Protect and preserve traditional agricultural and maritime development and uses.*

Complies. The Project does not involve work in agricultural land. The submarine cable was designed to follow along an existing cable corridor, and will be installed using HDD at the landfall and trenchless cable construction will be used across Vineyard Sound. The installed cable will have no effect on maritime uses. In-water construction will be coordinated with the USCG and Harbormasters to minimize impacts on navigation during construction.

6.4.3.2 Economy

Goal*: To promote a sustainable regional economy comprised of a broad range of businesses providing employment opportunities to a diverse workforce.*

Objective 1. *Protect and build on the Cape's competitive advantages.*

Complies. The Plan defines the Cape's competitive advantages as the unique natural environment, historic village character, harbors, and cultural heritage. The Project will not permanently alter these aspects of the community.

Objective 2. *Use resources and infrastructure efficiently.*

Complies. The Project will construct a new duct and manhole system in public ROWs that will be sized to house future cables for electricity distribution in Falmouth, promoting the efficient use of this infrastructure. Additionally, the cable will utilize existing duct and manhole system in Surf Drive.

Objective 3. *Foster a balanced and diverse mix of business and industry.*

Not applicable. The Project does not affect business or industrial development.

Objective 4. *Encourage industries that provide living wage jobs to a diverse workforce.*

Not applicable.

Objective 5. *Expand economic activity and regional wealth through exports, value added, import substitution, and local ownership.*

Not applicable.

6.4.3.3 Housing

Goal: *To promote the production of an adequate supply of ownership and rental housing that is safe, healthy, and attainable for people with different income levels and diverse needs.*

Objective 1. *Promote an increase in housing diversity and choice.*

Not applicable.

Objective 2. *Promote an increase in year-round housing supply.*

Not applicable

Objective 3. *Protect and improve existing housing stock.*

Not applicable

Objective 4. *Increase housing affordability.*

Not applicable.

6.5 Martha's Vineyard Commission Regional Policy Plan

This section describes the Project's consistency with the MVC's Island Plan ("the Plan"). The Plan was adopted in 2009. The adopted goals and objectives are outlined in Section 6 of the Plan.

6.5.1 Development and Growth

Goal: *Preserve and reinforce the traditional settlement pattern of the Island; reduce the amount of future development, especially in environmentally sensitive areas; slow the rate of growth; and ensure that development and redevelopment projects are better planned and designed.*

Objective D1*: Preserve and reinforce the traditional settlement pattern of the Island.*

Objective D2*: Reduce the amount of future development, especially in environmentally sensitive areas.*

Objective D3*: Reduce the rate of development.*

Objective D4*: Ensure that development and redevelopment projects are better planned and designed.*

Not applicable. The fifth cable to Martha's Vineyard will not direct development patterns, development siting, the rate of development or development (and redevelopment) planning. It will however, provide more reliable grid-based electrical energy service to meet current and future electrical energy needs.

6.5.2 Natural Environment

Goal: *Restore the Vineyard's native lands, waters and wildlife to functional and sustainable levels.*

Objective N1*: Safeguard the most important natural areas of the Island as open space.*

Objective N2*: Protect Minimum Viable Landscapes of significant Eco-Regions to restore and maintain the conditions to protect viable populations of the Vineyard's native species, both resident and migratory.*

Objective N3*: Provide residents and visitors with access to the Vineyard's beaches and shoreline for fishing, shellfishing, walking, sitting, swimming and other recreational activities in a diverse array of settings.*

Objective N4*: Enable residents and visitors to enjoy a diverse experience of walking, cycling and horseback riding.*

Objective N5*: Provide access to public open spaces in village areas.*

Objective N6*: Protect roadside and coastal vistas and viewsheds.*

Objective N7*: Increase farming and food production.*

Objective N8*: Increase fishing.*

Objective N9*: Promote lumbering.*

Objective N10*: Prepare for climate change.*

The 10 objectives to promote the natural environment are broad. The Project was designed to avoid and minimize coastal and submarine resources by: (1) using HDD to avoid dune, beach and intertidal resources, and (2) using trenchless submarine cable construction to minimize impacts to the seafloor. Once installed the submarine cable will not cause any long-term impacts to the seafloor or benthos. Use of underground duct and manhole system for the cable in the Eastville Avenue ROW: (1) avoids installing new utility poles along the road, (2) protects the viewshed, and (3) will impacts the publics ability to access the waterfront.

6.5.3 Built Environment

Goal: *Preserve the distinct character of Martha's Vineyard and promote environmentally sound building.*

Objective B1*: Increase public awareness of the Vineyard's built environment.*

Objective B2*: Protect historic resources – such as culturally significant buildings, streetscapes, and areas – and ensure that new development is compatible.*

Objective B3*: Protect community character by ensuring that buildings fit their context – especially as seen from public places such as roads and public waters – while allowing creativity and flexibility.*

Objective B4*: Encourage use of environmentally sound "green building" techniques and minimize the negative environmental impacts of building and human habitation.*

Objective B5*: Minimize the general ongoing environmental impacts of human habitation on its context.*

Objective B6*: Redevelop "Opportunity Areas" – presently problematic areas – to improve the quality of the physical environment, to make them work more efficiently, and to incorporate compact, mixed-use development.*

The Project is designed to preserve the character at the landfall and cable route by installing the cable underground. It does not involve any buildings or development per se, but by improving the reliability of the Island's electrical system it will support green building development such as the use of electric power based HAVC systems in lieu of fossil fuel-based HVAC systems. Two additional benefits of this Project include: (1) the fifth cable and island electrical system improvements will better accommodate integration of distributed renewable power generated on the island, and (2) allow Eversource to cease using the five on-Island diesel peaking generator which will reduce fossil fuel use and avoid air emissions from those decommissioned generators.

6.5.4 Social Environment

Goal*: Maintain a healthy, engaged, and diverse community.*

Objective S1*: Maintain the Vineyard's strong sense of community and inclusiveness, preserve the economic continuum, and increase understanding among groups (year-round/seasonal, income, age, ethnicity, color).*

Objective S2*: Make Martha's Vineyard a healthy community with a mindset to promote healthy lifestyles and to improve human and infrastructure capacity to provide necessary health and human services that are seamless, complementary, coordinated, and accessible.*

Objective S3*: Turn the whole Vineyard into a "school without walls" by providing community-based pre-K-to-12 education for students in the school system, and by encouraging and promoting opportunities for residents and visitors to pursue education throughout their lives.*

Objective S4*: Increase coordination of and support to the arts and culture community in order to bring various groups together, to foster cultural expression, to support the diverse for-profit and nonprofit arts sector, to promote Vineyard culture to the local and visiting community, and to increase cultural tourism.*

The Project per se does not intersect with the social environment goal. However, improving the reliability of the grid-based electrical will improve the Island's electric infrastructure which supports educational, cultural, health and human services on the island.

6.5.5 Livelihood and Commerce

Goal: *Transition to a more diverse and balanced year-round economy that enables those who grow up here to stay or return, helps year-round residents lead productive lives, and fortifies the seasonal aspects of the economy***.**

Objective L1*: Look to the creative stewardship of the Island's rich natural resource base to generate interesting, meaningful, living-wage jobs.*

Objective L2*: Create new business opportunities appropriate to the Vineyard, emphasizing initiatives that are environmentally benign or restorative.*

Objective L3*: Strengthen and gradually realign our core, visitor-based economic activities.*

Objective L4*: Find ways to provide "career path" jobs for the next generation and expand the proportion of higher paying "living wage" jobs.*

Objective L5*: Use the community's buying power to keep more dollars circulating within the local economy.*

Objective L6*: Locate commercial activities appropriately and ensure that there is sufficient commercial land for future needs.*

The Project does not directly intersect with this goal. However, providing more reliable grid-based electricity will support residents' livelihood and commerce on the Island.

6.5.6 Energy and Waste

Goal: *Ensure that the Vineyard community has reliable, secure, ample, affordable, and environmentally sound energy supplies; obtains as much of its energy as possible from sources that are renewable and, increasingly, local; and transforms a maximum amount of our waste into useful resources.*

Objective E1*: Organize to deal effectively with energy issues.*

Objective E2*: Reduce the amount of energy used in buildings.*

Objective E3*: Reduce the amount of fossil fuels used in motorized transportation.*

Objective E4*: Improve Island air quality related to transportation.*

Objective E5*: Pursue local, utility-scale generation of energy.*

Objective E6*: Optimize potential for on-site, residential-scale energy generation.*

Objective E7*: Develop capacity and a regulatory framework to encourage and support the development and installation of renewable energy generation.*

Objective E8*: Convert most of our waste into useful resources with an integrated, Island-wide program of waste management.*

Objective E9*: Pursue opportunities to reduce, reuse, and recycle waste materials.*

Complies. The purpose of the Martha's Vineyard Reliability Project is to improve the reliability of grid-based electricity to the Island. Other benefits of this Project support the objective of this goal, and those include: (1) Accommodating existing and future demand of electricity. A driver of future demand is the increased load needed to charge electric vehicles ("EVs"). This Project will support that demand. (2)

Providing adequate electricity will support increased use of EV's on the island. (3) The project and modifications to the Island's distribution system will accommodate interconnections from distributed renewable generation on the Island, which includes residential-scale generation. (4) Increasing grid-based electricity distribution to the Island will allow Eversource to decommission the five peaker diesel generators on the Island, thus reducing fossil fuel use and thus reducing emissions (including CO2) on the Island.

6.5.7 Housing

Goal: *Provide a full range of housing options by significantly increasing the number of affordable housing and community housing units on the Vineyard, by prioritizing those residents with the greatest need, and by emphasizing the creation of rental units.*

Objective H1*: Allow additional density for new community housing in appropriate locations.*

Objective H2*: Prioritize use of existing housing stock for affordable housing and community housing.*

Objective H3*: Increase funding for community housing and related infrastructure and services.*

Objective H4*: Streamline the planning and management of community housing efforts.*

Objective H5*: Encourage public-private partnerships to address seasonal workforce housing needs.*

Objective H6*: Increase the supply of housing for independent retirees, seniors, and others needing assisted living housing.*

The Project does not directly intersect with this goal. However, It will provide more reliable energy service to the Island that is better able to support housing.

6.5.8 Transportation

Goal: *Reduce dependence on private automobiles and promote alternate modes of travel – especially bus, bicycle, and walking – for both residents and visitors.*

Objective T1*: Promote and fund alternative modes of transportation.*

Objective T2*: Improve the efficiency and promotion of the Island's buses, taxis, and ferries.*

Objective T3*: Make town and village areas more pedestrian and bicycle friendly.*

Objective T4*: Expand and enhance a safe and efficient network of off-road bicycle paths (Shared User Paths), on-road bicycle routes, and walking trails.*

Objective T5*: Use physical traffic calming techniques to slow traffic and improve safety in neighborhoods.*

Not applicable. However, providing adequate electricity will support increased use of EV's on the island.

6.5.9 Water Resources

Goal: *Ensure that the quantity and quality of water resources remain sustainable.*

Objective W1*: Assure a plentiful supply of high quality drinking water.*

Objective W2*: Treat and dispose of wastewater in a manner that will support sustainable drinking water supplies and protect public health and surface water resources.*

Objective W3*: Develop and implement nitrogen reduction on a watershed or Island-wide basis.*

Objective W4*: Eliminate or reduce direct discharge of stormwater runoff into sensitive water resources.*

Objective W5*: Ensure appropriate management of coastal ponds and their watersheds, including improvements to water circulation.*

Not applicable to the water resources objectives. However, proper construction period BMPs will be implemented during construction along Eastville Avenue to manage stormwater to protect water resources from sedimentation during construction.

7.0 AIR QUALITY, GREEHOUSE GAS EMISSIONS, AND CLIMATE CHANGE ADAPTATION AND RESILIENCY

7.1 Air Quality and Greenhouse Gas Emissions

The operation of the fifth cable to Martha's Vineyard will not result in emissions and thus will have no direct effect on air quality or emission of greenhouse gases ("GHG"). During construction, BMPs identified in **Section 5.13** above will be employed to control air emissions from construction vehicles, vessels and equipment.

Benefits relative to air quality and emissions of GHGs include:

- The decommissioning of the five-diesel powered peaking generators, which combined provide approximately 12.5 megawatts ("MW") of supplemental power and use during peak demand periods. The diesel generators were installed in the 1950s and are located at 70 Airport Road in Vineyard Haven and 200 Edgartown Vineyard Haven Road in Oak Bluffs. See **Attachment B, Figure 4**. Th Project will benefit air quality and reduce emissions of GHGs on the Island.
- There are EJ populations within 5-mailes of these generators. This Project will reduce this environmental burden on those populations.
- The addition of a 5^{th} cable will enable the existing 23 kV electric distribution system on Martha's Vineyard to be reconfigured so that the electrical loading and total customer counts on all five cables are optimized to improve both capacity and customer reliability. The addition of the new 5th cable will also allow for an incremental increase in distributed energy resources (e.g., roof top solar photovoltaic units, wind generating units, etc.) on Martha's Vineyard. This will support reductions of GHG emissions on the Island.

7.2 Climate Change Adaptation and Resiliency

In accordance with MEPA's *Interim Protocol on Climate Change Adaptation and Resiliency* (dated October 1, 2021), the Proponent evaluated the potential climate change impacts on the project via the Resilient Massachusetts Action Team ("RMAT") Climate Resilience Design Standards Tool. See the RMAT output in **Attachment L – RMAT Tool Output.**

As described throughout this EENF/PEIR, and further discussed below: the installed buried terrestrial and submarine cable will not result in environmental impacts, by being buried it is considered to be resilient, and will have no effect on sea levels. Eversource has also taken steps to ensure that the new equipment yard and modifications at Substation #933 are resistant to the potential effects from sea level rise and climate change.

The field of climate change study is constantly evolving, and the Massachusetts State Hazard Mitigation and Climate Adaptation Plan (https://resilientma.org/shmcap-portal/#/) currently identifies the following four primary climate change interactions – changes in: precipitation, sea level rise, extreme weather, and rising temperatures.

Potential climate related impacts are particularly relevant to communities located near the coast, such as Falmouth and Oak Bluffs, and specifically to the Project area, which includes work along the shore. The RMAT Tool Output identified the risks as follows:

- Seal Level Rise / Storm Surge - High
- Extreme Precipitation / Urban Flooding - Moderate
- Extreme Precipitation / Riverine Flooding - Moderate
- Extreme Heat - High

Eversource focused its assessment of potential vulnerabilities to the distribution line infrastructure on changes in precipitation and extreme weather events, including the potential exposure of the Project area to flooding.

Generally, climate change research indicates an expectation of more frequent and intense storm events. Within the Project Area, climate models suggest there will be an increase in precipitation, with an up to 2-inch estimated increase in total annual precipitation between the 2030s and 2090s (https://resilientma.org/map/). More frequent and intense storm events, and increased annual precipitation, could result in more localized flooding in the Project area.

The FEMA mapped flood zone is defined as the 100-year flood event which represents a flood event that has a 1% probability of occurring in any given year. The terrestrial routes on both the Falmouth and Oak Bluffs side have portions that are within the 100-year floodplain. See **Attachment B, Figures 19 and 20**.

Underground distribution line design and installation is inherently adaptive and resilient to the potential effects of climate change. For example, most of the adverse weather conditions that traditional overhead distribution line infrastructures are exposed to above-ground can be avoided (e.g., wind and precipitation). While an overhead line typically takes less time to repair than an underground line in the event of an outage (days rather than weeks), an underground distribution line generally alleviates the need for more frequent investments in distribution infrastructure maintenance and repairs. The expected benefits would include a more secure energy supply with fewer instances of weather-related power outages.

In addition to the above, the underground distribution line facilities are not affected by flooding and will not cause flooding or exacerbate existing flooding situations. The Project does not involve any fill or permanent aboveground structures in the 100-year floodplain, and the use of HDD technology to install the distribution line beneath the Falmouth and Oak Bluffs shoreline (including the mapped 100-year floodplain limits) avoids changes to surface grades where flood storage is presently provided. Further, the splice vaults (manholes) will include sealant placed between precast concrete joints. However, these measures will not fully waterproof the splice vaults. It is expected that water will be able to enter the splice vaults especially rainwater via the covers and groundwater seepage during the life of these structures. In the event a splice vault becomes filled with water, before any maintenance or routine inspection of the splice vault can be completed, the splice vault would have to be drained before entering, which is a typical practice. Further, all the equipment to be installed inside the splice vaults is designed to operate and withstand being fully submersed in water, including salt water. Corrosion control measures will be included in the splice vaults to mitigate corrosion of any exposed metal structures or equipment.

Risk to electrical infrastructure facilities can be minimized through careful site design. To evaluate the potential for future flood risk at the Oak Bluffs parcel, Eversource considered existing conditions based on FEMA data and an on-site survey to assess the location of the flood plain in more detail, since a portion of the site is mapped within the 100-year floodplain. Regarding future conditions, portions of the site are within areas modeled as having flooding potential from precipitation events under the 2030 and 2070 100-year storm events and flooding from sea level rise/storm surge flooding in the 2070 100-year storm event.

According to MassCZM's Sea Level Rise and Coastal Flooding Viewer, the equipment yard site could potentially experience coastal flooding above mean higher high water (the average height of daily highest tide) from the most extreme predictions (year 2100) of sea level rise (5-foot to 6-foot increases above mean higher high water). This projection does not account for storm surge, waves, erosion, and other dynamic factors.

In consideration of the above potential sea level rise and coastal flooding scenarios, Eversource has incorporated several resiliency measures into the design of the Eastville Avenue parcel to mitigate impacts due to the potential for more frequent flooding and adverse consequences associated with increasing sea level rise. The equipment will be protected such that flood waters cannot penetrate to critical areas. These protective measures include placing all openings to the surface above projected flood levels, sealing conduits with plugs intended to withstand projected hydrostatic pressures and directing storm water flows from the open space above the station away from the station. Furthermore, there will be nothing in the design that will prevent the use of deployable flood barriers in the future should they become necessary.

8.0 ENVIRONMENTAL JUSTICE

This section describes the Project's past and planned efforts to reach out to potentially affected Environmental Justice communities. It then provides an enhanced analysis of impacts to demonstrate that the Project and its impacts, together with historical or existing sources of environmental pollution, will not have a disproportionate impact on EJ populations.

8.1 Scope of Environmental Justice Consideration

Pursuant to the Massachusetts Executive Office of Energy and Environmental Affairs ("EEA"), EJ is based on the principle that all people have a right to be protected from environmental pollution, and to live in and enjoy a clean and healthful environment. The EEA established an EJ Policy (updated January 2022) to "*help address the disproportionate share of environmental burdens experienced by lower-income people and communities of color*" and "*ensure their protection from environmental pollution as well as promote community involvement in planning and environmental decision-making."*

This EJ enhanced analysis follows the recent EJ Analysis Protocol. The EJ Analysis Protocol applies "*for any project that is likely to cause damage to the environment and is located within a distance of 1 mile of an Environmental Justice (EJ) population*." The Project does not meet or exceed MEPA review thresholds under 301 CMR 11.03(8)(a)-(b) and will not add 150 or more new average daily trips ("adt") of diesel vehicle traffic over a duration of 1 year or more. Therefore, the Project is not subject to a 5-mile radius.

Under the EJ Analysis Protocol, the analysis must include:

- An assessment of existing unfair or inequitable environmental burdens on the EJ population
- An assessment of the Project's impacts to determine disproportionate adverse effect (if existing unfair or inequitable environmental burdens exist) on the EJ population
- An analysis of the Project to determine Climate Change Effects (if existing unfair or inequitable environmental burdens exist)
- Mitigation and Section 61 Findings (if the Project impacts causes a disproportionate adverse effect or Climate Change Effects on the EJ population)

8.1.1 Designated Geographic Area

MEPA has classified areas of Massachusetts as Environmental Justice Populations by using the United States Census data to determine whether a block group meets one or more of the following criteria:

1. The annual median household income is not more than 65% of the statewide annual median household income;
2. Minority groups comprise 40% or more of the population;
3. 25% or more of households lack English language proficiency;

4. Minority groups comprise 25% or more of the population and the annual median household income of the municipality in which the neighborhood is located does not exceed 150% of the statewide annual median household income;
5. The Secretary has determined that a particular neighborhood should be designated as an Environmental Justice population

The Project site is located within 1 mile of six block groups that meet the criteria as EJ populations, see **Attachment B, Figures 24 – Environmental Justice Populations (Falmouth) and 25 – Environmental Justice Populations (Oak Bluffs)**. These six block groups are located within four census tracts. The EJ block groups located within the Designated Geographic Area ("DGA") are summarized in **Table 8.1**. If an EJ community is located even partially within the 1-mile radius, the entire community is part of the DGA that will be used as the basis for analyzing potential Project impacts and for public outreach purposes. The remainder of this analysis will focus on all identified EJ populations located in whole or in part within the DGA for the project.

Table 8.1 2020 EJ Block Groups within the DGA

Municipality	Census Tract	Block Group	EJ Designation
Falmouth	101480 (148)	8001 (1)	Income
Falmouth	101480 (148)	8003 (3)	Income
Falmouth	101490 (149)	9003 (3)	Income
Tisbury	72001 (2001)	1001 (1)	Income
Oak Bluffs	72002 (2002)	2002 (2)	Minority
Oak Bluffs	72002 (2002)	2004 (4)	Income
Municipality	**Census Tract**	**English Isolation**	
Tisbury	72001 (2001)	Portuguese or Portuguese Creole: 8.4%	

Figure 26 – Environmental Justice Populations – Diesel Generators (Martha's Vineyard) in Attachment B depicts the location of the generators in Oak Buffs and West Tisbury, and the EJ Populations with 1- and 5-Mile radii of each location. Decommissioning these generators will reduce emissions on the Island.

In accordance with the EJ Analysis Protocol, a four-step process has been developed for assessing whether EJ Populations have experienced existing unfair or inequitable environmental burdens within the DGA. As part of this approach a series of mapping tools have been developed that focus on,

1. the rates of four vulnerable health criteria as it relates to statewide averages (**Section 8.2**),
2. existing past and current polluting activities in the MA DPH EJ Tool (**Section 8.3**),
3. a review of the RMAT Climate Resilience Output Tool (**Section 8.4**), and
4. the use of the United States EPA's Environmental Justice Screening Tool (**Section 8.5**).

Each of these steps are described in detail below along with an assessment of the specific results for the environmental justice populations within the designated geographic area.

8.2 Vulnerable Health Criteria

The vulnerable health EJ criteria are four environmentally related health indicators to identify populations with evidence of higher-than-average rates of environmentally related health outcomes. Multiple terms are used to describe the vulnerable health EJ criteria as it relates to the EJ populations. These terms are defined and described below.

- The vulnerable health EJ criteria are reported for a population in a specific area. The area can be a state, town, or *census tract*. Census tracts are small, relatively permanent areas of land with a population typically between 1,200 – 8,000 people.

- Health criteria are reported as *rates,* or the number of people with the identified condition divided by the population in consideration. The Department of Public Health ("DPH") EJ tool compares the *community rate*, or the town or census tract of interest, to the *statewide rate,* or the rate for the population of Massachusetts. Two rate types are used: *crude rate* and *age-adjusted* rate. The crude rate is the rate calculated as number of individuals with a condition divided by the entire population. The age-adjusted rate is statistically modified to consider how different age groups have different rates of prevalence, as in the case of heart attack rate. Rates are also classified as *stable* or *unstable.* Unstable rates occur when there are too few cases in a community for a rate to be considered reliable such that the addition or deletion of small number of cases would lead to a large change in the rate. Stable rates are the opposite; there are enough cases in a population so that the rate will not fluctuate dramatically.

- A *confidence interval* refers to the minimum and maximum value such that the actual rate has a 95% chance of occurring between the calculated range. In other words, the specified rate has a high likelihood to be included in the range of values. The confidence interval is helpful to determine if a rate for a community is much higher than the statewide rate and not due to chance.

- A *case count* refers to the number of surveyed individuals that had the condition of interest. For example, if out of 40 children screened for blood lead levels, 1 child had elevated levels, the *case count* would be equal to 1.

As described above the first step of understanding whether existing EJ populations within the designated geographic area have experienced higher rates of four different vulnerable health criteria when compared to the statewide rate. Specifically, the guidance states the following:

> *"First, Proponents should consult the Massachusetts Department of Public Health (MA DPH) EJ Tool to identify whether any municipality or census tract that includes any of the identified EJ populations exhibits any of four "vulnerable health EJ criteria." Such criteria are environmentally related health indicators that are measured to be 110% above statewide rates based on a five-year rolling average. Any EJ population that exists within those municipalities or census tracts could then be viewed as exhibiting "vulnerable health EJ criteria," and therefore potentially bearing an "unfair or inequitable" environmental burden and related public health consequences. The Proponent is encouraged to conduct its own research into localized sources of data that may show additional public health vulnerabilities of the identified EJ population."*

The MA DPH EJ tool provides information on four different vulnerable health criteria:

- heart attack hospitalizations,
- childhood blood lead exposure,
- low birth weight, and
- childhood asthma for the most recent 5-year period of available data.

It should be noted that each of these datasets are available at different geographies, heart attack hospitalizations and childhood asthma are only available at the community level, while low birth weight and childhood blood lead exposure are sometimes available at the census tract level. In some cases, data from the DPH Tool output indicates Not Shown ("NS") due to data suppression. In some instances, DPH does not report values to protect the identity and privacy of individuals and to avoid the risk of identification of individuals in small population groups. For most datasets, the suppression rule is to not release numbers or rates when the number of events (e.g., number of blood lead cases in a particular census tract) is less than 6 and the population (e.g., number of individuals in that census tract) is less than 1,200. The suppression rule applies only to confidential health data and not data otherwise available to the public, such as air pollution data. Each of the vulnerable health criteria are described below, along with the results of the analysis for the DGA.

8.2.1 Heart Attack Hospitalizations

As described on the MA DPH website, Heart Attack Hospitalization is a criterion used to identify vulnerable health EJ populations. Exposure to air pollution can increase the risk for heart attack and other forms of heart disease, and it is indicative of a serious chronic illness that can lead to disability, decreased quality of life and premature death. People living in EJ areas may have higher than average heart attack hospitalization rates when compared to other communities.

Heart attack hospitalization data is based on data collected from all hospitals in Massachusetts and reflects individuals greater than 35 years old who have been admitted to the hospital for a heart attack. The vulnerable health criterion for Heart Attack Hospitalizations is the most recent 5-year average age-adjusted rate of hospitalization for myocardial infarction that is equal to or greater than 100% of the state rate. This indicator is available on a community basis.

Heart attack data at the community level was available for Falmouth, Tisbury, and Oak Bluffs. It was found that the heart attack rate for Falmouth is 34.4 per 10,000 individuals. This is greater than 110% of the statewide heart attack rate of 29.1 per 10,000, therefore Falmouth **does** meet the Vulnerable Health Criteria for heart attack. The heart attack rate data for Falmouth is considered stable and statistically significantly higher than the statewide level.

The heart attack rate for Tisbury is 46.1 per 10,000 individuals. This is greater than 110% of the statewide heart attack rate of 29.1 per 10,000, therefore Tisbury **does** meet the Vulnerable Health Criteria for heart attack. The heart attack rate data for Tisbury is considered stable and statistically significantly higher than the statewide level.

The heart attack rate for Oak Bluffs is 17.8 per 10,000 individuals. This is less than 110% of the statewide heart attack rate of 29.1 per 10,000, therefore Oak Bluffs **does not** meet the Vulnerable Health Criteria for heart attack. The heart attack rate data for Oak Bluffs is considered stable and statistically significantly lower than the statewide level.

Community heart attack data are summarized in **Section 8.2.5** below, along with the statewide prevalence data for comparison.

8.2.2 Childhood Blood Lead Levels

As described on the MA DPH website, childhood lead exposure is a criterion used to identify vulnerable health EJ populations because lead exposure disproportionately impacts lower income communities and communities of color, and childhood exposure to relatively low lead levels can cause severe and irreversible health effects, including damage to a child's mental and physical development.

Childhood Blood Lead Level data is based on data collected as part of the Massachusetts Lead Poisoning Prevention and Control Act which is a state law that requires all children to be screened each year for lead poisoning through age three and children in high-risk communities must be screened through age four. The vulnerable health criterion for Childhood Blood Lead Level is the five-year average prevalence of elevated (≥5 ug/dL estimated confirmed) childhood blood lead levels (ages 9-47 months) that is equal to or greater than 110% the state prevalence.

The childhood blood lead level indicator was available at the community level for Falmouth, Tisbury, and Oak Bluffs. Childhood blood lead levels at three census tract levels in Falmouth, Tisbury, and Oak Bluffs were presented, however data was designated as "NS" or "not shown", as described in **Section 8.2**.

At the community level, Falmouth's childhood blood lead level rate is 4.2 cases per 1,000. This is less than 110% of the statewide rate of 16.5 cases per 1,000, therefore Falmouth at the community level **does not** meet the Vulnerable Health Criteria for childhood blood lead levels. The childhood blood lead level data for Falmouth is considered stable and statistically significantly lower than the statewide level.

At the community level, Tisbury's childhood blood lead level rate is 27.1 cases per 1,000. This is greater than 110% of the statewide rate of 16.5 cases per 1,000, therefore Tisbury at the community level **does** meet the Vulnerable Health Criteria for childhood blood lead levels. The childhood blood lead level data for Tisbury is considered stable and not statistically different than the statewide level.

At the community level, Oak Bluffs' childhood blood lead level rate is 28.8 cases per 1,000. This is greater than 110% of the statewide rate of 16.5 cases per 1,000, therefore Oak Bluffs at the community level **does** meet the Vulnerable Health Criteria for childhood blood lead levels. The childhood blood lead level data for Oak Bluffs is considered unstable, meaning it did not have enough cases to be considered reliable, and not statistically different than the statewide level.

This indicator was further examined for the census tracts within the designated geographic area. However, for census tracts 101490, 72001, and 72002 data was not shown.

Community and census tract level childhood blood lead level data are summarized in **Section 8.2.5** below along with the statewide prevalence data for comparison.

8.2.3 Low Birth Weight

As described on the MA DPH website, low birth weight is a criterion used to identify vulnerable health EJ populations because exposure to environmental contaminants can increase the risk of delivering a low birth weight baby and low birth weight is a significant predictor of maternal and infant health. Women of color and women of low income have a higher risk of delivering a low birth weight baby. Low birth weight can increase the risk of infant mortality and morbidity, health problems throughout childhood, developing cognitive disorders, developmental delay and chronic diseases as an adult such as cardiovascular diseases and type 2 diabetes.

Low birth weight data are collected by the Registry of Vital Records and Statistics. Medical data, such as birth weight and gestational age, are based on information supplied by hospitals and birthing facilities. The vulnerable health criterion for low birth weight is the five-year average low birth weight rate among full-term births that is equal to or greater than 110% of the statewide rate. This indicator is available at both the community and census tract level.

The low birth weight indicator was available on a community level for Falmouth and Tisbury, and at the census tract level for one census tract in Tisbury. Low birth weight at the community level in Oak Bluffs and two census tract levels in Falmouth and Oak Bluffs were presented, however data was designated as "NS" or "not shown", as described in **Section 8.2**.

At the community level, Falmouth's low birth weight rate is 14.9 cases per 1,000. This is less than 110% of the statewide rate of 23.9 cases per 1,000, therefore Falmouth at the community level **does not** meet the Vulnerable Health Criteria for low birth weight. The low birth weight data for Falmouth is considered unstable, meaning it did not have enough cases to be considered reliable, and not statistically significantly different than the statewide level.

At the community level, Tisbury's low birth weight rate is 38.0 cases per 1,000. This is less than 110% of the statewide rate of 23.9 cases per 1,000, therefore Tisbury at the community level **does** meet the Vulnerable Health Criteria for low birth weight. The low birth weight data for Tisbury is considered unstable, meaning it did not have enough cases to be considered reliable, and not statistically significantly different than the statewide level.

This indicator was further examined for the census tracts within the designated geographic area. For census tracts 101490, and 72002 data was not shown. Census tract 72001 in Tisbury contains one EJ block group that reported 41.1 cases per 1,000. This is greater than 110% of the statewide rate of 23.9 cases per 1,000, therefore Tisbury census tract 72001 **does** meet the Vulnerable Health Criteria for low birth weight. The low birth weight data for this census tract is considered unstable, meaning it did not have enough cases to be considered reliable, and statistically significantly lower than the statewide level.

Community and census tract level low birth weight data are summarized in **Section 8.2.5** below along with the statewide prevalence data for comparison.

8.2.4 Childhood Asthma

As described on the MA DPH website, childhood asthma is a criterion used to identify vulnerable health EJ populations because people of color and low-income individuals are at greater risk for asthma exacerbations due to increased exposure to asthma triggers. Uncontrolled asthma can impact an individual's overall health and wellbeing. For example, uncontrolled asthma can reduce activity levels, negatively impact cardiovascular fitness, and increase school absenteeism.

Childhood asthma data are based on data collected from all hospitals in Massachusetts and reflects children between the ages of 5 and 14 years of age that have visited an emergency room for treatment for asthma. The vulnerable health criterion for childhood asthma is the five-year average rate of emergency department visits for childhood (5-14 years) asthma that is equal to or greater than 110% of the state rate. This indicator is available at the community level.

Childhood asthma data at the community level was available for Falmouth and Tisbury. Childhood asthma data at the community level in Oak Bluffs was presented, however data was designated as "NS" or "not shown", as described in **Section 8.2**.

The childhood asthma rate for Falmouth is 70.2 per 10,000 individuals. This is less than 110% of the statewide childhood asthma rate of 91.4 per 10,000, therefore Falmouth **does not** meet the Vulnerable Health Criteria for childhood asthma. The childhood asthma rate data for Falmouth is considered stable and not statistically significantly different than the statewide level.

The childhood asthma rate for Tisbury is 168.3 per 10,000 individuals. This is greater than 110% of the statewide childhood asthma rate of 91.4 per 10,000, therefore Tisbury **does** meet the Vulnerable Health Criteria for childhood asthma. The childhood asthma rate data for Tisbury is considered unstable, meaning it did not have enough cases to be considered reliable, and statistically significantly higher than the statewide level.

Community childhood asthma data are summarized in **Section 8.2.5** below, along with the statewide prevalence data for comparison.

8.2.5 Vulnerable Health Criteria Summary

Based on the information described above, Falmouth meets the vulnerable health criteria for heart attack, Tisbury meets the vulnerable health criteria for heart attack, childhood blood lead, low birth weight, and childhood asthma, and Oak Bluffs meets the vulnerable health criteria for childhood blood lead. Census tract 72001 in Tisbury meets the vulnerable health criteria for low birth weight. Therefore, these EJ communities in the designated geographic area are considered vulnerable and are subject to existing environmental burdens.

Table 8.2 Summary of Vulnerable Health Data

Vulnerable Health Criteria	Geography	Community Rate	Statistical Significance*	Stability	110% of Statewide Rate	>110% of Statewide Rate?
Heart Attack	**Falmouth**	34.4	SSH	Stable	26.4	**Yes**
Heart Attack	**Tisbury**	46.1	SSH	Stable	26.4	**Yes**
Heart Attack	Oak Bluffs	17.8	SSL	Stable	26.4	No
Childhood Blood Lead	Falmouth	4.2	SSL	Stable	16.5	No
Childhood Blood Lead	**Tisbury**	27.1	NSD	Stable	16.5	**Yes**
Childhood Blood Lead	**Oak Bluffs**	28.8	NDS	Unstable	16.5	**Yes**
Low Birth Weight	Falmouth	14.9	NSSD	Unstable	23.9	No
Low Birth Weight	**Tisbury**	38.0	NSSD	Unstable	23.9	**Yes**
Low Birth Weight	**Tract 72001 in Tisbury**	41.1	NSSD	Unstable	23.9	**Yes**
Childhood Asthma	Falmouth	70.2	NSSD	Stable	91.4	No
Childhood Asthma	**Tisbury**	168.3	SSH	Unstable	91.4	**Yes**

*SSH: Statistically significantly higher, SSL: Statistically significantly lower, NSSD: Not statistically significantly different, NSD: Not statistically different

8.3 MassDEP Regulated Facilities

As described in the MEPA Interim Protocol for Analysis of Projects Impacts on Environmental Justice Populations, the next step of the existing environmental burden analysis focuses on other potential sources of pollution within the boundaries of the EJ population. Specifically, the MEPA Protocol provides the following description of the requirements for this analysis:

> *"Second, the Proponent should consult additional data layers in the MA DPH EJ Tool to survey other potential sources of pollution within the boundaries of the EJ population. While comparisons to statewide averages are not presently available in the DPH EJ Tool, the Proponent should provide a narrative description of the estimated number and type of mapped facilities/infrastructure in the area, and survey enforcement histories of any facilities permitted by Massachusetts Department of Environmental Protection (MassDEP).*
>
> *Available mapping layers in the MA DPH EJ Tool include the following:*
>
> - MassDEP major air and waste facilities
> - M.G.L. c. 21E sites
> - "Tier II" toxics use reporting facilities
> - MassDEP sites with AULs
> - MassDEP groundwater discharge permits
> - Wastewater treatment plants
> - MassDEP public water suppliers
> - Underground storage tanks
> - EPA facilities
> - Road infrastructure
> - MBTA bus and rapid transit
> - Other transportation infrastructure
> - Regional transit agencies
> - Energy generation and supply"

Layers from the DPH EJ Tool were downloaded into ArcGIS and a one-mile buffer drawn around the project site boundary. Each of the resulting layers were used to develop a narrative of the number of types of facilities and infrastructure for the EJ populations in the DGA as well as used to survey the enforcement history. When available, enforcement histories and facility histories were searched in the Energy & Environmental Affairs Data Portal, MassDEP Underground Storage Tank ("UST") Facility Search, and EPA Resource Conservation and Recovery Act ("RCRA") Search. Below is a narrative discussion of the information gleaned using the mapping layers listed above in the MA DPH EJ Tool.

8.3.1 MassDEP Major Air & Waste Facilities Small and Large Quantity Toxics Users

MassDEP major air and waste facilities are facilities that have air operating permits, treat, store, generate or recycle large quantities of hazardous waste, or utilize large quantities of toxics. There are three MassDEP major air and waste facilities within the DGA.

- Falmouth Marine and Yachting Center at 278 Scranton Ave in Falmouth is a DEP regulated facility with a water use permit from the wetlands and waterways program. The facility has received four Notices of Noncompliance ("NON") – 2005, 2016, 2019, and 2021. While no data is available for the 2005 and 2016 NONs, the most recent two NONs show that there is a UST that is not in compliance. The 2019 NON was issued for failure to submit a compliance certification for a UST. The 2021 AUL was issued for failure to submit an inspection report for the same tank.

- Rite Aid #10187 at 520 Main Street in Falmouth is listed as a Very Small Quantity Generator of hazardous waste. This means this facility generates less than 220 lbs of hazardous waste or waste oil per month and no acutely hazardous waste. No history of regulatory enforcement was found.

- Auto Zone #5035 at 64 Davis St is a Large Quantity Generator of hazardous waste under Massachusetts Generator guidelines. It does not have a RCRA Generator Status. No history of regulatory enforcement was found.

8.3.2 MGL c. 21E Sites

21E sites are sites that have experienced a release of a hazardous material above a certain threshold. Once a release is reported to MassDEP it must be cleaned up within a year, or it is classified as Tier I, Tier ID, or Tier II. A Tier I site poses an immediate hazard, a Tier 1D site has not posed a permanent solution or final classification of the site, and a Tier II site does not meet the criteria for an immediate hazard. Five 21E sites were identified within the DGA.

- In 2018, a commercial property located at 30 Kennebec Avenue in Oak Bluffs was found to be contaminated with PCE, TCE, and DCE from prior commercial land uses including a laundromat and dry-cleaning service. Observation wells showed elevated levels of these compounds in the soil and water. In 2020, the site underwent a series of chemical oxidation treatment injections that lowered the levels of contaminants. The site is continuing to be monitored and remediated as needed and is listed as an Open Site under compliance in the EEA online database. The most recent available update for this site is the fourth Release Abatement Measure Status Report.

- There was a release of diesel fuel oil in 2013 to Falmouth Harbor at Tides Bulkhead on Clinton Avenue while a boat was refueling. An unknown quantity of fuel was released to the harbor when the fuel tank was overfilled by a fueling truck. Response Actions included the use of absorbents and a dispersant. The sheen of oil on the surface was apparently not extensive and only observed among a few boats. The site came under compliance in 2014 and is shown as an Open Site on the EEA online database.

- A residence at 28 Vineyard Avenue in Oak Bluffs has a Tier ID Status from a 2012 spill of fifty gallons of No. 2 fuel oil from an aboveground storage tank ("AST"). The residence came into compliance in 2013 and is an Open Site on the EEA online database.

- A residence at 81 Pennacook, Oak Bluffs had a release of 40 gallons of #2 fuel oil from a fuel tan/piping in 1994. The spill site currently has a Tier 1D status and came into Compliance in 2008. The site is listed as Open in the online database.

- The Getty Gas Station at 40 Davis Straits Road in Falmouth excavated 4 USTs in 2017 and measured high PID readings in the grave of the UST. There was groundwater at 10 feet below grade and no sheen observed in the groundwater. Approximately 150 tons of impacted soil and 4,900 gallons of groundwater were disposed of during 2017 remediation activities. The site is undergoing groundwater monitoring and will submit another report in 2022 with a Permanent Solution or Phase III Remedial Action Plan.

8.3.3 Tier II Facilities

A facility is required to submit a Tier II report to emergency response agencies if it uses over a certain threshold of hazardous chemicals during a calendar year. The purpose of Tier II reports is to help facilitate emergency response in the event the fire department would need to respond to an emergency at the facility. Three Tier II Facilities were identified within the DGA.

- Falmouth Marine & Yachting Center (described above) is also a Tier II reporter.
- NSTAR Station 996 at 1 Denny Path, Tisbury is a Tier II reporter.
- The North Marine IQ Lot is a Tier II reporter at 38 Falmouth Heights Road in Falmouth. According to the EEA database, this address is approximate, and it is suspected that this address is 53 Falmouth Heights Rd and belongs to North Marine Falmouth LLC. This facility has received one NON in 2017 for failure to submit a compliance certification for a UST.

8.3.4 MassDEP Activity Use Limitation Sites

An Activity Use Limitation ("AUL") provides notice of the presence of oil and/or hazardous material contamination remaining at the location after a cleanup has been conducted pursuant to Chapter 21E and the MCP. The AUL is a legal document that identifies activities and uses of the property that may and may not occur, as well as the property owner's obligation and maintenance conditions that must be followed to ensure the safe use of the property. Five AUL sites were identified within the DGA.

- RTN 4-0011660 https://eeaonline.eea.state.ma.us/portal#!/search/wastesite/results?RTN=4-0011660

Three releases of oil/hazardous material ("OHM") likely being diesel fuel/gasoline were reported at several residences on Lake Avenue in Oak Bluffs in 1990 and was reported to the MassDEP. A risk assessment completed by Capaccio Environmental Engineering in 2009 determined that there was No Significant Risk, as there was no impact to air or drinking water and no complete exposure pathway to humans. MassDEP issued one NON in June 2015 to the responsible Party Marmik Limited Liability Corporation and an Administrative Consent Order ("ACO") in September, 2017. The site came under compliance in 2018 and has an AUL to limit direct contact with OHM impacted soil, groundwater, and soil gas barriers in place at the site.

- RTN 4-0000922 https://eeaonline.eea.state.ma.us/portal#!/search/wastesite/results?RTN=4-0000922

During the removal of a UST in 1990, a release of diesel fuel/gasoline fuel was identified at the property of 12 Circuit Avenue Extension in Oak Bluffs and reported to MassDEP. The property is 0.59 acres and currently operates at Dockside Marketplace and Marina. The site was issued an AUL to ensure that construction of future buildings would include a vapor barrier and sub-slab depressurization system, with emergency underground utility repair and normal pavement maintenance allowed. During a site audit, all AUL conditions were seen as being fulfilled. The site owner received one Notice of Noncompliance in November 2018 associated with an administrative issue of the misfiling of the AUL in the property deed. Since the conditions of the AUL are being met, there is no risk to human health at this site.

- RTN 4-1075 https://eeaonline.eea.state.ma.us/portal#!/wastesite/4-0001075

The site at the current Cape Cod Bus Lines was a gas station at the time of release. The site had a Potential Release/Threat of Release notification in 1991 and had a Response Action Outcome issued in 2001. There is no information about the chemical released or the quantity reported in the EEA online database. During an announced inspection by DEP Staff, there was "no sign of subsurface excavation" and the "pavement was observed to be well maintained with no signs of cracks" and confirmed that the "the obligations and conditions of the AUL are being met." There are currently several businesses occupying this area of land.

- RTN 4-0021458 https://eeaonline.eea.state.ma.us/portal#!/wastesite/4-0021458

This RTN associated with 502 Main Street in Falmouth is from a suspected release of oil from an oil/water separator on the property. Tetrachloroethylene and other petroleum-related compounds were detected in the groundwater on the property. The oil/water separator was excavated, impact soils identified, and subsurface piping was found and followed to a leaching pit. The leaching pit and impacted souls was removed. The site currently has an AUL restricting residential uses of the site as well as limiting utility replacement and repairs. This site does not present a risk at the present time and came into compliance in 2009.

- RTN 4-12785 https://eeaonline.eea.state.ma.us/EEA/fileviewer/Default.aspx?formdataid=0&documentid=648002

This RTN is associated with a release of 60 gallons of No. 2 fuel oil from an AST at 10 & 11 Forest Circle in Oak Bluffs in 1997. The site was issued an AUL in 1997 after this release. During construction assessments in 2020/2021, soil borings and soil samples were taken, and it was determined that EPH/VPH levels were below surface and groundwater standards. The AUL was terminated early 2022, therefore this site does not present a risk.

8.3.5 MassDEP Groundwater Discharge Permits

This dataset contains the locations of permitted discharges of groundwater. This includes discharges from: Sanitary sewage in excess of 10,000 gallons per day ("gpd"), coin operated laundromats, car washes, industrial facilities, and reclaimed water (used in cooling towers and other closed-loop systems, no actual discharge). Two groundwater discharge permits were identified within the DGA.

- Atria Woodbriar Park Retirement Community at 339 Gifford Street in Falmouth is listed for a sanitary discharge of 39,750 gpd according to the Groundwater Permits database.
- Ocean Park, property of the town of Oak Bluffs at 17 Pennsylvania Avenue is listed for a sanitary discharge of 370,000 gpd according to the Groundwater Permits database.

8.3.6 Wastewater Treatment Plants

The MA DPH tool provide information on facilities that have received a National Pollutant Discharge Elimination System ("NPDES") permit. NPDES is a permit for facilities that treat wastewater. There are no facilities located in EJ areas within the DGA that hold a draft or final NPDES permit.

8.3.7 MassDEP Public Water Suppliers

This dataset contains locations of public community surface and groundwater supply sources based on data available in the DEP's Water Quality Testing System database for tracking water supply data. A community water system refers to the public water system which services at least 25 year-round residents. There are no public water supplier facilities located in EJ areas within the DGA.

8.3.8 Underground Storage Tanks

The MassDEP regulates the registration, installation, operation, maintenance, inspection, and closure of petroleum fuel and hazardous substance of UST systems. Seven locations were identified that have USTs located within the DGA.

- Falmouth Pier 31 Inc at 64 Scranton Avenue in Falmouth is located 0.9 miles from the Project. There are two 6,000-gallon gasoline USTs at this location that were installed in 1990. This facility's most recent MassDEP submittal was December 2021 and there is no history of enforcement.
- Falmouth Marine at 278 Scranton Avenue in Falmouth is located 0.6 miles from the Project. There is one 3,000-gallon diesel and one 3,000-gallon gasoline USTs at this location that were installed in 1986. This facility's most recent MassDEP submittal was March 2021. Enforcement actions include a Compliance Certification that was issued in August 2019 and resolved in September 2019, and a Third-Party Inspection Report that was issued in February 2021 and resolved in March 2021.

- Inter-gas Main St. at 607 Main Street in Falmouth is located 0.8 miles from the Project. There are three 10,000-gallon gasoline and one 10,000-gallon diesel USTs at this location that were installed in 1989. This facility's most recent MassDEP submittal was February 2022. Enforcement actions include a Compliance Certification that was issued and resolved in August 2017.
- Cumberland Farms #2180 at 797 Main Street in Falmouth is located 1.1 miles from the Project. All USTs have been removed from this location. No history of enforcement was reported.
- Colonial Filling Station at 502 Main Street in Falmouth is located 0.8 miles from the Project. There are two 6,000-gallon and one 4,000-gallon diesel USTs at this location that were installed in 1987. This facility's most recent MassDEP submittal was January 2022 and there is no history of enforcement.
- Getty #30524 at 40 Davis Straits Road in Falmouth is located 1.3 miles from the Project. All USTs have been removed from this location. No history of enforcement was reported.
- Jim's Vineyard Market's Inc at 27 Lake Avenue in Oak Bluffs is located 1.0 mile from the Project. There are four 3,000-gallon gasoline USTs that were installed in 1999 and one 1,000-gallon diesel UST that was installed in 2000 at this location. This facility's most recent MassDEP submittal was September 2021. Enforcement actions include a Compliance Certification that was issued and resolved in September 2020.

8.3.9 EPA Facilities

EPA facilities include Toxic Release Inventory ("TRI") facilities, which use and/or release over a certain threshold of toxic chemicals to the environment. There are 777 individual chemicals and 33 chemical categories covered by the TRI program.[4] The Resource Conservation and Recovery Act creates the framework for the proper management of hazardous and non-hazardous solid waste. Very Small Quantity Generators ("VSQGs") generate 100 kilograms or less per month of hazardous waste or one kilogram or less per month of acutely hazardous waste. Small Quantity Generators ("SQGs") generate more than 100 kilograms, but less than 1,000 kilograms of hazardous waste per month. Large Quantity Generators ("LQGs") generate 1,000 kilograms per month or more of hazardous waste or more than one kilogram per month of acutely hazardous waste. Three facilities within the DGA were identified as RCRA hazardous waste generators.

- Falmouth Marine at 278 Scranton Avenue in Falmouth was identified as a SQG of Hazardous Waste. There was no history of regulatory enforcement.
- Rite Aid #10187 at 520 Main Street in Falmouth was identified as a VSQG of Hazardous Waste. There was no history of regulatory enforcement.

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4 https://enviro.epa.gov/facts/tri/ef-facilities/#/Facility/01082KNZKS20COM

- Auto Zone #5035 at 64 Davis Straits Road in Falmouth was identified as a generator of hazardous waste. A RCRA Generator Status was not listed, however it is a Large Quantity Generator of hazardous waste under Massachusetts Generator guidelines. There was no history of regulatory enforcement.

8.3.10 Road Infrastructure

Road infrastructure includes Massachusetts Department of Transportation ("MassDOT") roads and bike lanes or shared use pathways. There is one major route that pass through the EJ block groups within the DGA in Falmouth, State Route 28.

Two bike lanes were identified in the DGA in Falmouth. The Shining Sea Bikeway is an approximately 11-mile path that runs from Falmouth to Woods Hole and then to North Falmouth, built on a former railroad ROW. It includes an approximately 5,300ft segment that is within the Project area, the southern portion of which is adjacent to an EJ community in Falmouth. The Project involves constructing a duct and manhole system within the bikeway. Eversource plans to perform construction in the fall and winter offseason to avoid conflicts with bike path users, and will repave the area once construction is completed. The second identified bike lane is the Downtown Falmouth Bike Path, an approximately 800 ft segment behind Mullen-Hall high school.

Three bike lanes were identified in the DPA in Martha's Vineyard. The Eastville Avenue Path runs along Hospital Way adjacent to the site and then overlaps the site within Eastville Avenue for about 300 ft in front of the Eversource owned parcel and planned future equipment site. The Project involves the installation of a duct and manhole system within this portion of Eastville Avenue. Eversource plans to perform construction in the fall and winter offseason to avoid conflicts with bike path users and traffic on Eastville Avenue, and will repave the area once construction is completed. The Beach Road Shared Use Path is an approximately half mile path that connects East Chop and West Chop at Vineyard Haven that is within 1 mile of the Project site, and located between EJ communities on Tisbury and Oak Bluffs. The Country Road Path connects to the Eastville Avenue Path at the intersection of Country Road and Eastville Avenue, and runs along the edge of an EJ community in Oak Bluffs.

8.3.11 MBTA Bus and Rapid Transit

MBTA Bus and Rapid Transit includes MBTA Bus routes, rapid transit, commuter rail lines, ferries, and their associated stations and parking areas.

No MBTA Bus and Rapid Transit is found in the DGA. A MBTA commuter rail runs approximately 10 miles north of the DGA.

8.3.12 Other Transportation Infrastructure

Other transportation infrastructure includes airports, freight yards, water taxis, railroad tracks, and ferry routes. Nine ferry routes intersect with mapped EJ communities. These include:

- Falmouth-Edgartown Ferry, Falmouth – Edgartown
- New England Fast Ferry, New Bedford – Vineyard Haven
- Steamship Authority, Woods Hole – Vineyard Haven
- Vineyard Fast Ferry, Quonset Point – Oak Bluffs
- New England Fast Ferry, New Bedford – Oak Bluffs
- Steamship Authority, Woods Hole – Oak Bluffs
- Island Queen, Falmouth – Oak Bluffs
- Hy Line, Hyannis – Oak Bluffs
- Hy Line Inter-Island, Nantucket – Oak Bluffs

Additionally, a private railway is depicted along the eastern edge of East Chop on Martha's Vineyard.

8.3.13 Regional Transit Agencies

Regional Transit Agency layers include the bus routes for the Regional Transit Authorities of Massachusetts and their associated bus stops. The Cape Cod Regional Transit Authority operates one bus route that is within the DGA, known as the "Sealine" route between Woods Hole and Hyannis. There are nine bus stops on the route described above that are located in the EJ block groups within the DGA. The Martha's Vineyard Transit Authority operates four bus routes that are within the DGA:

- Edgartown - Oak Bluffs - Vineyard Haven via Beach Roads,
- Oak Bluffs - Hospital - Airport via Barnes Road / Country Road,
- Oak Bluffs - Airport via Country Road / Barnes Road, and
- West Chop Loop.

There are twenty-one bus stops on the routes described above that are located in the EJ block groups within the DGA.

8.3.14 Energy Generation and Supply

The Energy Generation and Supply layer includes nuclear power plants, other power plants, and transmission lines.

One power plant is mapped approximately 0.8 miles west of the Project in Falmouth at Woods Hole Research Center. This is a 100kW capacity wind farm that has been in operation since October 2009.

8.3.15 Location of MassDEP-Regulated Facilities in Comparison to EJ Block Groups

To assess the existing conditions of the EJ areas and non-EJ areas in the DGA with regards to MassDEP-regulated facilities, a comparison was drawn between the EJ block groups in the DGA and the community of Falmouth, Tisbury, and Oak Bluffs for three facility types.

There are three Tier I and II sites in Falmouth, including two in the EJ neighborhoods in the DGA, and one in non-EJ areas. There are three AUL sites in Falmouth, including one in the EJ neighborhoods in the DGA, and two in non-EJ areas. There are 31 UST sites in Falmouth, including six in the EJ neighborhoods in the

DGA, and 19 in non-EJ areas. As a percentage breakdown, 19.4% of the UST sites in Falmouth are found in the EJ block groups within the DGA for the proposed project. Falmouth contains EJ block groups outside those intersecting the DGA. With these neighborhoods added, two of the three Tier I and II sites, one of the three AUL sites, and 12 of the 31 (38.7%) UST sites are in EJ neighborhoods.

There are four Tier I and II sites, two AUL sites, and three UST sites in Tisbury, all of which are in non-EJ areas. There is one EJ block group in Tisbury outside the one intersecting the DGA.

There are three Tier I and II sites and two AUL sites in Oak Bluffs, all of which are in the EJ neighborhoods within the DGA. There are four UST sites in Oak Bluffs, one of which is in the EJ neighborhoods in the DGA, and three that are in non-EJ areas. There are no EJ block groups in Oak Bluffs outside those intersecting the DGA.

Table 8.3 presents the results of normalized totals of each MassDEP regulated facility. Per square mile, the DGA contains more Tier I and II sites, AUL sites, and UST sites than the non-EJ areas in Falmouth and Oak Bluffs. The DGA in Tisbury does not contain any Tier I and II sites, AUL sites, or UST sites.

Table 8.3 Comparison of EJ vs Non-EJ MassDEP Regulated Facilities in the Project Area

Falmouth			
MassDEP Regulated Facility	**EJ Areas in the DGA**	**All EJ Areas**	**Non-EJ Areas**
Tier I and II sites (per sq. mi.)	1.29	0.16	0.03
AUL sites (per sq. mi.)	0.64	0.08	0.06
UST sites (per sq. mi.)	3.58	0.98	0.57
Tisbury			
MassDEP Regulated Facility	**EJ Areas in the DGA**	**All EJ Areas**	**Non-EJ Areas**
Tier I and II sites (per sq. mi.)	0	0	2.29
AUL sites (per sq. mi.)	0	0	1.14
UST sites (per sq. mi.)	0	0	1.72
Oak Bluffs			
MassDEP Regulated Facility	**EJ Areas in the DGA**	**All EJ Areas**	**Non-EJ Areas**
Tier I and II sites (per sq. mi.)	2.42	2.42	0
AUL sites (per sq. mi.)	2.75	1.62	0
UST sites (per sq. mi.)	0.81	0.81	0.49

8.4 Climate Adaptation (RMAT)

As described below, the RMAT Tool provides the proposed Project with information about sea level rise/storm surge, heat, and extreme precipitation impacts.

> *"Third, Proponents should consult the standard output report generated from the RMAT Climate Resilience Design Standards Tool (the "RMAT Tool"),9 which is required as an attachment to the ENF/EENF.10 Proponents should identify in the EIR whether the RMAT Tool indicates a "High" risk rating for sea level rise/storm surge or extreme precipitation (urban or riverine flooding) as applied to the project location. A "High" risk rating for these parameters could be an indicator of elevated climate risks for EJ populations that immediately surround the project site (meaning all EJ populations located in whole or in part within the project boundaries). The risk rating for the "extreme heat" parameter should not be used as a definitive indicator of elevated climate risks."*

The RMAT tool denotes the proposed Project would be considered "High" for Sea Level Rise/Storm Surge and Extreme Heat. There is "Moderate" risk for Extreme Precipitation – Urban Flooding and Extreme Precipitation – Riverine Flooding.

8.5 US EPA EJ Screen

As described in the MEPA Interim Protocol for Analysis of Projects Impacts on EJ Populations the next step of the existing environmental burden analysis focuses on using the United States Environmental Protection Agency Environmental Justice Screening Tool ("EJ Screen"). The MEPA protocol offers the following guidance when using the EJ Screen tool:

> *"Fourth, Proponents, at their option, may consult U.S. EPA's "EJ Screen," which provides a percentile ranking by census block group, compared against statewide averages, for 11 environmental indicators. When using the tool, Proponents should select the "compare to state" function and turn off the "EJ index" data layer—while the EJ index is calculated from the 11 environmental indicators after considering demographic information and population density, this calculation may be inconsistent with the definition of "EJ population" codified in Massachusetts law. The environmental indicators/percentiles could be relevant for assessing potential environmental exposures in the relevant census block as compared to statewide averages, and, therefore, could serve as a potential (though not definitive) indicator of "unfair or inequitable" environmental burden impacting the EJ population."*

At the time of the publication of the MEPA protocol, there were 11 environmental indicators provided in the EJ Screen tool. Since then, a 12th indicator has been added, and is included in the analysis below. The environmental indicators available through EPA EJ Screen are as follows:

1. NATA Air Toxics Cancer Risk (risk based on lifetime exposure in air)
2. NATA Respiratory Hazard Index Ratio (risk based on exposure in air)
3. NATA Diesel Particulate Matter (potential exposure in air)
4. Particulate Matter 2.5 (annual average, potential exposure in air)

5. Ozone (summer seasonal average, daily 8-hr max, potential exposure in air)
6. Lead Paint (% of housing built before 1960, potential exposure in dust/paint)
7. Traffic Proximity and Volume Count of Vehicles (annual average, quantity effecting air)
8. Proximity to Risk Management Plan Sites (quantity potentially effecting waste, water, and air)
9. Proximity to Hazardous waste Treatment, Storage, and Disposal Facilities (quantity potentially effecting waste, water, and air)
10. Proximity to National Priority List/Superfund sites (quantity potentially effecting waste, water, and air)
11. Wastewater Discharge toxic concentrations in streams (quantity potentially effecting water)
12. Underground Storage Tanks and Leaking Underground Storage Tanks (quantity potentially affecting waste, water, and air)

The EPA EJ Screen tool was run with the "compare to state" option turned on, and the "EJ Index" data layer turned off, for the census tracts immediately within one-mile of the DGA. **Attachment B, Figures 24 and 25** show the EJ communities within one-mile of the DGA. Each of the MEPA identified environmental indicators and their results in the DGA are summarized below.

8.5.1 NATA Air Toxics Cancer Risk

The NATA Air Toxics Cancer Risk indicator in EJ Screen, maps data from the National-Scale Air Toxics Assessment ("NATA") this to assess health risks from air toxics on a nation-wide basis. NATA was last updated using data from 2014, this dataset indicator uses both emissions information as well as air dispersion modeling to determine cancer risk. from air toxics. This indictors units are in N per million people.[5] This indicator is available at the census tract level. The NATA Air Toxics Cancer Risk indicator can be used to understand the life-time cancer risk from inhaling air toxics in EJ areas within the DGA compared to the state-wide rate.

The results of the NATA Air Toxics Risk indicator are 20 in one million cancer risk in all EJ areas within the DGA compared to an average statewide risk of 24 in one million cancer risk. As the Air Toxics cancer risk due to air toxics is lower in EJ areas within the DGA when compared to the state, there is no indication of unfair or inequitable environmental burden due to Air Toxics Cancer Risk for EJ areas within the DGA. Results from this analysis are presented in **Table 8.4**.

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5 A risk level of "N"-in-1 million implies that up to "N" people out of one million equally exposed people would contract cancer if exposed continuously (24 hours per day) to the specific concentration over 70 years (an assumed lifetime). This would be in addition to cancer cases that would normally occur in one million unexposed people.

8.5.2 NATA Respiratory Hazard Index Ratio

The NATA Respiratory Hazard Index Ratio[6] indicator in EJ Screen maps data from the NATA to assess health risks from air toxics on a nation-wide basis. NATA was last updated using data from 2014. This indicator uses both emissions information as well as air dispersion modeling to determine the risk of respiratory related (i.e., non-cancer health effects) from air toxics. This indicator is available at the census tract level and its units are dimensionless. The NATA Respiratory Hazard Index Ratio indicator can be used to understand the risk of respiratory (non-cancer related) health outcomes from inhaling air toxics in EJ areas within the DGA compared to the state-wide rate.

The result of the NATA Respiratory Hazard Index Ratio indicator is 0.2 in all EJ areas within the DGA compared to an average statewide risk of 0.3. As the Respiratory Hazard Index ratio due to air toxics is lower in EJ areas within the DGA when compared to the state, there is no indication of unfair or inequitable environmental burden due to respiratory hazards from air toxics in EJ areas within the DGA. Results from this analysis are presented in **Table 8.45.**

8.5.3 NATA Diesel Particulate Matter

The NATA Diesel PM indicator in EJ Screen maps data from the NATA to assess health risks from diesel particulate on a nation-wide basis. NATA was last updated using data from 2014, this indicator uses both emissions information as well as air dispersion modeling to determine the level of diesel particulates in the air. The Integrated Risk Information System ("IRIS") program by the EPA has a Diesel engine exhaust Reference concentration ("Rfc") of 5 micrograms (millionths of a gram) per cubic meter ($\mu g/m^3$).[7] This indicator is available at the census tract level. The NATA Respiratory Hazard Index Ratio indicator can be used to understand the risk of respiratory (non-cancer related) health outcomes from inhaling diesel PM in EJ areas within the DGA compared to the state-wide rate.

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6 The sum of the ratio of the potential exposure to an air toxic and the level at which no adverse effects are expected (i.e., summing each hazard quotient) for toxics that affect the same target organ or organ system. Because different air toxics can cause similar adverse health effects, combining hazard quotients from different toxics is often appropriate. A hazard index (HI) of 1 or lower means air toxics are unlikely to cause adverse noncancer health effects over a lifetime of exposure. However, an HI greater than 1 doesn't necessarily mean adverse effects are likely.

7 The sum of the ratio of the potential exposure to an air toxic and the level at which no adverse effects are expected (i.e., summing each hazard quotient) for toxics that affect the same target organ or organ system. Because different air toxics can cause similar adverse health effects, combining hazard quotients from different toxics is often appropriate. A hazard index (HI) of 1 or lower means air toxics are unlikely to cause adverse noncancer health effects over a lifetime of exposure. However, an HI greater than 1 doesn't necessarily mean adverse effects are likely.

The result of the NATA Diesel PM indicator is between 0.992 – 0.131 $\mu g/m^3$ in EJ areas within the DGA compared to an average statewide value of 0.295 $\mu g/m^3$. As the NATA Diesel PM index is lower in EJ areas within the DGA when compared to the state and to the IRIS Rfc, there is no indication of unfair or inequitable environmental burden due to respiratory hazards from air toxics in EJ areas within the DGA. Results from this analysis are presented in **Table 8.4**.

8.5.4 Particulate Matter ($PM_{2.5}$, annual average)

The Particulate Matter ("PM") indicator in EJ Screen maps data from EPA Office of Air and Radiation ("OAR") and indicates increased health risks due to exposure to PM. OAR uses data from 2017. The PM data is a combination of data collected from monitoring sites around the country and data modeled using an air dispersion modeling program. This indicator is available at the census tract level. The PM indicator can be used to understand the concentrations of PM in EJ areas within the DGA compared to the state-wide concentrations. This indicator is available at the census tract level and reports the annual average of ambient levels of $PM_{2.5}$ $\mu g/m^3$.

The results of the PM indicator for all block groups inside the DGA is between 5.9 – 6.07 $\mu g/m^3$ compared to the state average of 6.78 $\mu g/m^3$. As particulate matter concentrations for these EJ block groups are lower in EJ areas within the DGA when compared to the state, there is no indication of unfair or inequitable environmental burden due to particulate matter in EJ areas within the DGA. Results from this analysis are presented in **Table 8.4**.

8.5.5 Ozone

The Ozone indicator in EJ Screen maps data from EPA OAR and indicates increased health risks due to exposure to ozone. OAR uses data from 2017. Ozone data is a combination of data collected from monitoring sites around the country and data modeled using an air dispersion modeling program called CMAQ. Ozone data is reported as the summer, seasonal average of the daily maximum 8-hr concentration. This translates to the 8-hr period of the day when the average ozone concentration is the highest. This indicator is available at the census tract level. The Ozone indicator can be used to understand the risk of health outcomes, such as decreased lung function and increased hospital admissions, from inhaling ozone in EJ areas within the DGA compared to the state-wide rate.

The results of the Ozone indicator for all block groups inside the DGA range is 39.8-40 ppb compared to the state average of 39.5 ppb. These values are comparable to the statewide average and rank in the 64-66 percentile when compared to the statewide rates. The National Ambient Air Quality Standards ("NAAQS") for ozone are the 2015 standards of 70 ppb for the fourth-highest daily maximum 8-hour concentration averaged across three consecutive years.[8] The ozone concentration for the EJ areas inside the DGA is well below 70 ppb, but ozone is comparable to statewide rates. Results from this analysis are presented in **Table 8.4**.

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8 National Ambient Air Quality Standards for Ozone

8.5.6 Lead Paint

The Lead Paint indicator in EJ Screen maps data from the U.S. Census Bureau and the American Community Survey to assess lead exposure potential from houses built prior to 1960. Data is reported from the 2020 US census and 2014-2018 ACS. The lead paint indicator is reported as percent of housing units built pre-1960 and is available on the block group level. According to Jacobs et al. homes built prior to between 1940-1959 can have a 32-51% of having significant lead-based paints (2002).[9] Older houses have an even higher risk. This indicator can be used to understand the risk of exposure to lead, especially to young children who may consume lead paint chips and have high blood lead levels.

The results of the Lead Paint indicator vary greatly between block group and census tract. Three of the block groups reported higher than the state average of 49% of households built prior to 1960. Block group 8001 reported 64% of households, block group 9003 reported 70% of households, and block group 2002 reported 72% of households. The other three block groups reported lower than the state average; block group 8003 reported 24% of households, block group 1001 reported 28% of households; and block group 2004 reported 25% of households. Results from this analysis are presented in **Table 8.4**.

8.5.7 Traffic Proximity and Volume Count of Vehicles

The Traffic Proximity and Volume Count of Vehicles indicator in EJ screen uses 2017 data from the U.S. Department of Transportation to calculate a traffic proximity value that's an indicator of multiple health impacts including asthma onset, mortality rates, cardiovascular disease, and stress. The traffic indicator the count of daily vehicles at major roads within 500 meters of the given location, divided by the distance in meters from the location. This data is available on a block group level and is reported as average annual daily traffic per meter. This indicator can be used to understand the health risk that various populations face due to proximity to highly trafficked roads.[10]

The results of the Traffic Proximity and Volume Count of Vehicles indicator for all block groups inside the DGA are between 33 – 760, well below the statewide average of 2,100 AADT per meter. EJ Block groups 8001, 8003, and 9003 are the populations near highly trafficked roads in Falmouth. These EJ block groups are intersected by one of the busiest roads in Falmouth, Route 28. In addition, there are several bus routes that pass through the EJ block groups within the DGA. Results from this analysis are presented in **Table 8.4**.

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9 EJ Screen Technical Document, pg. 49

10 EJ Screen Technical Document, pg. 51

8.5.8 *Proximity to Risk Management Plan Sites*

The Proximity to Risk Management Plan ("RMP") sites indicator in EJ screen uses 2020 data from EPA's RMP database to calculate the proximity to a facility that uses hazardous chemicals and have a plan to manage spills. The RMP rule is part of the Clean Air Act Amendments at 40 CFR 68. Facilities that store over a certain threshold of a quantity of regulated substance (that could cause an offsite hazard if released) are required to submit a RMP plan. This indicator is calculated as the sum of RMP facilities within 5 km of a location (or the nearest one beyond 5 km), divided by the distance in kilometers between the RMP facilities and the location of interest. This data is available on a block group level and is reported as sum of total RMP facilities per kilometer.[11]

The block groups in the EJ populations within the DGA have RMP Proximity indicator values between 0.033 – 0.049 facilities per km. As RMP Proximity is lower in EJ areas within the DGA when compared to the state (0.70 facilities per km), there is no indication of unfair or inequitable environmental burden due to RMP Proximity in EJ areas within the DGA. Results from this analysis are presented in **Table 8.4.**

8.5.9 *Proximity to Hazardous Waste Facilities*

The Proximity to Hazardous Waste Facilities indicator in EJ screen uses 2020 data from the RCRA Info database to calculate the proximity to facilities that handle hazardous waste that is potentially dangerous to human and environmental health. This indicator includes facilities that treat, store, dispose, or generate large quantities of hazardous waste and is calculated as the sum of total facilities divided by their distance in kilometers. This data is available on a block group level and is reported as facilities per kilometer distance. This indicator can be used to better understand how hazardous waste facilities are distributed between EJ and non-EJ areas. For example, an indicator value of ½ indicates that there is 1 facility 2 km away from a specific location.

The results of the Proximity to Hazardous Waste Facilities indicator for the EJ block groups inside the DGA range between 0.084 – 2 facilities per km. As Proximity to Hazardous Waste Facilities is lower in EJ areas within the DGA when compared to the state (5.2 facilities per km), there is no indication of unfair or inequitable environmental burden due to Hazardous Waste Facility Proximity in EJ areas within the DGA. Results from this analysis are presented in **Table 8.4**.

8.5.10 *Proximity to National Priority List/Superfund sites*

The Proximity to National Priority List ("NPL") sites indicator in EJ screen uses 2020 data from the EPA CERCLIS database to calculate the proximity to contaminated Superfund. CERCLIS is the search database for the Comprehensive Environmental Response Compensation and Liability Act ("CERCLA"), otherwise known as "Superfund." Superfund sites are contaminated with hazardous waste and include manufacturing facilities, processing plants, landfills, and mining sites. The Superfund Act, or CERCLA,

[11] Risk Management Plan Overview

allows the EPA to force responsible parties to clean up the contaminated site or reimburse the government for EPA-led cleanup work. This indicator is calculated as the count of proposed and listed NPL/Superfund sites within 5 km (or the nearest one beyond 5 km) divided by the distance in kilometers. Data is available on a regional level. This indicator can be used to better understand how hazardous waste facilities are distributed between EJ and non-EJ areas.

The results of the Proximity to NLP sites indicator for the EJ block groups inside the DGA ranges between 0.045 – 0.08 facilities/km in comparison to the statewide average of 0.17 facilities per km. As the Proximity to NPL indicator results for the EJ areas inside the DGA are well below 0.17, the statewide average, there is no indication of unfair or inequitable environmental burden due to proximity to facilities that handle hazardous waste close to EJ populations within the DGA. Results from this analysis are presented in **Table 8.4.**

8.5.11 Wastewater Discharge Toxicity

The Wastewater Discharge Toxicity indicator in EJ Screen pulls data from the EPA's Risk-Screening Environmental Indicators ("RSEI") to calculate toxics concentrations in streams. The RSEI model uses 2020 information about Toxics Release Inventory sites, chemical release volumes, toxicity, chemicals' fate and transport through the environment, and human exposure to calculate an overall RSEI score. The RSEI score includes a toxicity-weighted concentration that excludes population information, making it easier to use for low-density rural areas. The modeled toxicity-weighted concentrations in stream sections within 500 m of the location are divided by the distance from the location in kilometers to get an overall Wastewater Discharge Toxicity score.[12] This indicator is available at the block group level and is reported in mg/L per km distance. This indicator can be used to understand the risk from exposure to toxics in surface water.

Wastewater Discharge Toxicity data was not available in the DGA and surrounding area. Therefore, there is no indication of unfair or inequitable environmental burden due to proximity to high wastewater discharge toxicity.

8.5.12 Underground Storage Tanks

The Underground Storage Tank indicator pulls data from the EPA UST Finder to map the location UST and LUST sites. UST Finder contains a comprehensive, state-sourced national map of UST and LUST data. It provides the attributes and locations of active and closed USTs, UST facilities, and LUST sites from states as of 2018-2019 and from Tribal lands and US territories as of 2020-2021. For the calculation of the UST

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[12] Toxicity-weighted concentrations are calculated from multiplying the concentration by the toxicity weight for a given chemical. Toxicity weights are relative, measure chronic human health effects only (include cancer and noncancer effects), and are for comparison purposes to ensure that more toxic chemicals get more attention. For example, the RSEI model uses a range of 0.02 for sulfuric acid to 1.4 billion for dioxin for toxicity weights. If there is more than one chemical present, then the toxicity-weighted concentrations can be added together to get the overall toxicity-weighted concentration of a batch of chemicals.

indicator in EJ Screen, LUSTs are multiplied by a factor of 7.7, and USTs are counted within a 1,500-foot buffered block group. The data is available on a block group level. The UST indicator can be used to understand how USTs are distributed between EJ and non-EJ areas within the DGA compared to the state-wide rate.

The results of the UST indicator vary greatly between block group and census tract. Four block groups have Proximity to UST indicators that are elevated above the statewide average risk of 3.1. In Falmouth, block group 8001 has a calculated risk of 8.6, which is in the 90th percentile in the state, and block group 8003 has a calculated risk of 7.4, which is in the 88th percentile in the state. Falmouth block group 9003 is in the 49th percentile. In Oak Bluffs, block group 2002 is in the 48th percentile, and block group 2004 is in the 59th percentile. Block group 1001 in Tisbury has zero USTs. As EJ block groups 8001 and 8003 in Falmouth are above the 80th percentile for the UST indicator when compared to statewide averages, proximity to USTs may contribute to the risk of pollution burden that these communities face, as discussed in **Section 8.5.13** below. Results from this analysis are presented in **Table 8.4**.

8.5.13 Summary of EJ Screen Results and Determination of Burdens

Based on the results of the EJ Screen for block groups within the DGA, exposure to USTs is the only environmental indicator that ranks in the 80th percentile or above for one or more EJ block groups and may indicate a burden of pollution.

Table 8.4 below summarizes the EJ block groups within the DGA and their environmental indicator values.

Table 8.4 USEPA EJ Screen Environmental Indicators

Census Tract		101480				101490		72001		72002			
Block Group		8001		8003		9003		1001		2002		2004	
Environmental Indicator	State Avg.	Value	%ile in State	Value	%ile in State	Value	%ile in State	Value	%ile in State	Value	%ile in State	Value	%ile in State
NATA air toxics cancer risk	**24**	20	56	20	56	20	56	20	56	20	56	20	56
NATA respiratory hazard index	**0.3**	0.2	21	0.2	21	0.2	21	0.2	21	0.2	21	0.2	21
NATA diesel PM (µg/m^3)	**0.295**	0.0994	4	0.0994	4	0.131	13	0.119	9	0.0992	4	0.0992	4
Particulate matter (µg/m^3)	**6.78**	6.07	14	6.07	14	6.07	15	5.94	9	5.9	8	5.9	8
Ozone (ppb)	**39.5**	39.9	66	39.9	66	40	67	39.9	65	39.8	64	39.8	64
Lead paint indicator (%)	**49**	64	65	24	22	70	72	28	26	72	74	25	23
Traffic proximity and volume	**2100**	760	52	690	50	610	46	33	5	220	24	52	7
Proximity to Risk Management Plan (RMP) sites	**0.70**	0.047	2	0.049	2	0.046	2	0.034	1	0.033	1	0.033	1
Proximity to Hazardous Waste Facilities	**5.2**	1	27	2	43	0.81	23	0.12	3	0.084	1	0.087	1
Proximity to National Priorities List (NPL) sites	**0.17**	0.074	40	0.08	45	0.072	38	0.046	11	0.045	10	0.045	10
Underground Storage Tanks	**3.1**	8.6	90	7.4	88	1.5	49	0	15	1.4	48	2.4	59

8.6 EJ Outreach Plan

The project team consulted with the MEPA Office on March 3, 2022 regarding EJ enhanced outreach and enhanced analysis. Key steps for public outreach included the issuance and distribution of a Project Factsheet, scheduling of public tabling events, and additional outreach steps.

Significant efforts were made to reach out to the EJ communities within a mile of the project, and to the broader community. Those efforts included:

- **Identification of Community Based Organizations (CBOs):** Eversource identified the CBOs contacted as part of the initial ENF outreach. The team consulted with the MEPA office and EEA, who confirmed that the list was appropriate.

- **Public meetings and direct outreach:** A list of completed and planned formal and informal meetings, consultations, and information sessions, described below.

8.6.1 EJ Screening Form

In compliance with MEPA EJ regulations, an Environmental Justice Screening Form was submitted to CBOs via email on April 1, 2022. The form and corresponding cover letter were provided in both English and Portuguese. See **Attachment M – Public Outreach Materials** for a copy of the EJ form. *

8.6.2 Fact Sheet

Attachment M – Public Outreach Materials includes the fact sheet prepared by Eversource used for distribution and dissemination of project information. The fact sheet includes visuals, explains the need for the Project, provide a summary of the Project, gives an estimated timetable for the project, and provides contact information. In the fact sheet aims to use terms that are easily understood, avoiding jargon and explaining concepts.

The fact sheet was translated into Portuguese for dissemination in both English and Portuguese.

8.6.3 Public Events

Outreach events were planned and executed by Eversource's Public Services team. **Table 8.5** below lists competed events through May 1, 2022 and tentatively planned future outreach events. It also notes which event locations were within EJ communities.

Eversource has placed a focus on responding to the feedback received at these meetings, and performing the analyses required to respond to questions and concerns raised.

Table 8.5 List of Completed and Future Public Outreach Events

Venue	Address	Date	In EJ Block Unit
Completed Outreach Events			
Falmouth Public Library	300 Main Street	March 16th 11am-1pm	Y
Gus Canty Community Center (Falmouth Dept of Recreation)	790 Main Street	March 17th 12:30-3pm	Y
Falmouth Public Library	300 Main Street	March 19th 11am-1pm	Y
Mahoney's Garden Center	958 E Falmouth Hwy	March 20th 1pm-3pm	Y
Oak Bluffs Public Library	56R School Street, Vineyard Haven	March 22nd 1:30-3:30pm	Y
Gus Canty Community Center	790 Main Street	March 24th 4:30pm-7pm	Y
Chicken Alley Thrift Store (MV Community Services)	38 Lagoon Pond Rd, Vineyard Haven	April 2nd 11am-1:30pm	N
Cronig's Market	Vineyard Haven	April 6th 11:30am-2pm	Y
Mahoney Gardening Center	958 E Falmouth Hwy	April 23rd 10am-2pm	Y
Falmouth Open House – Gus Canty Community Center	790 Main Street	April 27th 4pm-7pm	Y
Oak Bluffs Open House – Chef Deon's Kitchen	14 Towanticut St, Oak Bluffs	May 2nd 5pm-7pm	Y
Locations Where Project Materials were Left for Public Consumption			
Island Wide Youth Collaborative	111 Edgartown Rd, Vineyard Haven	March-May 2022	N
Cape Cod Conservatory	60 Highfield Dr, Falmouth	March-May 2022	Y
Falmouth Fitness Center	33 Highfield Dr, Falmouth	March-May 2022	Y
Garrett's Gas Station	435 Palmer Ave, Falmouth	March-May 2022	N
7 Eleven	59 Locust St, Falmouth	March-May 2022	Y
Martha's Vineyard Savings Bank	397 Palmer Ave, Falmouth	March-May 2022	N
Cape Cod Bagel	419 Palmer Ave, Falmouth	March-May 2022	N
Seafood Sam's	356 Palmer Ave, Falmouth	March-May 2022	N
Coffee Obsession	110 Palmer Ave, Falmouth	March-May 2022	Y

Outreach will continue with affected communities and community leadership throughout the lifespan of the Project, garnering feedback and implementing where practical. With the Project area having a significant tourist population in the late spring and summer seasons, Eversource will follow the guidance of community leaders by having more targeted outreach during peak tourist season to make sure the correct audience is being engaged. As peak tourist season ends, the Project Team return to broader outreach efforts within the entire community to prepare for Project construction

8.7 Assessment of Project Impacts to Determine Disproportionate Adverse Effect

8.7.1 Nature and Severity

In Section 3.0 of the EJ Analysis Protocol, the Project proponent is asked to describe the nature and severity of all short-term and long-term Project impacts, both in magnitude and duration. The text below presents the section of the Protocol with the detailed information.

> *"The Proponent should analyze whether the nature and severity of project impacts will materially exacerbate any existing unfair or inequitable environmental or public health burden impacting the EJ population. In assessing severity of an impact, the Proponent should consider both magnitude and duration.*
>
> *For example, a project that would have permanent traffic impacts affecting EJ populations with elevated public health conditions could be viewed as having a disproportionate adverse effect on such population. This is especially so, if any identified environmental or public health indicators related to air quality (such as PM 2.5/ozone exposure or asthma rates) are elevated in the EJ population, and the magnitude of the increase is at least 2,000 unadjusted adt (the ENF-level MEPA review threshold at 301 CMR 11.03(6)(b)13.) and is in close proximity to the EJ population. The Proponent should conduct analysis or modeling sufficient to demonstrate the magnitude of any relevant project impacts, for instance, by conducting air quality analysis of permanent increases in traffic consistent with the MassDEP Guidelines for Performing Mesoscale Analysis of Indirect Sources (1991). Mitigation measures that would specifically reduce the magnitude of the identified impact can be considered. It is important to note that, where the level of existing burden is high, even a small addition of project impacts may create disproportionate adverse effects. For instance, if any of the DPH vulnerable health EJ criteria or other public health or environmental indicators are well above statewide rates (e.g., an environmental indicator above the 80th percentile of statewide average in EPA's EJ Screen), even a small addition of impacts (e.g., below 2,000 unadjusted adt of permanent new traffic) could be viewed as creating a disproportionate adverse effect.*
>
> *In addition, while MEPA review thresholds at 301 CMR 11.03 provide a guide for a discussion of impacts, the Proponent shall not limit the discussion to impacts that meet or exceed MEPA review thresholds, and, instead, shall address all short-term and long-term impacts associated with the project, including construction period activities. For instance, an estimate of construction vehicle traffic and routes of travel may be warranted if construction activities will be occurring in close proximity to already-burdened EJ populations."*

8.7.1.1 USTs and Other Long-Term Risks to EJ Populations

Based on the results of the EJ Screen for block groups within the DGA, exposure to USTs is the only environmental indicator that ranks in the 80th percentile or above for one or more EJ block groups and may indicate a burden of pollution.

The primary risk associated with USTs is the contents of the tank leaking into groundwater. However, nearly all of the properties within the three EJ communities in the Falmouth DGA are connected to the public water supply system. According to the Falmouth Water Department, 80% of the town's water supply comes from the Long Pond treatment plant, which is located north of the DGA. Additional water sources are located even farther northeast of the DGA. The aquifer that supplies the town's water system designated by DEP as the Zone II area of contribution is located outside of the EJ communities in the DGA, which have a high concentration of USTs. Therefore, these high UST areas are unlikely to have an effect on drinking water in the town of Falmouth. Project impacts therefore, are not expected to materially exacerbate any existing unfair or inequitable environmental or public health burden relative to USTs on the EJ populations in the DGA.

In the built condition, the underground cable will have no effect on EJ populations or non-EJ populations as the cable does not generate any air emissions, generate or release pollutants, generate noise or increase traffic; and therefore is not expected to materially exacerbate any existing unfair or inequitable environmental or public health burden on the EJ populations in the DGA.

8.7.1.2 Construction Period

In an effort to avoid unfair or inequitable environmental and health burdens on EJ populations, the preferred route was selected to avoid and minimize work in EJ blocks units. The Falmouth landfall site is located at the intersection of Surf Drive and Shore Street within Census Tract 148, Block Group 1 – a constant for all four route options. As depicted on **Figure 27 – Environmental Justice Populations (Falmouth Alternative Routes) in Attachment B**, the landside cable alignments for Options 1 and 2 cross through EJ block units and thus do not avoid work in EJ block units. Option 4 while it avoids work in EJ block units is a longer route and was not selected as the preferred route as described in **Section 2 – Alternatives Analysis**, above[13]. The majority (approximately 65%) of the Preferred Route (Option 3) avoids EJ block units while the balance (approximately 35% of the route) passes along the margin of Census Tract 149, Block Group 3 in Mill Road. This alignment was selected because it: meets the project purpose and need; balances reliability, cost and environmental impacts; and does not impose and unfair or inequitable environmental burden on EJ populations. In Oak Bluffs the landfall, cable alignment and equipment yard are located outside of EJ block units and therefore and does not impose and unfair or inequitable environmental burden on EJ populations.

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[13] The Preferred Project was selected to meet the Project purpose and need, while concomitantly balancing reliability, cost, and environmental impact.

Potential construction-period effects on EJ and non-EJ populations are related to air emissions, dust, noise and traffic related the HDD operations at the landfall sites and construction of the duct and manhole systems.

Air Emissions:

Air quality impacts due to construction activities will be short-term. The total construction period for landside cable construction and HDD operations is expected to last 2- to 3-months with construction activity occurring between 7:00 a.m to 6:00 p.m, Monday through Friday, with most shifts ending at 3:30 pm. Anticipated air quality impacts include the creation of fugitive dust and emission of diesel exhaust. Anticipated sources of landside construction and duration are listed below:

HDD operations:

Equipment:

- Drill Rig
- Drill Fluid Pump
- 300kW Generator
- Godwin Pump
- 24-inch hammer and accessories
- 3” Electric Pump (for IR Contingency)
- 3-6” Dry-prime pump
- 1 – Semi-Truck
- 2- Pickup Trucks
- 1-rubber tire excavator
- 1-Office Container
- 25kW Generator
- 6-Site Light Towers

Duration: approximately 30 days in Falmouth and 30 days in Oak Bluffs.

Duct & Manhole Operations:

Equipment:

- 1-Excavator
- 2-Triaxel Trucks
- 2- pickup trucks
- 300kW Generator
- 1-roller/compactor
- 1-Office Container
- 25kW Generator
- 3-Site Light Towers

Duration: approximately 30 days in Falmouth and 5 days in Oak Bluffs.

Hydroplow Operations:
While hydroplow operations will occur offshore and are not expected to impact EJ communities, the following is provided for informational purposes.

Equipment:

- tug
- support boats
- diesel pumps (550 HP) for the plow
- Mooring winch (180 HP)
- 14kv generator to support on-barge equipment, lights etc.

Duration: approximately 20 days.

There are extensive mitigation measures in place to control dust and diesel emissions and ensure that construction activities create minimal impact to the surrounding communities, EJ and non-EJ communities. See **Section 5.13** above for proposed mitigation measures.

As the EJ block groups are not burdened with high levels of existing diesel particulate matter based on the EJ Screen analyses, the short-term diesel emissions from the Project are unlikely to create a health burden. Because the majority of duct and manhole construction in Falmouth is outside the EJ block units and the entire work zone in Oak Bluffs is outside of EJ block units, construction impacts will not disproportionately impact the EJ populations. Construction mitigation measures are discussed in further detail in **Section 5.13.**

Dust

Dust impacts due to construction activities will be short-term. The total construction period for landside cable construction and HDD operations is expected to last 2- to 3-months with construction activity occurring between 7:00 a.m to 6:00 p.m, Monday through Friday, with most shifts ending at 3:30 pm. Anticipated fugitive dust emission are associated with landside duct and manhole construction.

As the EJ block groups are not burdened with high levels of particulate matter based on the EJ Screen analyses, the short-term fugitive dust emissions from the Project are unlikely to create a health burden. Because the majority of duct and manhole construction in Falmouth is outside the EJ block units and the entire work zone in Oak Bluffs is outside of EJ block units, construction impacts will not disproportionately impact the EJ Populations. Construction mitigation measures are discussed in further detail in **Section 5.13.**

Noise

Noise impacts due to construction activities will be short-term. The total construction period for landside cable construction and HDD operations is expected to last 2- to 3-months with construction activity occurring between 7:00 a.m to 6:00 p.m, Monday through Friday, with most shifts ending at 3:30 pm. Anticipated noise are associated with construction equipment and vehicles for the HDD operations and landside duct and manhole construction.

Because the majority of duct and manhole construction in Falmouth is outside the EJ block units and the entire work zone in Oak Bluffs is outside of EJ block units, construction noise will not disproportionately impact the EJ Populations. Construction mitigation measures are discussed in further detail in **Section 5.13.**

Traffic

The Project will minimize traffic-related construction impacts to the extent possible. Construction traffic includes the daily trips of workers and construction vehicles transporting materials and equipment. Construction traffic will follow highly traveled state, county and municipal roads to access the duct and manhole routes and HDD landfall sites. Along these roads, construction-related traffic minimizes traffic through EJ block groups and therefore impacts will be minimized. Mitigation measures to address traffic activity are discussed further in **Section 5.13**. The construction period is timed to avoid peak traffic on Cape Cod and Martha's Vineyard.

As the EJ block groups are not burdened with high traffic volumes based on EJ Screen analyses, the short-term traffic from the Project is unlikely to create a health burden. Because the majority of duct and manhole construction in Falmouth is outside the EJ block units and the entire work zone in Oak Bluffs is outside of EJ block units, construction traffic impacts will not disproportionately impact the EJ Populations. Construction mitigation measures are discussed in further detail in **Section 5.13.**

8.7.2 Comparative Impact on EJ vs non-EJ Populations

Next, the MEPA protocol specifies that a comparison between EJ and Non-EJ Populations should be drawn to assess adverse and disproportionate impacts.

> *"In reviewing adverse impacts on the EJ population, the Proponent should also analyze whether the impacts on the EJ population are greater or less than those on non-EJ populations. The purpose of this analysis is to assess whether the project is adding impacts to an already burdened area in a "targeted" way that is disproportionate when compared to non-EJ populations. While the Proponent should generally compare EJ and non-EJ populations within the project site, a comparable area outside the project site could be chosen—for instance, if the EJ population itself is located outside the boundaries of the project site (but within the project's designated geographic area) or if the project is located entirely within an EJ population such that a comparison with non-EJ populations within the project site is not possible. In some cases, it may be appropriate to compare similar prior projects undertaken by the Proponent in non-EJ populations to explain why*

the area containing the EJ population was chosen for the project at hand and whether alternative locations outside the EJ population were considered. If a comparable area is selected outside the project site, the Proponent should provide a clear justification for why the area is viewed to be "comparable" or "similarly situated" such that a comparison with the applicable EJ population is reasonable. The Proponent should conclude that the project will have a disproportionate adverse effect on the EJ population, if the adverse impacts of the project are materially greater on EJ populations than on non-EJ populations in the comparison area. If so, the Proponent must provide an explanation of whether the project has considered practical alternatives to reduce or mitigate the impacts on EJ populations, and if so, what, if any, of such alternatives or mitigation were incorporated into the project."

Once built the underground cable will have no effect on EJ populations or non-EJ populations as the cable does not generate any air emissions, generate or release pollutants, generate noise or increase traffic; and therefore it will not materially exacerbate any existing unfair or inequitable environmental or public health burden on the EJ populations in the DGA.

8.7.3 Project Benefits & Environmental Benefits

Project proponents also must consider the benefits that the proposed Project would bring to the EJ population, as described below.

"In addition to analyzing adverse impacts, Proponent should analyze any project benefits that improve environmental conditions or the public health of the EJ population, or otherwise reduce the potential for unfair or inequitable effects on the EJ population. Emphasis should be given to project benefits that are intended to reduce any existing environmental burdens or public health consequences identified under Part II, or intended to mitigate project impacts that specifically affect the identified EJ populations. The Proponent should also analyze whether the project will provide "Environmental Benefits" for the identified EJ population, so as to result in a more equitable distribution of energy and environmental benefits and environmental burdens in accordance with "Environmental Justice Principles" as defined in 301 CMR 11.02."

Benefits from this Project are primarily found on Martha's Vineyard, include:

1. The fifth cable and on-Island electrical system improvements will better accommodate integration of distributed renewable power generated on the Island, benefiting EJ and non-EJ populations alike.
2. After the fifth cable is in service Eversource will cease using the five on-Island diesel peaking generators which will reduce fossil fuel use and avoid air emissions from those decommissioned generators. The 1- and 5-mile radii from these generator sites are depicted in **Attachment B, Figure 26** which suggest that this project element will benefit air quality for EJ populations within the 5-mile radii of the 2 generator sites.

3. The Shining Sea Bikeway will be widened which will improve recreational and exercise opportunities for area residents and visitors.
4. The Proponent will relocate 15 utility poles on Palmer Avenue to increase sidewalk clearance and improve pedestrian passage.
5. The Proponent will install electric vehicle charging stations at the Palmer Avenue lot and other locations in Falmouth.

8.8 Analysis of Project Impacts to Determine Climate Change Effects

The EJ Analysis Protocol specifies the following analysis should take place in relation to whether the project will exacerbate the effects of climate change on the EJ populations. The text from the Protocol is included below.

> *"Unless the assessment in Part II shows the absence of any "unfair or inequitable" environmental burden or related public health consequence borne by the identified EJ population as compared to the general population, the Proponent must further analyze, in addition to the analysis in Part III if applicable, whether the proposed project will increase or reduce the effects of climate change on the EJ population. In conducting this assessment, the Proponent should consider the following:*
>
> - Whether the project is likely to exacerbate the climate risks shown in the RMAT tool in a manner that affects the identified EJ population.; and
> - Whether the greenhouse gas (GHG) emissions associated with the project are likely to affect EJ populations that use or occupy the project"

8.8.1 Climate Adaptation

The RMAT Tool was consulted to find risks associated with climate change, as specified by the Protocol below.

> *"The Proponent should review the output report generated from the RMAT Tool to assess whether the climate parameters for sea level rise/storm surge and extreme precipitation (urban or riverine flooding) are ranked "High" and would affect the applicable EJ population(s). For instance, a residential dwelling that may not be sufficiently elevated to accommodate future sea level rise conditions may affect EJ populations, if it is located within an EJ population or specifically intended for use by EJ populations. Also, if a project proposes to cut a substantial number of trees in a manner that potentially adds to heat conditions in the area, or proposes to add impervious cover in a manner that worsens flooding conditions in the surrounding neighborhood, such impacts could have effects on EJ populations located in and around the project site. Any aspects of the project that could reduce climate risks, such as improvements to stormwater management systems and the use of pervious pavement and surfaces should also be reviewed. The Proponent should conduct analysis or modeling to quantify any anticipated climate change effects as appropriate, and should apply best available data on future climate conditions where available. The recommended design standards in the RMAT tool may provide a resource in performing such quantitative analyses."*

As described previously, the RMAT tool denotes the proposed Project would be considered "High" for Sea Level Rise / Storm Surge and Extreme Heat. There is "Moderate" risk for Extreme Precipitation – Urban Flooding and Extreme Precipitation – Riverine Flooding.

As explained above and in **Section 7.2,** underground distribution line design and installation is inherently adaptive and resilient to the potential effects of climate change. For example, most of the adverse weather conditions that traditional overhead distribution line infrastructures are exposed to above-ground can be avoided (e.g., wind and precipitation). In addition, the underground distribution line facilities are not affected by flooding and will not cause flooding or exacerbate existing flooding situations. The Project does not involve any fill or permanent aboveground structures in the 100-year floodplain, and the use of HDD technology to install the distribution line beneath the Falmouth and Oak Bluffs shoreline (including the mapped 100-year floodplain limits) avoids changes to surface grades where flood storage is presently provided. Thus, the Project will not affect flooding risk and accommodate seal level rise / storm surge and resulting in no unfair or inequitable consequence on EJ populations.

The Project has no effect on extreme heat risk and thus will not to impact EJ populations resulting in no unfair or inequitable consequence on EJ populations.

8.8.2 GHG Emissions (if over 2,000 tons per year of GHG CO2e)

The Protocol continues on to quantify GHG emissions for projects that generate over 2,000 tons per year of CO2 equivalent greenhouse gas emissions.

> *"The Proponent should conduct a GHG emissions analysis if a project is expected to generate 2,000 or more tpy of GHG (CO2) emissions from conditioned spaces that are likely to be used or occupied by EJ populations. As a general matter, this analysis will be required only for residential dwellings or commercial buildings intended for human use or occupation and located in whole or in part within a census block designated as an EJ population. The estimate of GHG emissions can be generated by inserting building types and square footage into an* ***Emissions Footprint Estimation Tool, available here****. The analysis should generally follow the methodology set forth in the 2010 MEPA Greenhouse Gas Emissions Policy and Protocol (the "2010 GHG Policy"), and should provide energy efficiency modeling to support GHG estimates for the Base Case and Design Case. To the extent a project is already required to conduct a GHG analysis under the 2010 GHG Policy, that analysis will satisfy the requirements of this Part IV.B."*

The Project does not generate GHG emissions thus a GHG emissions analysis was not prepared. The Project however is expected to yield benefits relative to lowering GHG emissions and those include:

1. The fifth cable and the Island's electrical system improvements will better accommodate integration of distributed renewable power generated on the Island.
2. After the fifth cable is in service Eversource will cease using the five on-Island diesel peaking generators which will reduce fossil fuel use, avoid air emissions from those decommissioned generators, and reduced GHG emissions associated with those generators.

3. The Proponent will install electric vehicle charging stations at the Palmer Avenue lot and other locations in Falmouth to support use of EVs.

8.8.3 Ecological Restoration (Wetlands)

Wetland restoration project proposed pursuant to 310 CMR 10.00 the Wetlands Protection Regulations act are permitted to provide information in an abbreviated checklist format.

Not applicable. The proposed Project is not an Ecological Restoration Project.

8.9 Mitigation and Section 61 Findings

The Project is required to address any disproportionate adverse effects that fall onto the EJ populations, as described by the text from the EJ Analysis Protocol below.

> *"To the extent any disproportionate adverse effects or increased climate change risks are identified for the EJ population under Parts II-V, the Proponent must describe measures to address such effects on EJ populations. These measures should be considered in addition to those that the project proposes to take to avoid, minimize and mitigate its environmental impacts more generally. For instance, measures proposed to reduce traffic congestion in the area (such as roadway improvements or traffic signals) may be sufficient to address potential deterioration in traffic conditions, but may not sufficiently address the disproportionate adverse effects that may result from the addition of air pollutants to an already burdened EJ population. In this instance, additional mitigation to further reduce project impacts (such as a more robust traffic demand management (TDM) program or re-routing project related traffic away from EJ populations) or to ameliorate the existing burden borne by the EJ population (such as contributions to public health services or air quality monitoring) may be warranted. Measures to address climate change risks are particularly important, in light of the vulnerabilities faced by the EJ populations that hinder access to affordable energy resources and the ability to adapt to extreme climate events, such as extreme and more frequent storms and associated flooding. In accordance with 301 CMR 11.07(6)(n), any EIR prepared under Section 58 of the Act must include proposed Section 61 findings identifying any and all actions to be taken to address any identified disproportionate adverse effects, or any increase in the effects of climate change, on EJ populations. Any Agency required to issue Section 61 Findings must then specify, as applicable, "any and all actions to be taken to reduce the potential for unfair or inequitable effects upon Environmental Justice Populations." 301 CMR 11.01(4)(c)2."*

Based on the results of this analysis, it was determined that the proposed Project does not contribute to any disproportionate adverse effects or increased climate change risks to the EJ populations within the DGA. The mitigation measures are presented in **Section 5.13** above, and draft Section 61 Findings are found in **Section 9** below.

9.0 DRAFT SECTION 61 FINDINGS AND MITIGATION

9.1 Draft Section 61 Findings

In accordance with MEPA (M.G.L. c. 30, Section 61) and its implementing regulations at 301 CMR 11.12(5), "…any State Agency that takes Action on a project for which the Secretary required an EIR shall determine whether the project is likely, directly or indirectly, to cause Damage to the Environment and shall make a finding describing the Damage to the Environment and confirming that all feasible measures have been taken to avoid or minimize the Damage to the Environment." The MEPA regulations at 301 CMR 11.12(5) further detail the methods by which the Agency(ies) taking action shall make its findings and identify the appropriate mitigation, as follows:

> *(a) Contents of Section 61 Findings. In all cases, the Agency shall base its Section 61Findings on the EIR, including all studies, analyses and assessments contained therein regarding environmental and public health impacts and effects on Environmental Justice Populations, and shall specify in detail: all feasible measures to be taken by the Proponent or any other Agency or Person to avoid Damage to the Environment or, to the extent Damage to the Environment cannot be avoided, to minimize and mitigate Damage to the Environment to the maximum extent practicable; if applicable, any and all actions to reduce the potential for unfair or inequitable effects upon an Environmental Justice Population; an Agency or Person responsible for funding and implementing mitigation measures, if not the Proponent; and the anticipated implementation schedule that will ensure that mitigation measures shall be implemented prior to or when appropriate in relation to environmental impacts. In accordance with M.G.L. c. 30, § 61, the reasonably foreseeable climate change impacts of a project, including its additional GHG emissions, and effects, such as predicted sea level rise, are within the subject matter of any required Permit, Land Transfer or Financial Assistance.*
>
> *(b) Section 61 Findings and Agency Action. Provided that mitigation measures are specified as conditions to or restrictions on the Agency Action, the Agency shall:*

1. make its Section 61 Findings part of the Permit, contract, or other document allowing or approving the Agency Action, which may include additional conditions to or restrictions on the Project in accordance with other applicable statutes and regulations; or
2. *refer in its Section 61 Findings to applicable sections of the relevant Permit, contract, or other document* approving or allowing the Agency Action.

> *(c) Subject Matter Jurisdiction Limitations. In the case of a Project undertaken by a Person that requires one or more Permits or a Land Transfer but does not involve Financial Assistance, any Participating Agency shall limit its Section 61 Findings, or any mitigation measures specified as conditions to or restrictions on the Agency Action, to those aspects of the Project that are within the subject matter of any required Permit or within the area subject to a Land Transfer.*

(d) <u>Proposed Section 61 Findings.</u> Proposed Section 61 Findings prepared by a Proponent in accordance with 301 CMR 11.07(6)(k) are intended to assist a Participating Agency in fulfilling its obligations in accordance with M.G.L. c. 30, §§ 61 and 62K. The Proponent's preparation of Proposed Section 61 Findings shall not mean that a Participating Agency has made its own Section 61 Findings. Except in accordance with 301 CMR 11.06(4) and 11.08(7), the Proponent's Proposed Section 61 Findings shall not limit an Agency's

Depending on a particular agency's procedures, the various Section 61 Findings may be part of permits or agency actions, or may be stand-alone documents. Moreover, agencies will generally limit Section 61 Findings to impacts and mitigation within the scope of the subject matter of their permits (e.g., MassDEP Section 61 Findings will address water quality and waterways matters).

The proposed Section 61 Findings below and the subsequent sections contain commitments the Proponent has made as a basis for respective agency Section 61 Findings. These commitments include mitigation measures for potential impacts related to wetlands, construction-period stormwater management, underwater archaeological resources, navigation, and construction noise and emissions.

9.1.1 Massachusetts Department of Environmental Protection

Project Name:	Martha's Vineyard Reliability Project
Project Location:	Falmouth and Oak Bluffs
Project Proponent:	NSTAR Electric Company d/b/a Eversource Energy
EEA Number:	
Date Noticed in Monitor:	

The following Findings for the Martha's Vineyard Reliability Project (insert EEA #XXX) have been prepared in accordance with the provisions of M.G.L. c. 30, Section 61 and 301 CMR 11.00. On [insert date] the Secretary of Energy and Environmental Affairs issued a Certificate stating that the Project's EENF/PEIR, dated [insert date] adequately and properly complied with the MEPA statute and regulations.

The Martha's Vineyard Reliability Project includes a new 23 kV underground and submarine distribution cable between Falmouth on Cape Cod and Oak Bluffs on Martha's Vineyard, modifications at the existing Stephens Lane substation in Falmouth, and a new equipment yard off Eastville Avenue in Oak Bluffs. The buried submarine cable is proposed to pass through state waters in the towns of Falmouth, Tisbury, and Oak Bluffs. The underground onshore cable will be located in the towns of Falmouth and Oak Bluffs.

The purpose of the Project is to improve the reliability of the grid-based electrical system on Martha's Vineyard to existing and future energy needs. on Martha's Vineyard, thus ensuring consistent and reliable energy services to its customers on the Island. Derivative benefits will be achieve on the Island, and those include the following. The fifth cable will also allow for an incremental increase in distributed energy resources (e.g., roof top solar photovoltaic units, wind generating units, etc.) on Martha's Vineyard supporting the reduction of GHG emission on the Island. Additionally, the Project will allow Eversource to decommission the five existing diesel generators, which will (1) move toward the Martha Vineyard Commission's Climate Action Task Force goal of eliminating fossil fuel use on the Island, and (2) reduce air emission on the Island generated by these five generators. Lastly, by connecting to the Stephens Lane substation in Falmouth, the source of the electricity moving through the new cable can be supplied by renewable energy as Eversource transitions its energy sources on the mainland to renewables.

The proposed submarine cable route will begin at the landfall site off Surf Drive in an existing paved parking lot near the intersection of Shore Street and Surf Drive in Falmouth. From this point, the proposed cable will cross Vineyard Sound and will make landfall in Oak Bluffs in the Eastville Avenue ROW. Both landing sites support the landing of the existing #99 Cable. The preferred method of cable installation across the Vineyard Sound is by trenchless construction, e.g., hydrolpow or remotely operated vehicle trenching machine. Horizontal directional drilling will be used from the landfall for approximately 2,500 feet seaward to avoid beach, dune, eel grass and intertidal resources. The landside underground duct and manhole system in both Falmouth and Oak Bluffs will be installed via open trench and back fill construction techniques. Equipment upgrades will be made at Substation #933 off Stephen's Land in Falmouth, within the existing substation footprint. A new equipment yard will be constructed off Eastville Avenue in Oak Bluffs on a parcel owned by Eversource.

As this Project is currently described, the following state permits and/or approvals will be required from the Department:

- 401 Water Quality Certification; and
- Chapter 91 Waterways License and Dredge Permit.

Based upon its review of the MEPA documents, the permit applications submitted to date, and the Department's regulations, the Department finds that the terms and conditions to be incorporated into the permits required for this Project will constitute all feasible measures to avoid damage to the environment, including consideration of the potential effects of climate change, and will minimize and mitigate such damage to the maximum extent practicable for those impacts subject to the Department's authority (see the appended Mitigation Table). Implementation of the mitigation measures will occur in accordance with the terms and conditions set forth in the permits.

Furthermore, this water-dependent Infrastructure Crossing Facility is presumed to meet the criteria related to public benefit review, and the Proponent has provided an analysis of the potential impacts and proposed public benefits.

____
Department of Environmental Protection

____
By

____
[Date]

9.1.2 Massachusetts Department of Transportation

Project Name: Martha’s Vineyard Reliability Project

Project Location: Falmouth and Oak Bluffs

Project Proponent: NSTAR Electric Company d/b/a Eversource Energy

EEA Number:

Date Noticed in Monitor:

The following Findings for the Martha’s Vineyard Reliability Project (insert EEA #XXX) have been prepared in accordance with the provisions of M.G.L. c. 30, Section 61 and 301 CMR 11.00. On [insert date] the Secretary of Energy and Environmental Affairs issued a Certificate stating that the Project’s EENF/PEIR, dated [insert date] adequately and properly complied with the MEPA statute and regulations.

The Martha’s Vineyard Reliability Project includes a new 23 kV underground and submarine distribution cable between Falmouth on Cape Cod and Oak Bluffs on Martha’s Vineyard, modifications at the existing Stephens Lane substation in Falmouth, and a new equipment yard off Eastville Avenue in Oak Bluffs. The buried submarine cable is proposed to pass through state waters in the towns of Falmouth, Tisbury, and Oak Bluffs. The underground onshore cable will be located in public ROWs the towns of Falmouth and Oak Bluffs.

The purpose of the Project is to improve the reliability of the grid-based electrical system on Martha’s Vineyard to existing and future energy needs. on Martha’s Vineyard, thus ensuring consistent and reliable energy services to its customers on the Island. Derivative benefits will be achieve on the Island, and those include the following. The fifth cable will also allow for an incremental increase in distributed energy resources (e.g., roof top solar photovoltaic units, wind generating units, etc.) on Martha's Vineyard supporting the reduction of GHG emission on the Island. Additionally, the Project will allow Eversource to decommission the five existing diesel generators, which will (1) move toward the Martha Vineyard Commission’s Climate Action Task Force goal of eliminating fossil fuel use on the Island, and (2) reduce air emission on the Island generated by these five generators. Lastly, by connecting to the Stephens Lane substation in Falmouth, the source of the electricity moving through the new cable can be supplied by renewable energy as Eversource transitions its energy sources on the mainland to renewables.

The proposed submarine cable route will begin at the landfall site off Surf Drive in an existing paved parking lot near the intersection of Shore Street and Surf Drive in Falmouth. From this point, the proposed cable will cross Vineyard Sound and will make landfall in Oak Bluffs in the Eastville Avenue ROW. Both landing sites support the landing of the existing #99 Cable. The preferred method of cable installation across the Vineyard Sound is by trenchless construction, e.g., hydrolpow or remotely operated vehicle trenching machine. Horizontal directional drilling will be used from the landfall for approximately 2,500 feet seaward to avoid beach, dune, eel grass and intertidal resources. The landside underground duct and manhole system in both Falmouth and Oak Bluffs will be installed via open trench and back fill construction techniques in public ROWs in Falmouth and Oak Bluffs. Equipment upgrades will be made at Substation #933 off Stephen's Land in Falmouth, within the existing substation footprint. A new equipment yard will be constructed off Eastville Avenue in Oak Bluffs on a parcel owned by Eversource.

As this Project is currently described, the following state permits and/or approvals will be required from the Department:

- State Highway Access Permit / Rail Division Use and Occupancy License.

Based upon its review of the MEPA documents, the permit applications submitted {insert date], and the Department's regulations, the Department finds that the terms and conditions to be incorporated into the permits required for this Project will constitute all feasible measures to avoid damage to the environment, including consideration of the potential effects of climate change, and will minimize and mitigate such damage to the maximum extent practicable for those impacts subject to the Department's authority (see the appended Mitigation Table). Implementation of the mitigation measures will occur in accordance with the terms and conditions set forth in the permits.

____
Department of Transportation

____
By

____
[Date]

9.2 Mitigation Summary

The most important mitigation measure for this Project is the careful selection of the preferred cable route and selected submarine cable construction techniques. As described in **Section 2.0,** the Proponent considered a number of alternative routes and determined that the preferred route and construction techniques would satisfy the Project purpose and best balance's the reliability, Project cost, and environmental impacts. The potential environmental effects are associated with the construction phase, as once the cable installed no ongoing potential adverse effects are anticipated. Long-term environmental benefits to be derived by the Martha's Vineyard Reliability Project include:

- The fifth cable will also allow for an incremental increase in distributed energy resources (e.g., roof top solar photovoltaic units, wind generating units, etc.) on Martha's Vineyard supporting the reduction of GHG emissions on the Island.
- Decommissioning of the five diesel peak period generators that will: (1) move toward the Martha Vineyard Commission's Climate Action Task Force goal of eliminating fossil fuel use on the Island, and (2) reduce air emission on the Island generated by these five generators.

- ♦ Connecting to the Stephens Lane substation in Falmouth, the source of the electricity moving through the new cable can be supplied by renewable energy as Eversource transitions its energy sources on the mainland to renewables.

In addition to proper route selection, a number of mitigation measures involving construction methodology and schedule will avoid and minimize potential environmental impacts. The mitigation measures are presented in **Section 5.13** above and summarized below in **Table 9.1**. The attributes of each mitigation measure are summarized below.

Table 9.1 Summary of Impacts and Mitigation Measures

Subject Matter	Impact	Mitigation Measure(s)	Schedule and Cost
Coastal Wetlands	Temporary impacts to: ♦ Land Under the Ocean ♦ Land Containing Shellfish ♦ Land Subject to Coastal Storm Flowage	♦ HDD construction at the landfalls avoid impacts to Coastal Beach, Coastal and eelgrass ♦ Trenchless construction across Vineyard sound minimize alteration to LOU and Land Containing Shellfish. ♦ Trenchless construction across Vineyard avoids permanent alteration to LOU and land Containing Shellfish. ♦ Landside work wil restore surface grades and conditions to match pre-construction conditions resulting in no effect on LSCSF.	During construction. Cost included in overall Project cost.
State-Listed Species	NHESP determined that the Project's submarine cable route is located within Priority and Estimated Habitat for: ♦ Least Tern, ♦ Common Tern, and ♦ Roseate Tern, which is also a federal-listed species.	♦ Eversource submit a Joint WPA-MESA Notice of Intent to initiate NHESP review. ♦ Work in the Sound, on the water sheet, is not expected to effect foraging habitat for these species. ♦ No work is proposed on the beach or dune. Construction proximate to the beaches and dunes, which may support nesting habitat will be timed to avoid the nesting seasons.	During construction. Cost included in overall Project cost
Water Quality	The Project is not expected to result in any significant impacts to water quality.	♦ A Preliminary Inadvertent Release Plan has been developed for the HDD activities and identifies the minimum standards for the contractor's project-specific IR Plan. ♦ A construction Stormwater Pollution Prevention Plan ("SWPPP") will be prepared and implanted during construction. The SWPP will prevent the BMPs to be used during construction to protect received water quality during construction.	During construction and operation. Cost included in overall Project costs.
Underwater Archaeological Resources	The proposed HDD and cable-trenching operations have the potential to impact underwater archaeological resources, should they be present, along the submarine cable alignment.	♦ The results of the marine archaeological assessment completed for the Project are being sent to MHC and MBUAR as part of this EENF/PEIR review. ♦ The alignment was selected to avoid known and any identified resources.	Prior to construction. Cost included in overall Project cost..

Subject Matter	Impact	Mitigation Measure(s)	Schedule and Cost
Navigation	In-water construction will require temporary navigation restrictions in the immediate vicinity of Project vessels.	♦ In-water construction will be timed to avoid the busy recreational boating season. ♦ The Proponent will coordinate with the U.S. Coast Guard, municipal Harbor Masters, and the Steamship Authority prior to initiating cable installation.	During construction. Cost included in overall Project cost.
Air Quality	Short-term, temporary air emissions during construction (vessels, construction vehicles, construction equipment) and possibly the generation of fugitive dust. Benefits will be achieved by decommissioning the five on-Island diesel generators, and the Project will support increased use of distributed renewal generation on the Island.	The following BMPs and mitigation measures will be implemented during construction of the onshore cable routes: ♦ Construction equipment engines will comply with requirements for the use of ULSD in off-road engines. The construction contractor will be encouraged to use diesel construction equipment with installed exhaust emission controls such as oxidation catalysts or particulate filters on their diesel engines. ♦ The contractors will abide by the 5-minute idle law. ♦ Mechanical sweeping of construction areas and surrounding streets and sidewalks, as necessary. ♦ Using covered trucks or enclosed trailers to transport aggregate and soils. ♦ Removal of all dirt/mud from the wheels and undercarriage of all trucks prior leaving the HDD sites; ♦ Wetting and / or covering of exposed soils and stockpiles to prevent dust generation, as necessary; ♦ Minimizing stockpiling of material and debris on-site; and ♦ Minimizing the duration that soils are left exposed. ♦ The Project will avoid annual emissions from the 5 decommissioned diesel generators.	During construction and operation. Cost included in overall Project cost. Decommissioning the on-Island generators occur in May 2025.

Subject Matter	Impact	Mitigation Measure(s)	Schedule and Cost
Noise	Temporary impacts on noise during construction	♦ Expected noise mitigation measures include: ♦ Minimizing the amount of work conducted outside of typical construction days and hours; ♦ Ensuring that appropriate mufflers are installed and maintained on construction equipment; ♦ Ensuring appropriate maintenance and lubrication of construction equipment to provide the quietest performance; ♦ Requiring muffling enclosures on continuously-operating equipment such as air compressors and welding generators; ♦ Turning off construction equipment when not in use and minimizing idling times; and ♦ Mitigating the impact of noisy equipment on sensitive locations by using shielding or buffering distance to the extent practical.	During construction. Cost included in overall Project cost.
Historic and Archaeological Resources	The desktop MACRIS due diligence review determined that the landside route does not pass through known historic resource and archaeological resources.	♦ The landside route is located in existing disturbed public ROWs. ♦ The Proponent will continue to coordinate with the NHC to avoid any previously unknown historic or archaeological resources. Coordination with the NHC to	During construction. Cost included in overall Project cost.
Stormwater	Impacts will be temporary and limited to the construction period.	♦ BMPs for erosion and sedimentation control will include the use of silt fence and/or hay bales around the HDD staging and temporary work areas and installation of inlet protection. These will be identified the project specific SWPPP. ♦ HDD installation will produce drill cuttings and drill fluids, which will be collected, managed, and disposed of in accordance with local and state standards.	During construction. Cost included in overall Project cost.

Subject Matter	Impact	Mitigation Measure(s)	Schedule and Cost
Traffic	Temporary traffic impacts during construction	♦ Prior to construction, Eversource will work closely with the Town of Falmouth and Oak Bluffs to develop an appropriate traffic management plan for minimizing construction-period traffic disruptions to multimodal forms of transportation (vehicles, bicycles, pedestrians). ♦ The underground distribution line is proposed to be constructed between September (after Labor Day) and May (before Memorial Day), which is the off-season for communities on Cape Cod and Martha's Vineyard. This proposed construction schedule will minimize impacts to neighboring seasonal residential homes and potentially result in fewer traffic related impacts due to a lower volume of vehicles on Cape and Island roadways during this time of year.	During construction. Cost included in overall Project cost.

Attachment B

Figures

G:\Projects2\MA\MA\6097\2022\MXD\Fig1_USGS_Locus_20220415.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

Martha's Vineyard Reliability Project

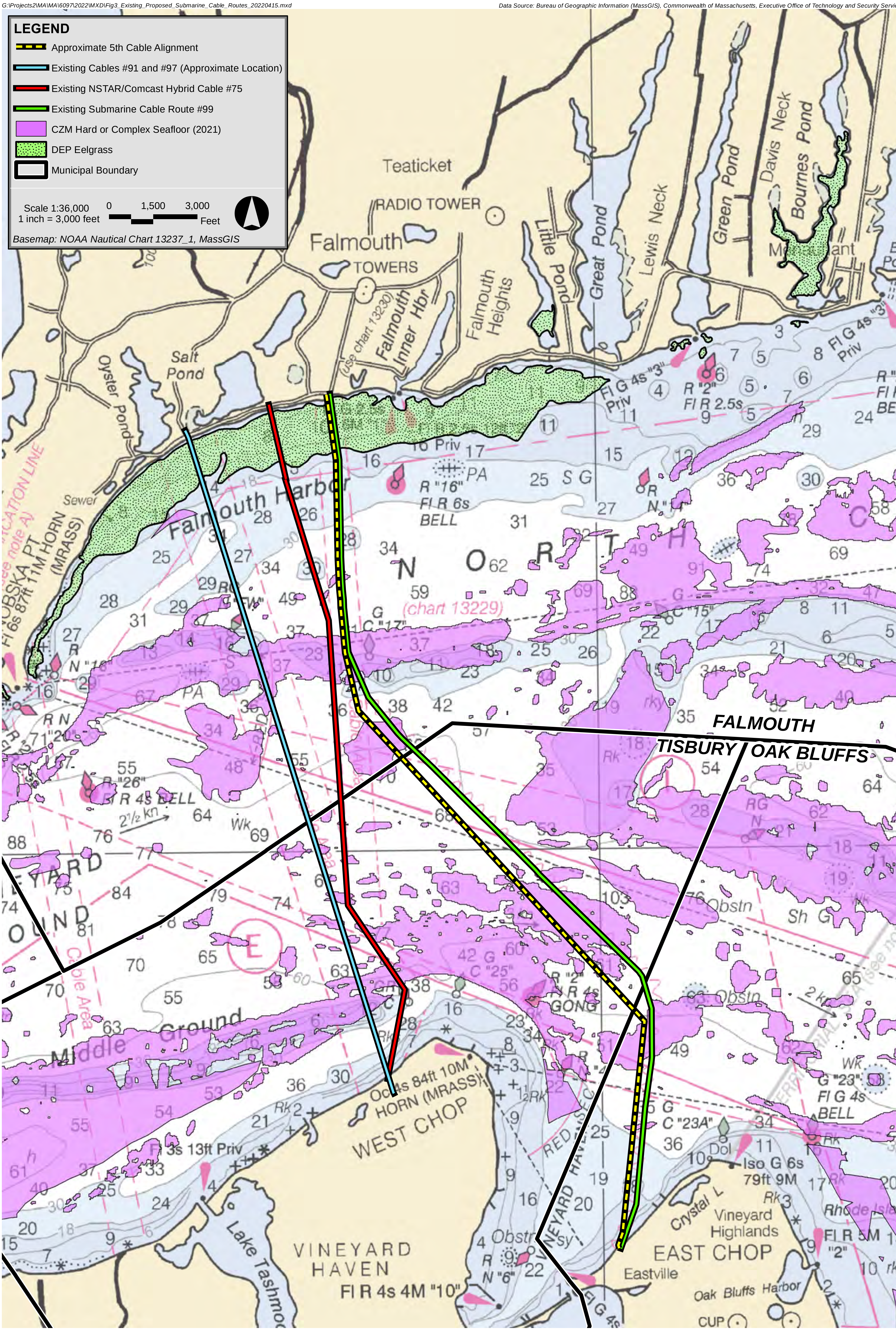
EVERSOURCE

Figure 1

USGS Locus Map

Figure 2
Aerial Locus

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Martha's Vineyard Reliability Project

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Figure 3

Existing and Proposed Submarine Cable Routes

G:\Projects2\MA\MA\6097\2022\MXD\Fig4_Diesel_Generators_Locus_20220415.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

Martha's Vineyard Reliability Project

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Figure 4

Existing Peak Demand Generators Locus Map

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

Martha's Vineyard Reliability Project

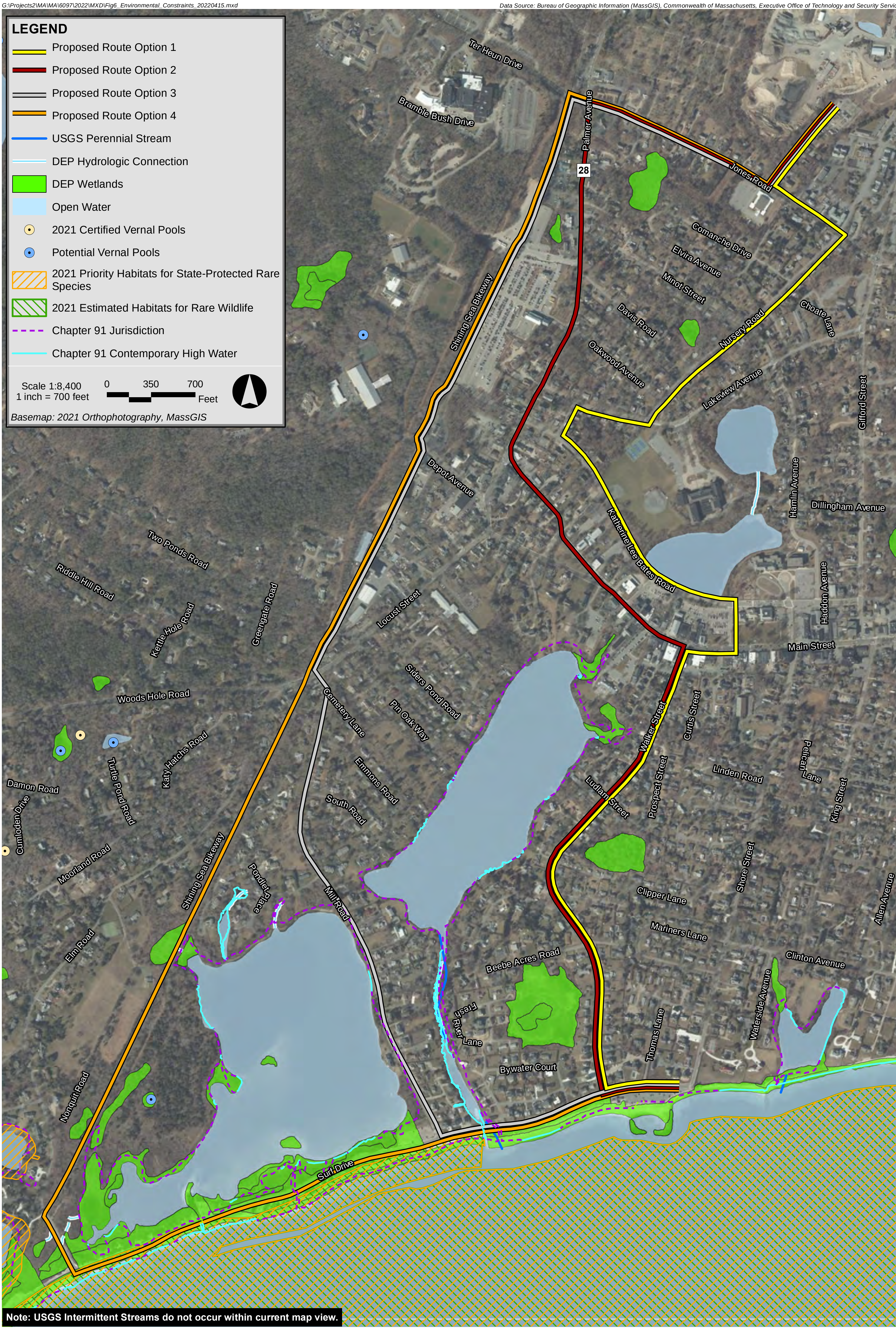
EVERSOURCE

Figure 5

Alternative Cable Landing Sites

G:\Projects2\MA\MA\6097\2022\MXD\Fig6_Environmental_Constraints_20220415.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

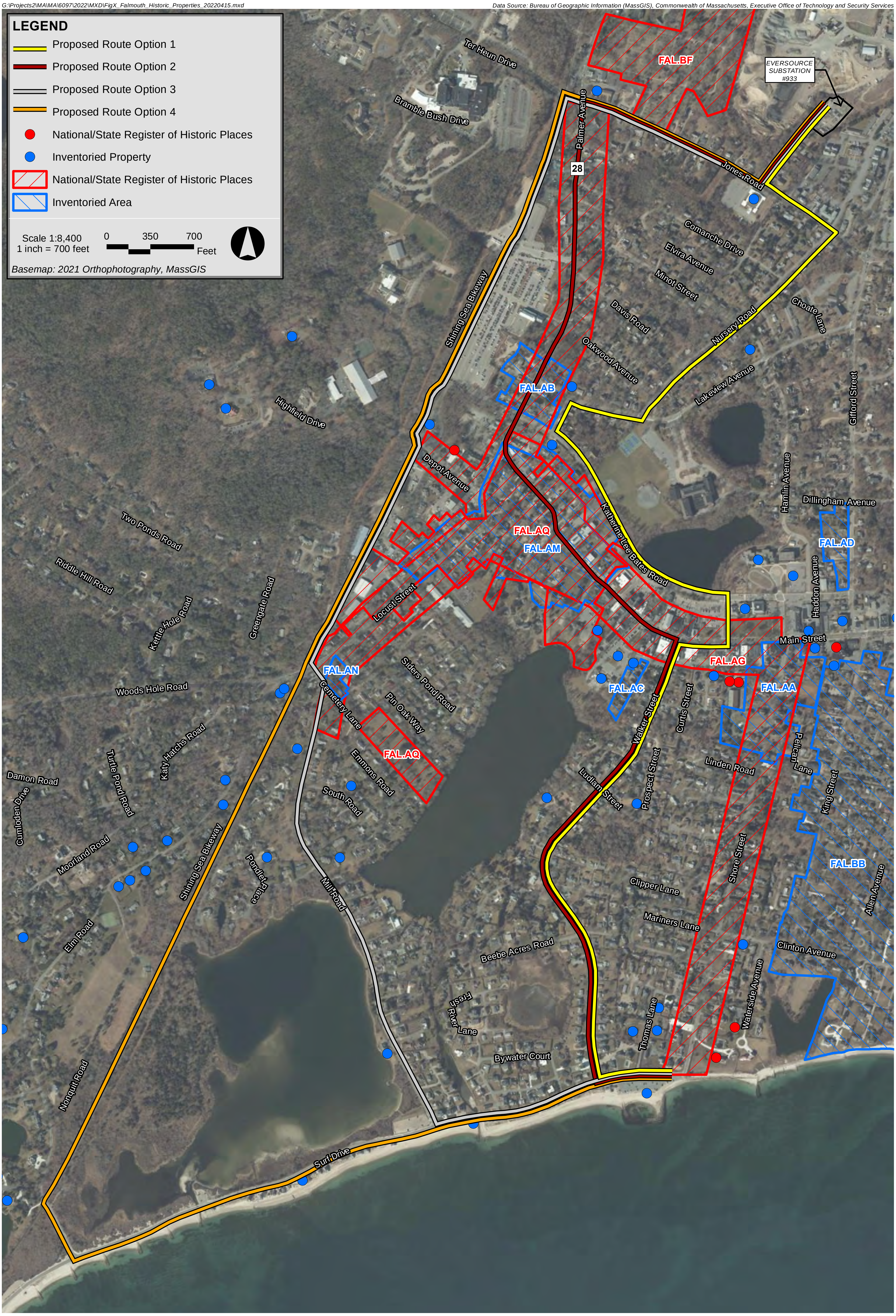


Martha's Vineyard Reliability Project

EVERSOURCE

Figure 6
Environmental Constraints in Falmouth

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



G:\Projects2\MA\MA\6097\2022\MXD\Fig7_Environmental_Constraints_Oak_Bluffs_20220415.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

Note: Certified Vernal Pools, Potential Vernal Pools, DEP Hydrologic Connections, USGS Perennial Streams, and USGS Intermittent Streams do not occur within the current map view.

Martha's Vineyard Reliability Project

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Figure 8

Environmental Constraints in Oak Bluffs

G:\Projects2\MA\MA\6097\2022\MXD\FigX_Oak_Bluffs_Historic_Properties_20220415.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

Martha's Vineyard Reliability Project

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Figure 9

Historic Resources in Oak Bluffs

Photograph 1: Typical hydrowplow on deck

Photograph 2: Hydroplow showing burial stinger extended

Photograph 3: Water nozzles on plow stinger

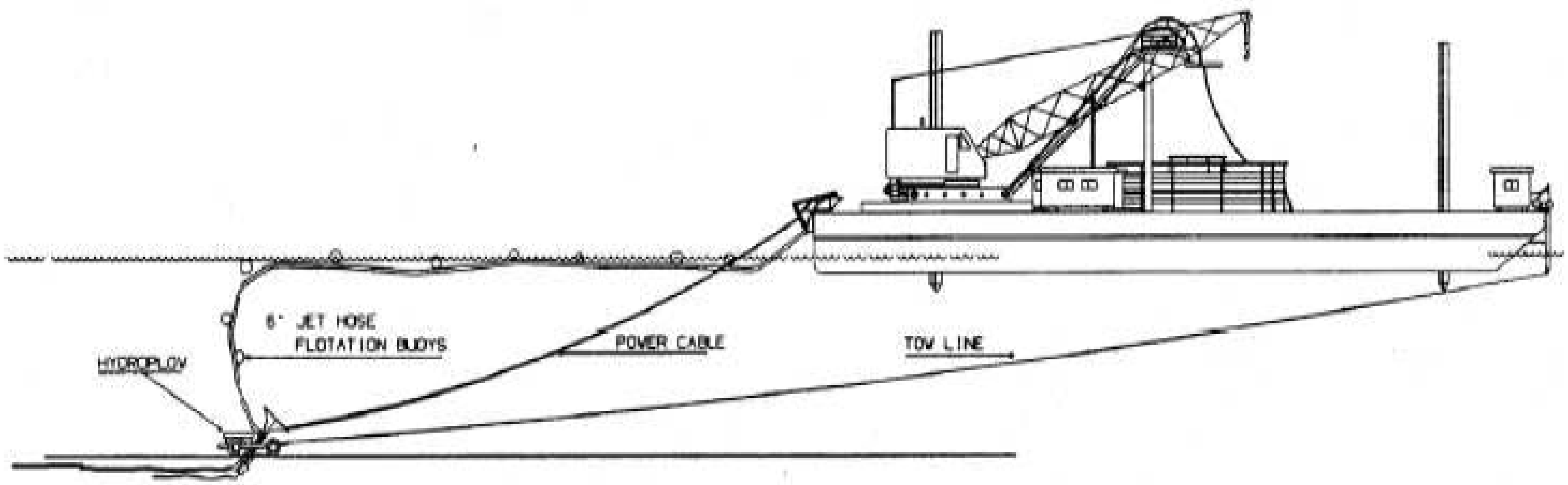
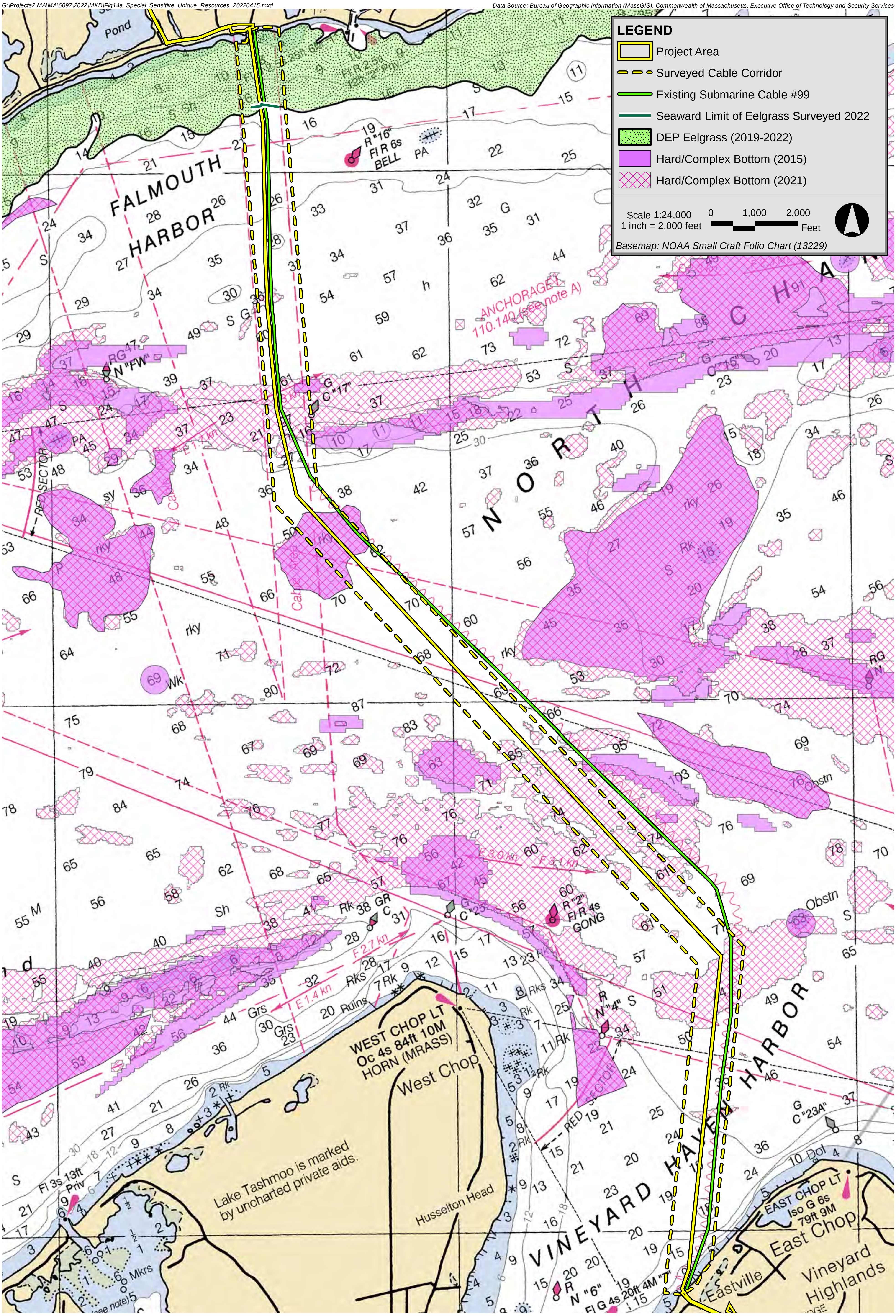


Figure 12

Schematic of Hydroplow Installation Technique

G:\Projects2\MA\MA\6097\2022\MXD\Fig14a_Special_Sensitive_Unique_Resources_20220415.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Martha's Vineyard Reliability Project

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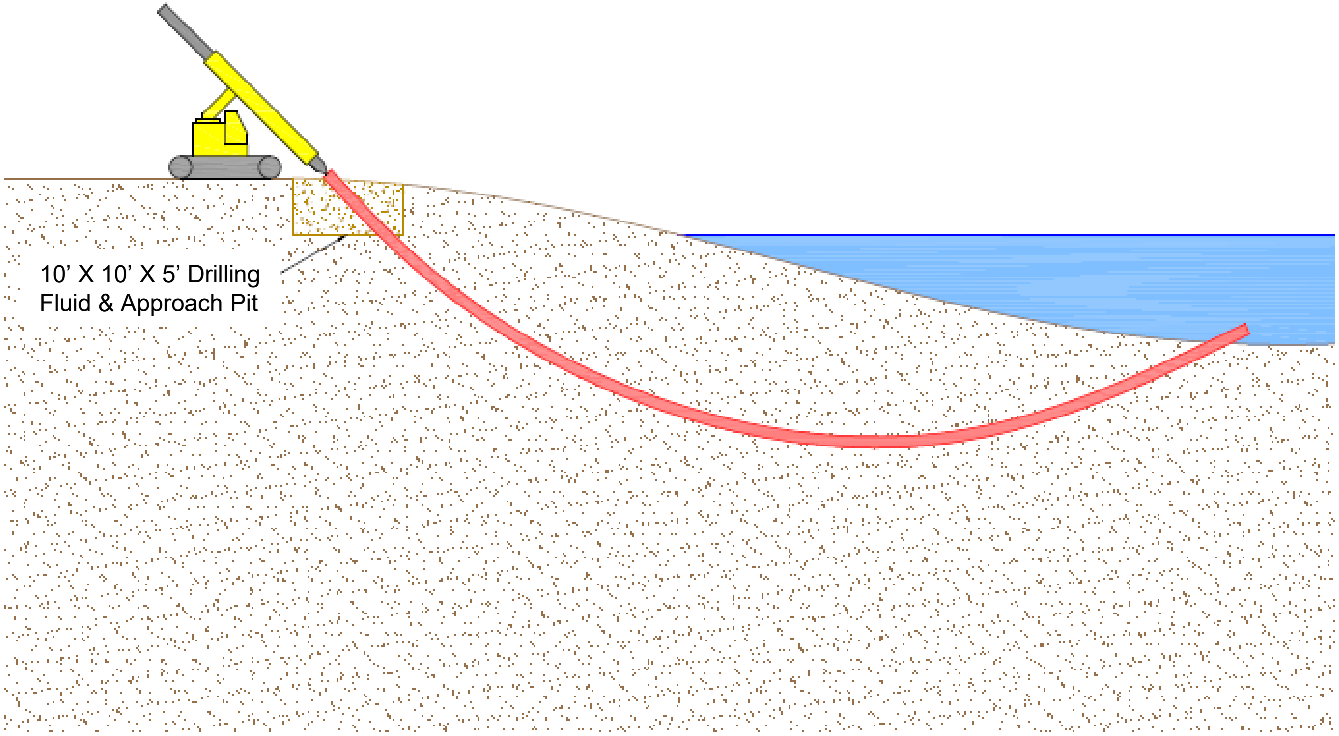
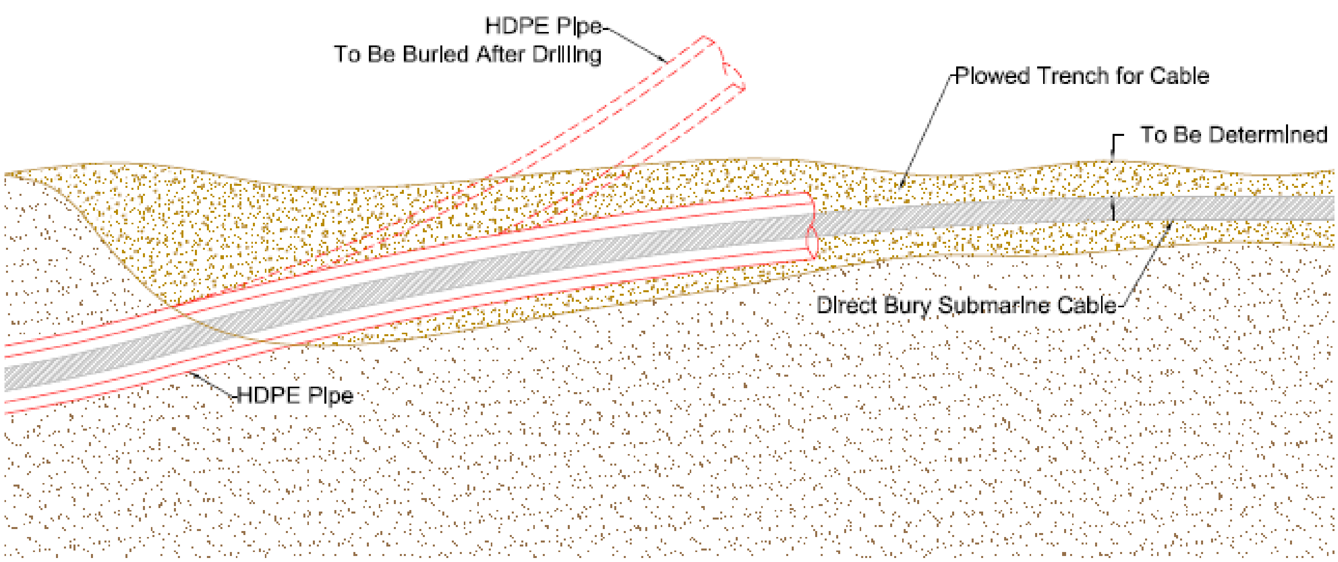
Figure 13

Hard/Complex Bottom and Eelgrass Areas



Drawing 1: Land-Based Directional Drill Setup and Trajectory



Drawing 2: Transition from Directional Drill Conduit to Plowed Cable

Photograph 1: Surf Drive and northern edge of paved parking area, facing west

Photograph 2: Paved parking area, facing south

Photograph 3: Back of coastal dune and wooden fence/seawall adjacent to cable landing site, facing southwest

Photograph 4: Seaward edge of coastal dune adjacent to cable landing site, facing west

Photograph 5: Coastal beach south of paved parking area, facing south

Photograph 6: Concreate seawall and coastal beach adjacent to cable landing site, facing west

Photograph 1: View of the coastal beach and coastal dune on site facing Northeast

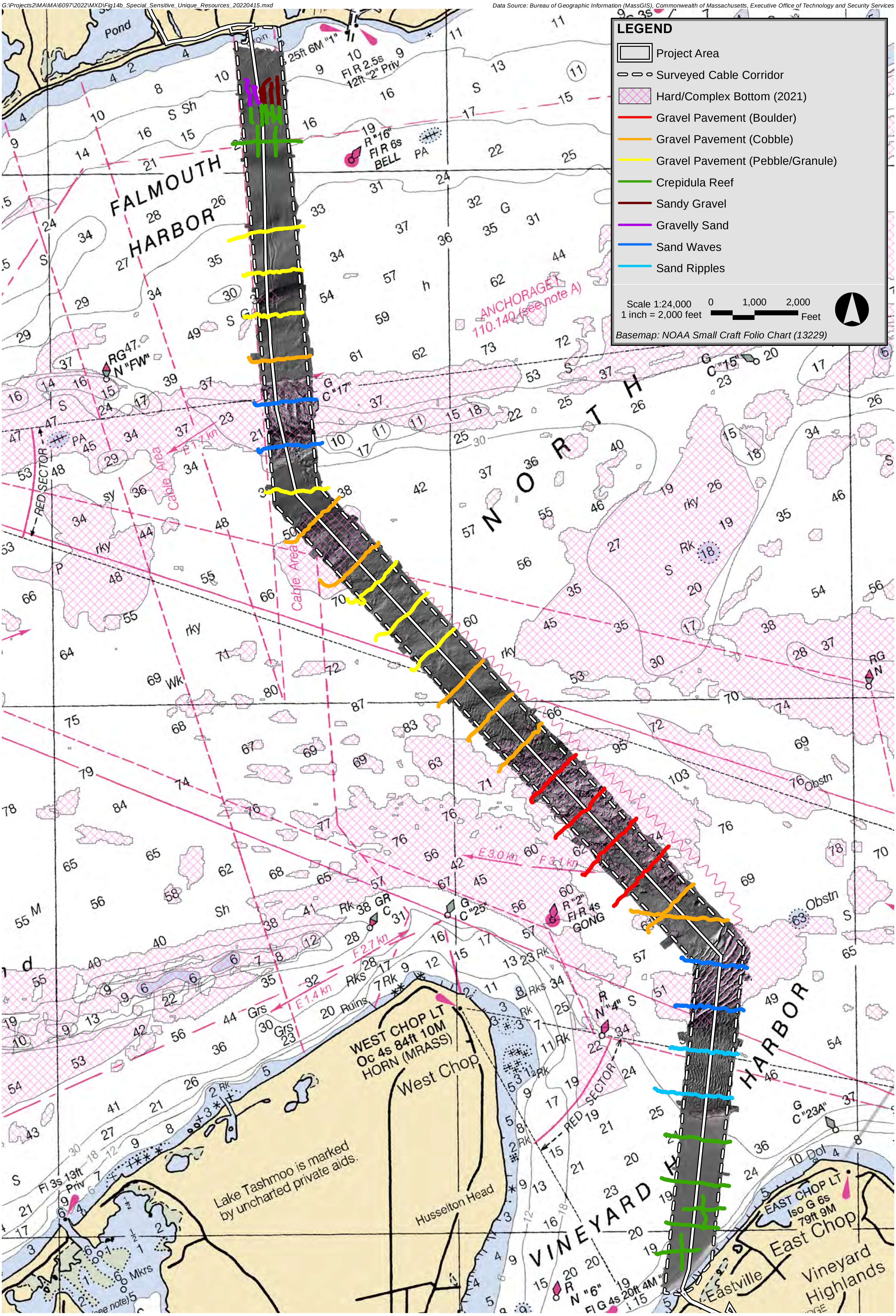
Photograph 2: View of delineated dune facing East

Photograph 3: View of delineated dune from the roadway facing Northwest

Photograph 4: View of the end of Eastville Avenue that extends to the back of the coastal dune, facing east

G:\Projects2\MA\MA\6097\2022\MXD\Fig14b_Special_Sensitive_Unique_Resources_20220415.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Martha's Vineyard Reliability Project

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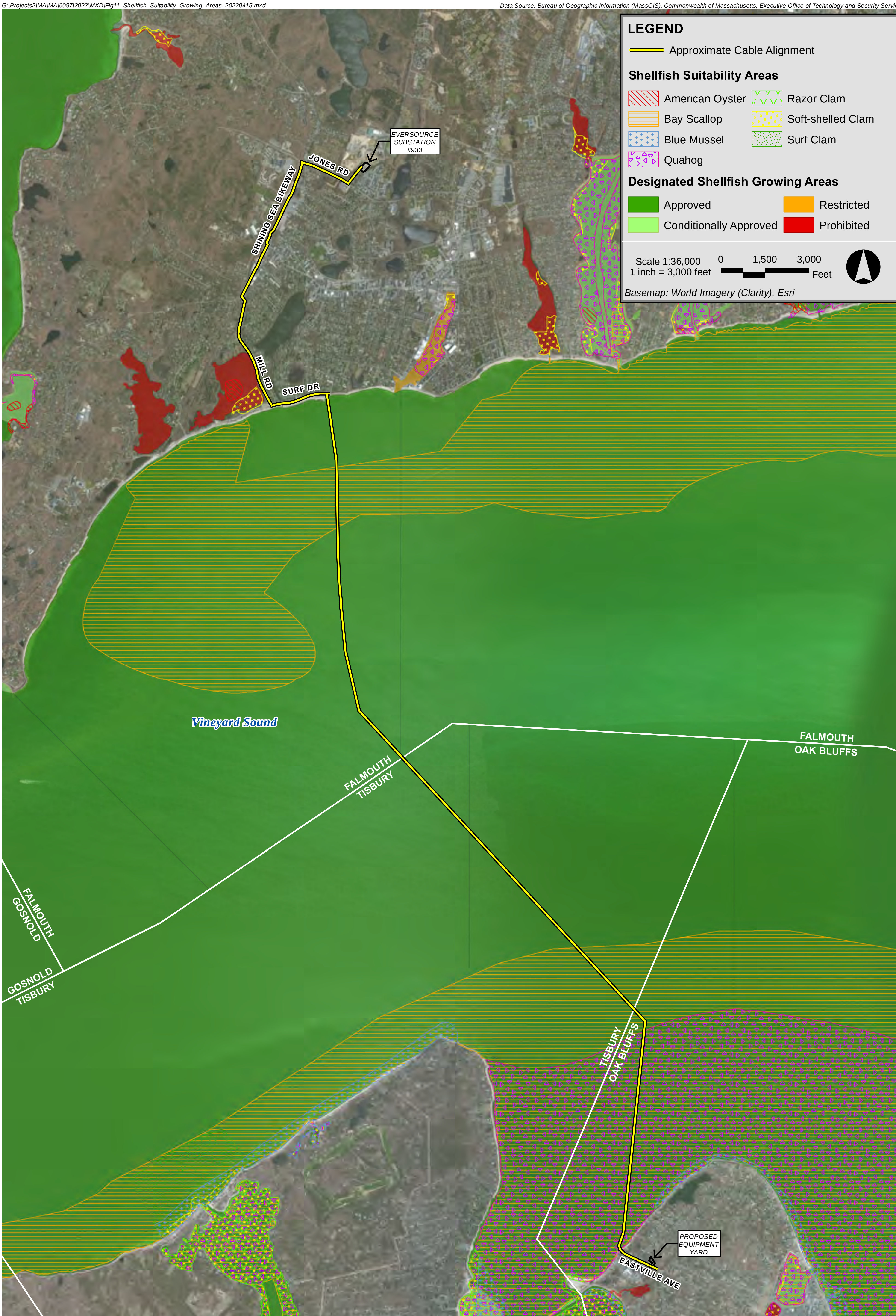
Figure 17

Dominant CMECS Substrate Classification

G:\Projects2\MA\MA\6097\2022\MXD\Fig11_Shellfish_Suitability_Growing_Areas_20220415.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Martha's Vineyard Reliability Project

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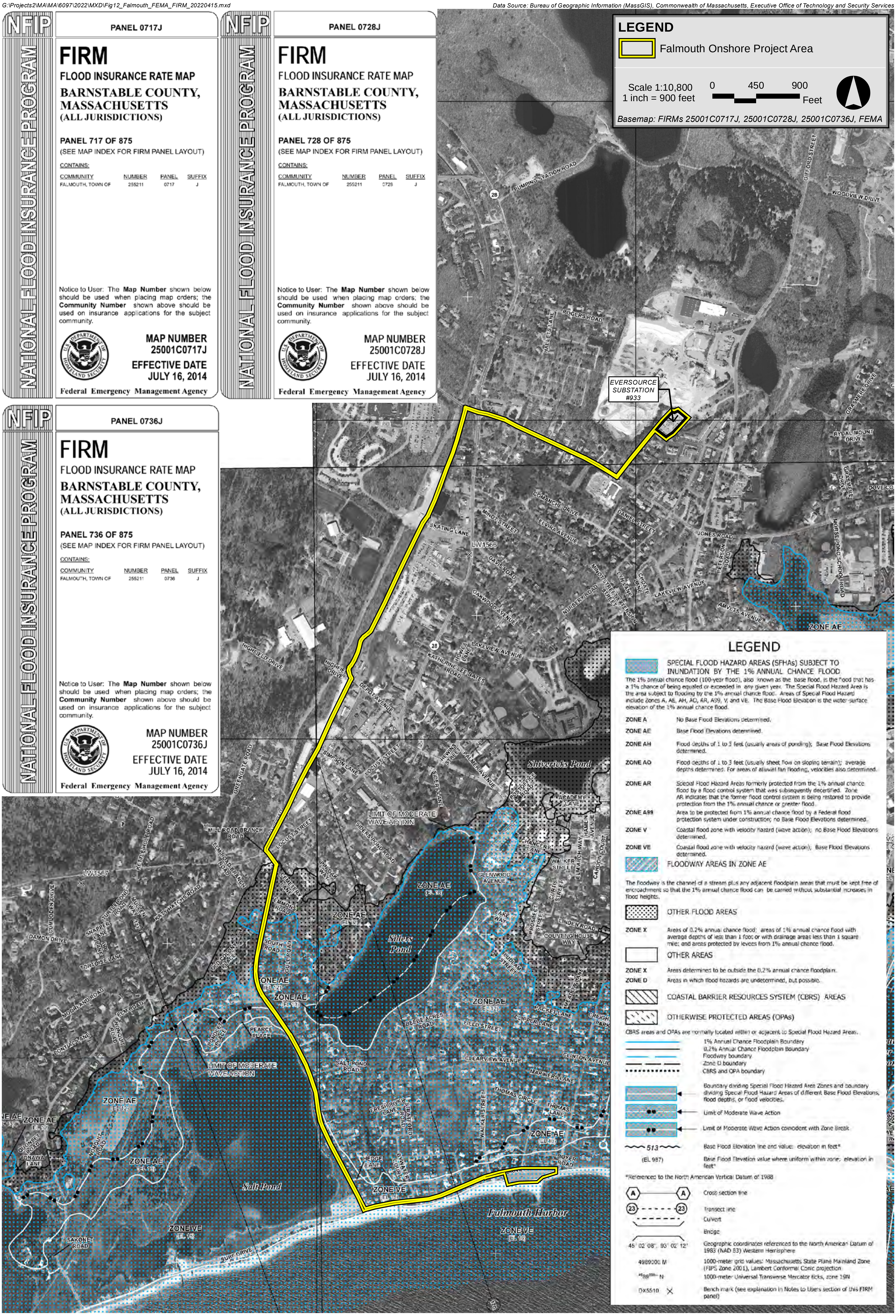
Figure 18

Shellfish Suitability and Designated Growing Areas



Martha's Vineyard Reliability Project

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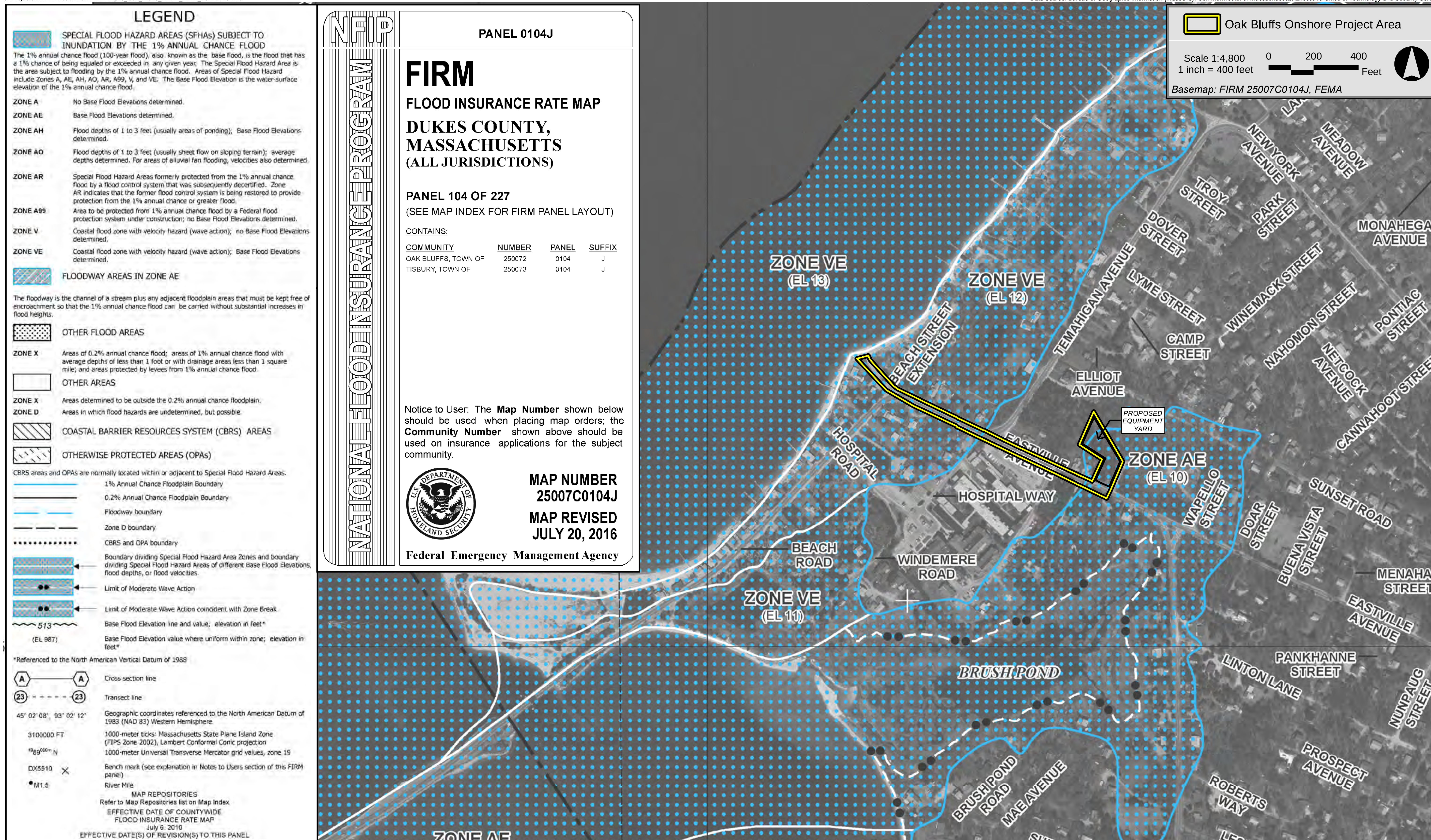
Figure 19

FEMA Q3 Flood Zones (Falmouth)

G:\Projects2\MA\MA\6097\2022\MXD\Fig13_Oak_Bluffs_FEMA_FIRM_20220415.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Martha's Vineyard Reliability Project

EVERSOURCE

Figure 20

FEMA Q3 Flood Zones - Oak Bluffs

G:\Projects2\MA\MA\6097\2022\MXD\Fig9A_Falmouth_Shoreline_Change_20220415.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

Martha's Vineyard Reliability Project

EVERSOURCE

Figure 21A

Shoreline Change (Short-Term) - Falmouth Landing Site

G:\Projects2\MA\MA\6097\2022\MXD\Fig9B_Falmouth_Shoreline_Change_20220415.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

Martha's Vineyard Reliability Project

EVERSOURCE

Figure 21B

Shoreline Change (Long-Term) Falmouth Landing Site

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

Martha's Vineyard Reliability Project

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Figure 22A

Shoreline Change (Short-Term) - Oak Bluffs Landing Site

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

Martha's Vineyard Reliability Project

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Figure 22B

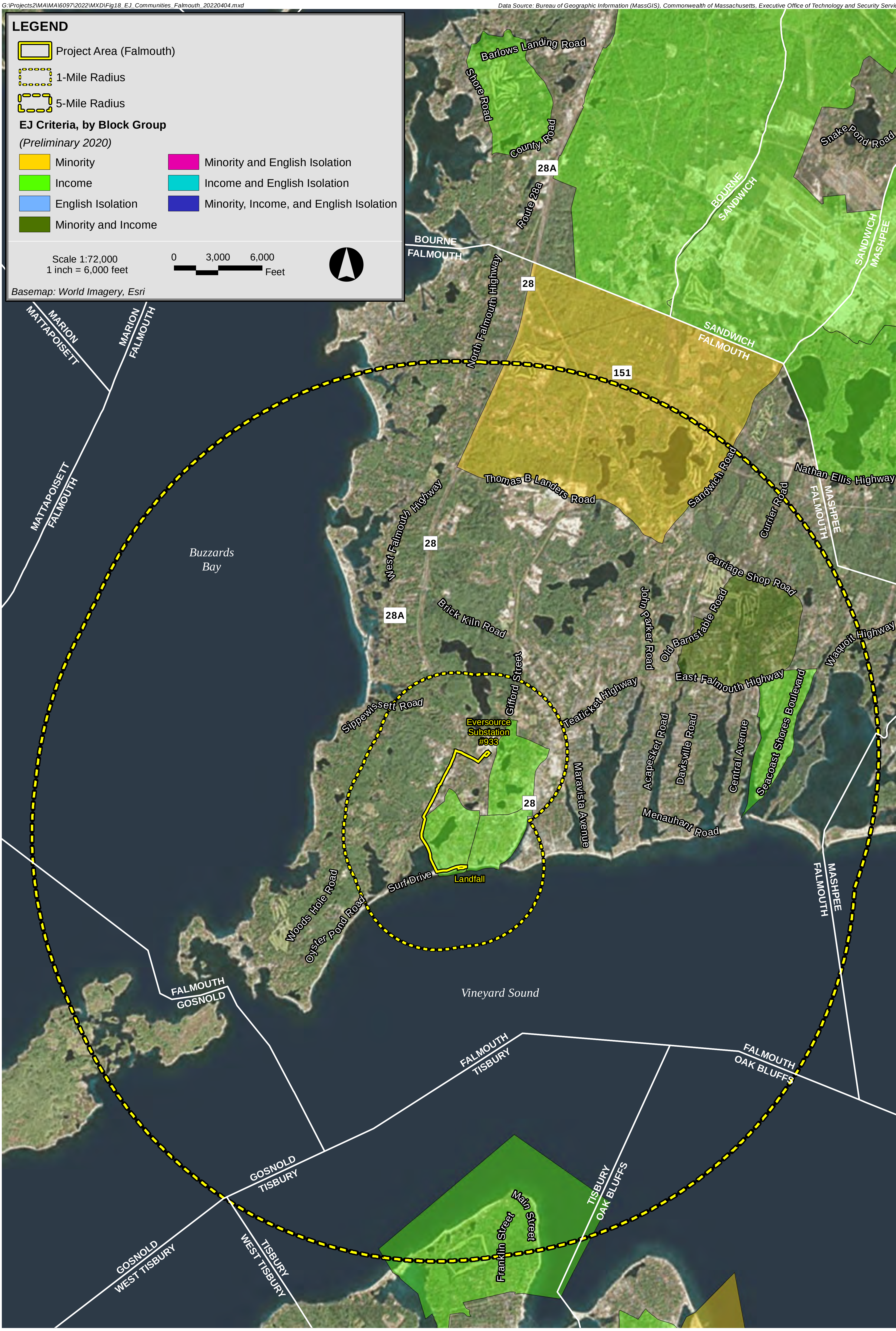
Shoreline Change (Long-Term) Oak Bluffs Landing Site

Martha's Vineyard Reliability Project

EVERSOURCE

Figure 23

Natural Heritage and Endangered Species Program Mapping

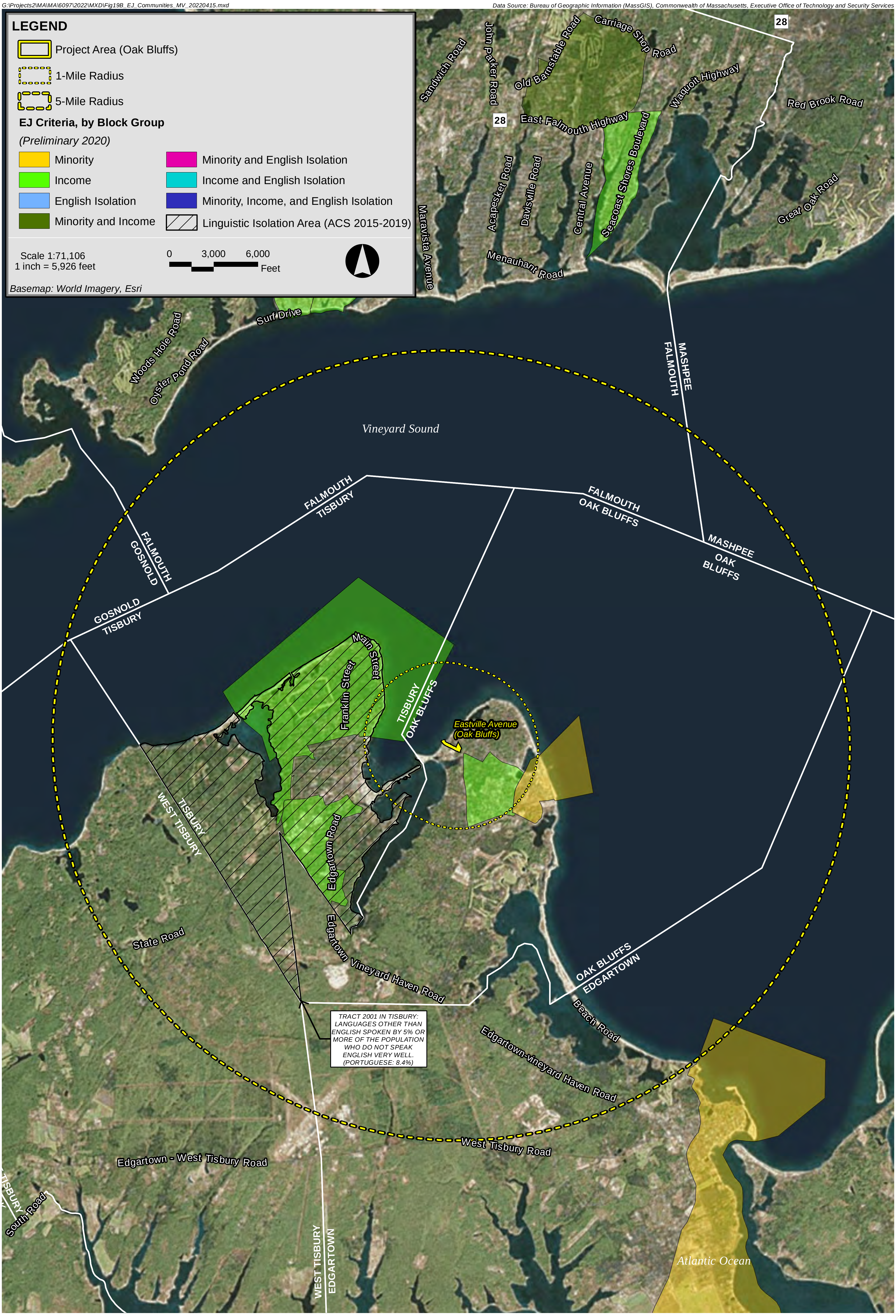


Martha's Vineyard Reliability Project

EVERSOURCE

Figure 24

Environmental Justice Populations (Falmouth)



Martha's Vineyard Reliability Project

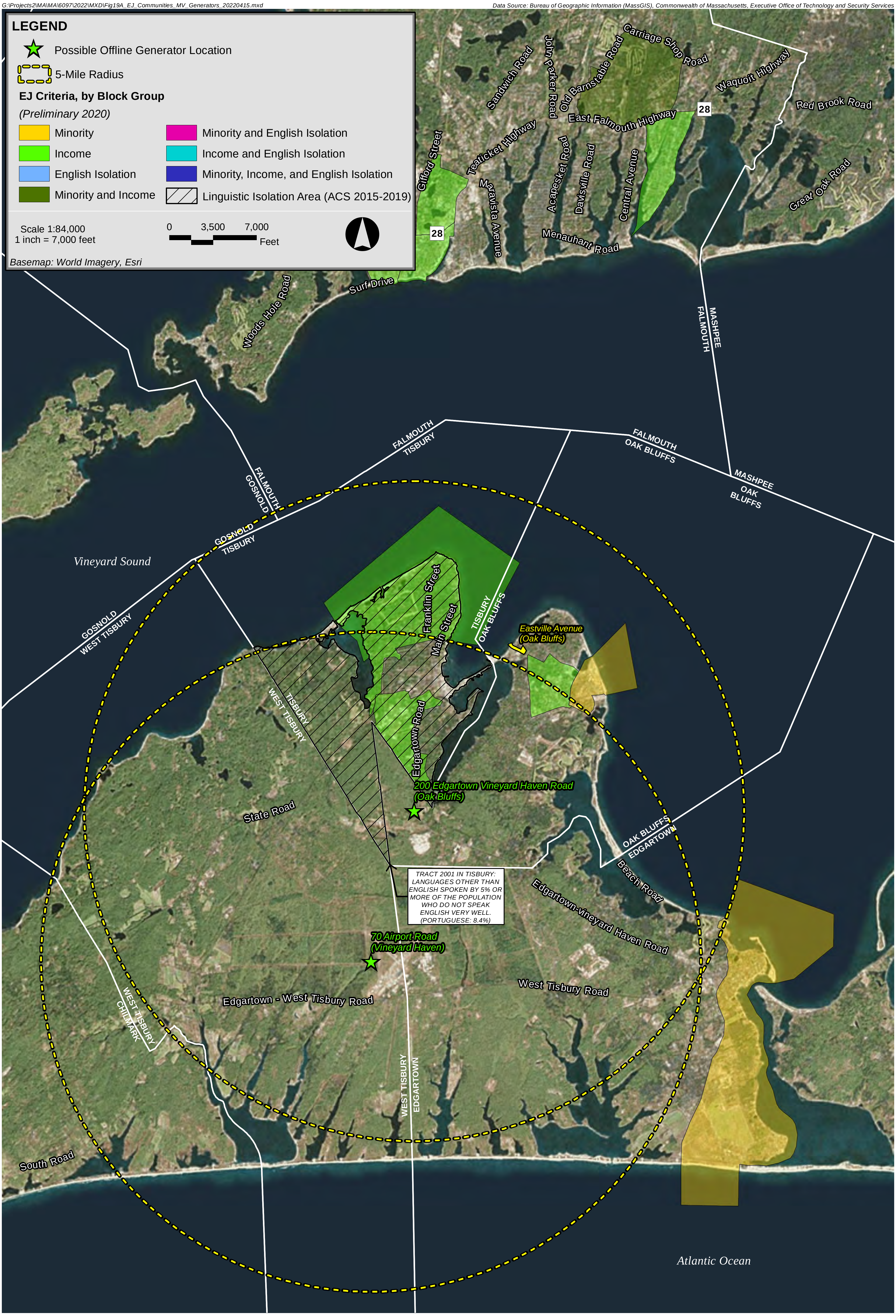
EVERSOURCE

Figure 25

Environmental Justice Populations (Oak Bluffs)

G:\Projects2\MA\MA\6097\2022\MXD\Fig19A_EJ_Communities_MV_Generators_20220415.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

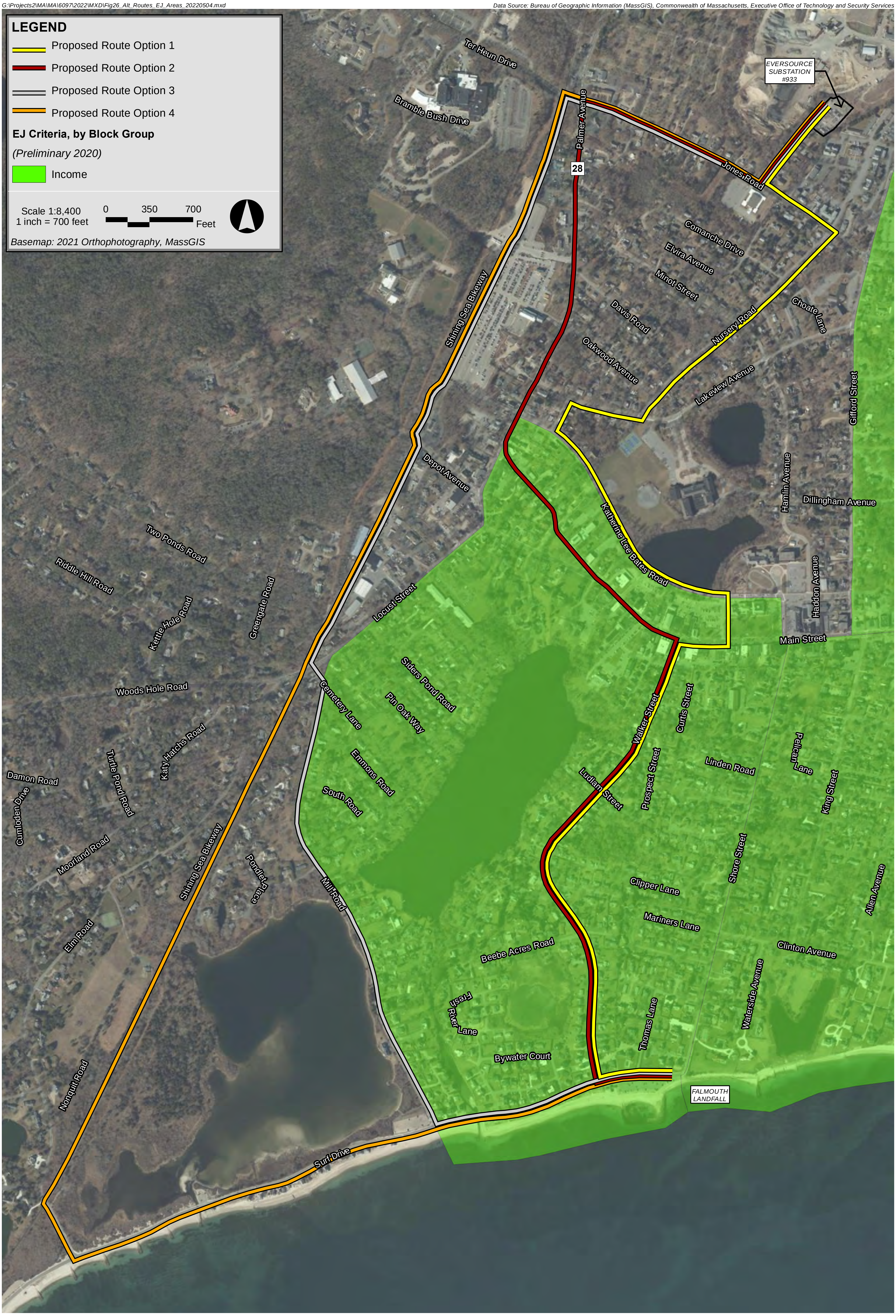


Martha's Vineyard Reliability Project

EVERSOURCE

Figure 26

Environmental Justice Populations - Diesel Generators (Martha's Vineyard)



Martha's Vineyard Reliability Project

EVERSOURCE

Figure 27
Environmental Justice Populations (Falmouth Alternative Routes)

Attachment C

Project Map Set

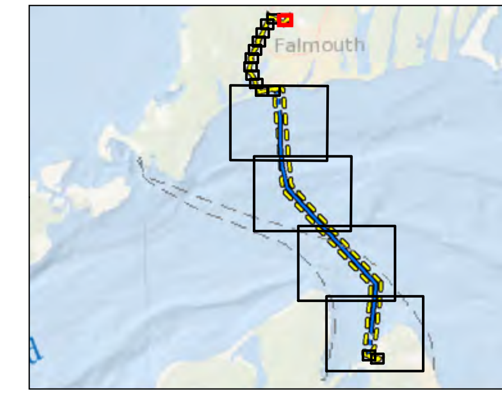
Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

FEMA 100-Year Flood Zones and FEMA Floodways are not displayed on this figure, see Figures 13 and 14 for FEMA maps.

Martha's Vineyard Reliability Project

EVERSOURCE

LOCUS



SCALE

1:1,200
1 inch = 100 feet

0 50 100 Feet

Map Projection: MA State Plane Mainland
Basemap: 2021 Orthophotography, MassGIS

LEGEND

- Approximate HDD Entry/Exit Hole Location
- Project Area
- Surveyed Cable Corridor
- Approximate Onshore Cable Alignment *Dashed where using existing conduit*
- Approximate Offshore Cable Alignment *Dashed where using HDD*
- Approximate Existing #99 Cable *Based on 2021 Locational Survey*
- 100-ft Wetland Buffer Area
- Elevation Contour (5-ft interval)
- Approximate HDD Staging Area

Field Delineated Resources

- Bordering Vegetated Wetland
- Top of Bank
- Dune Delineation - Landward Edge
- Field Delineated Wetland
- Field Delineated Coastal Dune

MassGIS Data Layers

- Open Water
- Approximate Wetland (not delineated)
- Barrier Beach System
- Barrier Beach - Coastal Beach
- Coastal Beach
- Coastal Dune
- Rocky Intertidal Shore
- C.91 Historic High Water *(dashed where inferred)*
- DEP Eelgrass (2019-2022)
- CZM Hard or Complex Seafloor (2021)

Attachment C

Project Map Set

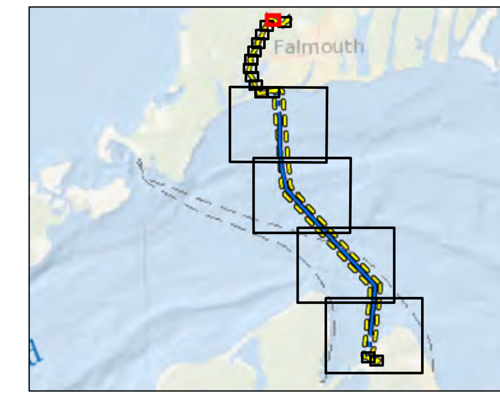
Sheet 1 of 18

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

Martha's Vineyard Reliability Project

EVERSOURCE

LOCUS



SCALE

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1 inch = 100 feet

0 50 100 Feet

Map Projection: MA State Plane Mainland
Basemap: 2021 Orthophotography, MassGIS

LEGEND

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Attachment C

Project Map Set

Sheet 2 of 18

G:\Projects2\MA\MA\6097\2022\MXD\App_C_Falmouth_Map_Set_20220511.mxd

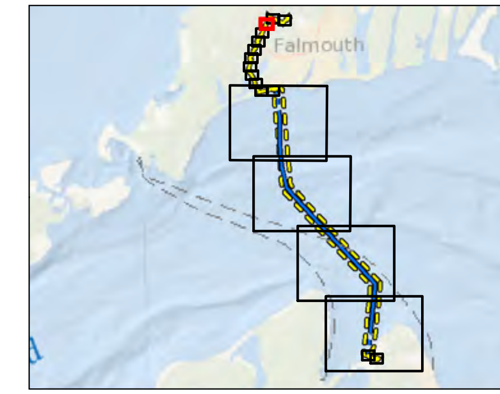
Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

FEMA 100-Year Flood Zones and FEMA Floodways are not displayed on this figure, see Figures 13 and 14 for FEMA maps.

Martha's Vineyard Reliability Project

EVERSOURCE

LOCUS



SCALE

1:1,200
1 inch = 100 feet

0 50 100 Feet

Map Projection: MA State Plane Mainland
Basemap: 2021 Orthophotography, MassGIS

LEGEND

- Approximate HDD Entry/Exit Hole Location
- Project Area
- Surveyed Cable Corridor
- Approximate Onshore Cable Alignment *Dashed where using existing conduit*
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MassGIS Data Layers

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Attachment C

Project Map Set

Sheet 3 of 18

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

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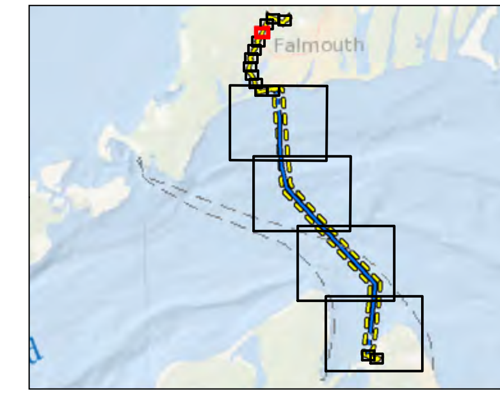
Martha's Vineyard Reliability Project

EVERSOURCE

LOCUS



SCALE

1:1,200
1 inch = 100 feet

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Map Projection: MA State Plane Mainland
Basemap: 2021 Orthophotography, MassGIS

LEGEND

- Approximate HDD Entry/Exit Hole Location
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MassGIS Data Layers

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- CZM Hard or Complex Seafloor (2021)

Attachment C

Project Map Set

Sheet 4 of 18

G:\Projects2\MA\MA\6097\2022\MXD\App_C_Falmouth_Map_Set_20220511.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

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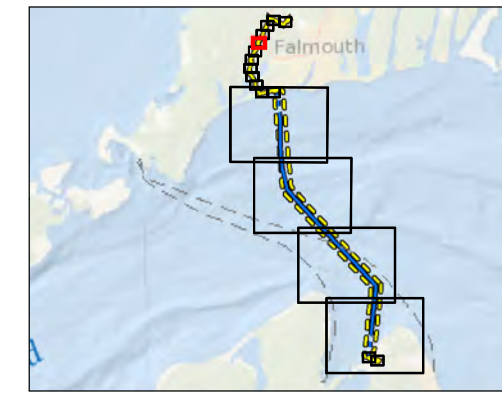
Martha's Vineyard Reliability Project

EVERSOURCE

LOCUS



SCALE

1:1,200
1 inch = 100 feet

0 50 100 Feet

Map Projection: MA State Plane Mainland
Basemap: 2021 Orthophotography, MassGIS

LEGEND

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MassGIS Data Layers

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Attachment C

Project Map Set

Sheet 5 of 18

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

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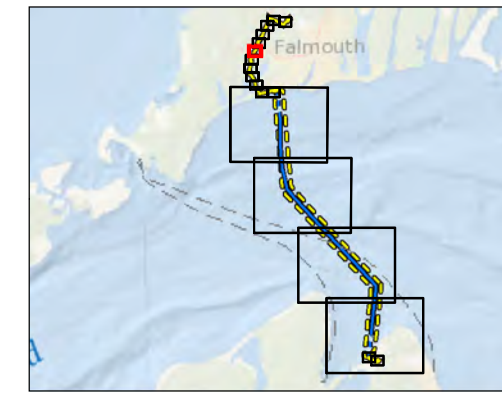
Martha's Vineyard Reliability Project

EVERSOURCE

LOCUS



SCALE

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Map Projection: MA State Plane Mainland
Basemap: 2021 Orthophotography, MassGIS

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Attachment C

Project Map Set

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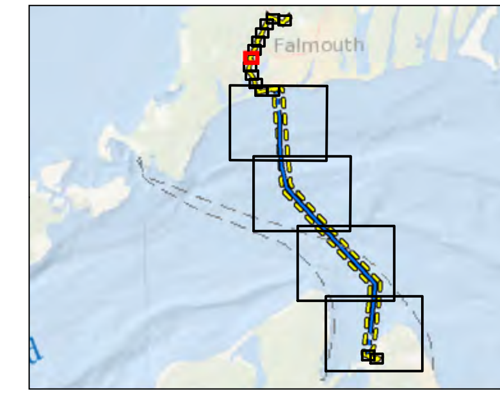
Martha's Vineyard Reliability Project

EVERSOURCE

LOCUS



SCALE

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Map Projection: MA State Plane Mainland
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Attachment C

Project Map Set

Sheet 7 of 18

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

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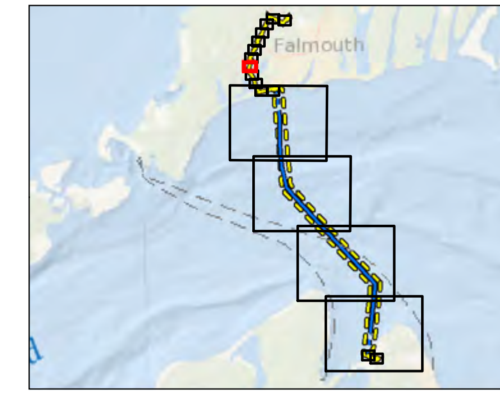
Martha's Vineyard Reliability Project

EVERSOURCE

LOCUS



SCALE

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0 50 100 Feet

Map Projection: MA State Plane Mainland
Basemap: 2021 Orthophotography, MassGIS

LEGEND

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Attachment C

Project Map Set

Sheet 8 of 18

G:\Projects2\MA\MA\6097\2022\MXD\App_C_Falmouth_Map_Set_20220511.mxd

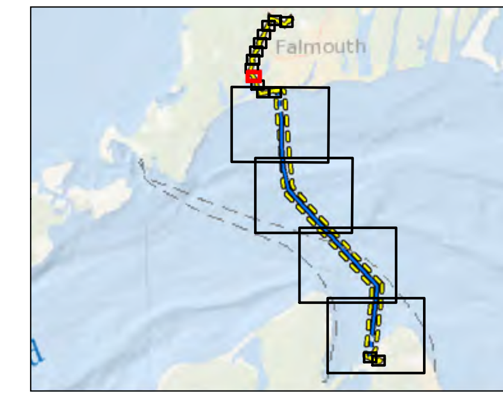
Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

FEMA 100-Year Flood Zones and FEMA Floodways are not displayed on this figure, see Figures 13 and 14 for FEMA maps.

Martha's Vineyard Reliability Project

EVERSOURCE

LOCUS



SCALE

1:1,200
1 inch = 100 feet

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Map Projection: MA State Plane Mainland
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Attachment C

Project Map Set

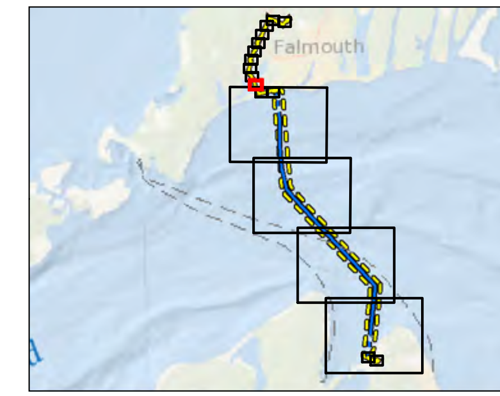
Sheet 9 of 18

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

Martha's Vineyard Reliability Project

EVERSOURCE

LOCUS



SCALE

1:1,200
1 inch = 100 feet

0 50 100 Feet

Map Projection: MA State Plane Mainland
Basemap: 2021 Orthophotography, MassGIS

LEGEND

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Attachment C

Project Map Set

Sheet 10 of 18

G:\Projects2\MA\MA\6097\2022\MXD\App_C_Falmouth_Map_Set_20220511.mxd

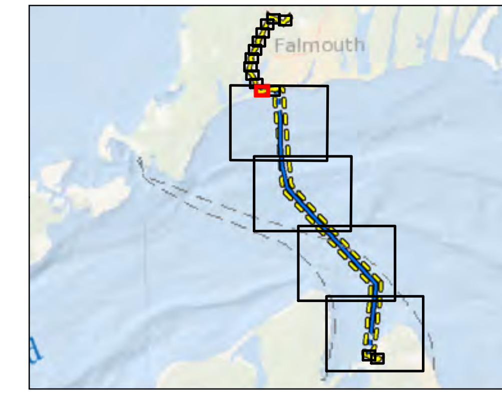
Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

FEMA 100-Year Flood Zones and FEMA Floodways are not displayed on this figure, see Figures 13 and 14 for FEMA maps.

Martha's Vineyard Reliability Project

EVERSOURCE

LOCUS



SCALE

1:1,200
1 inch = 100 feet

0 50 100 Feet

Map Projection: MA State Plane Mainland
Basemap: 2021 Orthophotography, MassGIS

LEGEND

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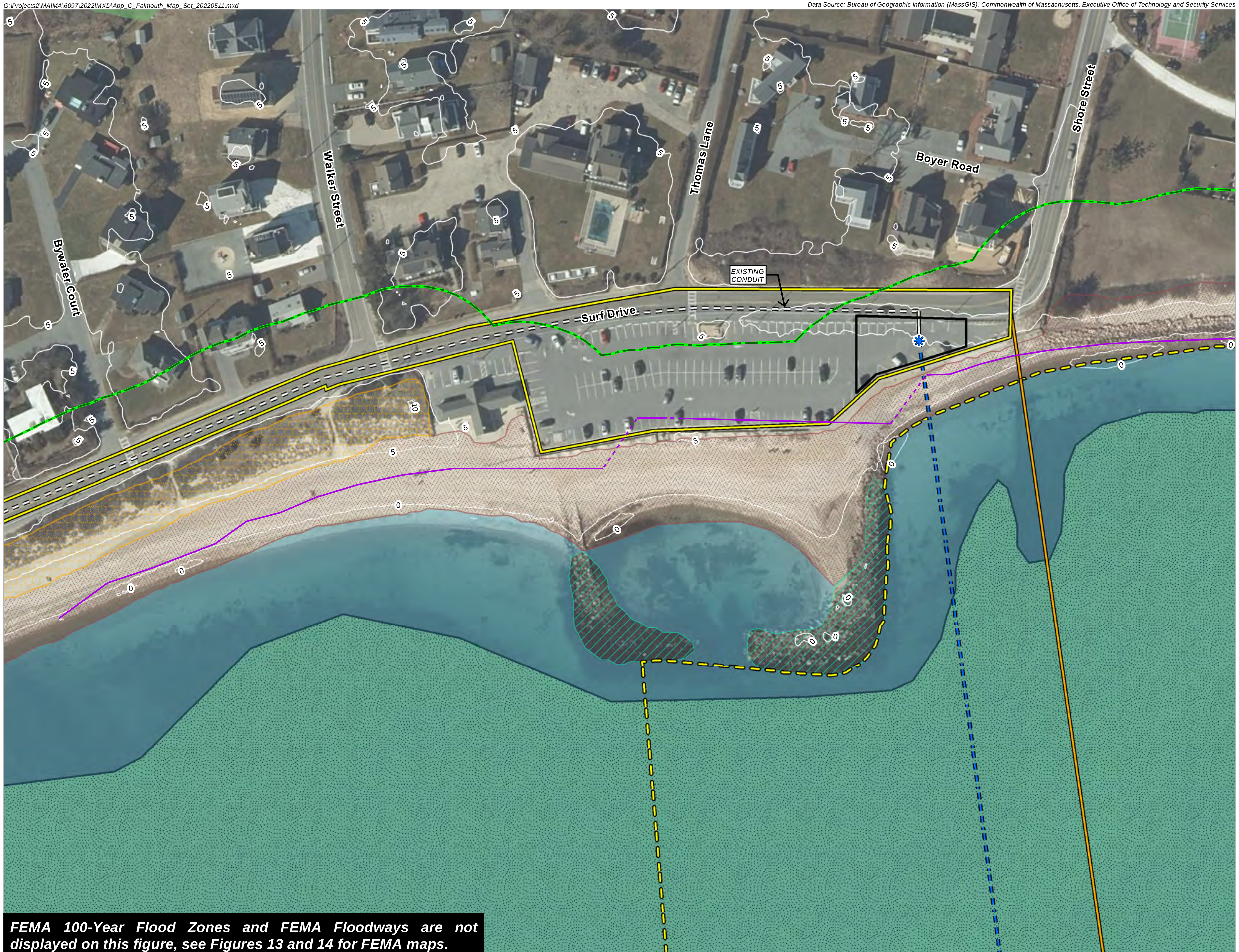
Attachment C

Project Map Set

Sheet 11 of 18

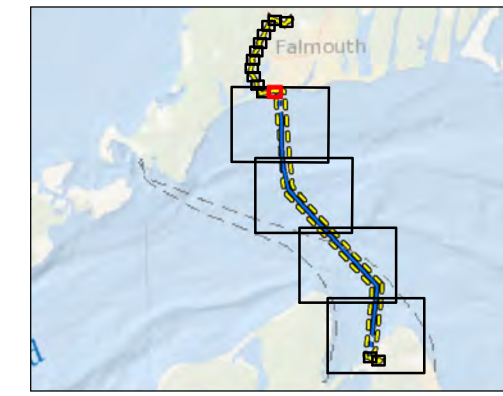
Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Martha's Vineyard Reliability Project

EVERSOURCE

LOCUS



SCALE

1:1,200
1 inch = 100 feet
0 50 100 Feet

Map Projection: MA State Plane Mainland
Basemap: 2021 Orthophotography, MassGIS

LEGEND

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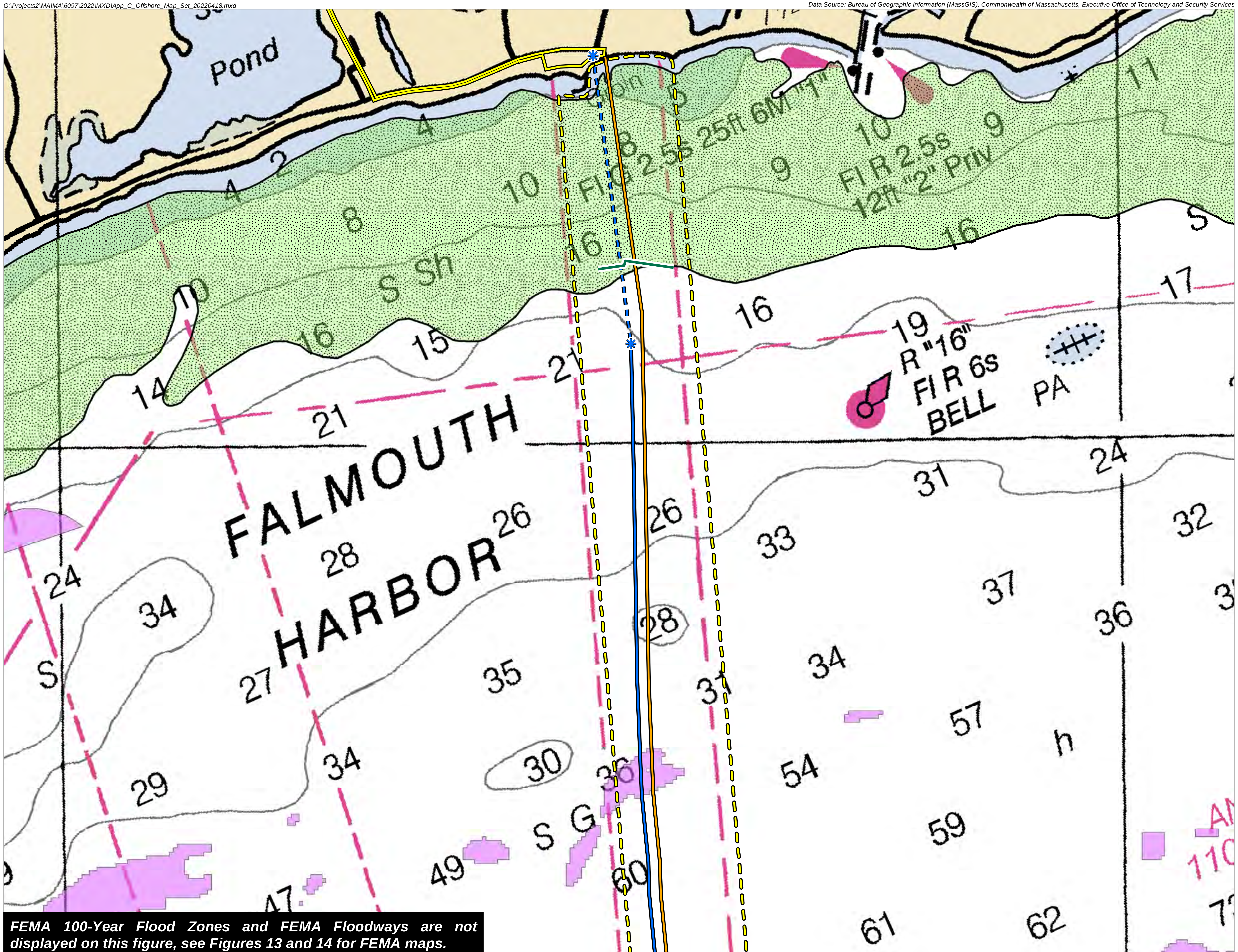
- CZM Hard or Complex Seafloor (2021)

Attachment C

Project Map Set

Sheet 12 of 18

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



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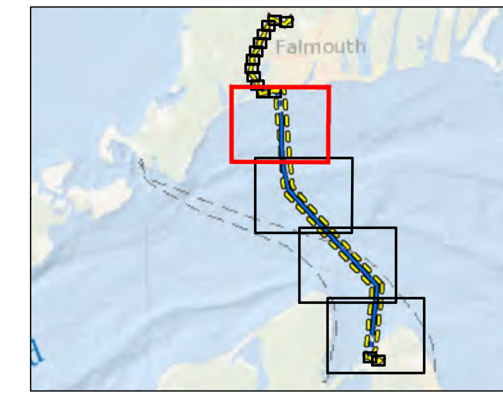
Martha's Vineyard Reliability Project

EVERSOURCE

LOCUS



SCALE

1:9,600
1 inch = 800 feet

0 400 800 Feet

Map Projection: MA State Plane Mainland
Basemap: NOAA Small Craft Folio Chart (13229)

LEGEND

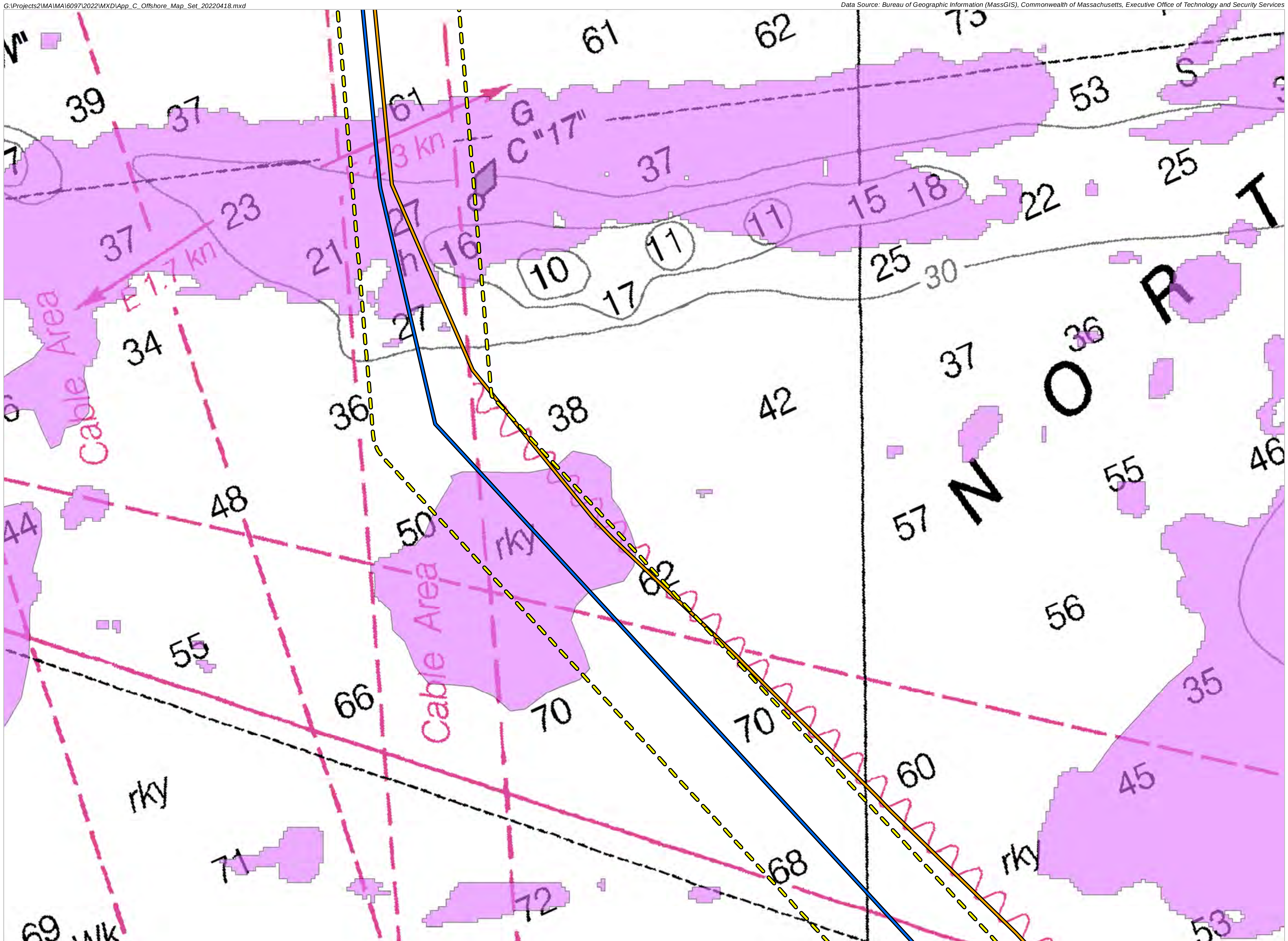
- Approximate HDD Entry/Exit Hole Location
- Project Area
- Surveyed Cable Corridor
- Approximate Offshore Cable Alignment *Dashed where using HDD*
- Approximate Existing #99 Cable *Based on 2021 Locational Survey*
- Seaward Limit of Eelgrass Surveyed 2022
- DEP Eelgrass (2019-2022)
- CZM Hard or Complex Seafloor (2021)

Attachment C

Project Map Set

G:\Projects2\MA\MA\6097\2022\MXD\App_C_Offshore_Map_Set_20220418.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



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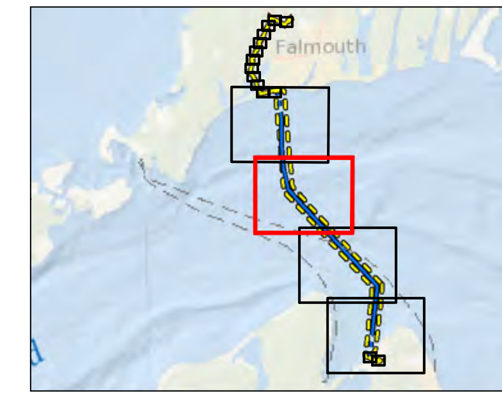
Martha's Vineyard Reliability Project

EVERSOURCE

LOCUS



SCALE

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0 400 800 Feet

Map Projection: MA State Plane Mainland
Basemap: NOAA Small Craft Folio Chart (13229)

LEGEND

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- Seaward Limit of Eelgrass Surveyed 2022
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Attachment C
Project Map Set
Sheet 14 of 18

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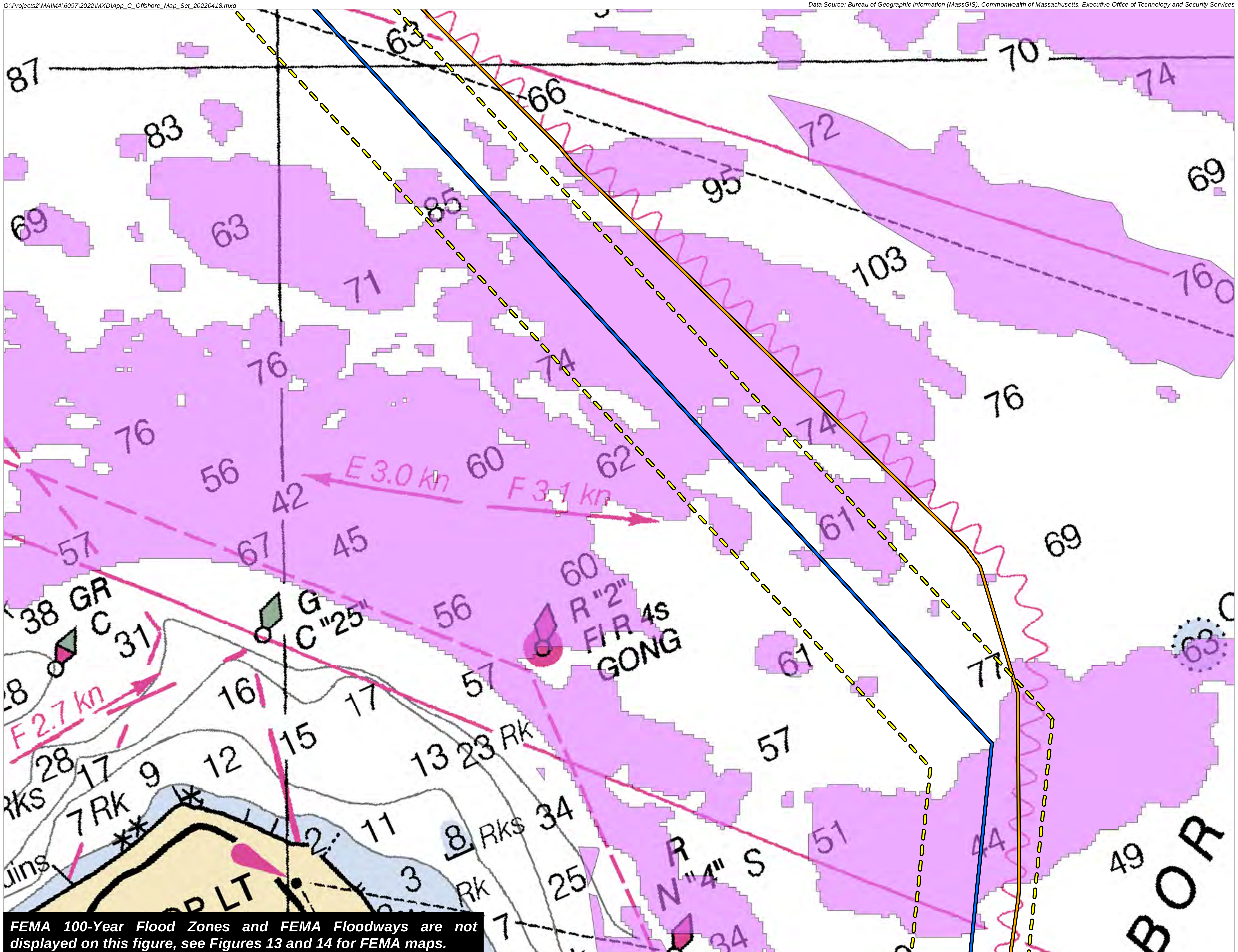

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Martha's Vineyard Reliability Project

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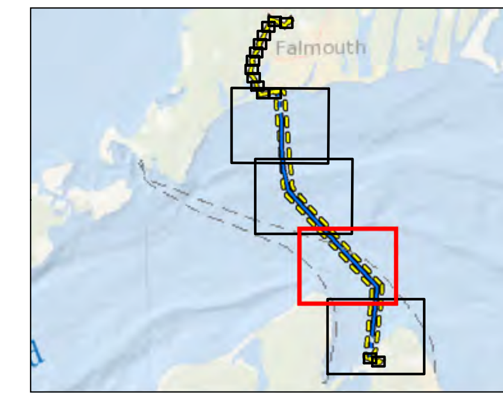

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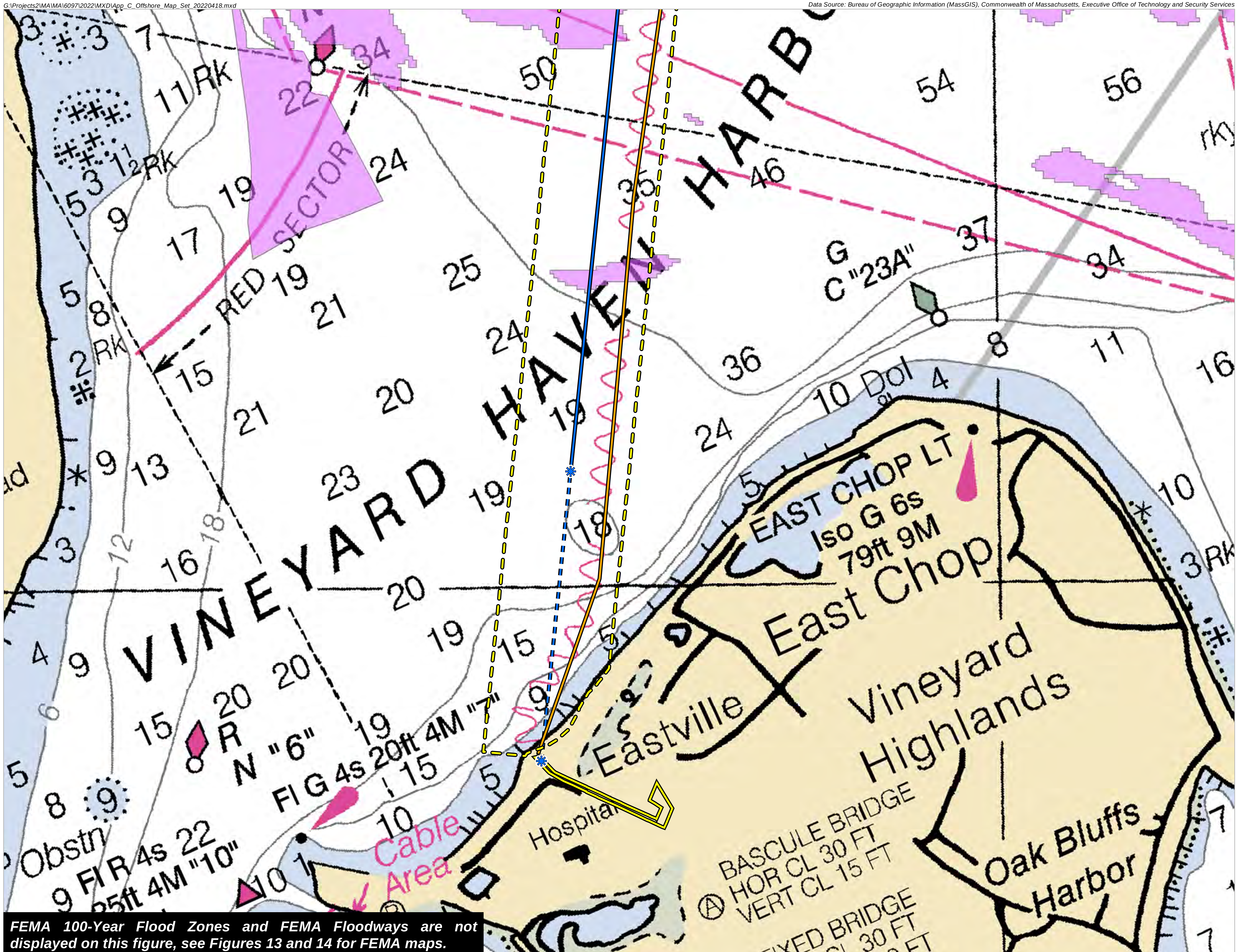
Attachment C
Project Map Set
Sheet 15 of 18

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



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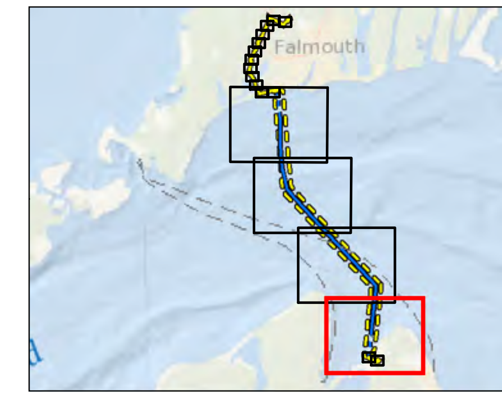
Martha's Vineyard Reliability Project

EVERSOURCE

LOCUS



SCALE

1:9,600
1 inch = 800 feet

0 400 800 Feet

Map Projection: MA State Plane Mainland
Basemap: NOAA Small Craft Folio Chart (13229)

LEGEND

- Approximate HDD Entry/Exit Hole Location
- Project Area
- Surveyed Cable Corridor
- Approximate Offshore Cable Alignment *Dashed where using HDD*
- Approximate Existing #99 Cable *Based on 2021 Locational Survey*
- Seaward Limit of Eelgrass Surveyed 2022
- DEP Eelgrass (2019-2022)
- CZM Hard or Complex Seafloor (2021)

Attachment C
Project Map Set
Sheet 16 of 18

G:\Projects2\MA\MA\6097\2022\MXD\App_C_Oak_Bluffs_Map_Set_20220511.mxd

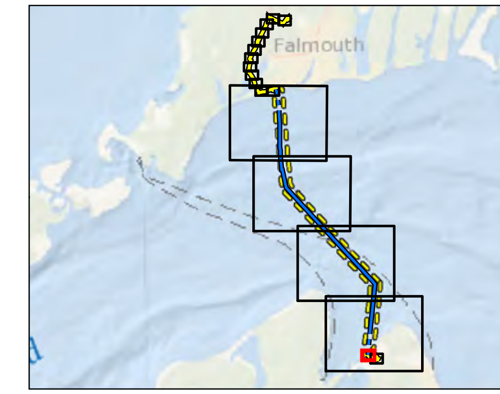
Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

FEMA 100-Year Flood Zones and FEMA Floodways are not displayed on this figure, see Figures 13 and 14 for FEMA maps.

Martha's Vineyard Reliability Project

EVERSOURCE

LOCUS



SCALE

1:1,200
1 inch = 100 feet

0 50 100 Feet

Map Projection: MA State Plane Mainland
Basemap: 2021 Orthophotography, MassGIS

LEGEND

- Approximate HDD Entry/Exit Hole Location
- Project Area
- Surveyed Cable Corridor
- Approximate Onshore Cable Alignment *Dashed where using existing conduit*
- Approximate Offshore Cable Alignment *Dashed where using HDD*
- Approximate Existing #99 Cable *Based on 2021 Locational Survey*
- 100-ft Wetland Buffer Area
- Elevation Contour (5-ft interval)
- Approximate HDD Staging Area

Field Delineated Resources

- Bordering Vegetated Wetland
- Top of Bank
- Dune Delineation - Landward Edge
- Field Delineated Wetland
- Field Delineated Coastal Dune

MassGIS Data Layers

- Open Water
- Approximate Wetland (not delineated)
- Barrier Beach System
- Barrier Beach - Coastal Beach
- Coastal Beach
- Coastal Dune
- Rocky Intertidal Shore
- C.91 Historic High Water *(dashed where inferred)*
- DEP Eelgrass (2019-2022)
- CZM Hard or Complex Seafloor (2021)

Attachment C

Project Map Set

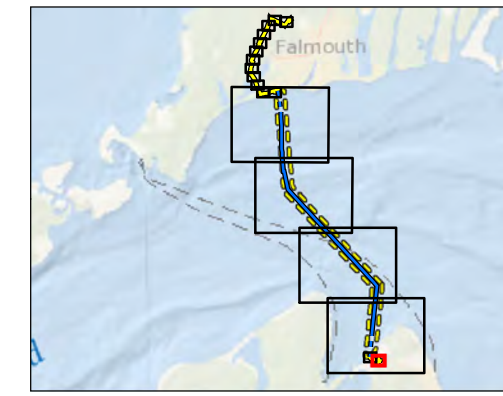
Sheet 17 of 18

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

Martha's Vineyard Reliability Project

EVERSOURCE

LOCUS



SCALE

1:1,200
1 inch = 100 feet

0 50 100 Feet

Map Projection: MA State Plane Mainland
Basemap: 2021 Orthophotography, MassGIS

LEGEND

- Approximate HDD Entry/Exit Hole Location
- Project Area
- Surveyed Cable Corridor
- Approximate Onshore Cable Alignment *Dashed where using existing conduit*
- Approximate Offshore Cable Alignment *Dashed where using HDD*
- Approximate Existing #99 Cable *Based on 2021 Locational Survey*
- 100-ft Wetland Buffer Area
- Elevation Contour (5-ft interval)
- Approximate HDD Staging Area

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MassGIS Data Layers

- Open Water
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- Barrier Beach System
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- Coastal Beach
- Coastal Dune
- Rocky Intertidal Shore
- C.91 Historic High Water *(dashed where inferred)*
- DEP Eelgrass (2019-2022)
- CZM Hard or Complex Seafloor (2021)

Attachment C

Project Map Set

Sheet 18 of 18

Attachment D

ENF Distribution List

- ENF Distribution List
- CBO Distribution List
- Newspaper Notice

ENVIRONMENTAL NOTIFICATION FORM DISTRIBUTION LIST

State and Regional Agencies

Secretary Bethany A. Card **(2 copies)**
Executive Office of Energy and
Environmental Affairs
Attn: MEPA Office
100 Cambridge Street, Suite 900
Boston, MA 02114
MEPA@mass.gov

Department of Environmental Protection
Commissioner's Office
Attn: MEPA Coordinator
One Winter Street
Boston, MA 02108
helena.boccadoro@mass.gov

Department of Environmental Protection
Southeastern Regional Office
Attn: MEPA Coordinator
20 Riverside Drive
Lakeville, MA 02347
george.zoto@mass.gov
jonathan.hobill@mass.gov

Massachusetts Department of Environmental
Protection – Waterways Division
Attn: Daniel J. Padien, Program Chief
One Winter Street
Boston, MA 02108
DEP.Waterways@mass.gov

Massachusetts Department of Environmental
Protection – Water Quality Certification
One Winter Street
Boston, MA 02108
DEP.Wetlands@mass.gov

MassDOT
Public/Private Development Unit
10 Park Plaza
Boston, MA 02116
MassDOTPPDU@dot.state.ma.us

MassDOT
Highway Division District #5
Attn: MEPA Coordinator
1000 County Street
Taunton, MA 02780
barbara.lachance@dot.state.ma.us

Massachusetts Historical Commission
The MA Archives Building
220 Morrissey Boulevard
Boston, MA 02125

Massachusetts Board of Underwater
Archaeological Resources
251 Causeway Street, Suite 800,
Boston, MA 02114-2136
david.s.robinson@mass.gov

Martha's Vineyard Commission
P.O. Box 1447
Oak Bluffs, MA 02557
turner@mvcommission.org
morrison@mvcommission.org

Cape Cod Commission
3225 Main Street
Barnstable, MA 02630
ksenatori@capecodcommission.org
regulatory@capecodcommission.org

MEPA Office
Attn: EEA EJ Director
100 Cambridge Street, Suite 900
Boston, MA 02144
MEPA-EJ@mass.gov

Coastal Zone Management
Attn: Project Review Coordinator
251 Causeway Street, Suite 800
Boston, MA 02114
robert.boeri@mass.gov

Division of Marine Fisheries (South Shore)
Attn: Environmental Reviewer
836 South Rodney French Blvd
New Bedford, MA, 02744
DMF.EnvReview-South@state.ma.us

Natural Heritage and Endangered Species
Program
Division of Fisheries & Wildlife
1 Rabbit Hill Road
Westborough, MA 01581
melany.cheeseman@mass.gov
emily.holt@mass.gov

The Steamship Authority
Attn: Robert B. Davis, General Manager
P.O. Box 284
Woods Hole, MA 02543
rdavis@steamshipauthority.com

Local Agencies/Representatives

Select Boards
Falmouth Board of Selectmen
Attn: Douglas C. Brown, Chairman
Falmouth Town Hall
59 Town Hall Square
Falmouth, MA 02540
selectboard@falmouthma.gov
doug.brown@falmouthma.gov

Tisbury Select Board
Attn: John W. Grande, Administrator
PO Box 1239
Vineyard Haven, MA 02568
edefoe@tisburyma.gov

Oak Bluffs Select Board
56 School Street
Oak Bluffs, MA 02557
bosadmin@oakbluffsma.gov

Planning Departments
Falmouth Planning Department
Attn: Jed Cornock, Town Planner
Falmouth Town Hall
59 Town Hall Square
Falmouth, MA 02540
planning@falmouthma.gov
jed.cornock@falmouthma.gov

Tisbury Planning Board
Attn: Patricia Harris, Assistant
P.O. Box 602
Vineyard Haven, MA 02568
pharris@tisburyma.gov

Oak Bluffs Planning Board
56 School Street
Oak Bluffs, MA 02557
planningboard@oakbluffsma.gov

Conservation Commissions
Falmouth Conservation Commission
Attn: Jennifer Lincoln, Administrator
Falmouth Town Hall
59 Town Hall Square
Falmouth, MA 02540
jennifer.lincoln@falmouthma.gov

Tisbury Conservation Commission
Attn: Jane Varkonda, Agent
P.O. Box 1239
Vineyard Haven, MA 02568
lbarbera@tisburyma.gov

Oak Bluffs Conservation Commission
56 School Street
Oak Bluffs, MA 02557
conservation@oakbluffsma.gov

Historical Commission
Falmouth Historical Commission
Attn: Ed Haddad, Chairman
Falmouth Town Hall
59 Town Hall Square
Falmouth, MA 02540
fhc@falmouthma.gov

Health Departments
Falmouth Health Department
Attn: Scott McGann, Agent
Falmouth Town Hall
59 Town Hall Square
Falmouth, MA 02540
health@falmouthma.gov

Tisbury Health Department
Attn Maura Valley, Agent
P.O. Box 666
Vineyard Haven, MA 02568
vsoushek@tisburyma.gov

Oak Bluffs Board of Health
56 School Street
Oak Bluffs, MA 02557
healthagent@oakbluffsma.gov

ENVIRONMENTAL COMMUNITY BASED ORGANIZATIONS						
First Name	**Last Name**	**Category**	**Area**	**Title**	**Affiliation**	**Email**
Ben	Hellerstein	MA Environmental	Statewide	MA State Director	Environment Massachusetts	ben@environmentmassachusetts.org
Cindy	Luppi	MA Environmental	Statewide	New England Director	Clean Water Action	cluppi@cleanwater.org
Deb	Pasternak	MA Environmental	Statewide	Director, MA Chapter	Sierra Club MA	deb.pasternak@sierraclub.org
Elvis	Mendez	MA Environmental	Statewide	Organizing Director	Neighbor to Neighbor	elvis@n2nma.org
Heather	Clish	MA Environmental	Statewide	Director of Conservation & Recreation Policy	Appalachian Mountain Club	hclish@outdoors.org
Heidi	Ricci	MA Environmental	Statewide	Director of Policy	Mass Audubon	hricci@massaudubon.org
Julia	Blatt	MA Environmental	Statewide	Executive Director	Mass Rivers Alliance	juliablatt@massriversalliance.org
Kelly	Boling	MA Environmental	Statewide	MA & RI State Director	The Trust for Public Land	kelly.boling@tpl.org
Kerry	Bowie	MA Environmental	Statewide	Board President	Browning the GreenSpace	kerry@msaadapartners.com
Nancy	Goodman	MA Environmental	Statewide	Vice President for Policy	Environmental League of MA	ngoodman@environmentalleague.org
Pat	Stanton	MA Environmental	Statewide	Project Manager	E4TheFuture	pstanton@e4thefuture.org
Rob	Moir	MA Environmental	Statewide	Executive Director	Ocean River Institute	rob@oceanriver.org
Robb	Johnson	MA Environmental	Statewide	Executive Director	Mass Land Trust Coalition	robb@massland.org
Sarah	Dooling	MA Environmental	Statewide	Executive Director	Mass Climate Action Network (MCAN)	sarah@massclimateaction.net
Staci	Rubin	MA Environmental	Statewide	Senior Attorney	Conservation Law Foundation	srubin@clf.org
Sylvia	Broude	MA Environmental	Statewide	Executive Director	Community Action Works	sylvia@communityactionworks.org
Tali	Smookler	MA Environmental	Statewide	Organizing Director	Unitarian Universalist Mass Action Network	tsmookler@uumassaction.org
Winston	Vaughan	MA Environmental	Statewide	Director of Climate Solutions	Healthcare without Harm	wvaughan@hcwh.org
John	Peters, Jr.	Tribal	Statewide	Executive Director	Massachusetts Commission on Indian Affairs (MCIA)	john.peters@mass.gov
Beckie	Finn	Tribal	Aquinnah	Natural Resource Department	Wampanoag Tribe of Aquinnah	beckie@wampanoagtribe.net
Bret	Stearns	Tribal	Aquinnah	Indirect Services Administrator	Wampanoag Tribe of Aquinnah	isa@wampanoagtribe-nsn.gov
Chris	Manning	Tribal	Aquinnah	Tribal Ranger	Wampanoag Tribe of Aquinnah	ranger.manning@wampanoagtribe-nsn.gov
Richard	Randolph	Tribal	Aquinnah, Statewide	Vice Chairman	Wampanoag Tribe of Gay Head (Aquinnah)	Richard@wampanoagtribe.net
Barbara	Spain	Tribal	Aquinnah, Statewide	Administrative Assistant	Wampanoag Tribe of Gay Head (Aquinnah)	barbara@wampanoagtribe.net
Chairwoman	Andrews-Maltais	Tribal	Martha's Vineyard, Statewide	Chairwoman	Wampanoag Tribe of Gay Head (Aquinnah)	chairwoman@wampanoagtribe-nsn.gov
Lee Ann	Wander	Tribal	Aquinnah, Statewide		Wampanoag Tribe of Gay Head (Aquinnah)	cos@wampanoagtribe-nsn.gov
Alma	Gordon	Tribal		President	Chappaquiddick Tribe of the Wampanoag Nation	tribalcouncil@chappaquiddick-wampanoag.org
Raymond	Williams	Tribal		Vice President	Chappaquiddick Tribe of the Wampanoag Nation	tribalcouncil@chappaquiddick-wampanoag.org
Sonksq Alma	Gordon	Tribal			Chappaquiddick Tribe of the Wampanoag Nation	tribalcouncil@chappaquiddick-wampanoag.org
Cheryll	Toney Holley	Tribal		Chair	Nipmuc Nation (Hassanamisco Nipmucs)	crwritings@aol.com
Kenneth	White	Tribal		Council Chairman	Chaubunagungamaug Nipmuck Indian Council	acw1213@verizon.net
Melissa	Ferretti	Tribal		Chair	Herring Pond Wampanoag Tribe	melissa@herringpondtribe.org
Patricia	D. Rocker	Tribal		Council Chair	Chappaquiddick Tribe of the Wampanoag Nation, Whale Clan	rockerpatriciad@verizon.net
Raquel	Halsey	Tribal		Executive Director	North American Indian Center of Boston	rhalsey@naicob.org
Vice Chairman Richard	Randolph	Tribal		Vice Chairman	Wampanoag Tribe of Gay Head (Aquinnah)	Richard@wampanoagtribe.net
Barbara	Spain	Tribal		Administrative Assistant	Wampanoag Tribe of Gay Head (Aquinnah)	barbara@wampanoagtribe.net
Chairwoman	Andrews-Maltais	Tribal		Chairwoman	Wampanoag Tribe of Gay Head (Aquinnah)	chairwoman@wampanoagtribe-nsn.gov
Lee Ann	Wander	Tribal			Wampanoag Tribe of Gay Head (Aquinnah)	cos@wampanoagtribe-nsn.gov
Bettina	Washington	Federally Recognized Tribes	Statewide	Tribal Historic Preservation Officer	Wampanoag Tribe of Gay Head (Aquinnah)	thpo@wampanoagtribe-nsn.gov
Bonney	Hartley	Federally Recognized Tribes	Statewide	Historic Preservation Manager	Stockbridge-Munsee Tribe	bonney.hartley@mohican-nsn.gov
Brian	Weeden	Federally Recognized Tribes	Statewide	Chair	Mashpee Wampanoag Tribe	Brian.Weeden@mwtribe-nsn.gov
Gwyneth	Packard	Local Group	Falmouth	Volunteer	Engage Falmouth	engagefalmouth@gmail.com
Michael	Digiano	Local Group	Falmouth	Executive Director	Falmouth Economic Developoment & Industrial Corporation	MDiGiano@falmouthedic.org
Reverend Bob	Murphy	Local Group	Falmouth	Retired Minister	Unitarian Universalist Congregation of Falmouth	murphydalzell@aol.com
Kit	O'Connor	Local Group	Falmouth	Office Administrator	Unitarian Universalist Fellowship of Falmouth	admin@uuffm.org
Hauke	Kite-Powell	Local Group	Falmouth	Chair	Woods Hole Diversity Advisory Committee	hauke@whoi.edu

Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs

MEPA Office

100 Cambridge St., Suite 900
Boston, MA 02114
Telephone 617-626-1020

PUBLIC NOTICE OF ENVIRONMENTAL REVIEW

PROJECT: Martha's Vineyard Reliability Project

LOCATION: Falmouth, Tisbury, and Oak Bluffs, MA

PROPONENT: NSTAR Electric d/b/a Eversource Energy

The undersigned is submitting an Environmental Notification Form ("ENF") to the Secretary of Energy & Environmental Affairs on or before
May 16, 2022 *(date)*

This will initiate review of the above project pursuant to the Massachusetts Environmental Policy Act ("MEPA," M.G.L. c. 30, ss. 61-62L). Copies of the ENF may be obtained from:

Epsilon Associates, Inc.
Attn: Corinne Snowdon
3 Mill & Main Place, Suite 250
Maynard, MA 01754
978-897-7100

Electronic copies of the ENF are also being sent to the Conservation Commission and Planning Board of Falmouth, Tisbury, and Oak Bluffs**.**

The Secretary of Energy & Environmental Affairs will publish notice of the ENF in the Environmental Monitor, receive public comments on the project, and then decide if an Environmental Impact Report is required. A site visit and/or remote consultation session on the project may also be scheduled. All persons wishing to comment on the project, or to be notified of a site visit and/or remote consultation session, should email MEPA@mass.gov or the MEPA analyst listed in the Environmental Monitor. Requests for language translation or other accommodations should be directed to the same email address. Mail correspondence should be directed to the Secretary of Energy & Environmental Affairs, 100 Cambridge St., Suite 900, Boston, Massachusetts 02114, Attention: MEPA Office, referencing the above project.

By NSTAR Electric d/b/a Eversource Energy

Attachment E

Chapter 91 Licenses

New England Telephone and Telegraph Company. E. S. S.

Commonwealth of Massachusetts.

No. 2334.

Whereas, the Southern Massachusetts Telephone Company of Boston, in the County of Suffolk, and Commonwealth aforesaid, has applied to the Board of Harbor and Land Commissioners for license to lay a submarine cable across Vineyard Sound from a point near Nobska Point Light House in Woods Hole to a point near West Chop on Martha's Vineyard and has submitted plans of the same; and whereas due notice of said application, and of the time and place fixed for a hearing thereon, has been given, as required by law, to the Selectmen of the towns of Falmouth and Tisbury;

Now, said Board, having heard all parties desiring to be heard, and having fully considered said application, hereby, subject to the approval of the Governor and Council, authorizes and licenses the said Southern Massachusetts Telephone Company, subject to the provisions of the nineteenth chapter of the Public Statutes, and of all laws which are or may be in force applicable thereto, to lay a submarine cable across Vineyard Sound from a point near Nobska Point Light House in Woods Hole to a point near West Chop on Martha's Vineyard, in the location, and as shown on the accompanying plans No. 2334, 2334a, 2334b.

This license is granted subject to the laws of the United States.

The Plans of said work

~~is~~ are on file in the office of said Board, numbered 2334, 2334a, 2334b, and ~~a~~ duplicates of said plans accompany this License, and ~~is~~ are to be referred to as a part hereof.

~~The amount of tide-water displaced by the work hereby authorized, shall be ascertained by said Board,~~ and compensation therefor shall be made by the said heirs, successors and assigns, by paying into the treasury of the Commonwealth cents for each cubic yard so displaced, ~~being the~~ amount hereby assessed by said Board, the same to be reserved as a compensation fund ~~for the harbor of~~

~~This License is also granted in consideration of the payment into the treasury of the Commonwealth by the said~~

~~for the rights and privileges hereby granted in land of said Commonwealth, of the further sum of~~

~~being the amount determined by the Governor and Council to be just and equitable therefor.~~

Nothing in this License shall be so construed as to impair the legal rights of any person.

This License shall be void unless the same, and the accompanying plan, are recorded, within one year from the date hereof, in the Registry of Deeds for the ~~District of the~~ Counties of Barnstable and Dukes.

In Witness Whereof, said Board of Harbor and Land Commissioners have hereunto set their hands this Twenty-first day of February in the year ~~eighteen hundred and ninety~~ nineteen hundred.

Woodward Emery
Clinton White
Chas C. Doten

Harbor and Land Commissioners.

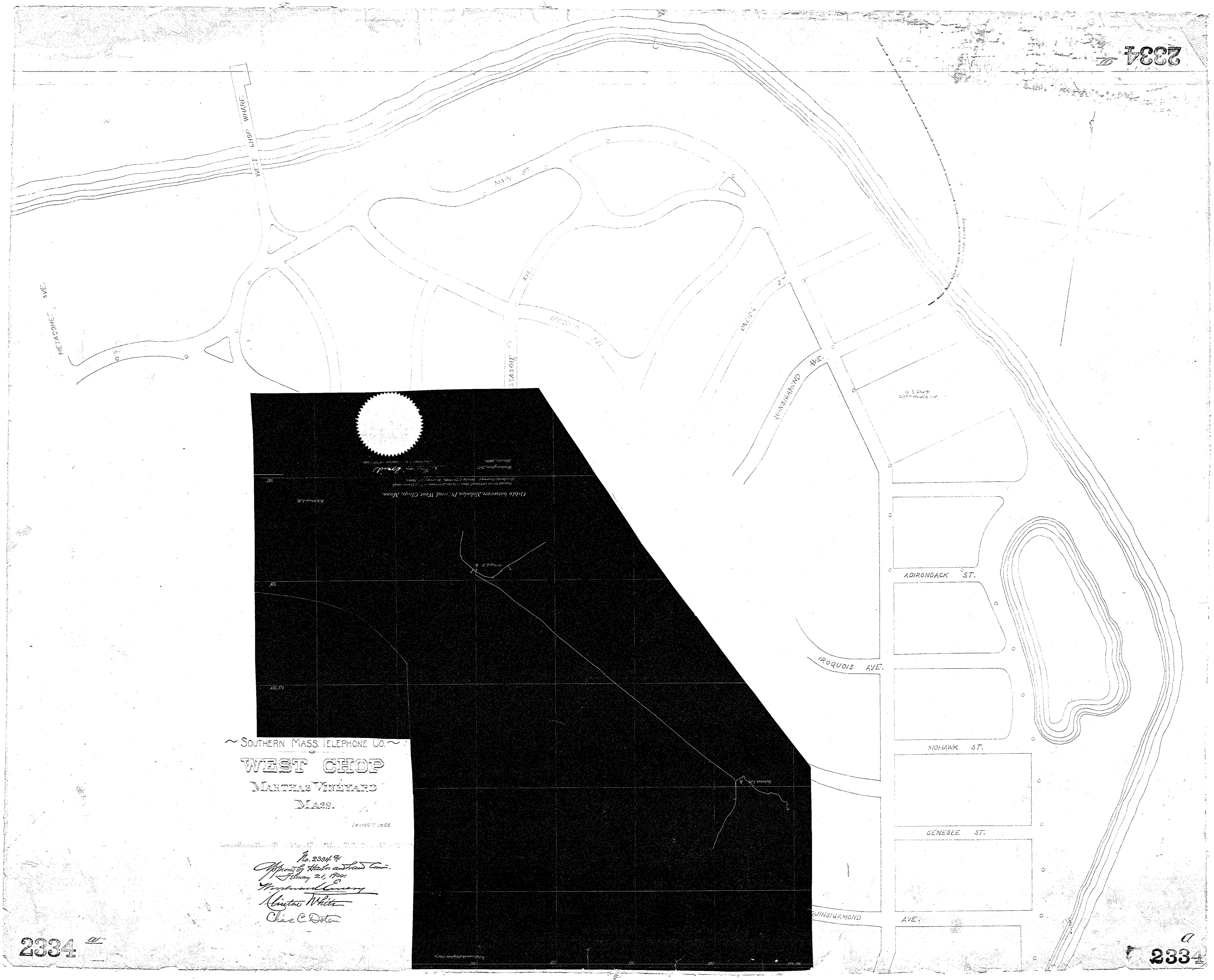
A true Copy.
Attest: Frederick N. Wales.
Clerk of Board.

COMMONWEALTH OF MASSACHUSETTS.

BOSTON, Feb. 21, 1900. ~~189~~

Approved by the Governor and Council.

E. F. Hamlin
Executive Secretary.


2334 a
WEST CHOP WHARF
MAIN ST.
METACOMET AVE.
MASSASOIT AVE.
IROQUOIS AVE.
ONEIDA ST.
QUINSIGAMOND AVE.
U. S. Gov't Lighthouse Lot
ADIRONDACK ST.
MOHAWK ST.
GENESEE ST.
~ SOUTHERN MASS. TELEPHONE CO. ~
WEST CHOP
MARTHAS VINEYARD
MASS.
Dec 30th 1899
No. 2334 a
Approved by Harbor and Land Comm.
February 21, 1900.
Woodward Emery
Clinton White
Chas C. Doten
2334 a
a
2334

No. 249 PRICE 50 CENTS

Name	Latitude	Longitude West from Greenwich		Character	Interval bet. Flashes	Color of Structure	Height above Sea	Visibility Naut. miles	Fog Signals
West Chop	41°28'51"	70°36'01"	4h42m24s.1	F. W. R. Sec.		White	83 ft.	14	Whistle
Nobska Point	41 30 57	70 39 20	4 42 37.3	F. W. R. Sec.		Brown	86 "	15	Bell
Tarpaulin Cove	41 28 08	70 45 29	4 43 01.9	F. W. v. W. Fl.	0m 30s	White	77 "	14	Bell
Cuttyhunk	41 24 (52)	70 57 (00)	4 43 48.0	F. W.		White	61 "	12	
Dumpling Rock	41 32 (18)	70 55 (19)	4 43 41.3	F. W. R. Sec.		White	48 "	12	Trumpet
Butler Flats	41 36 (19)	70 53 (41)	4 43 35.7	Flg. W.	0 05	White	53 "	13	Bell
Palmer Island	41 37 37	70 54 35	4 43 38.3	F. R.		White	34 "	11	
Wamsutta Mill	41 38 (54)	70 55 (35)	4 43 42.3	F. W.			91 "		
Ned Point	41 39 (03)	70 47 (46)	4 43 11.1	F. W.		White	40 "	11	
Bird Island	41 40 (10)	70 43 (04)	4 42 52.3	F. W. v. W. Fl.	1 20	White	37 "	11	
Wings Neck	41 40 (49)	70 39 (42)	4 42 38.8	F. W.		White	49 "	12	

Commonwealth of Massachusetts.

No. 3 3 8 1.

Whereas, J. Arthur Beebe, ______________________________

of Falmouth __________, in the County of Barnstable ______, and Commonwealth aforesaid, has applied to the Board of Harbor and Land Commissioners for license to build a pile wharf on Vineyard Sound in the town of Falmouth, ______

and has submitted plans of the same; and whereas due notice of said application, and of the time and place fixed for a hearing thereon, has been given, as required by law, to the Selectmen ______________________________ of the town __________ of Falmouth __________;

Now, said Board, having heard all parties desiring to be heard, and having fully considered said application, hereby, subject to the approval of the Governor and Council, authorizes and licenses the said J. Arthur Beebe, ______________________________ ______________________________ subject to the provisions of the ninety-sixth chapter of the Revised Laws, and of all laws which are or may be in force applicable thereto, to build and maintain a pile wharf on Vineyard Sound in the town of Falmouth, in conformity with the accompanying plan No. 3 3 8 1: Beginning at a point marked A on said plan, in the high water line and in front of the boat house of the said Beebe, and running southerly, at right angles with the general trend of the shore, 195 feet to a point marked B; thence run-nine easterly, at right angles with said line A-B, 17 feet to a point marked C; thence running northerly, parallel with said line A-B, 10 feet to a point marked D; thence running westerly, parallel with said line B-C, 10 feet to a point marked E; thence running northerly, parallel with said line A-B, 185 feet, more or less, to a point marked F in the high water line; thence running westerly to A, the point of beginning.

This license is granted subject to the laws of the United States.

The Plan of said work

is on file in the office of said Board, numbered 3381, and a duplicate of said plan accompanies this License, and is to be referred to as a part hereof.

~~The amount of tide-water displaced by the work hereby authorized, shall be ascertained~~ by said Board, and compensation therefor shall be made by the said

heirs, successors

and assigns, by paying into the treasury of the Commonwealth

cents for each cubic yard so displaced, being the amount

~~hereby assessed by said Board, the same to be reserved as a compensation fund for the harbor of~~

~~This License is also granted in consideration of the payment into the treasury of the~~ Commonwealth by the said

for the rights and privileges hereby granted in land of said Commonwealth, of the further sum of

~~being the amount determined by the Governor and Council to be just and equitable therefor.~~

Nothing in this License shall be so construed as to impair the legal rights of any person.

This License shall be void unless the same, and the accompanying plan, are recorded, within one year from the date hereof, in the Registry of Deeds for the ~~District of the~~ County of Barnstable.

In Witness Whereof, said Board of Harbor and Land Commissioners have hereunto set their hands this seventh day of June, in the year nineteen hundred and nine.

Geo. E. Smith
Samuel M. Mansfield
Heman A. Harding

Harbor and Land Commissioners.

COMMONWEALTH OF MASSACHUSETTS.

BOSTON, June 9. 1909

Approved by the Governor and Council.

E. F. Hamlin
Executive Secretary.

A true copy.
Attest: Frederick N. Wales
Clerk of Board.

Form WD 54.
1M sets-12-'28. No. 4178-2a.

The Commonwealth of Massachusetts

No. 9 9 1.

Whereas, The New England Telephone and Telegraph Company of Massachusetts,--

~~of~~--------------------~~, in the County of~~-----------------------~~and Commonwealth aforesaid~~, has applied to the Department of Public Works for license to lay and maintain a submarine cable in and across Vineyard Sound from Nobska Point at Woods Hole in the town of Falmouth to a cable house at Makonicky in the town of Tisbury on the island of Marthas Vineyard, and has submitted plans of the same; and whereas due notice of said application, and of the time and place fixed for a hearing thereon, has been given, as required by law, to the--------------------------- Selectmen---------- of the towns---of Falmouth and Tisbury---------;

Now, said Department, having heard all parties desiring to be heard, and having fully considered said application, hereby, subject to the approval of the Governor and Council, authorizes and licenses the said The New England Telephone and Telegraph Company of Massachusetts

---------------------------------------, subject to the provisions of the ninety-first chapter of the General Laws, and of all laws which are or may be in force applicable thereto, to lay and maintain a submarine cable in and across Vineyard Sound from Nobska Point at Woods Hole in the town of Falmouth to a cable house at Makonicky in the town of Tisbury on the island of Marthas Vineyard, in conformity with the accompanying plan No. 991.

Said submarine cable may be laid upon the surface of the bottom of Vineyard Sound, as shown on said plan.

This license is granted subject to the laws of the United States, and upon condition that said New England Telephone and Telegraph Company of Massachusetts, its successors and assigns, shall, upon request in writing by the Department of Public Works, or its successors, change the location of or lower said cable to such depth as said Department may prescribe, or remove said cable from tide water; and said Company, by accepting this license, shall be deemed to consent and agree to the condition herein set forth, and in case of any refusal or neglect on the part of said licensee, its successors and assigns, to comply with said condition, then this license shall be wholly void and the Commonwealth, by its proper officers, may proceed to remove or to cause the removal of said cable at the expense of said Company, its successors and assigns, as an unauthorized and unlawful structure in tide water.---

The plan of said work, numbered ----------9 9 1-------------- is on file in the office of said Department, and duplicate of said plan accompanies this License, and is to be referred to as a part hereof.

~~The amount of tide water displaced by the work hereby authorized shall be ascertained by said~~ Department, and compensation therefor shall be made by the said

heirs, successors

Form WD 54
1M sets-12-'28. No. 4178-2b.

~~and assigns, by paying into the treasury of the Commonwealth~~

~~cents for each cubic yard so displaced, being the amount hereby assessed~~

~~by said Department.~~

Nothing in this License shall be so construed as to impair the legal rights of any person.

This License shall be void unless the same and the accompanying plan are recorded within one year from the date hereof, in the Registr~~y~~ies of Deeds for the ~~District of the County of~~ Counties of Barnstable and Dukes County.

In Witness Whereof, said Department of Public Works have hereunto set their hands this twenty-sixth day of March, in the year nineteen hundred and twenty-nine.

F E Lyman
Richard K Hale

Department of Public Works

THE COMMONWEALTH OF MASSACHUSETTS

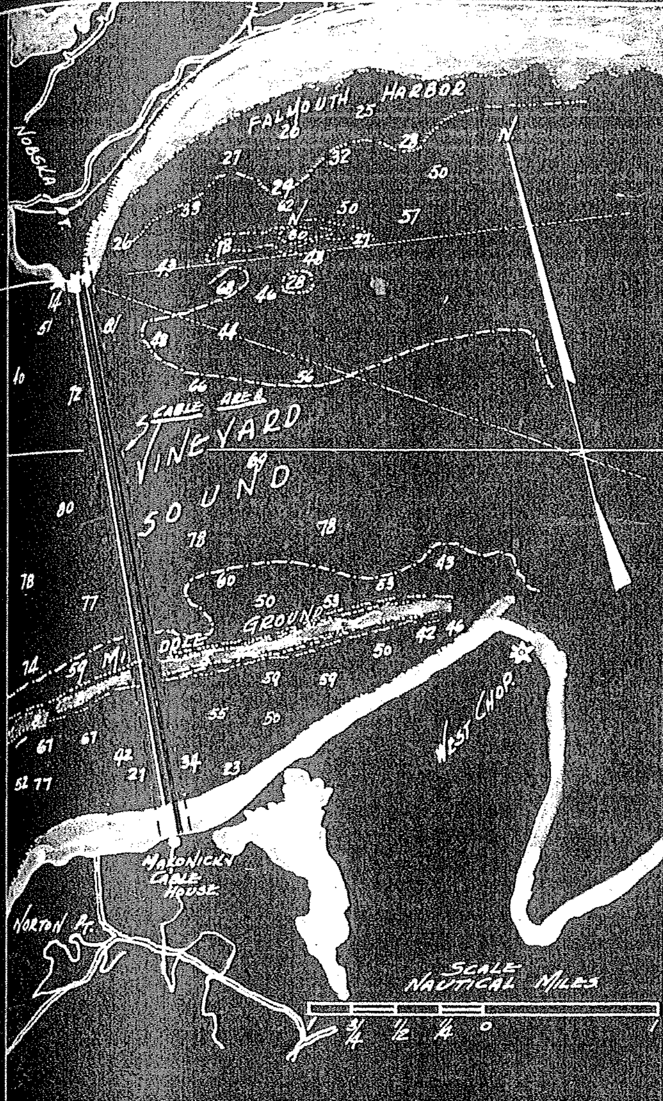
~~This license is approved in consideration of the payment into the treasury of the Commonwealth by the said of the further sum of , the amount determined by the Governor and Council as a just and equitable charge for rights and privileges hereby granted in land of the Commonwealth.~~

BOSTON, March 27, 1929

Approved by the Governor and Council.

William L. Reed
Executive Secretary.

A true copy. Attest: Mary A. Riley *Secretary.*



LEGEND

PLAN TO ACCOMPANY PETITION OF
THE NEW ENGLAND TELEPHONE & TELEGRAPH COMPANY OF MASS.
FOR PERMISSION TO PLACE A
SUBMARINE CABLE

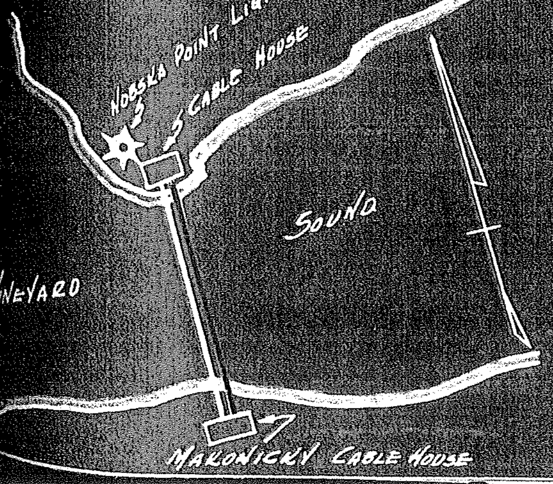
ACROSS	FROM	TO
VINEYARD SOUND	NOBSKA POINT	MARTHAS VINEYARD IS.

-:SUMMARY:-

PROPOSED SUBMARINE CABLE
PRESENT SUBMARINE CABLE

SCALE 1 INCH = 80000 INCHES. DATED FEB. 4, 1929 E.C.C.

BOTH OF THESE DETAIL CABLE LANDINGS ARE NOT DRAWN TO SCALE.



NO. 991
APPROVED BY DEPARTMENT OF PUBLIC WORKS
MARCH 26, 1929

COMMISSIONER OF PUBLIC WORKS

ASSOCIATE COMMISSIONERS

Form WD 54.
1M sets-12-'28. No. 4178-2a.

The Commonwealth of Massachusetts

No. 1833.

Whereas, The Service Company,------------------------------

of Foxborough-------- , in the County of Norfolk----------- and Commonwealth aforesaid, has applied to the Department of Public Works for license to fill solid in a part of Salt Pond at its property on Beach Street in the town of Falmouth,--

and has submitted plans of the same; and whereas due notice of said application, and of the time and place fixed for a hearing thereon, has been given, as required by law, to the ---------------------- Selectmen-----------of the town---- of Falmouth--------------------- ;

Now, said Department, having heard all parties desiring to be heard, and having fully considered said application, hereby, subject to the approval of the Governor and Council, authorizes and licenses the said

Service Company------------------------- , subject to the provisions of the ninety-first chapter of the General Laws, and of all laws which are or may be in force applicable thereto, to fill solid in a part of Salt Pond at its property on Beach Street in the town of Falmouth, in conformity with the accompanying plan No. 1833.

Solid filling may be placed in a part of Salt Pond in front of property of the licensee within an area varying in width and averaging about 75 feet wide, in the location shown in red on said plan and in accordance with the details there indicated.

Nothing in this license shall be construed as authorizing any filling of property not owned by the licensee without the consent of the owner or owners of such property.

The filling shall be carried out in a manner that will prevent the escape of material outside of the limits of the area within which filling is authorized by this license, and if required by the Department, the licensee shall build a rubble wall or other barrier satisfactory to the Department, to retain the filling places.---

The plan of said work, numbered ----------1 8 3 3,------------ is on file in the office of said Department, and duplicate of said plan accompanies this License, and is to be referred to as a part hereof.

~~The amount of tide water displaced by the work hereby authorized shall be ascertained by said~~ Department, and compensation therefor ~~shall be made by the said~~

~~heirs, successors~~

Form WD 54
1M sets-12-'28. No. 4178-2b.

~~and assigns, by paying into the treasury of the Commonwealth~~

~~cents for each cubic yard so displaced, being the amount hereby assessed~~

~~by said Department.~~

Nothing in this License shall be so construed as to impair the legal rights of any person.

This License shall be void unless the same and the accompanying plan are recorded within one year from the date hereof, in the Registry of Deeds for the ---------------------- ~~District of the~~ County of Barnstable.

In Witness Whereof, said Department of Public Works have hereunto set their hands this twenty-seventh---------------- day of November,-----------------in the year nineteen hundred and thirty-six.

Wm F Callahan
Richard K Hale
....

Department of Public Works

THE COMMONWEALTH OF MASSACHUSETTS

~~This license is approved in consideration of the payment into the treasury of the Commonwealth by the said~~

~~of the further sum of~~

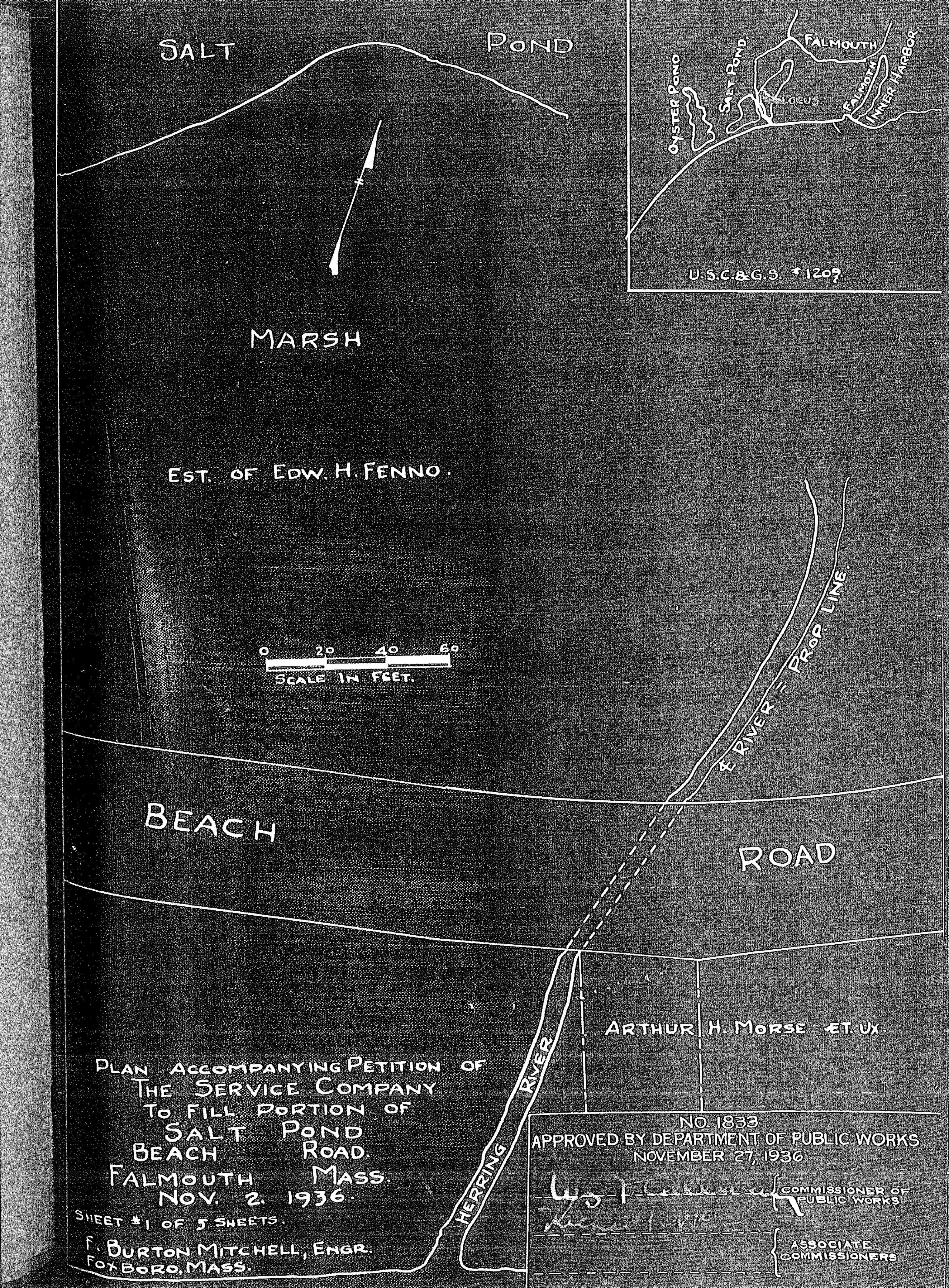
~~the amount determined by the Governor and Council as a just and equitable charge for rights and privileges hereby granted in land of the Commonwealth.~~

Boston, Nov. 30, 1936

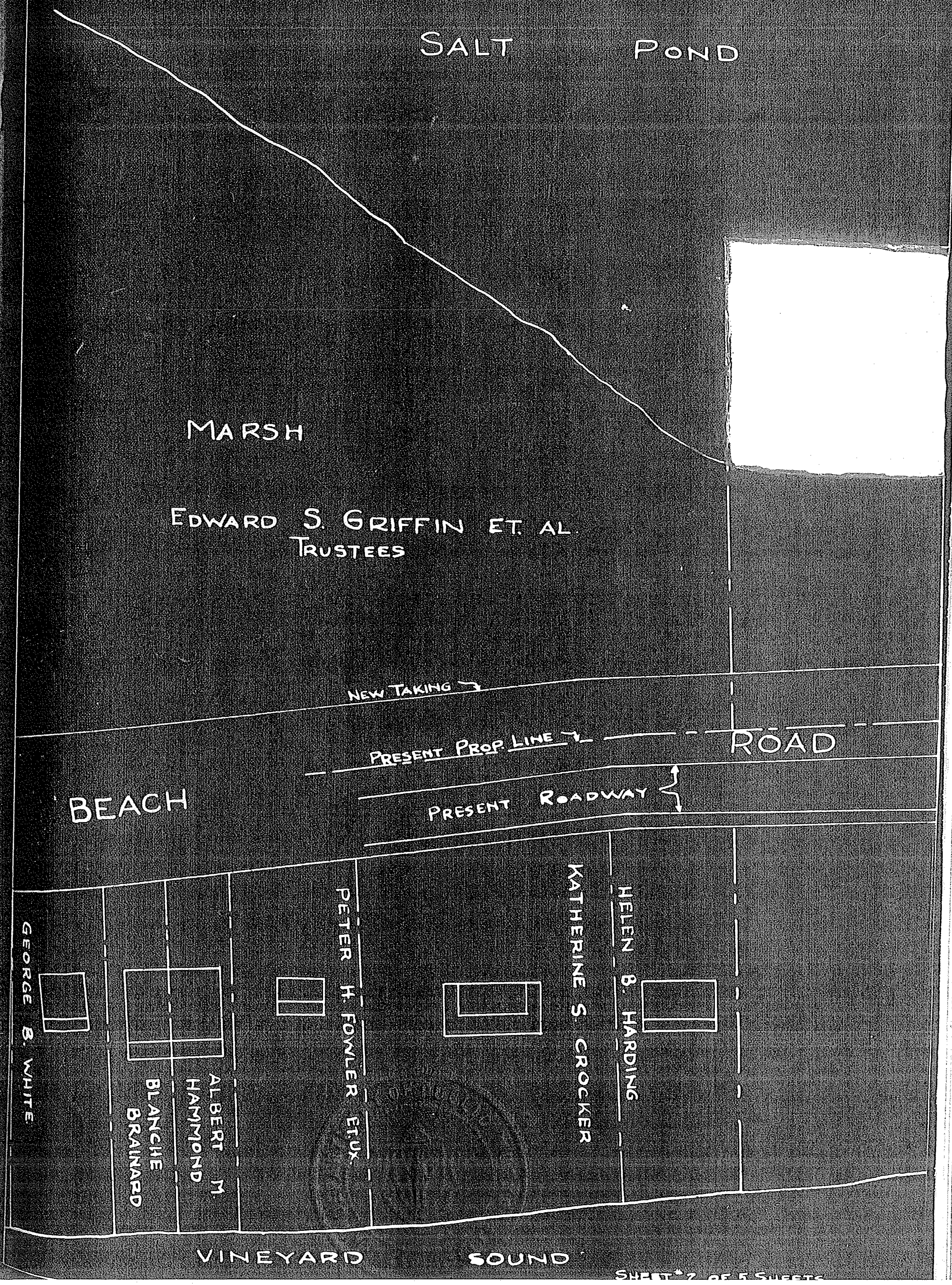
Approved by the Governor and Council.

Wm L Reed
Executive Secretary.

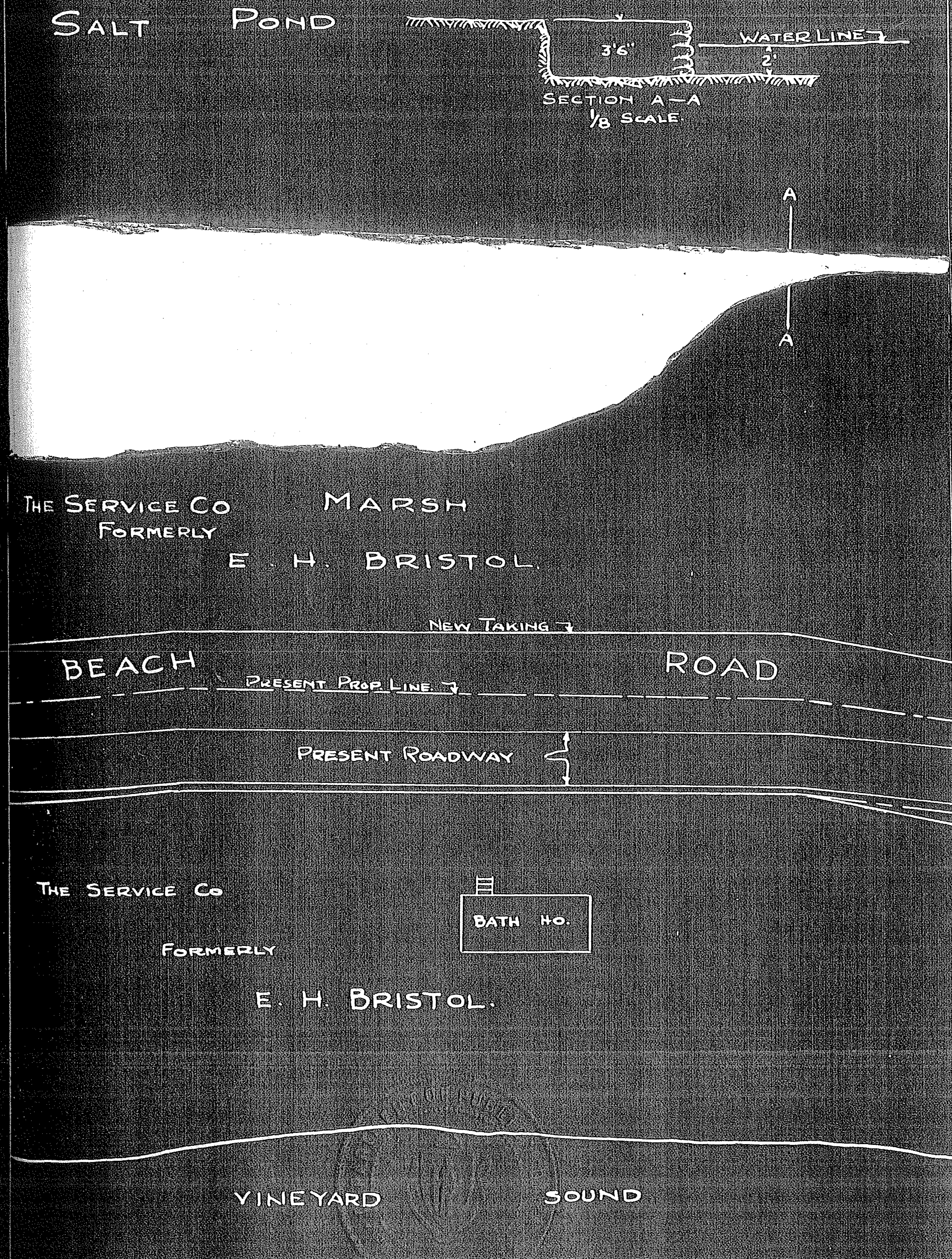
A true copy. Attest: Mary A. Riley Secretary.


SALT POND
MARSH
EST. OF EDW. H. FENNO.
0 20 40 60
SCALE IN FEET.
OYSTER POND
SALT POND
LOCUS.
FALMOUTH
FALMOUTH INNER HARBOR.
U.S.C.&G.S. #1209
℄ RIVER = PROP. LINE.
BEACH ROAD
HERRING RIVER
ARTHUR H. MORSE ET. UX.
PLAN ACCOMPANYING PETITION OF
THE SERVICE COMPANY
TO FILL PORTION OF
SALT POND
BEACH ROAD.
FALMOUTH MASS.
NOV. 2. 1936.
SHEET #1 OF 5 SHEETS.
F. BURTON MITCHELL, ENGR.
FOXBORO, MASS.
NO. 1833
APPROVED BY DEPARTMENT OF PUBLIC WORKS
NOVEMBER 27, 1936
COMMISSIONER OF PUBLIC WORKS
ASSOCIATE COMMISSIONERS

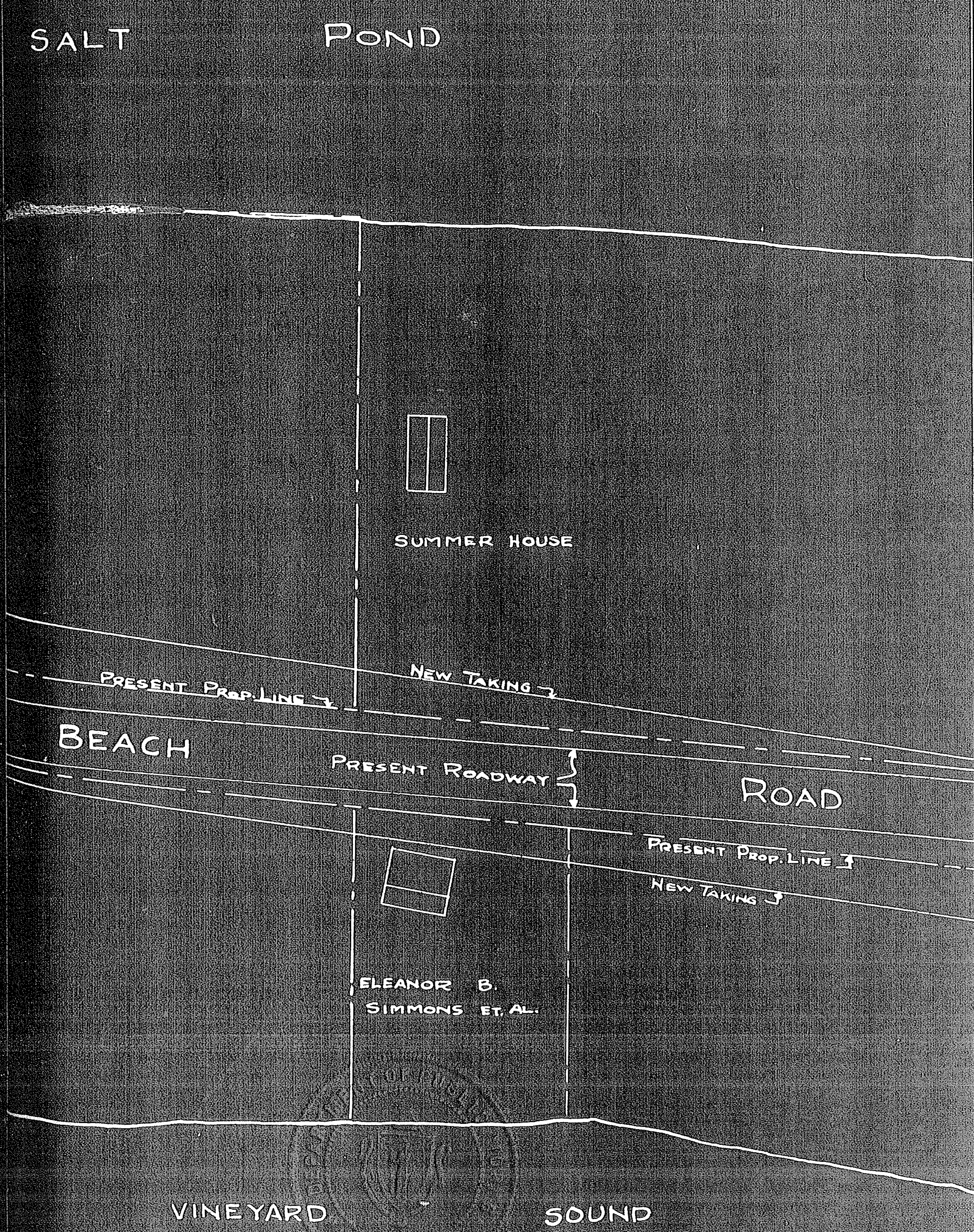
LICENSE PLAN NO. 1833
APPROVED NOVEMBER 27, 1936



LICENSE PLAN NO. 1833
APPROVED NOVEMBER 27, 1936

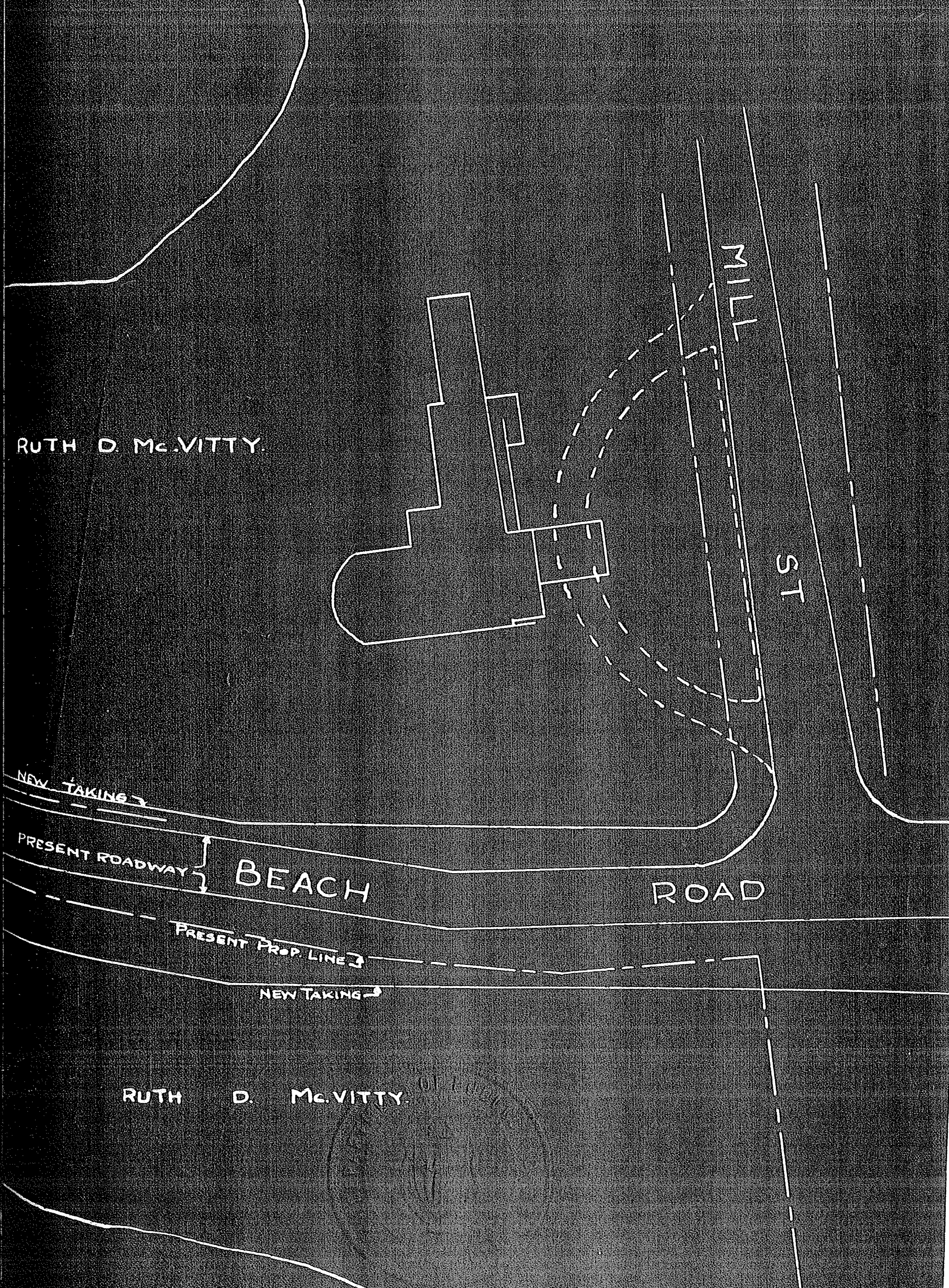


LICENSE PLAN NO. 1833
APPROVED NOVEMBER 27, 1936



SHEET # 4 OF 5 SHEETS.

LICENSE PLAN NO. 1833
APPROVED NOVEMBER 27, 1936



SHEET #5 OF 5 SHEETS.

Form WD 54.
1M sets-12-'28. No. 4178-2a.

The Commonwealth of Massachusetts

No. 1745.

Whereas, The Western Union Telegraph Company, of New York,

~~of~~----------------------~~, in the County of~~-------------------------~~and Commonwealth aforesaid~~, has applied to the Department of Public Works for license to lay and maintain a submarine cable in Vineyard Sound from Nobska Point at Woods Hole in the town of Falmouth to a point upon the shore of Marthas Vineyard Island in the town of Tisbury,------------------ and has submitted plans of the same; and whereas due notice of said application, and of the time and place fixed for a hearing thereon, has been given, as required by law, to the ---------------------- Selectmen----------- of the towns-- of Falmouth and Tisbury------- ;

Now, said Department, having heard all parties desiring to be heard, and having fully considered said application, hereby, subject to the approval of the Governor and Council, authorizes and licenses the said

Western Union Telegraph Company---------, subject to the provisions of the ninety-first chapter of the General Laws, and of all laws which are or may be in force applicable thereto, to lay and maintain a submarine cable in Vineyard Sound from Nobska Point at Woods Hole in the town of Falmouth to a point upon the shore of Marthas Vineyard Island in the town of Tisbury, in conformity with the accompanying plan No. 1745.

Said submarine cable may be laid upon the surface of the bottom of Vineyard Sound, in the location shown on said plan and in accordance with the details of construction there indicated.

Nothing in this license shall be construed as authorizing any use or occupancy of land, flats or structures not owned by the licensee without the consent of the owner or owners of such property.

This license is granted subject to the laws of the United States, and upon condition that the said Western Union Telegraph Company, its successors and assigns, shall, upon request in writing by the Department of Public Works, or its successors, change the location of said cable, lower it to such depth as said Department may prescribe, or remove it entirely from tide water; and said Company, by accepting this license, shall be deemed to consent and agree to the condition herein set forth, and in case of any refusal or neglect on the part of said licensee, its successors and assigns, to comply with this condition, then this license shall be wholly void and the Commonwealth, by its proper officers, may proceed to remove or to cause the removal of said cable at the expense of said licensee, its successors and assigns, as an unauthorized and unlawful structure in tide water.--

The plan of said work, numbered----------1 7 4 5,------------is on file in the office of said Department, and duplicate of said plan accompanies this License, and is to be referred to as a part hereof.

~~The amount of tide-water displaced by the work hereby authorized shall be ascertained by said~~ Department, and compensation therefor ~~shall be made~~ by the said

~~heirs, successors~~

Form WD 54
500 sets-3-'35. No. 4006-b.

and assigns, by paying into the treasury of the Commonwealth

cents for each cubic yard so displaced, being the amount hereby assessed by said Department.

Nothing in this License shall be so construed as to impair the legal rights of any person.

This License shall be void unless the same and the accompanying plan are recorded within one year from the date hereof, in the Registries of Deeds for the District of the County of Barnstable and the County of Dukes County.

In Witness Whereof, said Department of Public Works have hereunto set their hands this fifteenth day of December, in the year nineteen hundred and thirty-six.

Wm F Callahan
Richard K Hale
Frank L Kane

Department of Public Works

THE COMMONWEALTH OF MASSACHUSETTS

This license is approved in consideration of the payment into the treasury of the Commonwealth by the said

of the further sum of

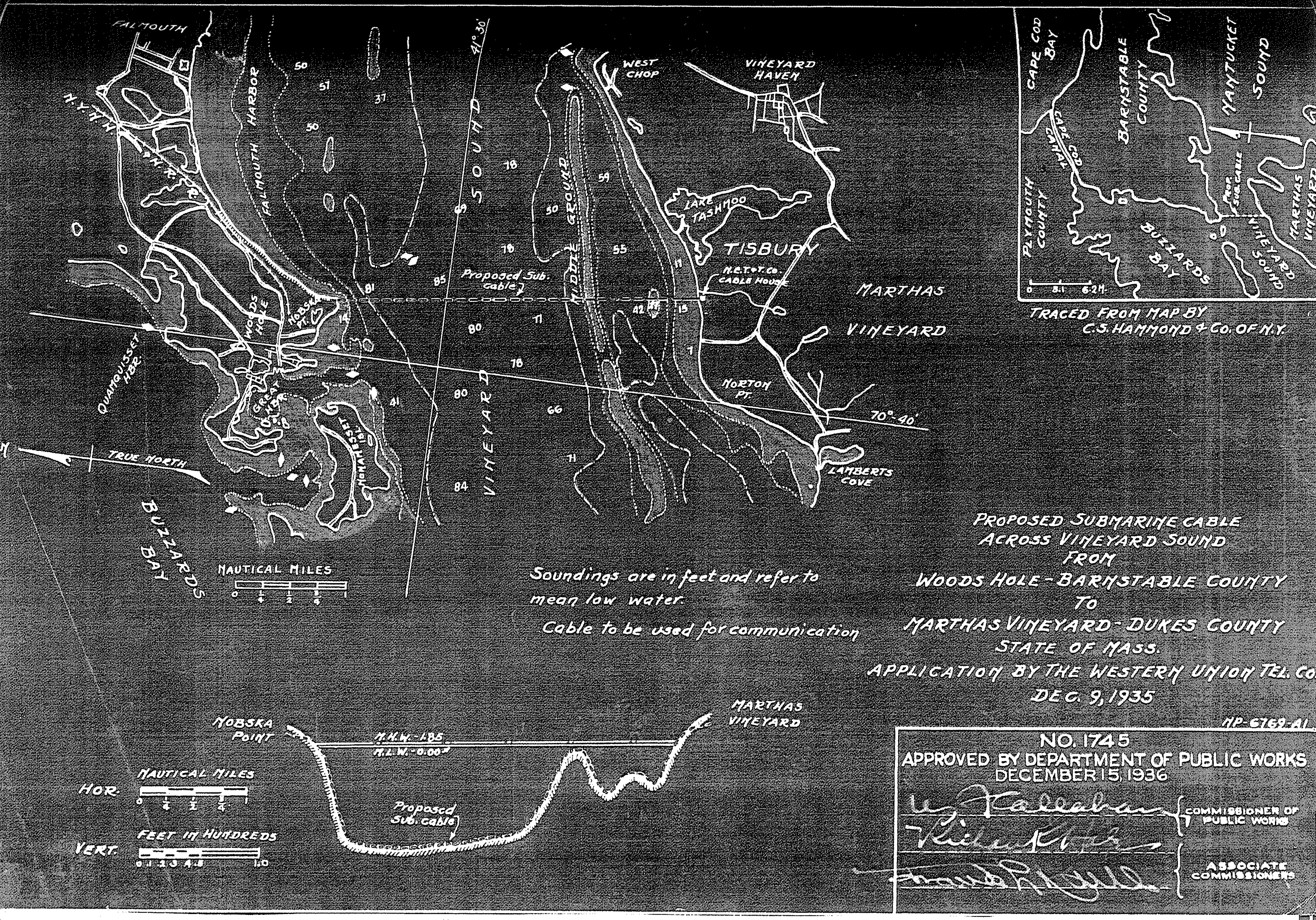
the amount determined by the Governor and Council as a just and equitable charge for rights and privileges hereby granted in land of the Commonwealth.

BOSTON, Dec. 16, 1936

Approved by the Governor and Council.

Wm L Reed
Executive Secretary.

A true copy. Attest: Mary A Riley *Secretary.*


FALMOUTH
N.Y.N.H.
FALMOUTH HARBOR
WOODS HOLE
NOBSKA PT.
GREAT HBR.
QUAMQUISSET HBR.
NONAMESSET ISL.
TRUE NORTH
BUZZARDS BAY
NAUTICAL MILES
SOUND
VINEYARD
41°30'
70°-40'
Proposed Sub. cable
MIDDLE GROUND
WEST CHOP
VINEYARD HAVEN
LAKE TASHMOO
TISBURY
N.E.T.&T.Co. CABLE HOUSE
MARTHAS VINEYARD
NORTON PT.
LAMBERTS COVE
CAPE COD BAY
CAPE COD CANAL
BARNSTABLE COUNTY
NANTUCKET SOUND
PLYMOUTH COUNTY
BUZZARDS BAY
VINEYARD SOUND
MARTHAS VINEYARD
PROP. SUB. CABLE
TRACED FROM MAP BY C.S. HAMMOND & CO. OF N.Y.
Soundings are in feet and refer to mean low water.
Cable to be used for communication
PROPOSED SUBMARINE CABLE
ACROSS VINEYARD SOUND
FROM
WOODS HOLE - BARNSTABLE COUNTY
TO
MARTHAS VINEYARD - DUKES COUNTY
STATE OF MASS.
APPLICATION BY THE WESTERN UNION TEL. CO.
DEC. 9, 1935
NOBSKA POINT
MARTHAS VINEYARD
M.H.W. - 1.85
M.L.W. - 0.00
Proposed Sub. cable
HOR. NAUTICAL MILES
VERT. FEET IN HUNDREDS
NP-6769-A1
NO. 1745
APPROVED BY DEPARTMENT OF PUBLIC WORKS
DECEMBER 15, 1936
COMMISSIONER OF PUBLIC WORKS
ASSOCIATE COMMISSIONERS

Form WD 54.
500 sets-3-'35. No. 4006-a

The Commonwealth of Massachusetts

No. 2161.

Whereas, the Cape and Vineyard Electric Company----------

of Barnstable-------, in the County of Barnstable---------- and Commonwealth aforesaid, has applied to the Department of Public Works for license to lay and maintain a submarine cable in, under and across Vineyard Sound between the towns of Falmouth and Tisbury,------------------------------

and has submitted plans of the same; and whereas due notice of said application, and of the time and place fixed for a hearing thereon, has been given, as required by law, to the ---------Selectmen--------------- of the towns-- of Falmouth and Tisbury--------;

Now, said Department, having heard all parties desiring to be heard, and having fully considered said application, hereby, subject to the approval of the Governor and Council, authorizes and licenses the said ---Cape and Vineyard Electric Company-----------------, subject to the provisions of the ninety-first chapter of the General Laws, and of all laws which are or may be in force applicable thereto, to lay and maintain a submarine cable in, under and across Vineyard Sound between the towns of Falmouth and Tisbury, in conformity with the accompanying plan No. 2161.

Said cable may be laid on the surface of the bed of said Sound from a point at the end of Shore Street in the town of Falmouth to a point about 1600 feet westerly from West Chop Light in the town of Tisbury, in the location shown on said plan and in accordance with the details there indicated.

Nothing in this license shall be construed as authorizing the use or occupancy of any land or flats not owned by the licensee without the consent of the owner or owners of such property.

This license is granted subject to the laws of the United States, and upon condition that the Cape and Vineyard Electric Company, its successors and assigns, shall, upon request in writing by the Department of Public Works or its successors, change the location of said cable, lower it to such depth as said Department may prescribe, or remove it entirely from tide water; and said licensee by accepting this license shall be deemed to consent and agree to the condition herein set forth, and in case of any refusal or neglect on the part of said licensee, its successors and assigns, to comply with said condition, then this license shall be wholly void and the Commonwealth, by its proper officers, may proceed to remove or to cause the removal of said cable at the expense of said licensee, its successors and assigns, as an unauthorized and unlawful structure in tide water.

The plan of said work, numbered---------2 1 6 1--------------is on file in the office of said Department, and duplicate of said plan accompanies this License, and is to be referred to as a part hereof.

~~The amount of tide water displaced by the work hereby authorized shall be ascertained by said~~ Department, and compensation therefor shall ~~be made by the said~~

~~heirs, successors~~

Form WD 54
500 sets-3-'35. No. 4006-b.

~~and assigns, by paying into the treasury of the Commonwealth~~

cents ~~for each cubic yard~~ so displaced, being the amount hereby assessed ~~by said Department~~.

Nothing in this License shall be so construed as to impair the legal rights of any person.

This License shall be void unless the same and the accompanying plan are recorded within one year from the date hereof, in the Registry of Deeds for the ---------------- ~~District of the~~ County of Barnstable.

In Witness Whereof, said Department of Public Works have hereunto set their hands this twenty-sixth-------------- day of February-------------- in the year nineteen hundred and forty.

...roved,

...rector Division of Waterways.

John W. Beal
Paul C. Ryan
George W. Schryver

Department of Public Works

THE COMMONWEALTH OF MASSACHUSETTS

~~This license is approved in consideration of the payment into the treasury of the Commonwealth~~ by the said

of the further sum of

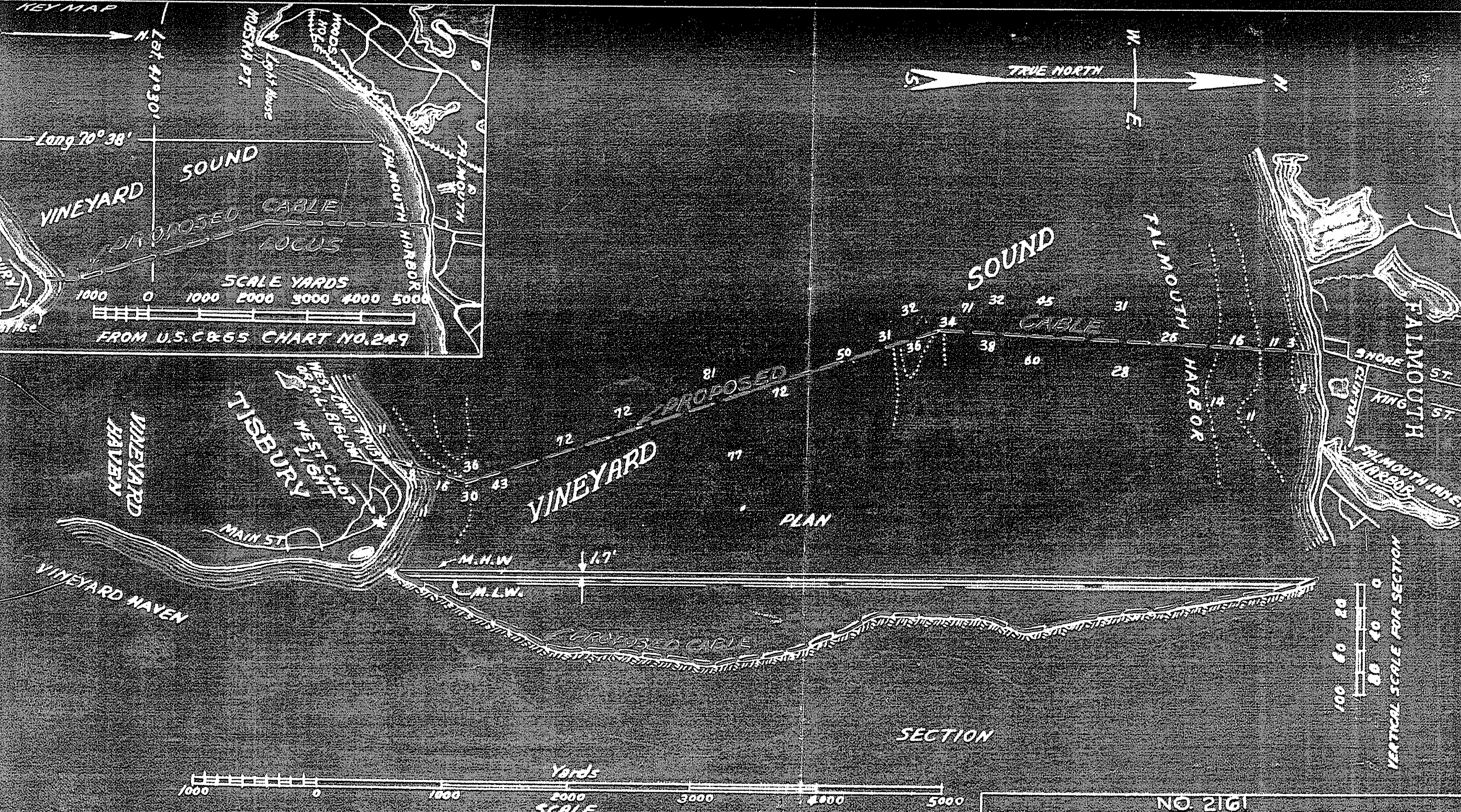
the amount determined by the Governor and Council as a just and equitable charge for rights and privileges ~~hereby granted in land of the Commonwealth~~.

Boston, Mar. 6, 1940

Approved by the Governor and Council.

Wm. L. Reed
Executive Secretary.

A true copy. Attest: Mary A. Riley *Secretary.*



PLAN ACCOMPANYING APPLICATION OF
CAPE & VINEYARD ELECTRIC COMPANY
FOR A PERMIT
TO LAY AN ARMORED SUBMARINE CABLE
ACROSS VINEYARD SOUND BETWEEN FALMOUTH
AND TISBURY MASSACHUSETTS
PLAN NO. C&V.E. CO. 105 FEB. 14, 1940

NO. 2161
APPROVED BY DEPARTMENT OF PUBLIC WORKS
FEBRUARY 26, 1940

COMMISSIONER OF PUBLIC WORKS

ASSOCIATE COMMISSIONERS

DIRECTOR - DIVISION OF WATERWAYS

Form WD 54.
500 sets-3-'35. No.'4006-a

The Commonwealth of Massachusetts

No. 2169.

Whereas, the Cape and Vineyard Electric Company,----------

of Barnstable----- , in the County of Barnstable-------- and Commonwealth aforesaid, has applied to the Department of Public Works for license to lay and maintain a submarine cable in, under and across Vineyard Sound between the towns of Falmouth and Tisbury,----------------------------

and has submitted plans of the same; and whereas due notice of said application, and of the time and place fixed for a hearing thereon, has been given, as required by law, to the ---------------- Selectmen--------- of the towns--of Falmouth and Tisbury------- ;

Now, said Department, having heard all parties desiring to be heard, and having fully considered said application, hereby, subject to the approval of the Governor and Council, authorizes and licenses the said

Cape and Vineyard Electric Company---- , subject to the provisions of the ninety-first chapter of the General Laws, and of all laws which are or may be in force applicable thereto, to lay and maintain a submarine cable in, under and across Vineyard Sound between the towns of Falmouth and Tisbury, in conformity with the accompanying plan No. 2169.

Said cable may be laid on the surface of the bed of said Sound from a point at the end of Shore Street in the town of Falmouth to a point at the end of Squantum Avenue in the town of Tisbury, in the location shown on said plan and in accordance with the details there indicated.

Nothing in this license shall be construed as authorizing the use or occupancy of any land or flats not owned by the licensee without the consent of the owner or owners of such property.

This license is granted subject to the laws of the United States, and upon condition that the Cape and Vineyard Electric Company, its successors and assigns, shall, upon request in writing by the Department of Public Works or its successors, change the location of said cable, lower it to such depth as said Department may prescribe, or remove it entirely from tide water; and said licensee by accepting this license shall be deemed to consent and agree to the condition herein set forth, and in case of any refusal or neglect on the part of said licensee, its successors and assigns, to comply with said condition, then this license shall be wholly void and the Commonwealth, by its proper officers, may proceed to remove or to cause the removal of said cable at the expense of said licensee, its successors and assigns, as an unauthorized and unlawful structure in tide water.

This license is issued in substitution for license No. 2161, dated February 26, 1940, and is granted for the purpose of allowing the said cable to be laid in a straight line under the tide waters of Vineyard Sound.

The plan of said work, numbered ------------2 1 6 9,------- is on file in the office of said Department, and duplicate of said plan accompanies this License, and is to be referred to as a part hereof.

~~The amount of tide water displaced by the work hereby authorized shall be ascertained by said~~ Department, and compensation therefor shall be made by the said

heirs, successors

Form WD 54
500 sets-3-'35. No. 4006-b.

~~and assigns, by paying into the treasury of the Commonwealth~~

cents for each ~~cubic yard so~~ displaced, being the amount hereby assessed ~~by said Department.~~

Nothing in this License shall be so construed as to impair the legal rights of any person.

This License shall be void unless the same and the accompanying plan are recorded within one year from the date hereof, in the Registr~~y~~ ies of Deeds for the ~~District of the~~ County of Barnstable and the County of Dukes County.

In Witness Whereof, said Department of Public Works have hereunto set their hands this twentieth day of March, in the year nineteen hundred and forty.

Approved,

Director Division of Waterways.

John W. Beal

Paul C. Ryan

George W. Schryver

Department of Public Works

THE COMMONWEALTH OF MASSACHUSETTS

~~This license is approved in consideration of the payment into the treasury of the Commonwealth~~ by the said of the further sum of

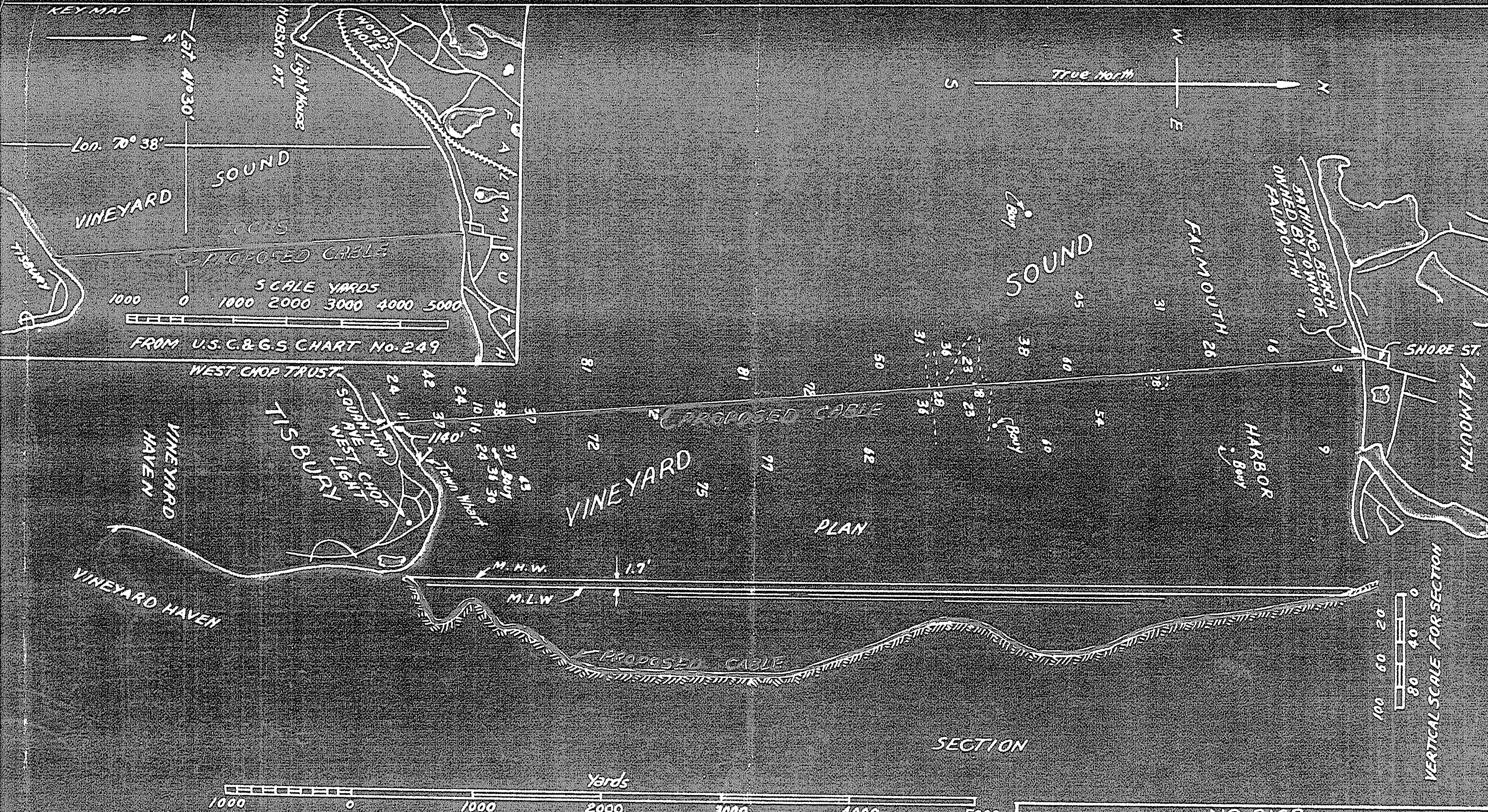
the amount determined by the Governor and Council as a just and equitable charge for rights and privileges ~~hereby granted in land of the Commonwealth.~~

Boston, March 27, 1940

Approved by the Governor and Council.

Wm L Reed
Executive Secretary.

A true copy. Attest: .... *Secretary.*



PLAN ACCOMPANYING APPLICATION OF
CAPE & VINEYARD ELECTRIC COMPANY
FOR A PERMIT
TO LAY AN ARMORED SUBMARINE CABLE
ACROSS VINEYARD SOUND BETWEEN FALMOUTH
AND TISBURY MASSACHUSETTS
PLAN NO. C&V.E. Co. 105 A MAR. 7, 1940

NO. 2169
APPROVED BY DEPARTMENT OF PUBLIC WORKS
MARCH 20, 1940

COMMISSIONER OF PUBLIC WORKS

ASSOCIATE COMMISSIONERS

DIRECTOR - DIVISION OF WATERWAYS

Form WD 54-A. 500-9-52-907819

The Commonwealth of Massachusetts

No. 3602.

Whereas, The Falmouth Associates, Inc.,------------------------------

of Falmouth--------------, in the County of Barnstable------------ and Commonwealth aforesaid, has applied to the Department of Public Works for license to build a stone jetty in Vineyard Sound, at its property in the town of Falmouth,-----------------

and has submitted plans of the same; and whereas due notice of said application, and of the time and place fixed for a hearing thereon, has been given, as required by law, to the ------------------- Selectmen---------------- of the town--------of Falmouth---------------------;

Now said Department, having heard all parties desiring to be heard, and having fully considered said application, hereby, subject to the approval of the Governor and Council, authorizes and licenses the said---

Falmouth Associates, Inc.----------------, subject to the provisions of the ninety-first chapter of the General Laws, and of all laws which are or may be in force applicable thereto, to build and maintain a stone jetty at Surf Drive in Vineyard Sound, at its property in the town of Falmouth, in conformity with the accompanying plan No. 3602.

A stone groin or jetty may be built extending into tidewater from the mean high water line a distance of approximately 60 feet with top width of 4 feet and side and end slopes of 1-1/2 horizontally to 1 vertically, in the location shown on said plan and in accordance with the details of construction there indicated.

Said groin may be built with its top at elevation 5.3 feet above mean low water at the mean high water line and sloping to elevation 3.3 feet above mean low water, amounting to 2 feet above mean high water, at the outer end, as shown on said plan.

This license is granted subject to the laws of the United States.

The plan of said work, numbered ----------3 6 0 2,-------------- is on file in the office of said Department, and duplicate of said plan accompanies this License, and is to be referred to as a part hereof.

~~The amount of tide-water displaced by the work hereby authorized shall be ascertained by said~~ Department, and compensation therefor ~~shall be made by the~~ said

~~heirs, successors~~

Form WD 54-B. 500-9-52-907819

~~and assigns, by paying into the treasury of the Commonwealth~~

cents for each ~~cubic yard so~~ displaced, being the amount hereby assessed ~~by said Department.~~

Nothing in this License shall be so construed as to impair the legal rights of any person.

This License shall be void unless the same and the accompanying plan are recorded within one year from the date hereof, in the Registry of Deeds for the ~~District of the~~ County of Barnstable.

In Witness Whereof, said Department of Public Works have hereunto set their hands this twenty-eighth day of December, in the year nineteen hundred and fifty-three.

John A. Volpe
Fred B. Dole
Francis V. Matera

Department of Public Works

Approval recommended,

R G Bessette
Director Division of Waterways.

THE COMMONWEALTH OF MASSACHUSETTS

~~This license is approved in consideration of the payment into the treasury of the Common-~~ wealth by the said

or the further sum of no charge

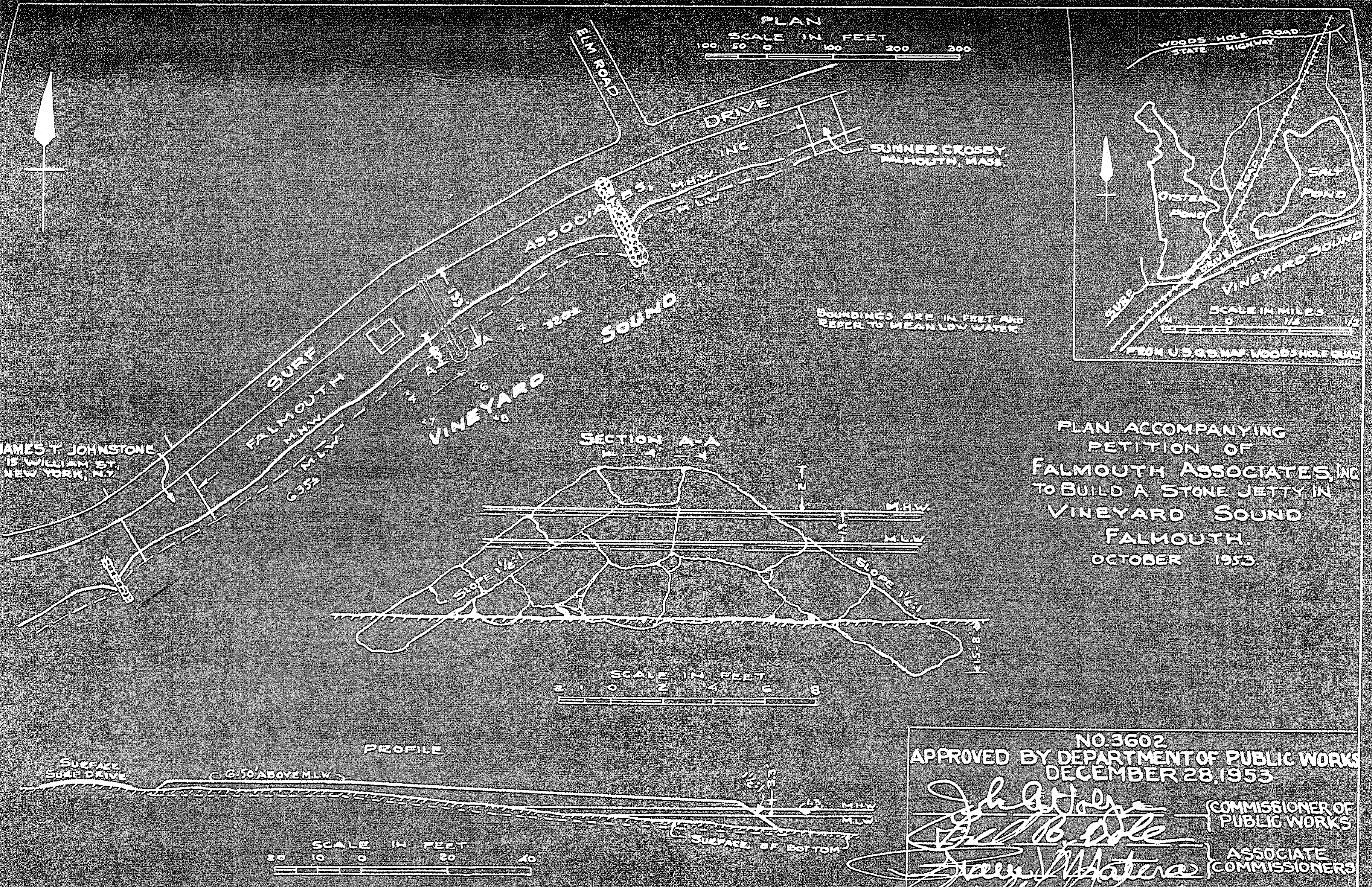
the amount determined by the Governor and Council as a just and equitable charge for rights and ~~privileges hereby granted in land of the Commonwealth.~~

Boston, Jan. 7, 1954

Approved by the Governor and Council.

Clarence R. Elam
Executive Secretary.

A true copy. Attest: Mary E. McMorrow
Secretary.


PLAN
SCALE IN FEET
100 50 0 100 200 300
ELM ROAD
DRIVE
SURF
FALMOUTH ASSOCIATES, INC.
M.H.W.
M.L.W.
SUMNER CROSBY, FALMOUTH, MASS.
JAMES T. JOHNSTONE
15 WILLIAM ST.
NEW YORK, N.Y.
VINEYARD SOUND
SOUNDINGS ARE IN FEET AND REFER TO MEAN LOW WATER.
WOODS HOLE ROAD
STATE HIGHWAY
OYSTER POND
SALT POND
VINEYARD SOUND
SCALE IN MILES
1/4 0 1/4 1/2
FROM U.S.G.S. MAP WOODS HOLE QUAD.
SECTION A-A
M.H.W.
M.L.W.
SLOPE 1½:1
SLOPE 1½:1
SCALE IN FEET
2 1 0 2 4 6 8
PROFILE
SURFACE SURF DRIVE
G. 5.0' ABOVE M.L.W.
M.H.W.
M.L.W.
SURFACE OF BOTTOM
SCALE IN FEET
20 10 0 20 40
PLAN ACCOMPANYING
PETITION OF
FALMOUTH ASSOCIATES, INC.
TO BUILD A STONE JETTY IN
VINEYARD SOUND
FALMOUTH.
OCTOBER 1953.
NO. 3602
APPROVED BY DEPARTMENT OF PUBLIC WORKS
DECEMBER 28, 1953
COMMISSIONER OF PUBLIC WORKS
ASSOCIATE COMMISSIONERS
DIRECTOR-DIVISION OF WATERWAYS

Form WD 54-A. 500-9-52-907819

The Commonwealth of Massachusetts

No. 3633.

Whereas, the Cape and Vineyard Electric Company,------------------------

of Barnstable------------, in the County of Barnstable----------- and Commonwealth aforesaid, has applied to the Department of Public Works for license to lay a second submarine cable in Nantucket and Vineyard Sounds, between the town of Falmouth and the town of Tisbury,--

and has submitted plans of the same; and whereas due notice of said application, and of the time and place fixed for a hearing thereon, has been given, as required by law, to the ------------------ Selectmen------------------ of the towns------- of Falmouth and Tisbury---------;

Now said Department, having heard all parties desiring to be heard, and having fully considered said application, hereby, subject to the approval of the Governor and Council, authorizes and licenses the said--

Cape and Vineyard Electric Company--------, subject to the provisions of the ninety-first chapter of the General Laws, and of all laws which are or may be in force applicable thereto, to place a submarine cable in Vineyard and Nantucket Sounds, in the towns of Falmouth and Tisbury, in conformity with the accompanying plan No. 3633.

A submarine cable may be laid on the beds of said Sounds from a point near the foot of Elm Road on the Falmouth shore, to a location near the foot of Squantum Avenue on the Tisbury shore or Marthas Vineyard Island, in the locations shown on said plan and in accordance with the details there indicated.

Said cable may leave the shores at said locations as shown on said plan and as shown in more detail on plans on file with the Department of Public Works.

Nothing in this license shall be construed as authorizing the use or occupancy of any land or flats not owned by the licensee without the consent of the owner or owners of such property.

This license is granted subject to the laws of the United States, and upon condition that the Cape and Vineyard Electric Company, its successors and assigns, shall, upon request in writing by the Department of Public Works or its successors, change the location of said cable, lower it to such depth as said Department may prescribe, or remove it entirely from tidewater; and said licensee by accepting this license shall be deemed to consent and agree to the condition herein set forth, and in case of any refusal or neglect on the part of said licensee, its successors and assigns, to comply with said condition, then this license shall be wholly void and the Commonwealth, by its proper officers, may proceed to remove or to cause the removal of said cable at the expense of said licensee, its successors and assigns, as an unauthorized and unlawful structure in tidewater.

The plan of said work, numbered 3633, is on file in the office of said Department, and duplicate of said plan accompanies this License, and is to be referred to as a part hereof.

~~The amount of tide-water displaced by the work hereby authorized shall be ascertained by said~~ Department, and compensation therefor shall be made ~~by the said~~

~~heirs, successors~~

Form WD 54-B. 500-9-52-907819

~~and assigns, by paying into the treasury of the Commonwealth~~

cents for each ~~cubic yard so~~ displaced, being the amount hereby assessed ~~by said Department.~~

Nothing in this License shall be so construed as to impair the legal rights of any person.

This License shall be void unless the same and the accompanying plan are recorded within one year from the date hereof, in the Registries of Deeds for the ~~District of the~~ Counties of Barnstable and Dukes County.

In Witness Whereof, said Department of Public Works have hereunto set their hands this tenth day of May, in the year nineteen hundred and fifty-four.

John A. Volpe
Fred B. Dole
Lewis J. Fritz

Department of Public Works

Approval recommended,

R G Bessette
Director Division of Waterways.

THE COMMONWEALTH OF MASSACHUSETTS

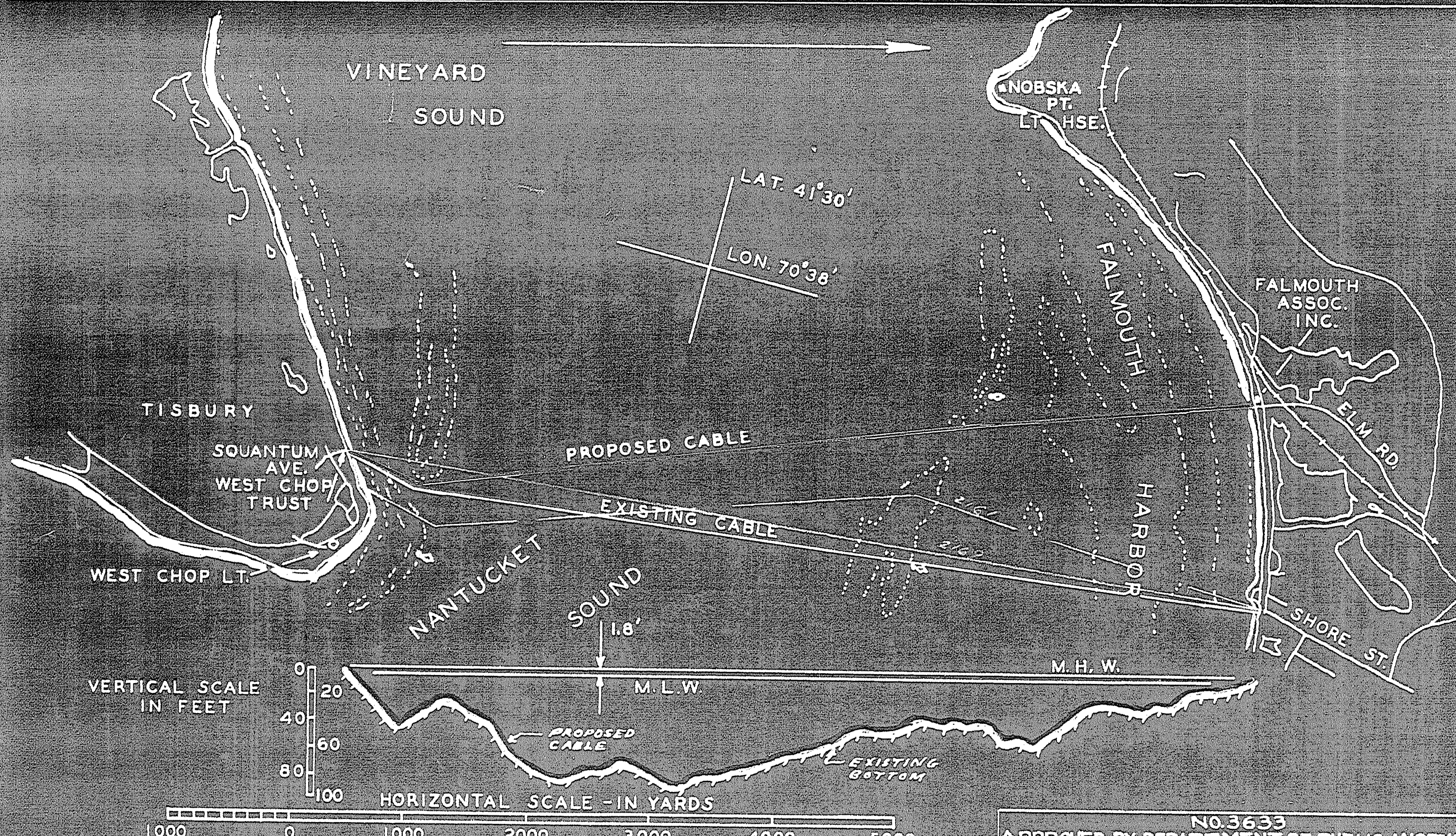
~~This license is approved in consideration of the payment into the treasury of the Commonwealth by the said or the further sum of the amount determined by the Governor and Council as a just and equitable charge for rights and privileges hereby granted in land of the Commonwealth.~~

Boston, May 20, 1954

Approved by the Governor and Council.

Clarence R. Elam
Executive Secretary.

A true copy. Attest: Mary E. McMorrow *Secretary.*



CAPE & VINEYARD ELECTRIC CO.

TRACED FROM
U.S.C. & G.S. CHART 249

PLAN FOR SECOND ARMORED SUBMARINE CABLE
BETWEEN FALMOUTH AND TISBURY MASSACHUSETTS

N.E.G.E.A. NO. 5225

FEB 26, 1954

NO. 3633
APPROVED BY DEPARTMENT OF PUBLIC WORKS
MAY 10, 1954

COMMISSIONER OF PUBLIC WORKS

ASSOCIATE COMMISSIONERS

DIRECTOR-DIVISION OF WATERWAYS

Form WD 54

1500 sets (2) 10-61-931508

The Commonwealth of Massachusetts

No. 4998.

Whereas, West Chop Trust------------------------------------

of Tisbury--------, in the County of Dukes County----- and Commonwealth aforesaid, has applied to the Department of Public Works for license to construct a stone groin in Vineyard Sound, at its property in the town of Tisbury,--

and has submitted plans of the same; and whereas due notice of said application, and of the time and place fixed for a hearing thereon, has been given, as required by law, to the Selectmen-------------of the town------- of Tisbury------------;

Now said Department, having heard all parties desiring to be heard, and having fully considered said application, hereby, subject to the approval of the Governor ~~and Council,~~ authorizes and licenses the said ------------------------------------

West Chop Trust------------------, subject to the provisions of the ninety-first chapter of the General Laws, and of all laws which are or may be in force applicable thereto, to maintain an existing pile and timber pier and to build and maintain a stone groin in Vineyard Sound, at its property in the town of Tisbury, in conformity with the accompanying plan No. 4998.

An existing pile and timber pier may be maintained as now built extending northwesterly into tidewater a distance of 116 feet from the mean high water line with a width of 6 feet, a further distance of 8 feet increasing to 10 feet in width and a further distance of 56 feet at said width of 10 feet, and having a timber platform 6 feet by 20 feet at the northeasterly side at its outer end, in the location shown on said plan and in accordance with the details there indicated.

A stone groin may be built extending into tidewater a distance of 38 feet from the mean high water line with a top width of 4 feet, and side slopes at 1-1/4 to 1 and an end slope reaching a further distance of 10 feet into tidewater, in the location shown on said plan with its center line 25 feet southwesterly of that of said pier, and in accordance with the details there indicated.

This license is granted subject to all applicable Federal, State, County and Municipal laws, ordinances and regulations, and upon the express condition that use by boats or otherwise of the structures hereby licensed shall involve no discharge of sewage or other polluting matter into the adjacent tidewaters except in strict conformity with the requirements of the local and State health departments.-----------------------------------

The plan of said work, numbered --------4 9 9 8,---------is on file in the office of said Department, and duplicate of said plan accompanies this License, and is to be referred to as a part hereof.

~~The amount of tide-water displaced by the work hereby authorized shall be ascertained~~ by said Department, and compensation ~~therefor shall be made~~ by the said ~~heirs, successors~~

~~and assigns, by paying into the treasury of the Commonwealth~~

cents for each cubic yard ~~so displaced, being the amount hereby assessed by said Department.~~

Nothing in this License shall be so construed as to impair the legal rights of any person.

This License shall be void unless the same and the accompanying plan are recorded within one year from the date hereof, in the Registry ------ of Deeds for the ------- ~~District of the~~ County of Dukes County.

In Witness Whereof, said Department of Public Works have hereunto set their hands this ----------first----------day of--------December,----------in the year nineteen hundred and sixty-five.

J.T.H.

F. W. Sargent

Anthony C. Rosselli

D. R. Dwight

Department of Public Works

John D. Warner

R. S. Foster

THE COMMONWEALTH OF MASSACHUSETTS

~~This license is approved in consideration of the payment into the treasury of the Commonwealth by the said of the further sum of the amount determined by the Governor and council as a just and equitable charge for rights and privileges hereby granted in land of the Commonwealth.~~

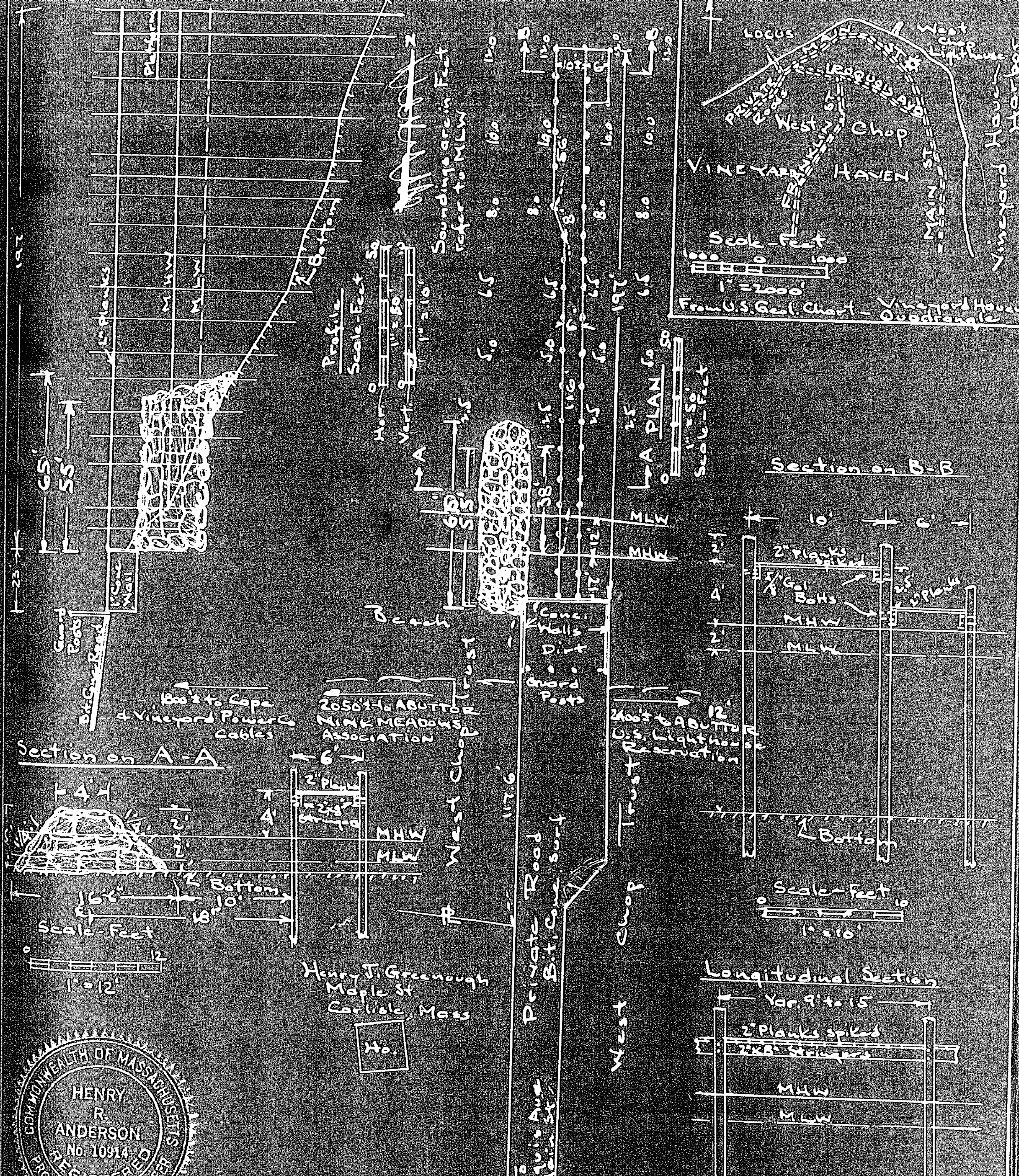
Approved by the Governor. ~~and Council~~

BOSTON, Dec. 3, 1965

John A. Volpe

Governor. ~~Executive Secretary.~~

A true copy. Attest: Edward F. Doyle Secretary.



PLAN ACCOMPANYING PETITION OF
WEST CHOP TRUST
TO MAINTAIN EXISTING PIER
AND CONSTRUCT A STONE GROIN
IN
VINEYARD SOUND
Tisbury

August 1965

LICENSE PLAN NO. 4998
APPROVED BY DEPARTMENT OF PUBLIC WORKS OF MASSACHUSETTS DECEMBER 1 1965

COMMISSIONER - DEPT. OF PUBLIC WORKS

ASSOCIATE COMMISSIONERS

BP:09394-0303 94-10-05 11:43 #59091

The Commonwealth of Massachusetts

No. 4142

Plan Book 506 Pages 32-40

Whereas, Commonwealth Electric Company

of -- Wareham --, in the County of -- Plymouth -- and Commonwealth aforesaid, has applied to the Department of Environmental Protection for license to ----- place and maintain a 6.0-inch diameter electric cable and a 3/4-inch diameter fiber optic cable with appurtenant duct banks and conduits -----

and has submitted plans of the same; and whereas due notice of said application, ~~and of the time and place fixed for a hearing thereon~~, has been given, as required by law, to the -- Boards of Selectmen -- of the Towns of -- Falmouth, Tisbury and Oak Bluffs;

NOW, said Department, having heard all parties desiring to be heard, and having fully considered said application, hereby, subject to the approval of the Governor, authorizes and licenses the said

----- Commonwealth Electric Company -----, subject to the provisions of the ninety-first chapter of the General Laws, and of all laws which are or may be in force applicable thereto, to ----- place and maintain a 6.0-inch diameter electric cable and a 3/4-inch diameter fiber optic cable with appurtenant duct banks and conduits -----

in and over the waters of -- Vineyard Sound -- from the Town of -- Falmouth --, through the Town of -- Tisbury --, to the Town of -- Oak Bluffs -- and in accordance with the locations shown and details indicated on the accompanying DEP License Plan No. 4142, (9 Sheets).

The structures authorized hereby shall be limited to the following use(s): for the transmission of electricity and telecommunications.

This License shall expire thirty(30) years from the date of issuance. By written request of the Licensee for an amendment, the Department may grant a renewal for a term of years not to exceed that which was originally authorized.

This license is granted subject to all applicable Federal, State, County and Municipal laws, ordinances and regulations, and upon the express condition that the licensee, its successors and assigns shall, upon request in writing by the Department of Environmental Protection or its successors, change the location of said cables, raise it to such height or lower it to such depth as said Department may prescribe or remove it entirely, and said licensee, by accepting this license, shall be deemed to consent and agree to the condition herein set forth, and in case of refusal or neglect on the part of said licensee, its successors and assigns to comply with this condition, then this license shall be wholly void and the Commonwealth, by its proper officers, may proceed to remove or to cause the removal of said cable at the expense of said licensee, its successors and assigns, as an unauthorized and unlawful structure in and over the waters of Vineyard Sound.

The Licensee may excavate materials, below the mean high water shoreline, to facilitate the placement of the duct banks, conduits and cables. Approximately 7.0 cubic yards of material may be excavated at the Falmouth site, and 7.5 cubic yards of material may be excavated at the Oak Bluffs site. Said dredging shall be performed by mechanical means, and all spoils shall be used to backfill the trenches upon completion of work. Any excess spoils shall be disposed of at an approved upland location.

Please see pages 3 and 4 for additional conditions to this license.----

Duplicate of said plan, number 4142 is on file in the office of said Department, and original of said plan accompanies this License, and is to be referred to as a part hereof.

STANDARD WATERWAYS LICENSE CONDITIONS

1. Acceptance of this Waterways License shall constitute an agreement by the Licensee to conform with all terms and conditions stated herein.

2. This License is granted upon the express condition that any and all other applicable authorizations necessitated due to the provisions hereof shall be secured by the Licensee <u>prior</u> to the commencement of any activity or use authorized pursuant to this License.

NOT AN OFFICIAL COPY NOT AN OFFICIAL COPY

3. Any change in use or any substantial structural alteration of any structure or fill authorized herein shall require the issuance by the Department of a new Waterways License in accordance with the provisions and procedures established in Chapter 91 of the Massachusetts General Laws. Any unauthorized substantial change in use or unauthorized substantial structural alteration of any structure or fill authorized herein shall render this Waterways License void.

4. This Waterways License shall be revocable by the Department for noncompliance with the terms and conditions set forth herein. This license may be revoked after the Department has given written notice of the alleged noncompliance to the Licensee and those persons who have filed a written request for such notice with the Department and afforded them a reasonable opportunity to correct said noncompliance. Failure to correct said noncompliance after the issuance of a written notice by the Department shall render this Waterways License void and the Commonwealth may proceed to remove or cause removal of any structure or fill authorized herein at the expense of the Licensee, its successors and assigns as an unauthorized and unlawful structure and/or fill.

5. The structures and/or fill authorized herein shall be maintained in good repair and in accordance with the terms and conditions stated herein and the details indicated on the accompanying license plans.

6. Nothing in this Waterways License shall be construed as authorizing encroachment in, on or over property not owned or controlled by the Licensee, except with the written consent of the owner or owners thereof.

7. This Waterways License is granted subject to all applicable Federal, State, County, and Municipal laws, ordinances and regulations including but not limited to a valid final Order of Conditions issued pursuant to the Wetlands Protection Act, G.L. Chapter 131, s.40.

8. This Waterways License is granted upon the express condition that the use of the structures and/or fill authorized hereby shall be in strict conformance with all applicable requirements and authorizations of the DEP, Division of Water Pollution Control.

9. This License authorizes structure(s) and/or fill on:

<u> x </u> Private Tidelands. In accordance with the public easement that exists by law on private tidelands, the licensee shall allow the public to use and to pass freely upon the area of the subject property lying between the high and low water marks, for the purposes of fishing, fowling, navigation, and the natural derivatives thereof.

<u> x </u> Commonwealth Tidelands. The Licensee shall not restrict the public's right to use and to pass freely, for any lawful purpose, upon lands lying seaward of the low water mark. Said lands are held in trust by the Commonwealth for the benefit of the public.

___ a Great Pond of the Commonwealth. The Licensee shall not restrict the public's right to use and to pass freely upon lands lying seaward of the high water mark for any lawful purpose.

No restriction on the exercise of these public rights shall be imposed unless otherwise expressly provided in this license.

10. Unless otherwise expressly provided by this license, the licensee shall not limit the hours of availability of any areas of the subject property designated for public passage, nor place any gates, fences, or other structures on such areas in a manner that would impede or discourage the free flow of pedestrian movement thereon.

STANDARD WATERWAYS DREDGING CONDITIONS

1. This Waterways License is issued subject to all applicable federal, state county and municipal laws,, ordinances, bylaws, and regulations including but not limited to a valid final Order of Conditions issued pursuant to the Wetlands Protection Act, G. L. Chapter 131, s. 40. In particular, this issuance is subject to the provisions of Sections 52 to 56, inclusive, of Chapter 91 of the Federal Laws, which provide, in part, that the transportation and dumping of the dredged material shall be done under the supervision of the Department, and that the Licensee shall be liable to pay the cost of said supervision whenever the owner of the days after notification in writing from the Treasurer of the Commonwealth that the same is due.

2. This Waterways License is issued upon the express condition that the dredging and transport and disposal of dredged material shall be in strict conformance with all applicable requirements and authorizations of the DEP, Division of Water Pollution Control.

3. All subsequent maintenance dredging and transport and disposal of this dredged material during the term of this License shall conform to all standards and conditions applied to the original dredging operation performed under this License.

4. After completion of the work hereby authorized, the Licensee shall furnish, to the Department, a suitable plan showing the depths at mean low water over the area dredged, The dredging under this License shall be so conducted as to cause no unnecessary obstruction of the free passage of vessels. In doing the dredging authorized, care shall be taken to cause no shoaling. If, however, any shoaling is caused, the Licensee shall,at his expense, remove the shoal areas. The Licensee shall pay all costs associated with such work, Nothing in this License shall be so construed as to impair the legal tights of any person, or authorize dredging on land not owned by the Licensee without consent of the owner(s) of such property,

5. The Licensee shall assume and pay all claims and demands arising in any manner from the work authorized herein, and shall save harmless and indemnify the Commonwealth of Massachusetts, its officers, employees, and agents from all claims, suits, damages, costs and expenses incurred by reason thereof.

6. The Licensee shall, at least three days before commencing any piece of dredging in the tide water, give written notice to the Department of the location and amount of the proposed work, and the time at which it is expected work will begin.

7. Whosoever violates any provision of this License shall be subject to a fine of $25,000 per day for each day such violation occurs or continues, or by imprisonment for not more than one year, or both such fine and imprisonment; or shall be subject to civil penalty not to exceed $25,000 per day for each day such violation occurs or continues.

The amount of tidewater displaced by the work hereby authorized has been ascertained by said Department, and compensation thereof has been made by the said --- Commonwealth Electric Company --- by paying into the treasury of the Commonwealth -- two dollars and zero cents ($2.00) -- for each cubic yard so displaced, being the amount hereby assessed by said Department (0.0 cu.yds. = $0.00).

Nothing in this License shall be so construed as to impair the legal rights of any person.

This License shall be void unless the same and the accompanying plan are recorded within 60 days from the date hereof, in the Registry of Deeds for the Counties of -- Barnstable and Dukes.

IN WITNESS WHEREAS, said Department of Environmental Protection have hereunto set their hands this thirtieth day of September in the year nineteen hundred and ninety-four.

Commissioner ______________________

Acting Director ______________________

Acting Section Chief ______________________

Department of Environmental Protection

THE COMMONWEALTH OF MASSACHUSETTS

This license is approved in consideration of the payment into the treasury of the Commonwealth by the said

----- Commonwealth Electric Company -----

the further sum of

----- sixty-one thousand, one hundred seventy dollars and zero cents ($61,170.00) -----

the amount determined by the Governor as a just and equitable charge for rights and privileges hereby granted in the land of the Commonwealth.

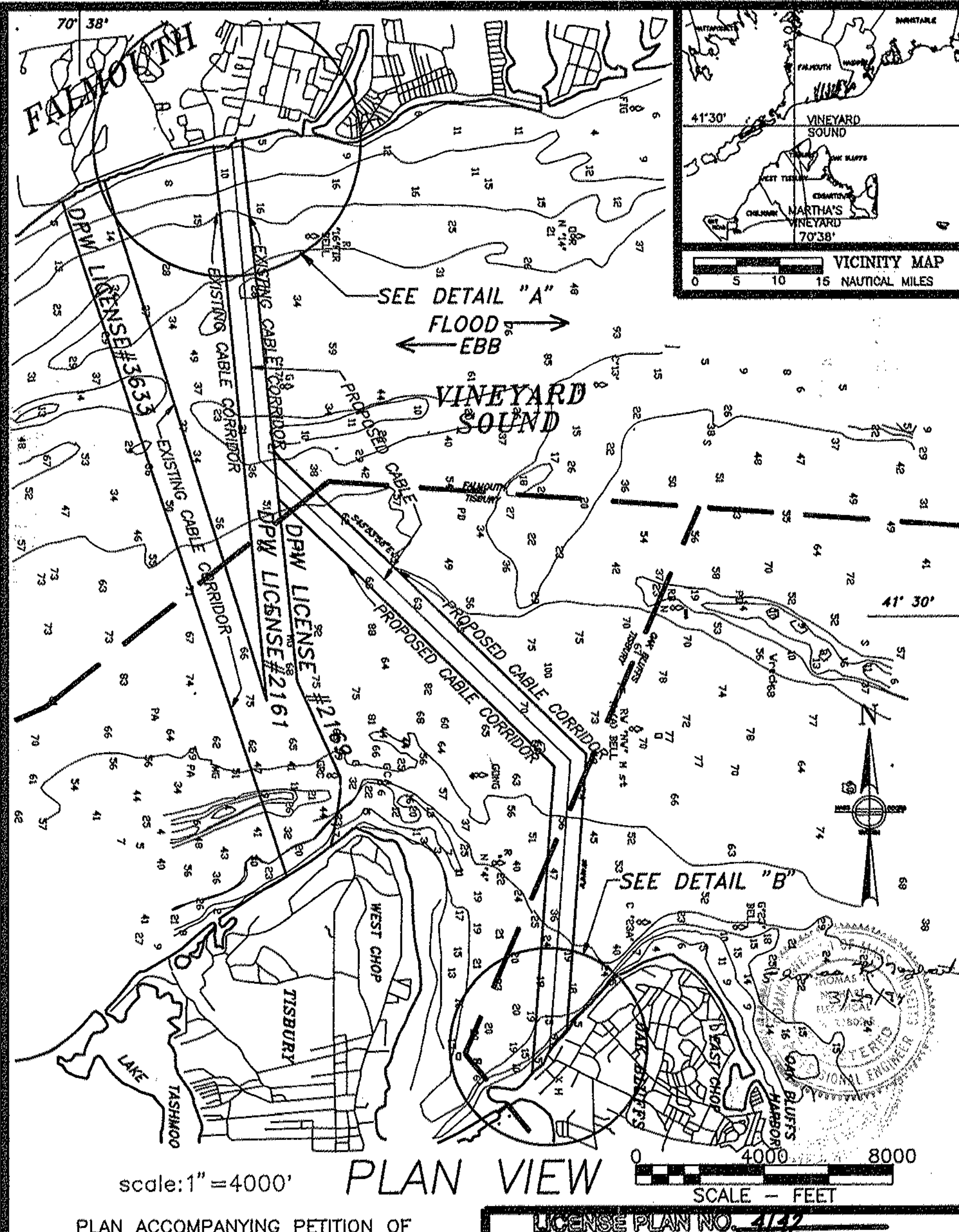
BOSTON,

Approved by the Governor.

____
Governor

BOOK 506 PAGE 32

506-32



scale:1"=4000' PLAN VIEW

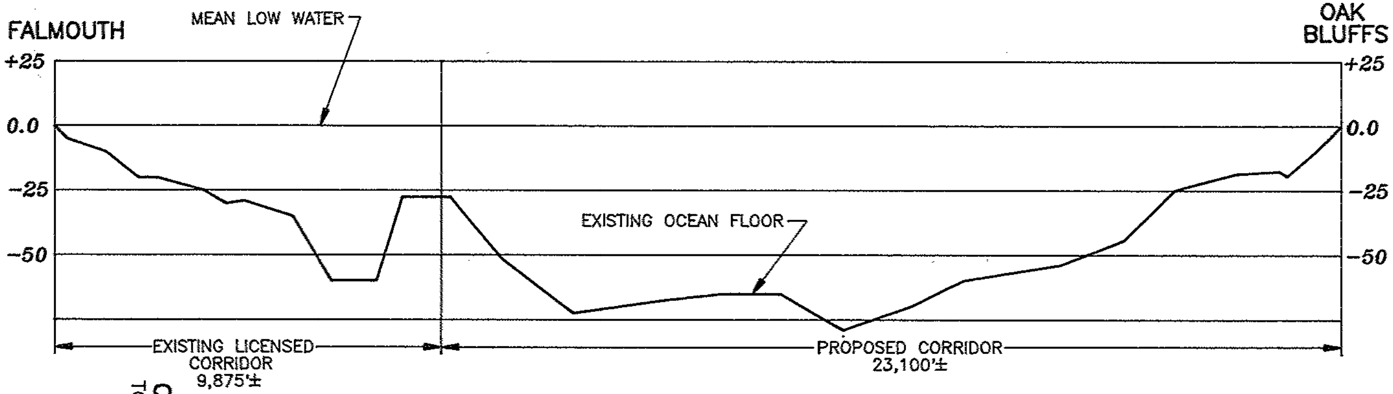
PLAN ACCOMPANYING PETITION OF
COMMONWEALTH ELECTRIC COMPANY
TO INSTALL AN ELECTRIC SUBMARINE CABLE,
FIBER OPTIC CABLE AND DUCT BANKS
IN VINEYARD SOUND
BETWEEN FALMOUTH, BARNSTABLE COUNTY, MA
& OAK BLUFFS, DUKES COUNTY, MA
MARCH 15, 1994
SHEET 1 OF 9

LICENSE PLAN NO. 4142
Approved by Department of Environmental Protection of Massachusetts
Thomas B. Powers COMMISSIONER
William A. ... DIVISION DIRECTOR
Jeffrey R. Martin Acting SECTION CHIEF
SEP 30 1994 DATE

4142

94-3411

506-33



PROFILE VIEW
OCEAN FLOOR
FALMOUTH TO OAK BLUFFS

SCALE: HORZ. 1"=3,300' VERT. 1"= 50'

LICENSE PLAN NO. 4142
Approved by Department of Environmental Protection
Date: SEP 30 1994

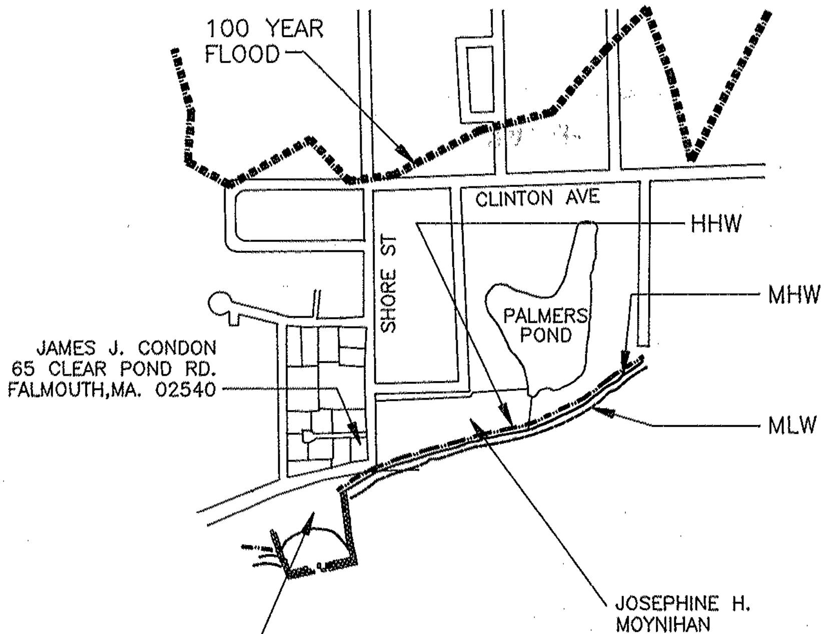
PLAN ACCOMPANYING PETITION OF
COMMONWEALTH ELECTRIC COMPANY
TO INSTALL AN ELECTRIC SUBMARINE CABLE,
FIBER OPTIC CABLE AND DUCT BANKS
IN VINEYARD SOUND
BETWEEN FALMOUTH, BARNSTABLE COUNTY, MA
& OAK BLUFFS, DUKES COUNTY, MA
MARCH 15, 1994
SHEET 2 OF 9

COMMONWEALTH OF MASSACHUSETTS
THOMAS K. NEYHART
ELECTRICAL
No. 21858
REGISTERED
PROFESSIONAL ENGINEER
3/24/94

94-3411

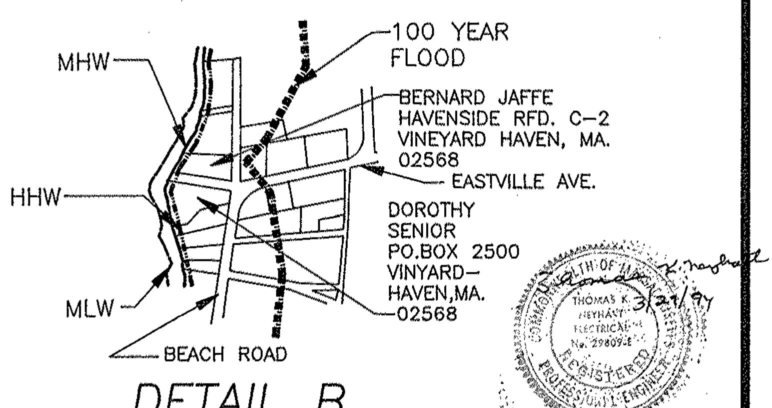
BOOK 506 PAGE 34

506-34



DETAIL A

SCALE: 1–6250



DETAIL B

SCALE: 1–6250

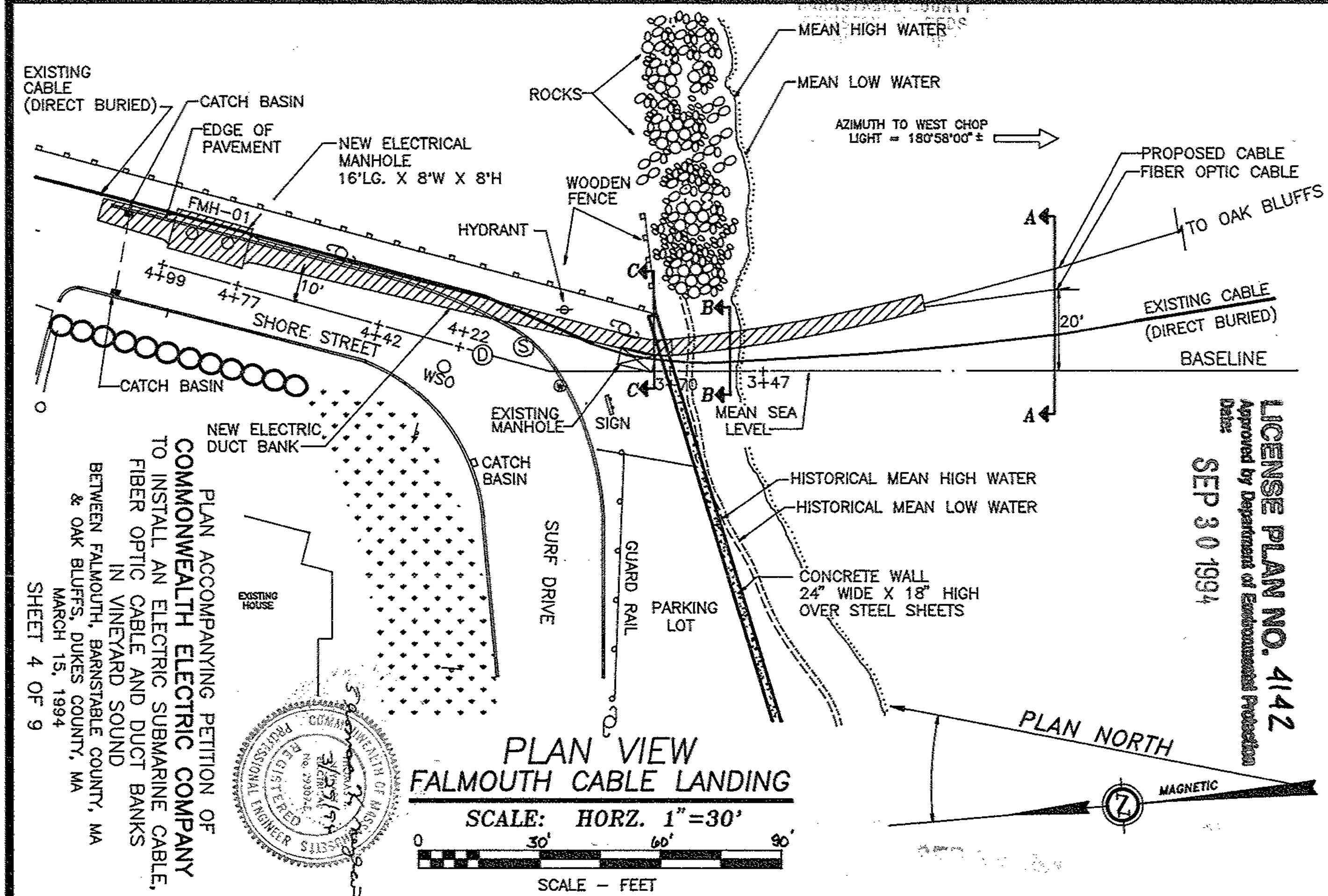
COMMONWEALTH OF MASSACHUSETTS
THOMAS K. MEYNAN
ELECTRICAL
No. 29809-E
REGISTERED PROFESSIONAL ENGINEER
3/21/94

LICENSE PLAN NO. 4142
Approved by Department of Environmental Protection
Date: SEP 30 1994

PLAN ACCOMPANYING PETITION OF
COMMONWEALTH ELECTRIC COMPANY
TO INSTALL AN ELECTRIC SUBMARINE CABLE,
FIBER OPTIC CABLE AND DUCT BANKS
IN VINEYARD SOUND
BETWEEN FALMOUTH, BARNSTABLE COUNTY, MA
& OAK BLUFFS, DUKES COUNTY, MA
MARCH 15, 1994
SHEET 3 OF 9

94-3411

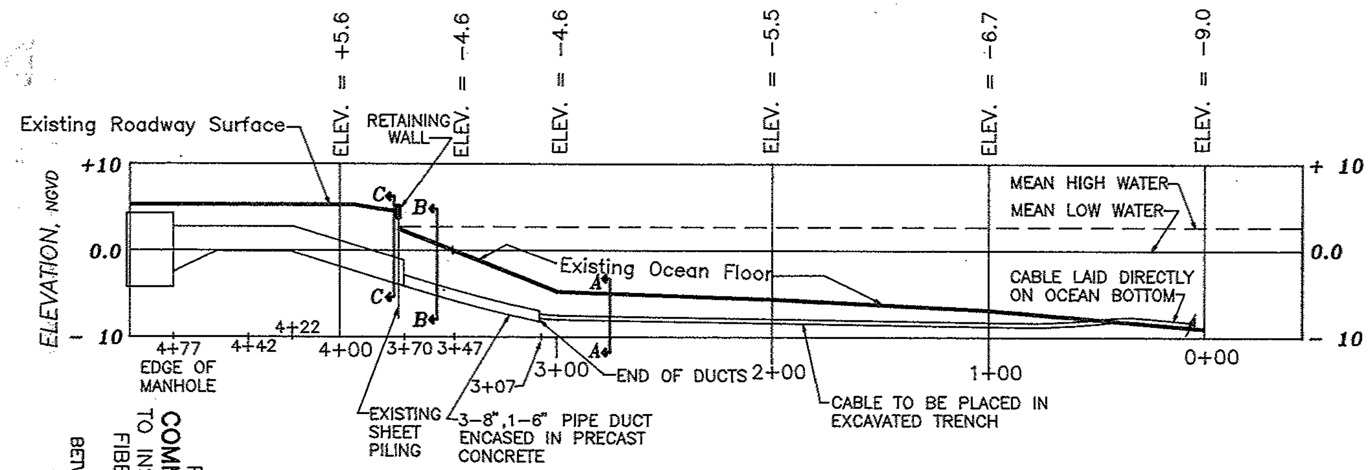
506-35



84-3411

BOOK 506 PAGE 35

506-36



PROFILE VIEW
FALMOUTH CABLE LANDING

SCALE: HORZ. 1"=60' VERT. 1"= 15'

PLAN ACCOMPANYING PETITION OF
COMMONWEALTH ELECTRIC COMPANY
TO INSTALL AN ELECTRIC SUBMARINE CABLE,
FIBER OPTIC CABLE AND DUCT BANKS
IN VINEYARD SOUND
BETWEEN FALMOUTH, BARNSTABLE COUNTY, MA
& OAK BLUFFS, DUKES COUNTY, MA
MARCH 15, 1994
SHEET 5 OF 9

COMMONWEALTH OF MASSACHUSETTS
THOMAS K. ...
ELECTRICAL
No. 29809-E
REGISTERED PROFESSIONAL ENGINEER
3/15/94

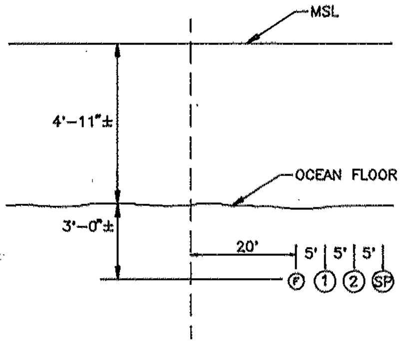
LICENSE PLAN NO. 4142
Approved by Department of Environmental Protection
Date: SEP 30 1994

94-3411

BOOK 506 PAGE 36

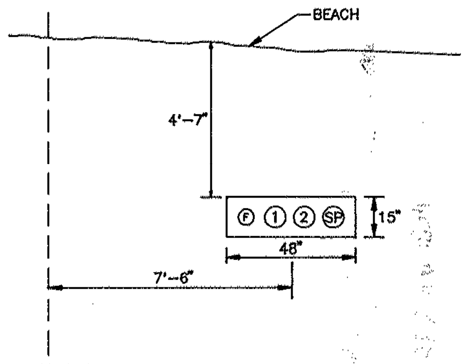
BOOK 506 PAGE 37

506-37



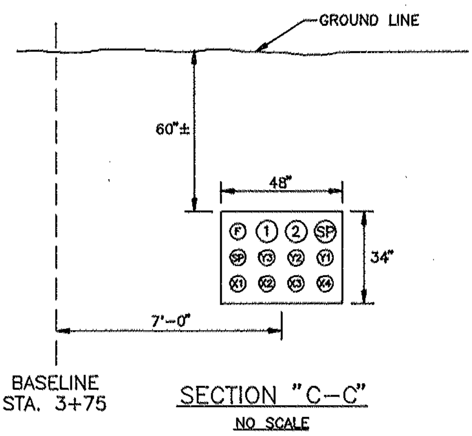
BASELINE
STA. 2+75

SECTION "A-A"
NO SCALE



BASELINE
STA. 3+55

SECTION "B-B"
NO SCALE



BASELINE
STA. 3+75

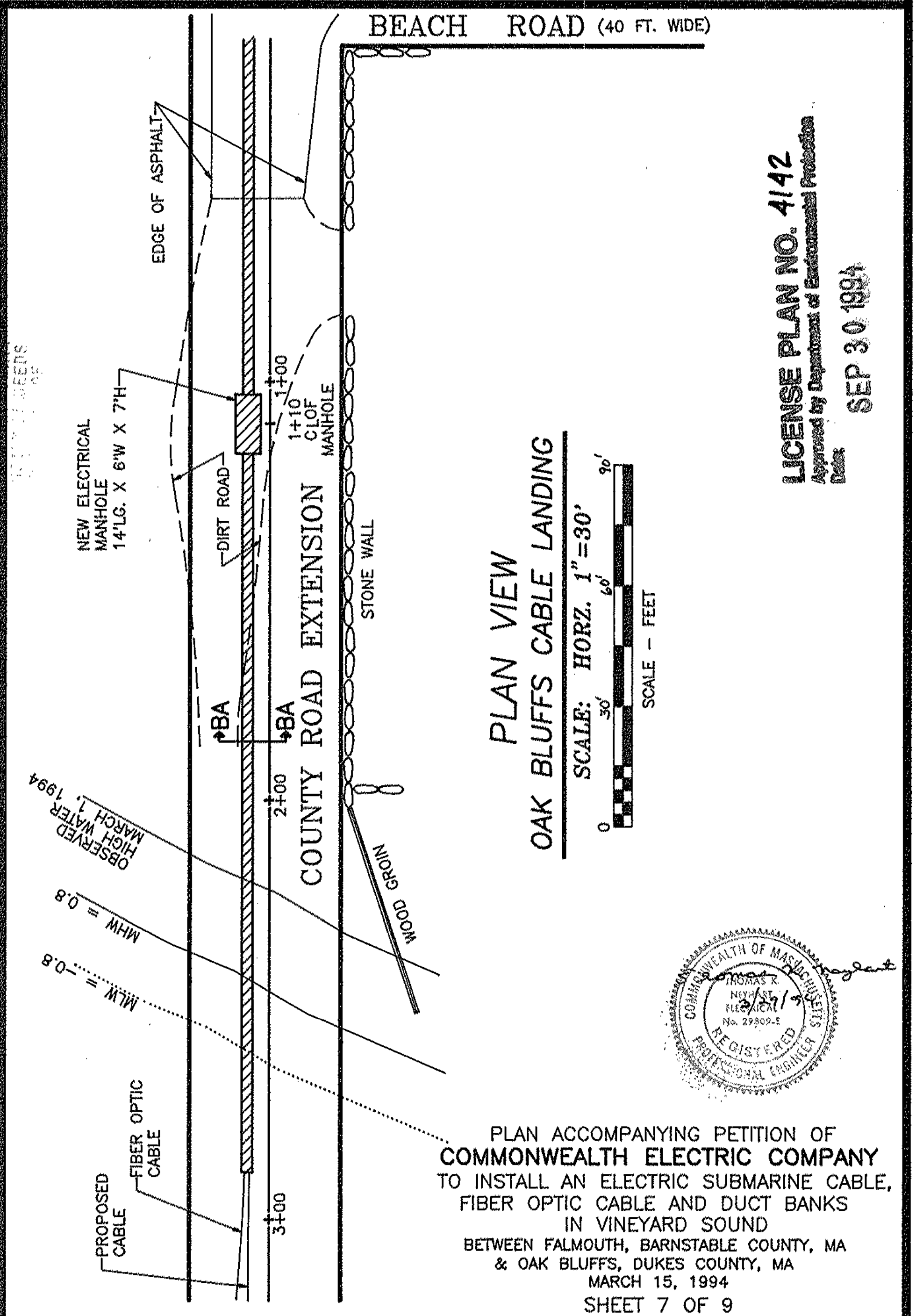
SECTION "C-C"
NO SCALE

PLAN ACCOMPANYING PETITION OF
COMMONWEALTH ELECTRIC COMPANY
TO INSTALL AN ELECTRIC SUBMARINE CABLE,
FIBER OPTIC CABLE AND DUCT BANKS
IN VINEYARD SOUND
BETWEEN FALMOUTH, BARNSTABLE COUNTY, MA
& OAK BLUFFS, DUKES COUNTY, MA
MARCH 15, 1994
SHEET 6 OF 9

LICENSE PLAN NO. 4142
Approved by Department of Environmental Protection
Date: SEP 30 1994

94-3411

506-38



PLAN ACCOMPANYING PETITION OF
COMMONWEALTH ELECTRIC COMPANY
TO INSTALL AN ELECTRIC SUBMARINE CABLE,
FIBER OPTIC CABLE AND DUCT BANKS
IN VINEYARD SOUND
BETWEEN FALMOUTH, BARNSTABLE COUNTY, MA
& OAK BLUFFS, DUKES COUNTY, MA
MARCH 15, 1994
SHEET 7 OF 9

506-39

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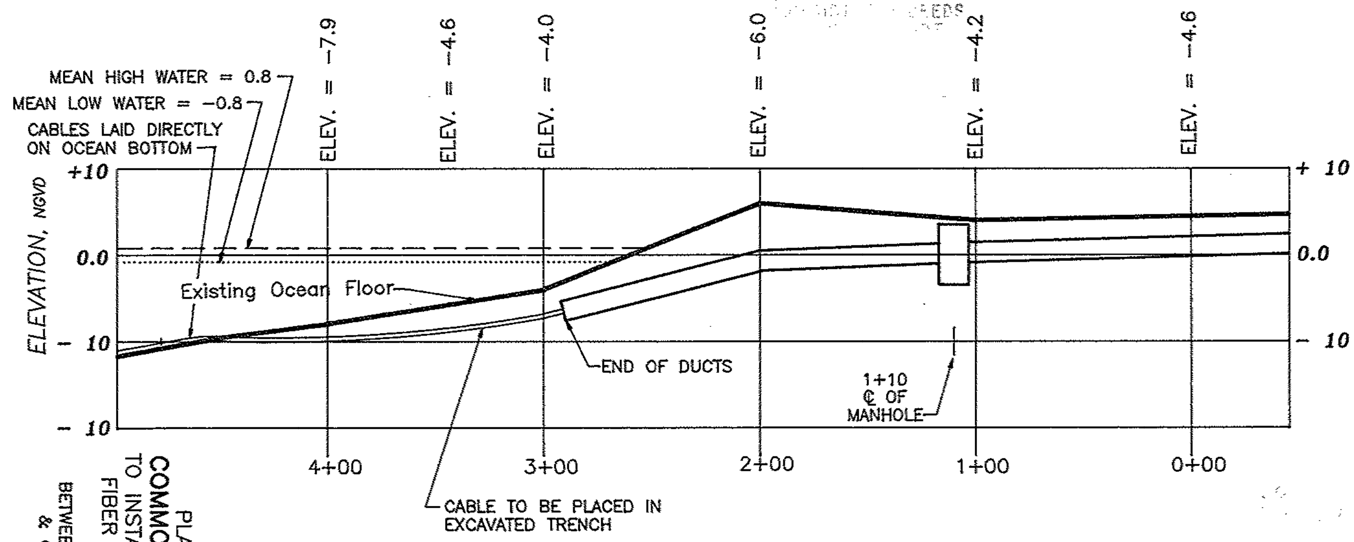


PROFILE VIEW

OAK BLUFFS CABLE LANDING

SCALE: HORZ. 1"=60' VERT. 1"= 15'

PLAN ACCOMPANYING PETITION OF
COMMONWEALTH ELECTRIC COMPANY
TO INSTALL AN ELECTRIC SUBMARINE CABLE,
FIBER OPTIC CABLE AND DUCT BANKS
IN VINEYARD SOUND
BETWEEN FALMOUTH, BARNSTABLE COUNTY, MA
& OAK BLUFFS, DUKES COUNTY, MA
MARCH 15, 1994
SHEET 8 OF 9

[Seal: COMMONWEALTH OF MASSACHUSETTS — REGISTERED PROFESSIONAL ENGINEER — No. 29809]

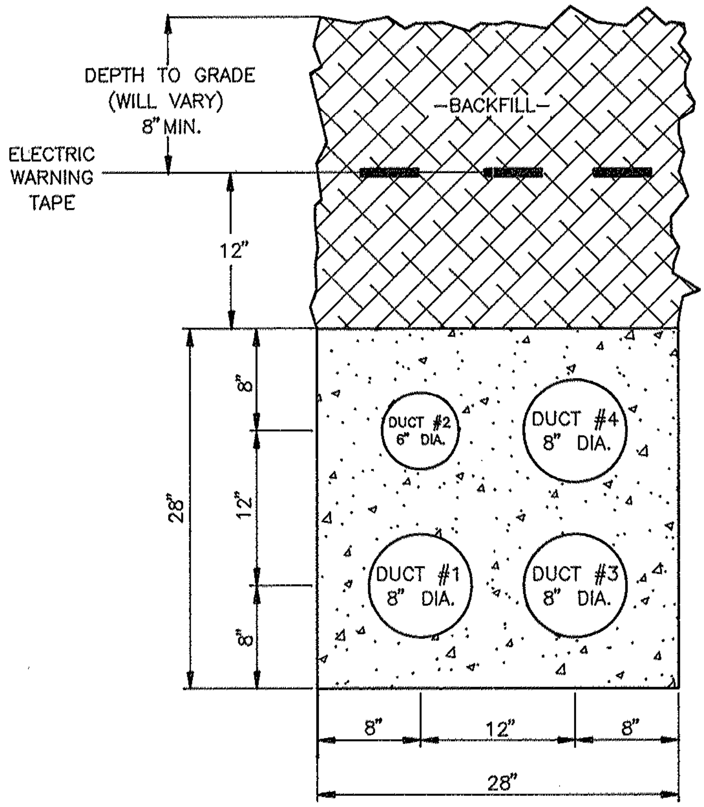
LICENSE PLAN NO. 4142
Approved by Department of Environmental Protection
Date: SEP 30 1994

94-3411

BOOK 506 PAGE 40

506-40

LICENSE PLAN NO. 4142
Approved by Department of Environmental Protection
Date: SEP 30 1994



CROSS SECTION DUCT BANK
OAK BLUFFS CABLE LANDING
VIEW BA-BA
SCALE: 1"=10"

THOMAS K. NEYHART
ELECTRICAL
No. 29809-E
REGISTERED PROFESSIONAL ENGINEER
COMMONWEALTH OF MASSACHUSETTS

PLAN ACCOMPANYING PETITION OF
COMMONWEALTH ELECTRIC COMPANY
TO INSTALL AN ELECTRIC SUBMARINE CABLE,
FIBER OPTIC CABLE AND DUCT BANKS
IN VINEYARD SOUND
BETWEEN FALMOUTH, BARNSTABLE COUNTY, MA
& OAK BLUFFS, DUKES COUNTY, MA
MARCH 15, 1994
SHEET 9 OF 9

94-3411

The Commonwealth of Massachusetts

No. 6007

Whereas, Commonwealth Electric Company

of -- Wareham --, in the County of -- Plymouth -- and Commonwealth aforesaid, has applied to the Department of Environmental Protection for license to ----- install and maintain a 23 kv submarine electric power cable and an integrated fiber-optic cable -----

and has submitted plans of the same; and whereas due notice of said application, ~~and of the time and place fixed for a hearing thereon~~, has been given, as required by law, to the - Boards of Selectmen - of the Towns of -- Falmouth, Tisbury and Oak Bluffs;

NOW, said Department, having heard all parties desiring to be heard, and having fully considered said application, hereby, subject to the approval of the Governor, authorizes and licenses the said

----- Commonwealth Electric Company -----, subject to the provisions of the ninety-first chapter of the General Laws, and of all laws which are or may be in force applicable thereto, to ----- install and maintain a 23 kv submarine electric power cable and an integrated fiber-optic cable -----

in, under and over the waters of -- Vineyard Sound and Vineyard Haven Harbor -- in the Towns of -- Falmouth, Tisbury and Oak Bluffs -- and in accordance with the locations shown and details indicated on the accompanying DEP License Plan No. 6007, (8 Sheets).

SHORE STREET - FALMOUTH

SEE BARNSTABLE PLAN BOOK 528, PAGES 46-53

The structures authorized hereby shall be limited to the following use(s): transmission of electricity and telecommunications.

This License shall expire thirty(30) years from the date of issuance. By written request of the Licensee for an amendment, the Department may grant a renewal for a term of years not to exceed that which was originally authorized.

SPECIAL WATERWAYS LICENSE CONDITIONS

1. The existing electric and fiber-optic cables illustrated on the accompanying license plan, as well as the associated pipe ducts, were previously authorized pursuant to DEP Waterways License No. 4142. Except as indicated in Special Condition #2 if this license, said existing cables shall be maintained in conformance with the terms and conditions of License No. 4142.

2. The licensee shall make every effort to bury both the proposed cables, and existing cables authorized pursuant to DEP License No. 4142, to a depth of approximately 10 feet below grade for a linear distance of approximately 13,000 feet from the Oak Bluffs landing. Said burial shall be in conformance with Sheet Nos. 1, 2, 7 and 8 of the accompanying license plan.

3. Burial shall take place by means of hydraulic jetplow embedment. No sediments shall be removed from the waters of Vineyard Sound or Vineyard Haven Harbor.

4. No maintenance dredging is authorized herein.

5. This license is granted subject to all applicable Federal, State, County and Municipal laws, ordinances and regulations, and upon the express condition that the licensee, its successors and assigns shall, upon request in writing by the Department of Environmental Protection or its successors, change the location of said cables, raise it to such height or lower it to such depth as said Department may prescribe or remove it entirely, and said licensee, by accepting this license, shall be deemed to consent and agree to the condition herein set forth, and in case of refusal or neglect on the part of said licensee, its successors and assigns to comply with this condition, then this license shall be wholly void and the Commonwealth, by its proper officers, may proceed to remove or to cause the removal of said cable at the expense of said licensee, its successors and assigns, as an unauthorized and unlawful structure in and over the waters of Vineyard Sound.

6. In partial compensation for private use of structures on Commonwealth tidelands, which interferes with the rights of the public to use such lands, the Licensee shall allow the public to pass on foot, for any purpose and from dawn to dusk, within the area of the subject properties lying seaward of the high water mark. This condition shall not be construed to prevent the Licensee from taking reasonable measures to discourage unlawful activity by users of the area(s) intended for public passage, including but not limited to trespassing on adjacent private areas and deposit of refuse of any kind or nature in the water or on the shore. Further, the exercise by the public of free on-foot passage in accordance with this condition shall be considered a permitted use to which the limited liability provisions of M.G.L. c.21, s.17c shall apply.

Please see page 3 for additional conditions to this license.---------

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Duplicate of said plan, number 6007 is on file in the office of said Department, and original of said plan accompanies this License, and is to be referred to as a part hereof.

STANDARD WATERWAYS LICENSE CONDITIONS

1. Acceptance of this Waterways License shall constitute an agreement by the Licensee to conform with all terms and conditions stated herein.

2. This License is granted upon the express condition that any and all other applicable authorizations necessitated due to the provisions hereof shall be secured by the Licensee prior to the commencement of any activity or use authorized pursuant to this License.

3. Any change in use or any substantial structural alteration of any structure or fill authorized herein shall require the issuance by the Department of a new Waterways License in accordance with the provisions and procedures established in Chapter 91 of the Massachusetts General Laws. Any unauthorized substantial change in use or unauthorized substantial structural alteration of any structure or fill authorized herein shall render this Waterways License void.

4. This Waterways License shall be revocable by the Department for noncompliance with the terms and conditions set forth herein. This license may be revoked after the Department has given written notice of the alleged noncompliance to the Licensee and those persons who have filed a written request for such notice with the Department and afforded them a reasonable opportunity to correct said noncompliance. Failure to correct said noncompliance after the issuance of a written notice by the Department shall render this Waterways License void and the Commonwealth may proceed to remove or cause removal of any structure or fill authorized herein at the expense of the Licensee, its successors and assigns as an unauthorized and unlawful structure and/or fill.

5. The structures and/or fill authorized herein shall be maintained in good repair and in accordance with the terms and conditions stated herein and the details indicated on the accompanying license plans.

6. Nothing in this Waterways License shall be construed as authorizing encroachment in, on or over property not owned or controlled by the Licensee, except with the written consent of the owner or owners thereof.

7. This Waterways License is granted subject to all applicable Federal, State, County, and Municipal laws, ordinances and regulations including but not limited to a valid final Order of Conditions issued pursuant to the Wetlands Protection Act, G.L. Chapter 131, s.40.

8. This Waterways License is granted upon the express condition that the use of the structures and/or fill authorized hereby shall be in strict conformance with all applicable requirements and authorizations of the DEP, Division of Water Pollution Control.

9. This License authorizes structure(s) and/or fill on:

_X_ Private Tidelands. In accordance with the public easement that exists by law on private tidelands, the licensee shall allow the public to use and to pass freely upon the area of the subject property lying between the high and low water marks, for the purposes of fishing, fowling, navigation, and the natural derivatives thereof.

_X_ Commonwealth Tidelands. The Licensee shall not restrict the public's right to use and to pass freely, for any lawful purpose, upon lands lying seaward of the low water mark. Said lands are held in trust by the Commonwealth for the benefit of the public.

___ a Great Pond of the Commonwealth. The Licensee shall not restrict the public's right to use and to pass freely upon lands lying seaward of the high water mark for any lawful purpose.

No restriction on the exercise of these public rights shall be imposed unless otherwise expressly provided in this license.

10. Unless otherwise expressly provided by this license, the licensee shall not limit the hours of availability of any areas of the subject property designated for public passage, nor place any gates, fences, or other structures on such areas in a manner that would impede or discourage the free flow of pedestrian movement thereon.

The amount of tidewater displaced by the work hereby authorized has been ascertained by said Department, and compensation thereof has been made by the said by paying into the treasury of the Commonwealth for each cubic yard so displaced, being the amount hereby assessed by said Department.

Nothing in this License shall be so construed as to impair the legal rights of any person.

This License shall be void unless the same and the accompanying plan are recorded within 60 days from the date hereof, in the Registry of Deeds for the Counties of -- Barnstable and Dukes.

IN WITNESS WHEREAS, said Department of Environmental Protection have hereunto set their hands this ninth day of October in the year nineteen hundred and ninety-six.

Director ______________________ Department of Environmental Protection

Program Chief ______________________

THE COMMONWEALTH OF MASSACHUSETTS

This license is approved in consideration of the payment into the treasury of the Commonwealth by the said

----- Commonwealth Electric Company -----

the further sum of

----- fifty-two thousand, fifty dollars and zero cents ($52,050.00) -----

the amount determined by the Governor as a just and equitable charge for rights and privileges hereby granted in the land of the Commonwealth.

BOSTON,

Approved by the Governor.

William F. Weld

Governor

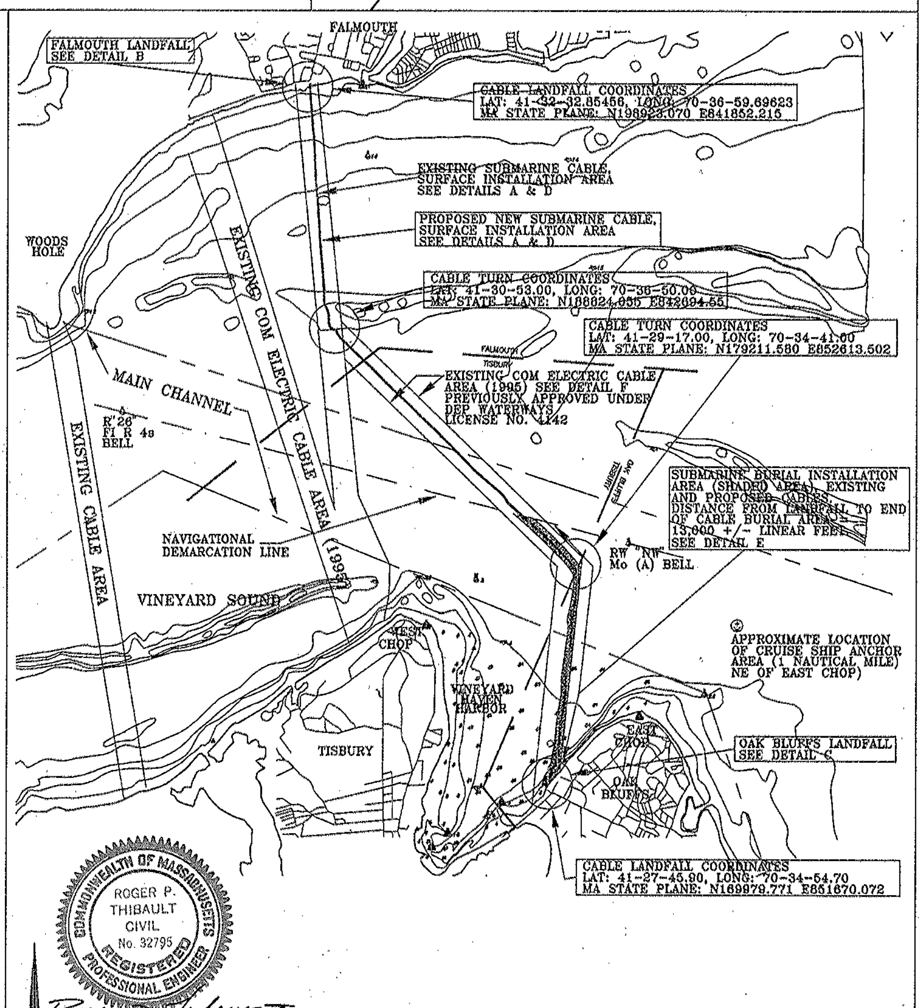
JM X

BOOK 328 PAGE 46

I CERTIFY THAT THIS PLAN AS PREPARED CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

COMMONWEALTH OF MASSACHUSETTS ROGER P. THIBAULT CIVIL No. 32795 REGISTERED PROFESSIONAL ENGINEER

Roger P. Thibault



OVERALL PROJECT PLAN/LOCUS MAP

SCALE: 1" = 5,000'-0"

SHEET 1 OF 8

PLANS ACCOMPANYING PETITION OF THE COMMONWEALTH ELECTRIC COMPANY
TO:
Install an electric and fiber optic submarine cable.
AT:
Vineyard Sound between Falmouth, Barnstable County, MA and Oak Bluffs, Dukes County, MA

AUGUST 12, 1996

LICENSE PLAN NO. 6007
Approved by Department of Environmental Protection of Massachusetts
DIVISION DIRECTOR
PROGRAM CHIEF
OCT 09 1996 DATE

W96-5188

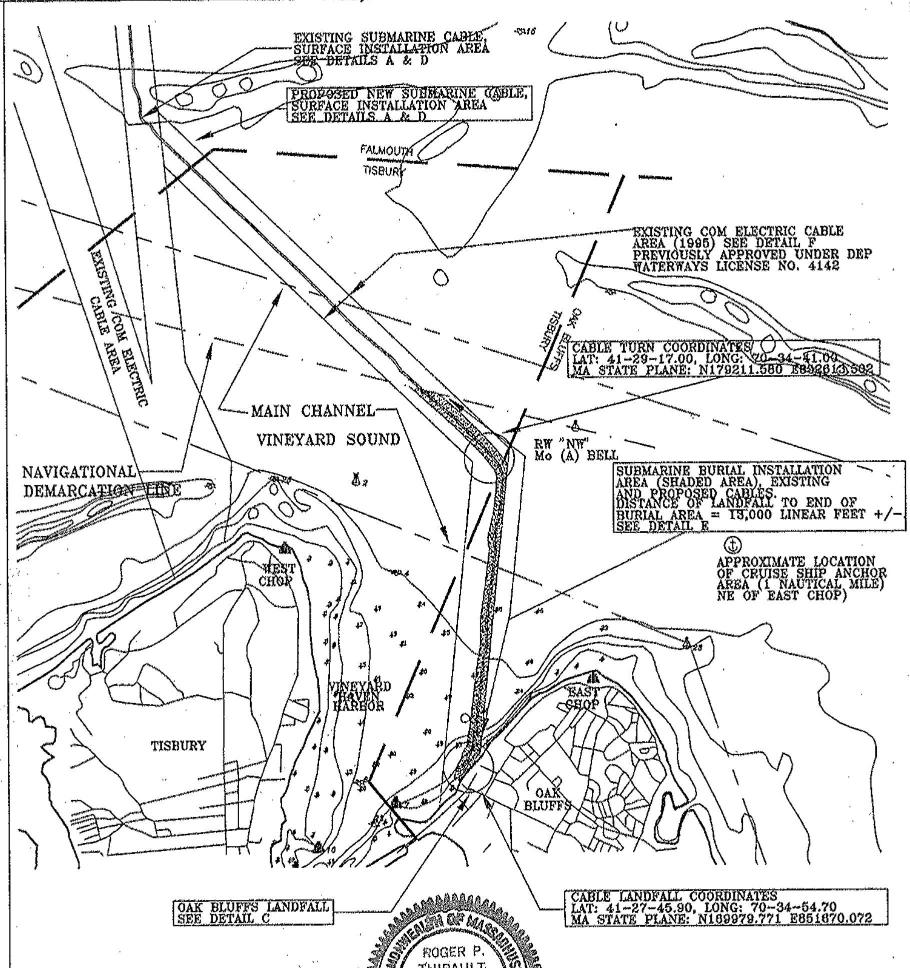
6007

BOOK 528 PAGE 47

I CERTIFY THAT THIS PLAN WAS PREPARED CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

COMMONWEALTH OF MASSACHUSETTS
ROGER P. THIBAULT
CIVIL
No. 32795
REGISTERED PROFESSIONAL ENGINEER

Roger P. Thibault



COMMONWEALTH OF MASSACHUSETTS
ROGER P. THIBAULT
CIVIL
No. 32795
REGISTERED PROFESSIONAL ENGINEER

Roger P. Thibault

SUBMARINE CABLE PLAN
TISBURY/OAK BLUFFS FOCUS AREA

SCALE: 1" = 3,500'-0"

LICENSE PLAN NO. 6007
Approved by Department of Environmental Protection
Date: OCT 09 1996

PLANS ACCOMPANYING PETITION OF THE COMMONWEALTH ELECTRIC COMPANY
AUGUST 12, 1996

SHEET 2 OF 8

BOOK 528 PAGE 49

I CERTIFY THAT THIS PLAN AS PREPARED CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

COMMONWEALTH OF MASSACHUSETTS
ROGER P. THIBAULT
CIVIL
No. 32795
REGISTERED PROFESSIONAL ENGINEER

Roger P. Thibault

BARNSTABLE ss. RECEIVED
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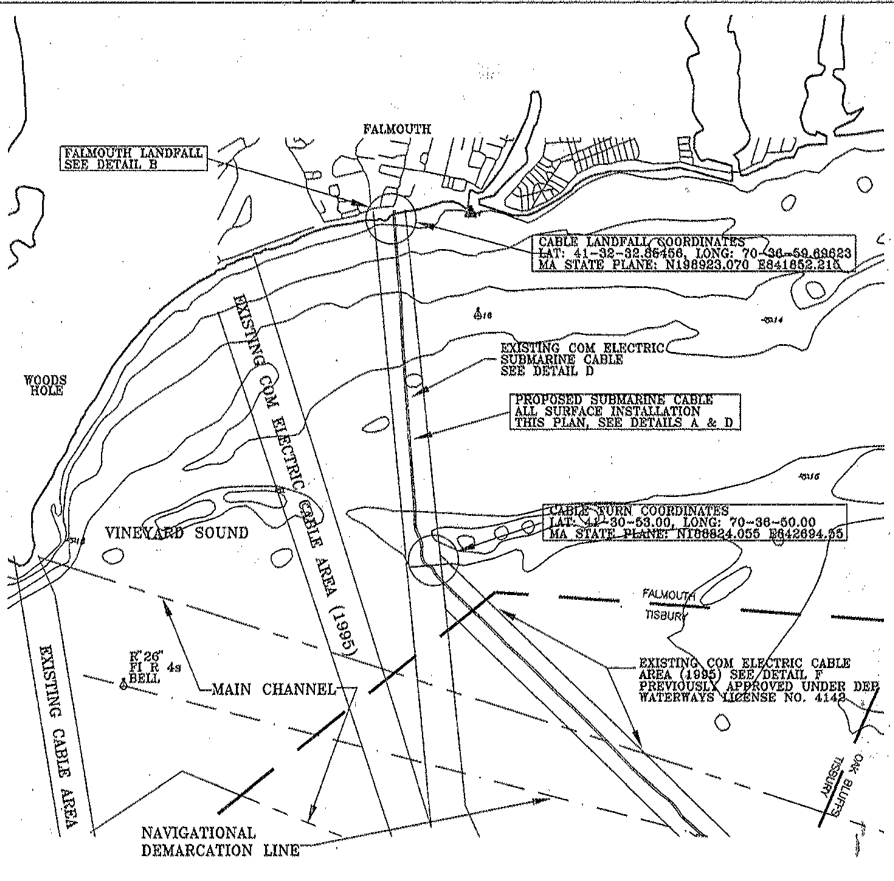

LICENSE PLAN NO. 6007
Approved by Department of Environmental Protection
Date: OCT 09 1996

COMMONWEALTH OF MASSACHUSETTS
ROGER P. THIBAULT
CIVIL
No. 32795
REGISTERED PROFESSIONAL ENGINEER

Roger P. Thibault

SUBMARINE CABLE PLAN
FALMOUTH FOCUS AREA

SCALE: 1" = 3,500'-0"

PLANS ACCOMPANYING PETITION OF THE
COMMONWEALTH ELECTRIC COMPANY
AUGUST 12, 1996

SHEET 3 OF 8

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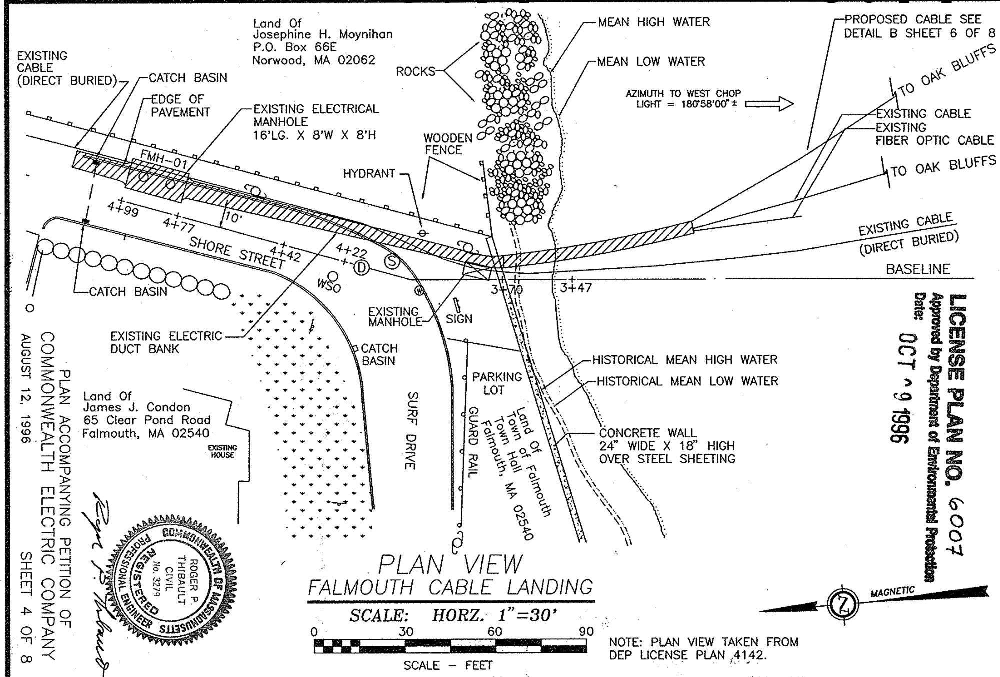
AND AS RECORDED



PLAN VIEW
FALMOUTH CABLE LANDING

SCALE: HORZ. 1"=30'

0 30 60 90

SCALE - FEET

NOTE: PLAN VIEW TAKEN FROM DEP LICENSE PLAN 4142.

I CERTIFY THAT THIS PLAN AS PREPARED CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

COMMONWEALTH OF MASSACHUSETTS
ROGER P. THIBAULT
CIVIL
No. 32979
REGISTERED PROFESSIONAL ENGINEER

BOOK 528 PAGE 49

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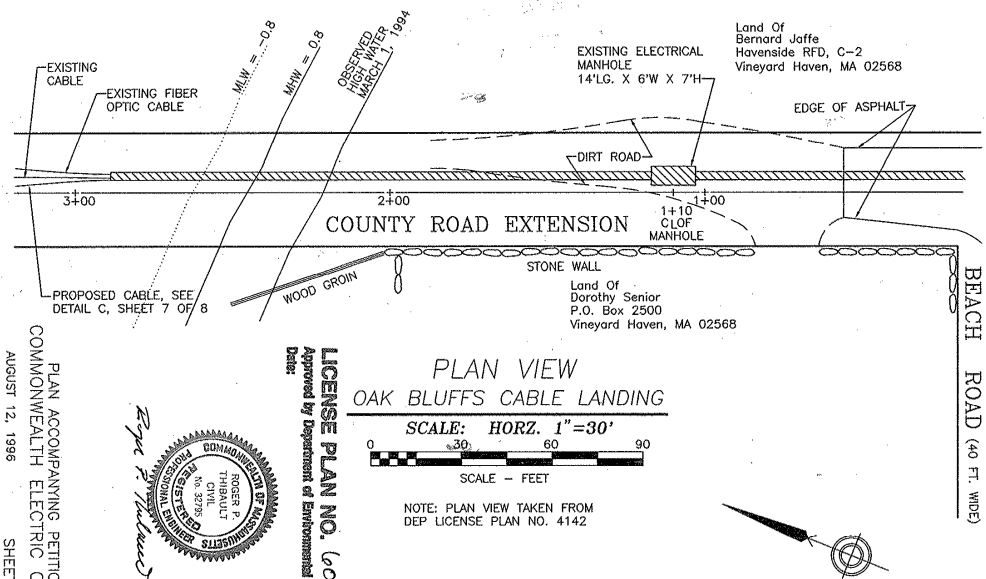


PLAN VIEW

OAK BLUFFS CABLE LANDING

SCALE: HORZ. 1"=30'

0 30 60 90

SCALE – FEET

NOTE: PLAN VIEW TAKEN FROM DEP LICENSE PLAN NO. 4142

LICENSE PLAN NO. 6007

Approved by Department of Environmental Protection

Date:

OCT 09 1996

PLAN ACCOMPANYING PETITION OF COMMONWEALTH ELECTRIC COMPANY

AUGUST 12, 1996

SHEET 5 OF 8

COMMONWEALTH OF MASSACHUSETTS ROGER P. THIBAULT CIVIL No. 32795 REGISTERED PROFESSIONAL ENGINEER

I CERTIFY THAT THIS PLAN AS PREPARED CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

COMMONWEALTH OF MASSACHUSETTS ROGER P. THIBAULT CIVIL No. 32795 REGISTERED PROFESSIONAL ENGINEER

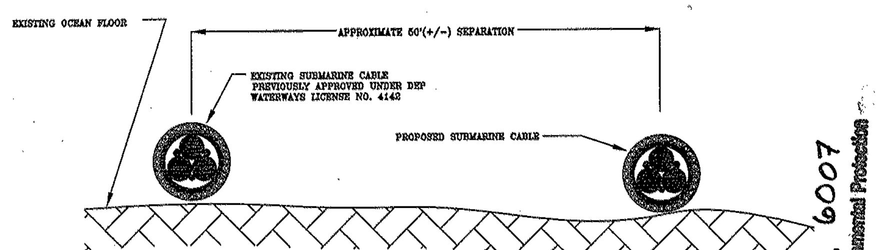
BOOK 528 PAGE 50

BOOK 528 PAGE 51

I CERTIFY THAT THIS PLAN HAS PREPARED CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

COMMONWEALTH OF MASSACHUSETTS
ROGER P. THIBAULT
CIVIL
No. 32795
REGISTERED PROFESSIONAL ENGINEER

Roger P. Thibault



DETAIL A

TYPICAL CROSS SECTION VIEW FROM THE SOUTH
NEW AND PROPOSED SUBMARINE CABLE
SURFACE INSTALLAION AREA
NOT TO SCALE

LICENSE PLAN NO. 6007
Approved by Department of Environmental Protection
Date: OCT 09 1996

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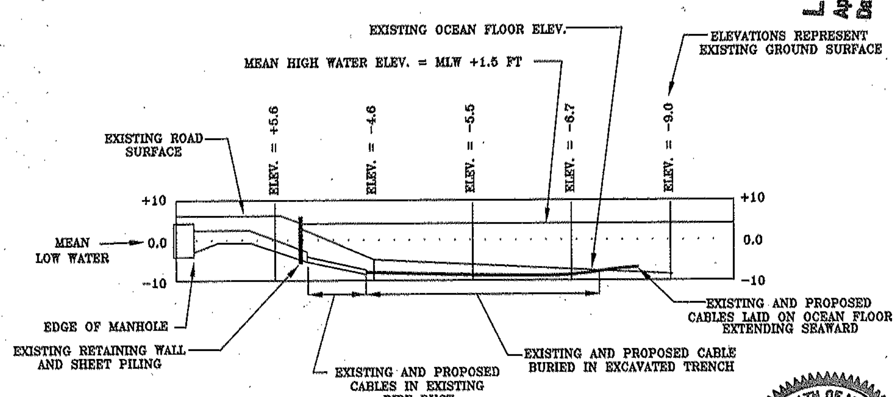


DETAIL B

PROFILE VIEW
SURFACE INSTALLATION SUBMARINE CABLE – FALMOUTH LANDFALL
NOT TO SCALE
NOTE: EXISTING CABLE LANDFALL CONDUITS PREVIOUSLY APPROVED UNDER DEP WATERWAYS LICENSE NO. 4142

COMMONWEALTH OF MASSACHUSETTS
ROGER P. THIBAULT
CIVIL
No. 32795
REGISTERED PROFESSIONAL ENGINEER

Roger P. Thibault

SUBMARINE CABLE PLAN
TYPICAL CROSS SECTIONS AND DETAILS

NOT TO SCALE UNLESS OTHERWISE NOTED

PLANS ACCOMPANYING PETITION OF THE
COMMONWEALTH ELECTRIC COMPANY
AUGUST 12, 1996

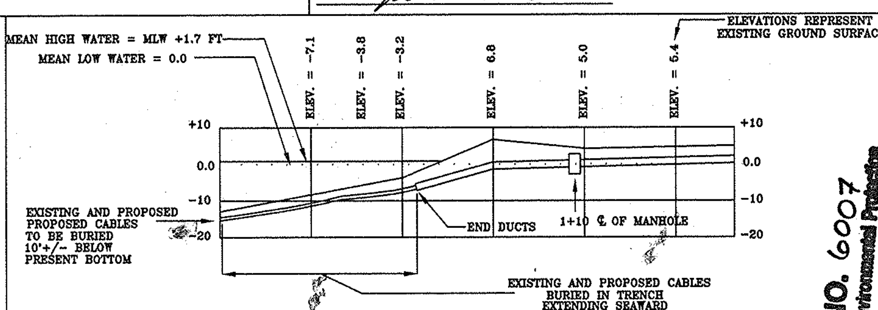
SHEET 6 OF 8

BOOK 528 PAGE 52

I CERTIFY THAT THIS PLAN HAS PREPARED CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

COMMONWEALTH OF MASSACHUSETTS
ROGER P. THIBAULT
CIVIL
No. 32795
REGISTERED PROFESSIONAL ENGINEER

Roger P. Thibault



DETAIL C

PROFILE VIEW

BURIED SUBMARINE CABLE - OAK BLUFFS LANDFALL

NOT TO SCALE

NOTE: EXISTING CABLE LANDFALL CONDUITS PREVIOUSLY APPROVED UNDER DEP WATERWAYS LICENSE NO. 4142

LICENSE PLAN NO. 6007
Approved by Department of Environmental Protection
Date: OCT 09 1996

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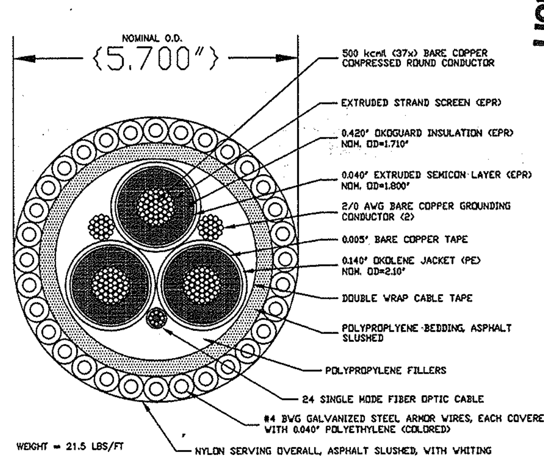


3/C 500 KCMIL OKOGUARD SHLD OKOLENE WITH 2-2/0 AWG GRD & 1 - SINGLE MODE FIBER OPTIC CABLE, OKOLENE COVERED #4 BWG STEEL ARMOR WIRES 23 KV

COMMONWEALTH OF MASSACHUSETTS
ROGER P. THIBAULT
CIVIL
No. 32795
REGISTERED PROFESSIONAL ENGINEER

Roger P. Thibault

DETAIL D

TYPICAL CROSS SECTION

EXISTING AND PROPOSED

MARTHA'S VINEYARD SUBMARINE CABLES

NOT TO SCALE

SUBMARINE CABLE PLAN
TYPICAL CROSS SECTIONS AND DETAILS

NOT TO SCALE UNLESS OTHERWISE NOTED

PLANS ACCOMPANYING PETITION OF THE
COMMONWEALTH ELECTRIC COMPANY
AUGUST 12, 1996

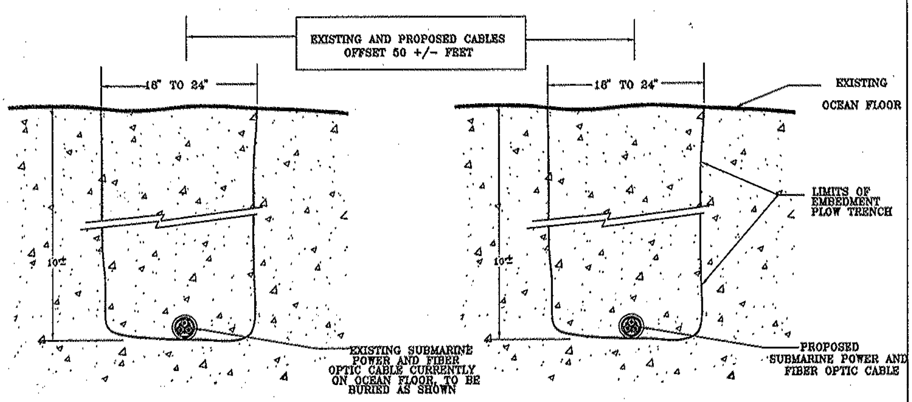
SHEET 7 OF 8

BOOK 528 PAGE 53

I CERTIFY THAT THIS PLAN AS PREPARED CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

COMMONWEALTH OF MASSACHUSETTS
ROGER P. THIBAULT
CIVIL
No. 32795
REGISTERED PROFESSIONAL ENGINEER

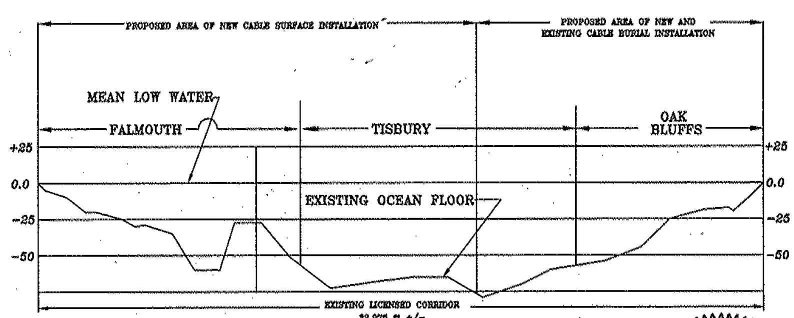
Roger P. Thibault



DETAIL E

TRENCH CROSS SECTION VIEW FROM THE SOUTH
SUBMARINE BURIAL INSTALLATION AREA
EXISTING AND PROPOSED CABLES
NOT TO SCALE

LICENSE PLAN NO. 6007
Approved by Department of Environmental Protection
Date: OCT 09 1996



DETAIL F

OCEAN FLOOR PROFILE VIEW
FALMOUTH TO OAK BLUFFS
NOT TO SCALE

COMMONWEALTH OF MASSACHUSETTS
ROGER P. THIBAULT
CIVIL
No. 32795
REGISTERED PROFESSIONAL ENGINEER

Roger P. Thibault

SUBMARINE CABLE PLAN
TYPICAL CROSS SECTIONS AND DETAILS

NOT TO SCALE UNLESS OTHERWISE NOTED

PLANS ACCOMPANYING PETITION OF THE
COMMONWEALTH ELECTRIC COMPANY
AUGUST 12, 1996

SHEET 8 OF 8

The Commonwealth of Massachusetts

No. 13588

Whereas, Comcast, Northeast Division and NSTAR Electric Company

of -- Chelmsford -- in the County of -- Middlesex – and Westwood—in the County of – Norfolk, respectively, have applied to the Department of Environmental Protection to -- construct and maintain an approximately 4.5 mile long electric transmission and communications cable and to dredge; -------------------------------

and have submitted plans of the same; and whereas due notice of said application, and of the time and place fixed for a hearing thereon, has been given, as required by law, to the -- Towns -- of –Falmouth and Tisbury------

NOW, said Department, having heard all parties desiring to be heard, and having fully considered said application, hereby, subject to the approval of the Governor, authorizes and licenses the said

Comcast, Northeast Division and NSTAR Electric Company --, subject to the provisions of the ninety-first chapter of the General Laws, and of all laws which are or may be in force applicable thereto, to -- construct and maintain an approximately 4.5 mile long electric transmission and communications cable and to dredge; -------------------------------

in flowed tidelands of – Vineyard Sound-- in the -- Towns -- of – Falmouth and Tisbury----in accordance with the locations shown and details indicated on the accompanying DEP License Plans No. 13588 dated August 28, 2013 (7 sheets).

This License is valid for a term of thirty (30) years from the date of issuance. By written request of the Licensee for an amendment, the Department may grant a renewal for the term of years not to exceed that authorized in this License.

The structures authorized hereby shall be limited to the following uses: transmission of electricity and communications services to the public.

This License is subject to the following Special and Standard Conditions:

1. This license is granted subject to all applicable Federal, State, County and Municipal laws, ordinances and, and upon the express condition that the licensee, its successors and assigns shall, upon request in writing by the Department of Environmental Protection or its successors, change the location of said cable, raise it to such height or lower it to such depth as said Department may prescribe or remove the cable entirely based on a demonstrated navigational or environmental issue, and said licensee, by accepting this license, shall be deemed to consent and agree to the condition herein set forth, and in case of refusal or neglect on the part of said licensee, its successors and assigns to comply with this condition, then this license shall be wholly void and the Commonwealth, by its proper officers, may proceed to remove or cause the removal of said circuit at the expense of said licensee, its successors and assigns, as an unauthorized and unlawful structure in and under the waters of Vineyard Sound.

2. The Licensees shall construct and maintain the submarine cables as described and delineated on the License Plans and in the application filed for this project dated May 7, 2013, on file with the Department.

3. The Licensees shall maintain adequate sediment cover over the cable and conduit, to the extent practicable, to ensure that the structures do not pose a hazard to navigation or fishing gear. The Licensees shall notify the Department in the event that the cable or conduit becomes exposed and any measures to be implemented in compliance with this condition.

4. The Licensee shall allow the public to pass freely on foot for any lawful purpose within the area of any of the subject properties lying seaward of the historic mean high water mark where the circuits make landfall, as located on the License Plans. Passage within said area shall be available to the general public, free of charge, twenty-four (24) hours a day. This condition shall not be construed to prevent the Licensee from taking reasonable measures to discourage unlawful activity by users of the area intended for public passage. The intent of this condition is to provide public activities such as strolling and viewing of the bay in addition to the public rights of fishing, fowling, and navigation that already exist in private tidelands. Said allowance of passage shall commence immediately upon completion of construction of the project.

5. Within the waters of the Commonwealth, the Licensee shall in no way discourage, restrict, impede or otherwise interfere with the exercise of public rights of access to tidelands for fishing, fowling, navigation and the natural derivatives thereof upon completion of construction. During construction, the licensee may implement reasonable measures necessary to protect public safety. To mitigate temporary impacts to navigation, the Licensees shall: a) install the cable between October and May to minimize impacts to recreational boating, and b) coordinate with the U.S. Coast Guard, the harbormasters of Tisbury and Falmouth, and the Massachusetts Steamship Authority prior to initiating cable installation and implement measures deemed necessary by those agencies to mitigate impacts to navigation

6. Prior to the commencement of work, the Licensees shall make a payment of twenty thousand dollars ($20,000) to the Massachusetts Ocean Resources and Waterways Trust Fund, and provide proof of said payment to the Department within two weeks of the payment. In the event that the project does not rely solely on the use of an ROV and/or hydroplow and work vessels with dynamic positioning systems to install the cable, with the exception of small vessels used by divers and post-construction monitoring vessels, the Licensees shall inquire of the Department as

to whether a new or amended license is required reflecting a higher Ocean Development Mitigation Fee, as described in the MEPA Certificates issued for this project.

7. All vessels used in the project shall be maintained in sea-worthy condition. Construction and construction-support vessels shall, at a minimum, implement best management practices to control discharge of drainage and trash. Discharges of sanitary waste, grey water, and other discharges are prohibited unless otherwise authorized a NPDES permit, NPDES general permit, or other NPDES authorization applicable to this project.

8. Any changes made to the project as described in the Chapter 91 License Application, License Plans or supplemental documents on file with the Department will require further notification and approval by the Department in accordance with 310 CMR 9.22 or 9.24.

9. Except for any monitoring, mitigation, operation, maintenance, or other activities specifically authorized by the Department for a different timeframe, all construction work authorized herein shall be completed within five (5) years of the date of issuance of this License. Said construction period may be extended by the Department for one or more one year periods without public notice, provided that the Applicant submits to the Department, thirty (30) days prior to the expiration of said construction period, a written request to extend the period and provides an adequate justification for said extension

10. The Licensee shall request, in writing, that the Department issue a Certificate of Compliance in accordance with 310 CMR 9.19 within sixty (60) days of completion of the licensed project. The request shall include a set of plans depicting the actual as-built location of the circuits. The request shall be accompanied by a certification by a registered professional engineer or registered land surveyor licensed in the Commonwealth that the project was completed in accordance with the License.

11. Upon the nullification, expiration, or revocation of this License, the Licensee shall remove all structures authorized in this License, unless the Department determines that continued existence of said structures will promote the public interests served by M.G.L. c. 91 or that removal methods pose a greater risk or environmental impact. Such removal shall take place upon written notice to and at the direction of the Department.

12. The total Occupation Fee for this project is $156,236.00. This payment shall be made in a series of five installments of $31,247.20. The first installment shall be made prior to license issuance. The remaining four installments shall be made annually, no later than the anniversary date of the issuance of this License.

Please see following Standard Waterways Dredging Conditions, page 4 and following Standard Waterways License Conditions, page 5. --

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A duplicate of said plans, DEP License Plan No. (13588) (7 sheets), is on file in the office of said Department, and the original of said plans accompanies this License and is to be referred to as a part hereof.

STANDARD WATERWAYS DREDGING CONDITIONS

1. Acceptance of this Waterways License shall constitute an agreement by the licensee to conform to all terms and conditions stated herein.

2. This license is issued upon the express condition that any and all other applicable authorizations necessitated due to the provisions hereof shall be secured by the licensee prior to the commencement of any activity hereby authorized.

3. This license shall be revocable by the Department for noncompliance with the terms and conditions set forth herein. This license may be revoked after the Department has given written notice of the alleged noncompliance to the licensee, or his agent, and those persons who have filed a written request, with the Department, for such notice and has afforded the licensee a reasonable opportunity to correct said noncompliance. Failure to correct said noncompliance after the issuance of a written notice by the Department shall render this license void.

4. This license is issued subject to all applicable federal, state, county, and municipal laws, ordinances, by-laws, and regulations, including but not limited to, a valid Order of Conditions issued pursuant to the Wetlands Protection Act, M.G.L. Chapter 131, s.40. The Department acknowledges that certain state and local approvals may be in the form of a composite permit issued by the Energy Facilities Siting Board. In particular, this issuance is subject to the provisions of Sections 52 to 56, inclusive of Chapter 91 of the General Law and its Regulations 310 CMR 9.40(5), which provides, in part, that the transportation and dumping of the dredge material shall be done under the supervision of the Department, and, when required, the licensee shall provide at his/her expense a dredge inspector approved by the Department. When said inspector is required, a report certified by the dredge inspector shall be submitted to the Department within 30 days after the completion of the dredging. The report shall include daily logs of the dredging operation indicating volume of dredge material, point of origin, point of destination and other appropriate information.

5. This Waterways License is issued upon the express condition that dredging and transportation and disposal of dredge material shall be in strict conformance with all applicable requirements and authorizations of the DEP, Wetlands and Waterways Regulation Program.

6. All subsequent maintenance dredging and transportation and disposal of this dredge material, during the term of this license, shall conform to all standards and conditions applied to the original dredging operation performed under this license.

7. After completion of the work authorized, the licensee shall furnish, to the Department a suitable plan showing the depths at mean low water over the area dredged. The dredging under this license shall be conducted as to cause no unnecessary obstruction of the free passage of vessels. In doing the dredging authorized, care shall be taken to cause no shoaling. If, however, any shoaling is caused, the licensee shall, at his expense remove the shoal areas. The licensee shall pay all costs of supervision, and if at any time the Department deems necessary a survey or surveys of the area dredged, the licensee shall pay all costs associated with such work. Nothing in this license shall be construed as to impair the legal rights of any persons, or authorize dredging on land not owned by the licensee without consent of the owner(s) of such property.

8. The licensee shall assume and pay all claims and demands against the Commonwealth of Massachusetts, its officers, employees, and agents arising in any manner from the work authorized herein, and shall save harmless and indemnify the Commonwealth of Massachusetts, its officers, employees, and agents from all claims, audits, damages, costs and expenses incurred by reason thereof.

9. The licensee shall, at least three days before commencing any dredging in the tide water, give written notice to the Department of the time, location and amount of the proposed work.

10. Whosoever violates any provisions of this license shall be subject to a fine of $25,000 per day for each day such violation occurs or continues, or by imprisonment for not more than one year, or both such fine and imprisonment; or shall be subject to civil penalty not to exceed $25,000 per day for each day such violation occurs or continues.

STANDARD WATERWAYS LICENSE CONDITIONS

1. Acceptance of this Waterways License shall constitute an agreement by the Licensee to conform with all terms and conditions stated herein.

2. This License is granted upon the express condition that any and all other applicable authorizations necessitated due to the provisions hereof shall be secured by the Licensee prior to the commencement of any activity or use authorized pursuant to this License.

3. Any change in use or any substantial structural alteration of any structure or fill authorized herein shall require the issuance by the Department of a new Waterways License in accordance with the provisions and procedures established in Chapter 91 of the Massachusetts General Laws. Any unauthorized substantial change in use or unauthorized substantial structural alteration of any structure or fill authorized herein shall render this Waterways License void.

4. This Waterways License shall be revocable by the Department for noncompliance with the terms and conditions set forth herein. This License may be revoked after the Department has given written notice of the alleged noncompliance to the Licensee and those persons who have filed a written request for such notice with the Department and afforded them a reasonable opportunity to correct said noncompliance. Failure to correct said noncompliance after the issuance of a written notice by the Department shall render this Waterways License void and the Commonwealth may proceed to remove or cause removal of any structure or fill authorized herein at the expense of the Licensee, its successors and assigns as an unauthorized and unlawful structure and/or fill.

5. The structures and/or fill authorized herein shall be maintained in good repair and in accordance with the terms and conditions stated herein and the details indicated on the accompanying license plans.

6. Nothing in this Waterways License shall be construed as authorizing encroachment in, on or over property not owned or controlled by the Licensee, except with the written consent of the owner or owners thereof.

7. This Waterways License is granted subject to all applicable Federal, State, County, and Municipal laws, ordinances and regulations including but not limited to a valid final Order of Conditions issued pursuant to the Wetlands Protection Act, M.G.L. Chapter 131, s.40. The Department acknowledges that certain state and local approvals may be in the form of a composite permit issued by the Energy Facilities Siting Board.

8. This Waterways License is granted upon the express condition that the use of the structures and/or fill authorized hereby shall be in strict conformance with all applicable requirements and authorizations of the DEP.

9. This License authorizes structure(s) and/or fill on:

_X_ Private Tidelands. In accordance with the public easement that exists by law on private tidelands, the Licensee shall allow the public to use and to pass freely upon the area of the subject property lying between the high and low water marks, for the purposes of fishing, fowling, navigation, and the natural derivatives thereof.

_X_ Commonwealth Tidelands. The Licensee shall not restrict the public's right to use and to pass freely, for any lawful purpose, upon lands lying seaward of the low water mark. Said lands are held in trust by the Commonwealth for the benefit of the public.

__ a Great Pond of the Commonwealth. The Licensee shall not restrict the public's right to use and to pass freely upon lands lying seaward of the high water mark for any lawful purpose

No restriction on the exercise of these public rights shall be imposed unless otherwise expressly provided in this License, unless otherwise expressly provided by this License, the Licensee shall not limit the hours of availability of any areas of the subject property designated for public passage, nor place any gates, fences, or other structures on such areas in a manner that would impede or discourage the free flow of pedestrian movement thereon.

The amount of tidewater displaced by the work hereby authorized has been ascertained by said Department, and compensation thereof has been made by the said – Comcast-Northeast Division and NSTAR Electric Company -- by paying into the treasury of the Commonwealth -- two dollars and zero cents ($2.00) -- for each cubic yard so displaced, being the amount hereby assessed by said Department. (0.00 cubic yards = $0.00).

Nothing in this License shall be so construed as to impair the legal rights of any person.

This License shall be void unless the same and the accompanying plan are recorded within sixty (60) days from the date hereof, in the Barnstable County Registry of Deeds and Dukes County Registry of Deeds.

IN WITNESS WHEREAS, said Department of Environmental Protection have hereunto set their hands this 31st day of October in the year two thousand and thirteen.

Commissioner ______________ Department of Environmental Protection

Program Chief ______________

THE COMMONWEALTH OF MASSACHUSETTS

This license is approved in consideration of the payment into the treasury of the Commonwealth by the said – Comcast, Northeast Division and NSTAR Electric Company------------------------------------

-- the further sum of – One Hundred Fifty Six Thousand and Two Hundred and Thirty Six Dollars ($156,236.00) --

the amount determined by the Governor as a just and equitable charge for rights and privileges hereby granted in the land of the Commonwealth.

BOSTON,

Approved by the Governor.

____
Governor

SHEET INDEX:

SITE INFORMATION:

VINEYARD SOUND FROM FALMOUTH TO TISBURY

AT: FALMOUTH/TISBURY

IN: VINEYARD SOUND

BARNSTABLE/DUKES COUNTY
COMMONWEALTH OF MASSACHUSETTS

0 3,000 6,000

SCALE IN FEET

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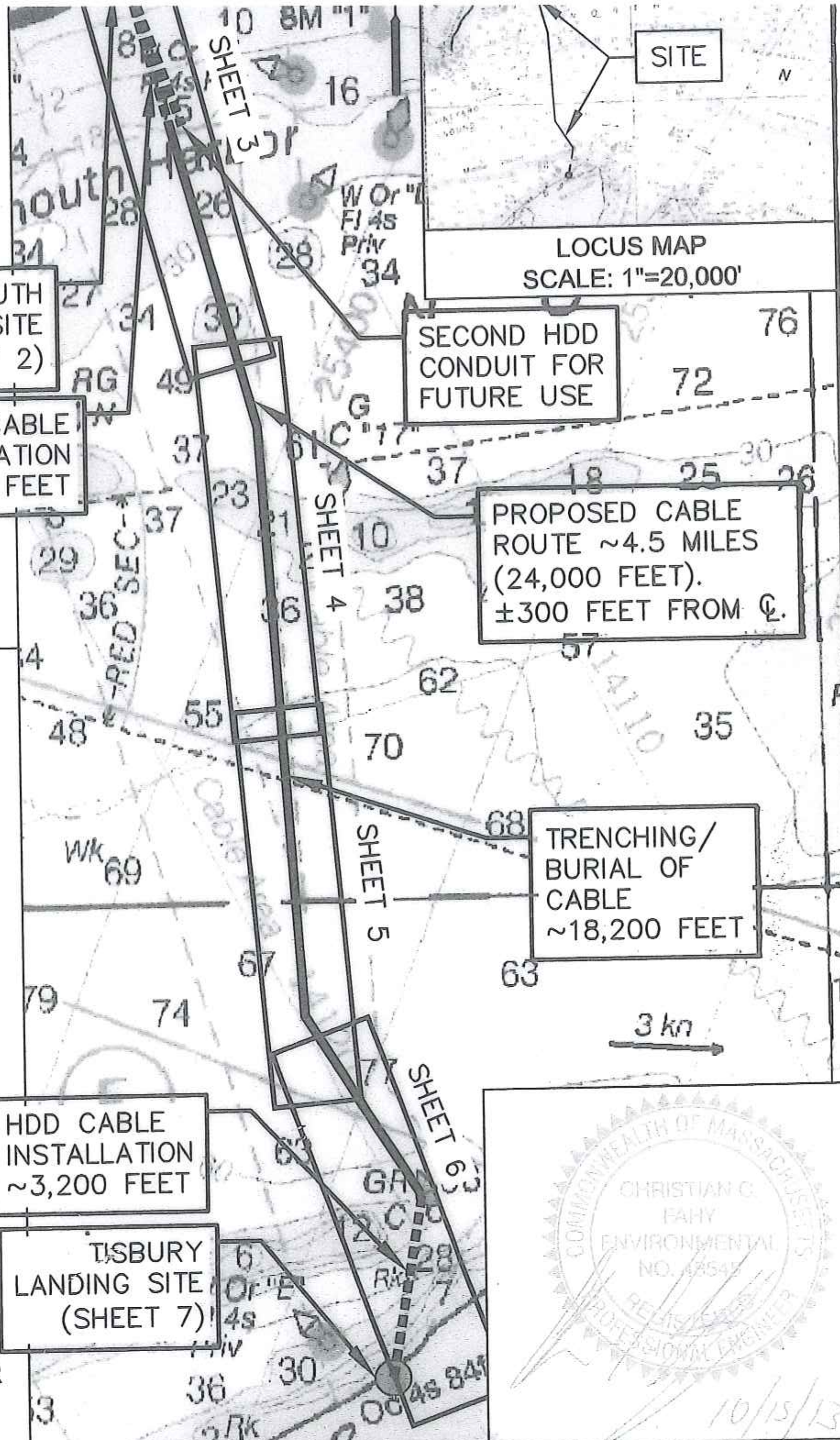
NOTE: EASEMENTS TO BE ADDED AFTER LEGAL DOCUMENTS WITH PROPERTY OWNERS ARE EXECUTED.



MARTHA'S VINEYARD HYBRID CABLE PROJECT

GENERAL VICINITY MAP & KEY SHEET

SCALE: 1"=3,000'

DATE: AUG. 28, 2013

SHEET: 1 OF: 7

APPLICATION BY: COMCAST, NORTH CENTRAL DIVISION / NSTAR ELECTRIC
330 BILLERICA ROAD, CHELMSFORD, MA 01824 / 1 NSTAR WAY, WESTWOOD, MA 02090

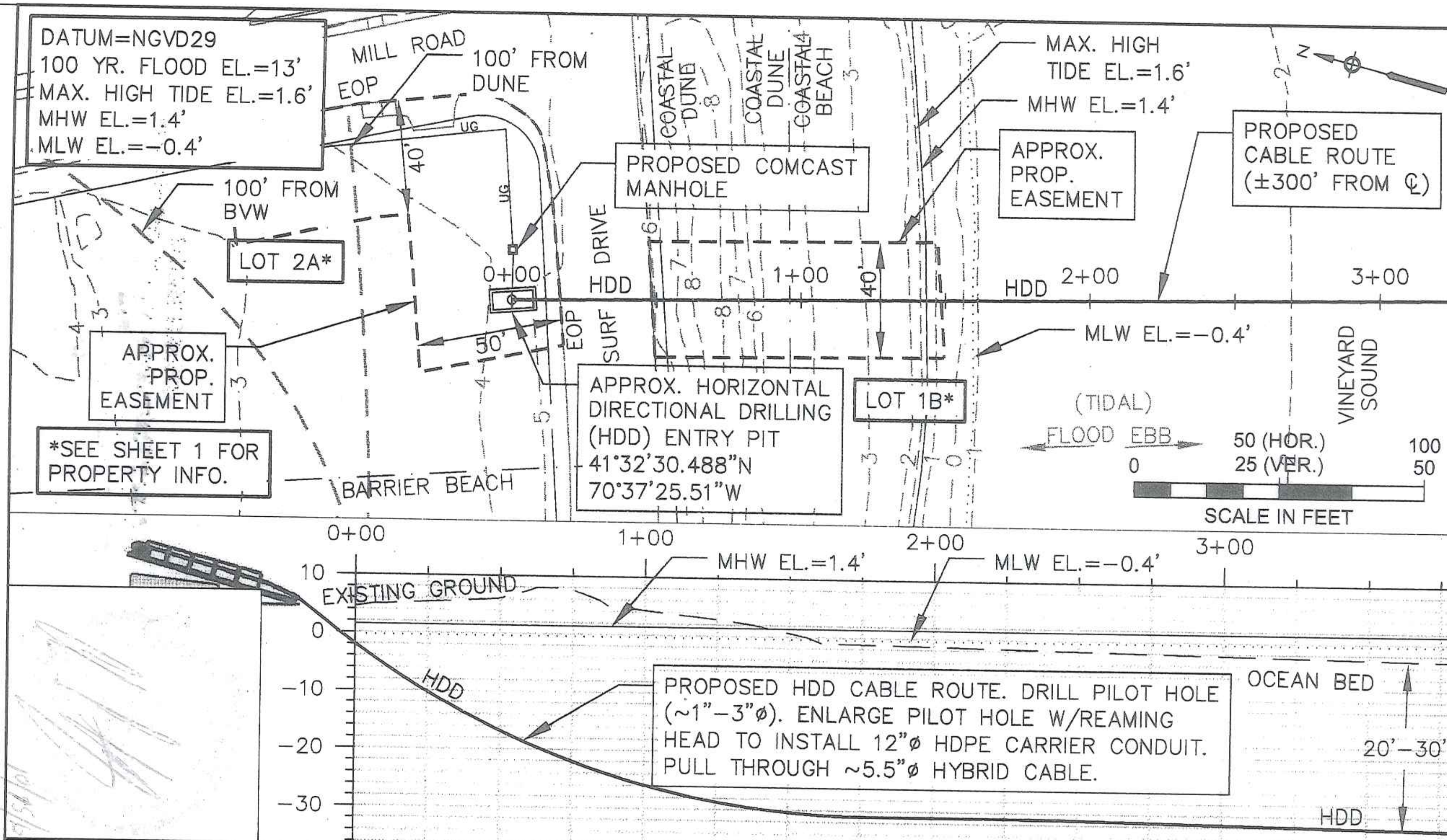
PLAN ACCOMPANYING
PETITION OF:

COMCAST, NORTH CENTRAL DIVISION AND
NSTAR ELECTRIC
MARTHA'S VINEYARD FIBER OPTIC CABLE PROJECT
VINEYARD SOUND
FALMOUTH & TISBURY
BARNSTABLE & DUKES COUNTY

OCT 31 2013

LICENSE PLAN NO. 13588

Approved by Department of Environmental Protectic
of Massachusetts



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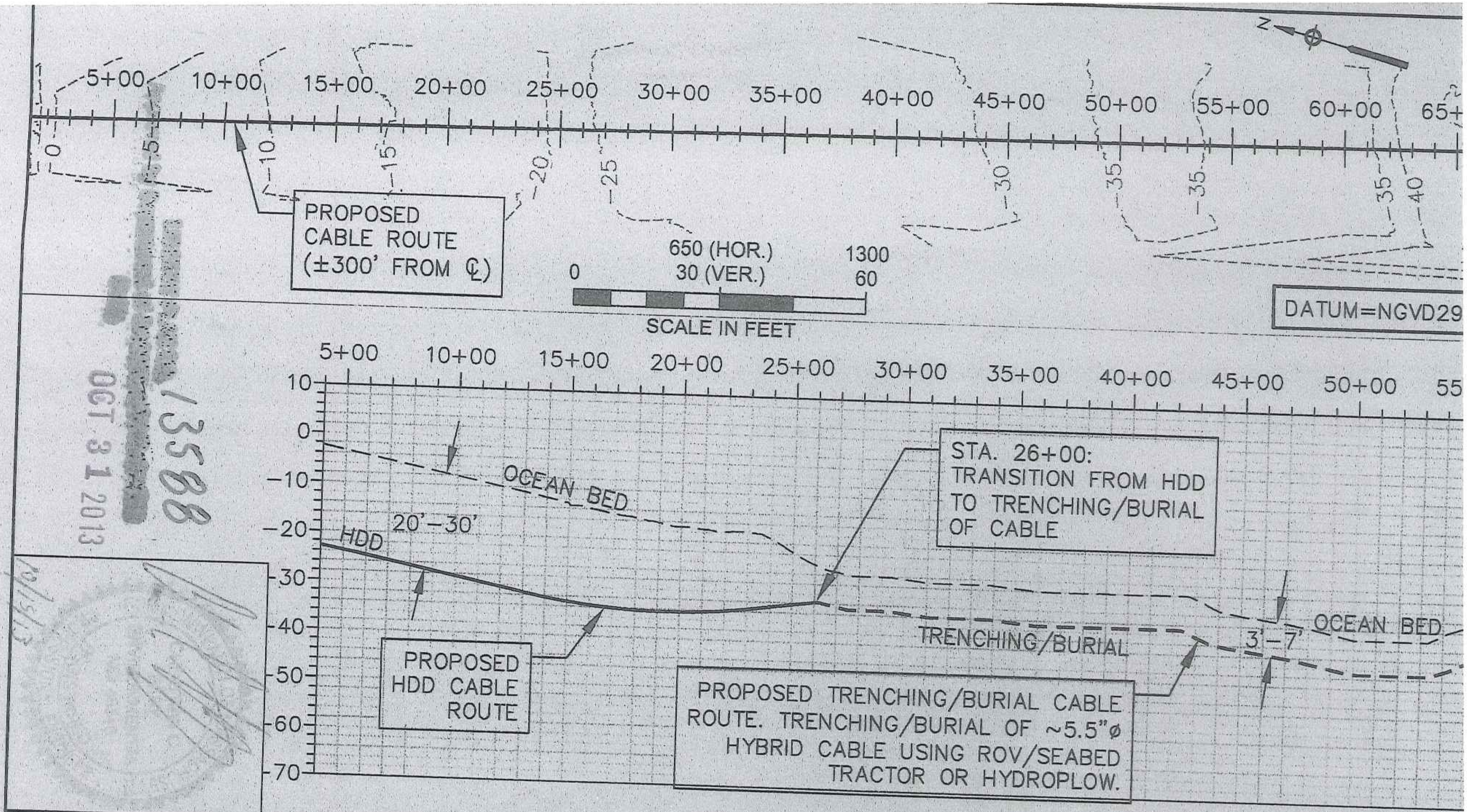

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COMMONWEALTH OF MASS.

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SUBMARINE ROUTE - PLAN & SECTION

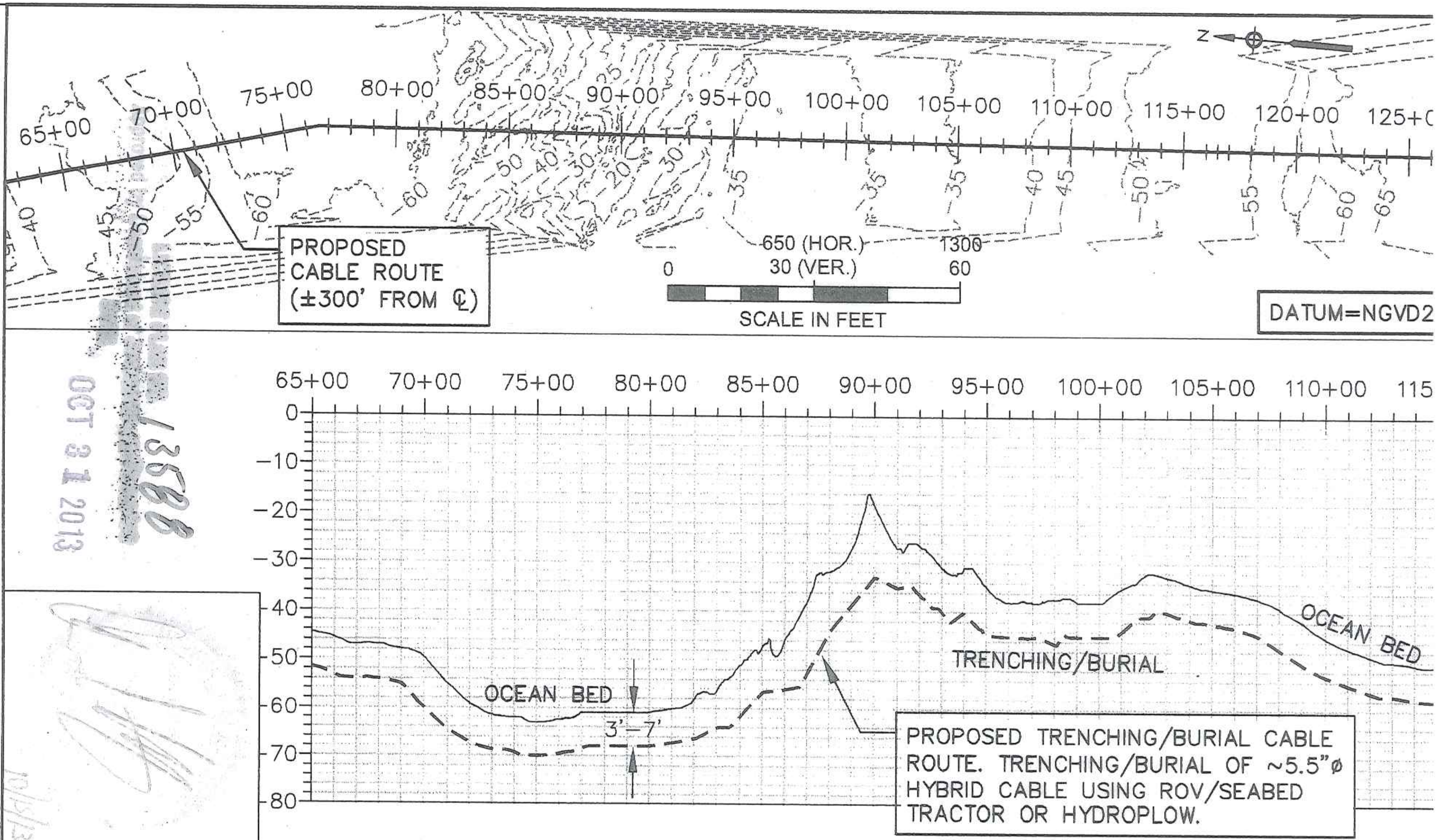
APPLICATION BY:
COMCAST, NORTH CENTRAL DIVISION
330 BILLERICA ROAD, CHELMSFORD, MA 01824

NSTAR ELECTRIC
1 NSTAR WAY, WESTWOOD, MA 02090

SCALE: HOR: 1"=650' VER: 1"=30'

DATE: AUG. 28, 2013

SHEET: 3 OF: 7



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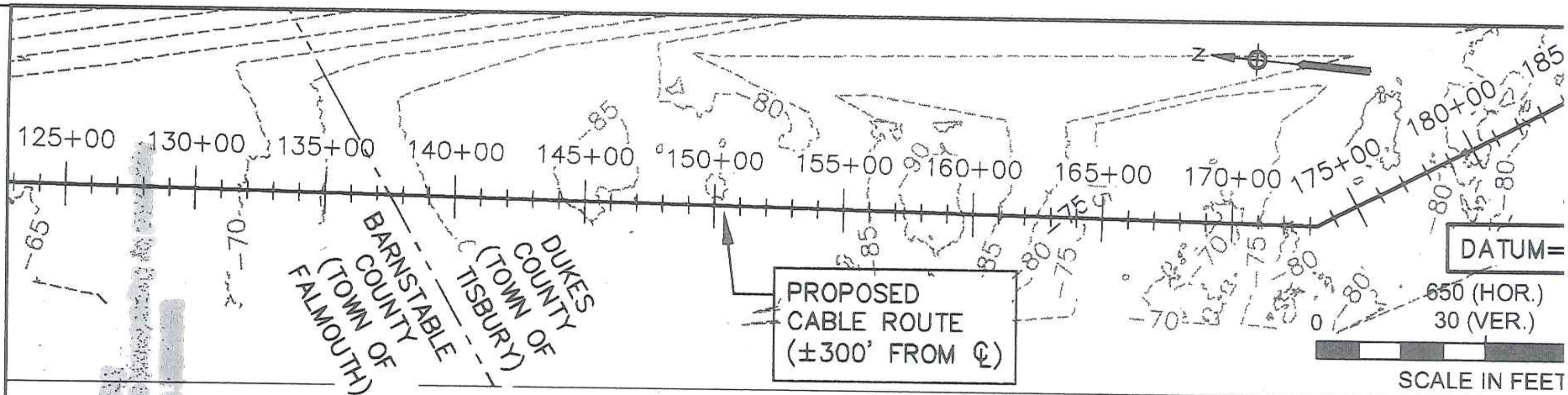
SHEET: 4 OF: 7



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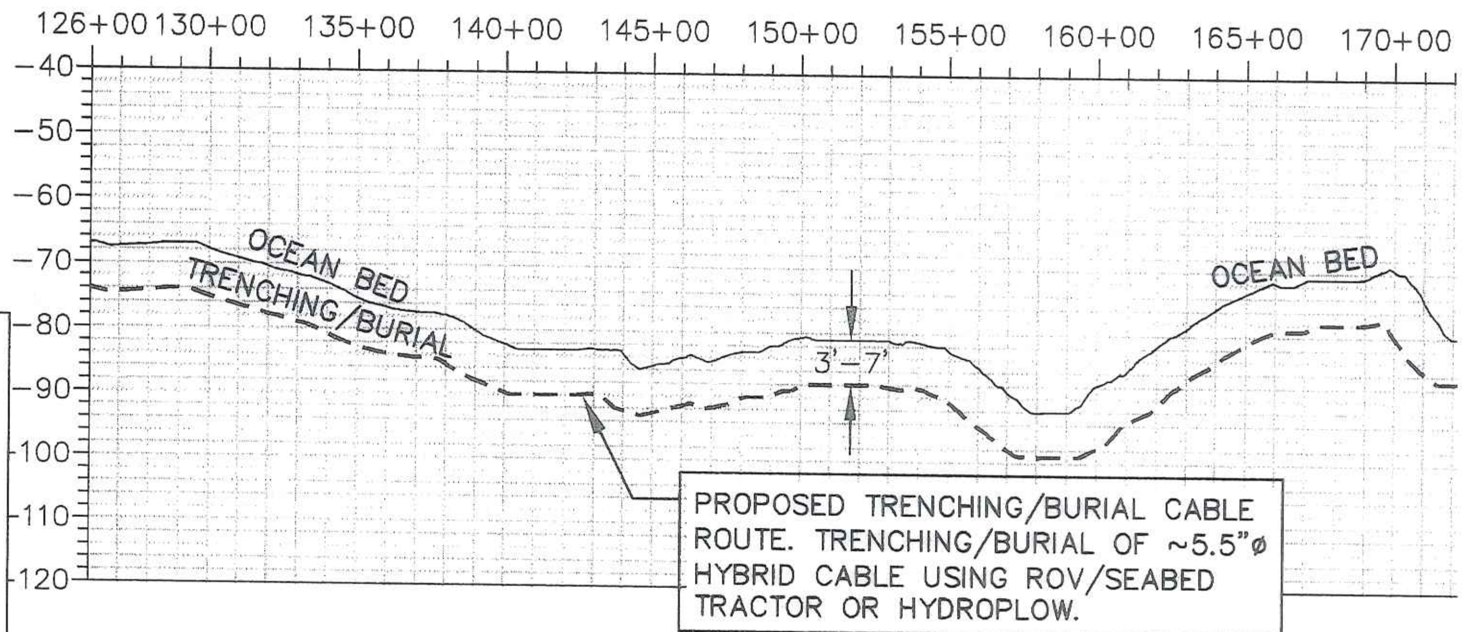
OCT 31 2013



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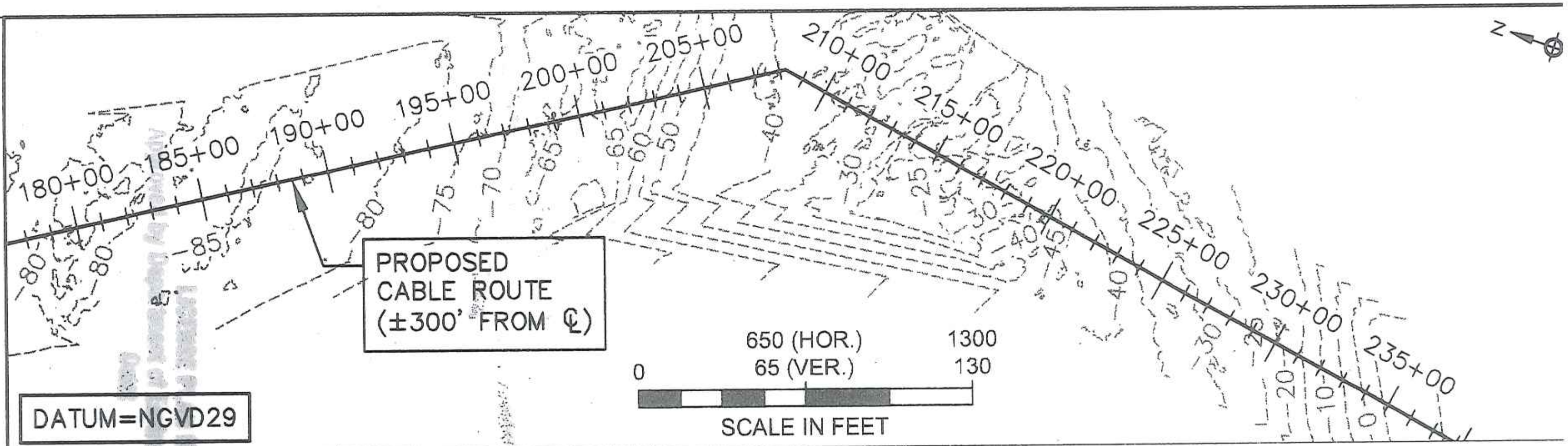
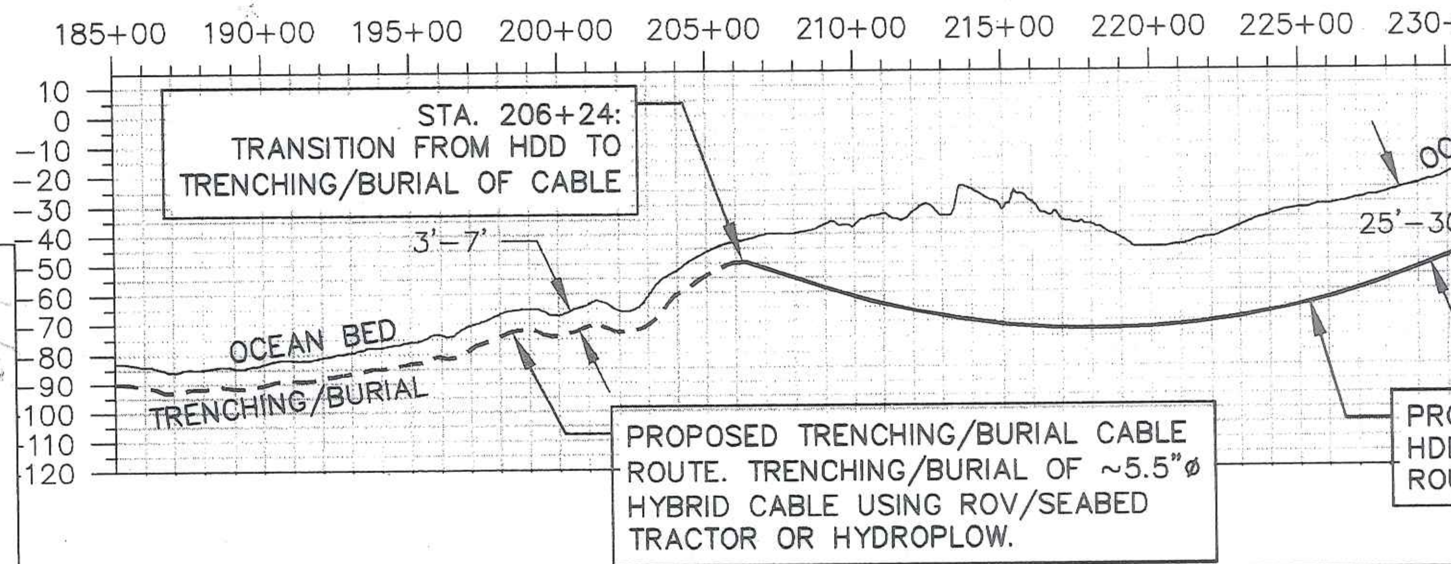
SCALE: HOR / VER

DATE: AUG.

SHEET: 5





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OCT 31 2013

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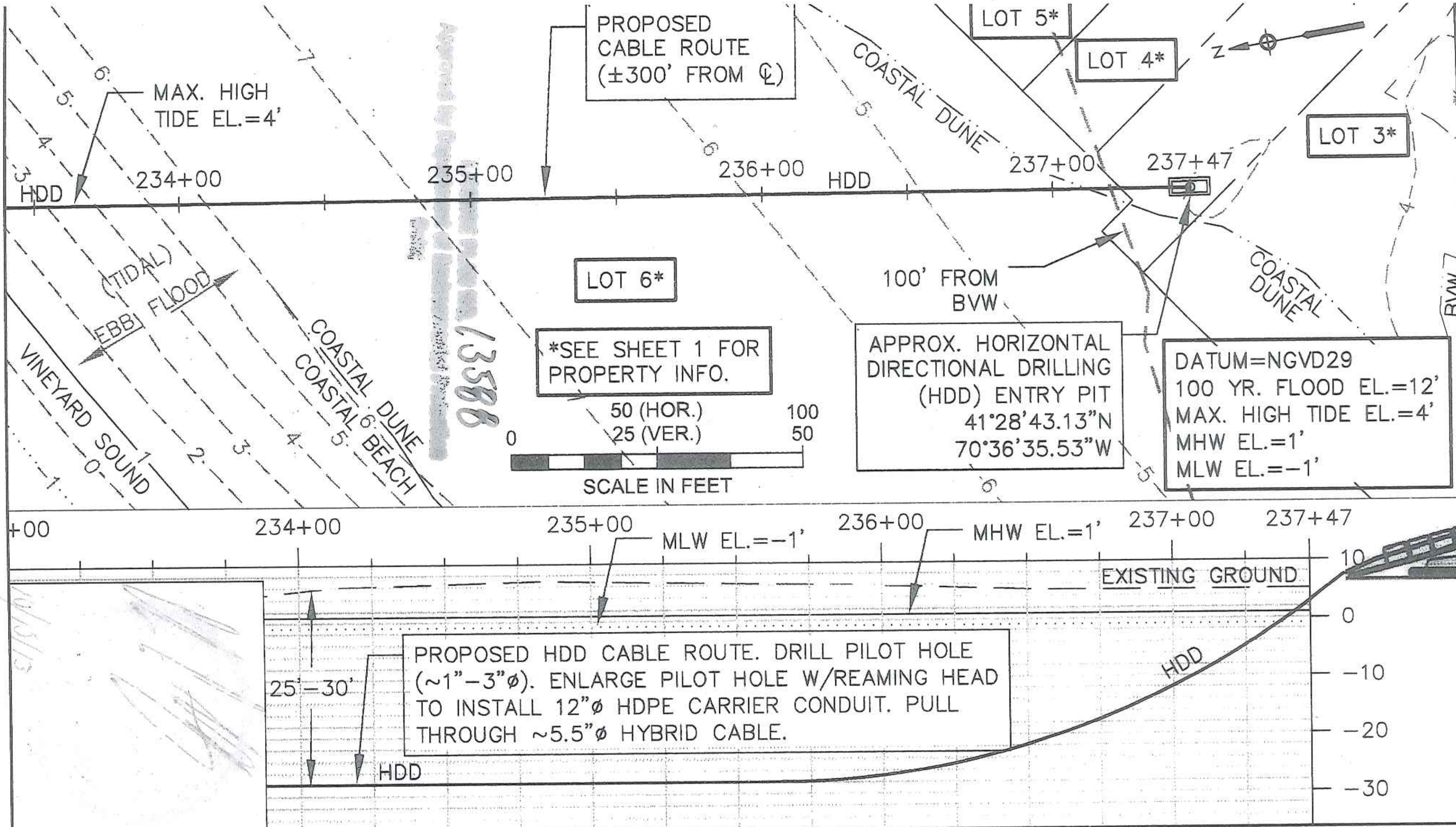
SCALE: HOR / VER

DATE: AUG

SHEET: 6



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CERTIFICATION:

I CERTIFY THAT THIS PLAN HAS BEEN PREPARED IN CONFORMITY WITH THE RULES AND REGULATIONS OF THE REGISTRY OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

COMMONWEALTH OF MASSACHUSETTS CHRISTIAN C. FAHY ENVIRONMENTAL NO. 48545 REGISTERED PROFESSIONAL ENGINEER

10/15/13

MAP SOURCE:

NOAA RASTER NAVIGATIONAL CHART 13237_1, 03-01-2007

SHEET INDEX:

1. VICINITY MAP & KEY SHEET
2. FALMOUTH LANDING - PLAN & SECTION
3. SUBMARINE ROUTE - PLAN & SECTION
4. SUBMARINE ROUTE - PLAN & SECTION
5. SUBMARINE ROUTE - PLAN & SECTION
6. SUBMARINE ROUTE - PLAN & SECTION
7. TISBURY LANDING - PLAN & SECTION

SITE INFORMATION:

VINEYARD SOUND FROM FALMOUTH TO TISBURY

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BARNSTABLE/DUKES COUNTY
COMMONWEALTH OF MASSACHUSETTS

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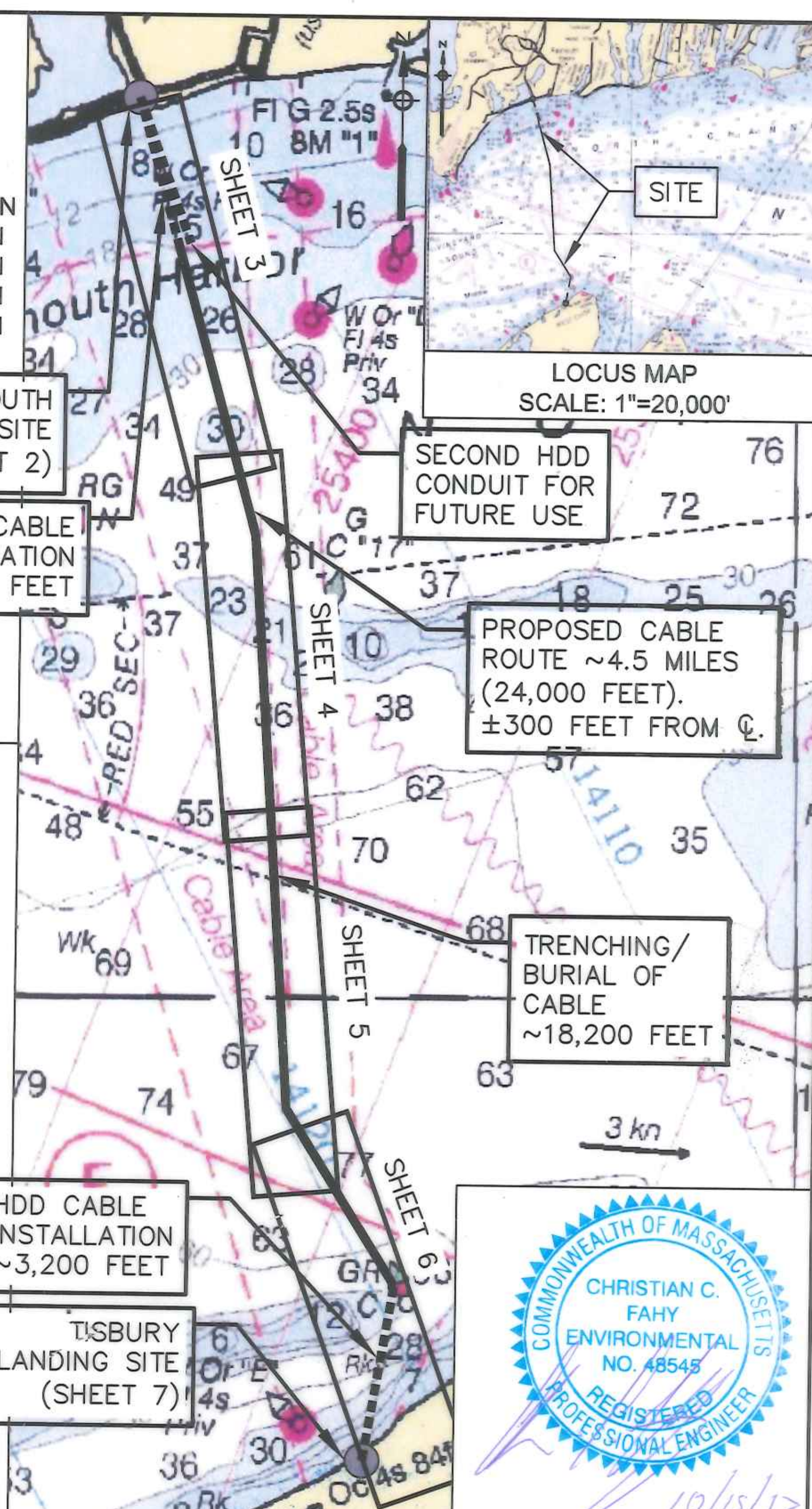

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MARTHA'S VINEYARD HYBRID CABLE PROJECT

GENERAL VICINITY MAP & KEY SHEET

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330 BILLERICA ROAD, CHELMSFORD, MA 01824 / 1 NSTAR WAY, WESTWOOD, MA 02090

SCALE: 1"=3,000'

DATE: AUG. 28, 2013

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PLAN ACCOMPANYING PETITION OF:

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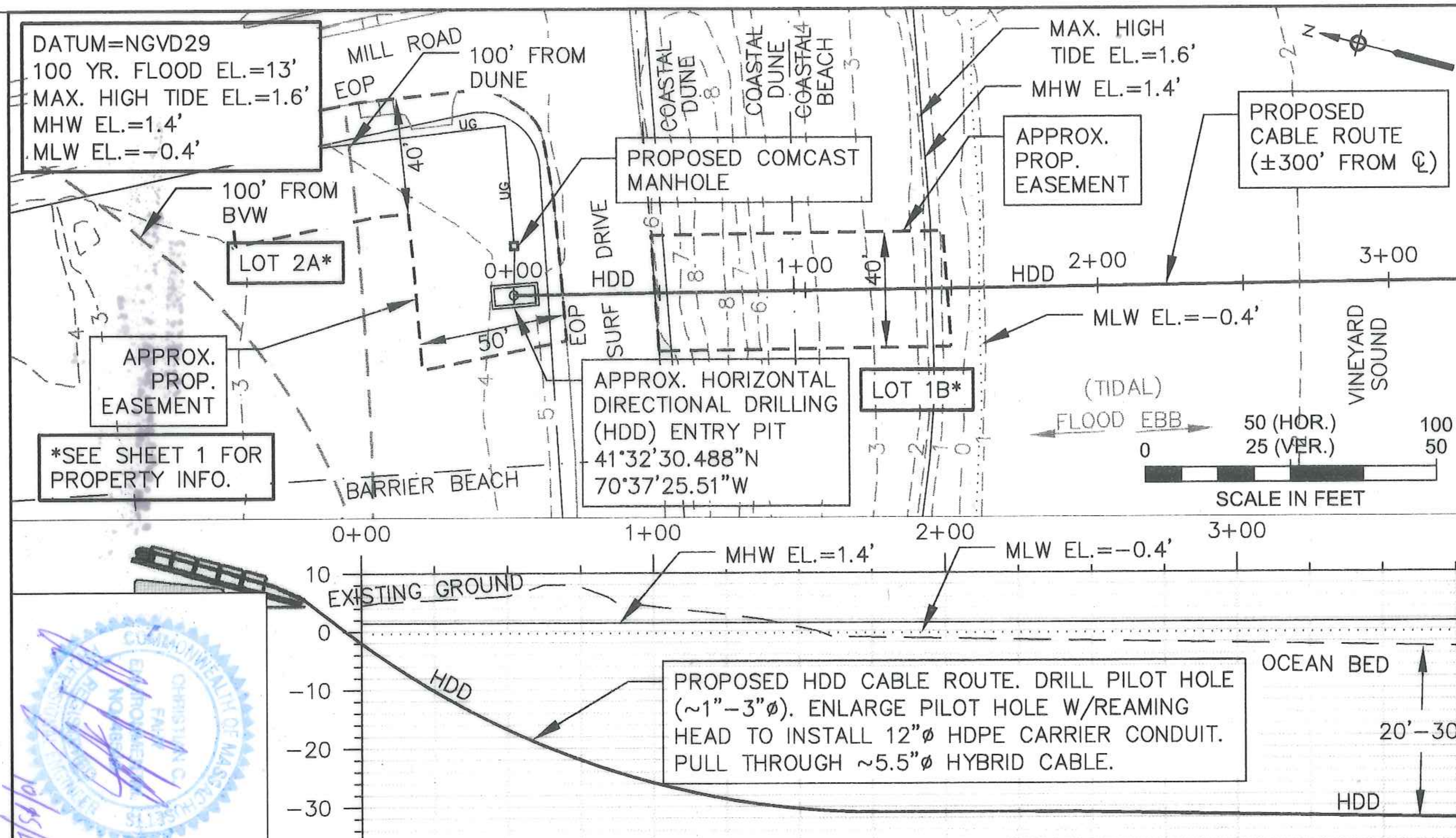
MARTHA'S VINEYARD FIBER OPTIC CABLE PROJECT
VINEYARD SOUND
FALMOUTH & TISBURY
BARNSTABLE & DUKES COUNTY

OCT 31 2013

LICENSE PLAN NO. 13588

Approved by Department of Environmental Protection of Massachusetts



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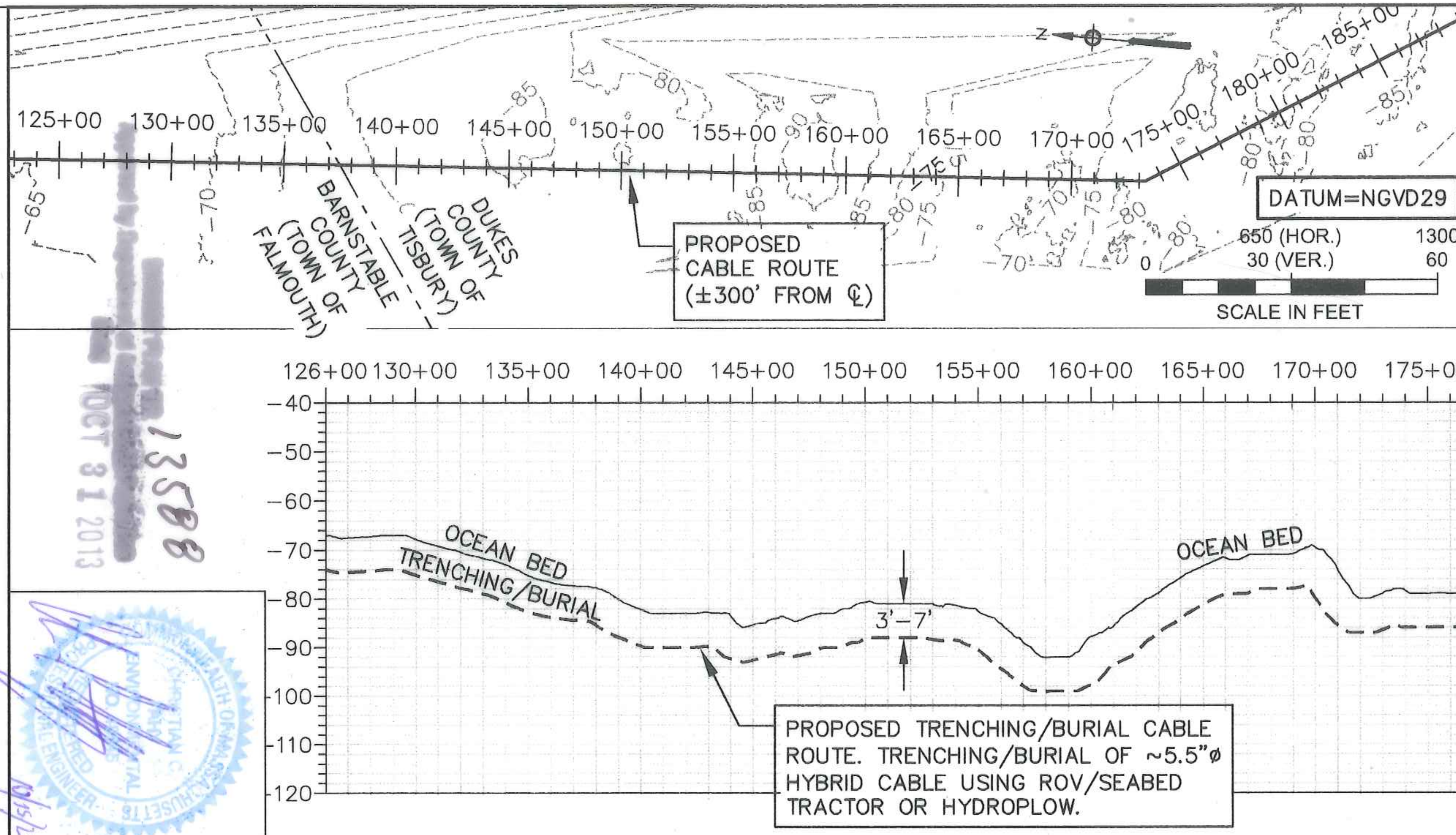

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COMMONWEALTH OF MASS.

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SUBMARINE ROUTE - PLAN & SECTION

APPLICATION BY:
COMCAST, NORTH CENTRAL DIVISION
330 BILLERICA ROAD, CHELMSFORD, MA 01824

NSTAR ELECTRIC
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SCALE: HOR: 1"=650'
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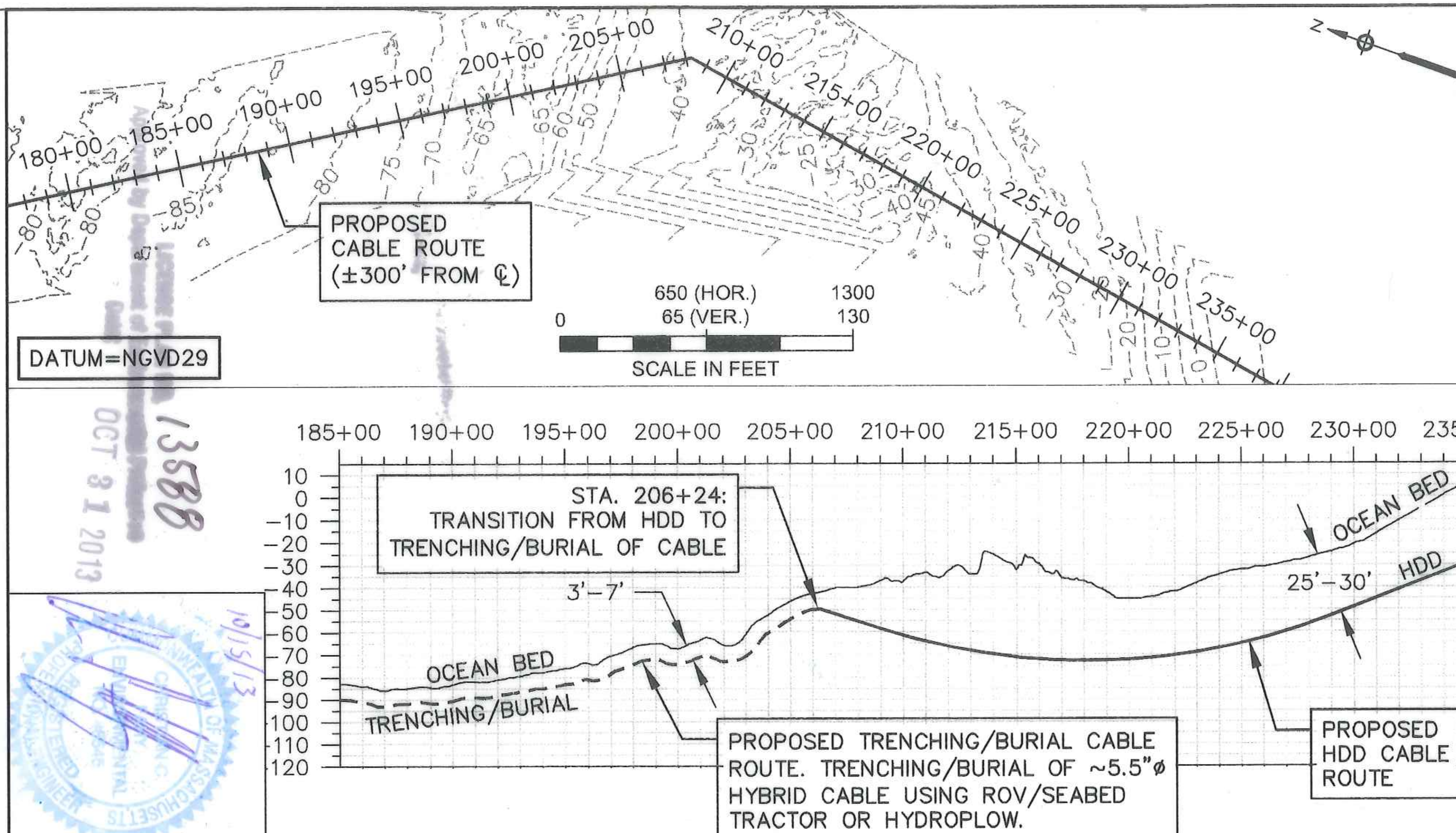

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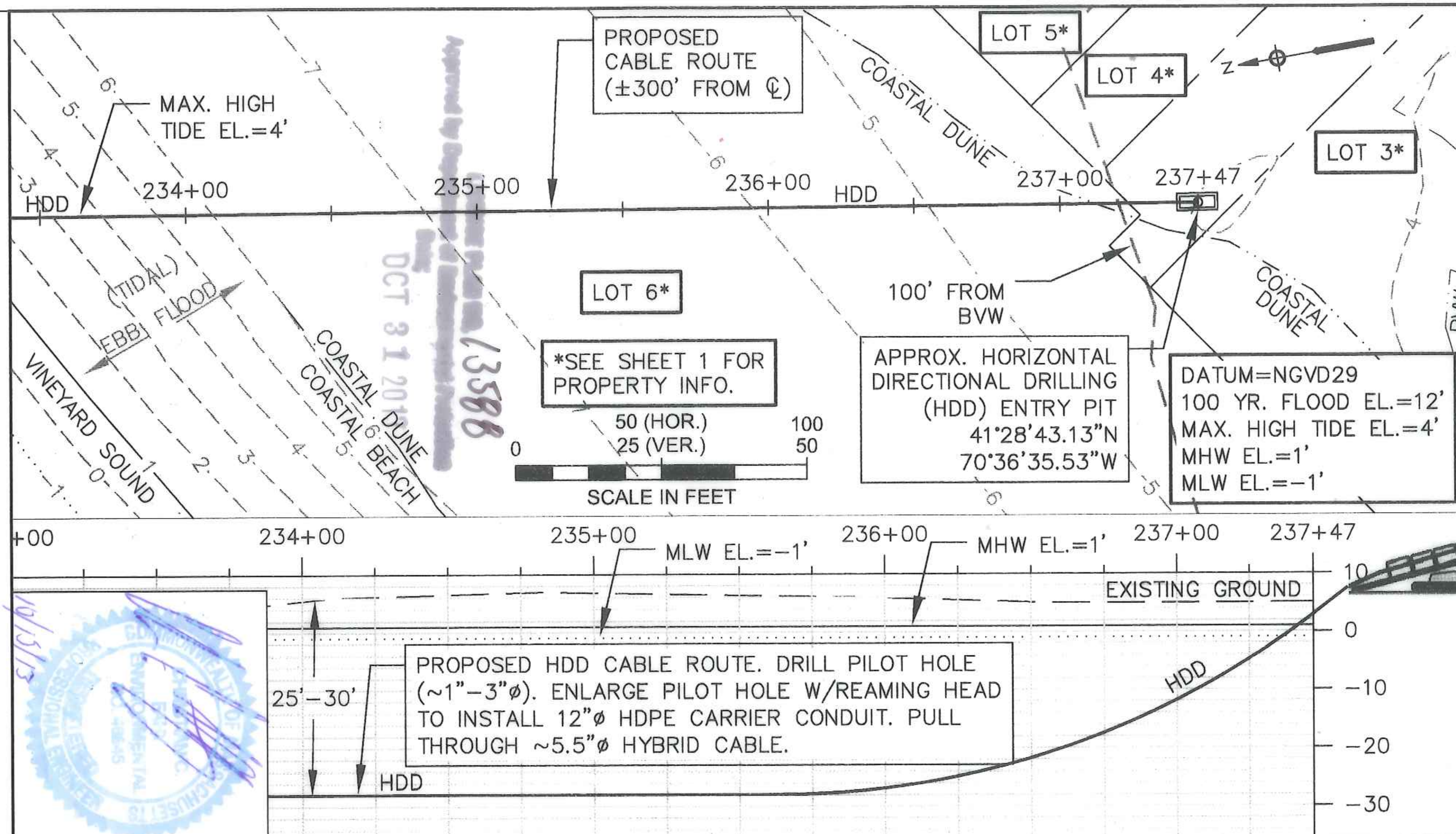

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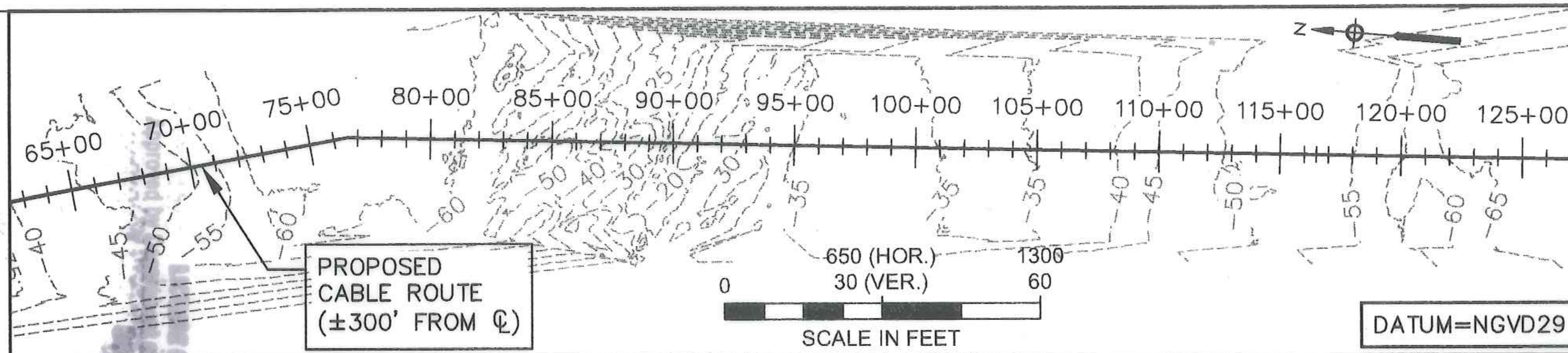

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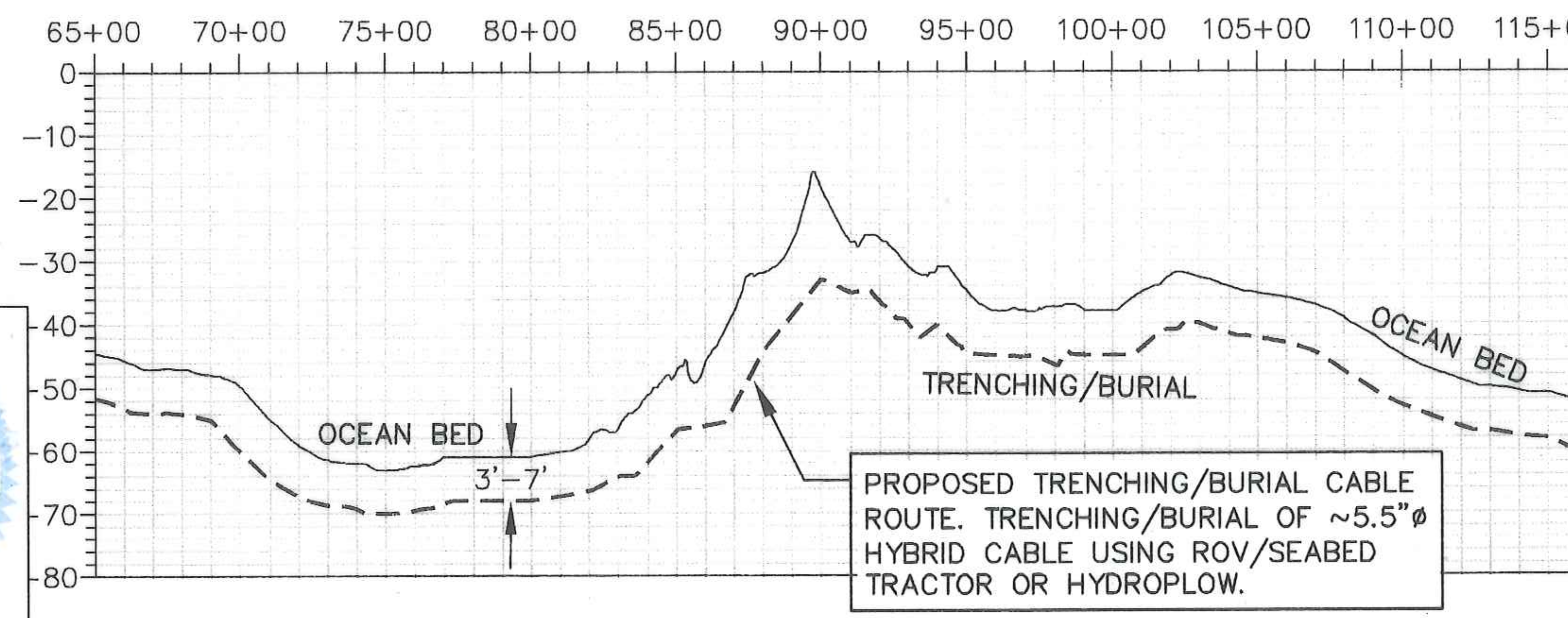

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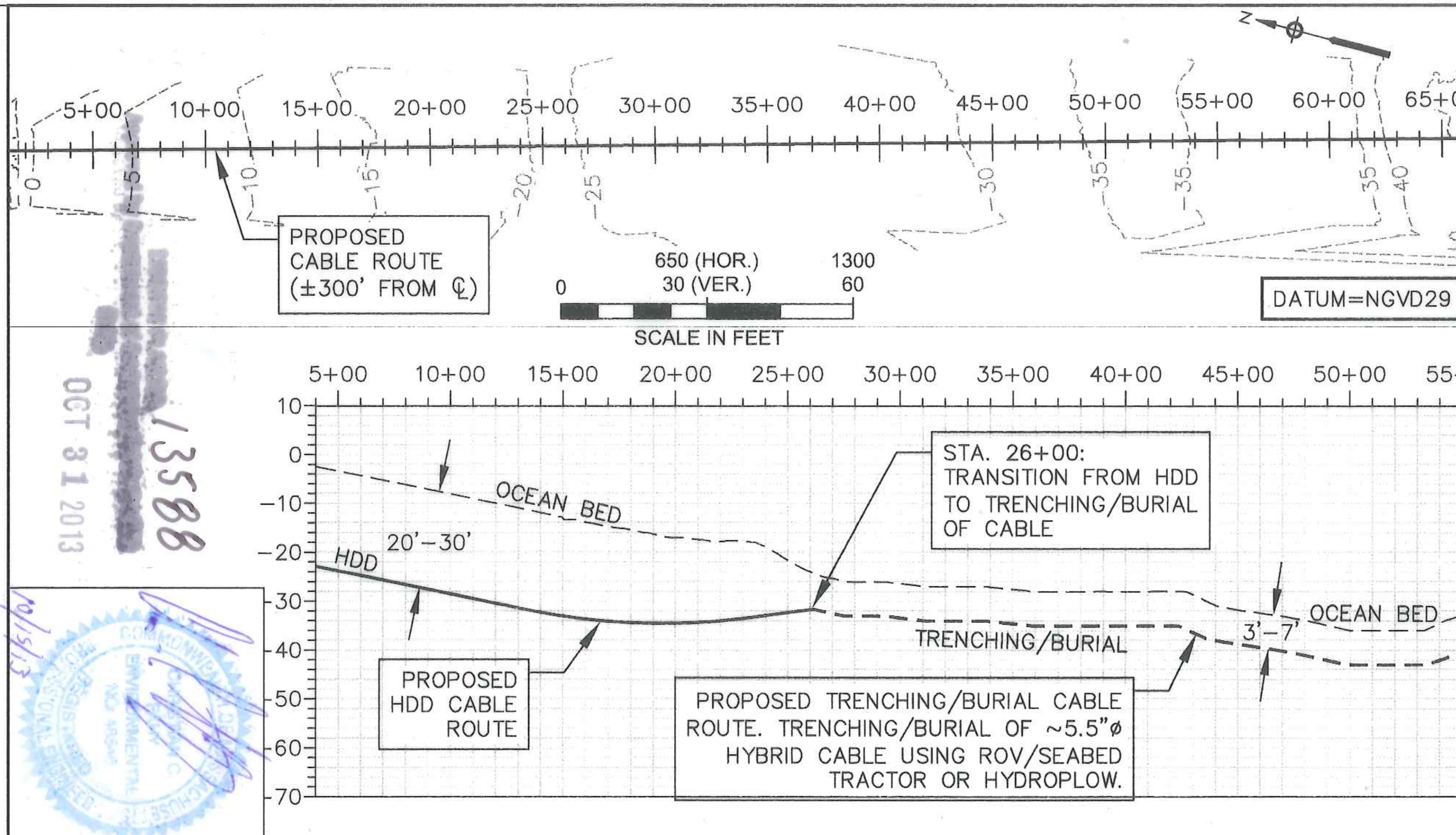
COMMONWEALTH OF MASSACHUSETTS
CHRISTIAN C. ...
ENVIRONMENTAL
NO. 48545
REGISTERED PROFESSIONAL ENGINEER

10/15/13



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10/15/13

Attachment F

Agency Communications

- DEP
- MUBAR
- MHC
- NHESP

From:	Wong, David W (DEP)
To:	Sean Scannell
Cc:	Dwight Dunk; Waldrip, Matthew A
Subject:	RE: Eversource Energy - Sediment Sampling and Analysis Plan for Proposed 5th Submarine Cable - Vineyard Sound
Date:	Thursday, August 19, 2021 1:54:45 PM

Dear Mr. Scannell,

Thanks for your sediment Sampling and Analysis Plan (SAP). It is well designed, displayed, and elaborated. As a result, your SAP is approved without any revision/modification.

Please let me know if you have any questions.

Sincerely,

David

David WH Wong, Ph.D.
401 Water Quality Certification Program
Division of Wetlands and Waterways
Bureau of Water Resources
Massachusetts Department of Environmental Protection
Phone: 617-874-7155
David.W.Wong@mass.gov

From: Sean Scannell <sscannell@epsilonassociates.com>
Sent: Thursday, August 19, 2021 9:51 AM
To: Wong, David W (DEP) <david.w.wong@mass.gov>
Cc: Dwight Dunk <DDunk@epsilonassociates.com>; Waldrip, Matthew A <matthew.waldrip@eversource.com>
Subject: Eversource Energy - Sediment Sampling and Analysis Plan for Proposed 5th Submarine Cable - Vineyard Sound

Mr. Wong,

Please see the attached proposed project-specific Sediment Sampling and Analysis Plan (SAP) to support the planning and design efforts of Eversource Energy for the proposed 5th Submarine Cable between Falmouth and Oak Bluffs. The sediment testing field work described in this project-specific SAP is intended to fulfill the requirements of the 401 Water Quality Certification ("WQC") program and to provide field data to support the installation of the cable.

Should you have any questions regarding this submission, please do not hesitate to contact Dwight Dunk at (978) 897-7100 or via email at ddunk@epsilonassociates.com.

Regards,

Sean Scannell | Project Scientist
Epsilon Associates, Inc.
3 Mill & Main Place, Suite 250
Maynard, Massachusetts 01754
978.897.7100 | 978.461.6299 (direct)
sscannell@epsilonassociates.com | www.epsilonassociates.com

MEMORANDUM

Date: August 19, 2021

To: David Wong, Massachusetts Department of Environmental Protection ("MassDEP")

From: D. R. Dunk

Subject: Sediment Sampling and Analysis Plan (SAP) | Eversource 5th Submarine Cable Project

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Epsilon Associates, Inc. prepared this memorandum to describe the proposed project-specific Sediment Sampling and Analysis Plan ("SAP") to support the planning and design efforts of Eversource Energy ("Eversource") for the proposed 5th Submarine Cable between Falmouth and Oak Bluffs. Eversource proposes to install a 5th submarine cable within Vineyard Sound. This 5th submarine cable will be installed adjacent to and west of the extant #99 submarine cable (refer to Figure 1 – Potential 5th Cable Route).

The sediment testing field work described in this project-specific SAP is intended to fulfill the requirements of the 401 Water Quality Certification ("WQC") program and to provide field data to support the installation of the cable. Therefore, in accordance with 314 CMR 9.07(2)(b)5. we respectfully request approval of this project-specific SAP to collect 31 sediment cores within the proposed survey and sampling corridor in Vineyard Sound (refer to Figure 2 – Proposed 5th Submarine Cable Route Survey and Sampling Plan).

Proposed Sediment Sampling Plan

The proposed cable route measures approximately 33,145-feet from the Falmouth to Oak Bluffs. A combination of horizontal directional drill and hydroplow will be used to install the submarine cable. The hydroplow installation portion is estimated to be approximately 29,500-feet of this route. The target depth of cable installation is 6- to 10-feet below the seabed, which correlates to approximately 27,315 to 44,797 cubic yards ("cy") of sediment repositioning. At those volumes, the standard number of cores based on one core per 1,000 cy would be 27 to 45 cores. The proposed project specific sampling program includes 31 cores to be advanced every approximately 1,000 feet along the hydroplow cable route to meet the requirements of the Massachusetts Bureau of Underwater Archaeological Resources (MBUAR") which requires one core to be collected no greater than every approximately 1,000-feet.

Whereas the "dredging[1]" for cable installation will not require excavation and disposal of sediments (traditional dredging), but rather only the repositioning of sediments; and the number of cores exceeds the DEP standard number of cores for a 6-foot cable burial and will adequately characterize sediment quality for the 10-foot burial, we respectfully request approval of this project specific SAP per 314 CMR 9.07(2)(b)5.

Coring Operations

Coring operations will be conducted by CR Environmental, inc. ("CR") of Falmouth, MA. Based on CR's coring experience within Vineyard sound, the dominate substrate in most of the deeper portions along the proposed cable alignment is expected to be coarse sand and gravel along with patches of gravel and cobble. Furthermore, these areas are mapped as "rocky" on NOAA charts.

After a preliminary review of the geophysical data, the final core locations along the cable route will be selected. Sediment will be collected by advancing cores (vibracores) into the substrate. The vibracores will be collected using a NAVCO pneumatic vibracore system. The NAVCO pneumatic vibracore system includes a 1,750 vpm Bin/Hopper Vibrator, 50 cfm portable air compressor, hoses, galvanized steel core barrels, stainless steel catcher and brass core head assemblies.

The vibracores will be collected in 10-foot-long galvanized steel core barrels with hard plastic cellulose acetate butyrate ("CAB") liners to 10 feet below bottom or refusal, whichever is encountered first. A Ted Young 0.1m^2 modified Van Veen grab sampler will also be provided as a backup sediment sampling system if cores cannot be collected in hard bottom areas. Mud line depths at core locations will be recorded using the vessel mounted Humminbird echosounder. Positioning during the coring effort will be accomplished with a Hemisphere V-104 GPS, heading sensor and HYPACK software, this system is capable of sub-meter accuracy.

Operations will be planned around slack tide periods and cores will be advanced approximately every 1,000 feet along the cable route for a total of 31 cores.

Laboratory Sediment Analysis

Sediment samples will be collected, and grain size analysis will be conducted on each sample. Based on sediment results for the 2014 NSTAR/Comcast hybrid cable to the west and more recent sampling for the

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[1] Dredging is defined as: The removal or repositioning of sediment or other material from below the mean high tide line for coastal waters and below the high-water mark for inland waters. Dredging shall not include activities in bordering or isolated vegetated wetlands. [314 CMR 9.02]

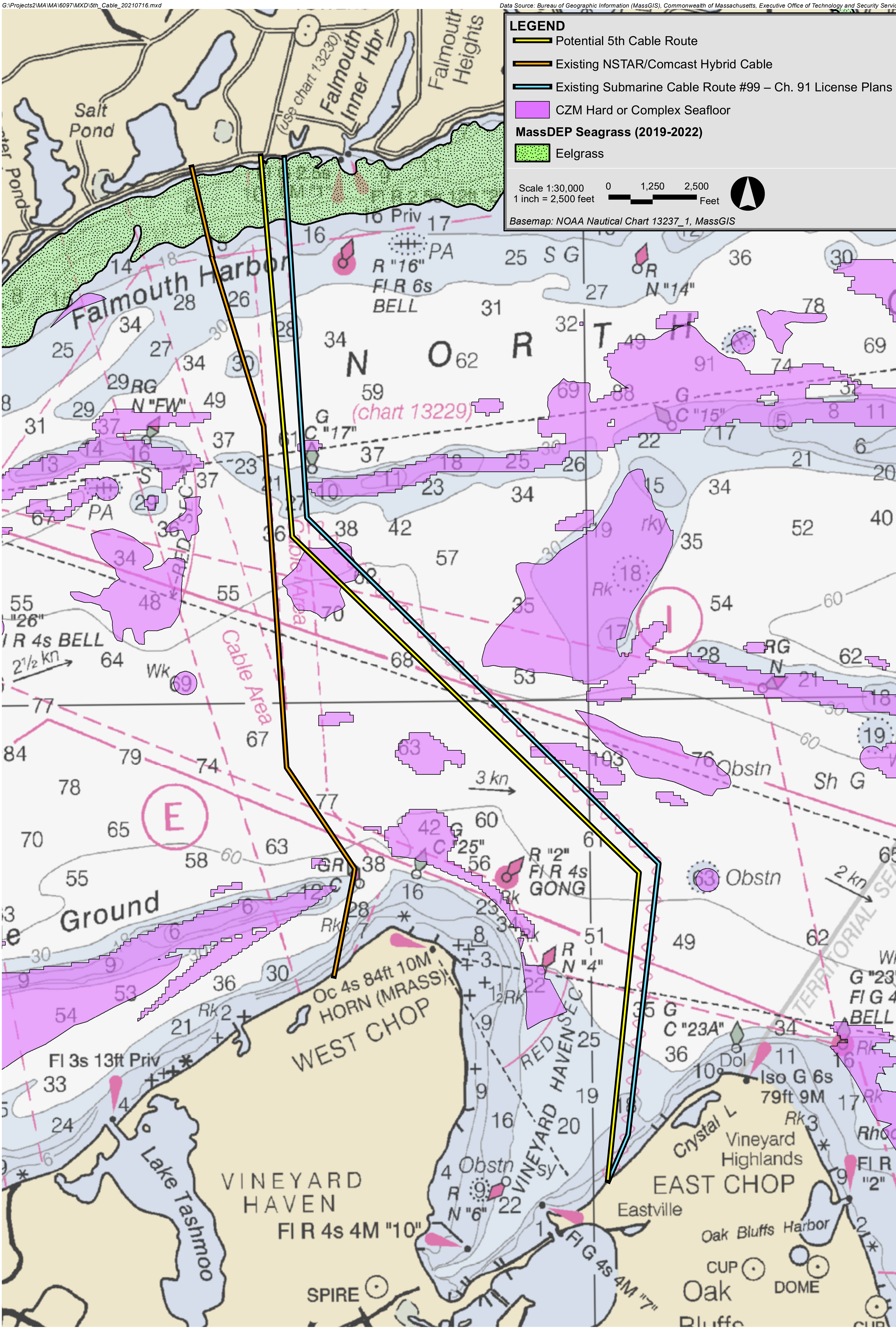
Vineyard Wind export cable to the east, the sediment in Vineyard Sound between Falmouth and Oak bluffs is primarily coarse sand with less than 10% fines (i.e., passing the No. 200 sieve).

Samples will also be collected for potential chemical analyses, should they be required. Since the Project is unlikely to contain anthropogenic concentrations of oil or hazardous materials, in accordance with 314 CMR 9.07(2)(a) no chemical testing is required where the sediment contains less than 10% fines. However, CR will collect sufficient sediment volume to conduct chemical testing if after sieve testing the sediment contains more than 10% fines. Due to the short "hold time" for volatile organic carbons ("VOCs"), testing for VOCs will be done concurrent with sieve testing. All other parameters have longer hold times so that testing for those analytes can be delayed until after the sieve results are received, if required. Should the samples contain more than 10% fines, the sediments will be analyzed for the full suite of parameters in accordance with 314 CMR 9.07(2)(b)6. which includes: percent water, Total Organic Carbon ("TOC"), metals, Polycyclic Aromatic Hydrocarbons ("PAHs"), Polychlorinated Biphenyls ("PCBs"), Extractable Petroleum Hydrocarbons ("EPH"), Volatile Organic Compounds ("VOCs"), and Toxicity Characteristic Leaching Procedure ("TCLP"), if necessary.

encl. Figure 1 – Potential 5th Cable Route
Figure 2 – Proposed 5th Submarine Cable Route Survey and Sampling Plan

cc: M. Waldrip, Eversource

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

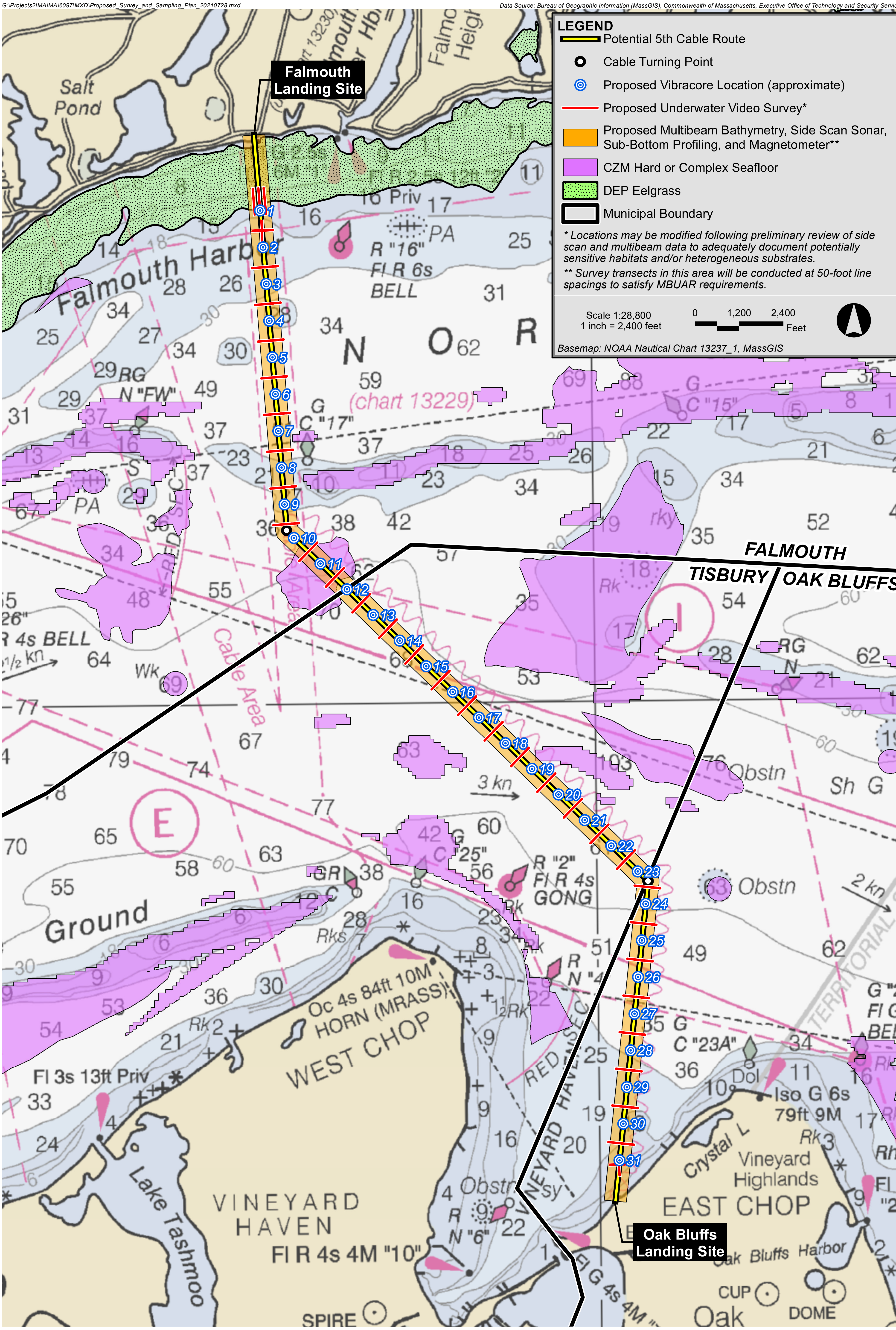


Epsilon ASSOCIATES INC.

Figure 1
Potential 5th Cable Route

G:\Projects2\MA\MA\6097\MXD\Proposed_Survey_and_Sampling_Plan_20210728.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



5th Cable

Figure 2

Proposed 5th Submarine Cable Route Survey and Sampling Plan

From:	Wong, David W (DEP)
To:	Sean Scannell
Cc:	Dwight Dunk; Waldrip, Matthew A
Subject:	RE: Eversource Energy - Sediment Sampling and Analysis Plan for Proposed 5th Submarine Cable - Vineyard Sound
Date:	Tuesday, January 25, 2022 7:57:36 PM

Dear Mr. Scannell,

Thanks for keeping MassDEP updated on the SAP for Eversource Energy's 5th Submarine Cable Project. The analysis result is sound, and the data are convincing. Based on the results of this project-specific SAP information, MassDEP approves your request that no further chemical testing is required.

Thanks for complying with MassDEP's regulation in protecting our environment during development.

Please let me know if you have any questions.

Sincerely,

David

David WH Wong, Ph.D.
401 Water Quality Certification Program
Division of Wetlands and Waterways
Bureau of Water Resources
Massachusetts Department of Environmental Protection
Phone: 617-874-7155
David.W.Wong@mass.gov

From: Sean Scannell <sscannell@epsilonassociates.com>
Sent: Tuesday, January 25, 2022 5:06 PM
To: Wong, David W (DEP) <david.w.wong@mass.gov>
Cc: Dwight Dunk <DDunk@epsilonassociates.com>; Waldrip, Matthew A <matthew.waldrip@eversource.com>
Subject: RE: Eversource Energy - Sediment Sampling and Analysis Plan for Proposed 5th Submarine Cable - Vineyard Sound
Importance: High

Dr. Wong,

Please see the attached submission of the results for the project-specific SAP conducted in support of Eversource Energy's 5th Submarine Cable Project. Based on the results of the project-specific SAP and sediment analyses, we believe the project planning and design can proceed without any further chemical testing. We respectfully request written concurrence by your Department indicating that no further chemical testing is required based on the information provided within this submission.

Should you have any questions regarding this submission, please do not hesitate to contact Dwight Dunk at (978) 897-7100 or via email at ddunk@epsilonassociates.com, or myself at the number and email address provided in my signature below.

Regards,

Sean Scannell | Project Scientist
Epsilon Associates, Inc.
3 Mill & Main Place, Suite 250
Maynard, Massachusetts 01754
978.897.7100 | 978.461.6299 (direct)
sscannell@epsilonassociates.com | www.epsilonassociates.com

From: Wong, David W (DEP) <david.w.wong@state.ma.us>
Sent: Thursday, August 19, 2021 1:55 PM
To: Sean Scannell <sscannell@epsilonassociates.com>
Cc: Dwight Dunk <DDunk@epsilonassociates.com>; Waldrip, Matthew A <matthew.waldrip@eversource.com>
Subject: RE: Eversource Energy - Sediment Sampling and Analysis Plan for Proposed 5th Submarine Cable - Vineyard Sound

Dear Mr. Scannell,

Thanks for your sediment Sampling and Analysis Plan (SAP). It is well designed, displayed, and elaborated. As a result, your SAP is approved without any revision/modification.

Please let me know if you have any questions.

Sincerely,

David

David WH Wong, Ph.D.
401 Water Quality Certification Program
Division of Wetlands and Waterways

Bureau of Water Resources
Massachusetts Department of Environmental Protection
Phone: 617-874-7155
David.W.Wong@mass.gov

From: Sean Scannell <sscannell@epsilonassociates.com>
Sent: Thursday, August 19, 2021 9:51 AM
To: Wong, David W (DEP) <david.w.wong@mass.gov>
Cc: Dwight Dunk <DDunk@epsilonassociates.com>; Waldrip, Matthew A <matthew.waldrip@eversource.com>
Subject: Eversource Energy - Sediment Sampling and Analysis Plan for Proposed 5th Submarine Cable - Vineyard Sound

Mr. Wong,

Please see the attached proposed project-specific Sediment Sampling and Analysis Plan (SAP) to support the planning and design efforts of Eversource Energy for the proposed 5th Submarine Cable between Falmouth and Oak Bluffs. The sediment testing field work described in this project-specific SAP is intended to fulfill the requirements of the 401 Water Quality Certification ("WQC") program and to provide field data to support the installation of the cable.

Should you have any questions regarding this submission, please do not hesitate to contact Dwight Dunk at (978) 897-7100 or via email at ddunk@epsilonassociates.com.

Regards,

Sean Scannell | Project Scientist
Epsilon Associates, Inc.
3 Mill & Main Place, Suite 250
Maynard, Massachusetts 01754
978.897.7100 | 978.461.6299 (direct)
sscannell@epsilonassociates.com | www.epsilonassociates.com

The COMMONWEALTH OF MASSACHUSETTS
BOARD OF UNDERWATER ARCHAEOLOGICAL RESOURCES
EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS
251 Causeway Street, Suite 800, Boston, MA 02114-2136
Tel. (617) 626-1014 Fax (617) 626-1240
www.mass.gov/orgs/board-of-underwater-archaeological-resources

October 5, 2021

Kimberly M. Smith, M.A., RPA
Marine Archaeologist
Gray & Pape, Inc.
60 Valley Street, Suite 103
Providence, RI 02909

RE: Formal Approval of Special Use Permit No. 21-003, Eversource Energy 5th Submarine Cable Project, Vineyard Sound, Falmouth to Oak Bluffs

Dear Ms. Smith,

This letter confirms the vote taken by the Massachusetts Board of Underwater Archaeological Resources on September 30, 2021 to formally approve granting Special Use Permit No. 21-003 to Gray & Pape, Inc. for the purpose of conducting marine archaeological reconnaissance survey in Vineyard Sound between Falmouth and Oak Bluffs as detailed in the work plan and maps accompanying the application for the Eversource Energy 5th Submarine Cable Project. The duration of this permit (SUP 21-003) shall be one year from the date of issuance with its expiration date as September 30, 2022.

This permit is herein granted to Gray & Pape, Inc. and is dependent upon compliance with the Board's Regulations (312 CMR 2.00). All work must be conducted in accordance with Board directives, standard conditions and the Technical Proposal included in the application. Activities allowed under this permit include archaeological reconnaissance and remote sensing survey, video documentation, benthic grab sample collection, and vibracore sampling in the permit area.

For projects subject to Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR 800), permittees are directed to consult with and provide their proposed research design and methodology to the State Historic Preservation Office/Massachusetts Historical Commission and the lead federal agency in accordance with 36 CFR 800.4, prior to conducting the field investigation.

This permit does not relieve the permittee or any other person of the necessity of complying with all other federal, state and local statutes, regulations, by-laws and ordinances.

If you should have any questions or need further assistance, please do not hesitate to contact the Board by email (david.s.robinson@mass.gov) or at the address above.

Sincerely,

David S. Robinson
Director

/dsr
Cc: Brona Simon, MHC
Robert Boeri, Todd Callaghan, Lisa Engler, Stephen McKenna, MCZM (via email attachment)
Bettina Washington, WTGH/A (via email attachment)
David Weeden, MWT (via email attachment)
Dwight Dunk, Sean Scannell, Epsilon Associates, Inc. (via email attachment)
Charlotte M. Cogswell, CR Environmental, Inc. (via email attachment)

The COMMONWEALTH OF MASSACHUSETTS
BOARD OF UNDERWATER ARCHAEOLOGICAL RESOURCES
EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS
251 Causeway Street, Suite 800, Boston, MA 02114-2136
Tel. (617) 626-1014 Fax (617) 626-1240
www.mass.gov/orgs/board-of-underwater-archaeological-resources

August 10, 2021

Kimberly M. Smith, M.A., RPA
Marine Archaeologist
Gray & Pape, Inc.
60 Valley Street, Suite 103
Providence, RI 02909

RE: Issuance of Provisional Special Use Permit 21-003, Eversource Energy 5th Submarine Cable Project, Vineyard Sound, Falmouth to Oak Bluffs, MA

Dear Ms. Smith,

This letter confirms the acceptance and provisional approval by the Massachusetts Board of Underwater Archaeological Resources of the Special Use Permit application submitted by Gray & Pape, Inc., for marine archaeological reconnaissance survey in Vineyard Sound between Falmouth and Oak Bluffs as detailed in the work plan and maps accompanying the application for the Eversource Energy 5th Submarine Cable Project. This provisional permit (No. 21-003) is effective upon issuance, August 10, 2021, for the duration of one year. Formal approval of this permit will be considered by the Board at its next regularly scheduled meeting on September 30, 2021.

This permit is herein granted to Gray & Pape, Inc., and dependent upon compliance with the Board's Regulations (312 CMR 2.00). All work must be conducted in accordance with Board directives, standard conditions and the Scope of Work included in the application. Activities allowed under this permit include archaeological reconnaissance and remote sensing, video documentation, benthic grab sample collection, and vibracore sampling in the permit area. For projects subject to Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR 800), permittees are directed to consult with and provide their proposed research design and methodology to the State Historic Preservation Office/Massachusetts Historical Commission and the lead federal agency in accordance with 36 CFR 800.4, prior to conducting the field investigation.

This permit does not relieve the permittee or any other person of the necessity of complying with all other federal, state and local statutes, regulations, by-laws and ordinances.

Review of your provisional permit by the full Board has been scheduled for Thursday, September 30, 2021 at 12:30 PM via Zoom's remote video tele-conferencing platform. Instructions for logging-in will be provided prior to the meeting.

If you should have any questions or need further assistance, do not hesitate to contact the Board by email (david.s.robinson@mass.gov) or at the address above.

Sincerely,

David S. Robinson
Director

/dsr

Cc: Brona Simon, MHC
Robert Boeri and Stephen McKenna, MCZM (via email attachment)
Bettina Washington, WTGH/A (via email attachment)
David Weeden, MWT (via email attachment)
Dwight Dunk and Sean Scannell, Epsilon, (via email attachment)
Charlotte M. Cogswell, CR Environmental, Inc. (via email attachment)

The Commonwealth of Massachusetts
William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

August 30, 2021

Matthew Waldrip
Eversource Energy
247 Station Drive
Westwood, MA 02090

RE: Eversource Energy 5th Submarine Cable Project, Vineyard Sound, Falmouth to Oak Bluffs, MA.
MHC #RC.70200.

Dear Mr. Waldrip:

Staff of the Massachusetts Historical Commission (MHC), have reviewed the Project Notification Form (PNF) and a copy of the Massachusetts Board of Underwater Archaeological Resources (MBUAR) Special Use Permit application and marine archaeological reconnaissance scope of work prepared and submitted by Gray & Pape, Inc., for the project referenced above.

The PNF indicates that the project requires federal permits, including a permit from the US Army Corps of Engineers. The MHC looks forward to consultation with the involved federal agencies pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR 800). A copy of the Environmental Notification Form (ENF) should be submitted to the MHC when it is filed with the MEPA office.

Additional information is required by the MHC to ascertain the project area of potential effect. Scaled existing and proposed conditions project plans for the preferred project alternative, sized no larger than 11" by 17", should be submitted to the MHC for review and comment.

Project plans should show the complete project impact area, including terrestrial and near-shore areas required for any HDD cable entrance and exit pits, access routes, equipment storage and materials staging areas in Falmouth and Oak Bluffs. The NOAA chart included in the submittal suggests that the terrestrial portions of the project impact area may be located in proximity to historic and/or archaeological resources recorded in the MHC's Inventory of Historic and Archaeological Assets of the Commonwealth.

The MHC looks forward to reviewing a copy of the draft marine archaeological reconnaissance survey report that has been prepared consistent with 950 CMR 70.14. If the project requires ground impacts within archaeologically sensitive areas above mean low water, then additional identification efforts for archaeological resources may be required. Any archaeological survey conducted for the project above mean low water must be conducted under a State Archaeologist's permit (950 CMR 70) by a qualified archaeological consultant.

220 Morrissey Boulevard, Boston, Massachusetts 02125
(617) 727-8470 • Fax: (617) 727-5128
www.sec.state.ma.us/mhc

These comments are provided to assist in compliance with Section 106 of the National Historic Preservation Act of 1966 as amended (36 CFR 800), Massachusetts General Laws Chapter 9, Sections 26-27C (950 CMR 70-71), and MEPA (301 CMR 11). If you have questions or require additional information, please contact Jonathan K. Patton at this office.

Sincerely,

Brona Simon

Brona Simon
State Historic Preservation Officer
Executive Director
State Archaeologist
Massachusetts Historical Commission

xc: Brooke Kenline-Nyman, Eversource
Paul M. Maniccia, USACOE-NED, Regulatory
Bettina Washington, Wampanoag Tribe of Gay Head (Aquinnah)
David Weeden, Mashpee Wampanoag Tribe
David S. Robinson, MBUAR
Sarah Korjeff, Cape Cod Commission
Adam Turner, MVC
Dwight Dunk, Epsilon
Kim Smith, Gray & Pape

Epsilon ASSOCIATES INC.

Projects:\6097\Eversource 5th Martha's Vineyard Cable

3 Mill & Main Place, Suite 250
Maynard, MA 01754
www.epsilonassociates.com

978 897 7100
FAX 978 897 0099

October 28, 2021
Regulatory Review
Natural Heritage and Endangered Species Program
MA Division of Fisheries and Wildlife
1 Rabbit Hill Road
Westborough, MA 01581

Subject: Eversource Energy 5th Submarine Cable from Falmouth to Oak Bluffs – Vineyard Sound

To whom it may concern:

Epsilon Associates, Inc. ("Epsilon") submits the attached Request for State-listed Species Information Form to obtain information on the state-listed species present in Vineyard Sound between Falmouth and Oak Bluffs, MA. Epsilon is conducting due diligence for Eversource Energy to install a 5th submarine cable in Vineyard Sound from Falmouth to Oak Bluffs, MA (see attached Figure 1 – Potential 5th Cable Route). The new cable will be installed via hydroplow construction technique for the majority of its length within Vineyard Sound, and will utilize horizontal direction drilling ("HDD") at the landing sites to avoid impact to intertidal resources. We identified the location of the cable installation as proximate to mapped estimated habitats of rare wildlife (EH 1366) and priority habitat of rare species (PH 2158). We respectfully request information on the state listed species so we may provide the clients with a necessary list of approvals and permits required to proceed with cable installation.

Please contact me at (978) 897-7100 or via email at sscannell@epsilonassociates.com with any questions regarding this request.

Sincerely,
EPSILON ASSOCIATES, INC.

Sean Scannell

Sean Scannell
Project Scientist

Encl: Request for State-listed Species
Figure 1 – Potential 5th Cable Route
Filing Fee – Check No. 44504

Request for State-listed Species Information

Please complete this form to request state-listed species information from the Natural Heritage & Endangered Species Program for a particular location (please submit only one project per form).

Fee: $50.00, Payable to Comm. of MA – NHESP (as required in 321 CMR 10.17(3))
No fee required if request is for conservation purposes or habitat management *and* you are a non-profit conservation group, government agency or are working with a government agency.

Requestor Information

Name: Sean Scannell
Affiliation: Epsilon Associates, Inc.

Address: 3 Mill & Main Place, Suite 250

City: Maynard
State: MA
Zip Code: 01754

Daytime Phone: 978-897-7100
Ext.
Email address: sscannell@epsilonassociate

Project Information

Project or Site Name: Eversource Energy 5th Submarine Cable from Falmouth to Oak Bluffs

Location: Vineyard Sound
Town: Falmouth, Oak Bluffs, Tisbu

Name of Landowner or Project Proponent (if different from Requestor):

Acreage of the Property:

Description of Proposed Project and Current Site Conditions: (If necessary attach additional sheet)

The Project Location is Vineyard Sound between Falmouth, MA and Oak Bluffs, MA (see the attached Figure). The new submarine cable will be installed via hydroplow construction technique for the majority of the length within Vineyard Sound, and will utilize horizontal directional drilling ("HDD") ay the landing sites to avoid impact to intertidal resources. Epsilon is conducting due diligence for Eversource Energy to install this 5th submarine cable to improve service reliability for Martha's Vineyard.

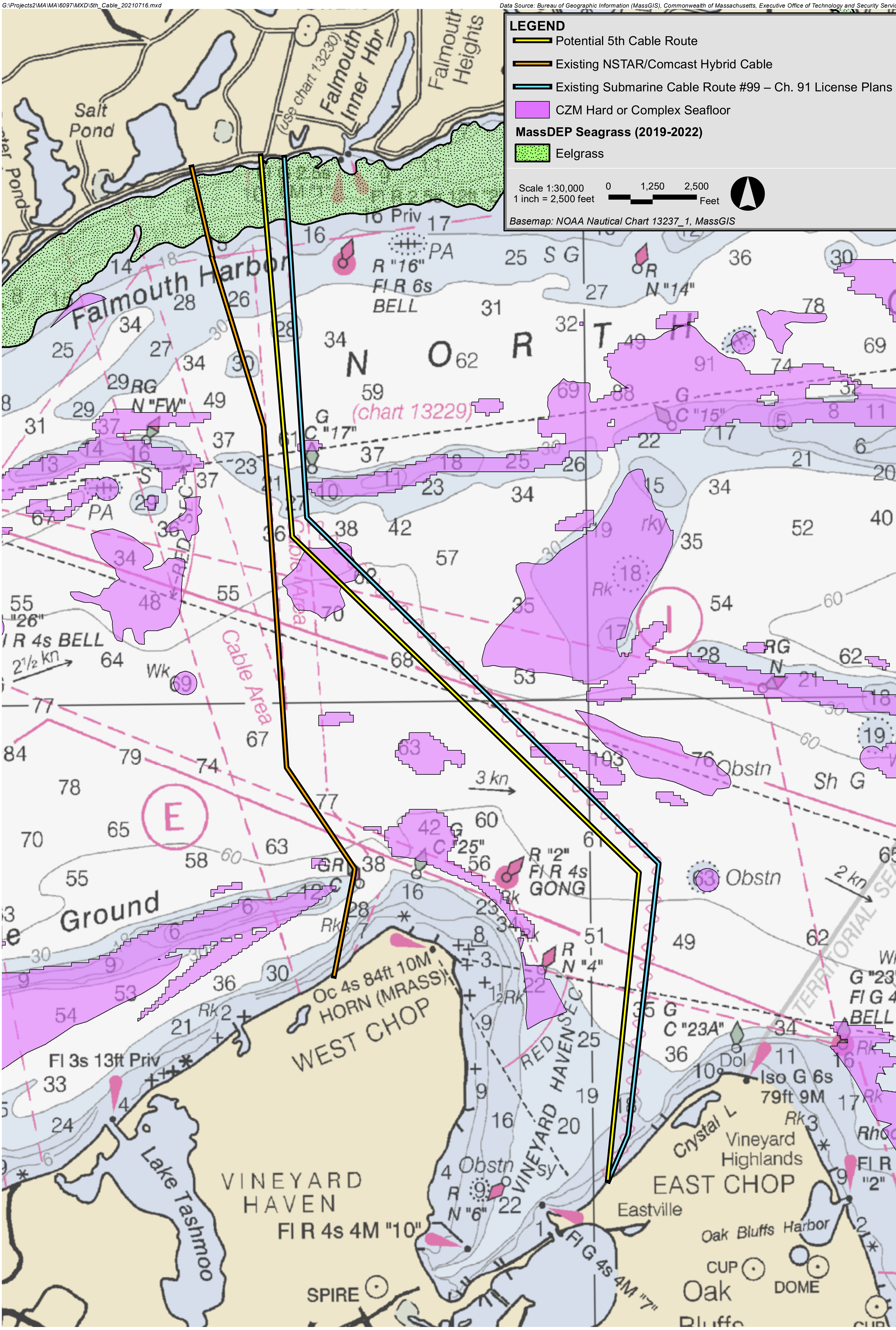
Required: Enclose a map with the site location clearly marked and centered on the page.

Please **mail** this completed form, a topographic map, and fee (if applicable) to the above address, Attn: Regulatory Review.

If no fee is required, you can email the information to natural.heritage@state.ma.us.

A written response will be returned within 30 days of receipt of all information required.

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



5th Cable

Epsilon ASSOCIATES INC.

Figure 1
Potential 5th Cable Route

MASSWILDLIFE

DIVISION OF
FISHERIES & WILDLIFE

1 Rabbit Hill Road, Westborough, MA 01581
p: (508) 389-6300 | f: (508) 389-7890
MASS.GOV/MASSWILDLIFE

December 7, 2021

Sean Scannell
Epsilon Associates, Inc.
3 Mill & Main, Suite 250
Maynard MA 01754

RE: Project Location: Eversource 5th Submarine Cable Falmouth to Oak Bluffs
Town: FALMOUTH, OAK BLUFFS, TISBURY
NHESP Tracking No.: 21-40597

To Whom It May Concern:

Thank you for contacting the Natural Heritage and Endangered Species Program of the MA Division of Fisheries & Wildlife (the "Division") for information regarding state-listed rare species in the vicinity of the above referenced site. Based on the information provided, this project site, or a portion thereof, is located **within** *Priority Habitat 2158* (PH 2158) and *Estimated Habitat 1366* (EH 1366) as indicated in the *Massachusetts Natural Heritage Atlas* (15th Edition) for the following state-listed rare species:

Scientific name	Common Name	Taxonomic Group	State Status
Sterna hirundo	Common Tern	Bird	Special Concern
Sterna dougallii	Roseate Tern	Bird	Endangered
Sternula antillarum	Least Tern	Bird	Special Concern

The species listed above are protected under the Massachusetts Endangered Species Act (MESA) (M.G.L. c. 131A) and its implementing regulations (321 CMR 10.00). State-listed wildlife are also protected under the state's Wetlands Protection Act (WPA) (M.G.L. c. 131, s. 40) and its implementing regulations (310 CMR 10.00). Fact sheets for most state-listed rare species can be found on our website (www.mass.gov/nhesp).

Please note that projects and activities located within Priority and/or Estimated Habitat **must** be reviewed by the Division for compliance with the state-listed rare species protection provisions of MESA (321 CMR 10.00) and/or the WPA (310 CMR 10.00).

Wetlands Protection Act (WPA)

If the project site is within Estimated Habitat and a Notice of Intent (NOI) is required, then a copy of the NOI must be submitted to the Division so that it is received at the same time as the local conservation commission. If the Division determines that the proposed project will adversely affect the actual Resource Area habitat of state-protected wildlife, then the proposed project may not be permitted (310 CMR 10.37, 10.58(4)(b) & 10.59). In such a case, the project proponent may request a consultation with the Division to discuss potential project design modifications that would avoid adverse effects to rare wildlife habitat.

A streamlined joint MESA/WPA review process is available. When filing a Notice of Intent (NOI), the applicant may file concurrently under the MESA on the same NOI form and qualify for a 30-day streamlined joint review. For a copy of the NOI form, please visit the MA Department of Environmental Protection's website: https://www.mass.gov/how-to/wpa-form-3-wetlands-notice-of-intent.

MA Endangered Species Act (MESA)

If the proposed project is located within Priority Habitat and is not exempt from review (see 321 CMR 10.14), then project plans, a fee, and other required materials must be sent to Natural Heritage Regulatory Review to determine whether a probable Take under the MA Endangered Species Act would occur (321 CMR 10.18). Please note that all proposed and anticipated development must be disclosed, as MESA does not allow project segmentation (321 CMR 10.16). For a MESA filing checklist and additional information please see our website: https://www.mass.gov/regulatory-review.

We recommend that rare species habitat concerns be addressed during the project design phase prior to submission of a formal MESA filing, as avoidance and minimization of impacts to rare species and their habitats is likely to expedite endangered species regulatory review.

This evaluation is based on the most recent information available in the Natural Heritage database, which is constantly being expanded and updated through ongoing research and inventory. If the purpose of your inquiry is to generate a species list to fulfill the federal Endangered Species Act (16 U.S.C. 1531 et seq.) information requirements for a permit, proposal, or authorization of any kind from a federal agency, we recommend that you contact the National Marine Fisheries Service at (978)281-9328 and use the U.S. Fish and Wildlife Service's Information for Planning and Conservation website (https://ecos.fws.gov/ipac). If you have any questions regarding this letter please contact Emily Holt, Endangered Species Review Assistant, at (508) 389-6385.

Sincerely,

Everose Schlüter

Everose Schlüter, Ph.D.
Assistant Director

Attachment G

Preliminary Inadvertent Release Contingency Plan for Horizontal Directional Drilling

Inadvertent Release Contingency Plan for Horizontal Directional Drilling

Martha's Vineyard Reliability Project
Falmouth, MA and Oak Bluffs, MA

Prepared for:

NSTAR Electric Company d/b/a Eversource Energy
247 Station Drive
Westwood MA, 02090

Prepared by:

Epsilon Associates, Inc.
3 Mill & Main Place, Suite 250
Maynard, Massachusetts 01754

April 15, 2022

TABLE OF CONTENTS

1.0 INTRODUCTION

NSTAR Electric Company d/b/a Eversource Energy ("Eversource") proposes the Martha's Vineyard Reliability Project which involves constructing a submarine cable across Vineyard Sound. The Project is needed to improve the reliability of Eversource's distribution system to and on Martha's Vineyard. The proposed Martha's Vineyard Reliability Project includes an approximately 2.7-mile underground duct bank and manhole system which will house the onshore distribution cable from the existing Eversource Stephens Lane Substation in Falmouth to the paved parking lot at the intersection of Surf Drive and Shore Street in Falmouth. The cable will then span an approximate 6.8-mile submarine route across Vineyard Sound to a landfall site off Eastville Avenue in Oak Bluffs on Martha's Vineyard. An approximate 0.25-mile underground duct bank and manhole system will house the onshore distribution cable from the landfall site to an existing Eversource parcel off Eastville Avenue. New equipment will be installed in the existing Eversource Substation in Falmouth, and a new driveway, manholes, and equipment will be installed in the Eversource Parcel in Oak Bluffs to facilitate the connection of the new cable to the grid. Combined these elements comprise the "Project."

Eversource proposes that the cable be installed via Horizontal Directional Drilling ("HDD") at each landfall site, in both Falmouth and Oak Bluffs, to avoid potential impacts to coastal wetland resource areas and Special, Sensitive, or Unique ("SSU") resources. This draft Inadvertent Release Contingency Plan ("IR Plan") was developed to support the environmental permit applications and provide information to bidders responding to Eversource's Request for Proposals to construct the Project. The selected HDD contractor will be tasked to develop a site- and project-specific IR Plan based on their construction means, method and equipment.

A primary potential environmental concern associated with HDD involves the inadvertent release ("IR") of drilling fluids during the drilling process. The purpose of this draft IR Plan is to establish general procedures to prevent a fluid release (or frac-out) during HDD construction and to outline the steps to manage, control and minimize the impacts in the event that an IR of drilling fluid occurs. The objectives of this plan are to:

- Provide an overview of the HDD process with a specific focus on the management and use of drilling fluids;
- Identify controls to be implemented during construction to minimize the potential of an IR;
- Provide a means of monitoring to permit early detection of IRs;
- Protect areas that are considered environmentally sensitive (coastal resources, biological resources, or cultural resources);
- Establish the baseline site-specific environmental protection measures to utilize prior to, during, and following drilling and pipe installation activities to minimize and control erosion and sediment releases to adjoining resources;

- Establish the baseline for a general response program for construction that is understood and can be implemented immediately by field crews in the event of an IR of drilling fluid occurs; and

- Establish the baseline for a chain of command for reporting and notifying, in a timely manner, the construction management team, the Owner, and the proper authorities in the event of an IR of drilling fluid and of the response actions that are to be implemented.

It is important to note that this document serves as the preliminary framework for the Contractor's submittal presenting a site- and-contractor-specific IR Plan consistent with the site conditions and constraints, and the Contractor's selected means, methods and equipment. This plan was prepared to support the environmental permit applications and will be updated with the selected Contractor's specific information prior to the start of HDD construction. The selected HDD Contractor will be responsible for incorporating specific permit conditions, applicable regulatory requirements, site specific environmental features and geotechnical information into its IR Plan. The final plan will be submitted for review and approval by Eversource's environmental representative prior to the start of construction.

2.0 DESCRIPTION OF HDD PROCESS

The construction sequence for installation via HDD at the landfalls will consist of the following methods:

- Approach Pit: Land-based HDD rigs are typically staged behind an approach pit, which for this Project will measure approximately 10 by 20 feet for the drill path entry point. The approach pit will provide the contractor with access to the proper trajectory for drilling and will also serve as a reservoir for drilling fluids (i.e., a slurry consisting predominantly of water and bentonite, a naturally occurring, inert and non-toxic clay) used to extract material from the drill head.

- Pilot Hole: A small diameter pilot hole will be drilled from the approach pit to the pre-determined location offshore where typical offshore cable installation will terminate. The pilot hole will be drilled at an angle of typically 8 to 18 degrees such that it arcs down beneath the nearshore coastal resources and extends to a depth of approximately 25 to 35 feet beneath the surface of the seafloor. The path of the pilot hole will then arc back up towards the desired point on the seafloor that will be the transition point offshore cable installation and the seaward end of the HDD. Drilling fluid (a bentonite slurry) will cool and lubricate the drill bit, stem, and other equipment, and will also serve to seal the sides of the bore.

- Surfacing of HDD Pilot Hole: Given the coarse-grained nature of sediments at the HDD exit hole location and the small diameter of the pilot hole, little to no turbidity is expected as the drill head reaches the seafloor surface. Although not anticipated, a small amount of bentonite clay could be released at the exit point of the HDD operation. Where the pilot hole exits the seafloor, it is expected that the contractor will lower a gravity cell (typically a 20-foot by 20-foot steel box, similar to a trench box) at the exit hole to retain any incidental bentonite drilling fluid released when the pilot drill "punches out."

The drilling fluid (typically bentonite and water based with selected polymers/additives to improve and modify fluid and drilling properties to address site-specific ground characteristics) is pumped through nozzles in the drill head to support the hole and to hydraulically transport drill cuttings from the drill bit back to the entry pit. Environmentally acceptable polymers and additives may be used on this project. Bentonite clay is an inert, naturally occurring substance and is appropriate for use in sensitive environments because it poses minimal environmental risks; for this reason, bentonite is commonly used for the HDD process. Nevertheless, the contractor will minimize the amount of bentonite near the exit hole and will have controls near the exit hole to minimize and contain any bentonite. Any bentonite retained by the gravity cell will be removed before the gravity cell is removed.

- Reaming and HDPE Conduit Insertion: After the pilot hole is established, the cutter head will be replaced with a larger diameter cutter head, or reamer. Upsizing of the bore hole is achieved by reaming the hole with successively larger cutter heads. The current plan is that the reaming passes will not punch out of the exit hole with each pass to minimize the volume of cutting fluids released during the reaming operation. Only for the final pass will the reamer punch out.

  The HDPE pipe lengths will be thermally fused and staged either onshore or offshore depending on the pulling direction for the pull-in. Lastly, the drill string is pulled back through the bore hole with the new interconnection HDPE conduit attached. The pullback will be one continuous until the lead end of the conduit reaches the entry pit.

- Cable Insertion and Transition: Upon conclusion of the reaming and conduit pullback, the end of the conduit will be capped and remain exposed on the seafloor. The conduit will likely have a messenger wire passing through it with a cap on each end until the cable is installed. Divers will assist with the messenger line retrieval/operations and perform cable pull-in monitoring while the submarine cable is inserted into the conduit and pulled through the conduit to the land connection.

- Disposal of drill cuttings and drill fluids: The HDD installation method will produce a slurry of two co-mingled byproducts: drill cuttings and excess drill fluids (water and bentonite clay). During drilling, this slurry will be collected from the reservoir pit and will be processed through a filter/recycling system where drill cuttings (solids) will be separated from reusable drill fluids. Non-reusable material consisting of drill cuttings and excess drill fluids will be trucked to an appropriate disposal site.

- Landward Manholes and Infrastructure: The submarine cable will be pulled back through the conduit installed via HDD, from which it will enter the transition vault or manhole, where it will transition to onshore cabling.

- Site Restoration: The contractor will restore the approach pit work area to match existing conditions. Any paved areas that disturbed for the HDD will be properly repaved, per the Company's agreement with the Towns of Falmouth and Oak Bluffs.

Specific to this plan, it is important to have an awareness of the function and composition of the HDD drilling fluids. The drilling fluid composition and drilling fluid management are integral components of the HDD process with the following purposes:

- Support and stabilize the drill hole,
- Suspend and transport cuttings from drill bit through the drill hole annulus,
- Control fluid loss through the bore's side walls by forming a filter cake on the bore hole walls,
- Managing and modifying the drilling fluid mix to improve its cutting carrying characteristics, its pumpability, and its hole stabilization and support characteristics,
- Power the downhole cutting tools (e.g., via mud motors if required); and,
- Serve as a coolant and lubricant to the drill bit during the drilling process, and lubricant during the pipe insertion process.

The drilling fluids are composed primarily of potable water, which will likely be obtained from municipal or private sources. As mentioned above, the drilling fluid also contains bentonite clay as a means to increase viscosity. Bentonite is a naturally occurring, nontoxic, inert substance that meets NSF/ANSI 60 NSF Drinking Water Additives Standards and is frequently used for drilling potable water wells. While bentonite is non-toxic and commonly used in farming practices, it has the potential to impact plants, fish and their eggs if discharged to waterways in significant quantities. Frequently, additives are used to: amend the drilling fluid, improve its compatibility with the ground and groundwater chemical characteristics, improve its cutting suspension and carrying characteristics, improve its hole stabilization ability, and reduce seepage loss through the ground characteristics. Environmentally acceptable additives are required for this project.

During the HDD process and subsequent conduit insertion, the drilling fluid pumped downhole will tend to flow along the path of least resistance. Generally, this will be through the annulus between the drill string and the drill hole side wall. However, the bore alignment may encounter ground conditions where the path of least resistance is an existing fracture, fissure or hole of anthropogenic origin, areas with low overburden confinement, or coarse sand/gravel zones in the soil. When this occurs, circulation can be lost or reduced. This is a common occurrence in the HDD process, but does not necessarily prevent completion of the bore or result in a release to the environment. Drilling fluid seepage associated with IR's are most likely to occur near the bore entry and exit points where the drill head is shallow. They infrequently occur at other deeper locations along the directional bore path. Again, environmentally acceptable additives to amend the properties of the drilling fluid will be used as necessary to prevent and limit releases and losses through such paths of lower flow resistance.

3.0 ORGANIZATION AND STAFF RESPONSIBILITIES

Responsibilities of Various Organizations

The principal organizations involved in this project include the Regulatory Agencies, Owner, Design Engineer, and HDD Construction Contractor. The roles and responsibilities of the principal organizations relative to HDD are discussed in the following subsections.

Regulatory Agencies

Eversource is working to obtain necessary permit authorizations and approvals to implement the Project. Anticipated regulatory agencies reviewing and issuing permits include:

Agency	Permit/Approval
Federal	
U.S. Army Corps of Engineers ("USACE")	Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899 Individual Permit
U.S. Coast Guard ("USCG")	Notice to Mariners
State	
Massachusetts Department of Environmental Protection ("MassDEP")	Water Quality Certification ("WQC") pursuant to Section 401 of the Clean Water Act Chapter 91 Waterways License
Local	
Falmouth Conservation Commission	Massachusetts Wetlands Protection Act ("WPA") Order of Conditions
Tisbury Conservation Commission	WPA Order of Conditions

Owner

Eversource is the "Owner". Eversource will provide Construction Manager(s) and Environmental Monitoring for the Project and will be responsible for correspondence and coordination among the parties including the HDD contractor and the Design Engineer.

Design Engineer

The Design Engineer for the HDD Design has yet to be selected. During construction, the Design Engineer will be responsible for reviewing and accepting required contractor submittals, shop drawings, and material certificates. The Owner in coordination with the Design Engineer will take responsibility for review and acceptance of submittals, and documenting the materials and methods used comply with the contract documents.

HDD Construction Contractor

The HDD Construction Contractor ("HDD Contractor") for this Project has yet to be selected. The HDD Contractor will be responsible to complete the pipe installation by HDD in accordance with the design criteria, contract documents, environmental compliance permits and local, state, and federal regulations. The HDD Contractor will be expected to use the appropriate construction procedures and techniques to complete the installation, including a site- and contractor-specific means and methods IR Plan prepared by the Contractor in accordance with the contract documents.

The HDD Drill Operator ("Drill Operator") will be responsible for operating the HDD drill rig and observing and managing changes in annular fluid pressure or loss of circulation. The Drill Operator will communicate with other members of the drill crew as needed when issues arise. The HDD Contractor will be responsible for developing the specific lines of communication within their organization and shall dedicate a responsible person for communicating IRs to the Owner's Construction Management team and Environmental Monitor.

Lines of Communication and Authority

In the case of a detected or suspected IR of drilling fluids from the boring, the Drilling Operator will notify the HDD Contractor's foreman or superintendent and the Owner's Construction Manager immediately. The Owner will be responsible for notifying regulatory agencies, as necessary.

Training

The HDD Contractor will ensure that all construction personnel have appropriate environmental training before beginning work. Eversource's Environmental Monitor will also conduct a project orientation and field training meeting for staff assigned with specific roles during the HDD installation and will review the site-specific environmental concerns and permit conditions. The Owner and Design Engineer will also attend the orientation meeting to review the procedures that will be used to document IRs in accordance with the HDD specifications.

4.0 FLUID RELEASE MINIMIZATION MEASURES

HDD Design

The HDD crossings are being designed to reduce the potential risk of an inadvertent fluid release during construction. Design considerations include:

- Generally, for the formation of IRs, the more critical stage of the HDD process tends to be during the initial pilot hole drilling when the annular space between the bore sidewall and the drill string is the smallest;
- Adjusting the drill alignment to miss existing infrastructure including existing utilities;

- Establishing a drill alignment line that allows for gradual angular changes to minimize pressure build-up;
- Requiring drilling fluid composition and drilling procedures that minimize drilling fluid pressures;
- Requiring drilling fluids that adequately address site-specific drilling concerns while posing the least threat to the environment;
- Preliminary analyses indicate that the likely potential IR to the ground surface is the first 25 feet after the entry pit, and the last 25 feet before the exit pit. This is common for HDD operations as the bore approaches the surface. For both HDD operations, entry will occur in a paved parking area and exit will occur in land under the ocean; and
- The Contractor should consider utilizing real-time annular pressure monitoring with the use of a down-hole annular pressure tool throughout pilot hole drilling operations, or provide alternative monitoring methods and/or best drilling practices to so that the drilled and bored (reamed) holes do not become plugged with drill cuttings leading to hydrofracture and IR.

Contingency Plan

As mentioned above, prior to construction the selected HDD Contractor will be required to submit a final Site- and Contractor-Specific Inadvertent Release Contingency Plan for review and acceptance by the Owner. The project specifications will require that the following major elements be addressed in detail in the Contractor's Plan:

- Work plan and detailed description of the drilling program (details for executing pilot hole, reaming, pull-back operations, and schedule), this plan will include necessary procedures for addressing problems that are typically encountered during HDD installations through the anticipated subsurface for each drill location, including the use of a gravity cell, or other acceptable method, to retain drilling fluids at the exit point;
- Drilling fluid composition design and on-hand amendments to alter fluid properties to reduce pressures, potential for plugging, and seepage losses;
- Description of the proposed drilling equipment and drill site layout;
- Material Safety Data Sheet ("MSDS") information for all drilling fluid products proposed for use;
- Procedures for drilling fluid pressure control, and fluid and pressure loss monitoring and management to aid in the detection of an IR (i.e., metering of makeup water, recording of drilling fluid product quantities utilized, fluid return volumes, fluid and cuttings disposal quantities, turbidity of surface water, etc.);
- Contingency plans for addressing IRs into water, which includes the specific procedures used to halt the release and then contain, clean-up, and remove materials from the release site;

- Notification procedures and chain-of-command in the event of a release;
- Criteria for evaluating the need for a drill hole abandonment and the associated plan for sealing the drill hole if abandoned; and,
- Drilling fluid management and disposal procedures.

The workspace layout for HDD materials and equipment will be configured to reduce the likelihood of a release. The entry and exit points are setback from the shoreline to allow detection and response, in the event of a release. Erosion and sediment control measures will be placed between the entry location and the beach.

Emergency Response Equipment

In addition to providing a site-specific IR Plan, the HDD Contractor will be responsible for implementing the necessary safeguards to minimize the likelihood of a fluid release and management/control should a release occur. The contractor will also have a remediation contractor on call should additional support be needed during an IR. To maximize protection to sensitive environmental areas, many of these measures will be: pre-positioned at the site, readily available and operational prior to the start of drilling. Such additional spill response will be employed immediately, as secondary measures, in the event of a fluid release. Emergency response equipment may include, but is not limited to:

- Vacuum trucks
- Boats or similar vessel to facilitate a water response
- High power pumps
- Hoses with suction heads
- Sediment controls
- Storage tanks/drums for drilling muds
- Absorbent booms
- Plastic sheeting
- Conventional clean up items: shovels, push brooms, squeegees, pails
- Supporting equipment: light plant with generator, light towers, electrical cords, extra radios, cellular phones, batteries, flashlights, lanterns

Early Fluid Release Detection

The HDD method has the potential for seepage or fluid loss into pervious geologic formations through which the bore path crosses. This may occur because of, low overburden confinement, or from seepage through porous soils such as coarse sand and gravel. It is important to note that IRs of drilling fluid can occur even if the down-hole pressures are minimal. Subsurface conditions that could be conducive and lead to IRs or drill difficulties include:

- Highly permeable soil such as cobbles and gravel;
- Considerable differences in the elevations of HDD entry and exit points (typically greater than 50 feet);
- Disturbed soil, such as unconsolidated fill; and,
- Soft soils with low overburden capacity.

An experienced drill crew is the most effective measure to detect reaction to drilling fluid seepage prior to a surface release and promptly stop the drilling, and they can modify the drilling fluid composition, properties and pressures to address indications of loss of drill fluid. The HDD Contractor will be required to utilize experienced drill crews as the HDD alignment is adjacent to environmentally sensitive areas. The following factors can be used to identify the potential for drill fluid release:

- The loss of pressure within the drill hole utilizing a downhole pressure monitoring system;
- A substantial reduction in the volume of return fluid (loss of circulation); and
- The lack of drill cuttings returning in the drill fluid

In addition to an experienced drill crew, the HDD Contractor will be required to perform periodic (at least twice a day) visual inspection and monitoring of the drill bit or reaming bit for signs of an IR. If visual monitoring indicates a potential release, additional measures such as turbidity measurements and bentonite accumulation measurements will be required.

5.0 INADVERTENT RELEASE MONITORING AND NOTIFICATIONS

The HDD Contractor is responsible for monitoring the drilling operation to detect a potential IR by observing and documenting the flow characteristics of drilling fluid returns to the HDD entry/exit pits and by visual inspection along the drill path. If drilling fluid to the HDD entry/exit pits are lost, the HDD Contractor shall implement the following steps:

- The Drill Operator will monitor and document pertinent drilling parameters/conditions and observe and monitor the drill path for evidence of an IR. If there is evidence (typically visual) of a release, the contractor will be required to stop the drilling immediately;
- The HDD Contractor will notify the Owner’s Construction Manager or Environmental Monitor of significant loss of drilling fluid returns at the drill rig;
- The HDD Contractor will take steps to modify the drill fluid properties and pressures to reduce the potential of drill fluid loss or release; and

- The Drill Operator will take steps to restore drilling fluid circulation in accordance with the requirements of the HDD technical specifications.

If a fluid release is identified, an immediate response is necessary and the proper corrective actions must be taken to minimize impacts to environmentally sensitive resources (e.g., watercourse, waterbodies, and wetlands).

Inadvertent Release Notification

The Drill Crew will notify the Owner's Construction Manager or Environmental Monitor immediately if an IR is identified regardless of its location. The HDD Contractor will be responsible for notifying applicable regulatory agencies, as necessary. IRs that occur within uplands that are properly contained and removed from the site may not be reported to regulatory agencies at the discretion of the Owner. The HDD Contractor shall not resume HDD activities until the release is controlled and confirmation has been received from the proper authorities. The Owner's Construction Manager will notify the HDD Contractor when HDD drilling operations may resume.

6.0 INADVERTENT RELEASE RESPONSE (UPLAND)

If the IR is **terrestrial** the following specific processes will be followed:

- Contain any surface IRs by use of conventional sediment controls
- In the event of an excessively large IR, a spill response team (e.g., Clean Harbors) would be called to assist the contractor in containment and cleanup of excess drilling fluid in the water. Phone numbers of the spill response team will be available on site at all times
- Place pumps or vacuum equipment at source of IR to recover drilling fluid and into containment tanks and disposed of at an approved facility.

A common reason for upward movement and release of drill fluid is from pressure exerted by drill pumps. Lowering drill fluid pressure is a first step to limiting a release and can be accomplished by stopping drill rig pumps and allowing pressure to bleed off. With no pumping pressure in the hole, surface seepage will generally stop, then the HDD Contractor can trip the drill steel back a selected distance and attempt to clear cuttings from the annulus to re-establish circulation.

The contractor will be required to contain/isolate and remove fluid that released to the surface. On land this can be done through use of berms, straw bales, or silt fence in conjunction with excavating a small sump if needed. Sufficient spill-absorbent material will also be available on-site.

If a release is identified in an upland area, the HDD Contractor will be required to immediately respond as described above to limit the extent of the release. After containment is established, cleanup and removal can be conducted by hand, with vacuum trucks, or other equipment. The Environmental Monitor will be present during clean up and removal activities, as they may need to be conducted outside of the pre-authorized temporary workspace areas. The Environmental Monitor, Construction Manager, and the HDD Contractor will work closely to determine the best course of action for IRs occurring within upland areas.

Upon containment of the release, the HDD Contractor will be required to evaluate the cause of the seepage and develop mitigation strategies to limit the likelihood of recurrence. The location of the seepage and the area around the seep will be monitored upon the re-start of the HDD operations for changes in conditions. The segments of borehole nearest the entry points and other areas of low overburden cover tend to be the most susceptible to surface seepage as they have the least amount of soil confinement. These locations may have areas of dry land where seepage detection is easily identified and contained. If areas of high risk for IRs are identified during the HDD design phase, they can be protected from an uncontrolled release through use of strategically placed confinement/filter beds, straw bales, silt fence, or earthen berms placed prior to the start of drilling. Introduction of non-toxic, engineer approved, "Loss Circulation Materials" as in cotton seed hulls, newspaper, cedar fibers or corn cobs may be introduced to help regain circulation and prevent further IR's.

7.0 INADVERTENT RELEASE RESPONSE (IN WATER)

If the IR is in the water the following specific processes will be followed:

- The underwater release point will be identified
- In the event of an excessively large IR, a spill response team (e.g., Clean Harbors) would be called to assist the contractor to contain and cleanup of excess drilling mud in the water. Phone numbers of the spill response team will be available be on site (see below section regarding Emergency Response Equipment for more detail)
- A Gravity Cell (trench box) or similar barrier will be deployed at the IR or release point to help contain the release.
- A dive team will then be deployed to help clean up the fluid release.
- Divers will place pumps or vacuum equipment at source of IR to recover drilling fluid and place removed material in containment tanks and disposed of at an approved land-based facility.

If an IR occurs within the water, the HDD Contractor will be required to cease drilling operations, reduce pressures in the borehole immediately, and notify the Owner's Construction Manager and Environmental Monitor. The Environmental Monitor, with input from the Drill Operator, will evaluate the potential impact of the release on a site-specific basis and will determine the appropriate course of action. The contractor will be required to develop general response methods for marine resource area(s) and pre-place necessary materials and equipment at the site prior to construction. Specific response actions will be determined in consultation with the Environmental Monitor and Contractor and could include the following:

- Shutting down or slowing the drill fluid pumps – slowing fluid pumps is preferred because there are risks to the complete shut down;
- Modifying the drill fluid properties, add agents to reduce drilling fluid pressures and/or to plug/seal release path;
- Tripping the drill steel back a selected distance and attempt to clear cuttings from the annulus to re-establish circulation
- Stopping drilling activities for 24 hours to allow the bentonite in the subsurface pathways to gel and seal the pathways;
- Evaluate the current drill methods to identify site specific improvements to lower the risk of additional IRs;
- Implementation of proper in-water control measures including, but not limited to gravity cells, silt curtains, and turbidity curtains. These activities will require that qualified personal and equipment and other support materials, and supplies be prepositioned and readily available at or near the site; and

8.0 DRILL HOLE ABANDONMENT PLAN

In the event the HDD Contractor must abandon a drilled hole, a plan to fill the abandoned hole will be implemented as outlined in the contractor's project-specific Inadvertent Release Contingency Plan and an alternative plan/alignment for the HDD landfall will be evaluated. If it becomes necessary to abandon a partially completed hole, the abandoned hole will be filled with a mixture of high-yield bentonite, water, and drill spoil. The first ten feet of the bore path will be compacted and filled with soil to prevent future settlement. The HDD Contractor's site-specific abandonment plan will be accepted by the Design Engineer and Owner prior to being performed in the field.

After the abandoned hole is filled, an alternate entry and exit hole and bore path alignment will be evaluated by the HDD Contractor, Owner, and the Design Engineer. The new alignment will be offset from the abandoned hole by at least 10 feet (except at the ends where a 5-foot offset may be used) to help limit the risk of steering difficulties due to the presence of or hydraulic connection causing drill fluid loss to the abandoned hole.

Attachment H

Marine Survey Report

GEOPHYSICAL AND UNDERWATER VIDEO SURVEYS SEDIMENT SAMPLING EVERSOURCE 5TH CABLE
Vineyard Sound, Falmouth and Vineyard Haven, MA

Red transects of Gravel Pavement (boulders) in deeper water of the southern half of the Eversource 5th Cable Corridor

Diverse Colonizers at VS-19 72 ft below MLLW - Sulfur Sponge, Northern Star Coral, and Juvenile Sea Bass

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APPENDICES

1.0 INTRODUCTION

CR Environmental, Inc. (CR) conducted bathymetric and geophysical surveys, a towed underwater video survey and sediment sampling to characterize the proposed 5th Cable corridor between Oak Bluffs and Falmouth, Massachusetts (Figure 1). The survey area consisted of approximately 3.16 km^2 spanning 10 km of Vineyard Sound. Survey components included: towed underwater video; multibeam bathymetry and backscatter; side scan sonar; sub-bottom sonar; and magnetometry. The survey operation was based out of Falmouth Harbor. Hydrographic and geophysical operations were conducted first to ensure safe deployment of the video system and selection of sediment sampling stations. The survey and sampling efforts were executed between August 19 and November 22, 2021. Remote sensing data acquisition was completed on September 14th. The underwater video survey was conducted between September 29 and October 1. Sediment sampling was conducted between November 17 and 22. Towed underwater video transects and sediment sample locations were cleared by marine archaeologists at Gray & Pape, Inc. prior to work commencing.

CR's survey and processing methods were designed to allow synergistic analysis of data from multiple sensors using GIS software to provide accurate mapping of surface and sub-surface characteristics and features of interest within the survey area.

2.0 DATA ACQUISITION AND PROCESSING METHODS

2.1 Bathymetric and Geophysical Survey Methods

2.1.1 Vessels and Navigation

Multibeam bathymetry, towed side scan sonar, and magnetometry surveys were conducted using CR's 25-foot vessel *Cyprinodon*. To expedite data acquisition sub-bottom profiling was conducted using the 24-foot vessel *Hayden Jane.* Each vessel was equipped with a side-mounted transducer pole and clean 110-volt power supplies. The surveys were designed and supervised by a NSPS Certified Hydrographer. The survey crews included qualified hydrographers, USCG licensed vessel captains and crew members familiar with deployment and retrieval of towed instruments. Vessel positioning was performed using a Hemisphere VS-330 RTK GPS system and HYPACK survey software.

Transect spacing for sub-bottom sonar and magnetometer surveys was set to 50 ft (15.2 m) per Massachusetts Board of Underwater Archaeological Resources (MBUAR) requirements (Figure 1). Bathymetric and side scan sonar data were simultaneously collected along these transects, yielding greater than 200-percent seafloor coverage for these sensors. Additional multibeam transects were occupied in shallow areas to achieve full seafloor coverage. Cross-line transect spacing for multibeam bathymetry and sub-bottom sonar was set to 1,640 ft (500 m). Towed underwater video data were collected along transects spaced approximately 1,000 ft (305 m) apart oriented perpendicular to the survey corridor alignment.

2.1.2 Bathymetry and Acoustic Backscatter

Multibeam bathymetric data were collected in waters deeper than approximately 3 m Mean Lower Low Water (MLLW) using a Teledyne Reson T20-R multibeam echo sounder (MBES). Approximately 317 km (197 miles) of transects were occupied. In addition to high-resolution bathymetry, the T20-R MBES recorded high-resolution quantitative backscatter ("Snippets") and side scan sonar data. These backscatter data allowed mapping of the distribution of surficial sediment texture (roughness). Motion and heading corrections were provided by an IxBlue OCTANS V fiber-optic geocompass. Corrections for water surface fluctuations were acquired using the Hemisphere RTK GPS system and verified using tide data collected by a digital water level recorder installed adjacent to a shoreline benchmark established on a wooden pier at the mouth of Falmouth Harbor. The benchmark was surveyed using RTK GPS. The benchmark elevation was 1.356 m NAVD88 (0.966 m MLLW). MBES system components were interfaced to a computer running HYPACK acquisition and processing software.

MBES data were acquired using a transmit frequency of 250-kHz and a 0.039 millisecond pulse. Power and gain settings remained constant throughout the survey to minimize backscatter differences between transects. Using this frequency the MBES beam angle was approximately 1.75 degrees with an acoustic footprint of 0.24 m^2 to 1.27 m^2 across the swath at the mean site depth.

Patch calibration tests were performed daily to verify angular offsets between the MBES transducer and the motion/heading sensor. Water column sound velocity was determined at the beginning and end of each survey day by collecting profiles using an AML Minos-X sound velocity profiler. The water column was well mixed during the survey. Transducer draft was verified daily using the "Bar Check" method, in which a metal plate is lowered to a known depth beneath the transducer. Echo sounder depths consistently matched the bar depth to within 1 cm.

MBES data were processed using HYPACK L]W[IIT† software. Components of processing included removal of outlying soundings associated with water column interference (e.g., vegetation, fish), application of sound velocity profiles and conversion of soundings to MLLW elevations using RTK GPS and tide gage data. Bathymetric data were filtered to accept only beams falling within an angular limit of 55° from nadir (vertical). Multibeam data were exported as an ASCII space delimited text file using the average elevation in 1 m x 1 m cells per US ACOE recommendations (US ACOE, 2013). A grid was created from this data to facilitate visualization and interpretation. The grid and a 3-dimensional surface visualization were provided to Gray and Pape, Inc. to aid their archaeological review of data.

Bathymetric data accuracy and uncertainty was quantified using comparisons between data collected on primary transects and on perpendicular cross-lines. These differences were statistically analyzed and tabulated for comparison with accuracy recommendations published by the US Army Corps of Engineers (US ACOE, 2013).

2.1.2.1 Multibeam backscatter processing

The MBES system recorded backscatter data in Snippets and side scan formats. A backscatter Snippet is the series of amplitude values in the signal reflected from a beam's footprint on the seabed. One Snippet is produced for each of the T20-R system's 256 beams for each sonar ping. These backscatter data were processed using HYPACK's implementation of GeoCoder software developed by NOAA's Center for Coastal and Ocean Mapping Joint Hydrographic Center (CCOM/JHC). GeoCoder was used to create a mosaic best suited for substrate characterization through the use of innovative beam-angle correction algorithms.

Snippets data were extracted from cleaned files and a mosaic of beam time-series (BTS) backscatter data was created using GeoCoder, and was exported in grey-scale TIF raster format. BTS data for the survey were also exported in ASCII format with fields for Easting, Northing, and backscatter (dB) using a 0.20 m cell resolution. These data were gridded and used to develop a map of seabed backscatter values (sediment roughness). The grid was converted to ESRI raster format to facilitate comparison with other data layers using GIS software. A second raster was produced by applying a mild Gaussian filter to the grid to minimize near nadir artifacts.

MBES side scan data were processed using Chesapeake Technology, Inc. SonarWiz software. Processing steps included water column removal and application of moderate time-varied gain to raw files. Data were exported as a GeoTIF mosaic with a pixel resolution of 0.25 m x 0.25 m.

2.1.3 Side Scan Sonar

Towed side scan sonar data were acquired using an Edgetech, Inc. Model 4125 400/900 kHz system. The system was interfaced to a computer running Edgetech, Inc. Discover acquisition software. The acquisition computer was interfaced to a Hemisphere RTK GPS system via serial connection.

Sonar data were collected using both 400- and 900–kHz frequencies and 25 - 50 meter range scale to accommodate the range of water depths encountered over the survey area while maximizing image resolution. Survey transects were spaced to ensure greater than 100 percent insonification of the seabed, often greater than 300-percent. The survey team prioritized maintenance of appropriate sonar altitude despite strong currents.

Towed side scan data were processed using SonarWiz software. Data were first corrected for towfish layback and signal attenuation. The position of the towfish was calculated in real-time using a HYPACK mobile device utility which considers "cable out" relative to the GPS antenna, the cable catenary curve, and the effects of vessel course corrections. Layback corrections were further adjusted and verified during post processing using targets visible on parallel files with opposite courses. These corrected data were converted to XTF format and provided to Gray and Pape, Inc. to aid their archaeological review of data.

CR created mosaics of 400- and 900-kHz data in georeferenced TIF format suitable for analysis using GIS or CAD software. Targets (Contacts) of potential interest were digitized from 900-kHz data in SonarWiz. Each Contact was measured, described and tabulated. High resolution images have been provided for each Contact

2.1.4 Sub-Bottom Sonar

Sub-bottom sonar data were acquired using an Innomar Compact profiling system interfaced to a RTK GPS system. The GPS antenna was installed directly above the transducer and no layback offsets were required. The transmit beamwidth of the system is approximately 2-degrees. Transmit power was optimized and signal gain dynamically adjusted to minimize clipping (signal saturation) of hard-bottom reflectors while maximizing penetration. The system was operated using an 8-kHz center frequency. Data were recorded in Innomar "RAW" data format using Innomar's SESWIN software.

Sub-bottom data were processed using Chesapeake Technology's SonarWiz software. Appropriate adjustments to time-varied gain (TVG) were made during processing. Data were converted from Innomar's proprietary "RAW" format and exported in SEG-Y format. These data were delivered to Gray and Pape, Inc. to aid their archaeological review of data.

CR digitized the seafloor for each profile. CR next carefully inspected each sub-bottom profile for the presence of buried features of interest. The "acoustic basement" was digitized for each profile. In the context of this project, acoustic basement is the maximum interpreted sonar penetration (i.e., maximum overburden thickness). In some instances, this basement may clearly indicate the surface of ledge, in others an acoustically opaque or diffuse layer due to scattering (e.g., coarse gravel), and in others the presence of entrained natural gases associated with microbial activity. A combined ASCII text layer was exported from "thickness" layers computed by subtracting seafloor depth from basement depth. These data were converted to grid format and filtered to remove artifacts. Sub-bottom profiles were exported in JPG format with accompanying GIS shapefiles (polylines) of navigation data.

2.1.5 Magnetics

Magnetic data were acquired using a Marine Magnetics, Inc. Explorer high resolution marine magnetometer system. Transect spacing was set to 50 ft to comply with MBUAR requirements. The magnetic data acquisition system consisted of a towfish-mounted Overhauser magnetic sensor and pressure/depth sensor, an onboard power supply and serial interface, and a data acquisition computer. The 4-Hz data stream from the magnetic sensor was routed to the HYPACK navigation computer via serial port, and HYPACK recorded magnetic readings in gammas (1.0 gamma = 1 nanoTesla) as a separate field within the same raw data file containing RTK GPS navigation data.

The magnetometer was towed at a fixed distance (10 m) behind the side scan sonar towfish using a combined cable tether with the magnetometer towfish adjusted to neutral buoyancy. This towing configuration provided the survey technicians with a real-time depiction of the altitude of both sensors, minimizing potential impacts with the seabed and simplifying layback corrections (Section 2.3).

Magnetometer data were processed using HYPACK's Magnetometer Processor Module. Each magnetic survey transect was first inspected in profile format for signals which indicate the presence of ferrous anomalies (objects) or utilities. Observed anomalous signals were digitized to an ASCII database including fields for position, approximate magnitude (in nT), and shape. Signal shape classifications include Dipolar (DP), Monopolar (MP) and Multiple Component MC). Images of each anomaly (in profile) were stored with measurements in a database.

After inspecting each data file and digitizing anomalies, magnetic measurements were merged into a single ASCII comma-delimited database containing all total field (TF) magnetic intensity measurements for the survey area. The database included fields for Northing, Easting, and magnitude (in nanoTeslas – nT). This combined data set was transformed into magnetic gradients by subtracting subsequent measurements, thereby minimizing interference from geological features or temporal variations of magnetic fields. The resultant data set was imported to Golden Software, Inc. Surfer Surface Modeling Software. A grid was calculated and used to create a map depicting magnetic gradients. The map was exported as a georeferenced TIF image file for analysis in GIS software.

2.2 Towed Underwater Video Sled Survey Methods

On September 29, 30, and October 1, 2021, CR Environmental, Inc. (CR) performed a towed underwater video sled survey to document bottom substrate and biota, and identify any potential Special, Sensitive or Unique Areas (SSU's) such as hard/complex seafloor, and eelgrass beds along the 1,000 ft (305 m) wide Eversource 5th Cable corridor. Underwater video data were collected along 41 transects as directed by Epsilon Associates. Twenty-eight of the cross-corridor transects were spaced approximately 1,000 ft (305 m) apart along the length of the corridor and the remaining tighter spaced transects were in shallower waters at the northern and southern landfall extents.

2.2.1 Vessel and Navigation

Vessel operations for the underwater video sled survey were performed from CR's 25-foot fiberglass survey vessel, *Charlotte Anne*. The vessel has a large, enclosed pilothouse, bench for survey equipment, stern mounted lifting davit and hauler, and 12-volt and 110-volt power supplies.

Navigation for the surveys was accomplished using a Hemisphere V104 Sub-meter GPS and Heading Sensor that was serially interfaced to a shipboard computer running HYPACK hydrographic surveying software. This system calculated X and Y positions in the desired grid system (UTM North, Zone 19 Meters), recorded navigation data, and provided a steering display for the vessel captain.

Progress of the video sled survey along the proposed transects was followed in HYPACK using georeferenced imagery (e.g., orthophotos) as a background file by the vessel captain thus ensuring video transect coverage at the chosen transect locations.

GPS offsets from the GPS antennae to the stern mounted davit on *Charlotte Anne* were input to the HYPACK software and laybacks (distance from the video sled to davit) were adjusted regularly using line angle and line out.

2.2.2 Video Sled Survey

Underwater video data were collected using CR's portable towed video sled consisting of a lightweight aluminum frame, Outland Technologies' (OTI) high-definition fixed focus color video camera, and two wide-angle LED video lights with variable output control. The OTI video camera was cabled to an OTI-1080 HD DVR recorder and high-resolution daylight monitor at the surface. In addition, a GoPro Hero 4+ Black video camera in a Golem Gear deep water housing was mounted below the OTI camera and programmed to record full HD video at 1080P, 30 frames per second, and take 12 megapixel still frames every 5 seconds. Prior to deploying the video sled, the time on the OTI DVR and GoPro cameras were synced to the time on the navigation system. OTI and GoPro cameras were also synced simultaneously by videotaping the transect number and date on a white board prior to deployment of the sled and by recording position at the time of the initial contact with the bottom with both cameras operating.

The video sled was operated in drift and towed mode. The sled was raised and lowered using the stern-mounted davit on the *Charlotte Anne*, and the height of the system off the bottom was continually adjusted to achieve the best bottom coverage and video quality. When the video camera was one foot off the bottom, the viewing area of the camera was approximately 1.5 feet x 1.5 feet (18 inches x 18 inches), and the video quality was optimal for bottom sediment characterizations and biota identifications. For scaling purposes, lasers were set 10 inches (25 cm) apart and a calibration check was performed prior to video operations.

Camera footage was backed up on an external hard drive at the end of the underwater video operation. The video transect data from the OTI camera video footage displayed time from the GPS and these data were reviewed for preliminary substrate mapping. Seabed screen captures were prepared from each transect and a preliminary substrate figure was provided to Epsilon and Gray & Pape to help plan and guide the sediment sampling operations.

Subsequently, the higher resolution GoPro camera footage was reviewed by CR's marine biologist for the final species identifications and bottom substrate classification using CMECS guidelines. For each transect the video was paused approximately every 30 seconds and a screen capture created.

Substrate and biota notes were taken for each screen capture.

The most abundant CMECS substrate component was determined visually for each screen capture. The frequency of dominant substrate components for each transect were calculated from the screen capture data to determine the final dominant substrate or substrates for a transect. Most dominant substrates had frequencies of 70-90%. Multibeam backscatter and side scan sonar data in the vicinity of the transects were also reviewed when determining the dominant CMECS substrate classifications.

Notes on biota for each screen capture within a transect included presence/absence data to assess species frequency, and rough counts for select species (e.g., fish, sea urchins). These data along with visual estimates of cover for sessile species such as sponges, tunicates, mussels and coral using CMECS modifiers (i.e., trace <1%, sparse (1-<30%, moderate 30-70%, dense 70-90%, complete 90-100%) were used to determine each transects biotic components: class, sub-class, biotic group, biotic community, co-occurring elements and associated taxa.

A representative subset of the screen captures taken along each video transect were annotated and provided with this report.

Data compiled for each transect included:

- The dominant CMECS (FGDC-STD, 2012) substrate and biotic component units,
- Presence/absence data for biota (fauna, seagrass and macroalgae) observed, and
- The presence of Special, Sensitive or Unique Areas.
- Water depth in Mean Lower Low Water (MLLW)
- Start and end coordinates in NAD83

Biotic data were reviewed amongst the transects to determine common assemblages observed along the cable corridor, and their association with substrate features. Aggregated CMECS classifications were completed for these common assemblages with accompanying representative screen captures.

All raw navigation data and edited GoPro underwater video data with the local time and file names have been furnished to Epsilon Associates.

2.3 Sediment Sampling Methods

2.3.1 Vessel and Navigation

Sediment vibracore and grab sampling was conducted from CR's 26-foot landing craft style vessel, *Lophius,* designed for shallow water sediment sampling operations. *Lophius* is equipped with a 1,000-pound capacity hydraulic winch and bow-mounted A-frame, portable generator, and a Humminbird combination radar, depth sounder, and chart plotter. The bow door can be lowered to the water surface.

Navigation for the sampling effort was accomplished using a Hemisphere VS 104 Differential GPS with built in heading capable of providing sub-meter horizontal position accuracy. The GPS was interfaced to a shipboard survey laptop running the latest version of HYPACK® hydrographic surveying software. During the sediment sampling operations, this system calculated X, Y positions in the desired grid system, recorded navigation data and provided a steering display for the vessel captain. Georeferenced imagery (e.g., orthophotos) and NOAA mapped charts were used as background files.

R/V *Lophius* during vibracoring operations on the 5th Cable corridor

The 25-foot support boat *Charlotte Anne* was provided to make security calls to vessels working in the area and the processing and storage of cores and samples by Epsilon.

2.3.2 Vibracore and Grab Sampling

Thirty-one sediment sampling stations were proposed. Stations were located mid-corridor and spaced approximately 1,000 ft (305 m) apart along the length of the corridor roughly coincident with the planned underwater video transects.

Following characterization of the areas of hard seafloor during the 5th Cable geophysical and underwater video field operations, and consultation with MBUAR, it was determined that vibracoring was not feasible at 18 of the 31 proposed sediment sampling stations. Instead grab samples were to be collected at these stations.

Vibracore and grab sampling was conducted over a 4-day period, November 17 through 22, 2021.

Two-point anchors were set for vibracoring operations. Coring was attempted at 13 of the 31 sample locations. Vibracores were successfully obtained at 12 stations. A grab was taken at VS-24 instead of a core. The core ID, coordinates, time and date of collection, water depth, core penetration and recoveries were recorded in HYPACK survey software.

Two cores were collected at each vibracore station, one for grain size and potential chemical analysis depending on grain size results, and a second was provided intact to marine archaeologists at Gray & Pape. Vibracores were collected using CR's NAVCO pneumatic vibracore system that includes a 1,750 vpm Bin/Hopper Vibrator, 50 cfm portable air compressor and 6-10 foot long 3-inch diameter galvanized steel core barrel with core cutter/catcher assemblies and clean 2 7/8-inch OD CAB hard plastic liner. The system is equipped with a check valve for retaining fine sediments. The liners were removed intact from the core barrel, labeled, and capped prior to transport to the support vessel. The core used for grain size and chemistry was opened, sampled for volatile organic compounds, photographed, logged, and sampled for grain size and other chemical constituents by Epsilon Associates field personnel. A generator and cutting shears were provided to safely open the core liners. The top of the intact core for Gray & Pape was capped and labelled with Station ID, water depth, penetration, recovery, and time.

Grab samples were collected at the remaining 19 sediment sampling stations using a Ted Young 0.1 m^2 modified Van Veen grab sampler. A minimum of three grab samples and maximum of five were taken to collect enough sediment for analyses. Sediment samples were inspected through the upper doors of the grab to ensure adequate recovery. If recovery was acceptable volatile organic compound samples were taken immediately upon retrieval. The grab was then emptied into a clean stainless steel bowl for further processing. A clean stainless-steel spoon was used to collect and transfer sediment to one gallon plastic bags for grain size analysis, and laboratory supplied sample jars for sediment chemistry. Sampling equipment was deconned between sampling events. Sediment samples were kept on ice in coolers prior to being transported by Epsilon Associates to Rhode Island Analytical, Warwick, RI.

3.0 RESULTS

The following Sections describe the bathymetric, geophysical and underwater video data results. GIS software provided accurate mapping of surface and sub-surface characteristics and features of interest within the survey area allowing synergistic analysis of data from multiple sensors. Video data were used to identify Coastal and Marine Ecological Classification (CMECS) substrate and biotic components found along the proposed 5th Cable corridor (FGDC, June 2012), and to aid in the interpretation of geophysical survey data. Mapped habitat roughness and complexity derived from geophysical data helped inform the CMECS classifications and identification of Special, Sensitive or Unique Species and Habitats (SSUs) under the Massachusetts Ocean Management Plan (EEA, 2021). Sediment sampling coordinates and collection notes are provided but reporting of any chemical or grain size analyses was conducted by others.

3.1 Multibeam Bathymetric and Acoustic Backscatter Results

Seafloor elevations in the survey corridor ranged from approximately -2.2 m to -31.0 m MLLW (-7.2 ft to -102 ft MLLW). The mean depth was -16.0 m (-52.5 ft) MLLW (Figure 2).

Bathymetric relief clearly identified the presence of sand ripples, sand waves, sandy gravel waves, boulder fields and portions of utility crossings (Figure 3).

Statistical analysis of multibeam bathymetric data intersections showed a negligible mean elevation bias of -0.01 m (-0.033 ft), and a mean vertical uncertainty of 0.12 m (0.39 ft), substantially lower than the values recommended by USACE (2013, Table 3-1: bias <0.2 ft, 95% uncertainty <0.8 ft) (Table 1). Uncertainty was driven by the presence of boulders and steep slopes relative to the acoustic beam footprint rather than systematic errors or biases. The analysis documented negligible tide biases and minimal horizontal uncertainty. Portions of the data contained low magnitude (~ 0.05 m) artifacts associated with navigating the strong currents at low speed.

3.1.1 Seafloor Roughness and Complexity

Several metrics of seafloor roughness and complexity were calculated and mapped using the bathymetric data. These included: rugosity, slope, vector ruggedness measure, and slope of slope.

3.1.1.1 Rugosity

Rugosity, a measure of seafloor roughness, is the ratio of surface area to planar area within a square 3 x 3 cell neighborhood. Values near 1.0 suggest flat terrain with higher values suggesting rougher more complex terrain. CMECS Table 10.11 defines rugosity values between 1.0 to < 1.25 as "Very Low", values between 1.25 to <1.50 as "Low", and 1.50 to <1.75 as "Moderate" (FGDC, June 2012).

Rugosity was calculated using QPS Fledermaus software to develop a grid suitable for analysis in ArcGIS. Rugosity values ranged from 1.0 to 1.47 with a mean of 1.0015. Ninety-nine percent of the rugosity values were very low, below 1.033. The higher rugosity values were in the areas of sand waves and boulders (Figure 4).

3.1.1.2 Slope

Slope was calculated using Surfer software. CMECS Table 10.12 defines slopes between 0 degrees to < 5 degrees as "Flat", between 5 degrees to <25 degrees as "Sloping", between 30 degrees to < 60 degrees as "Steeply Sloping", and between 60 degrees to <90 degrees as vertical (FGDC, June 2012). Slopes within the survey corridor ranged from 0 degrees or flat to 60 degrees vertical. The mean slope value was 2.46 degrees. Ninety-nine percent of the slope values were lower than 15.9 degrees or flat to sloping. Sand waves and large angular boulders were responsible for the highest slope values (Figure 5).

3.1.1.3 Vector ruggedness measure

The Benthic Terrain Modeler (BTM) extension for ESRI ArcGIS developed by NOAA and MA CZM was used to calculate the Vector Ruggedness Measure (VRM) as presented in Sappington et al., (2007). The intent of the application of VRM to data was to spatially estimate the extent of seabed dominated by larger hard bottom substrates (i.e., large cobbles and boulders). VRM ruggedness values can range from 0 (no terrain variation) to 1 (complete terrain variation). BTM documentation suggests typical values for natural terrains range between 0 and about 0.4.

The VRM model was exported from ArcGIS and used to construct contours in Surfer software with intervals selected to minimize interferences associated with minor depth differences between transects (bathymetric artifacts). These contours were exported in shapefile format and imported to ArcGIS. Contours associated with obvious sand waves and sand wave fields were cleaned from the contour layer resulting in a map that represents the estimated extent of large hard bottom substrates (Figure 6).

VRM values ranged from 0 to 0.04 (mean = 0.0017). Ninety-nine percent of values were lower than 0.019. Values lower than 0.002 were associated with bathymetric artifacts.

The VRM model appeared to accurately delineate the extent of larger coarse substrates (cobble and boulder) when visually compared to bathymetric relief, side scan sonar and towed video data. Model sensitivity was sufficient to identify isolated boulders and troughs associated with existing cables in the northern portion of the corridor.

3.1.1.4 Slope of slope

Recent research has demonstrated that the seafloor slope of slope (habitat complexity in degrees of degrees) is a robust indicator of benthic habitat value from a fisheries perspective (Wedding and Yoklavich, 2015; Borland et al, 2021). The measure reflects the maximum rate of slope change, with higher values associated with increased diversity and fish abundance.

Slope of slope was calculated from the bathymetric grid using Surfer software and imported to ArcGIS. Slope of slope values ranged from 0 to 84 degrees of degrees (mean = 16) (Figure 7). Ninety-nine percent of values were less than 72 degrees of degrees. High values were associated with cobble and boulder substrates. The highest values were associated with sand waves. Lower values were associated with pebble substrate and the lowest values were associated with

Crepidula reef. The slope of slope model was sufficiently sensitive to detect relief associated with existing cables within the survey corridor.

3.1.2 Backscatter Results

Multibeam backscatter data (Snippets) allowed mapping of surficial seabed features and textures without the positional uncertainties associated with towed sonar systems. The backscatter mosaic (Figure 8) suggests the presence of eelgrass in the northernmost portion of the corridor extending approximately 400 m (1,312 ft) from the shoreline, though raw bathymetric data did not appear to have signatures associated with aquatic vegetation. The northern sand wave field which was clearly visible in bathymetric data exhibited the lowest backscatter, suggesting that substrates in this area are likely composed of sand without epibiota. The highest backscatter was mapped in the southern sand wave field, suggesting a coarser sand, gravel and cobble matrix without acoustic scattering associated with epibiota. Other portions of the survey corridor, including those which were suggested by bathymetric and video data to be dominated by large cobbles and boulders, possessed intermediate backscatter values. This suggests that much of this stable seabed may be covered with epibiota which scatters and absorbs acoustic signals, masking the reflectance of the geologic substrate.

3.2 Side Scan Sonar Results

Towed side scan sonar data allowed a more refined inspection of surficial bottom features than MBES backscatter layers albeit with a minor degradation of positional accuracy associated with the towed and 2-dimensional nature of the data. High resolution images and descriptions of digitized seabed features (Contacts) are presented in Appendix A and the locations of these Contacts are depicted on the sonar mosaic (Figure 9). Seventy-four digitized contacts have been described (Table 2) and delivered in GIS shapefile format.

Examples of digitized Contacts include boulders (C-0016) and boulder fields (C-0004); possible ledge outcrops (C-0029); signatures associated with cables (C-0003); debris (C-0012, C-0039, C-0062); fishing gear / conch traps (C-0070); fish schools, likely of false albacore, *Euthynnus alleteratus* (C-0024, C-0069); sand waves (C-0044); and a wreck in Vineyard Haven Harbor (C-0058) (Figure 9, Appendix A).

3.3 Sub-Bottom Sonar Results

Examples of sub-bottom profiles over different substrate types from north to south along the proposed cable route have been annotated. The locations of these five annotated profiles are depicted on Figure 10 and the profiles are shown on Figures 11A-C.

Profile 1 is a record collected over the northernmost portion of the survey corridor. Pebble/granule gravel pavement grades to cobbles in deeper water. Sonar penetration was greater over the cobble seabed in deeper water, approximately 6 - 8 m (20 - 26 ft) than over the pebble/granule dominated seabed (Figure 11A).

Profile 2 was collected over sandy seabed with pronounced sand waves. Sonar penetration on this profile was approximately 3 - 5 m (5 – 16 ft), with an acoustic basement suggestive of cobble (Figure 11A).

Profile 3 was collected over seabed of pebble/granule gravel pavement. Sonar penetration ranged from approximately 1 - 4 m (3 – 13 ft) with an acoustic basement suggestive of cobble and/or boulder (Figure 11B).

Profile 4 was collected over boulder dominated gravel pavement seabed. Sonar penetration in this area was minimal and acoustic basement was diffuse and suggestive of a coarse gravel matrix (Figure 11B).

Profile 5 was collected over the southern sand and pebble/granule seabed. Sonar penetration ranged from approximately 1 - 4 m (3-13 ft) over the sand/gravelly sand waves/ridges and decreased to less than 1 m over seabed dominated by *Crepidula* reef closer to the southern landfall. The interpreted acoustic basement was diffuse and suggestive of cobble and/or boulders (Figure 11C).

Each of the sub-bottom files was carefully inspected and the acoustic basement was interpreted and digitized. These files were combined to create map of depth to acoustic basement (minimum sediment thickness) (Figure 12). While sonar penetration was highly variable due to scattering by surface materials and sub-surface strata, the map conservatively depicts interpreted sediment thickness. Sediment thickness estimates ranged from approximately 0.6 - 5.6 m (2 - 18 ft) with a mean thickness of 1.8 m (6 ft). Sonar penetration was generally greatest in seabeds dominated by sand, gravelly sand and pebble/granule substrates. Penetration was lower in coarser sediments (cobble/boulder) and in many areas of high topographic relief. Sonar penetration did not appear to be depth dependent and reached its minima in shallow waters dominated by *Crepidula* reef.

3.4 Magnetics Results

The quality of magnetometer data was adversely affected by the presence of electric utilities. Although some of these interferences caused magnetic interferences with magnitudes beyond the sensor's ability to record, however, CR's processing approach allowed accurate mapping and description of magnetic anomalies associated with ferrous materials and magnetic fields surrounding utilities.

CR digitized 174 magnetic anomalies (Figure 13, Appendix B, and Table 3). An electric cable was mapped in the northern 3,300 m (10,827 ft) of the survey corridor, and data suggest an electric cable extending approximately 1,900 m (6,234 ft) from the southern limit of the survey corridor. In addition, a series of linearly arranged anomalies were observed over 850 m (2,789 ft) of the central boulder fields and may indicate a cable. Many of the large mapped individual anomalies are likely associated with electric cables.

Approximately co-located magnetic anomalies and side scan sonar contacts were correlated using ArcMAP software within a 10 m (33 ft) search radius. The evaluation was intended to demonstrate which anomalies were likely surficial. The results of the analysis were constrained by the limited number of side scan contacts relative to magnetic anomalies (i.e., not every boulder, conch trap or exposed cable segment was digitized as points in the side scan Contact database whereas every observed magnetic anomaly was digitized).

Table 4 lists approximately co-located magnetic anomalies and corresponding side scan Contacts. Six of the anomalies were associated with the wreck in the southernmost portion of the survey corridor in Vineyard Haven Harbor. Eleven of the anomalies were co-located with fishing gear (e.g., conch traps). Two of the anomalies were co-located with boulders, and one anomaly was co-located with unidentifiable debris.

Cables were observed on the surface of the seafloor at the northern video transect EG-2C, and video transects VS-15, 16, 17, and 18 in the central boulder field (Figure 14).

3.5 <u>Sediment Sampling Results</u>

Figure 15 is a plot of the 12 vibracore and 19 grab sampling stations along the 5th Cable corridor. Sampling coordinates for grabs and cores, water depth, and core penetration and recovery are provided on Table 5. At six grab sampling stations (15, and 17 through 21) only a few cobbles, sponges and tunicates were collected, and no sediment was available for grain size analysis. Vibracore recoveries ranged from 0.7 to 6 feet. Grain size and analytical results for the core and grab samples are reported elsewhere by Epsilon Associates.

3.6 <u>Underwater Video Results</u>

The Coastal and Marine Ecological Classification Standard (CMECS), a hierarchical arrangement of biogeographic and aquatic setting units and components (water column, geoform, substrate and biotic), was used to describe ecosystem features along the Eversource 5th Cable corridor in Vineyard Sound. (FGDC, 2012). Also provided are observation of any Massachusetts CZM Special, Sensitive or Unique Resources (SSUs) such as, eelgrass beds, hard/complex seafloor, or commercially important species.

The forty-one underwater video transects for the Eversource 5th Cable corridor included:

- Twenty-eight 1,000 ft (305 m) transects perpendicular to the cable route spaced approximately 1,000 ft apart,
- In Vineyard Haven Harbor, two North-South 1,000 ft, and two East-West 750 ft (229 m) cross- corridor transects,
- In outer Falmouth Harbor off of Shore Street, one East-West 1,600 ft (488 m), and two North-South 700 ft (213 m) cross-corridor transects at the proposed location of the HDD cable punch-out location, and
- An additional six 1,000 ft transects were occupied to map out the extent of the eelgrass bed off Falmouth Harbor.

Table 6 provides the bottom substrate and biotic components observed at each video transect based on the CMECS (FDGC, 2012). These are illustrated on Figure 14 for the dominant CMECS substrate classifications, and Figure 16 for the dominant CMECS biotic components. A list of flora and fauna observed by transect along with summary statistics of species observations by transect and frequency of observation across all transects and the subset with gravel pavement are provided on Table 7. Plates 1 to 41 are representative screen captures of bottom substrate and biota with the elapsed video time and CMECS components (Appendix C).

Vineyard Sound is a complex body of water that separates the Elizabeth Islands and Falmouth and Mashpee from the island of Martha's Vineyard. Two to three knot currents shape the shoreline, shoals and ocean bottom, and minimal slack tide periods and strong ever-changing winds make it a challenging area to conduct surveys. Underwater video survey operations for the 5th Cable corridor needed to be scheduled around slack tide periods, and operations often had to be suspended during maximum tides. Field crews continually adjusted the line out on the lifting davit to maintain the video sled ½ to one foot off the bottom which was often difficult in areas of boulder dominated substrate.

Due to the strong tides, video time on the bottom for the main cross-corridor transects varied from 10 to 43 minutes, and averaged 21 minutes. The cross-corridor video transects in outer Falmouth Harbor and Vineyard Haven Harbor varied from 6 to 12 minutes and the eelgrass transects off Falmouth from 8 to 12 minutes. Vessel speed during these surveys ranged from ½ knot to 2 knots. Despite the higher than optimal survey speed on several transects, bottom substrate, biota IDs, and rough counts were successfully obtained. The transects run at slack tide provided extremely detailed bottom coverage and excellent video quality. Although the video data has not adjusted for the difference in transect time on bottom or length, strong trends were seen in the uncorrected statistics.

3.6.1 CMECS Classification from Video Footage

The CMECS biogeographic setting for the 5th Cable corridor is the Virginian ecoregion of the cold temperate Northwest Atlantic province in the temperate North America realm. The water column in late September - early October 2021 was a Euhaline, Marine Nearshore Surface Layer with a Moderate Water temperature regime. The Geoform tectonic setting is a Passive Continental Margin, and the physiographic setting is a Sound. The Level 1 and 2 Geoform Components included Megaripples, Moraine, Ripples, Sediment Wave Fields, and Till Surfaces. The surveyed corridor also had Anthropogenic Cable Area Geoforms, as both live and former unused transmission cables run from Falmouth to Martha's Vineyard. These cables often cause bottom scouring, trap sand, and create bottom habitat for macroalgae and macrobenthos.

Visually estimated surficial substrates were primarily of geologic origin and consisted of coarse unconsolidated mineral substrate Gravel Pavement dominated by Boulder, Cobble or Pebble/Granule bottom at 19 of the 41 transects, and fine unconsolidated substrates of Sand Waves, Sand Ripples, Gravelly Sand, or Sandy Gravel at 12 transects.

Biogenic substrate of *Crepidula* Reef was observed at seven transects in Vineyard Haven Harbor and three transects in outer Falmouth Harbor. At the shallower inshore northern ends of the transects in outer Falmouth Harbor, the substrate transitioned to Gravelly Sand and Sandy Gravel (Figure 14).

Biotic Groups and Sub-classes associated with the corridor substrates are shown on Figure 16. They are listed below along with identified Biotic Communities:

1) Attached Sea Urchins
    a. Attached *Arbacia punctulata* (purple sea urchin) on Gravel Pavement of Pebble/Granule
2) Diverse Colonizers on Gravel Pavement of Pebble/Granule, Cobbles and Boulders
    a. Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)
3) Gastropod Reef
    a. *Crepidula* Reef
4) Gastropod Reef with co-occurring Leathery Leafy Algal Bed on *Crepidula* Reef
    a. *Crepidua* Reef with co-occuring *Codium* Community
5) Seagrass Bed on Gravelly Sand and Sandy Gravel
    a. *Zostera marina* (eelgrass) Herbaceous Vegetation
6) Inferred Fauna on Sand Ripples,

7) Soft Sediment Fauna on Sand Waves
8) Soft Sediment Fauna on Sand Waves with Attached Fauna in the Pebble/Granule Sand Wave Troughs.

Representative screen captures and classification of these aggregated CMECS units are provided in Appendix D. The screen capture water depths are relative to MLLW, and coordinates are provided on Table 8 and their location plotted on Figure 16. Table 6 provides additional information on the co-occurring elements and associated taxa for these CMECS units.

A total of 29 invertebrates, six fish, 15 algal species, and eelgrass were observed on the 5th Cable underwater video footage (Table 7).

Species observed at greater than 50% of the transects on the 5th Cable corridor included bushy bryozoan (*Bugula* spp.), jingle shell (*Anomia* spp.), tube worm (*Hydroides dianthus*), purple sea urchin (*Arbacia punctulata*), white invasive tunicate (*Didemnum candidum*), juvenile black sea bass (*Centropristis striata*), and branching red algae (Table 7).

The frequency for these same species excluding branching red algae was greatest on gravel pavement within the survey corridor. Other species frequently associated with gravel pavement were encrusting bryozoan (*Schizoporella unicornis*), northern star coral (*Astrangia poculata*), bread crumb sponge (*Halichondria panicea*), sulfur sponge (*Cliona celata*), dove snail (*Anachis* sp.), blue mussel (*Mytilus edulis*), and the tunicates sand sponge (*Amaroucium pellucidum*) and sea pork (*Amaroucium stellatum*).

Sulfur sponge, bread crumb sponge, the tunicate sand sponge, sea spiders (Pycnogonida), dove snail, and encrusting bryozoan were particularly associated with areas of gravel pavement dominated by cobbles and boulders. The tunicates sea pork and white invasive tunicate were also found on pebble/granule dominated gravel pavement.

Jingle shell, common oyster (*Crassostrea virginica*) and oyster drill (*Urosalpinx cinerea*) were primarily associated with pebble/granule gravel pavement.

Fish were observed at less than 17% of the survey corridor transects, and generally in low numbers. Juvenile black sea bass was the exception having been observed at 85% of the corridor transects and had the highest densities in the areas of gravel pavement dominated by boulders. Adult black sea bass, cunner (*Tautogolabraus adspersus*), puffer (*Sphaeroides maculatus*), scup (*Stenotomus chrysops*), and tautog (*Tautoga onitis*) were also primarily associated with areas of Diverse Colonizers on gravel pavement of cobbles and boulders. Sea robin (*Prionotus carolinus)* was associated with sand waves and ripples and gravel pavement of pebble/granule or boulders and cobbles.

Algal species most frequently observed along the 5th Cable corridor included dead man's fingers (*Codium fragile*) wire weed (*Sargassum filipendula*), purple laver (*Prophyra umbilicalis*), and species of branching red algae. Dead man's fingers and purple laver were predominantly associated with *Crepidula* Reef in waters 13 -24 ft below MLLW. Branching red algal species and wire weed were found on areas of Gravel Pavement and *Crepidula* Reef.

The area of Diverse Colonizers on gravel pavement of cobbles and boulders in the central portion of the survey corridor (transects VS-13 through -20) had the greatest faunal richness ranging from 15 to 18 species of fish and invertebrates in waters 63-86 ft below MLLW (Table 7, Figure 16). Average faunal species richness across these transects was 15.

High faunal richness, 15 to 16 species, was also observed at lower relief areas of Attached Sea Urchins on gravel pavement of pebble/granule at transects VS-2 and -3 possibly due to strong currents. Average faunal species richness for this CMECS unit was 11.

The lowest faunal species richness was in areas of Soft Sediment Fauna at Sand Waves without hard substrate in the troughs of the waves (e.g., transect VS-5), and *Crepidula* Reef transects VS-27 and -28, CS-4 through -7 where only 3 to 4 species were recorded in waters 15-19 ft below MLLW. Sand Waves in waters 30-50 ft below MLLW with Attached Fauna on Pebble-Granule substrate in their troughs (transects VS-6, and VS-22 and -23) had an average faunal species richness of 11.

The highest species richness for flora, macroalgae and eelgrass, was generally on nearshore transects of *Crepidula* Reef in waters 13-38 ft below MLLW. Eelgrass observed at the northern extent of the cable corridor in outer Falmouth Harbor was not observed in waters deeper than 17 ft below MLLW.

3.6.2 Commercial Species

Juvenile black sea bass were observed at 85% of the survey corridor transects and had the greatest density at transects VS-15 to VS-18, an area of Diverse Colonizers on Gravel Pavement dominated by boulders and cobbles. The seven adult black sea bass observed were only observed at this same area of hard/complex seafloor.

No summer flounder (*Paralichthys dentatus*) were observed during the fall survey. Earlier in the year they might have been observed utilizing the sand wave shoals.

Blue mussels were observed on 95% of the transects in areas of Gravel Pavement of pebble/granule, cobble, or boulder.

Numbers were low for the few other commercial species observed on the underwater video; one bay scallop (*Argopecten irradians*) and sea clam (*Spisula solidissima*), two knobbed whelk *(Busycon carica*) and common oyster, three long-finned squid (*Loligo pealei*), and six horseshoe crabs (*Limulus polyphemus*).

3.6.3 Special Sensitive and Unique Species and Habitats

Special sensitive and unique areas (SSUs) under the Massachusetts Ocean Management Plan mapped within the 5th Cable corridor include areas of hard/complex seafloor and eelgrass beds.

3.6.3.1 Hard/complex seafloor

*"*Hard/complex seafloor is seabed characterized singly or by any combination of hard seafloor, complex seafloor, artificial reefs, biogenic reefs, or shipwrecks and obstructions. For the 2021 ocean plan, hard/complex seafloor was mapped using updated surficial seafloor sediment data and the same complex seafloor data used in the 2015 ocean plan. The locations of artificial reefs, biogenic reefs, and shipwrecks and obstructions to navigation were added to the SSU resource area "(EEA, 2021). Figure 17 shows the mapped Massachusetts Ocean Management Plan Layer for hard/complex seafloor in the vicinity of the 5th Cable survey corridor.

Overlay of the Massachusetts Ocean Management Plan's (MOMP's) mapped hard/complex seafloor with the CMEC substrate classifications shows that areas classified as Gravel Pavement dominated by boulders are mapped as well as some cobble dominated areas, and the northern and southern areas of Sand Waves (Figure 18).

Terrain ruggedness (Figure 6) derived from geophysical data collected for the 5th Cable indicates general concurrence with the areas of hard bottom mapped by MOMP (Figure 17). The active Eversource 99 Cable was also recognized at the northern end of the corridor. Plots of rugosity (Figure 4), slope (Figure 5) and slope of slope (Figure 7) also show the morphologically complex seafloor which includes the northern and southern areas of sand waves/ridges.

Hard/Complex Seafloor of Cobbles and Boulders
Nine of the twelve transects classified as Diverse Colonizers on Gravel Pavement of cobbles or boulders were in the vicinity of areas mapped by MOMP as hard/complex seafloor. Four had boulder dominated substrate and the remaining cobble. The three additional cobble dominated

areas with Diverse Colonizers at transects VS-4, VS-13 and VS-14 are potential SSUs (Figure 18). VS-4 lies just north of L'Hommedieu Shoal in an area of high currents.

Cobble dominated Gravel Pavement at Transect VS-4 on the north side of L'Hommedieu Shoal - Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) Community with sulfur sponge, sand sponge, sea pork, and blue mussels

Boulder dominated Gravel Pavement at Transect VS-18 Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) Community of sulfur sponge, sea pork, northern star coral, encrusting bryozoan, and tube worms

The Biotic Community at these twelve transects with hard and complex seafloor in deeper waters was Mollusk/Sponge/Tunicate Colonizers (Large Megafauna). At several, the colonies of sulfur sponge protruded 2-3 feet off the bottom and were interspersed with bread crumb sponge, large concentrations of the tunicates, sand sponge and sea pork, extensive patches of blue mussels, northern star coral, and encrusting bryozoan. Other smaller co-occurring species living within the sponges and tunicates included tiny dove snails and sea spiders. Associated mobile taxa were adult black sea bass and large schools of juvenile black sea bass.

<u>Hard Seafloor of Pebble/Granule</u>

Areas of coverage by Pebble/Granule Gravel Pavement were present at seven transects in the northern half of the 5th Cable corridor. These areas are not mapped as hard/complex seafloor by the Massachusetts Ocean Management Plan (Figure 18). Unlike Gravel Pavement of cobbles and boulders these pebble-granule dominated areas had little relief, and low rugosity, slope, and slope of slope values indicating a lack of complexity (Figures 4, 5, and 7).

Faunal richness and species frequency and biomass were lower in the Attached *Arbacia punctulata* community on Gravel Pavement of pebbles/granules compared to the more complex Mollusk/Sponge/Tunicate Colonizers community on Gravel Pavement comprised of cobbles and boulders.

Attached Arbacia punctulata with encrusting red algae, jingle shells, bushy bryozoan, invasive white tunicate, and surf clam shells in Gravel Pavement of Pebble/Granule at transect VS-2 in outer Falmouth Harbor

Specifically, the frequencies for sulfur sponge, bread crumb sponge, encrusting bryozoan (*Schizoporella unicornis*), sand sponge a tunicate, and *Sargassum* were lower; and no sea spiders or adult sea bass were observed (Table 7).

The Attached *Arbacia punctulata* community was more strongly associated with jingle shells, oysters, oyster drills (*Urosalpinx cinerea*), and encrusting red algae (*Lithothamnium lenormandi*).

<u>Biogenic *Crepidula* Reef</u>

Crepidula Reef was present at the northern and southern nearshore ends of the 5th Cable corridor in water depths ranging from 15 to 23 ft below MLLW. Although a form of biogenic reef, these areas were not mapped by Massachusetts Ocean Management Plan as hard/complex seafloor (Figure 18). The *Crepidula* Reef seafloor had low relief as shown on the bathymetric figures for rugosity, slope, ruggedness, and slope of slope (Figures 4, 5, 6 and 7). *Crepidula* Reef to the south at the entrance to Vineyard Haven Harbor (transects CS-4 to CS-7) was covered by the co-occurring invasive *Codium fragile* (Figure 16, Table 7, Appendix D). The northern *Crepidula* Reef had moderate bushy bryozoan and sparse benthic macroalga. A few juvenile black sea bass were observed at both areas; however, faunal richness was low averaging 4.5. Due to the presence of invasive algal cover, low relief and low diversity these areas should not be mapped as SSUs.

Crepidula Reef Community with purple sea urchin, jingle shell, and branching red algae at transect EG-1 in outer Falmouth Harbor

Shoals/Sand Waves

The 5th Cable corridor crosses L'Hommedieu Shoal off outer Falmouth Harbor and a small sand shoal outside the mouth of Vineyard Haven Harbor. The sand waves and ripples are mapped as complex seafloor by the Massachusetts Ocean Management Plan (Figure 17). These shoals are coincident with areas mapped during the 2021 bathymetric survey of the 5th Cable corridor (Figure 2) and assessments of bathymetric rugosity (Figure 4), slope (Figure 5) and slope on slope (Figure 7). Overlay of the NOAA DEM with CR's 2021 bathymetric data for L'Hommedieu Shoal indicated that the sand wave/ridge peaks are essentially permanent features, however the northern and southern tails of the waves/ridges may be more mobile.

In the summer months, L'Hommedieu Shoal and Middle Ground to the west of the cable corridor support large populations of summer flounder, striped bass (*Roccus saxatilis*), and bluefish (*Pomatomus saltatrix*). At the time of the survey in late September few fauna were observed associated with the sand bottom of the shoals on the 5th Cable corridor. Soft Sediment Fauna was assumed to be the biotic sub-class for sand substrate. Only a few mobile associated taxa, such as long-finned squid, hermit crabs (*Pagarus* spp.), horseshoe crab, sea robin, and one adult black sea bass buried in the sand were present (Table 7).

Long-Finned Squid in Sand Ripples at transect VS-23 through the southern shoal/Sand Wave area outside Vineyard Haven Harbor

An area of sand ripples at transect VS-25 near the mouth of Vineyard Haven Harbor was classified as Inferred Fauna. Polychaete worm holes, fecal castings, whelk egg cases, and one parchment worm tube were observed on the sand substrate (Appendix D).

Soft Sediment Fauna in Sand Waves and Attached Fauna in Troughs at transect VS-23 through the southern shoal outside Vineyard Haven Harbor

Higher invertebrate species richness was found at Sand Waves on transects VS-6, and VS-22 to VS-24. Troughs of these sand waves had a Pebble/Granule substrate in a matrix of sand and Attached Fauna of tunicates, *Crepidula,* dove snails, and hydroids (*Hydrozoa* sp.), mobile arthropods and juvenile black sea bass (Table 7, Appendix D).

3.6.3.2 Eelgrass

Eelgrass SSUs are defined as "areas that support communities of rooted eelgrass (*Zostera marina*)," and are mapped at the northern extent of the 5th Cable corridor (EEA, 2021).

Sparse to moderate eelgrass was observed in a Seagrass Bed growing in Gravelly Sand to Sandy Gravel at the northern inshore end of transects EG-1 through EG-6 in outer Falmouth Harbor (Figure 16). Eelgrass cover disappeared in water depths greater than 17 feet below MLLW where the seafloor transitioned to *Crepidula* Reef. The eelgrass bed is well inshore of the approximate punch out area for the proposed horizontal directional drilling.

Seagrass Bed of *Zostera marina* with horn snails and bushy bryozoan in a Gravelly Sand substrate at transect EG-2C in outer Falmouth Harbor

3.6.4 Anthropogenic Cable Geoform /Debris

Anthropogenic Cable geoforms were observed on nine underwater video transects, and the positions plotted to see if they aligned with any of the geophysical data. Video captures of extant cable(s) closely matched the positions of cable signatures observed in bathymetric data, and generally agreed with cable signatures in the side scan sonar records.

Debris and cables were observed during the underwater video survey at nine transects. Plates of screen captures are provided in Appendix C.

Unidentified debris and cables were observed in cobble/ boulder substrate on transects VS-9 screen capture C (Plate 9a.), VS-16-F (Plate 16a.), VS-17-E (Plate 17a.), and VS-18-E (Plate 18a.), and sand ripples at transect VS-25-G (Plate 25a.). A chest-like structure was observed in sand ripples at transect VS-24-P, and sandbags at VS-24-F and -M (Plates 24a. and b.) outside Vineyard Haven Harbor. An individual bone was observed in the sand waves of L'Hommedieu Shoal at transect VS-6-K (Plate 6b).

Cables were observed to provided structure and habitat for biota. On transect VS-8-B (Plate 8a.), and at transect EG-2C near the northern extent of the surveyed corridor, there were multiple observations of the Eversource 99 Cable (screen captures D, F, G, and J, Plates 37a. and b. - Appendix C). At transect EG-2C in gravelly sand species richness for fauna and flora was higher than in adjacent transects. Bushy bryozoans, hydroids, wire weed, and branching red algae were observed growing on the cable, and small schools of juvenile seabass within the algal canopy.

Live transmission Cable 99 on transect EG-2C provided hard substrate for the growth of branching red algae and bushy bryozoan

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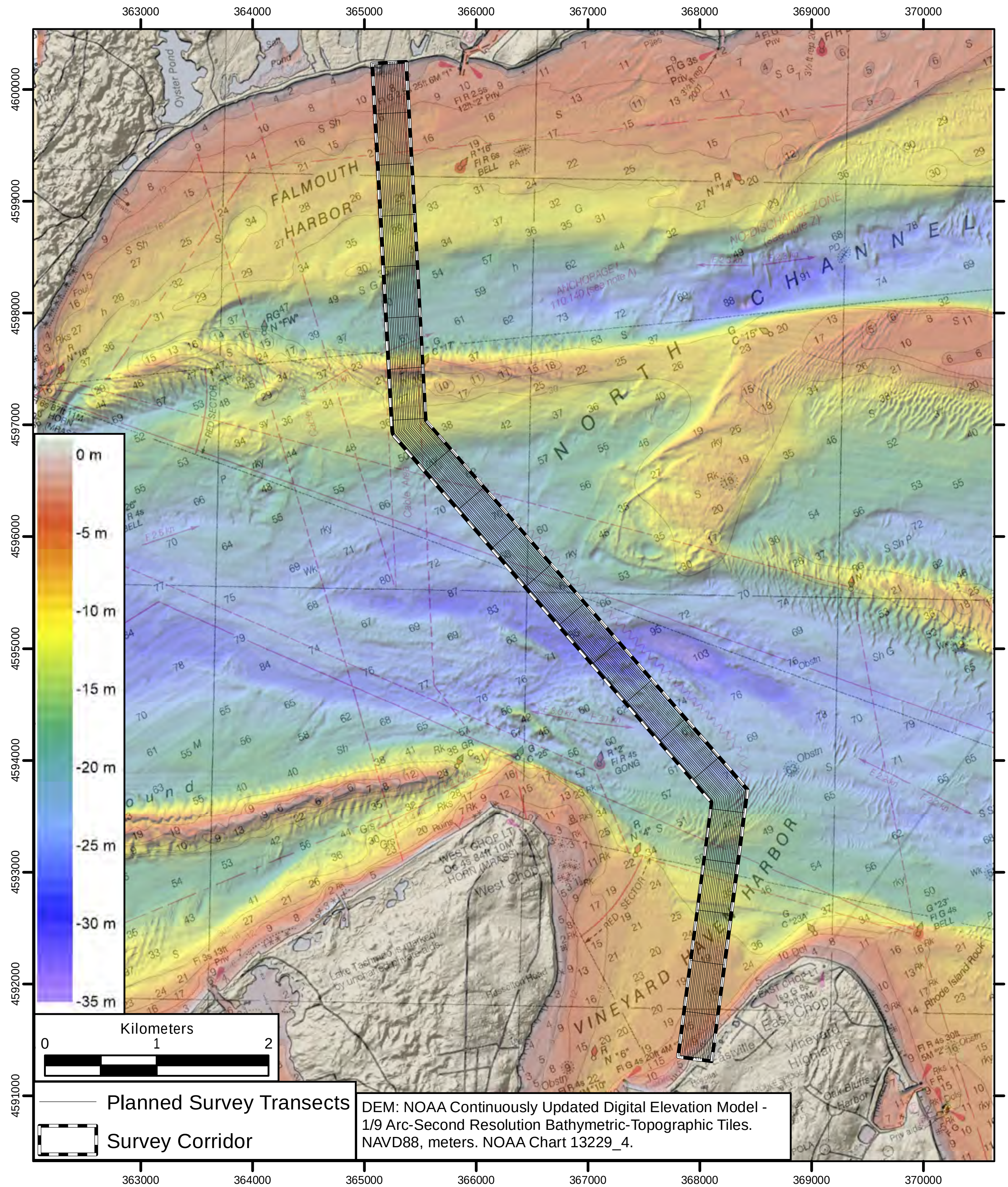
FIGURES



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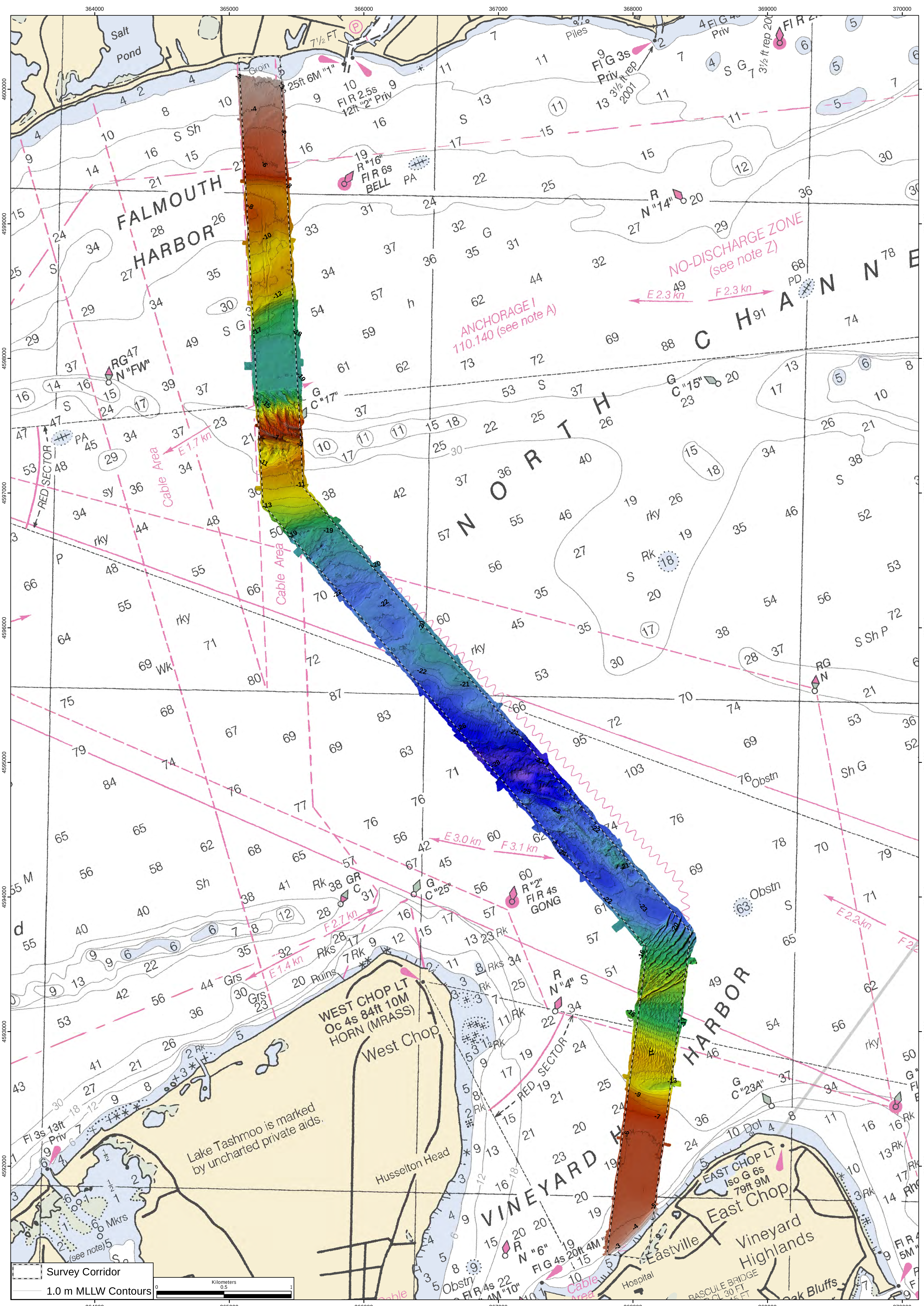
SURVEY LOCUS AND PLANNED SURVEY TRANSECTS
5th Cable Crossing
Vineyard Sound, Massachusetts

N W E S

NOTES:
1) Primary transects for magnetics and sub-bottom sonar set to 15m separation, sub-bottom augmented by cross-lines spaced 470m apart.
2) Multibeam and side scan sonar transect spacing set to ensure >> 100% bottom coverage.
3) Grid UTM, Zone 19N, NAD 83 Meters

Figure 1



MEAN LOWER LOW WATER BATHYMETRY
1.0 m Contours and 5x Surface
5th Cable Crossing
Vineyard Sound, Massachusetts

NOTES:
1) Bathymetric relief layer uses 5x exaggeration.
2) Grid UTM, Zone 19N, NAD 83 Meters

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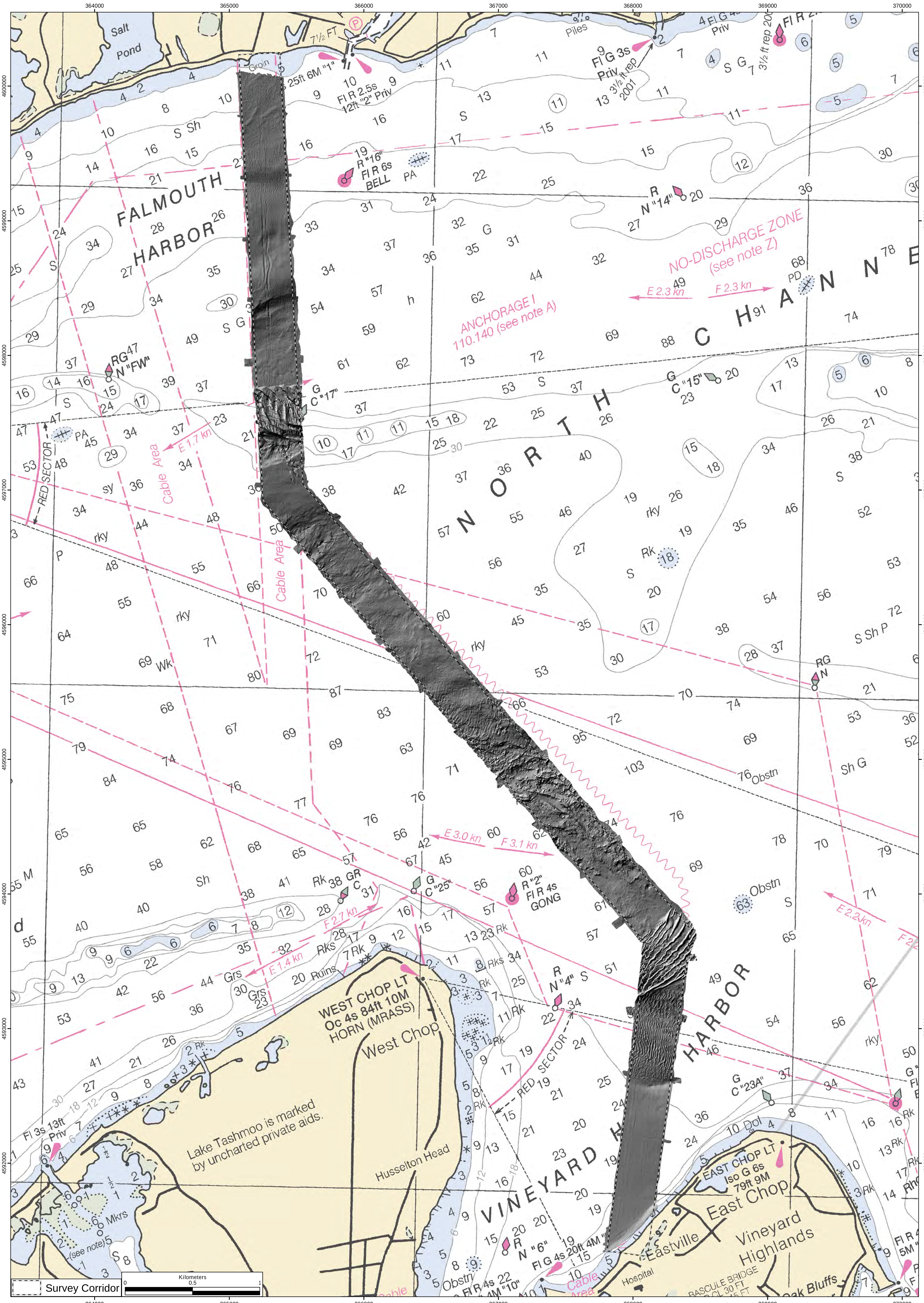
Figure 2

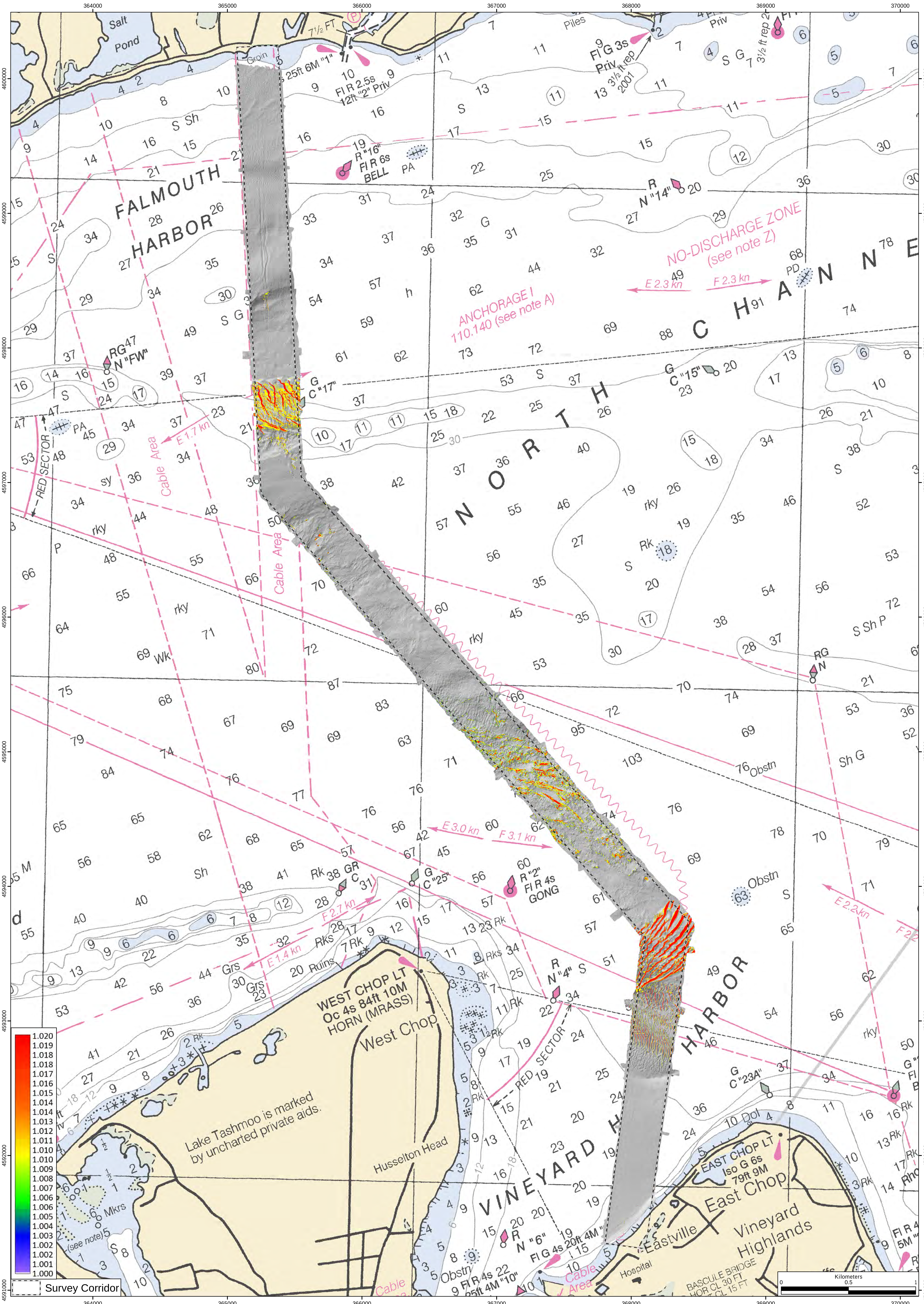


BATHYMETRIC RELIEF
5th Cable Crossing
Vineyard Sound, Massachusetts

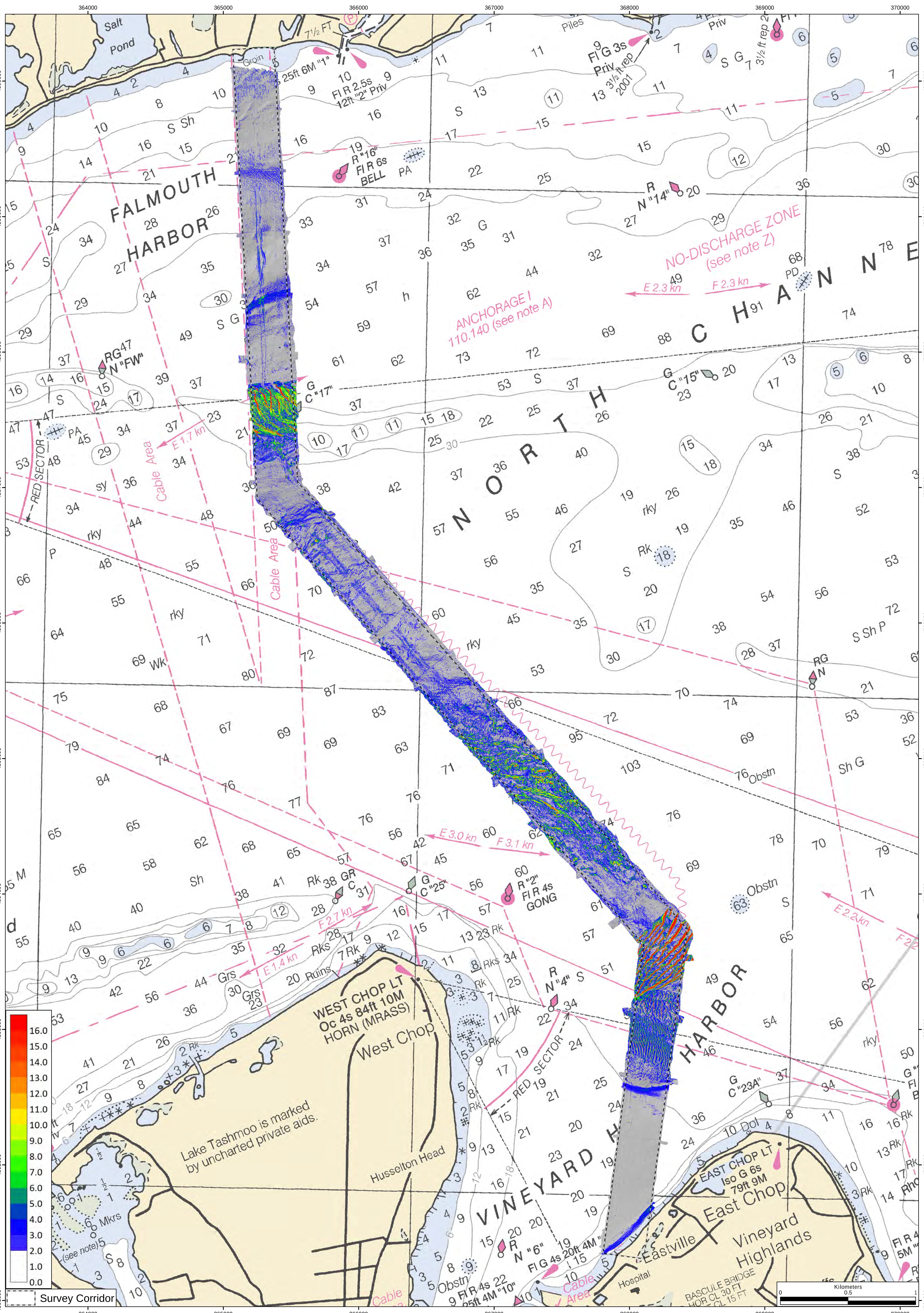
CR
www.crenvironmental.com

NOTES:
1) Bathymetric relief layer uses 5x exaggeration.
2) Grid UTM, Zone 19N, NAD 83 Meters

Figure 3



CR www.crenvironmental.com	SEAFLOOR RUGOSITY 5th Cable Crossing Vineyard Sound, Massachusetts	N W E S	
	NOTES: 1) Rugosity calculation discussed in Report Section X. 2) Grid UTM, Zone 19N, NAD 83 Meters	Figure 4	

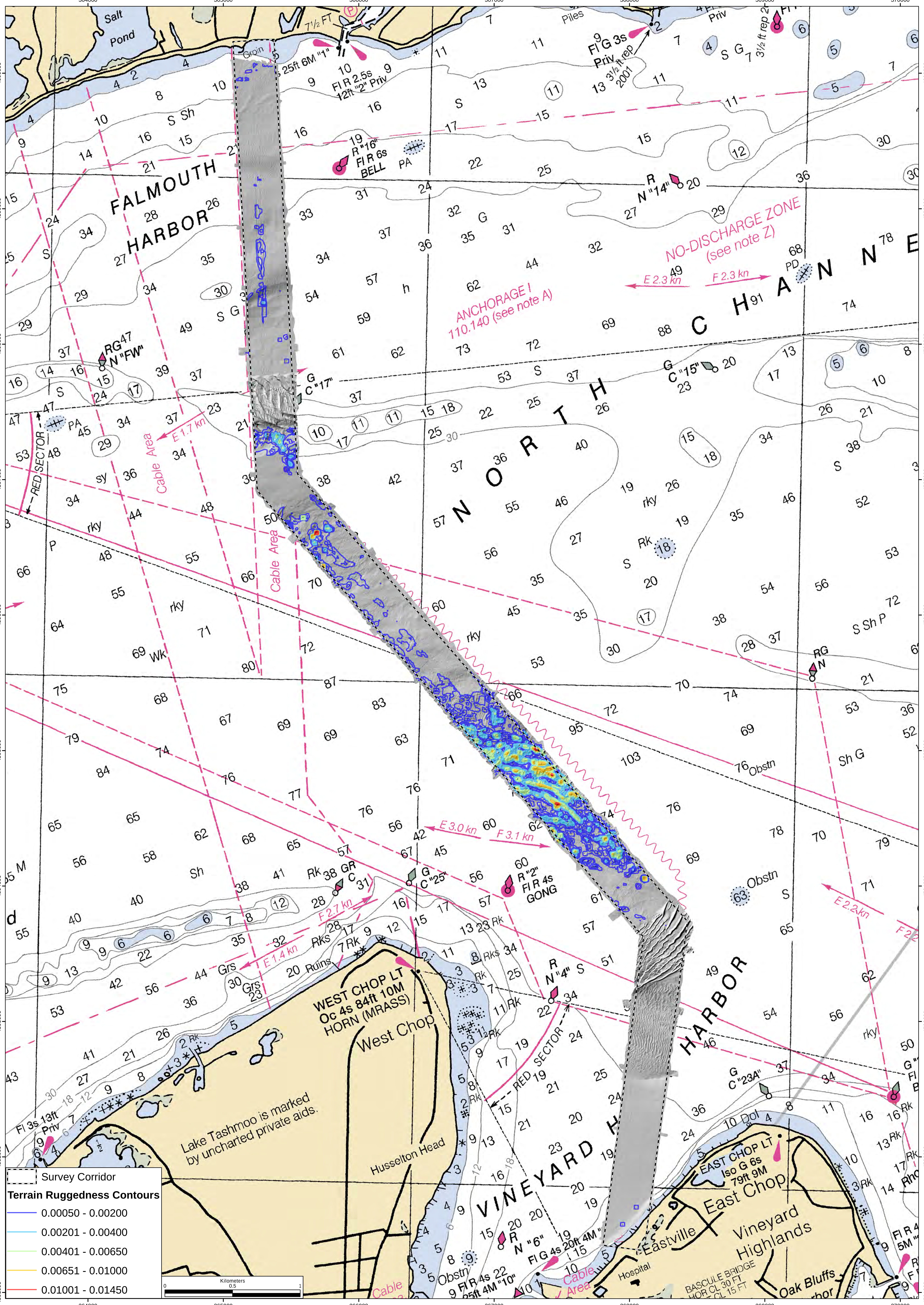


BATHYMETRIC SLOPE
5th Cable Crossing
Vineyard Sound, Massachusetts

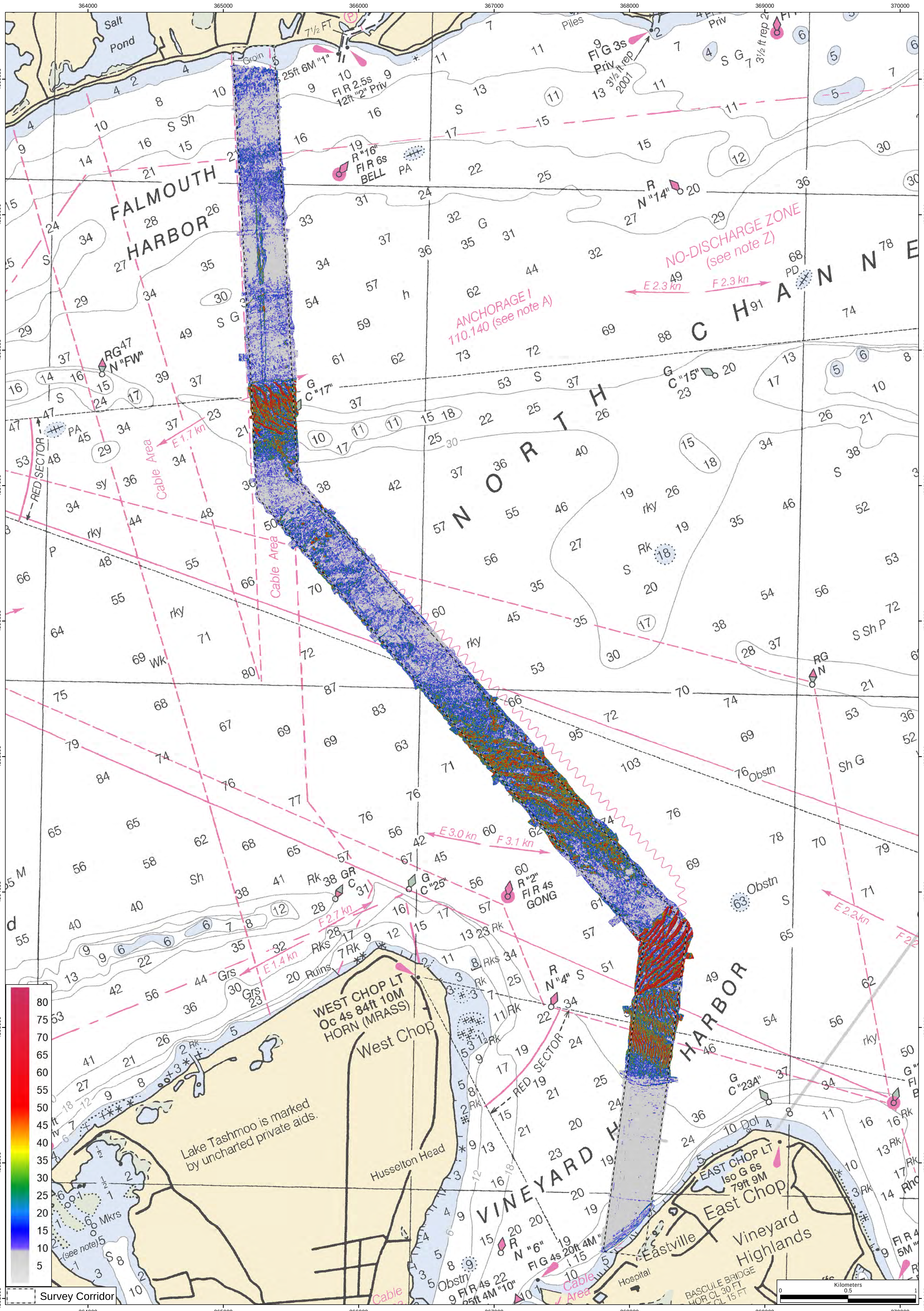
www.crenvironmental.com

NOTES:
1) Terrain Slope (degrees).
2) Grid UTM, Zone 19N, NAD 83 Meters

Figure 5



CR www.crenvironmental.com	TERRAIN RUGGEDNESS CONTOURS BASED ON BATHYMETRY 5th Cable Crossing Vineyard Sound, Massachusetts	N W E S
	NOTES: 1) Bathymetric relief layer uses 5x exaggeration. 2) Terrain ruggedness contours exclude sand wave fields. 3) Grid UTM, Zone 19N, NAD 83 Meters	Figure 6



BATHYMETRIC SLOPE OF SLOPE

5th Cable Crossing

Vineyard Sound, Massachusetts

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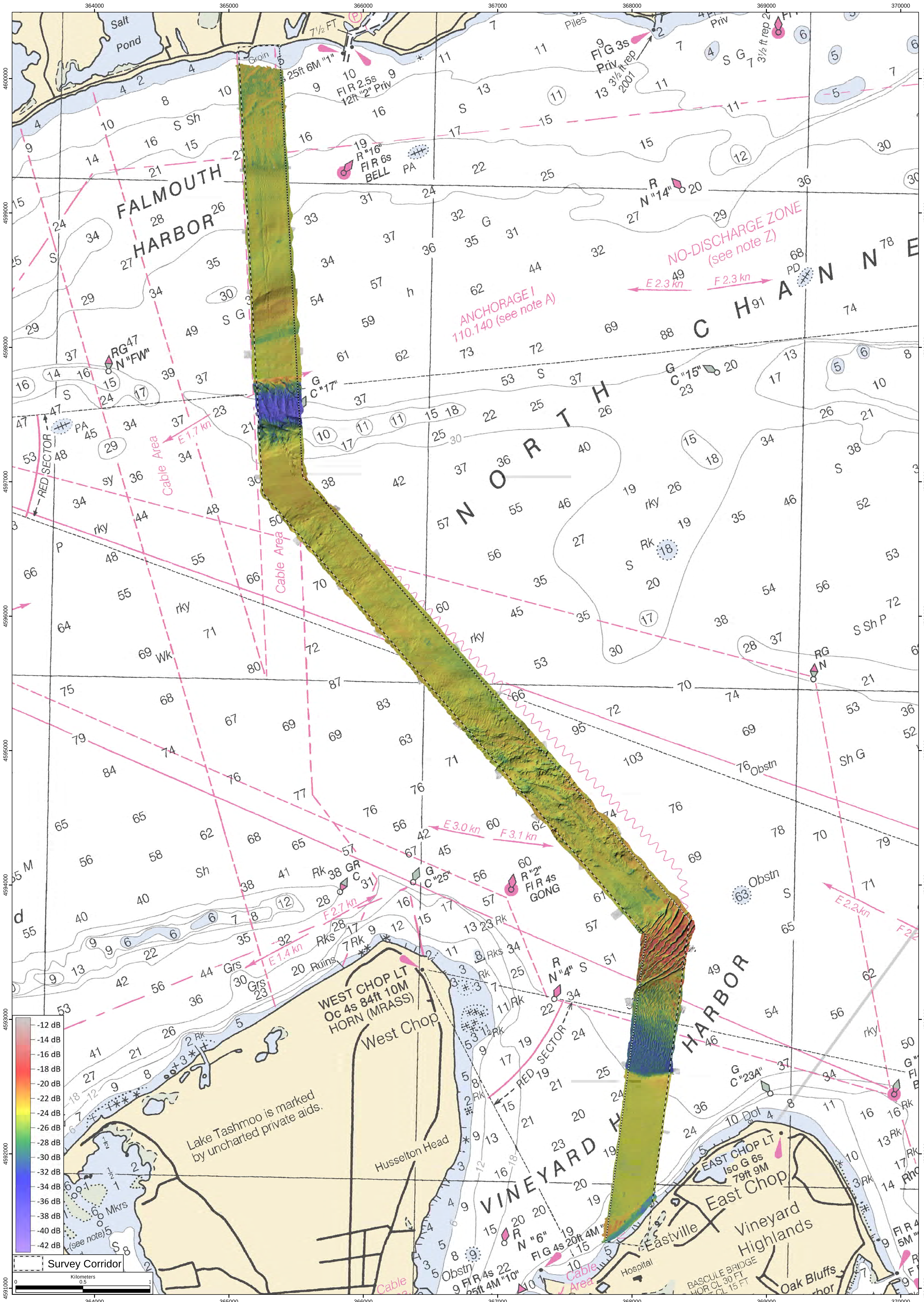
NOTES:

1) Maximum rate of slope change (degrees of degrees).

2) Grid UTM, Zone 19N, NAD 83 Meters

Figure 7

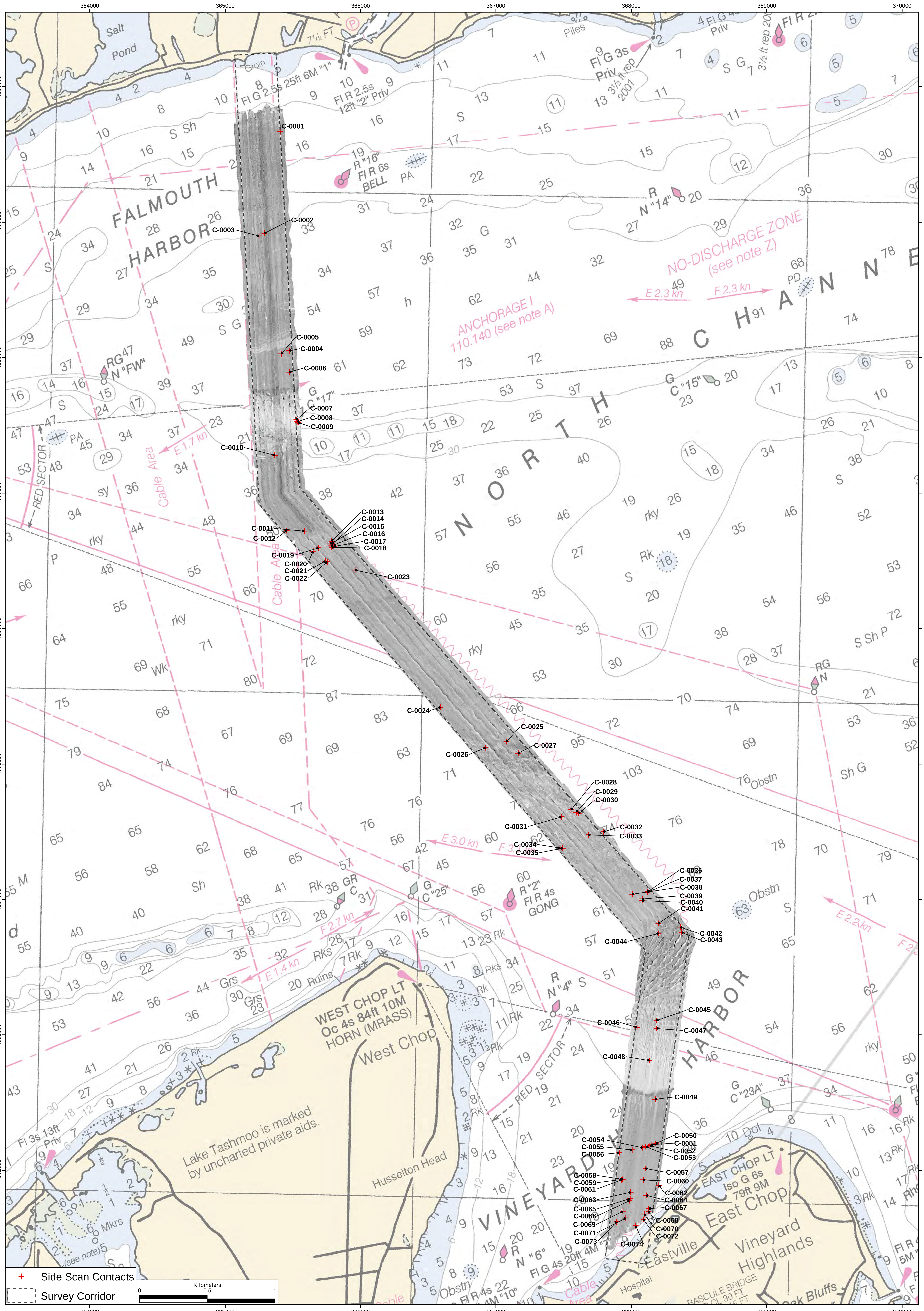


BEAM TIME SERIES BACKSCATTER MOSAIC
5th Cable Crossing
Vineyard Sound, Massachusetts

CR
www.crenvironmental.com

NOTES:
1) Cooler colors suggest smoother surfaces.
2) Grid UTM, Zone 19N, NAD 83 Meters

Figure 8



400-kHz SIDE SCAN SONAR MOSAIC AND
900-kHz CONTACTS
5th Cable Crossing
Vineyard Sound, Massachusetts

NOTES:
1) Detailed Contact imagery presented in Appendix A.
2) Grid UTM, Zone 19N, NAD 83 Meters

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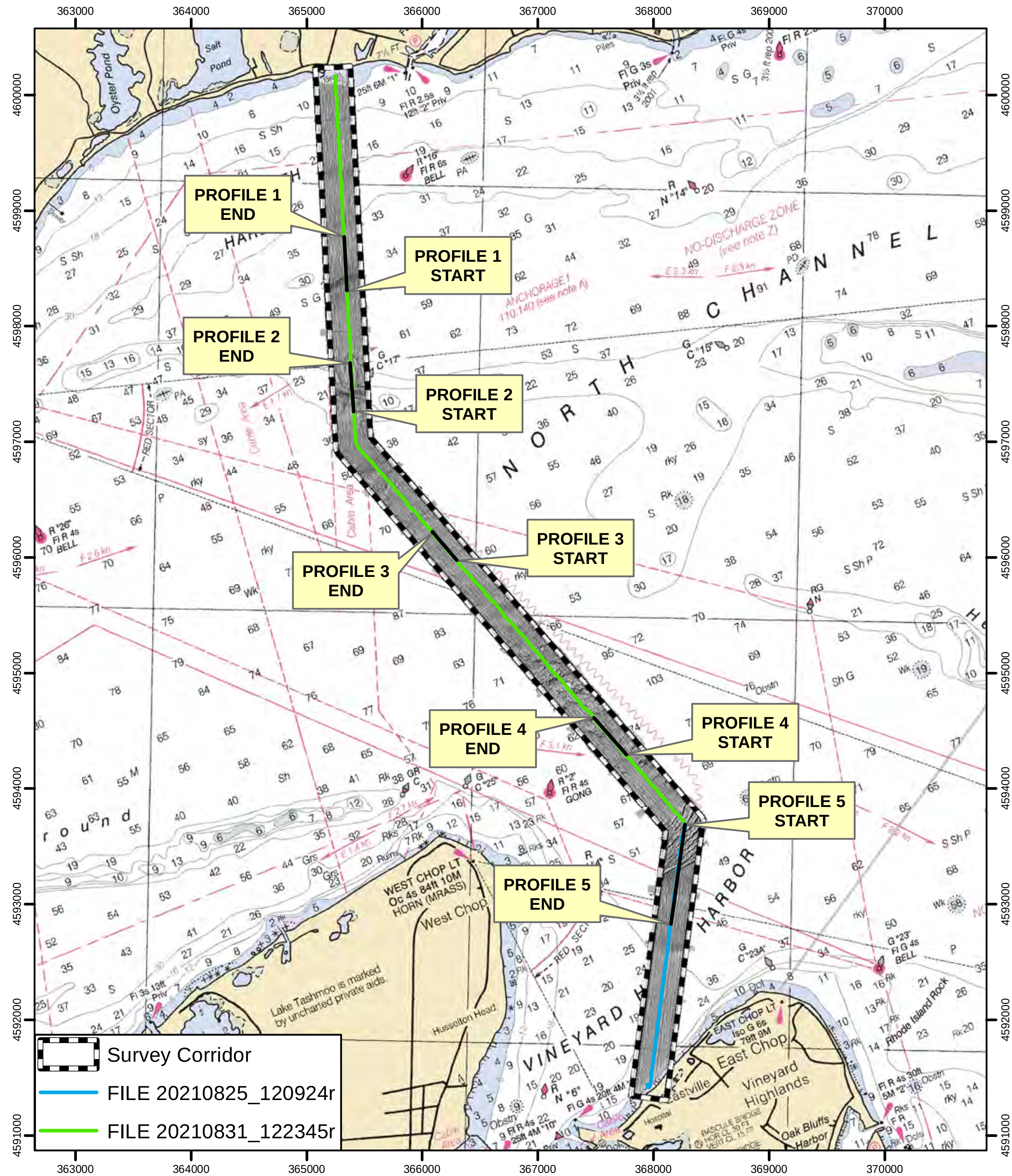
Figure 9



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SUB-BOTTOM SONAR TRACKLINES AND INDEX TO PROFILES
15 meter Spacing
5th Cable Crossing
Vineyard Sound, Massachusetts

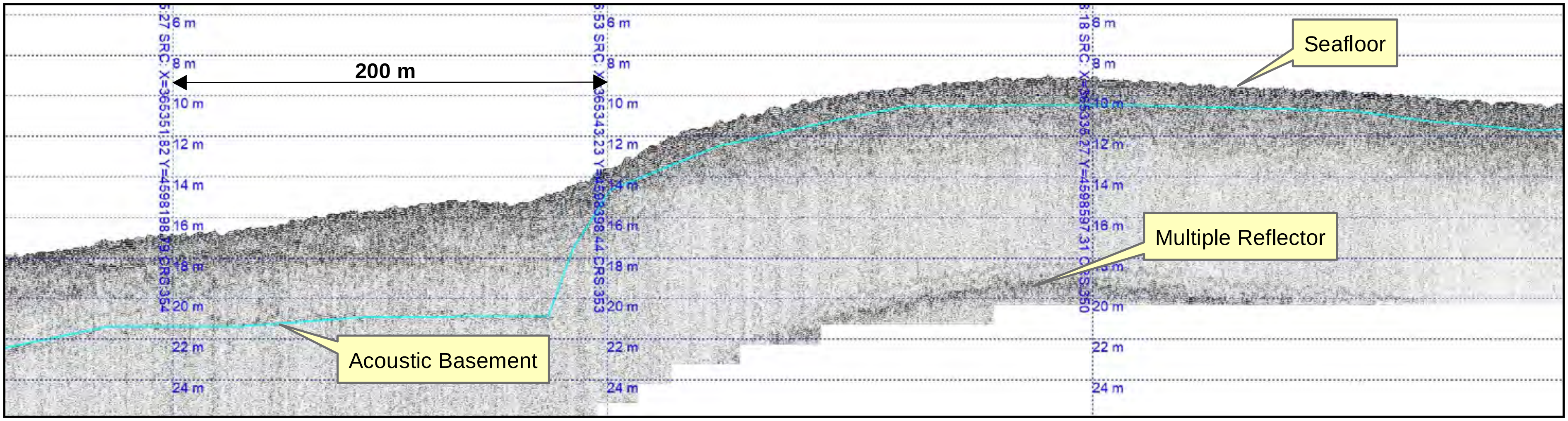
NOTES:
1) Grid UTM, Zone 19N, NAD 83 Meters

Kilometers
0 0.5 1

N W E S

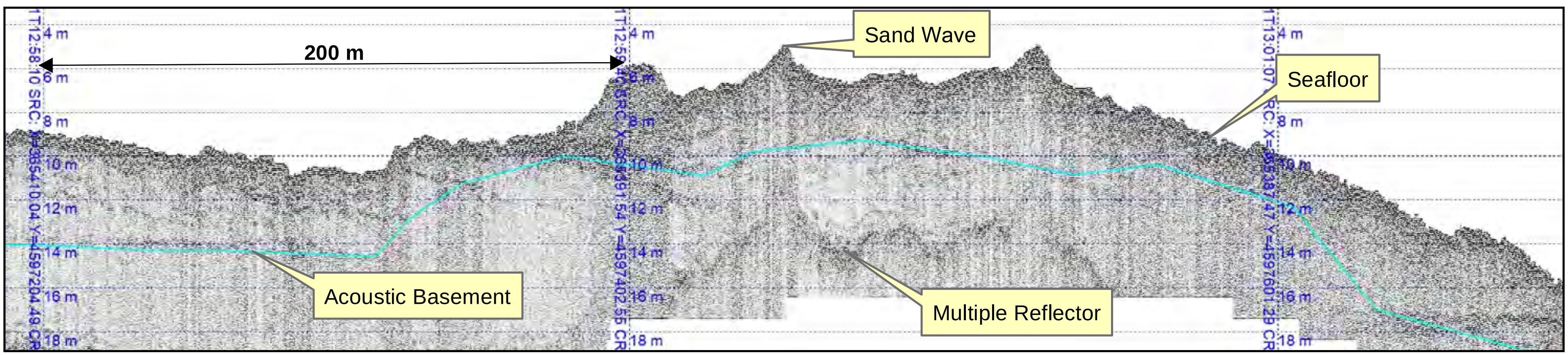
Figure 10

PROFILE 1 - PEBBLE/GRANULE to COBBLE BOTTOM

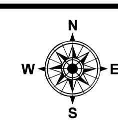


SOUTH NORTH

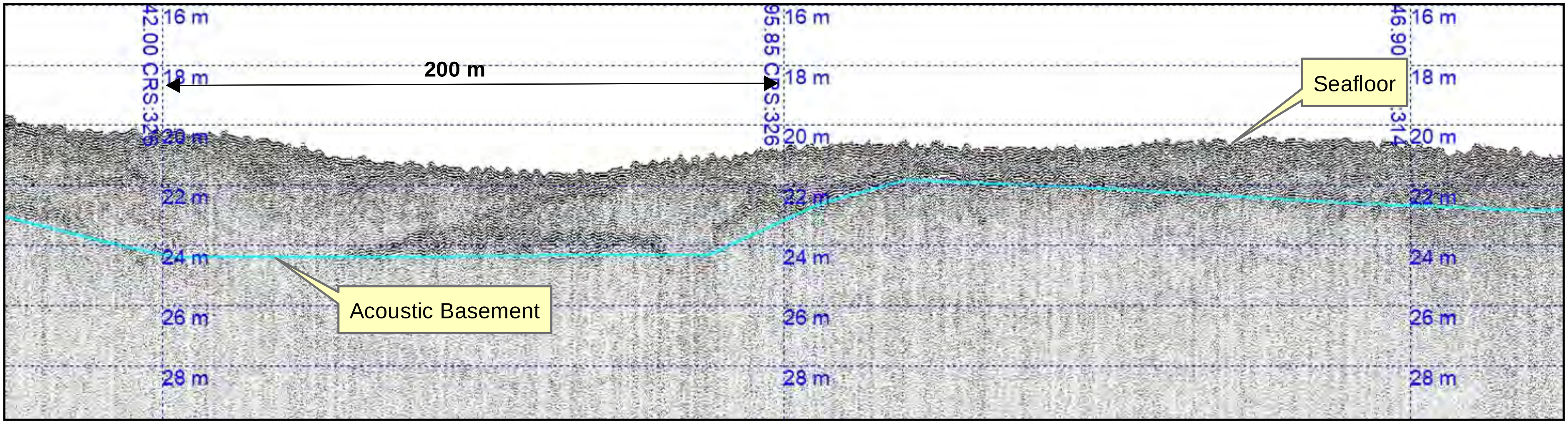
PROFILE 2 - SAND BOTTOM



SOUTH NORTH

www.crenvironmental.com	EXAMPLES OF SUB-BOTTOM SONAR PROFILES 5th Cable Crossing Vineyard Sound, Massachusetts	
	NOTES: 1) Profile locations shown on Figure 10.	Figure 11A

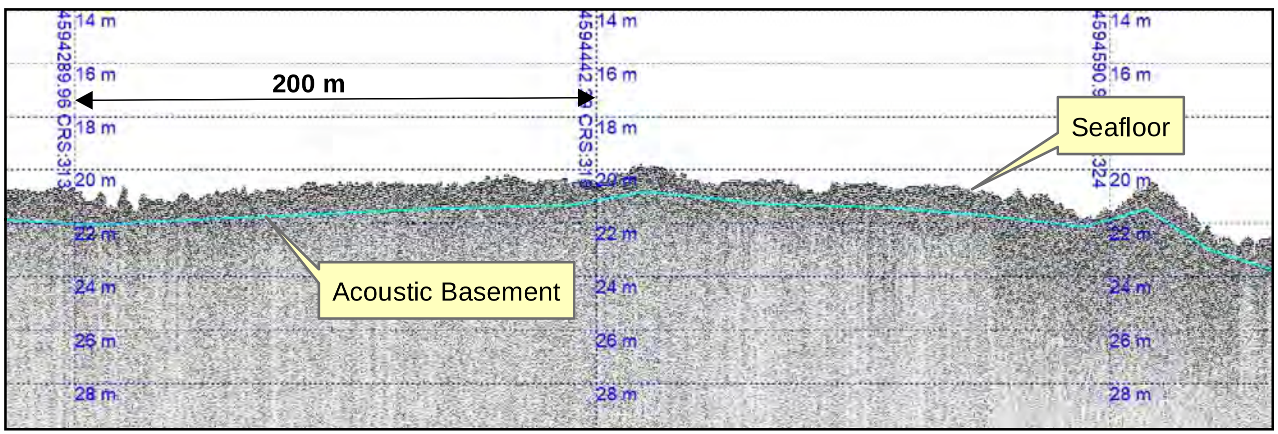
PROFILE 3 - PEBBLE/GRANULE BOTTOM



SOUTH

NORTH

PROFILE 4 - BOULDER BOTTOM



SOUTH

NORTH

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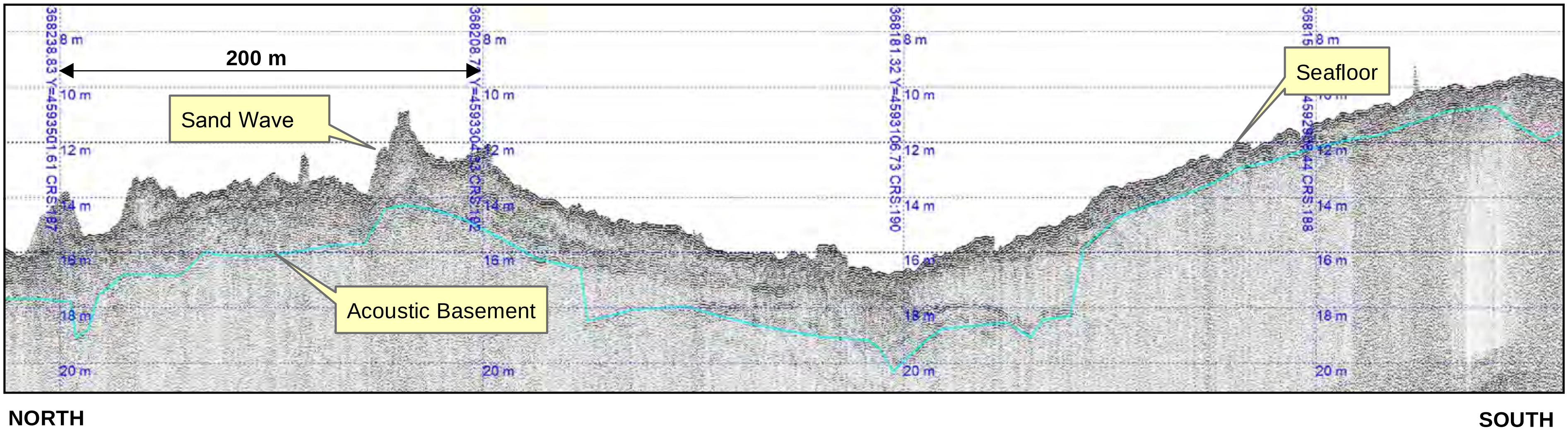
EXAMPLES OF SUB-BOTTOM SONAR PROFILES
5th Cable Crossing
Vineyard Sound, Massachusetts

NOTES:
1) Profile locations shown on Figure 10

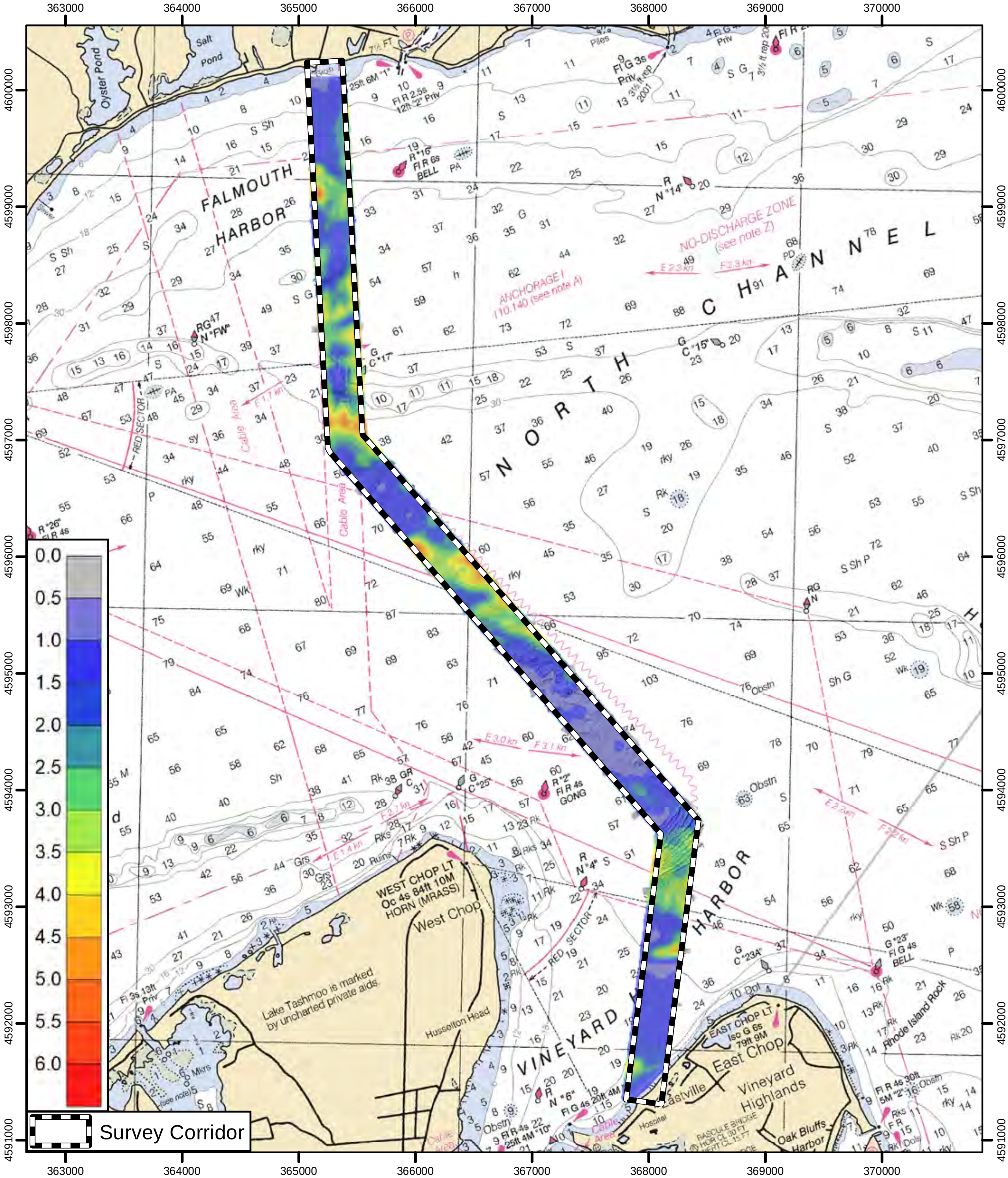
N W E S

Figure 11B

PROFILE 5 - SAND / GRAVELLY SAND BOTTOM



www.crenvironmental.com	EXAMPLES OF SUB-BOTTOM SONAR PROFILES 5th Cable Crossing Vineyard Sound, Massachusetts	N W E S
	NOTES: 1) Profile locations shown on Figure 10	Figure 11C



DEPTH TO ACOUSTIC BASEMENT BENEATH SEAFLOOR (m)
Based on Sub-Bottom Sonar
5th Cable Crossing
Vineyard Sound, Massachusetts

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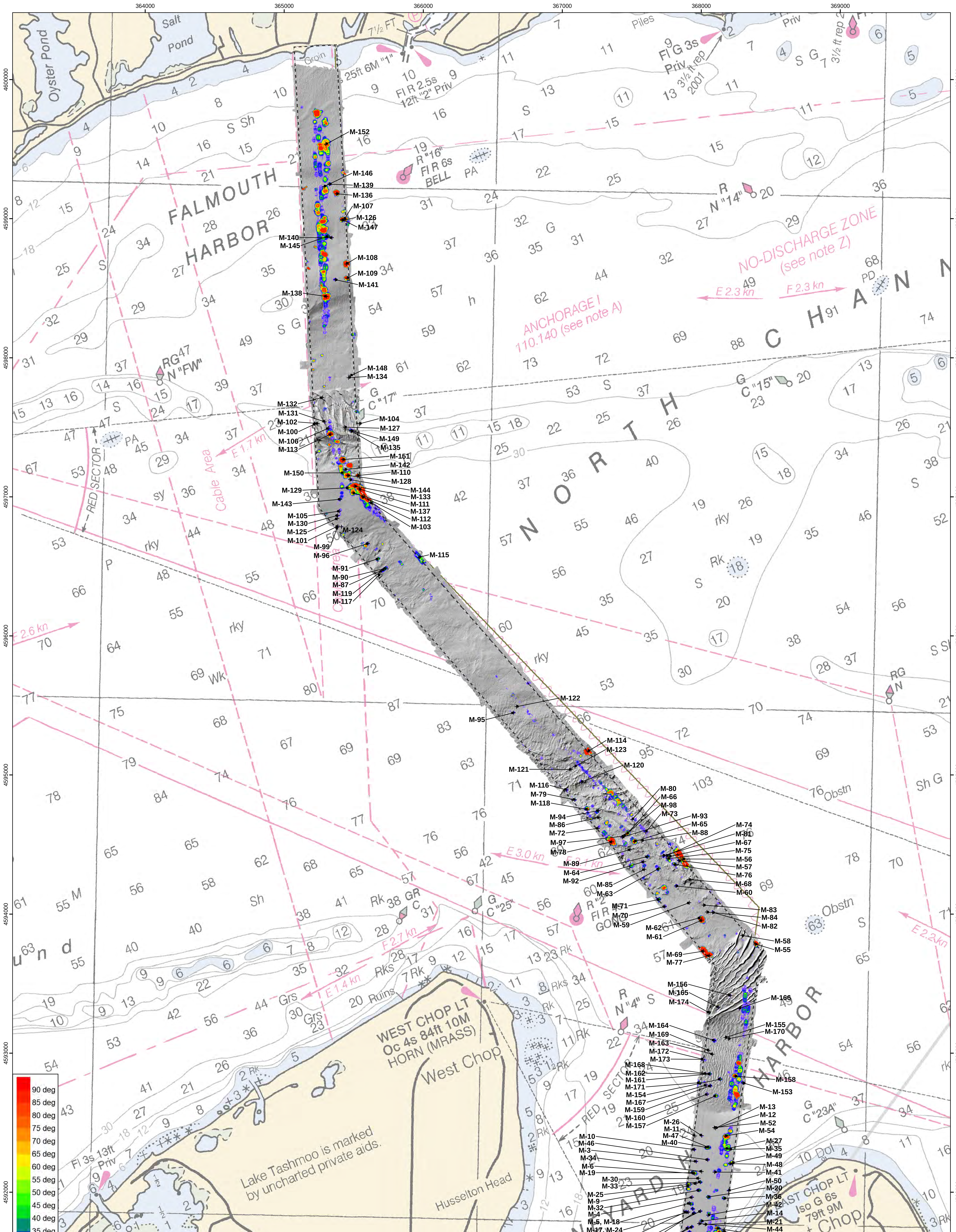
NOTES:
1) Grid UTM, Zone 19N, NAD 83 Meters

Kilometers
0 0.5 1

Figure 12



MAGNETIC GRADIENT SLOPE AND DIGITIZED MAGNETIC ANOMALIES
5th Cable Crossing
Vineyard Sound, Massachusetts

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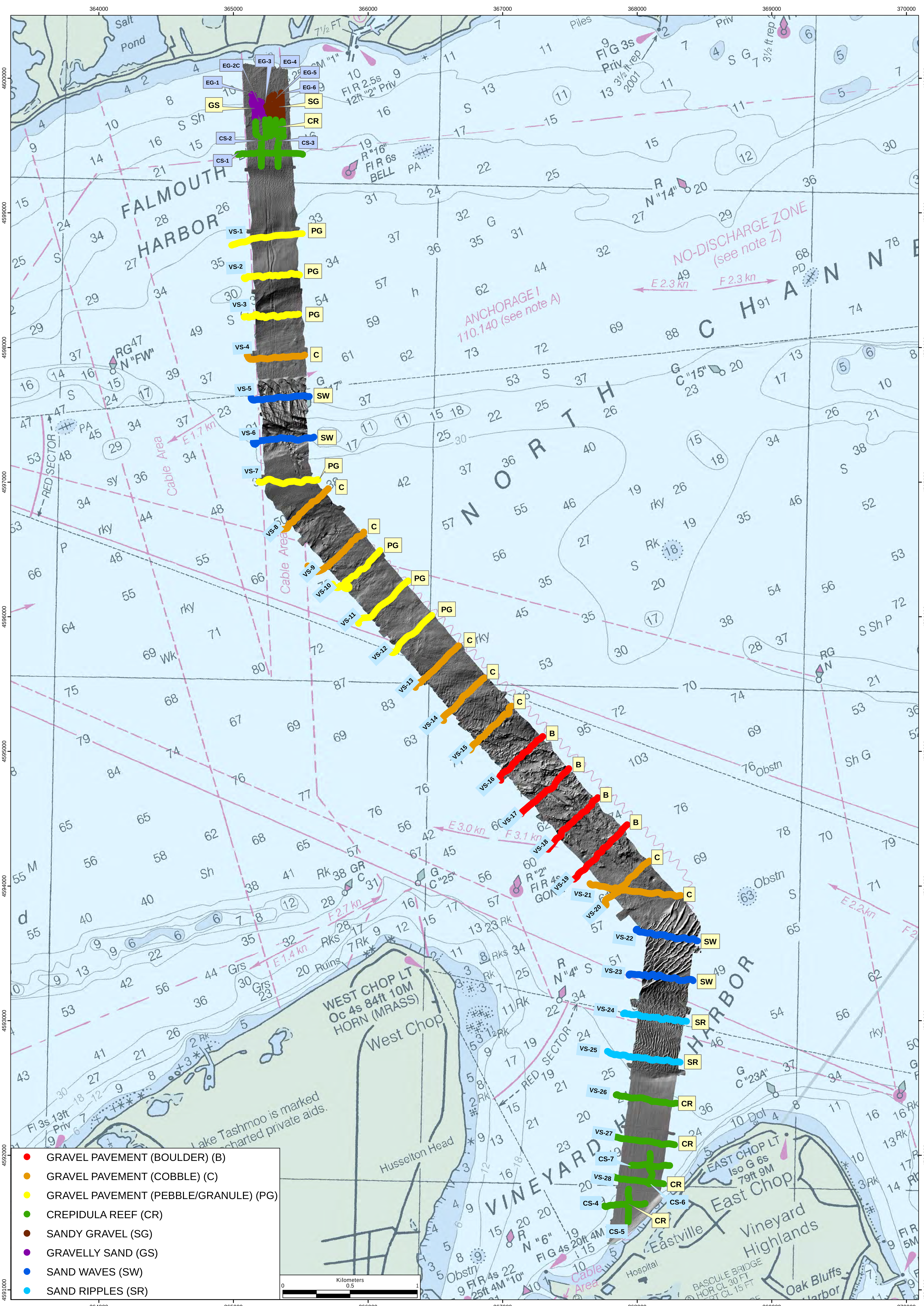
NOTES:
1) Magnetic anomalies are described on Table 3.
2) Bathymetric relief layer uses 5x exaggeration.
3) Grid UTM, Zone 19N, NAD 83 Meters

Figure 13



DOMINANT CMECS SUBSTRATE CLASSIFICATION
BASED ON VIDEO OBSERVATIONS
5th Cable Crossing
Vineyard Sound, Massachusetts

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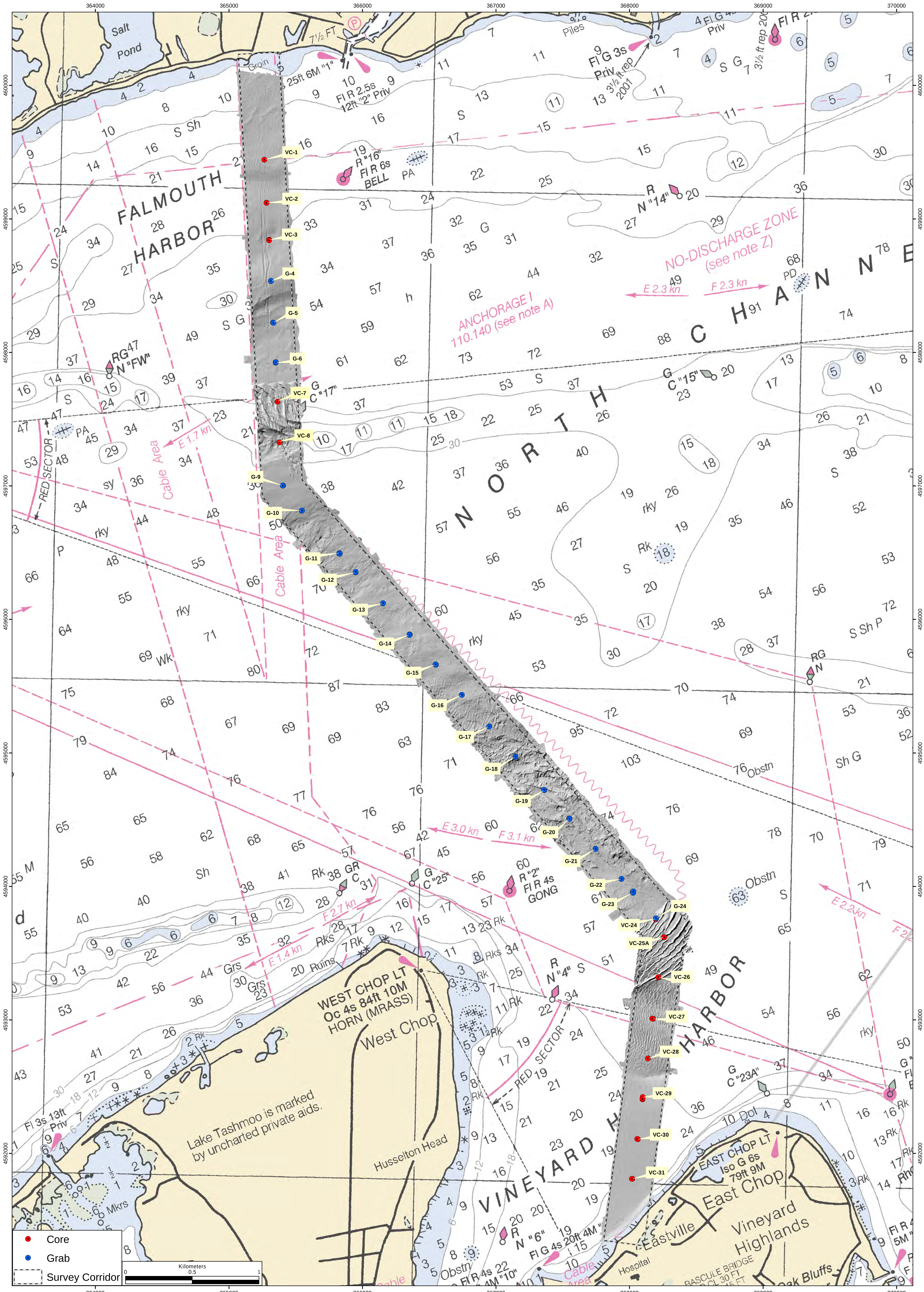
NOTES:
1) Bathymetric relief layer uses 5x exaggeration.
2) Labels for the transect numbers are placed at the start of the video transect
3) Grid UTM, Zone 19N, NAD 83 Meters

1:12,000

Figure 14



CORE AND GRAB SAMPLE LOCATIONS
5th Cable Crossing
Vineyard Sound, Massachusetts

CR
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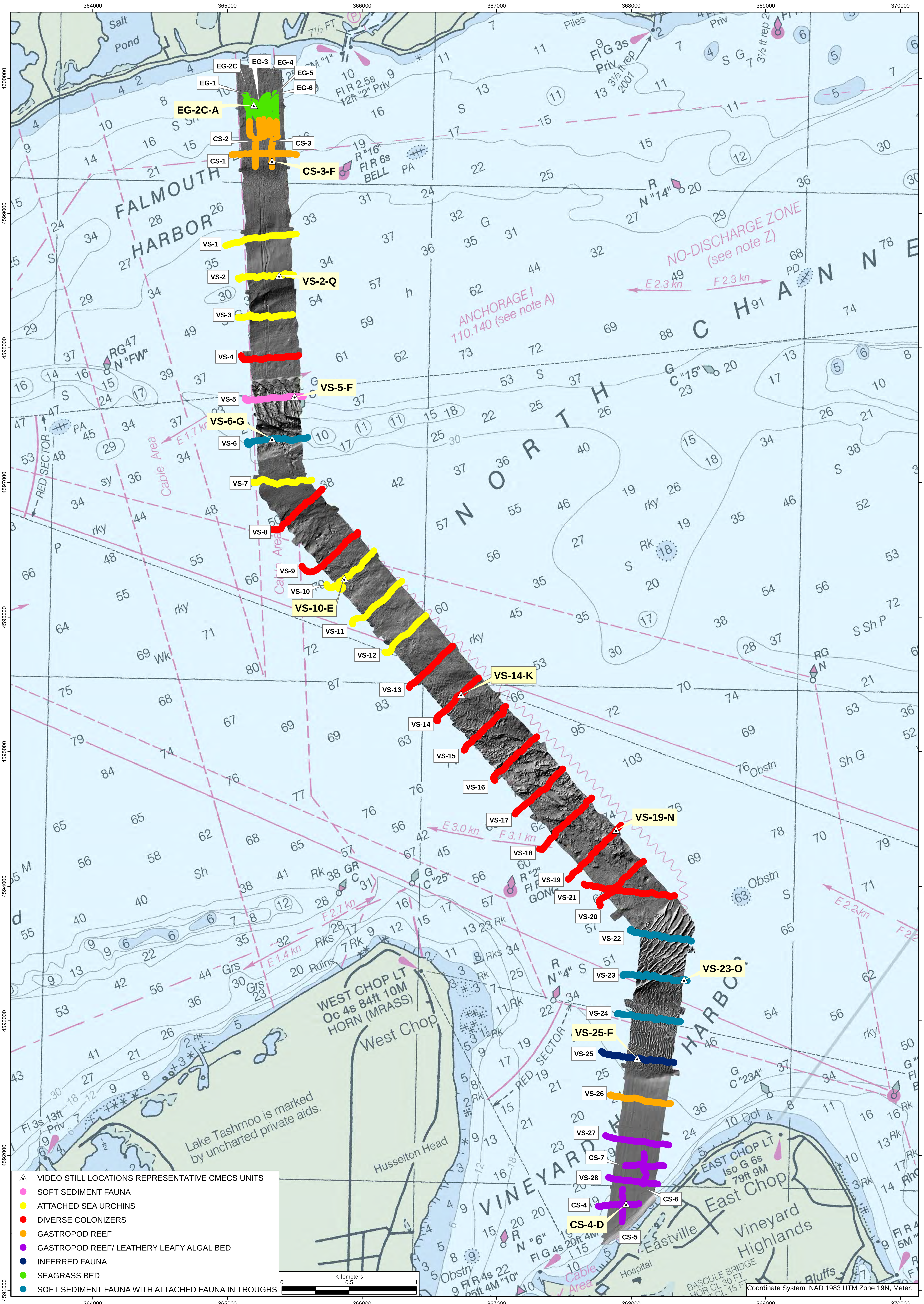
NOTES:
1) Bathymetric relief layer uses 5x exaggeration.
2) Grid UTM, Zone 19N, NAD 83 Meters

Figure 15



DOMINANT CMECS BIOTIC COMPONENTS
BASED ON VIDEO OBSERVATIONS
5th Cable Crossing
Vineyard Sound, Massachusetts

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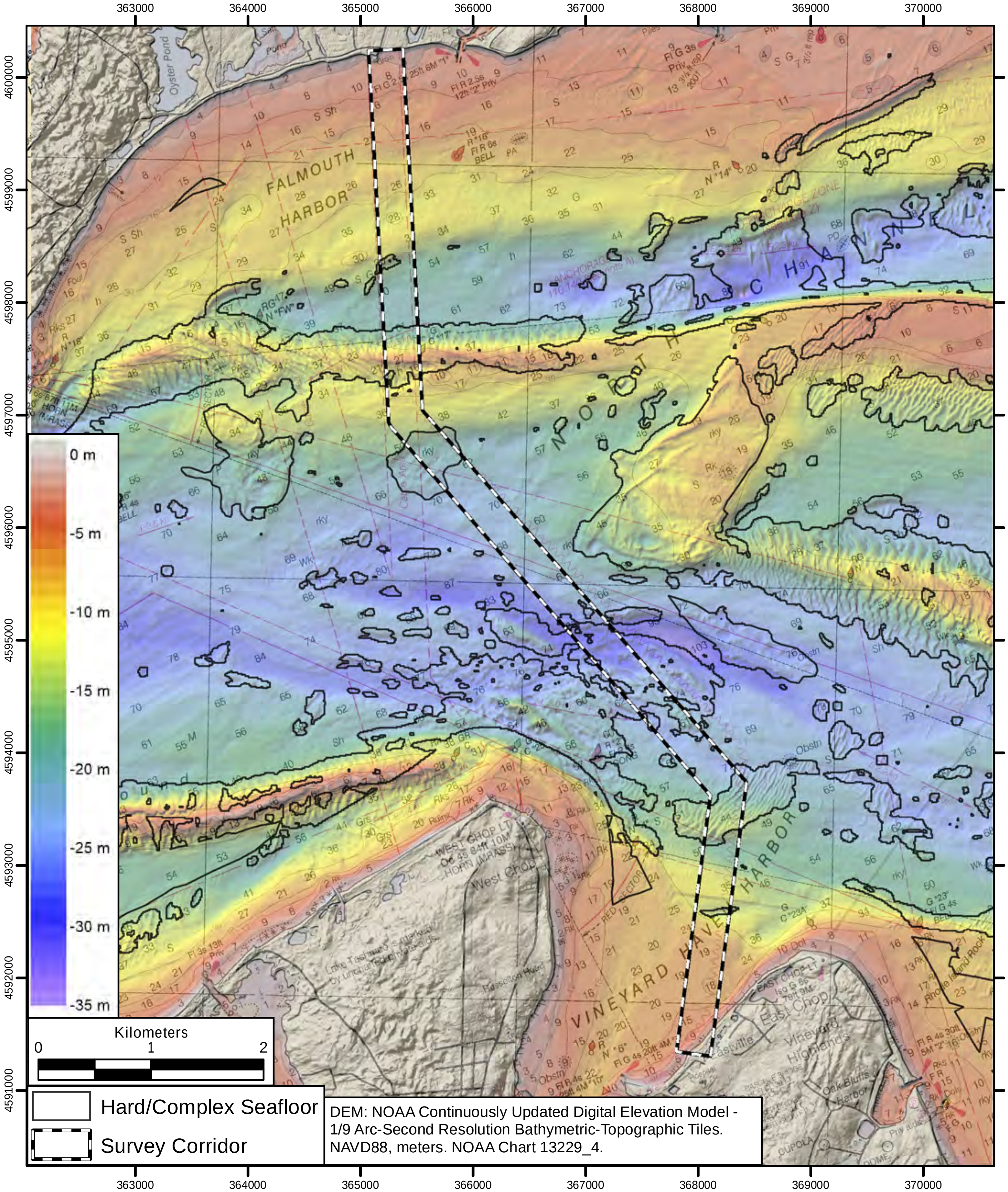
NOTES:
1) Bathymetric relief layer uses 5x exaggeration.
2) Labels for the transect numbers are placed at the start of the video transect
3) See Table X for detailed descriptions.

1:12,000

Figure 16



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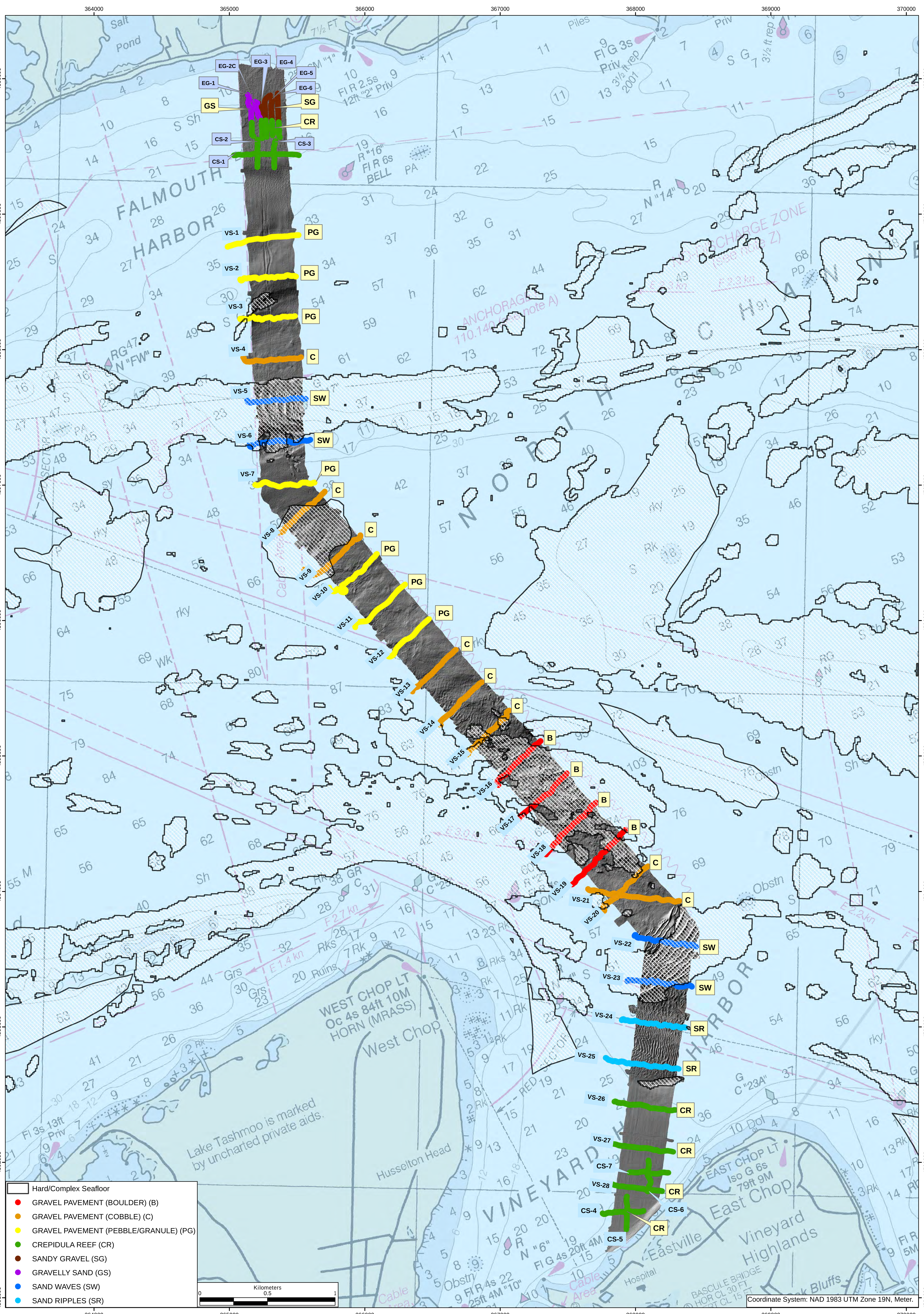
MASSACHUSETTS OCEAN MANAGEMENT PLAN
HARD / COMPLEX SEAFLOOR
5th Cable Crossing
Vineyard Sound, Massachusetts

NOTES:
1) Souce: 2021 Massachusetts Ocean Management Plan Layer, hard_complex_seafloor_2021.
2) Grid UTM, Zone 19N, NAD 83 Meters

Figure 17



DOMINANT CMECS SUBSTRATE CLASSIFICATION
BASED ON VIDEO OBSERVATIONS
5th Cable Crossing
Vineyard Sound, Massachusetts

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NOTES:
1) Bathymetric relief layer uses 5x exaggeration.
2) Labels for the transect numbers are placed at the start of the video transect
3) See Table X for detailed descriptions.

1:12,000

Figure 18

TABLES

TABLE 1

CROSS-LINE COMPARISON RESULTS
Eversource 5th Cable Hydrographic Survey
August 19 through September 14, 2021
Values in Meters

+/- Beam Angle Limit	Max Outlier	Mean Diff	Std Dev	95% Confidence
0	0.81	0.00	0.07	0.13
5	0.86	0.00	0.06	0.12
10	0.87	0.00	0.06	0.13
15	0.87	0.00	0.06	0.13
20	0.87	0.00	0.07	0.13
25	0.96	-0.01	0.06	0.11
30	0.96	-0.01	0.05	0.09
35	0.96	-0.02	0.06	0.12
40	0.83	-0.02	0.06	0.12
45	1.01	-0.03	0.06	0.12
50	1.09	-0.03	0.07	0.13
55	1.09	-0.04	0.07	0.13
60	1.09	-0.02	0.08	0.16
Average		-0.01	0.06	0.12

Notes:

1. Comparisons made between cross-line swaths and a reference surface created using mainstay data to +/- 55 degrees from nadir using 1m x 1m cell average elevations.

2. 95th percentile uncertainty calculated as 2x root mean square per ACOE recommendations.

TABLE 2

SIDE SCAN SONAR CONTACTS
EVERSOURCE 5th CABLE, VINEYARD SOUND, MA

Target	X	Y	Classification	Notes	Height (m)	Length (m)	Width (m)	Shadow (m)	Scour (m)
C-0001	365405.3	4599666.5	Boulder		0.7	2.3	1.3	1.3	0.0
C-0002	365289.8	4598917.3	Cable or fishing gear	Dimensions given for central target	0.2	1.5	0.3	0.6	0.0
C-0003	365250.1	4598897.2	Cable		0.3	0.0	0.3	1.1	0.0
C-0004	365473.2	4598050.0	Boulder Field		0.3	20.7	6.7	0.7	0.0
C-0005	365413.5	4598026.6	Boulder		2.5	3.1	1.0	2.4	0.0
C-0006	365473.7	4597892.6	Boulder		0.8	4.2	1.9	1.6	0.0
C-0007	365525.8	4597539.9	Fishing Gear		0.8	0.7	0.9	2.7	0.0
C-0008	365532.4	4597526.3	Boulder		1.0	5.4	1.1	2.3	0.0
C-0009	365539.9	4597520.9	Boulder		1.9	2.2	1.3	1.9	0.0
C-0010	365367.4	4597278.3	Possible Cable Segment		0.2	17.7	0.3	0.3	0.0
C-0011	365586.8	4596719.1	Boulder		2.1	4.3	3.5	5.8	0.0
C-0012	365454.4	4596721.5	Debris or Wreckage		0.0	7.0	1.6	0.2	0.0
C-0013	365785.9	4596643.3	Boulder	Possible debris	0.5	8.0	2.5	3.1	0.0
C-0014	365793.0	4596625.7	Boulder		1.3	6.1	2.3	4.7	0.0
C-0015	365774.0	4596623.2	Boulder		1.7	4.2	3.1	4.0	0.0
C-0016	365782.3	4596609.0	Boulder		1.6	3.5	1.3	4.6	0.0
C-0017	365802.9	4596606.0	Boulder		2.5	6.8	3.2	2.8	0.0
C-0018	365786.8	4596599.5	Boulder or debris		1.0	4.0	1.1	3.4	0.0
C-0019	365690.5	4596594.7	Boulder		5.2	8.0	2.2	6.1	0.0
C-0020	365649.3	4596570.5	Boulder		1.4	3.7	2.7	8.0	0.0
C-0021	365738.7	4596497.6	Boulder		1.6	5.7	3.0	9.1	0.0
C-0022	365753.6	4596492.3	Boulder		1.6	5.5	2.8	9.2	0.0
C-0023	365959.4	4596431.1	Boulder field	Anomalous cluster of rocks	1.1	5.2	9.7	1.3	0.0
C-0024	366590.7	4595418.5	Fish shoal (typical)	Inverted image	0.0	0.0	0.0	0.0	0.0
C-0025	367077.0	4595163.8	Sand	Anomolous sand formation. Possible buried object.	0.2	5.1	3.6	0.8	0.0
C-0026	366924.0	4595119.6	Fishing gear	Likely conch trap	1.2	1.3	1.0	3.5	0.0
C-0027	367164.2	4595079.2	Debris		0.0	6.2	1.9	0.0	1.4
C-0028	367554.8	4594661.4	Boulder Field	Measurments for typical boulder	1.1	2.3	1.6	2.3	0.0
C-0029	367593.6	4594639.6	Boulder or ledge		0.8	7.2	3.1	2.4	0.0
C-0030	367611.6	4594633.6	Trench		0.0	20.1	2.5	0.0	0.0
C-0031	367485.7	4594609.4	Boulder Field	Boulder ridge	0.0	0.0	0.0	0.0	0.0
C-0032	367794.5	4594498.4	Trench with possible cable segment		0.0	0.0	0.0	0.0	0.0
C-0033	367683.6	4594476.0	Boulder		1.3	3.0	1.7	1.7	0.0

TABLE 2

SIDE SCAN SONAR CONTACTS
EVERSOURCE 5th CABLE, VINEYARD SOUND, MA

Target	X	Y	Classification	Notes	Height (m)	Length (m)	Width (m)	Shadow (m)	Scour (m)
C-0034	367473.8	4594379.4	Boulder or debris		2.5	3.2	2.6	4.9	0.0
C-0035	367493.6	4594378.2	Boulder or debris		2.4	5.4	3.3	9.3	0.0
C-0036	368121.2	4594056.7	Boulder or debris		3.8	6.1	3.4	5.2	0.0
C-0037	368117.6	4594052.2	Boulder or debris		1.5	9.2	3.1	10.0	0.0
C-0038	368006.8	4594038.3	Possible cable segment		0.6	17.4	0.3	1.5	0.0
C-0039	368080.8	4594002.8	Debris	Possible debris field	1.6	6.7	3.9	1.9	0.0
C-0040	368080.1	4593990.4	Possible cable segment		0.2	11.2	1.8	0.3	0.0
C-0041	368200.1	4593822.7	Debris		0.5	6.5	0.7	2.3	0.0
C-0042	368362.3	4593795.3	Cable		0.0	35.1	0.2	0.0	0.0
C-0043	368372.7	4593757.3	Cable		0.0	27.6	0.0	0.0	0.0
C-0044	368202.2	4593748.6	Sand waves	Width = approximate wavelength (peak to peak)	0.0	0.0	1.7	0.0	0.0
C-0045	368185.6	4593105.5	Debris		0.6	3.2	1.3	1.9	0.0
C-0046	368042.8	4593054.7	Debris	Debris in sand waves	0.4	6.4	0.4	0.9	0.0
C-0047	368187.8	4593047.2	Debris	Debris in sand waves	0.2	1.6	2.5	0.7	0.0
C-0048	368134.4	4592809.5	Fishing gear	Likely conch trap near sand ridge	0.3	1.3	0.8	1.0	0.0
C-0049	368176.7	4592524.4	Debris		0.1	3.1	0.1	0.2	0.0
C-0050	368180.6	4592198.7	Fishing Gear	Likely conch trap	0.2	1.5	0.7	0.2	0.0
C-0051	368145.6	4592188.9	Fishing Gear	Likely conch trap	0.3	1.0	0.9	1.8	0.0
C-0052	368138.4	4592180.5	Fishing Gear	Likely conch trap	0.2	1.0	0.6	2.3	0.0
C-0053	368107.5	4592175.3	Fishing Gear	Likely conch trap	0.3	1.1	0.5	1.3	0.0
C-0054	368084.5	4592166.9	Fishing Gear	Likely conch trap	0.3	0.8	0.5	1.9	0.0
C-0055	368005.9	4592150.4	Fishing Gear	Likely conch trap	0.3	0.9	0.8	2.2	0.0
C-0056	367910.9	4592130.2	Fishing Gear	Likely conch trap	0.1	1.3	0.7	0.2	0.0
C-0057	368104.9	4592013.2	Fishing Gear	Likely conch trap	0.6	1.2	0.7	0.8	0.0
C-0058	367938.3	4591933.0	Wreck	Northern portion	0.8	19.3	3.5	3.6	0.0
C-0059	367932.9	4591932.6	Wreck		0.2	15.8	3.0	0.9	0.0
C-0060	368087.6	4591929.3	Fishing Gear	Likely conch trap	0.0	1.1	0.7	0.0	0.0
C-0061	367929.7	4591929.7	Wreck		0.5	18.8	8.0	2.9	0.0
C-0062	368203.9	4591889.6	Debris	Debris likely associated with wreckage to west	0.3	15.0	1.0	2.0	0.0
C-0063	367995.9	4591838.1	Fishing Gear	Likely conch trap	0.5	1.2	0.9	3.5	0.0
C-0064	368110.1	4591815.0	Fishing Gear	Likely conch trap	0.3	1.2	0.4	2.0	0.0
C-0065	367991.1	4591792.1	Fishing Gear	Likely conch trap	0.3	1.2	0.5	2.6	0.0
C-0066	367987.5	4591775.1	Fishing Gear	Likely conch trap	0.2	0.9	0.5	2.0	0.0
C-0067	368130.2	4591717.3	Fishing Gear	Likely conch trap	0.6	1.7	0.7	4.8	0.0

TABLE 2

SIDE SCAN SONAR CONTACTS
EVERSOURCE 5th CABLE, VINEYARD SOUND, MA

Target	X	Y	Classification	Notes	Height (m)	Length (m)	Width (m)	Shadow (m)	Scour (m)
C-0068	368127.8	4591696.0	Fishing Gear	Likely conch trap	0.5	1.4	1.0	4.0	0.0
C-0069	367939.1	4591698.0	Fish shoal (typical)		0.0	0.0	0.0	0.0	0.0
C-0070	368095.6	4591677.4	Fishing Gear	Likely conch trap	0.3	1.0	0.6	2.2	0.0
C-0071	367959.9	4591647.0	Fishing Gear	Likely conch trap	0.3	1.6	0.8	2.9	0.0
C-0072	368090.1	4591637.2	Debris		0.2	3.0	0.3	1.2	0.0
C-0073	367891.6	4591619.7	Trench		0.0	9.4	1.1	0.0	0.9
C-0074	368032.6	4591590.7	Fishing Gear	Likely conch trap	0.3	1.3	0.5	2.1	0.0

TABLE 3
DIGITIZED MAGNETIC ANOMALIES
EVERSOURCE 5TH CABLE CORRIDOR, VINEYARD SOUND, MA

ID	HYPACK Name	X	Y	Peak_Spread (nT)	Time_Elapsed (sec)	Distance Over Ground (m)	Signature Class
M-1	MAGTGT (272.64)	367867	4591692	272.6	15.3	29.6	Multiple Component
M-2	MAGTGT (34.07)	367890	4591859	34.1	7.8	14.6	Dipolar
M-3	MAGTGT (22.54)	367963	4592220	22.5	7.5	12.9	Dipolar
M-4	MAGTGT (12.95)	367933	4591963	13.0	7.5	12.7	Multiple Component
M-5	MAGTGT (75.85)	367924	4591914	75.9	11.0	18.2	Dipolar
M-6	MAGTGT (175.46)	367950	4592134	175.5	11.0	18.3	Dipolar
M-7	MAGTGT (21.96)	367903	4591744	22.0	7.5	13.8	Monopolar
M-8	MAGTGT (33.18)	367888	4591653	33.2	17.0	30.4	Multiple Component
M-9	MAGTGT (220.00)	367909	4592045	220.0	33.5	63.1	Multiple Component
M-10	MAGTGT (36.72)	367950	4592307	36.7	8.0	17.0	Dipolar
M-11	MAGTGT (12.09)	367954	4592404	12.1	7.1	15.1	Monopolar
M-12	MAGTGT (25.70)	368102	4592460	25.7	23.8	36.4	Dipolar
M-13	MAGTGT (25.70)	368102	4592460	25.7	23.8	36.4	Dipolar
M-14	MAGTGT (44.38)	368001	4591791	44.4	13.5	23.7	Dipolar
M-15	MAGTGT (12.39)	367998	4591677	12.4	6.7	12.1	Monopolar
M-16	MAGTGT (296.86)	367879	4591676	296.9	30.5	60.2	Multiple Component
M-17	MAGTGT (20.20)	367906	4591856	20.2	10.3	19.9	Monopolar
M-18	MAGTGT (20.89)	367914	4591921	20.9	7.2	12.0	Dipolar
M-19	MAGTGT (90.28)	367942	4592140	90.3	7.7	15.6	Dipolar
M-20	MAGTGT (96.66)	368048	4591965	96.7	19.3	34.3	Dipolar
M-21	MAGTGT (14.43)	368028	4591768	14.4	8.3	17.1	Dipolar
M-22	MAGTGT (16.70)	368002	4591587	16.7	6.8	12.9	Dipolar
M-23	MAGTGT (47.88)	367915	4591713	47.9	12.3	29.7	Monopolar
M-24	MAGTGT (46.11)	367938	4591881	46.1	9.5	17.4	Dipolar
M-25	MAGTGT (14.36)	367962	4592063	14.4	6.6	15.3	Dipolar
M-26	MAGTGT (23.77)	368003	4592406	23.8	12.0	22.4	Dipolar
M-27	MAGTGT (42568.55)	368178	4592312	42568.6	7.5	14.3	Multiple Component
M-28	MAGTGT (34.16)	367932	4591751	34.2	9.3	23.2	Monopolar
M-29	MAGTGT (36.68)	367948	4591850	36.7	9.3	17.1	Multiple Component
M-30	MAGTGT (10.74)	367981	4592099	10.7	23.7	43.1	Multiple Component
M-31	MAGTGT (423.87)	368114	4591740	423.9	8.7	16.7	Dipolar
M-32	MAGTGT (75.66)	367984	4592014	75.7	20.3	40.0	Dipolar
M-33	MAGTGT (51.62)	367993	4592072	51.6	5.8	11.0	Monopolar
M-34	MAGTGT (11.28)	368003	4592148	11.3	12.3	24.9	Multiple Component
M-35	MAGTGT (45.69)	368206	4592308	45.7	7.8	13.6	Dipolar
M-36	MAGTGT (78.90)	368163	4591956	78.9	8.0	13.9	Dipolar
M-37	MAGTGT (749.91)	368128	4591710	749.9	16.5	30.4	Multiple Component
M-38	MAGTGT (38.93)	367942	4591566	38.9	5.3	11.1	Dipolar
M-39	MAGTGT (27.20)	367959	4591675	27.2	5.3	9.9	Monopolar
M-40	MAGTGT (137.68)	368041	4592321	137.7	19.8	37.4	Multiple Component
M-41	MAGTGT (22.68)	368095	4592144	22.7	18.8	36.8	Multiple Component
M-42	MAGTGT (56.66)	368049	4591835	56.7	18.7	33.9	Multiple Component
M-43	MAGTGT (27.67)	367963	4591607	27.7	8.3	19.1	Monopolar
M-44	MAGTGT (19.96)	367984	4591774	20.0	5.5	13.3	Monopolar
M-45	MAGTGT (23.32)	367994	4591864	23.3	6.5	15.8	Monopolar
M-46	MAGTGT (43.69)	368047	4592232	43.7	16.8	39.1	Dipolar
M-47	MAGTGT (78.52)	368054	4592322	78.5	13.0	29.8	Monopolar
M-48	MAGTGT (60.73)	368206	4592205	60.7	11.8	18.8	Dipolar
M-49	MAGTGT (163.81)	368224	4592211	163.8	12.3	21.8	Dipolar
M-50	MAGTGT (35.86)	368197	4592011	35.9	9.5	16.4	Dipolar
M-51	MAGTGT (47.66)	368159	4591720	47.7	7.5	15.4	Dipolar
M-52	MAGTGT (21.58)	368093	4592464	21.6	28.0	45.9	Dipolar
M-53	MAGTGT (38482.51)	368075	4591660	38482.5	8.3	17.0	Multiple Component
M-54	MAGTGT (31664.83)	368173	4592404	31664.8	9.8	17.5	Multiple Component
M-55	MAGTGT (36957.06)	368389	4593784	36957.1	11.5	18.5	Multiple Component
M-56	MAGTGT (52778.16)	367867	4594396	52778.2	116.7	136.1	Multiple Component
M-57	MAGTGT (36.18)	367838	4594385	36.2	28.8	31.9	Dipolar
M-58	MAGTGT (11.89)	368293	4593846	11.9	39.7	41.6	Monopolar
M-59	MAGTGT (14.83)	367913	4594082	14.8	14.3	24.6	Dipolar

TABLE 3
DIGITIZED MAGNETIC ANOMALIES
EVERSOURCE 5TH CABLE CORRIDOR, VINEYARD SOUND, MA

ID	HYPACK Name	X	Y	Peak_Spread (nT)	Time_Elapsed (sec)	Distance Over Ground (m)	Signature Class
M-60	MAGTGT (48.34)	367819	4594202	48.3	18.8	33.3	Dipolar
M-61	MAGTGT (10769.83)	368003	4593956	10769.8	12.9	19.3	Multiple Component
M-62	MAGTGT (74.16)	367991	4593973	74.2	9.5	15.2	Dipolar
M-63	MAGTGT (108.53)	367693	4594327	108.5	9.0	15.5	Monopolar
M-64	MAGTGT (60.98)	367613	4594413	61.0	9.3	16.5	Dipolar
M-65	MAGTGT (1353.26)	367520	4594522	1353.3	16.8	30.4	Multiple Component
M-66	MAGTGT (476.17)	367466	4594578	476.2	11.6	21.3	Monopolar
M-67	MAGTGT (12.59)	367771	4594414	12.6	108.0	61.4	Dipolar
M-68	MAGTGT (11.44)	367911	4594248	11.4	40.5	32.0	Multiple Component
M-69	MAGTGT (10519.06)	368016	4593733	10519.1	37.0	64.9	Multiple Component
M-70	MAGTGT (44.96)	367738	4594054	45.0	13.0	25.6	Dipolar
M-71	MAGTGT (79.16)	367696	4594105	79.2	8.3	15.4	Monopolar
M-72	MAGTGT (22.51)	367257	4594616	22.5	9.5	17.6	Monopolar
M-73	MAGTGT (32.96)	367601	4594590	33.0	75.5	29.0	Monopolar
M-74	MAGTGT (16.25)	367749	4594418	16.3	56.8	23.7	Monopolar
M-75	MAGTGT (21.07)	367760	4594398	21.1	59.5	12.5	Monopolar
M-76	MAGTGT (23.62)	367806	4594358	23.6	21.8	2.8	Monopolar
M-77	MAGTGT (2896.83)	368058	4593702	2896.8	8.7	14.3	Monopolar
M-78	MAGTGT (51183.76)	367356	4594520	51183.8	15.6	26.0	Multiple Component
M-79	MAGTGT (53.32)	367090	4594822	53.3	14.5	27.3	Dipolar
M-80	MAGTGT (12.32)	367503	4594679	12.3	24.5	11.6	Monopolar
M-81	MAGTGT (28.51)	367726	4594419	28.5	102.5	52.3	Multiple Component
M-82	MAGTGT (39.06)	368081	4594013	39.1	55.4	49.4	Monopolar
M-83	MAGTGT (69.67)	368016	4594064	69.7	146.3	251.6	Multiple Component
M-84	MAGTGT (13.46)	368040	4594015	13.5	97.3	155.6	Multiple Component
M-85	MAGTGT (30.10)	367591	4594322	30.1	77.5	131.9	Multiple Component
M-86	MAGTGT (25.85)	367265	4594695	25.9	72.0	127.2	Multiple Component
M-87	MAGTGT (55.68)	365719	4596480	55.7	28.3	45.8	Monopolar
M-88	MAGTGT (9.95)	367572	4594527	10.0	43.0	49.3	Dipolar
M-89	MAGTGT (770.43)	367488	4594463	770.4	432.7	859.8	Multiple Component
M-90	MAGTGT (58.27)	365730	4596487	58.3	27.5	36.9	Monopolar
M-91	MAGTGT (81.33)	365674	4596555	81.3	22.2	35.5	Monopolar
M-92	MAGTGT (34.01)	367586	4594376	34.0	30.2	66.9	Monopolar
M-93	MAGTGT (32.74)	367432	4594552	32.7	28.5	54.5	Dipolar
M-94	MAGTGT (19.82)	367260	4594744	19.8	23.7	47.6	Monopolar
M-95	MAGTGT (23.18)	366650	4595447	23.2	17.3	29.8	Monopolar
M-96	MAGTGT (48.41)	365602	4596665	48.4	16.3	30.0	Monopolar
M-97	MAGTGT (21.05)	367443	4594560	21.1	48.0	52.8	Dipolar
M-98	MAGTGT (21.05)	367443	4594560	21.1	48.0	52.8	Dipolar
M-99	MAGTGT (35.56)	365381	4596782	35.6	26.5	37.4	Dipolar
M-100	MAGTGT (12.75)	365221	4597524	12.8	16.6	41.6	Dipolar
M-101	MAGTGT (22.32)	365385	4596790	22.3	17.0	36.2	Dipolar
M-102	MAGTGT (10.32)	365241	4597527	10.3	25.0	63.0	Dipolar
M-103	MAGTGT (38568.00)	365620	4596961	38568.0	123.8	211.2	Multiple Component
M-104	MAGTGT (25.23)	365541	4597525	25.2	22.8	45.5	Dipolar
M-105	MAGTGT (33.61)	365396	4596897	33.6	21.2	42.9	Dipolar
M-106	MAGTGT (80.33)	365317	4597494	80.3	74.8	136.1	Multiple Component
M-107	MAGTGT (788.32)	365431	4598996	788.3	14.7	24.0	Monopolar
M-108	MAGTGT (7566.56)	365446	4598675	7566.6	21.0	35.9	Multiple Component
M-109	MAGTGT (4764.12)	365452	4598572	4764.1	24.0	22.1	Multiple Component
M-110	MAGTGT (12523.26)	365528	4597153	12523.3	4.0	9.0	Monopolar
M-111	MAGTGT (32727.37)	365539	4597057	32727.4	6.5	21.7	Monopolar
M-112	MAGTGT (53236.59)	365562	4597001	53236.6	25.2	34.4	Dipolar
M-113	MAGTGT (38292.99)	365335	4597451	38293.0	74.5	120.2	Multiple Component
M-114	MAGTGT (7817.76)	367186	4595171	7817.8	13.0	20.5	Multiple Component
M-115	MAGTGT (365.48)	365970	4596566	365.5	106.2	145.0	Multiple Component
M-116	MAGTGT (43.63)	367029	4594893	43.6	22.3	41.4	Multiple Component
M-117	MAGTGT (20.80)	365688	4596444	20.8	17.8	37.0	Monopolar
M-118	MAGTGT (564.20)	367180	4594752	564.2	25.2	43.1	Dipolar

TABLE 3
DIGITIZED MAGNETIC ANOMALIES
EVERSOURCE 5TH CABLE CORRIDOR, VINEYARD SOUND, MA

ID	HYPACK Name	X	Y	Peak_Spread (nT)	Time_Elapsed (sec)	Distance Over Ground (m)	Signature Class
M-119	MAGTGT (44.68)	365700	4596469	44.7	30.0	52.8	Monopolar
M-120	MAGTGT (21.25)	367137	4594949	21.3	46.5	51.8	Multiple Component
M-121	MAGTGT (9.78)	367063	4595039	9.8	23.3	29.1	Monopolar
M-122	MAGTGT (22.63)	366671	4595491	22.6	43.7	65.0	Dipolar
M-123	MAGTGT (65.05)	367090	4595061	65.1	69.0	9.9	Multiple Component
M-124	MAGTGT (24.22)	365412	4596785	24.2	20.3	29.3	Dipolar
M-125	MAGTGT (23.90)	365381	4596845	23.9	24.0	46.7	Dipolar
M-126	MAGTGT (19.26)	365416	4598988	19.3	11.5	24.7	Monopolar
M-127	MAGTGT (9.65)	365435	4597501	9.7	15.0	22.6	Monopolar
M-128	MAGTGT (5670.87)	365456	4597154	38499.9	16.8	27.7	Multiple Component
M-129	MAGTGT (139.11)	365460	4597065	139.1	26.0	45.8	Multiple Component
M-130	MAGTGT (31.12)	365384	4596867	31.1	33.2	40.4	Multiple Component
M-131	MAGTGT (30.80)	365291	4597540	30.8	38.5	56.5	Multiple Component
M-132	MAGTGT (16.96)	365274	4597714	17.0	61.5	88.3	Multiple Component
M-133	MAGTGT (38378.41)	365507	4597077	38378.4	29.5	53.4	Multiple Component
M-134	MAGTGT (19.95)	365463	4597857	20.0	17.5	31.1	Monopolar
M-135	MAGTGT (42.60)	365482	4597474	42.6	17.3	32.3	Dipolar
M-136	MAGTGT (4647.32)	365376	4599180	4647.3	23.8	39.7	Multiple Component
M-137	MAGTGT (1394.00)	365495	4597028	1394.0	34.5	57.5	Multiple Component
M-138	MAGTGT (38434.33)	365303	4598441	38434.3	31.8	58.9	Multiple Component
M-139	MAGTGT (51.20)	365324	4599249	51.2	12.0	24.6	Monopolar
M-140	MAGTGT (18.88)	365343	4598864	18.9	15.3	28.7	Monopolar
M-141	MAGTGT (39.27)	365367	4598562	39.3	14.0	27.2	Dipolar
M-142	MAGTGT (154.55)	365436	4597196	154.6	82.0	171.2	Multiple Component
M-143	MAGTGT (51.82)	365402	4596983	51.8	20.8	27.6	Monopolar
M-144	MAGTGT (4253.49)	365473	4597124	4253.5	109.5	206.6	Multiple Component
M-145	MAGTGT (91.07)	365314	4598875	91.1	19.5	41.4	Monopolar
M-146	MAGTGT (936.62)	365287	4599231	936.6	77.7	170.3	Multiple Component
M-147	MAGTGT (1208.87)	365416	4598995	1208.9	12.7	24.0	Dipolar
M-148	MAGTGT (17.58)	365478	4597871	17.6	17.5	27.5	Dipolar
M-149	MAGTGT (62.69)	365481	4597477	62.7	29.0	58.7	Dipolar
M-150	MAGTGT (162.85)	365424	4597173	162.9	22.0	41.1	Dipolar
M-151	MAGTGT (37514.31)	365421	4597268	37514.3	26.7	48.3	Multiple Component
M-152	MAGTGT (615.50)	365299	4599535	615.5	55.8	132.7	Multiple Component
M-153	MAGTGT (53.63)	368300	4592786	53.6	13.2	27.8	Dipolar
M-154	MAGTGT (82.11)	368136	4592813	82.1	12.0	28.0	Dipolar
M-155	MAGTGT (23.97)	368174	4593111	24.0	18.0	36.3	Dipolar
M-156	MAGTGT (30.00)	368209	4593414	30.0	16.8	34.7	Monopolar
M-157	MAGTGT (124.41)	368103	4592694	124.4	12.0	26.0	Dipolar
M-158	MAGTGT (1019.85)	368244	4592834	1019.9	13.0	24.1	Dipolar
M-159	MAGTGT (32.07)	368066	4592766	32.1	15.4	35.9	Multiple Component
M-160	MAGTGT (37.09)	368042	4592705	37.1	12.8	34.4	Monopolar
M-161	MAGTGT (58.57)	368062	4592850	58.6	12.8	24.5	Dipolar
M-162	MAGTGT (58.57)	368062	4592850	58.6	12.8	24.5	Dipolar
M-163	MAGTGT (17.26)	368081	4592991	17.3	14.5	27.3	Multiple Component
M-164	MAGTGT (76.61)	368092	4593090	76.6	22.0	43.5	Dipolar
M-165	MAGTGT (28.15)	368123	4593329	28.2	18.1	33.6	Dipolar
M-166	MAGTGT (22.18)	368273	4593321	22.2	16.0	27.9	Dipolar
M-167	MAGTGT (26.11)	368034	4592770	26.1	10.8	30.1	Multiple Component
M-168	MAGTGT (14.28)	368033	4592852	14.3	8.3	17.7	Multiple Component
M-169	MAGTGT (8.36)	368053	4593019	8.4	12.7	27.5	Dipolar
M-170	MAGTGT (14.06)	368195	4593103	14.1	25.3	42.2	Dipolar
M-171	MAGTGT (75.83)	367986	4592787	75.8	13.0	23.3	Dipolar
M-172	MAGTGT (39.65)	368013	4592955	39.7	12.5	27.0	Dipolar
M-173	MAGTGT (39.65)	368013	4592955	39.7	12.5	27.0	Dipolar
M-174	MAGTGT (14.09)	368056	4593290	14.1	15.5	32.5	Dipolar

TABLE 4

CO-LOCATED MAGNETOMETER ANOMALIES AND SONAR CONTACTS
Eversource 5th Cable
Vineyard Sound, MA

Mag. Anomaly	Side Scan Contact	Side Scan Classifaction	Side Scan Description
M-5	C-0058	Wreck	Northern portion
M-5	C-0059	Wreck	
M-5	C-0061	Wreck	
M-14	C-0065	Fishing Gear	Likely trap
M-14	C-0066	Fishing Gear	Likely trap
M-18	C-0058	Wreck	Northern portion
M-18	C-0059	Wreck	
M-18	C-0061	Wreck	
M-34	C-0055	Fishing Gear	Likely trap
M-37	C-0067	Fishing Gear	Likely trap
M-37	C-0068	Fishing Gear	Likely trap
M-39	C-0071	Fishing Gear	Likely trap
M-44	C-0065	Fishing Gear	Likely trap
M-44	C-0066	Fishing Gear	Likely trap
M-53	C-0070	Fishing Gear	Likely trap
M-104	C-0007	Fishing Gear	
M-104	C-0008	Boulder	
M-104	C-0009	Boulder	
M-154	C-0048	Fishing gear	Likely trap
M-170	C-0045	Debris	

TABLE 5
EVERSOURCE 5TH CABLE VIBRACORE AND GRAB SAMPLING FIELD DATA
November 2021

NOTES:

1-Values are in decimal feet, ng = no good/poor recovery

2- Vibracores were taken at stations labled "vc" and grabs were taken at stations labled "g"

3-Core attempts are identified by the letter at the end of Station ID (1ST attempt="a",2ND attempt="b",3RD attempt="c")

4-Grid: UTM NORTH, Ellipsoid: WGS-84, Zone: Zone 19(72W-66W), Distance: Meters

Station ID[2]	X(Eastings)[4]	Y(Northings)[4]	LAT	LONG	TIME	DATE	Water Depth[1]	Penetration[1]	Recovery[1]
vc-25a[3]	368258.46	4593619.49	41.48336666	70.57801823	8:16:35	11/17/2021	58.8	6	5.3
vc-25b	368259.85	4593619.02	41.48336265	70.57800148	8:34:16	11/17/2021	58.7	ng	ng
vc-25c	368260.16	4593617.4	41.48334812	70.57799741	8:43:31	11/17/2021	58.7	ng	ng
vc-25d	368259.65	4593618.35	41.48335659	70.57800373	8:55:42	11/17/2021	58.5	ng	ng
vc-24a	368200.36	4593757.98	41.48460408	70.57874418	9:23:32	11/17/2021	70	ng	ng
vc-24b	368196.49	4593760	41.48462163	70.57879096	9:35:54	11/17/2021	65.9	ng	ng
vc-24c	368197.09	4593754.02	41.48456789	70.57878246	9:49:13	11/17/2021	68.8	ng	ng
vc-24d	368196.9	4593752.44	41.48455363	70.57878439	10:02:26	11/17/2021	69	ng	ng
vc-26a	368216.46	4593318.9	41.48065323	70.57845543	10:32:36	11/17/2021	44	ng	ng
vc-26b	368216.21	4593319.56	41.48065913	70.57845857	10:43:10	11/17/2021	44	4	3.1
vc-26c	368215.84	4593319.66	41.48065997	70.57846302	11:04:13	11/17/2021	43.8	3.5	2.8
vc-27a	368176.63	4593007.55	41.47784326	70.57886427	11:45:26	11/17/2021	48	ng	ng
vc-27b	368171.06	4593008.67	41.47785243	70.5789312	11:56:03	11/17/2021	48.8	4.5	3.35
vc-27c	368170.62	4593009.35	41.47785848	70.57893661	12:12:41	11/17/2021	48.8	4.5	3.45
vc-28a	368138.81	4592710.95	41.47516644	70.57925223	13:19:11	11/17/2021	35.7	4.5	3.88
vc-28b	368138.31	4592710.81	41.4751651	70.57925819	13:28:50	11/17/2021	36	5	3.9
vc-29a	368097.42	4592404.58	41.47240106	70.57968077	14:03:35	11/17/2021	25.6	6	5.85
vc-29a	368099.15	4592421.72	41.47255567	70.57966381	14:03:59	11/17/2021	25.6	6	5.85
vc-29b	368097.21	4592406.7	41.47242011	70.57968375	14:19:14	11/17/2021	25.6	6	5.9
vc-30a	368062.64	4592105.31	41.46970069	70.5800317	14:51:49	11/17/2021	19.5	6	5.4
vc-30b	368058.1	4592107.6	41.46972057	70.58008655	15:04:05	11/17/2021	19.3	6	5.4
vc-31a	368021.33	4591809.11	41.46702689	70.58046145	7:46:15	11/19/2021	20.5	6	6
vc-31b	368018.34	4591809.15	41.46702676	70.58049725	7:55:56	11/19/2021	20.5	6.5	6
vc-3a	365300.74	4598844.07	41.52991663	70.61460141	9:16:45	11/19/2021	37.1		0.7
vc-3b	365301.39	4598841.52	41.52989378	70.61459305	9:25:55	11/19/2021	37		1.3

TABLE 5
EVERSOURCE 5TH CABLE VIBRACORE AND GRAB SAMPLING FIELD DATA
November 2021

Station ID[2]	X(Eastings)[4]	Y(Northings)[4]	LAT	LONG	TIME	DATE	Water Depth[1]	Penetration[1]	Recovery[1]
vc-3c	365301.22	4598839.3	41.52987376	70.61459459	9:37:18	11/19/2021	37	3.5	2.8
vc-2a	365281.87	4599121.25	41.53240913	70.6148896	10:06:42	11/19/2021	29	2.5	1.45
vc-2b	365281.93	4599120.67	41.53240392	70.61488875	10:17:17	11/19/2021	29	5.5	4.6
vc-2c	365281.87	4599120.06	41.53239842	70.61488933	10:29:27	11/19/2021	29	4	2.5
vc-1a	365265.72	4599443.29	41.53530601	70.61515526	10:57:22	11/19/2021	20.7	3	2.3
vc-1b	365265.71	4599443.52	41.53530807	70.61515543	11:12:08	11/19/2021	20.8	4	1.1
vc-1c	365265.83	4599443.36	41.53530665	70.61515396	11:24:37	11/19/2021	21	3	2.3
g-5a	365331.36	4598223.14	41.52433104	70.61409552	8:14:11	11/20/2021	59		
g-5b	365333.18	4598221.79	41.52431919	70.61407342	8:21:43	11/20/2021	59		
g-4a	365314.34	4598534.64	41.52713287	70.61436917	8:33:21	11/20/2021	35		
g-4b	365315.82	4598535.41	41.52714005	70.61435161	8:39:01	11/20/2021	35		
g-6a	365350.23	4597923.14	41.52163306	70.61380231	8:49:11	11/20/2021	61		
g-6b	365351.8	4597925.01	41.52165016	70.61378392	8:53:39	11/20/2021	61		
g-6c	365349.24	4597926.53	41.52166341	70.61381493	8:59:44	11/20/2021	61		
g-6d	365352.01	4597925.65	41.52165596	70.61378155	9:09:19	11/20/2021	61		
g-9a	365405.44	4597002.15	41.51334988	70.61293491	9:19:25	11/20/2021	38		
g-9b	365402.8	4597002.61	41.51335358	70.61296664	9:24:14	11/20/2021	39		
g-10a	365545.89	4596814.25	41.51168165	70.61121048	9:29:27	11/20/2021	50		
g-10b	365547.78	4596815.8	41.51169592	70.61118819	9:36:37	11/20/2021	51		
g-11a	365828.44	4596496.29	41.50886615	70.60775502	9:42:42	11/20/2021	68		
g-11b	365825.09	4596493.06	41.50883651	70.60779443	9:45:34	11/20/2021	68		
g-11c	365829.89	4596490.9	41.50881786	70.60773645	9:49:53	11/20/2021	68		
g-12a	365949.06	4596351.57	41.5075833	70.60627798	9:56:03	11/20/2021	72		
g-12c	365949.66	4596356.15	41.50762464	70.60627181	10:04:07	11/20/2021	69		
g-13a	366153.52	4596120.89	41.50554046	70.60377767	10:12:38	11/20/2021	71		
g-13b	366154.39	4596121.21	41.50554349	70.60376732	10:23:20	11/20/2021	71		
g-14a	366353.19	4595886.64	41.50346463	70.6013341	10:30:19	11/20/2021	67		
g-14b	366354.99	4595885.7	41.50345646	70.60131233	10:37:04	11/20/2021	67		
g-14c	366352.86	4595887.95	41.50347637	70.60133835	10:39:44	11/20/2021	67		
g-14d	366351.61	4595882.81	41.50342988	70.60135218	10:42:14	11/20/2021	67		
g-15a	366548.99	4595662.34	41.50147768	70.59893924	10:47:09	11/20/2021	69		no sediment
g-15b	366549.55	4595660.14	41.50145797	70.59893205	10:49:47	11/20/2021	69		no sediment

TABLE 5
EVERSOURCE 5TH CABLE VIBRACORE AND GRAB SAMPLING FIELD DATA
November 2021

Station ID[2]	X(Eastings)[4]	Y(Northings)[4]	LAT	LONG	TIME	DATE	Water Depth[1]	Penetration[1]	Recovery[1]
g-15c	366546.86	4595661.66	41.5014712	70.5989646	10:51:46	11/20/2021	69		no sediment
g-16a	366744.05	4595434.56	41.49945922	70.59655263	10:57:05	11/20/2021	72		
g-16b	366744.49	4595434.96	41.4994629	70.59654744	10:59:33	11/20/2021	72		
g-16c	366744.32	4595434.15	41.49945558	70.5965493	11:02:24	11/20/2021	72		
g-17a	366949.77	4595198.56	41.49736847	70.59403667	11:07:46	11/20/2021	81		no sediment
g-17b	366949.81	4595199.11	41.49737343	70.59403632	11:10:30	11/20/2021	81		no sediment
g-17c	366948.15	4595196.94	41.49735362	70.59405572	11:12:50	11/20/2021	82		no sediment
g-18a	367144.65	4594970.36	41.49534609	70.59165242	12:28:22	11/20/2021	88		no sediment
g-18b	367146.34	4594972.72	41.49536762	70.5916327	12:30:17	11/20/2021	88		no sediment
g-18c	367145.88	4594970.68	41.49534918	70.59163776	12:32:41	11/20/2021	88		no sediment
g-19a	367362.18	4594721.61	41.49314238	70.58899255	12:38:33	11/20/2021	85		no sediment
g-19b	367362.3	4594721.65	41.49314276	70.58899112	12:42:19	11/20/2021	85		no sediment
g-19c	367359.17	4594723.45	41.49315845	70.589029	12:46:00	11/20/2021	85		no sediment
g-20a	367550.32	4594506.88	41.49124006	70.58669228	12:52:29	11/20/2021	71		no sediment
g-20b	367550.59	4594509.18	41.49126082	70.58668956	12:54:33	11/20/2021	70		no sediment
g-20c	367550.54	4594504.92	41.49122245	70.58668922	12:56:24	11/20/2021	71		no sediment
g-21a	367745.57	4594281.5	41.48924298	70.58430467	13:04:33	11/20/2021	71		no sediment
g-21b	367745.99	4594281.35	41.48924169	70.58429961	13:07:04	11/20/2021	72		no sediment
g-21c	367746.94	4594279.49	41.4892251	70.58428783	13:09:02	11/20/2021	73		no sediment
g-22a	367939.34	4594055.97	41.48724424	70.5819349	13:15:47	11/20/2021	75		
g-22b	367940.85	4594056.38	41.48724818	70.58191691	13:23:42	11/20/2021	75		
g-23a	368024.31	4593953.11	41.48633208	70.58089491	13:31:05	11/20/2021	75		
g-23b	368027.92	4593961.14	41.48640498	70.58085344	13:43:52	11/20/2021	75		
g-23c	368025.21	4593956.36	41.48636149	70.58088485	13:46:31	11/20/2021	74		
g-23d	368027.62	4593951.11	41.48631462	70.58085484	13:50:29	11/20/2021	74		
g-23e	368029.2	4593961.71	41.48641032	70.58083824	13:53:31	11/20/2021	74		
g-24a	368199.08	4593760.69	41.48462827	70.57876009	13:58:10	11/20/2021	68		
vc-7a	365363.22	4597630.65	41.51900171	70.61358125	13:12:25	11/22/2021	42.6	4.5	3.6
vc-7b	365362.85	4597630.57	41.51900093	70.61358566	13:25:47	11/22/2021	42.2	4	3
vc-8a	365379.36	4597326.28	41.51626392	70.61331981	13:53:01	11/22/2021	40.6	3.5	2.85
vc-8b	365379.08	4597325.96	41.51626099	70.61332309	14:04:31	11/22/2021	40.1	3.5	2.9

TABLE 6

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Video Transect ID	Transect Start_X[1]	Start_Y	Transect End_X	End_Y	Minimum Measured Water Depths (MLLW m)	Minimum Measured Water Depths (MLLW ft)	CMECS Substrate Component[2]	CMECS Biotic Class	CMECS Biotic Sub-class [2]	CMECS Biotic Group[2]	CMECS Biotic Community	Co-occurring Elements	Associated Taxa
VS-1B	364986.8	4598758.9	365511.1	4598845.9	10.2	33	Pebble/Granule in matrix Sandy Gravel	Faunal Bed	Attached Fauna	Attached Sea Urchins	Attached Sparse[3] *Arbacia punctulata*	**Sparse -** Tunicates (*Didemnum*); Benthic Macroalgae Crustose Algae (*Lithothamion*)	Mobile Arthopods - **Trace** (*Pagurus*)
VS-2	365079.9	4598518.4	365492.4	4598539.8	9.9	32	Gravel Pavement (Pebble/Granule)	Faunal Bed	Attached Fauna	Attached Sea Urchins	Attached Sparse *Arbacia punctulata*	**Trace** - Tunicates (*Didemnum*), (*Amaroucium*); **Moderate** Benthic Macroalgae Crustose Algae (*Lithothamion*)	Mobile Arthopods **Trace** (*Limulus*) Fish - **Trace** (*Prionotus*)
VS-3	365079.3	4598228.9	365485.1	4598247.9	14.9	49	Gravel Pavement (Pebble/Granule)	Faunal Bed	Attached Fauna	Attached Sea Urchins	Attached Sparse *Arbacia punctulata*	**Sparse -** Bryozoans (*Schizoporella*) (*Bugula*); Tunicates (*Didemnum*); Coral (*Astrangia*); Mollusks (*Mytilus*) (*Anachis*);and **Trace** Benthic Macroalgae Crustose Algae (*Lithothamion*)	Mobile Arthopods - **Trace** (*Pagurus*) Fish - **Trace** (Juvenile *Centropritis*)
VS-4	365101.7	4597942.1	365530.0	4597944.7	18.5	61	Gravel Pavement (Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate** - Sponges (*Cliona*) and Tunicates (*Amaroucium*); **Trace** - Bryozoan (*Schizoporella*) and Mollusks (*Mytilus*)	Fish - **Moderate** (Juvenile *Centropritis*), **Trace** (Adult *Centropritis*)
VS-5	365131.3	4597626.5	365564.1	4597636.4	10.1	33	Sand (Waves)	Faunal Bed	Soft Sediment Fauna				Fish - **Trace** (*Prionotus*) and Mollusks (*Loligo*), Mobile Crustacea (*Ovalipes*)
VS-6	365148.5	4597303.2	365597.5	4597334.1	9.1	30	Sand (Waves) Pebble/Granule in troughs	Faunal Bed	Soft Sediment Fauna / Attached Fauna (in troughs)		Attached Sparse (*Didemnum*), Trace (*Amaroucium*) in troughs	**Trace** - Mollusks (*Mytilus*) in troughs; Hydroid (*Hydrozoa*)	Mobile Arthopods - **Trace** (*Pagurus*)
VS-7	365190.1	4597002.0	365628.9	4597018.5	11.1	36	Gravel Pavement (Pebble/Granule)	Faunal Bed	Attached Fauna	Attached Sea Urchins	Attached Sparse *Arbacia punctulata*	**Sparse** - Tunicate (*Amaroucium*); Benthic Macroalgae Crustose Algae (*Lithothamion*)	Fish - **Trace** (Juvenile *Centropritis*)
VS-8	365322.2	4596654.1	365704.6	4596951.8	13.1	43	Gravel Pavement (Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Sparse -** Tunicates (*Amaroucium/Didendum*), Sponges (*Cliona*), Bryozoan (*Schizoparella*), Echinoderms (*Arbacia*), and Mollusks (*Mytilis*) (*Anachis*)	Fish - **Trace** (Juvenile *Centropriti* s)
VS-9	365553.5	4596377.9	365968.1	4596629.6	19.2	63	Gravel Pavement (**Cobble**; Pebble/Granule)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate** - Sponges (*Cliona*) and Mollusks (*Mytilis*); **Sparse**- Tunicates (*Amaroucium/Didemnum*) and Echinoderms (*Arbacia* **); Trace** - Coral (*Astrangia*)	Fish - **Trace** (Adult *Centropritis*)
VS-10	365737.9	4596242.2	366089.3	4596491.8	19.8	65	Gravel Pavement **(Pebble/Granule;** Cobble)	Faunal Bed	Attached Fauna	Attached Sea Urchins	Attached Sparse *Arbacia punctulata*	**Sparse** - Mollusks (Mytilis) (*Anachis*) **Trace -** Coral (*Astrangia*)	Fish - **Trace** (Juvenile *Centropritis*)

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Video Transect ID	Transect Start_X[1]	Start_Y	Transect End_X	End_Y	Minimum Measured Water Depths (MLLW m)	Minimum Measured Water Depths (MLLW ft)	CMECS Substrate Component[2]	CMECS Biotic Class	CMECS Biotic Sub-class [2]	CMECS Biotic Group[2]	CMECS Biotic Community	Co-occurring Elements	Associated Taxa
VS-11	365929.9	4595949.5	366297.7	4596266.7	21.4	70	Gravel Pavement (Pebble/Granule)	Faunal Bed	Attached Fauna	Attached Sea Urchins	Attached Moderate *Arbacia punctulata*	**Moderate** - Tunicates (*Didemnum*); **Sparse** - Mollusks (*Mytilis*), and **Trace** - Bryozoan (*Schizoporella*)	Mobile Arthopods - **Trace** (Pagurus) Fish - **Sparse** (Juvenile Centropritis)
VS-12	366169.7	4595740.1	366474.8	4596010.6	19.6	64	Gravel Pavement (Pebble/Granule)	Faunal Bed	Attached Fauna	Attached Sea Urchins	Attached Moderate *Arbacia punctulata*	**Sparse** - Bryozoan (*Schizoporella*); Sponge (*Halichondria*); Mollusks (*Mytilus*) (*Anachis*) and **Trace** Coral (*Astrangia*); Sponge (Cliona),	Fish - **Trace** (Juvenile *Centropritis*)
VS-13	366353.2	4595474.8	366672.6	4595784.5	19.6	64	Gravel Pavement (Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate** - Tunicates (*Amaroucium*), Echinoderms (Arbacia); **Sparse** - Sponges (*Cliona*), (*Halichondria*), Bryozoan (*Schizoporella*) Mollusks (*Ananchis*); **Trace** - Coral (*Astrangia*) and Tunicate (*Didemnum*)	Mobile Arthopods - **Trace** (Pagurus); Fish - **Sparse** (Juvenile *Centropritis*) **Trace** (Spaeroides)
VS-14	366562.0	4595229.0	366866.5	4595545.6	20.6	68	Gravel Pavement (Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate** - Tunicates (*Amaroucium*), Sponge (*Halichondria*) and Mollusks (*Mytilis*); **Sparse** - Sponge (*Cliona*), Bryozoan (*Schizoporella*) and Echinoderms (*Arbacia*); **Trace** - Coral (*Astrangia*)	Mobile Arthopods - **Trace** (*Pagurus*) (Pycnogonida) Fish - **Moderate** (Juvenile *Centropritis*) **Trace** (*Spaeroides*) (*Stenotomus)*
VS-15	366757.8	4595009.3	367068.7	4595335.9	22.0	72	Gravel Pavement (Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate -** Tunicates (*Amaroucium*), (*Cliona*), and *(Halichondria*); **Sparse** - Bryozoan (*Schizoporella*), Coral (*Astrangia*), Mollusks (*Anachis*) and Echinoderms (*Arbaci* a); **Trace -** Tunicates (*Didemnum*)	Fish - **Dense** (Juvenile *Centropritis*) **Trace** (Adult *Centropritis*); Mobile Arthropods - Trace (Pycnogonida)
VS-16	366987.5	4594785.6	367298.5	4595110.6	26.1	86	Gravel Pavement **(Boulder;** Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate** - Tunicates (*Amaroucium*), Sponge (*Cliona*); **Sparse -** Bryozoan (*Schizoporella*), Coral (*Astrangia*), Tunicates (*Didemnum*), Mollusks (*Anachis*); **Trace** - Echinoderms (*Arbacia*)	Mobile Arthopods - **Trace** (Pagurus) (Pycnogonida); Fish - **Dense** (Juvenile *Centropritis*), **Trace** (*Tautoga) (Tautogolabru* s)
VS-17	367139.5	4594536.7	367491.7	4594871.3	23.2	76	Gravel Pavement (Boulder)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate -** Tunicates *(Amaroucium*), Sponge (*Cliona)* , and Coral (*Astrangia*) ; **Sparse** - Bryozoan (*Schizoporella*), Mollusks (*Anachis*) and Echinoderms (*Arbacia*)	Fish - **Dense** (Juvenile *Centropritis*), **Trace** (*Tautoga);* Mobile Arthropods - *(Pycnogonida)*

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Video Transect ID	Transect Start_X[1]	Start_Y	Transect End_X	End_Y	Minimum Measured Water Depths (MLLW m)	Minimum Measured Water Depths (MLLW ft)	CMECS Substrate Component[2]	CMECS Biotic Class	CMECS Biotic Sub-class [2]	CMECS Biotic Group[2]	CMECS Biotic Community	Co-occurring Elements	Associated Taxa
VS-18	367319.4	4594275.6	367706.8	4594655.8	21.1	69	Gravel Pavement (**Boulder;** Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate** - Tunicates (*Amaroucium*) and Sponge (*Cliona*); **Sparse-** Sponge (*Halichondria*), Bryozoan (*Schizoporella*), Mollusks (*Anachis)* and Coral (*Astrangia*); **Trace** Tunicates (*Didemnum*)	Fish - **Dense** (Juvenile *Centropritis*); **Trace** (Adult *Centropritis*), (*Spaeroides), (Tautogolabrus*); Mobile Arthropods - **Trace** (Pycnogonida)
VS-19	367532.3	4594050.1	367926.2	4594454.8	19.3	63	Gravel Pavement (**Boulder;** Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate -** Tunicates (*Amaroucium*) and Sponge (*Halichondria*) ; **Sparse** - Bryozoan (*Schizoporella*), Sponge (*Cliona*), Coral (*Astrangia*), Mollusks (Anachis) and Echinoderms (*Arbacia*); **Trace -** Tunicates (*Didemnum*)	Fish - **Moderate** (Juvenile *Centropritis*), **Trace** (*Tautoga*); Mobile Arthropods - Trace (Pycnogonida)
VS-20	367769.5	4593856.7	368092.4	4594185.5	20.9	69	Gravel Pavement (Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate** - Tunicates (*Amaroucium*) and (*Didemnum*); Sponge (*Cliona*), Coral (*Astrangia*), Mollusks (*Anachis*) and Echinoderms (*Arbacia*); **Trace -** Sponge (*Halichondria*), Bryozoan (*Schizoporella*)	Mobile Arthopods **Trace** (Limulus) (Pycnogonida); Fish - **Sparse** (Juvenile *Centropritis*), **Trace** (*Tautoga*)
VS-21	367649.0	4594016.8	368324.1	4593929.2	22.0	72	Gravel Pavement (Cobble)	Faunal Bed	Attached Fauna	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	**Moderate -**Tunicates (*Amaroucium/Didendum*); **Sparse** - Bryozoan (*Schizoporella*), Sponge (*Halichondri* a) and Mollusks (*Anachis*); **Trace** - Sponges (*Cliona*), and Mollusks (*Mytilis*)	Mobile Arthopods - **Trace** (*Pagurus*) Fish - **Moderate** (Juvenile *Centropritis*)
VS-22	367992.7	4593671.9	368448.4	4593592.4	15.2	50	Sand (Waves); Pebble/Granule in troughs	Faunal Bed	Soft Sediment Fauna; Attached Fauna (in troughs)			**Trace-** Hydroid (*Hydrozoa*); Tunicate (*Didemnum*) in Sand Wave troughs	Fish - **Trace** (Juvenile *Centropritis)* (Adult *Centropritis*); Mobile Arthopods - (*Pagurus*) (*Ovalipes*)
VS-23	367941.1	4593336.6	368416.6	4593296.6	11.5	38	Sand (Waves); Pebble/Granule in troughs	Faunal Bed	Soft Sediment Fauna; Attached Fauna (in troughs)			**Sparse** Attached (*Crepidula*); **Trace** - Hydroid (*Hydrozoa*); Benthic Macroalgae Branching Red Algae (*Codium*) (*Sargassum*) in Sand Wave troughs	Fish - **Sparse** (*Prionotus*), **Trace** (Juvenile *Centropritis*); Mobile Arthropods - (*Limulus*), (*Pagurus*) (*Loligo*)
VS-24	367898.3	4593049.4	368367.4	4592994.6	13.6	45	Sand (Ripples); Shell Rubble in troughs	Faunal Bed	Soft Sediment Fauna; Attached Fauna in troughs			**Sparse** -Attached Tunicate (*Amoroucium*); Mollusks (Anachis); Benthic Macroalage Tube Worms in Sand Wave troughs	Fish - **Trace** (*Prionotus*) and (Juvenile *Centropristis*); Mobile Arthopods - (Pagurus)

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VS-25	367779.3	4592771.7	368318.9	4592689.5	10.5	34	Sand (Ripples)	Faunal Bed	Inferred Fauna			**Sparse** fecal casts**, Trace** Polychaete (*Chaetopterus*)	Fish - **Trace** (Juvenile *Centropritis*) (*Prionotus)* ; Mobile Arthopods (*Limulus*) (*Pagarus*)
VS-26	367844.2	4592446.7	368294.2	4592386.3	7.1	23	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Moderat**e - Bryozoan (*Bugula*); **Trace** - Leathery leafy algal bed (*Codium)* (*Sargassum*) (*Porphyra*)	Fish - **Sparse** (Juvenile *Centropritis*), **Trace** *Spaeroides*); Mobile Arthopods - **Trace** (*Limulus*)
VS-27	367811.0	4592147.0	368278.8	4592077.4	5.9	19	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/*Codium* Communities	**Moderat**e - Bryozoan (*Bugula*) and Benthic Macroalgae (*Porphyra*)	Mobile Arthopods - **Trace** (Limulus); Fish - **Trace** (Juvenile *Centropritis*)
VS-28	367832.5	4591837.5	368195.8	4591786.7	5.7	19	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/*Codium* Communities	**Moderate** - Bryozoan (*Bugula*) and Benthic Macroalgae (*Porphyra*) and Branching Red Algae	Fish - **Trace** (Juvenile *Centropritis*) (*Spaeroides*)
CS-1	365033.2	4599433.7	365513.0	4599434.7	5.6	18	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Moderate** - Bryozoan (*Bugula*); **Sparse** Benthic Macroalgae (*Porphyra*) and Branching Red Algae	Fish - **Trace** (Juvenile *Centropritis*)
CS-2	365207.5	4599550.6	365206.8	4599346.8	6.0	20	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Moderate** Bryozoan (*Bugula*); **Sparse** Benthic Macroalgae (*Porphyra*) and Branching Red Algae	Fish - **Trace** (Juvenile *Centropritis*)
CS-3	365339.5	4599540.8	365331.4	4599344.9	5.5	18	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Moderate** Bryozoan (*Bugula*); **Sparse** Benthic Macroalgae (*Porphyra*) and Branching Red Algae	Fish - **Trace** (Juvenile *Centropritis*)
CS-4	367757.4	4591623.4	368058.5	4591641.5	5.0	16	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/*Codium* Communities	**Moderate** Bryozoan (*Bugula*); Benthic Macroalage **Sparse** (*Porphyra*) and **Trace** Branching Red Algae	Fish - **Trace** (Juvenile *Centropritis*)
CS-5	367933.0	4591504.1	367936.9	4591748.1	4.5	15	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/*Codium* Communities	**Moderate** Bryozoan (*Bugula*); Benthic Macroalage **Sparse** (*Porphyra*) and **Trace** Branching Red Algae	Fish - **Trace** (Juvenile *Centropritis*)
CS-6	368090.2	4591785.3	368095.2	4592013.0	5.8	19	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/*Codium* Communities	**Moderate** Bryozoan (*Bugula*); Benthic Macroalage **Sparse** (*Porphyra*) and **Trace** Branching Red Algae	Mobile Arthopods - **Trace** (Pagurus); Fish - (Juvenile *Centropritis*)
CS-7	367956.2	4591923.9	368242.4	4591923.0	5.8	19	*Crepidula* Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/*Codium* Communities	**Moderate** Bryozoan (*Bugula*); Benthic Macroalage **Sparse** (*Porphyra*) and **Trace** Branching Red Algae	Fish - **Trace** (Juvenile *Centropritis*)

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EG-1	365136.4	4599879.3	365165.5	4599685.8	3.9	13	Gravelly Sand	Aquatic Vegetation Bed	Aquatic Vascular Vegetation	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	**Moderate** (Zostera marina) Bryozoan (Bugula) and **Sparse** Benthic Macroalgae (*Porphyra*) (*Sargassum*) and Red Branching Algae)	Mobile Arthopods - **Trace** (*Limulus*); Fish - (*Tautoga*)
	365166.0	4599682.0	365177.6	4599576.8	5.1	17	Crepidula Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Trace - Echinoderms (Arbacia); Sparse** Benthic Macroalgae (*Porphyra) (Codium) and* Branching Red Algae	
EG-2C	365184.5	4599830.2	365235.1	4599693.1	4.0	13	Gravelly Sand	Aquatic Vegetation Bed	Aquatic Vascular Vegetation	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	**Sparse** (Zostera marina) with Gastropod (Bittium); Moderate Bryozoan (Bugula) and **Sparse** Benthic Macroalgae (Branching Red Algae) and **Trace** (*Sargassum*)	Fish - **Sparse** (Juvenile *Centropritis*)
	365236.4	4599691.6	365353.6	4599604.8	5.1	17	Crepidula Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Sparse** Benthic Macroalgae (*Porphyra) and (*Branching Red Algae*);* **Trace** *(Ulva)*	
EG-3	365239.3	4599813.1	365238.0	4599705.6	4.4	14	Sandy Gravel	Aquatic Vegetation Bed	Aquatic Vascular Vegetation	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	**Moderate** (*Zostera marina*) and Bryozoan (Bugula), Sparse Benthic Macroalgae (Porphyra) and (Branching Red Algae) **Trace** (*Sargassum*)	Fish - **Trace** (Juvenile *Centropritis*)
	365239.0	4599702.8	365243.3	4599561.0	5.1	17	Crepidula Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Moderate** Bryozoan (*Bugula*), and **Sparse** Benthic Macroalgae (*Porphyra*) and (Branching Red Algae)	
EG-4	365301.0	4599878.3	365268.3	4599700.2	4.2	14	Sandy Gravel	Aquatic Vegetation Bed	Aquatic Vascular Vegetation	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	**Moderate** (Zostera marina) with Gastropd (Bittium) and Bryozoan (*Bugula*); Sparse Benthic Macroalgae (*Porphyra*) and (Branching Red Algae) Trace (*Sargassum*)	Fish - **Trace** (Juvenile *Centropritis*)
	365268.7	4599697.6	365275.2	4599571.1	5.1	17	Crepidula Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Sparse** Bryozoan (*Bugula*); Benthic Macroalgae (Porphyra) and (Branching Red Algae)	

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EG-5	365313.9	4599847.5	365314.1	4599692.8	4.1	13	Sandy Gravel	Aquatic Vegetation Bed	Aquatic Vascular Vegetation	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	**Moderate** (*Zostera marina*) with Gastropod (*Bittium*); Bryozoan (*Bugula*); **Trace** (*Chaetopterus*); **Sparse** Benthic Macroalgae (*Porphyr* a), (*Ulva*) and (Branching Red Algae)	
	365314.0	4599690.5	365319.5	4599580.9	5.1	17	Crepidula Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Moderate** Bryozoan (*Bugula*); **Sparse** Benthic Macroalgae (*Porphyra)* and (Branching Red Algae)	Fish - **Trace** (Juvenile *Centropritis*)
EG-6	365356.8	4599891.1	365363.2	4599683.4	3.9	13	Sandy Gravel	Aquatic Vegetation Bed	Aquatic Vascular Vegetation	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	**Moderate** (*Zostera marina*) with Gastropod (*Bittium*); Bryozoan (*Bugula*) and **Sparse** Benthic Macroalgae (*Porphyra*) and (Branching Red Algae)	Fish - **Trace** (Juvenile *Centropritis*)
	365363.6	4599680.5	365372.8	4599569.2	5.1	17	Crepidula Reef	Reef Biota	Mollusk Reef Biota	Gastropod Reef	*Crepidula* Reef	**Sparse** Bryozoan (*Bugula*); Benthic Macroalgae (*Porphyra*), (Branching Red Algae) and **Trace** *(Sargassum*)	Fish - **Trace** (*Tautoga*)

References:

Federal Geographic Data Committee. Marine and Coastal Spatial Data Subcommittee.June 2012. Coastal and Marine Ecological Classification Standard, FGDC-STD-018-2012.

Marine and Coastal Saptial Data Subcommittee. August 2014. Recommendations for Coastal and Marine Ecological Classification Standard (CMECS). Technical Guidance Document 2014-3.

Notes:

1. Coordinates for the video transect start and end points are in Grid: UTM North, Ellipsoid: WGS-84, Zone: Zone 19 (72W-66W), Distance: Meters
2. Reference Figure 14 for the major CMECS substate components and Figure 16 for the dominant biotic components along the survey corridor; Appendix C for GoPro screen captures along each video transect; and Appendix D for characterization of the major seabed assemblages using units from multiple CMECS components.
3. CMECS modifiers were used to relay relative frequency within a transect (number of screen captures in which element was observed / total screen capture observation points, taken ~ every 30 seconds)

   Trace (<1%)
   Sparse (1 to <30%)
   Moderate (30 to 70%)
   Dense (70 to 90%)
   Complete (90 to 100%)

TABLE 7
SPECIES BY TRANSECT FROM UNDERWATER VIDEO SEPTEMBER/OCTOBER 2021
EVERSOURCE 5TH CABLE CROSSING, VINEYARD SOUND, MA

TRANSECT ID	Latin Name	VS-1B	VS-2	VS-3	VS-4	VS-5	VS-6	VS-7	VS-8
	Substrate Code[6]	GP (PG)	GP (PG)	GP (PG)	GP (C)	SW	SW	GP (PG)	GP (C)
FAUNA									
PORIFERA									
Bread Crumb Sponge	*Halichondria panicea*			X					X
Sulfur Sponge	*Cliona celata*				X				X
CNIDARIA									
Burrowing Anemone	*Ceriantheopsis americana*		X		X				
Bushy Hydroids	*Hydrozoa* sp.						X		
Northern Star Coral	*Astrangia poculata*	X	X	X	X			X	X
BRYOZOA									
Bushy Bryozoan [3]	***Bugula* spp.[3]**	X	X	X					X
Encrusting Bryozoan	*Schizoporella unicornis*		X	X	X				X
MOLLUSCA									
Bay Scallop [5]	*Argopecten irradians* [5]								
Blue Mussel [5]	*Mytilis edulis* [5]		X	X	X		X	X	X
Channeled Whelk [1]	*Busycotypus canaliculatus* [1]								
Common Oyster [5]	*Crassostrea virginica* [5]		X	X					
Dove Snails	*Anachis* spp.			X					X
Horn Snails	*Bittium alternatum*								
Jingle Shell	***Anomia* spp.**	X	X	X	X		X	X	X
Knobbed Whelk [1,5]	*Busycon carica* [1,5]	X							
Long-Finned Squid [1,5]	*Loligo pealei* [1,5]					X			
Oyster Drill	*Urosalpinx cinerea*		X	X			X		
Slipper Limpet	*Crepidula fornicata*								
Surf Clam [5]	*Spisula solidissima* [5]						X		
ANNELIDA									
Parchment Worm	*Chaetopterus pergamentaceus*		X						
Tube worm	***Hydroides dianthus***		X	X	X		X	X	X
ARTHROPODA									
Merostomata									
Horshoe Crab [1,5]	*Limulus polyphemus* [1,5]		X						
Pycnogonida									
Sea Spider									
Crustacea									
Barnacle	*Balanus* sp.						X		
Flat Clawed Hermit Crab	*Pagurus Pollicaris*								
Lady Crab	*Ovalipes occellatus*					X			
Long Clawed Hermit Crab	*Pagurus longicarpus*	X		X			X		
Echinoderms									
Purple sea urchin	***Arbacia punctulata***	X	X	X	X		X	X	X
VERTEBRATA									
Elasmobrachiomorphi									
Osteichthyes									
Black Sea Bass (Adult) [1,5]	*Centropristis striata* [1,5]				X				
Black Sea Bass (Juvenile) [1,5]	***Centropristis striata* [1,5]**		X	X	X			X	X
Cunner	*Tautogolabrus adspersus*								
Puffer	*Sphaeroides maculatus*								
Scup [1,5]	*Stenotomus chrysops* [1,5]								
Sea Robin	*Prionotus carolinus*		X			X			
Tautog [1,5]	*Tautoga onitis* [1,5]								
CHORDATA									
Sand Sponge	*Amaroucium pellucidum*				X				X
Sea Pork	*Amaroucium stellatum*		X	X	X		X	X	X
White Invasive Tunicate	***Didemnum candidum***	X	X	X	X		X	X	X
SPECIES RICHNESS FAUNA[2]		7	16	15	12	3	11	8	14
DEPTH BELOW MLLW (ft)		33	32	49	61	33	30	36	43

TABLE 7
SPECIES BY TRANSECT FROM UNDERWATER VIDEO SEPTEMBER/OCTOBER 2021
EVERSOURCE 5TH CABLE CROSSING, VINEYARD SOUND, MA

TRANSECT ID	VS-9	VS-10	VS-11	VS-12	VS-13	VS-14	VS-15	VS-16	VS-17	VS-18	VS-19
	GP (C)	GP (PG)	GP (PG)	GP (PG)	GP (C)	GP (C)	GP (C)	GP (B)	GP (B)	GP (B)	GP (B)
FAUNA											
PORIFERA											
Bread Crumb Sponge	X		X	X	X	X	X		X		X
Sulfur Sponge	X			X	X	X	X	X	X	X	X
CNIDARIA											
Burrowing Anemone											
Bushy Hydroids	X				X					X	
Northern Star Coral	X	X		X	X	X	X	X	X	X	X
BRYOZOA											
Bushy Bryozoan [3]			X	X	X	X	X	X	X	X	X
Encrusting Bryozoan	X		X	X	X	X	X	X	X	X	X
MOLLUSCA											
Bay Scallop [5]											
Blue Mussel [5]	X	X	X	X	X	X	X	X	X	X	X
Channeled Whelk [1]											X
Common Oyster [5]											
Dove Snails		X		X	X	X	X	X	X	X	X
Horn Snails											
Jingle Shell	X	X	X	X		X	X			X	
Knobbed Whelk [1,5]					X						
Long-Finned Squid [1,5]											
Oyster Drill											
Slipper Limpet											
Surf Clam [5]											
ANNELIDA											
Parchment Worm											
Tube worm	X	X	X	X	X	X	X	X	X	X	X
ARTHROPODA											
Merostomata											
Horshoe Crab [1,5]											
Pycnogonida											
Sea Spider						X	X	X	X	X	X
Crustacea											
Barnacle	X	X			X						
Flat Clawed Hermit Crab			X			X					
Lady Crab											
Long Clawed Hermit Crab					X			X			
Echinoderms											
Purple sea urchin	X	X	X	X	X	X	X	X	X	X	X
VERTEBRATA											
Elasmobrachiomorphi											
Osteichthyes											
Black Sea Bass (Adult) [1,5]	X					X	X	X		X	
Black Sea Bass (Juvenile) [1,5]		X	X	X	X	X	X	X	X	X	X
Cunner									X	X	
Puffer					X	X				X	
Scup [1,5]						X					
Sea Robin								X			
Tautog [1,5]								X	X		X
CHORDATA											
Sand Sponge			X		X	X	X	X	X	X	X
Sea Pork	X	X		X		X	X	X	X	X	X
White Invasive Tunicate	X	X	X	X	X	X	X	X	X	X	X
SPECIES RICHNESS FAUNA[2]	13	10	11	13	17	18	15	16	16	17	16
DEPTH BELOW MLLW (ft)	63	65	70	64	64	68	72	86	76	69	63

TABLE 7
SPECIES BY TRANSECT FROM UNDERWATER VIDEO SEPTEMBER/OCTOBER 2021
EVERSOURCE 5TH CABLE CROSSING, VINEYARD SOUND, MA

TRANSECT ID	VS-20	VS-21	VS-22	VS-23	VS-24	VS-25	VS-26	VS-27	VS-28	CS-1	CS-2	CS-3
	GP (C)	GP (C)	SW	SW	SR	SR	CR	CR	CR	CR	CR	CR
FAUNA												
PORIFERA												
Bread Crumb Sponge	X	X										
Sulfur Sponge	X	X										
CNIDARIA												
Burrowing Anemone												
Bushy Hydroids			X			X						
Northern Star Coral	X	X										
BRYOZOA												
Bushy Bryozoan [3]	X		X	X		X	X	X	X	X	X	X
Encrusting Bryozoan	X	X	X	X								
MOLLUSCA												
Bay Scallop [5]												
Blue Mussel [5]	X	X										
Channeled Whelk [1]												
Common Oyster [5]												
Dove Snails	X	X	X		X							
Horn Snails												
Jingle Shell	X	X								X	X	X
Knobbed Whelk [1,5]												
Long-Finned Squid [1,5]				X								
Oyster Drill					X	X						
Slipper Limpet			X	X		X	X	X	X	X	X	X
Surf Clam [5]												
ANNELIDA												
Parchment Worm	X					X				X		
Tube worm	X	X	X	X	X		X					
ARTHROPODA												
Merostomata												
Horshoe Crab [1,5]	X					X	X	X				
Pycnogonida												
Sea Spider	X											
Crustacea												
Barnacle			X	X		X	X			X		
Flat Clawed Hermit Crab			X			X						
Lady Crab			X									
Long Clawed Hermit Crab		X	X	X	X	X						
Echinoderms												
Purple sea urchin		X								X	X	X
VERTEBRATA												
Elasmobrachiomorphi												
Osteichthyes												
Black Sea Bass (Adult) [1,5]			X									
Black Sea Bass (Juvenile) [1,5]	X	X	X	X	X	X	X	X	X	X	X	X
Cunner												
Puffer							X		X			
Scup [1,5]												
Sea Robin				X	X	X						
Tautog [1,5]	X											
CHORDATA												
Sand Sponge	X	X										
Sea Pork	X	X	X		X							
White Invasive Tunicate	X	X	X									
SPECIES RICHNESS FAUNA [2]	17	14	13	9	7	11	7	4	4	7	5	5
DEPTH BELOW MLLW (ft)	69	72	50	38	45	34	23	19	19	18	20	18

TABLE 7
SPECIES BY TRANSECT FROM UNDERWATER VIDEO SEPTEMBER/OCTOBER 2021
EVERSOURCE 5TH CABLE CROSSING, VINEYARD SOUND, MA

TRANSECT ID	**CS-4**	**CS-5**	**CS-6**	**CS-7**	**EG-1**	**EG-2C**	**EG-3**	**EG-4**	**EG-5**	**EG-6**
	CR	**CR**	**CR**	**CR**	**GS/CR**	**GS/CR**	**SG/CR**	**SG/CR**	**SG/CR**	**SG/CR**
FAUNA										
PORIFERA										
Bread Crumb Sponge										
Sulfur Sponge						X				
CNIDARIA										
Burrowing Anemone										
Bushy Hydroids						X				
Northern Star Coral										
BRYOZOA										
Bushy Bryozoan [3]	X	X	X	X	X	X	X	X	X	X
Encrusting Bryozoan										
MOLLUSCA										
Bay Scallop [5]						X				
Blue Mussel [5]										
Channeled Whelk [1]										
Common Oyster [5]										
Dove Snails										
Horn Snails						X	X	X	X	X
Jingle Shell						X		X	X	
Knobbed Whelk [1,5]										
Long-Finned Squid [1.5]										
Oyster Drill										
Slipper Limpet	X	X		X	X	X	X	X	X	X
Surf Clam [5]										
ANNELIDA										
Parchment Worm									X	
Tube worm			X							
ARTHROPODA										
Merostomata										
Horshoe Crab [1,5]					X					
Pycnogonida										
Sea Spider										
Crustacea										
Barnacle								X		
Flat Clawed Hermit Crab								X		
Lady Crab										
Long Clawed Hermit Crab			X							
Echinoderms										
Purple sea urchin					X					
VERTEBRATA										
Elasmobrachiomorphi										
Osteichthyes										
Black Sea Bass (Adult) [1,5]										
Black Sea Bass (Juvenile) [1,5]	X	X	X	X		X	X	X		X
Cunner										
Puffer										
Scup [1,5]										
Sea Robin										
Tautog [1,5]					X					X
CHORDATA										
Sand Sponge										
Sea Pork										
White Invasive Tunicate										
SPECIES RICHNESS FAUNA[2]	3	3	4	3	5	8	4	7	5	5
DEPTH BELOW MLLW (ft)	16	15	19	19	13-17	13-17	14-17	14-17	13-17	13-17

TABLE 7
SPECIES BY TRANSECT FROM UNDERWATER VIDEO SEPTEMBER/OCTOBER 2021
EVERSOURCE 5TH CABLE CROSSING, VINEYARD SOUND, MA

TRANSECT ID	Overall Freqency %	Gravel Pavement Frequency %	Hard Bottom only Frequency %	Hard /Complex Bottom Frequency %	Sand Waves/ Ripples Frequency %	*Crepidula* Reef Frequency %
FAUNA						
PORIFERA						
Bread Crumb Sponge	29	**63**	43	**75**	0	0
Sulfur Sponge	34	**68**	14	**100**	0	6
CNIDARIA						
Burrowing Anemone	5	11	14	8	0	0
Bushy Hydroids	17	16	0	25	**50**	6
Northern Star Coral	44	**95**	**86**	**100**	0	0
BRYOZOA						
Bushy Bryozoan [3]	**80**	**74**	71	75	50	**100**
Encrusting Bryozoan	44	**84**	**57**	**100**	33	0
MOLLUSCA						
Bay Scallop [5]	2	0	0	0	0	6
Blue Mussel [5]	46	**95**	**86**	**100**	17	0
Channeled Whelk [1]	2	5	0	8	0	0
Common Oyster [5]	5	11	29	0	0	0
Dove Snails	37	**68**	43	**83**	33	0
Horn Snails	12	0	0	0	0	31
Jingle Shell	**54**	**79**	**100**	67	17	38
Knobbed Whelk [1,5]	5	11	14	8	0	0
Long-Finned Squid [1.5]	5	0	0	0	33	0
Oyster Drill	12	11	29	0	**50**	0
Slipper Limpet	44	0	0	0	**50**	**94**
Surf Clam [5]	2	0	0	0	17	0
ANNELIDA						
Parchment Worm	12	11	14	8	17	13
Tube worm	**59**	**95**	**86**	**100**	**67**	13
ARTHROPODA						
Merostomata						
Horshoe Crab [1,5]	15	11	14	8	17	19
Pycnogonida						
Sea Spider	17	37	0	**58**	0	0
Crustacea						
Barnacle	24	16	14	17	**67**	19
Flat Clawed Hermit Crab	12	11	14	8	33	6
Lady Crab	5	0	0	0	33	0
Long Clawed Hermit Crab	27	26	29	25	**83**	6
Echinoderms						
Purple sea urchin	**56**	**95**	**100**	**92**	17	25
VERTEBRATA						
Elasmobrachiomorphi						
Osteichthyes						
Black Sea Bass (Adult) [1,5]	17	32	0	**50**	17	0
Black Sea Bass (Juvenile) [1,5]	**85**	**89**	**86**	**92**	**67**	**88**
Cunner	5	11	0	17	0	0
Puffer	12	16	0	25	0	13
Scup [1,5]	2	5	0	8	0	0
Sea Robin	15	11	14	8	**67**	0
Tautog [1,5]	15	21	0	33	0	13
CHORDATA						
Sand Sponge	29	**63**	14	**92**	0	0
Sea Pork	46	**84**	**71**	**92**	**50**	0
White Invasive Tunicate	**51**	**100**	**100**	**100**	33	0
SPECIES RICHNESS FAUNA[2]	**Avrg Richness**	14	11	15	9	5
DEPTH BELOW MLLW (ft)	**Avrg Depth**	61	50	67	38	12

TABLE 7
SPECIES BY TRANSECT FROM UNDERWATER VIDEO SEPTEMBER/OCTOBER 2021
EVERSOURCE 5TH CABLE CROSSING, VINEYARD SOUND, MA

TRANSECT ID	Latin Name	VS-1B	VS-2	VS-3	VS-4	VS-5	VS-6	VS-7	VS-8
	Substrate Code[6]	GP (PG)	GP (PG)	GP (PG)	GP (C)	SW	SW	GP (PG)	GP (C)
FLORA									
ALISMATALES									
Zosteraceae									
Eelgrass [1]	*Zostera marina* [1]								
CHLOROPHYTA									
Dead Man's Fingers	*Codium fragile*	X							
Green Fleece	*Enteromorpha erecta*								
Gutweed	*Enteromorpha* sp.								
Sea Lettuce	*Ulva lactuca*			X					X
PHAEOPHYTA									
Wire Weed	*Sargassum filipendula*						X		
Sea Lace	*Chorda filum*								
Epiphytic Filamentous Algae	*Ectocarpus confervoides*								
BACILLARIOPHYTA									
Diatom Mat									
RHODOPHYTA									
Branching red alga	***Rhodophyta***	X	X			X	X		X
Agardh's Red Algae	*Agardhiella subulata*								
Chenille	*Dasya pedicellata*								
Dulse	*Rhodymenia palmata*	X							
Encrusting Red Algae	*Lithothamnium lenormandi*	X	X	X				X	X
Kelp	*Laminaria agardhii*								
Purple laver	*Porphyra umbilicalis*	X							
SPECIES RICHNESS FLORA[2]		5	2	2	0	1	2	1	3
DEPTH BELOW MLLW (ft)		33	32	49	61	33	30	36	43

TABLE 7
SPECIES BY TRANSECT FROM UNDERWATER VIDEO SEPTEMBER/OCTOBER 2021
EVERSOURCE 5TH CABLE CROSSING, VINEYARD SOUND, MA

TRANSECT ID	VS-9	VS-10	VS-11	VS-12	VS-13	VS-14	VS-15	VS-16	VS-17	VS-18	VS-19
	GP (C)	GP (PG)	GP (PG)	GP (PG)	GP (C)	GP (C)	GP (C)	GP (B)	GP (B)	GP (B)	GP (B)
FLORA											
ALISMATALES											
Zosteraceae											
Eelgrass [1]											
CHLOROPHYTA											
Dead Man's Fingers											
Green Fleece											
Gutweed						X					
Sea Lettuce							X				
PHAEOPHYTA											
Wire Weed										X	X
Sea Lace											
Epiphytic Filamentous Algae											
BACILLARIOPHYTA											
Diatom Mat											
RHODOPHYTA											
Branching red alga				X							X
Agardh's Red Algae											
Chenille											
Dulse											
Encrusting Red Algae											
Kelp											
Purple laver											
SPECIES RICHNESS FLORA[2]	0	0	0	1	0	1	1	0	0	1	2
DEPTH BELOW MLLW (ft)	63	65	70	64	64	68	72	86	76	69	63

TABLE 7
SPECIES BY TRANSECT FROM UNDERWATER VIDEO SEPTEMBER/OCTOBER 2021
EVERSOURCE 5TH CABLE CROSSING, VINEYARD SOUND, MA

TRANSECT ID	VS-20	VS-21	VS-22	VS-23	VS-24	VS-25	VS-26	VS-27	VS-28	CS-1	CS-2	CS-3
	GP (C)	GP (C)	SW	SW	SR	SR	CR	CR	CR	CR	CR	CR
FLORA												
ALISMATALES												
Zosteraceae												
Eelgrass [1]												
CHLOROPHYTA												
Dead Man's Fingers	X			X		X	X	X	X			
Green Fleece		X			X							
Gutweed												
Sea Lettuce										X		X
PHAEOPHYTA												
Wire Weed	X	X		X		X	X	X				
Sea Lace				X	X	X						
Epiphytic Filamentous Algae					X							
BACILLARIOPHYTA												
Diatom Mat								X				
RHODOPHYTA												
Branching red alga	X	X	X	X		X	X	X	X	X	X	X
Agardh's Red Algae									X			
Chenille				X								
Dulse	X											
Encrusting Red Algae												
Kelp										X	X	
Purple laver							X	X	X	X	X	X
SPECIES RICHNESS FLORA[2]	4	3	1	5	3	4	4	5	4	4	3	3
DEPTH BELOW MLLW (ft)	69	72	50	38	45	34	23	19	19	18	20	18

TABLE 7
SPECIES BY TRANSECT FROM UNDERWATER VIDEO SEPTEMBER/OCTOBER 2021
EVERSOURCE 5TH CABLE CROSSING, VINEYARD SOUND, MA

TRANSECT ID	CS-4	CS-5	CS-6	CS-7	EG-1	EG-2C	EG-3	EG-4	EG-5	EG-6
	CR	CR	CR	CR	GS/CR	GS/CR	SG/CR	SG/CR	SG/CR	SG/CR
FLORA										
ALISMATALES										
Zosteraceae										
Eelgrass [1]					X	X	X	X	X	X
CHLOROPHYTA										
Dead Man's Fingers	X	X	X	X	X	X		X		
Green Fleece										
Gutweed										
Sea Lettuce						X		X	X	
PHAEOPHYTA										
Wire Weed				X	X	X	X	X		X
Sea Lace										
Epiphytic Filamentous Algae					X					
BACILLARIOPHYTA										
Diatom Mat										
RHODOPHYTA										
Branching red alga	X	X	X	X	X	X	X	X	X	X
Agardh's Red Algae										
Chenille										
Dulse										
Encrusting Red Algae										
Kelp						X				
Purple laver	X	X	X	X	X	X	X	X	X	X
SPECIES RICHNESS FLORA[2]	3	3	3	4	5	6	3	5	3	3
DEPTH BELOW MLLW (ft)	16	15	19	19	13-17	13-17	14-17	14-17	13-17	13-17

TABLE 7
SPECIES BY TRANSECT FROM UNDERWATER VIDEO SEPTEMBER/OCTOBER 2021
EVERSOURCE 5TH CABLE CROSSING, VINEYARD SOUND, MA

TRANSECT ID	**Overall Freqency %**	**Gravel Pavement Frequency %**	**Hard Bottom only Frequency %**	**Hard /Complex Bottom Frequency %**	**Sand Waves/ Ripples Frequency %**	***Crepidula* Reef Frequency %**
FLORA						
ALISMATALES						
Zosteraceae						
Eelgrass [1]	15	0	0	0	0	38
CHLOROPHYTA					0	0
Dead Man's Fingers	34	11	14	8	5	**63**
Green Fleece	5	5	0	8	2	0
Gutweed	2	5	0	8	0	0
Sea Lettuce	20	16	14	17	0	31
PHAEOPHYTA						
Wire Weed	37	21	0	33	7	**50**
Sea Lace	7	0	0	0	7	0
Epiphytic Filamentous Algae	5	0	0	0	2	6
BACILLARIOPHYTA						
Diatom Mat	2	0	0	0	0	6
RHODOPHYTA						
Branching red alga	**68**	37	43	33	12	**100**
Agardh's Red Algae	2	0	0	0	0	6
Chenille	2	0	0	0	2	0
Dulse	5	11	14	8	0	0
Encrusting Red Algae	12	26	**57**	8	0	0
Kelp	7	0	0	0	0	19
Purple laver	41	5	14	0	0	**100**
SPECIES RICHNESS FLORA[2]	**Avrg Richness**	1	2	1	3	4
DEPTH BELOW MLLW (ft)	**Avrg Depth**	61	50	67	38	12

TABLE 7 NOTES:

1) Species selected for assessment of 'important fish resource areas' an SSU under the Massachusetts Ocean Management Plan

2) X designates presence of a species on a transect. Species Richness = the total number of species observed - not normalized for length of transect: 36 transects ~1,000 ft, two N-S 700 ft and one E-W 1.600 ft in outer Falmouth Harbor; two 750 ft E-W Vineyard Haven Harbor

3) Species with a frequency across transects greater than or equal to 50% are bolded

4) Reference Figure 14 for transect locations and CMECS substrate classification, and Figure 16 for Biotic classification

5) Commercially important species

6) Substrat GP-Gravel pavement: (PG-pebble/granule, C-cobble, or B-boulder dominated)
CR- Crepidula Reef
SG-Sandy Gravel
GS-Gravelly Sand
SW-Sand Waves
SR -Sand Ripples

TABLE 8
COORDINATES AND WATER DEPTH OF REPRESENTATIVE SCREEN CAPTURES OF MAJOR CMECS UNITS

ID	CMEC BIOTIC CLASSIFICATION UNIT	TRANSECT	PHOTO Plate	ELAPSED TIME (sec)	X	Y	LOCAL TIME	MLLW DEPTH (m)	MLLW DEPTH (ft)
EG-2C-A	Seagrass Bed	EG-2C	A	2:18	365194.3	4599803.8	2:39:37 PM	4.1	13.4
CS-3-F	Gastropod Reef	CS-3	F	4:55	365330.8	4599388.7	4:23:01 PM	6.1	20.0
VS-2-Q	Attached Sea Urchins	VS-2	Q	17:02	365383	4598537.9	9:50:26 AM	10.4	34.1
VS-5-F	Soft Sediment Fauna	VS-5	F	13:32	365497.8	4597639.6	11:37:35 AM	12.4	40.7
VS-6-G	Attached Fauna (Tunicates in Sand Wave Troughs)	VS-6	G	5:57	365331.7	4597322	11:50:59 AM	11.4	37.4
VS-10-E	Attached Sea Urchins	VS-10	E	4:49	365868	4596285.4	1:31:33 PM	22.4	73.5
VS-14-K	Diverse Colonizers (Cobble)	VS-14	K	25:10	366735.5	4595425.8	10:14:12 AM	22.8	74.8
VS-19-N	Diverse Colonizers (Boulder)	VS-19	N	18:03	367888.6	4594418.3	2:14:44 PM	22.1	72.5
VS-23-O	Attached Fauna (Gastropds in Sand Wave Troughs)	VS-23	O	26:05	368392.4	4593306.1	11:24:23 AM	14.7	48.2
VS-25-F	Inferred Fauna	VS-25	F	12:30	368044.5	4592721.5	9:56:13 AM	10.8	35.4
CS-4-D	Gastropod Reef/Large Leafy Algal Bed	CS-4	D	5:39	367961.2	4591638.1	11:14:27 AM	5.2	17.1

Notes:

1. See Appendix D for CMECS classifications of these units and representative screen captures
2. Locations plotted on Figure 16 by ID.
3. Ordered from North to South along the survey corridor
4. Depths are feet or meters below Mean Lower Low Water

APPENDICES

APPENDIX A

900 kHz Side Scan Sonar Targets

APPENDIX A

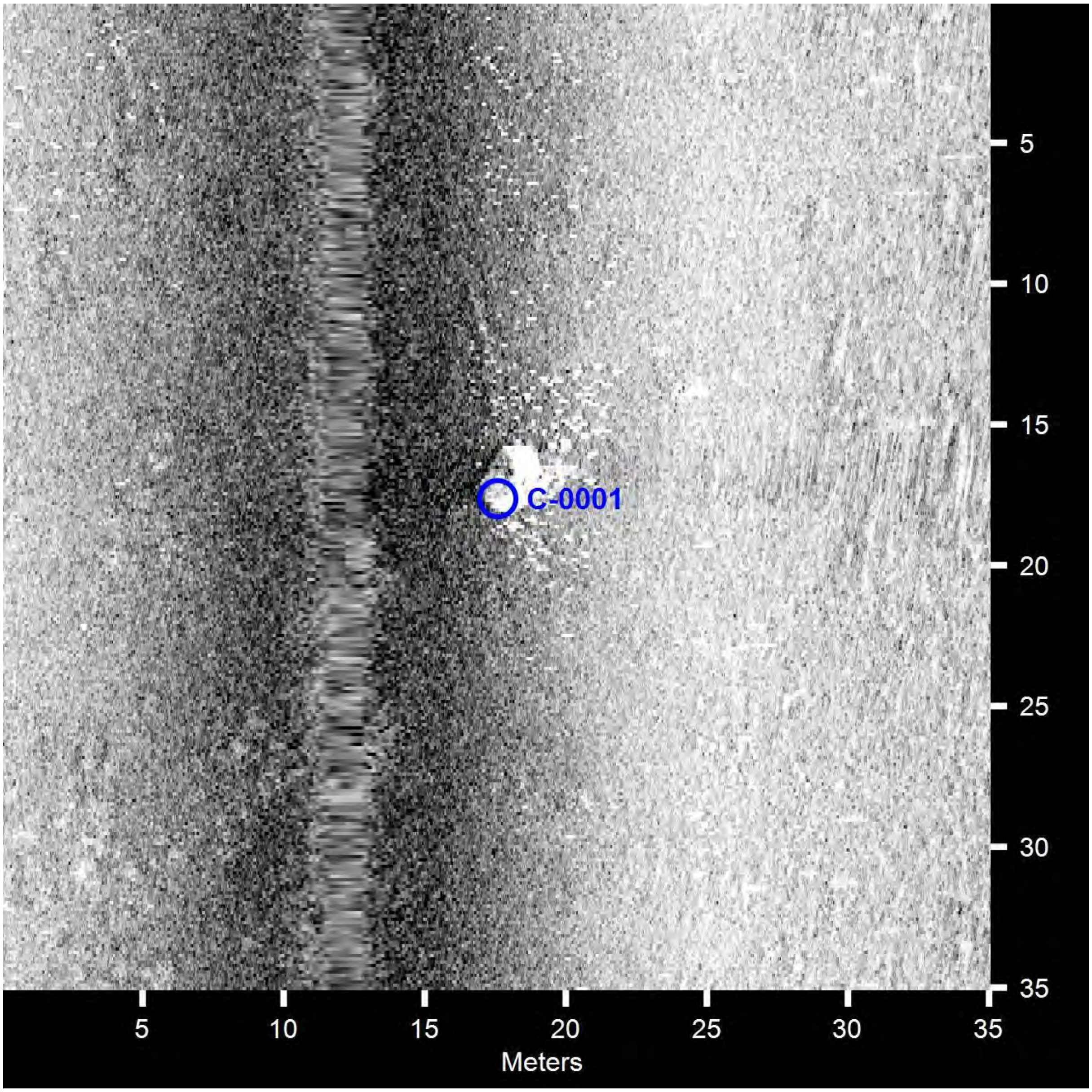
900-kHz SIDE SCAN SONAR CONTACTS
Eversource 5th Cable
Vineyard Sound, MA

Contacts in the report:

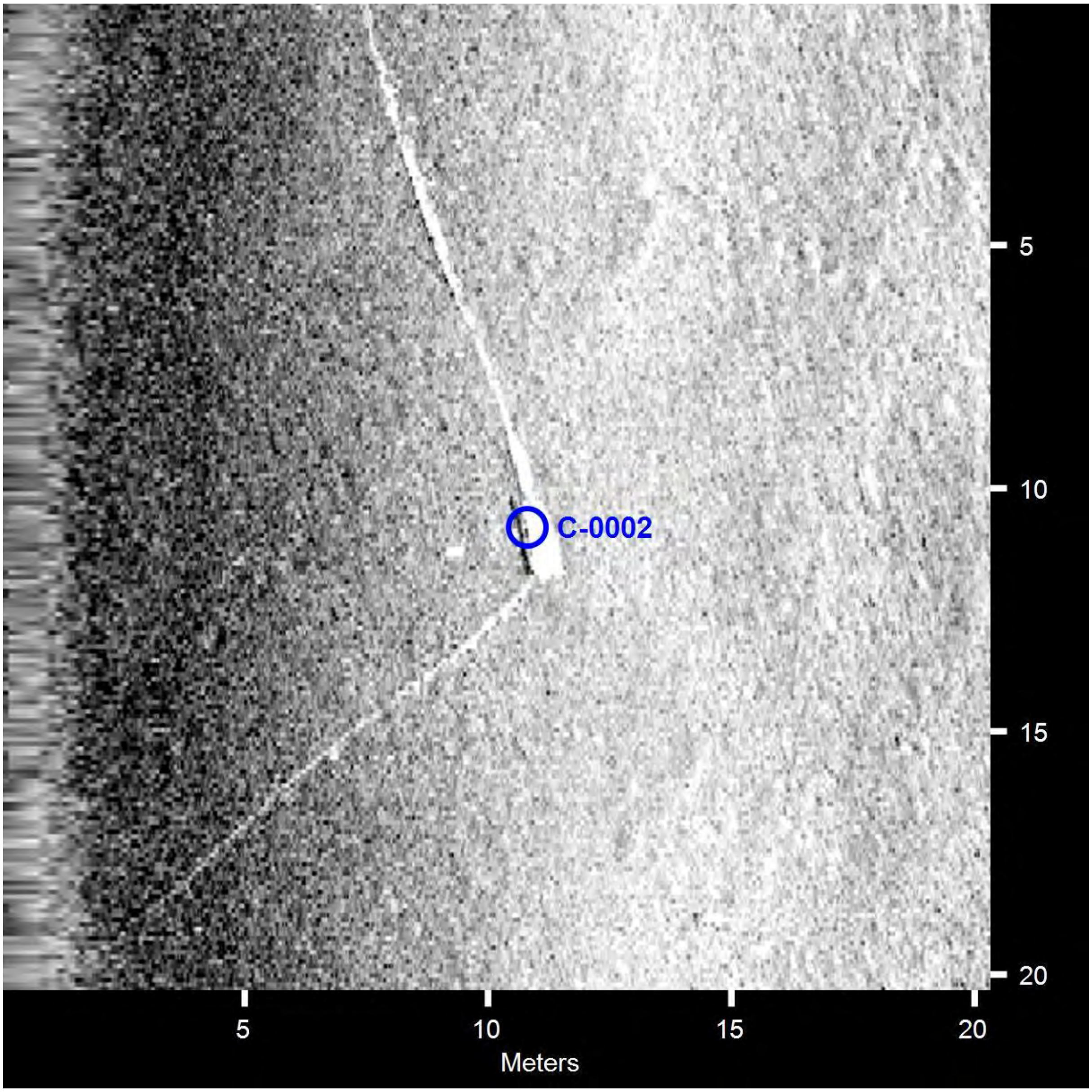
C-0001	8/25/2021 6:44:20 PM	41.5373392928	-70.6135325363
C-0002	9/7/2021 5:31:29 PM	41.5305741058	-70.6147485772
C-0003	8/25/2021 5:54:14 PM	41.5303860759	-70.6152204157
C-0004	8/25/2021 7:13:30 PM	41.5227962970	-70.6123571553
C-0005	9/7/2021 2:46:02 PM	41.5225756096	-70.6130670113
C-0006	8/25/2021 8:19:52 PM	41.5213790462	-70.6123163440
C-0007	8/25/2021 7:17:44 PM	41.5182119724	-70.6116133309
C-0008	8/25/2021 7:17:53 PM	41.5180908489	-70.6115307404
C-0009	8/25/2021 7:17:55 PM	41.5180431356	-70.6114402645
C-0010	9/7/2021 4:16:22 PM	41.5158295966	-70.6134520947
C-0011	8/25/2021 7:28:56 PM	41.5108317825	-70.6106988187
C-0012	8/31/2021 4:10:10 PM	41.5108309240	-70.6122854273
C-0013	8/23/2021 5:58:05 PM	41.5101830835	-70.6082968444
C-0014	8/31/2021 6:08:22 PM	41.5100253235	-70.6082083409
C-0015	8/31/2021 7:12:43 PM	41.5099993416	-70.6084348506
C-0016	8/31/2021 7:12:49 PM	41.5098730742	-70.6083324460
C-0017	8/31/2021 7:12:55 PM	41.5098494081	-70.6080857562
C-0018	8/31/2021 7:12:52 PM	41.5097889072	-70.6082771961
C-0019	8/25/2021 2:39:35 PM	41.5097289719	-70.6094296312
C-0020	8/31/2021 5:05:09 PM	41.5095040664	-70.6099175484
C-0021	8/23/2021 5:49:33 PM	41.5088630921	-70.6088308050

C-0022	8/23/2021 7:26:38 PM	41.5088180891	-70.6086501676
C-0023	8/31/2021 8:32:59 PM	41.5083013009	-70.6061721485
C-0024	8/31/2021 2:56:04 PM	41.4992888126	-70.5983853310
C-0025	8/31/2021 5:27:30 PM	41.4970761789	-70.5925056244
C-0026	8/23/2021 5:30:35 PM	41.4966533297	-70.5943280316
C-0027	8/20/2021 5:21:46 PM	41.4963296647	-70.5914420811
C-0028	8/20/2021 3:49:41 PM	41.4926324776	-70.5866721371
C-0029	8/20/2021 5:45:07 PM	41.4924422269	-70.5862037121
C-0030	8/20/2021 4:31:05 PM	41.4923911148	-70.5859864309
C-0031	8/20/2021 3:39:28 PM	41.4921524543	-70.5874889485
C-0032	8/20/2021 2:58:30 PM	41.4912037096	-70.5837658813
C-0033	8/20/2021 5:53:12 PM	41.4909839855	-70.5850891965
C-0034	8/23/2021 4:12:23 PM	41.4900791619	-70.5875808398
C-0035	8/20/2021 6:28:15 PM	41.4900723813	-70.5873429792
C-0036	8/20/2021 3:59:05 PM	41.4872811490	-70.5797578888
C-0037	8/20/2021 2:51:55 PM	41.4872400762	-70.5797998076
C-0038	8/23/2021 4:31:18 PM	41.4870963519	-70.5811232381
C-0039	8/20/2021 7:20:41 PM	41.4867884055	-70.5802290501
C-0040	8/23/2021 5:07:02 PM	41.4866767009	-70.5802348852
C-0041	8/23/2021 6:47:17 PM	41.4851867174	-70.5787615252
C-0042	8/20/2021 2:48:01 PM	41.4849665490	-70.5768132015
C-0043	8/20/2021 4:03:47 PM	41.4846264744	-70.5766804560
C-0044	8/20/2021 3:28:42 PM	41.4845196836	-70.5787199972
C-0045	9/8/2021 5:08:39 PM	41.4787268264	-70.5787780936
C-0046	9/8/2021 5:43:12 PM	41.4782460911	-70.5804772272
C-0047	9/8/2021 5:09:13 PM	41.4782018305	-70.5787392673
C-0048	9/8/2021 1:45:43 PM	41.4760532880	-70.5793263909

C-0049	8/19/2021 8:03:01 PM	41.4734926455	-70.5787582907
C-0050	8/19/2021 5:37:18 PM	41.4705608239	-70.5786399239
C-0051	8/19/2021 7:46:02 PM	41.4704669793	-70.5790566508
C-0052	8/19/2021 7:14:52 PM	41.4703899029	-70.5791416143
C-0053	8/19/2021 7:14:47 PM	41.4703383557	-70.5795095104
C-0054	8/19/2021 6:43:36 PM	41.4702584092	-70.5797829710
C-0055	8/19/2021 5:25:55 PM	41.4700972913	-70.5807205320
C-0056	8/19/2021 3:58:31 PM	41.4698999264	-70.5818536770
C-0057	8/19/2021 7:47:40 PM	41.4688784018	-70.5795060570
C-0058	8/19/2021 4:10:51 PM	41.4681286119	-70.5814828018
C-0059	8/19/2021 5:03:03 PM	41.4681240780	-70.5815470599
C-0060	8/19/2021 7:12:28 PM	41.4681200216	-70.5796945996
C-0061	8/19/2021 4:42:43 PM	41.4680979383	-70.5815842049
C-0062	8/19/2021 7:27:32 PM	41.4677814427	-70.5782931308
C-0063	8/19/2021 6:30:57 PM	41.4672841615	-70.5807724029
C-0064	8/19/2021 5:41:04 PM	41.4670948819	-70.5793998556
C-0065	8/19/2021 6:30:37 PM	41.4668685821	-70.5808190029
C-0066	8/19/2021 6:30:27 PM	41.4667154553	-70.5808591280
C-0067	8/19/2021 5:41:55 PM	41.4662185689	-70.5791383567
C-0068	8/19/2021 5:42:06 PM	41.4660262569	-70.5791620656
C-0069	8/19/2021 6:07:02 PM	41.4660129541	-70.5814213950
C-0070	8/19/2021 5:42:17 PM	41.4658535738	-70.5795433837
C-0071	8/19/2021 6:06:36 PM	41.4655569425	-70.5811618046
C-0072	8/19/2021 7:55:07 PM	41.4654899177	-70.5796009636
C-0073	8/19/2021 4:39:59 PM	41.4653001367	-70.5819732187
C-0074	8/19/2021 6:48:40 PM	41.4650620872	-70.5802790628



C-0001	Dimensions and attributes
● Click Position 41.5373392928 -70.6135325363 (WGS84) (X) 365405.31 (Y) 4599666.51 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210825184104H.xtf	● Target Width: 1.3 Meters ● Target Height: 0.7 Meters ● Target Length: 2.3 Meters ● Target Shadow: 1.3 Meters ● Classification1**: Boulder** ● Description:

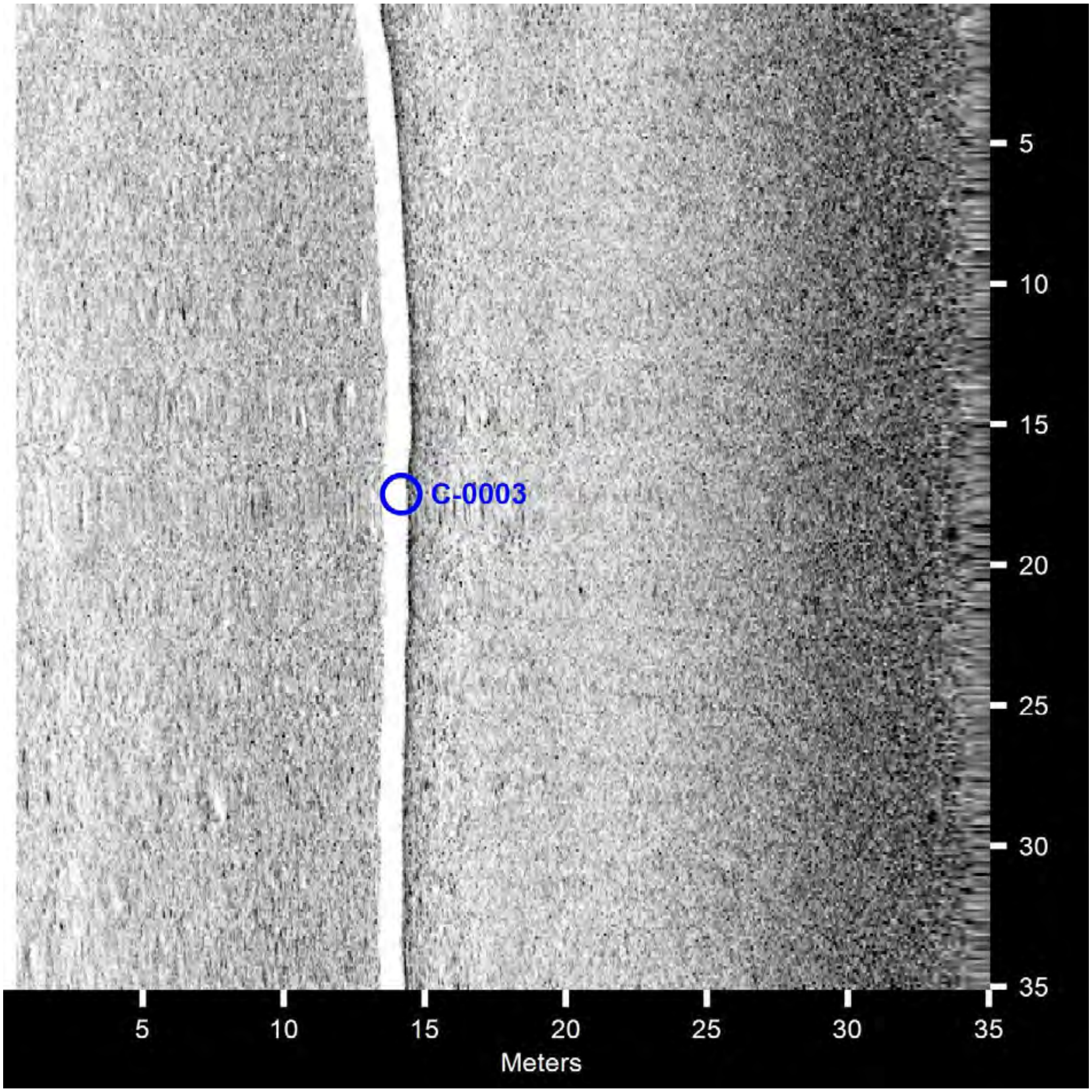


C-0002

- Click Position
  41.5305741058 -70.6147485772 (WGS84)
  (X) 365289.83 (Y) 4598917.30 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210907171010H.xtf

Dimensions and attributes

- Target Width: 0.3 Meters
- Target Height: 0.2 Meters
- Target Length: 1.5 Meters
- Target Shadow: 0.6 Meters
- Classification1**: Cable or fishing gear**
- Description: Dimensions given for central target

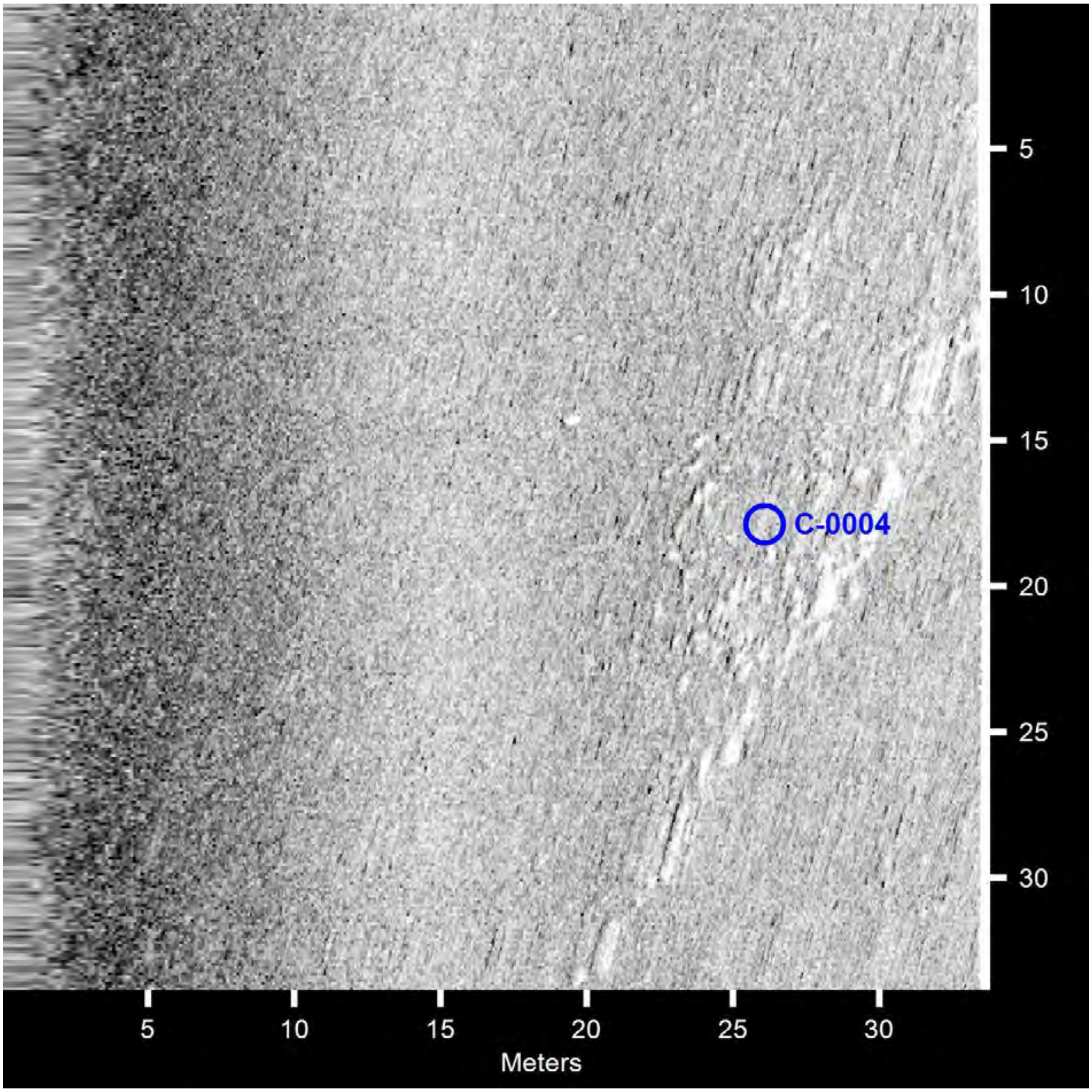


C-0003

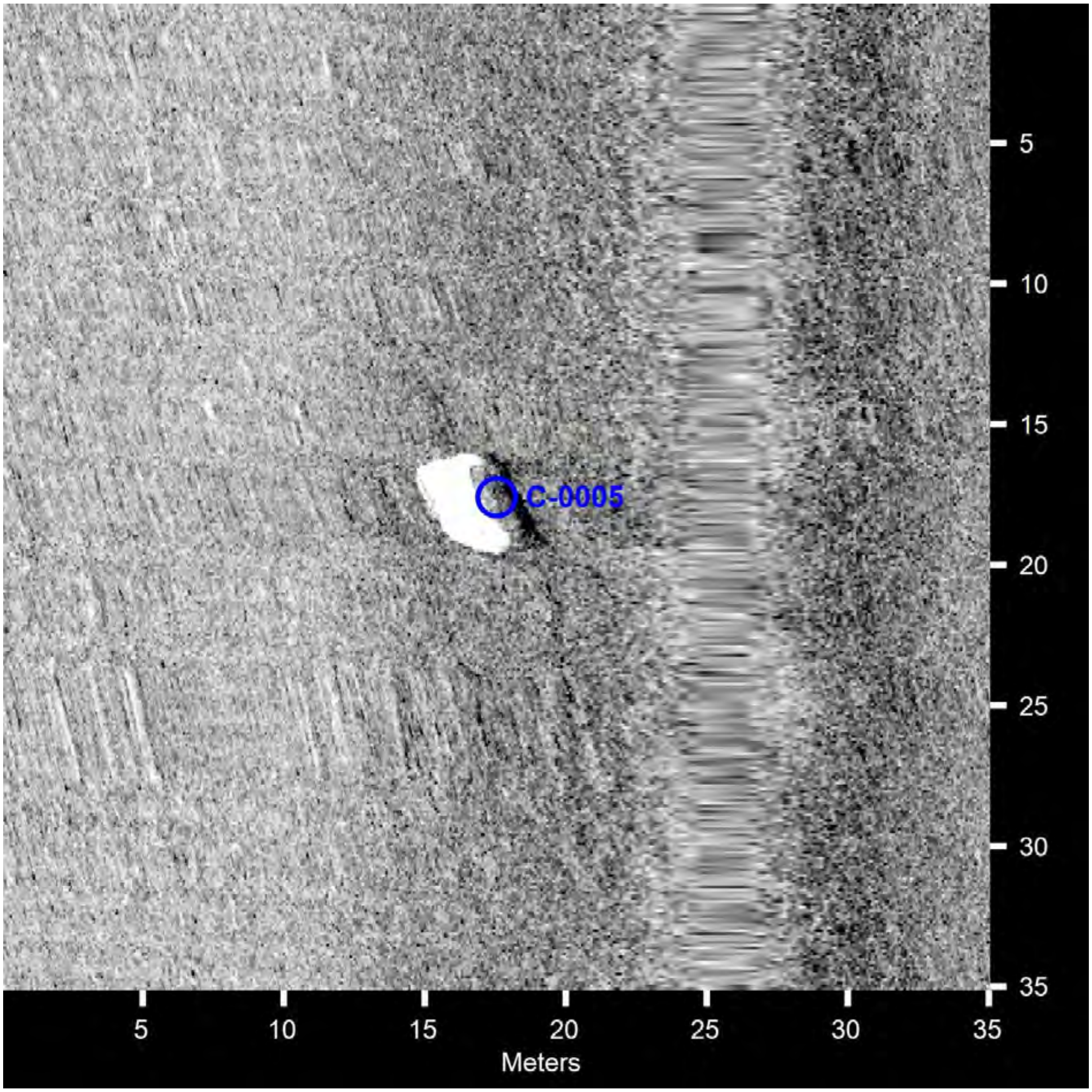
- Click Position
  41.5303860759 -70.6152204157 (WGS84)
  (X) 365250.07 (Y) 4598897.16 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210825174557H.xtf

Dimensions and attributes

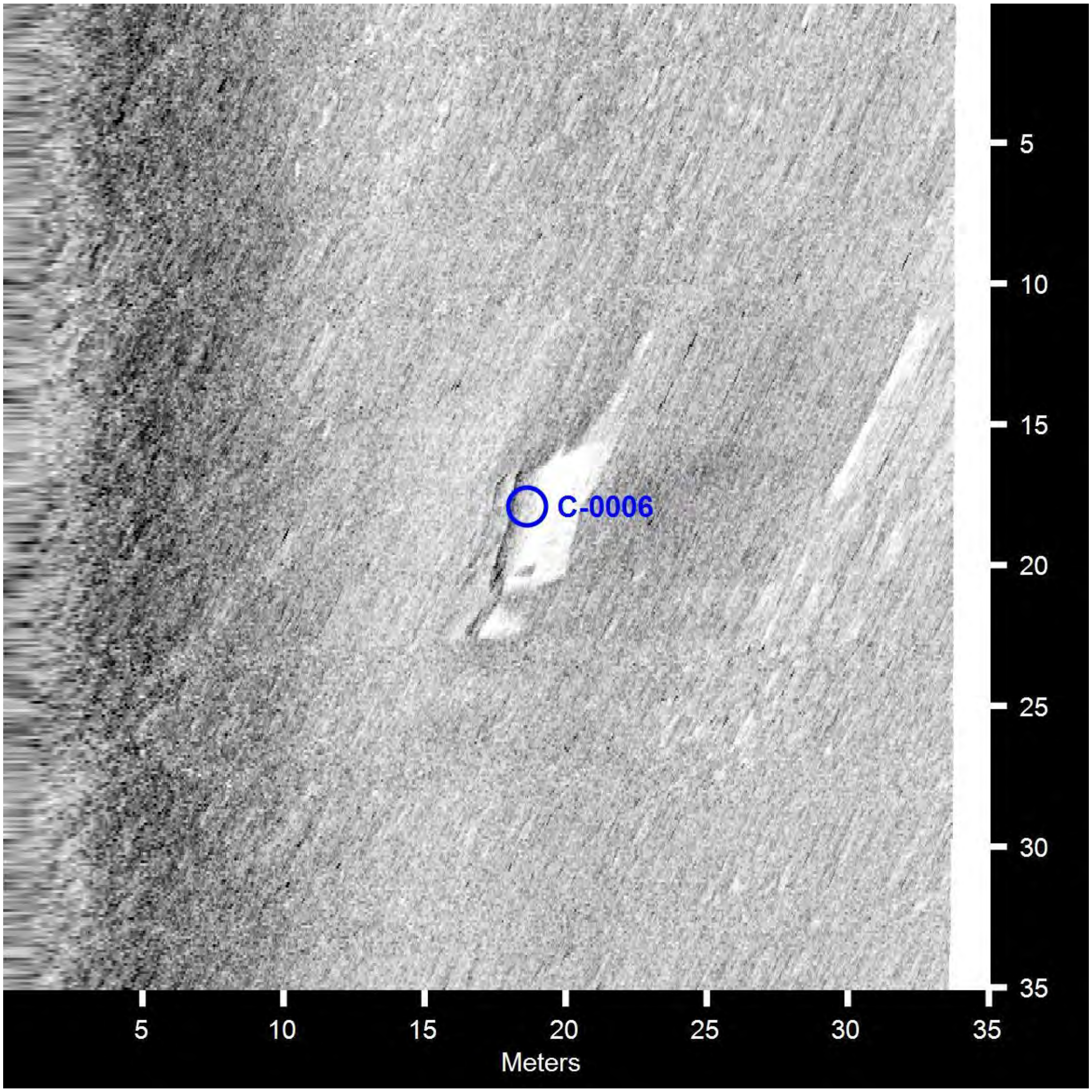
- Target Width: 0.3 Meters
- Target Height: 0.3 Meters
- Target Length: 0.0 Meters
- Target Shadow: 1.1 Meters
- Classification1: **Cable**
- Description:



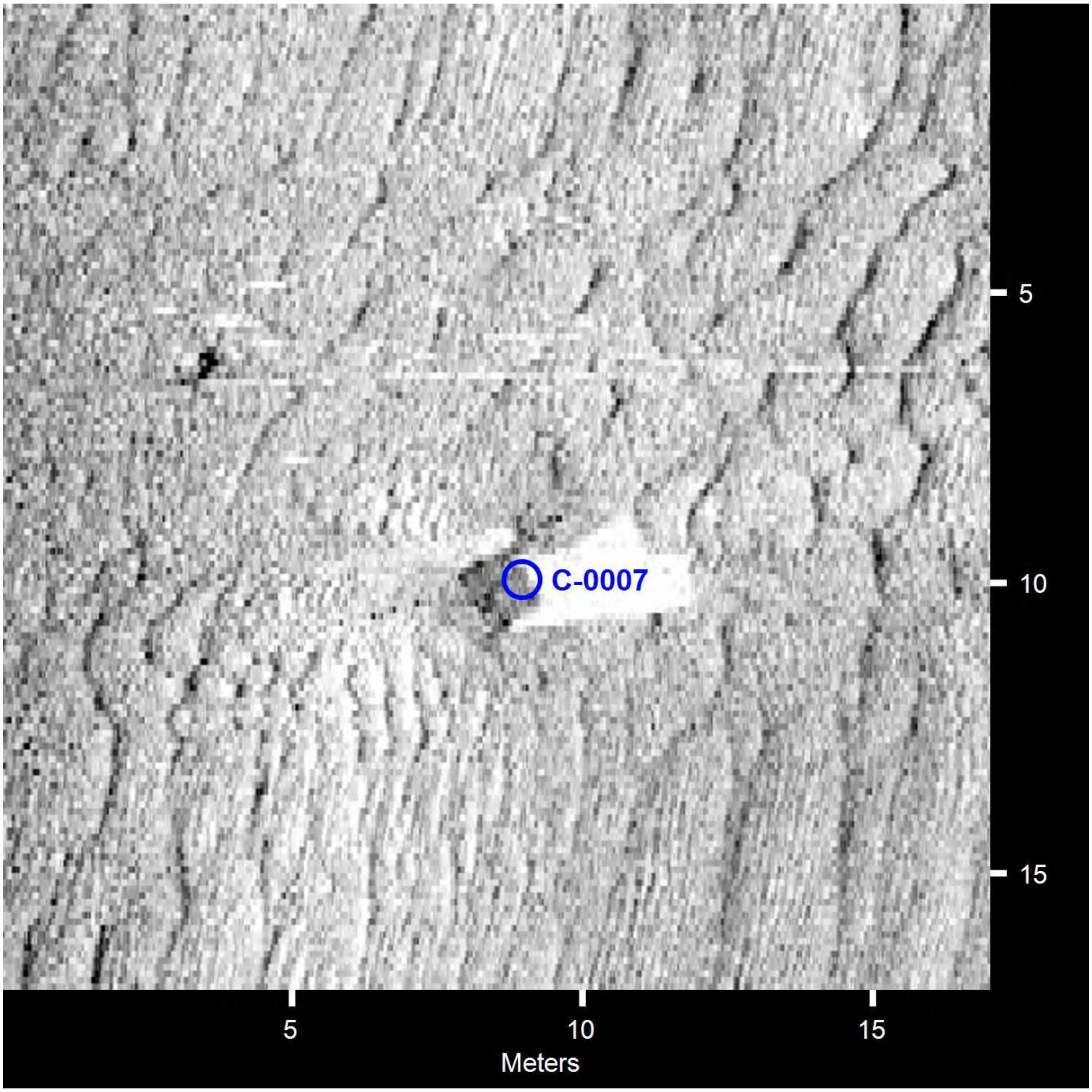
C-0004	Dimensions and attributes
● Click Position 41.5227962970 -70.6123571553 (WGS84) (X) 365473.22 (Y) 4598050.04 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210825185723H.xtf	● Target Width: 6.7 Meters ● Target Height: 0.3 Meters ● Target Length: 20.7 Meters ● Target Shadow: 0.7 Meters ● Classification1: **Boulder Field** ● Description:



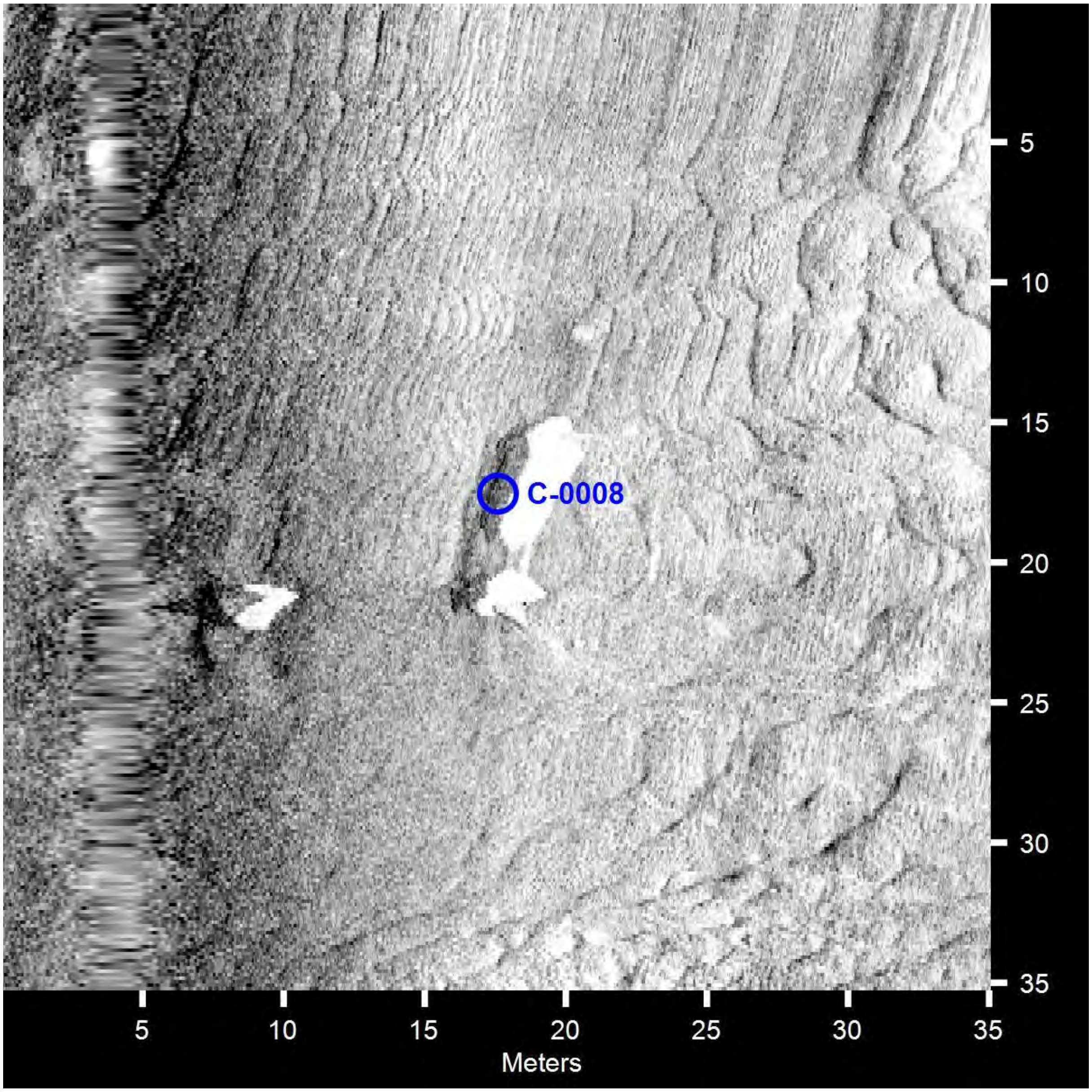
C-0005	Dimensions and attributes
● Click Position 41.5225756096 -70.6130670113 (WGS84) (X) 365413.54 (Y) 4598026.64 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210907142614H.xtf	● Target Width: 1.0 Meters ● Target Height: 2.5 Meters ● Target Length: 3.1 Meters ● Target Shadow: 2.4 Meters ● Classification1**: Boulder** ● Description:



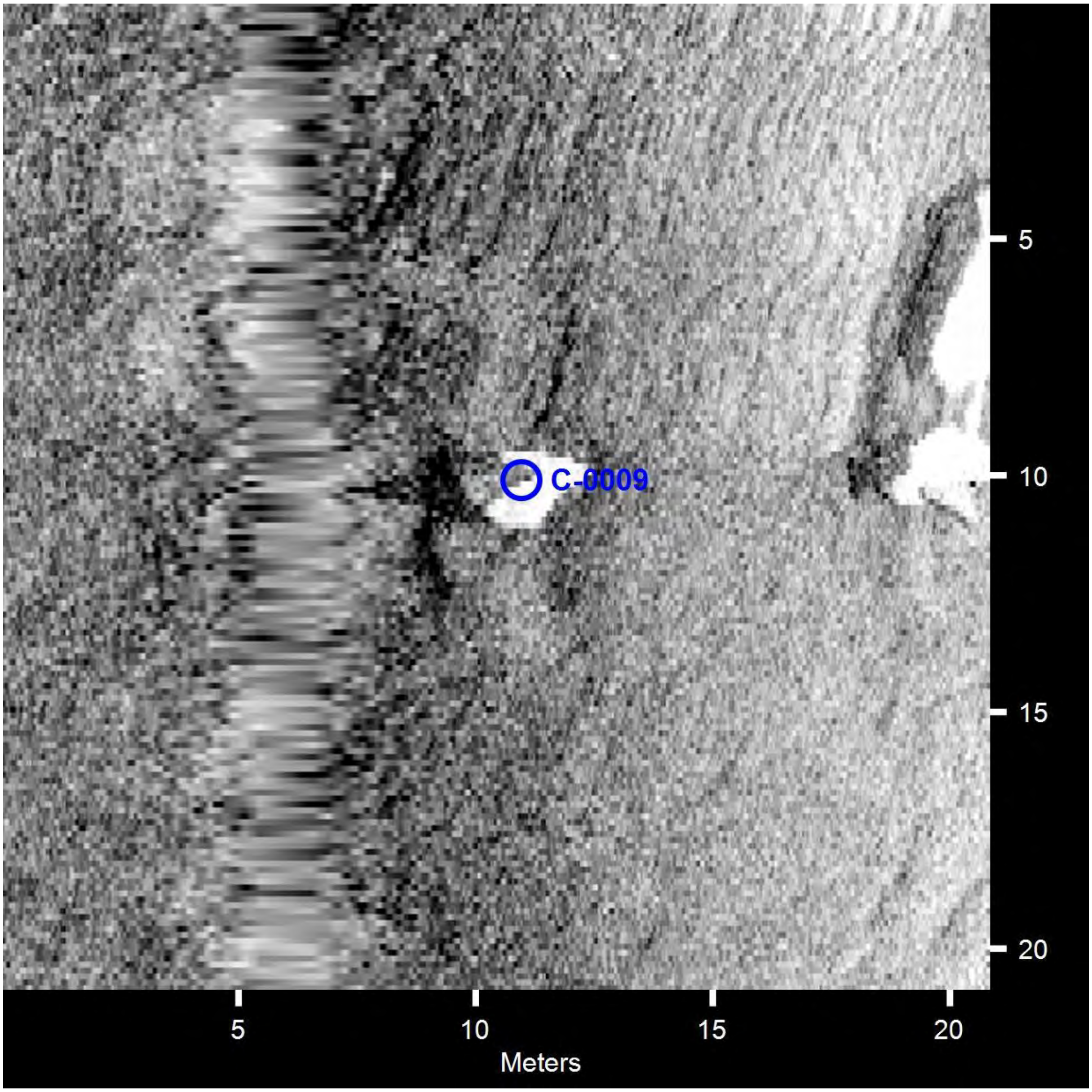
C-0006	Dimensions and attributes
● Click Position 41.5213790462 -70.6123163440 (WGS84) (X) 365473.69 (Y) 4597892.62 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210825200524.001H.xtf	● Target Width: 1.9 Meters ● Target Height: 0.8 Meters ● Target Length: 4.2 Meters ● Target Shadow: 1.6 Meters ● Classification1: **Boulder** ● Description:



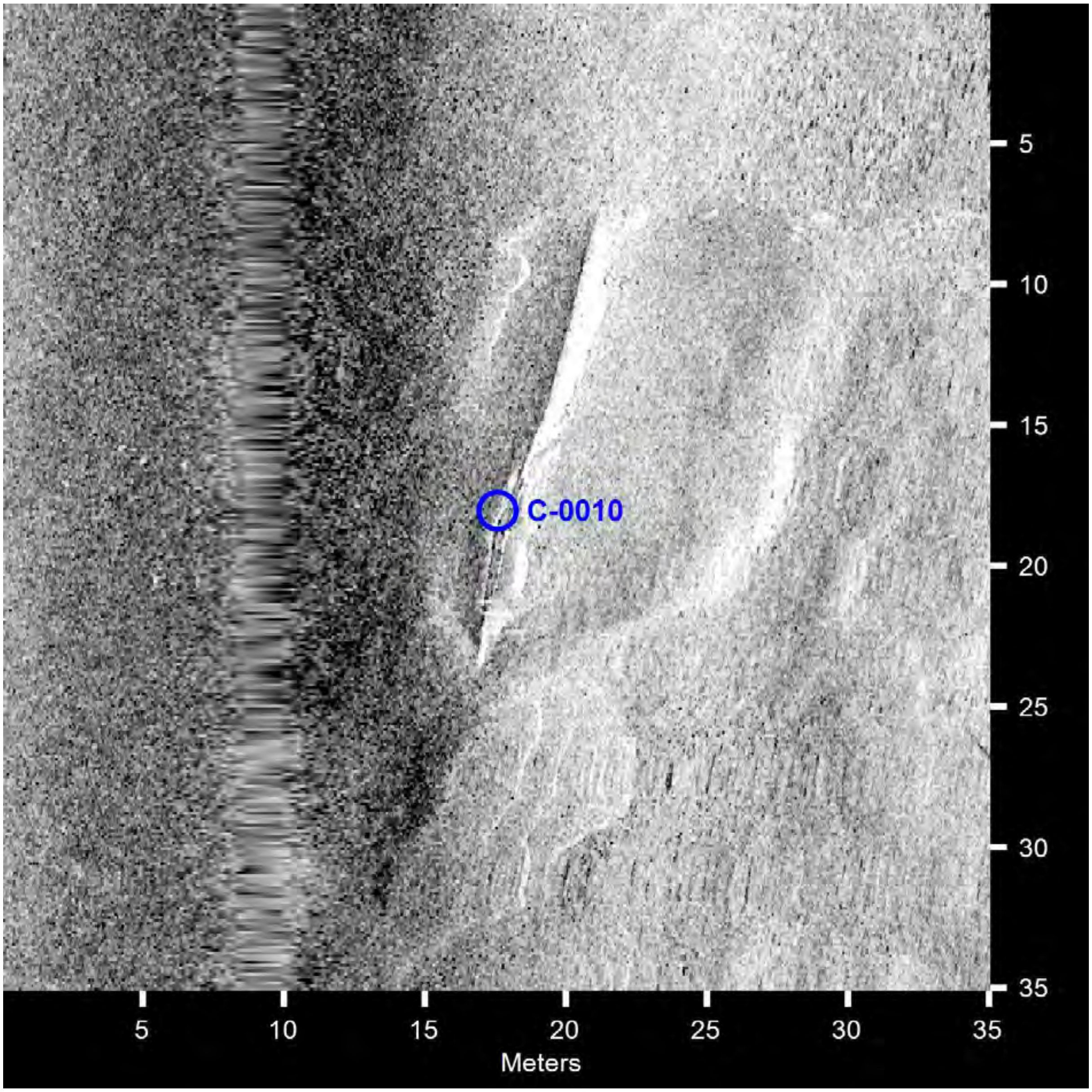
C-0007	Dimensions and attributes
● Click Position 41.5182119724 -70.6116133309 (WGS84) (X) 365525.79 (Y) 4597539.91 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210825185723H.xtf	● Target Width: 0.9 Meters ● Target Height: 0.8 Meters ● Target Length: 0.7 Meters ● Target Shadow: 2.7 Meters ● Classification1**: Fishing Gear** ● Description:



C-0008	Dimensions and attributes
● Click Position 41.5180908489 -70.6115307404 (WGS84) (X) 365532.43 (Y) 4597526.33 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210825185723H.xtf	● Target Width: 1.1 Meters ● Target Height: 1.0 Meters ● Target Length: 5.4 Meters ● Target Shadow: 2.3 Meters ● Classification1: **Boulder** ● Description:



C-0009	Dimensions and attributes
● Click Position 41.5180431356 -70.6114402645 (WGS84) (X) 365539.88 (Y) 4597520.89 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210825185723H.xtf	● Target Width: 1.3 Meters ● Target Height: 1.9 Meters ● Target Length: 2.2 Meters ● Target Shadow: 1.9 Meters ● Classification1**: Boulder** ● Description:

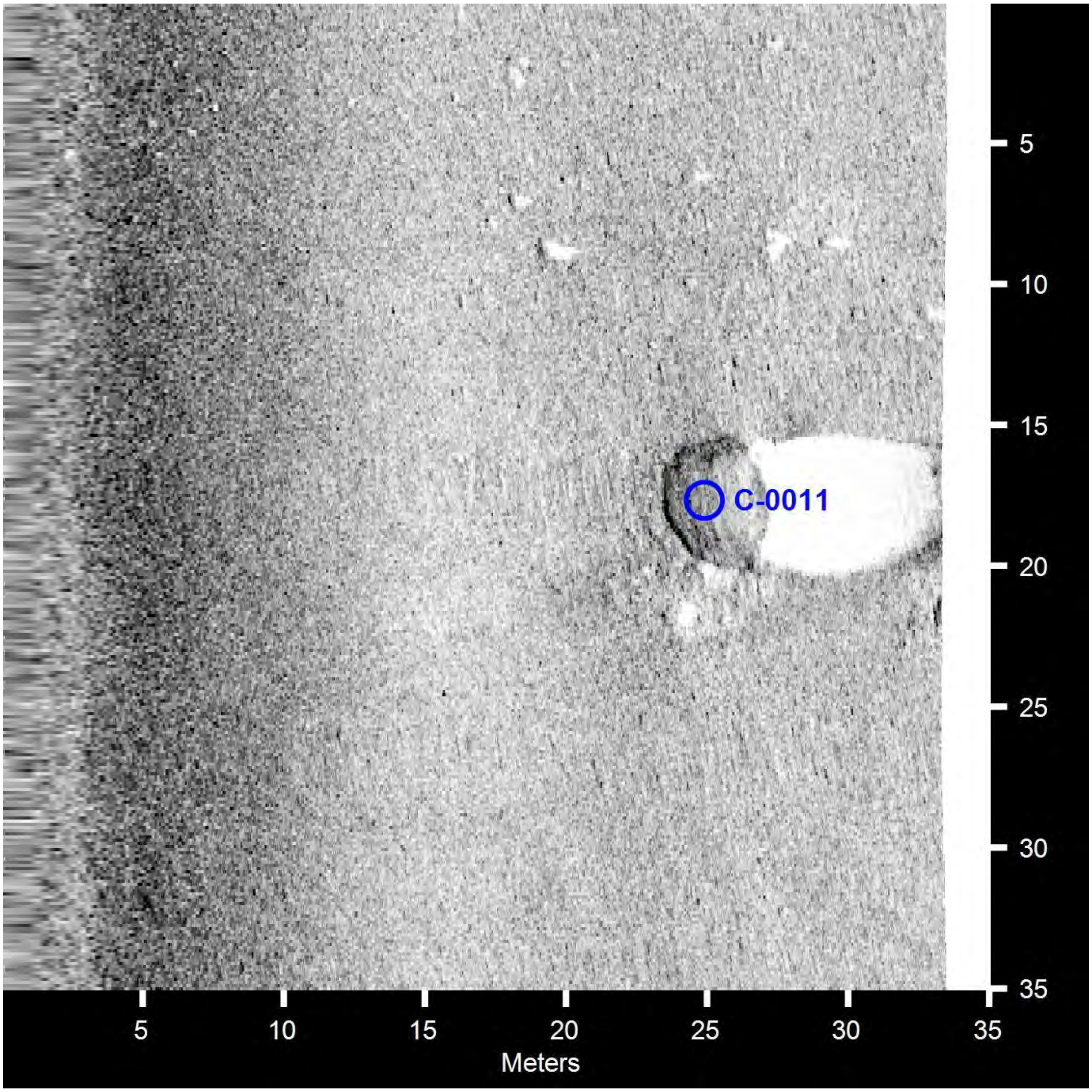


C-0010

- Click Position
  41.5158295966 -70.6134520947 (WGS84)
  (X) 365367.42 (Y) 4597278.27 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210907160829H.xtf

Dimensions and attributes

- Target Width: 0.3 Meters
- Target Height: 0.2 Meters
- Target Length: 17.7 Meters
- Target Shadow: 0.3 Meters
- Classification1: **Possible Cable Segment**
- Description:

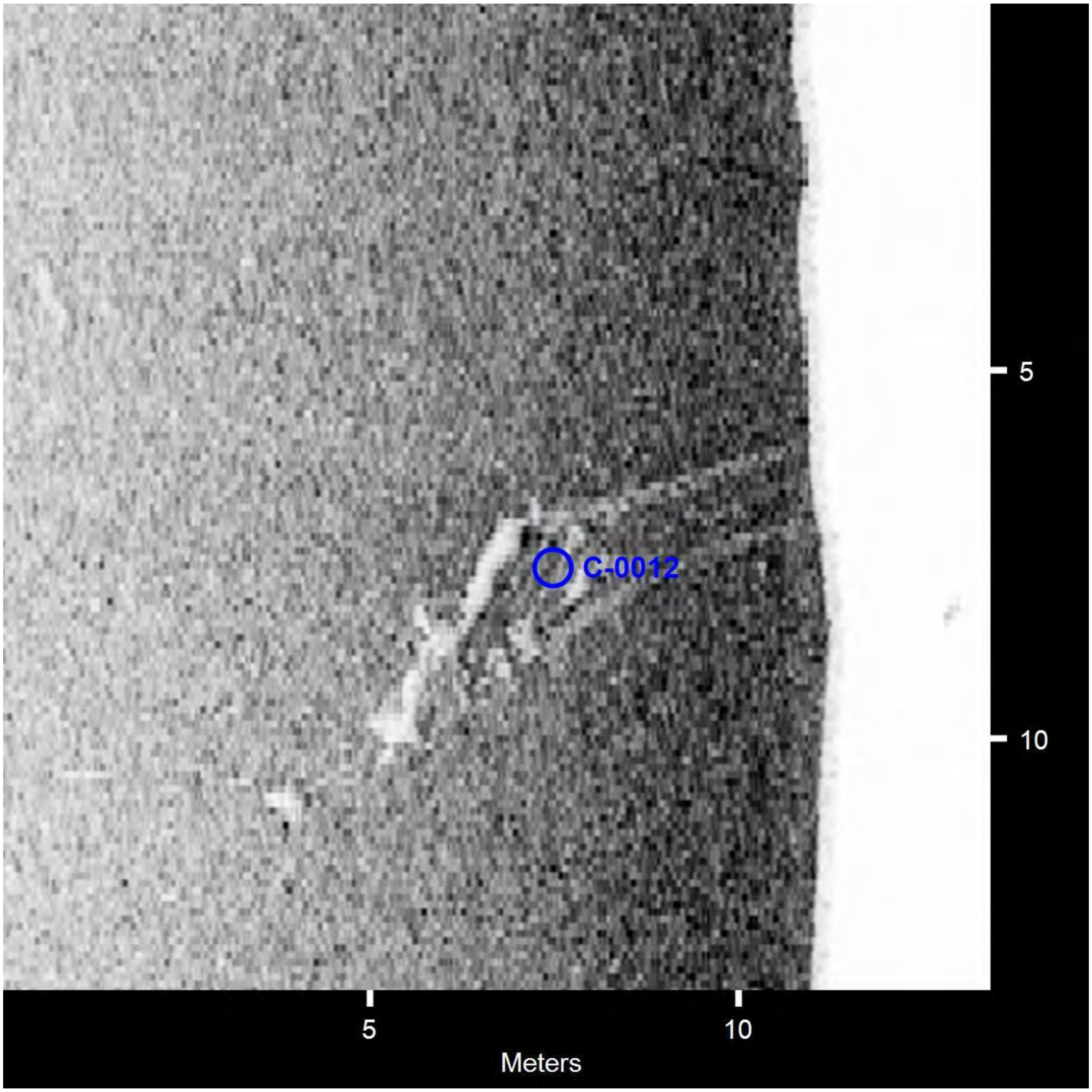


C-0011

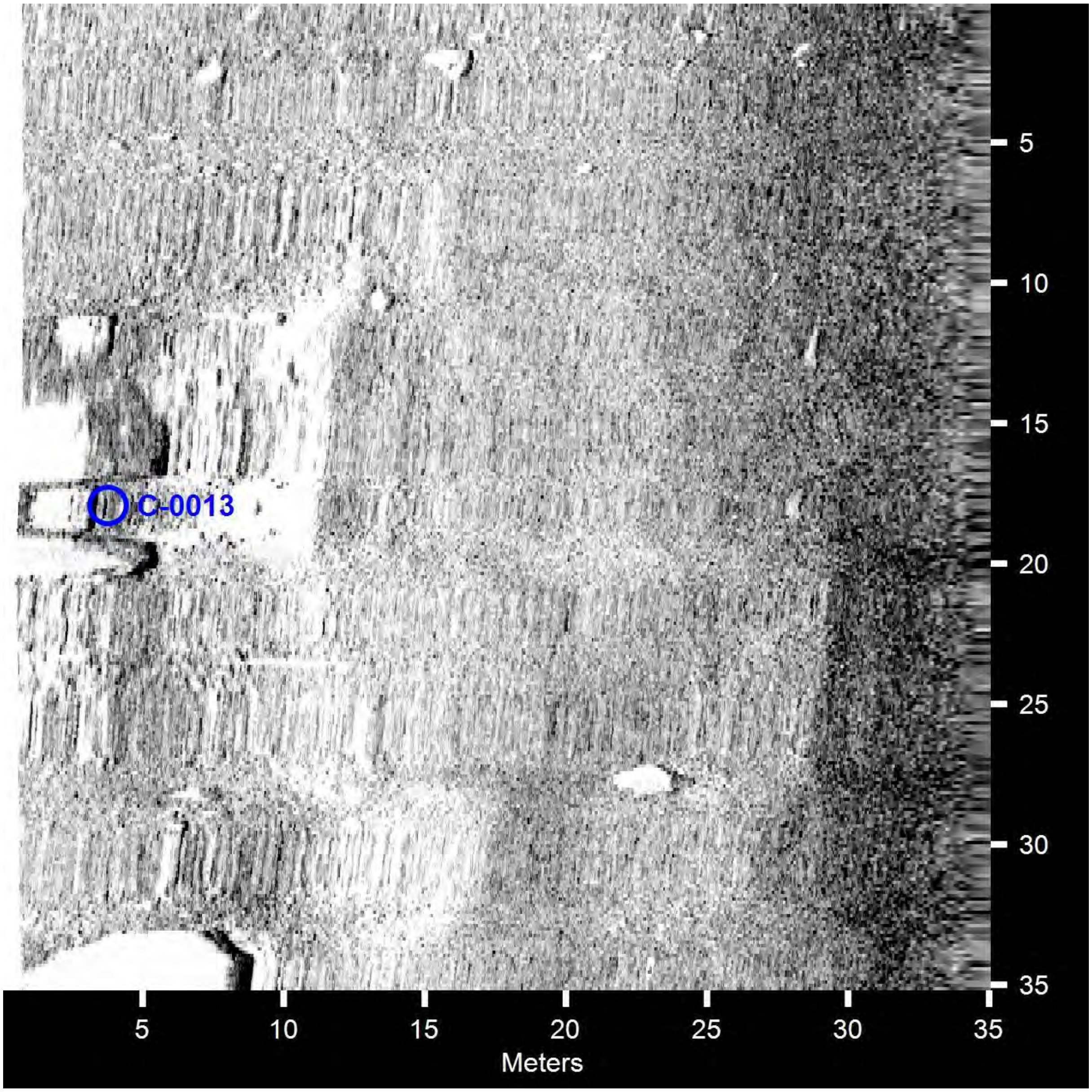
- Click Position
  41.5108317825 -70.6106988187 (WGS84)
  (X) 365586.83 (Y) 4596719.10 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210825192550H.xtf

Dimensions and attributes

- Target Width: 3.5 Meters
- Target Height: 2.1 Meters
- Target Length: 4.3 Meters
- Target Shadow: 5.8 Meters
- Classification1: **Boulder**
- Description:



C-0012	Dimensions and attributes
● Click Position 41.5108309240 -70.6122854273 (WGS84) (X) 365454.42 (Y) 4596721.47 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210831154258H.xtf	● Target Width: 1.6 Meters ● Target Height: 0.0 Meters ● Target Length: 7.0 Meters ● Target Shadow: 0.2 Meters ● Classification1: **Debris or Wreckage** ● Description:

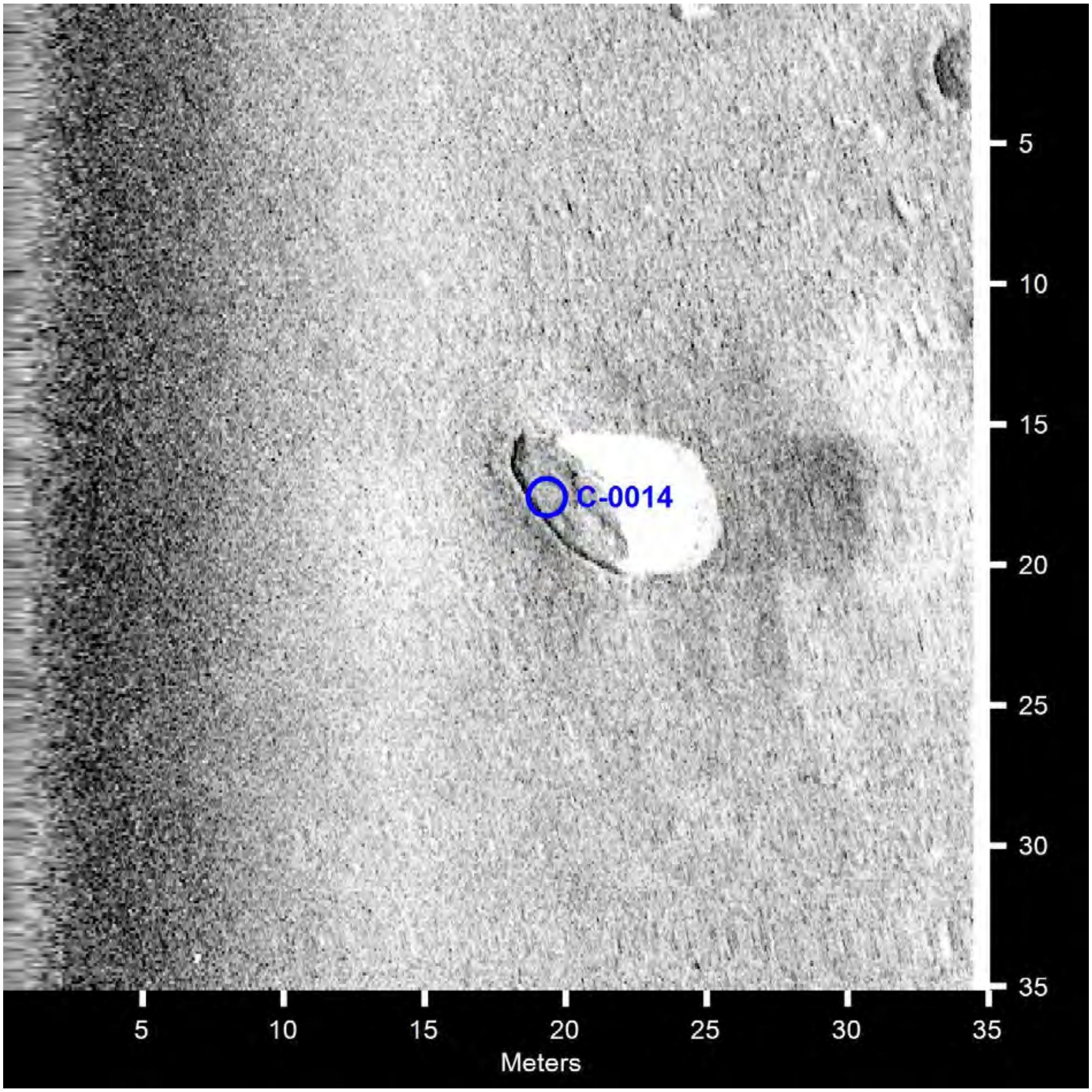


C-0013

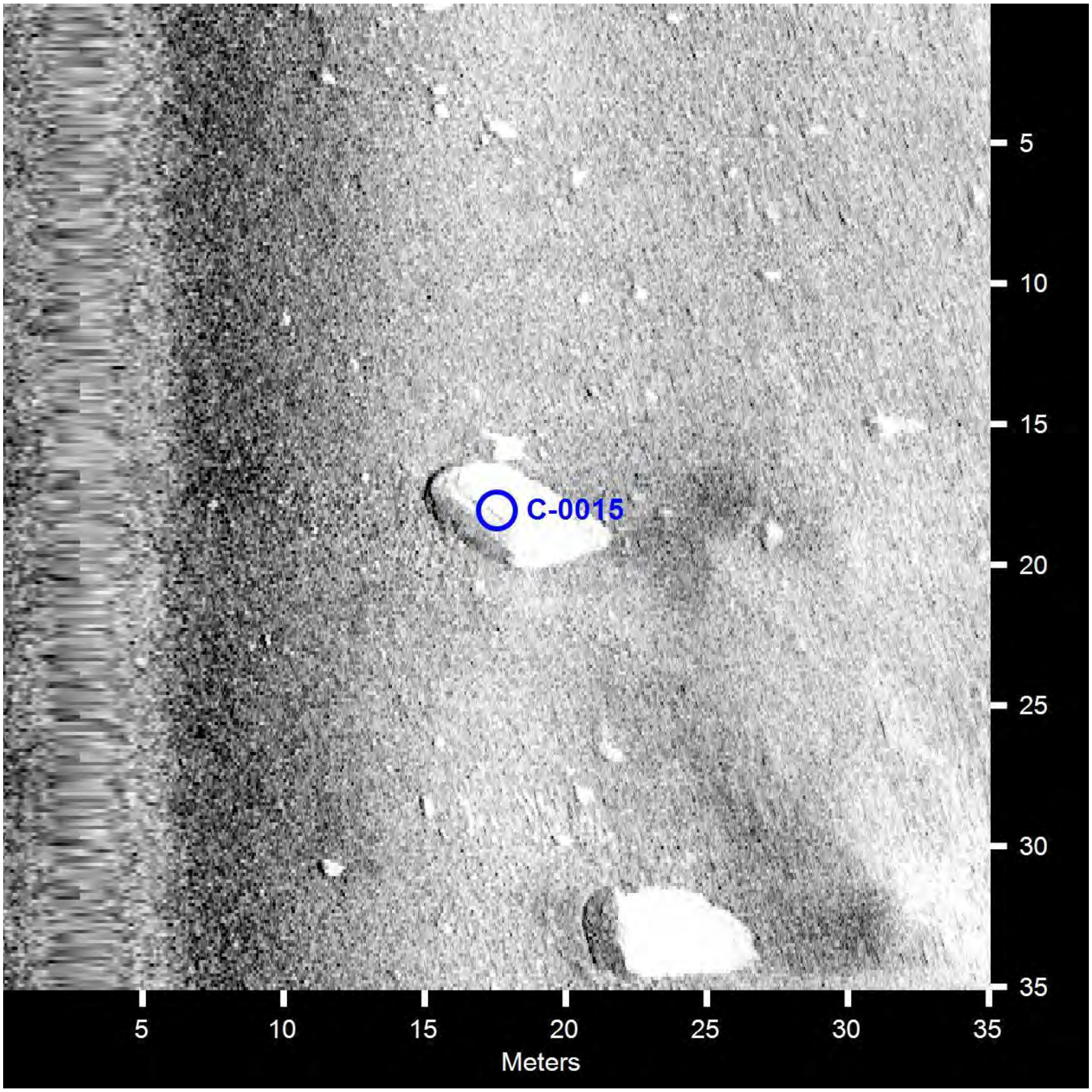
- Click Position
  41.5101830835 -70.6082968444 (WGS84)
  (X) 365785.94 (Y) 4596643.34 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210823175307H.xtf

Dimensions and attributes

- Target Width: 2.5 Meters
- Target Height: 0.5 Meters
- Target Length: 8.0 Meters
- Target Shadow: 3.1 Meters
- Classification1: **Boulder**
- Description: Possible debris



C-0014	Dimensions and attributes
● Click Position 41.5100253235 -70.6082083409 (WGS84) (X) 365793.00 (Y) 4596625.69 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210831180429H.xtf	● Target Width: 2.3 Meters ● Target Height: 1.3 Meters ● Target Length: 6.1 Meters ● Target Shadow: 4.7 Meters ● Classification1**: Boulder** ● Description:

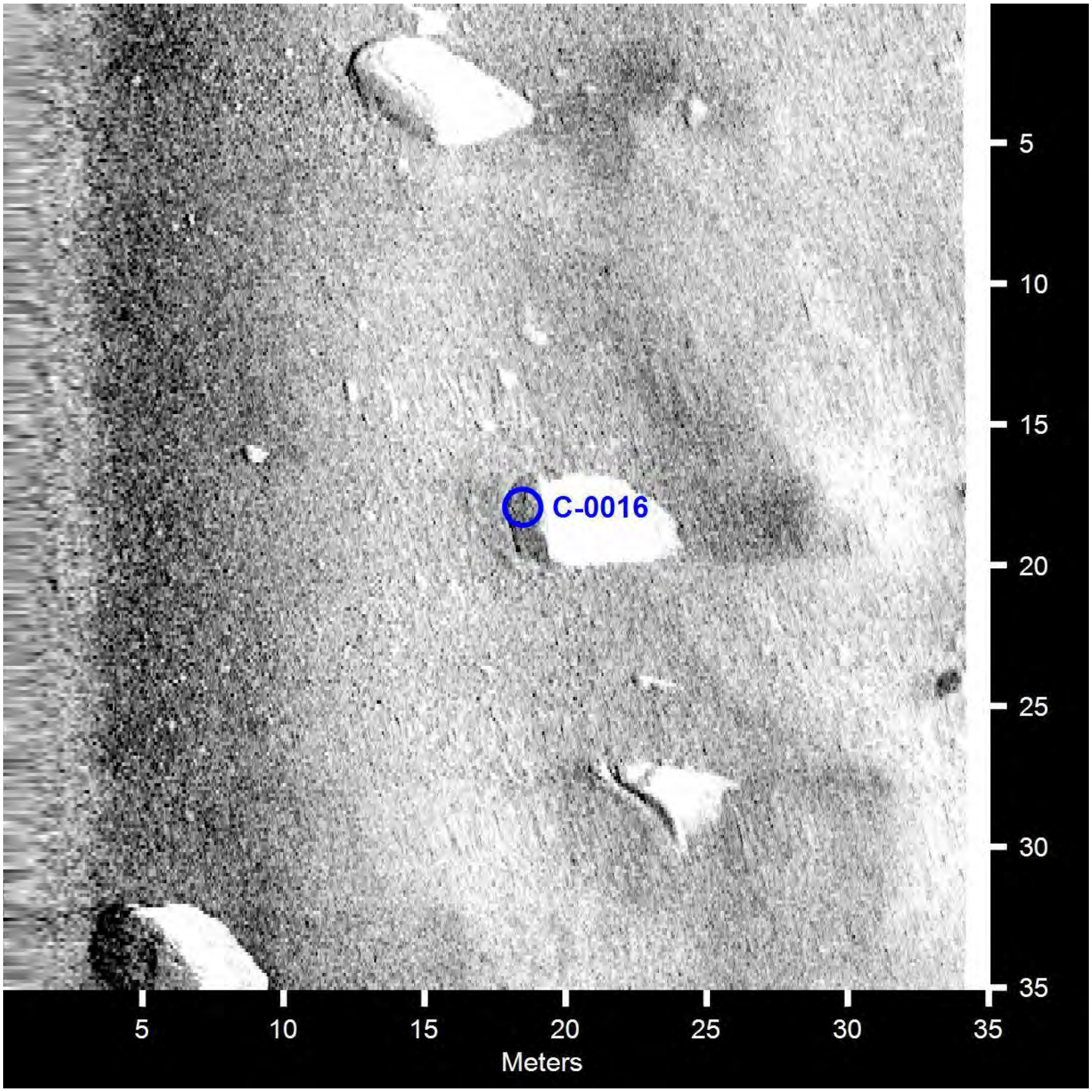


C-0015

- Click Position
  41.5099993416 -70.6084348506 (WGS84)
  (X) 365774.05 (Y) 4596623.16 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210831190906H.xtf

Dimensions and attributes

- Target Width: 3.1 Meters
- Target Height: 1.7 Meters
- Target Length: 4.2 Meters
- Target Shadow: 4.0 Meters
- Classification1: **Boulder**
- Description:

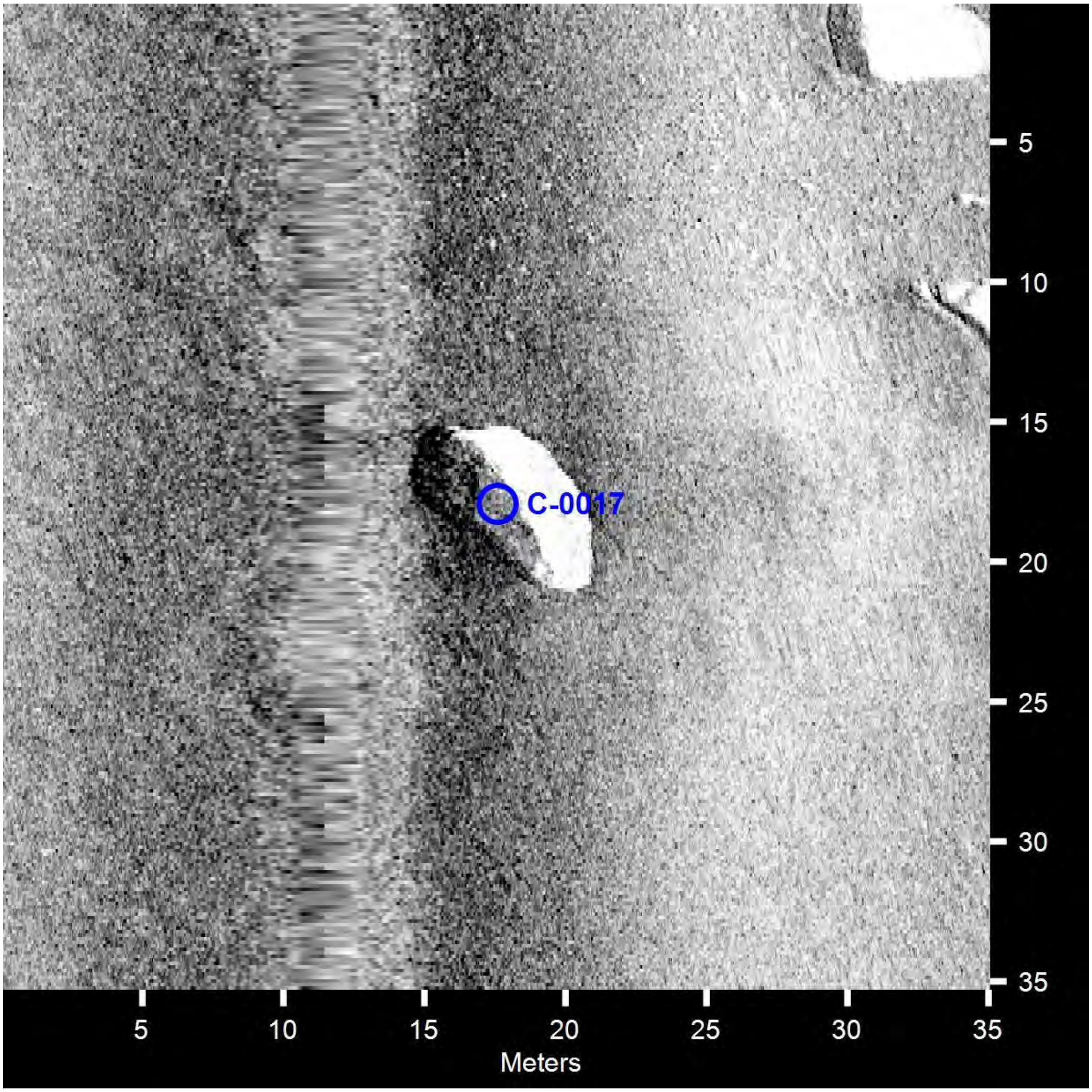


C-0016

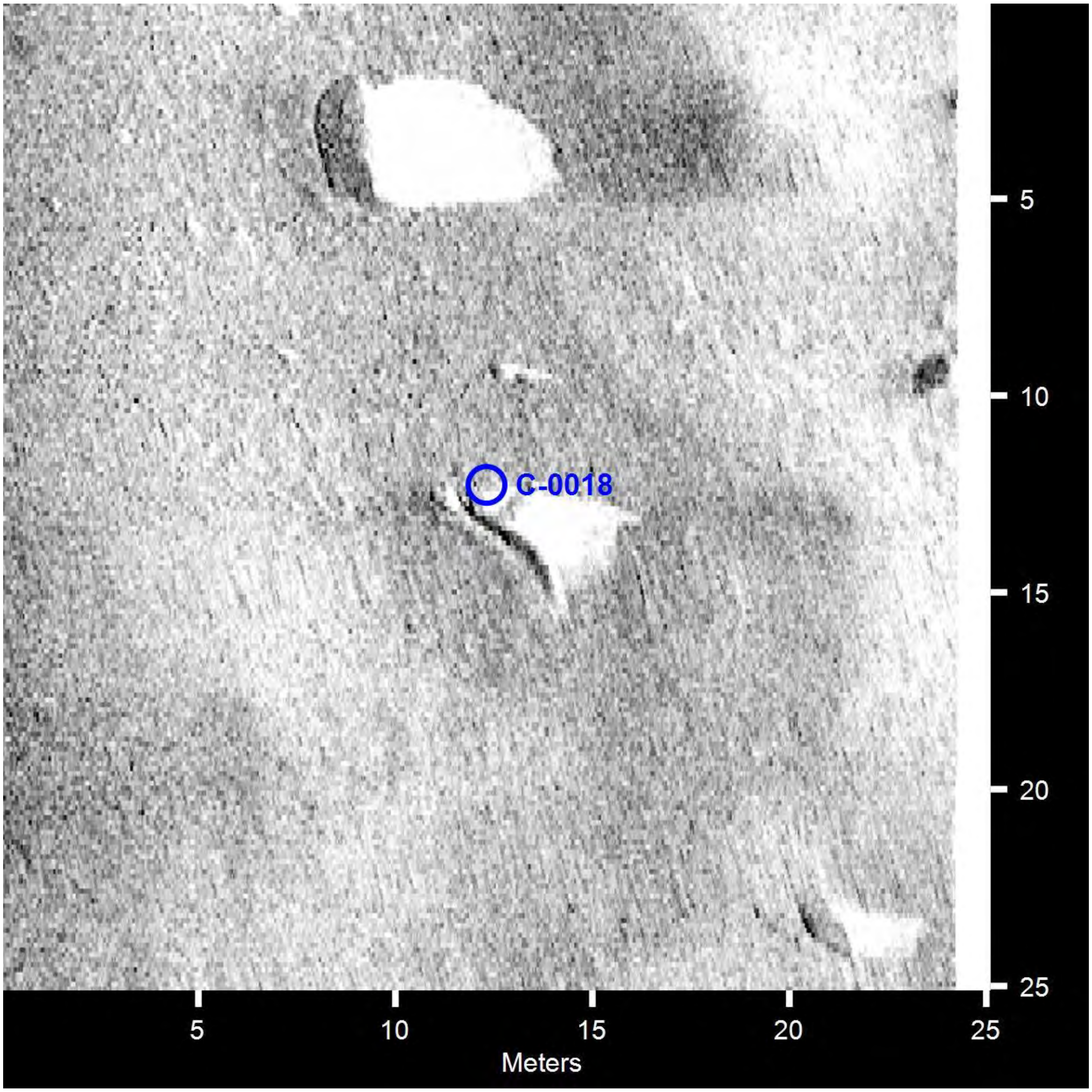
- Click Position
  41.5098730742 -70.6083324460 (WGS84)
  (X) 365782.33 (Y) 4596608.98 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210831190906H.xtf

Dimensions and attributes

- Target Width: 1.3 Meters
- Target Height: 1.6 Meters
- Target Length: 3.5 Meters
- Target Shadow: 4.6 Meters
- Classification1: **Boulder**
- Description:



C-0017	Dimensions and attributes
● Click Position 41.5098494081 -70.6080857562 (WGS84) (X) 365802.87 (Y) 4596605.97 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210831190906H.xtf	● Target Width: 3.2 Meters ● Target Height: 2.5 Meters ● Target Length: 6.8 Meters ● Target Shadow: 2.8 Meters ● Classification1: **Boulder** ● Description:

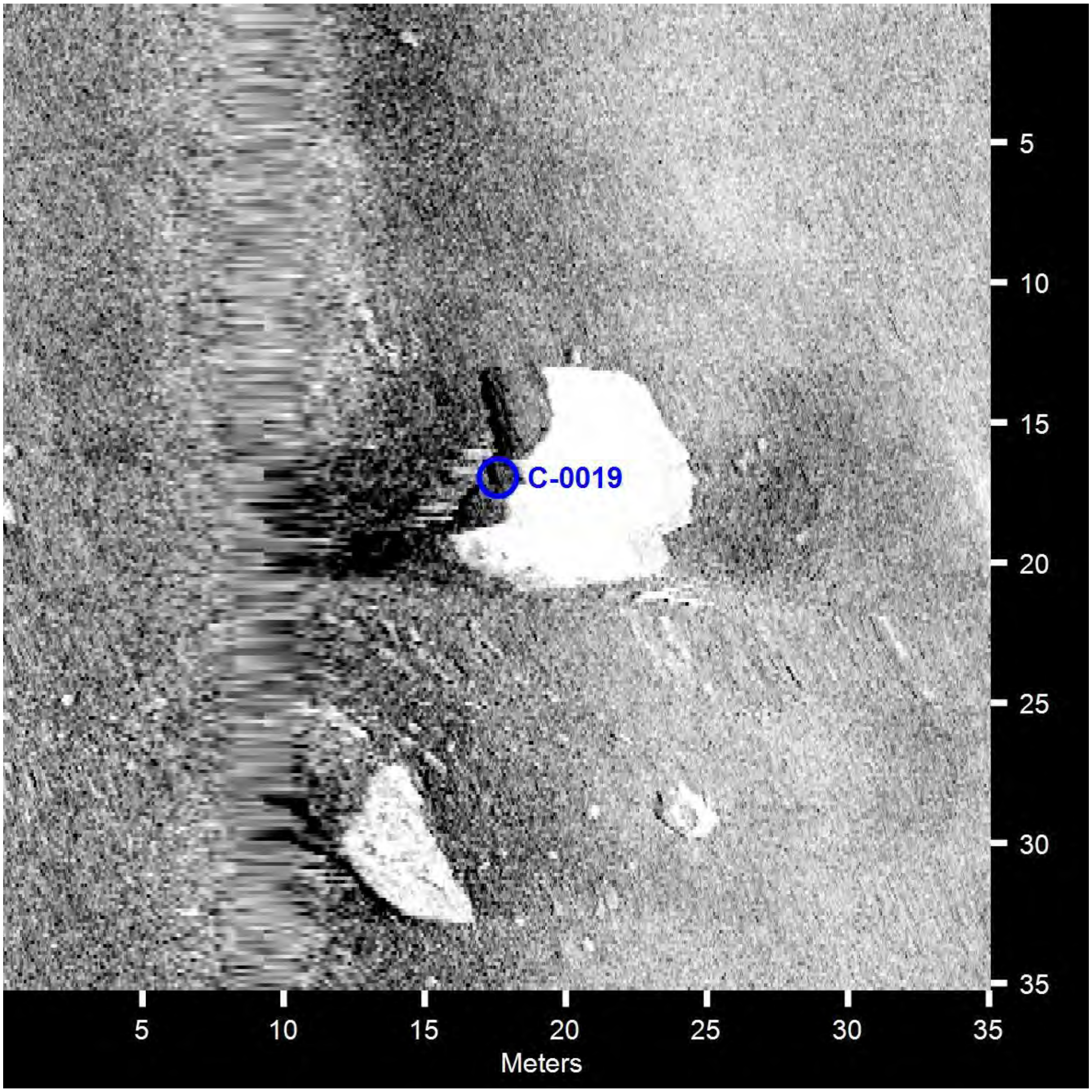


C-0018

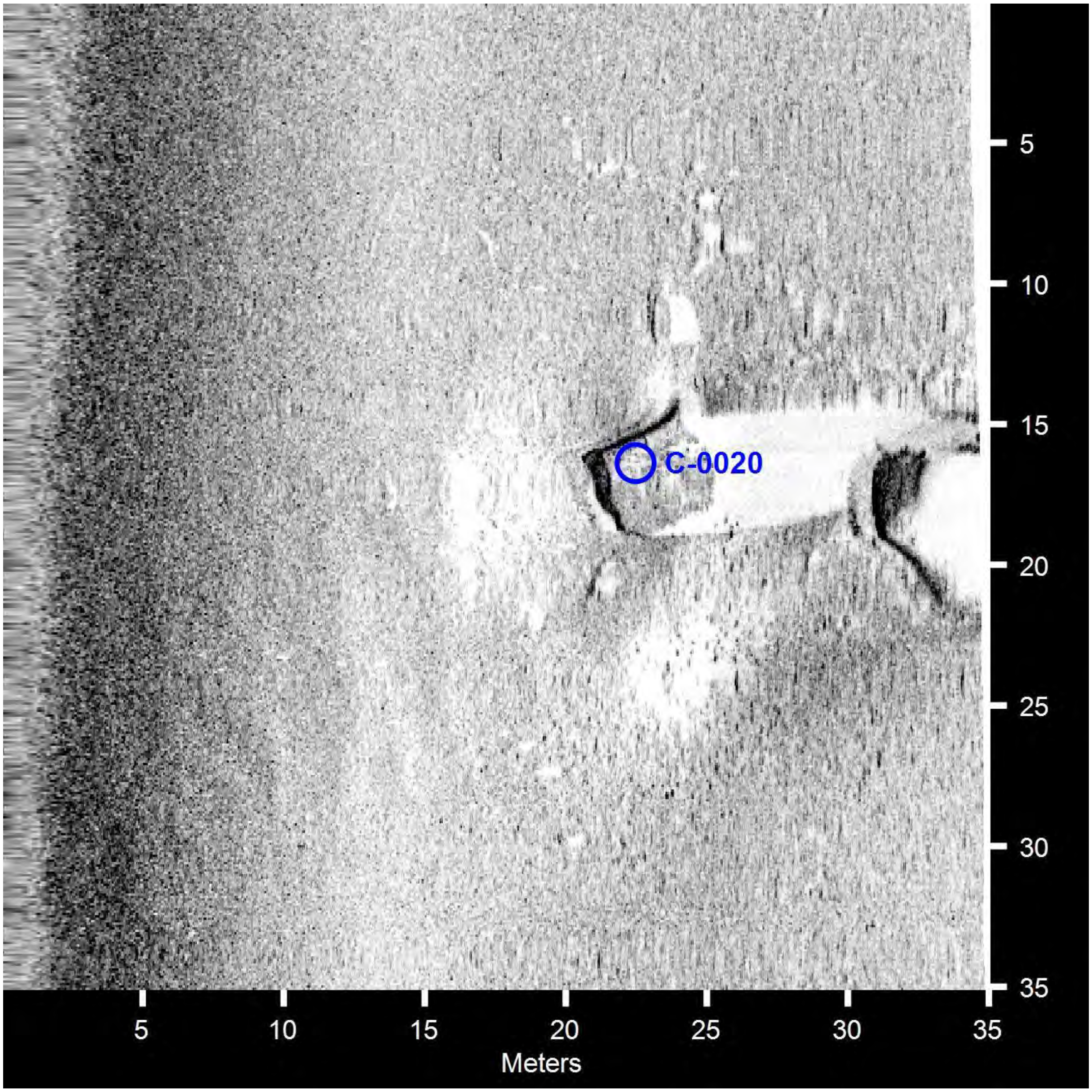
- Click Position
  41.5097889072 -70.6082771961 (WGS84)
  (X) 365786.77 (Y) 4596599.55 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210831190906H.xtf

Dimensions and attributes

- Target Width: 1.1 Meters
- Target Height: 1.0 Meters
- Target Length: 4.0 Meters
- Target Shadow: 3.4 Meters
- Classification1**: Boulder or debris**
- Description:



C-0019	**Dimensions and attributes**
● Click Position 41.5097289719 -70.6094296312 (WGS84) (X) 365690.47 (Y) 4596594.69 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210825143650H.xtf	● Target Width: 2.2 Meters ● Target Height: 5.2 Meters ● Target Length: 8.0 Meters ● Target Shadow: 6.1 Meters ● Classification1**: Boulder** ● Description:

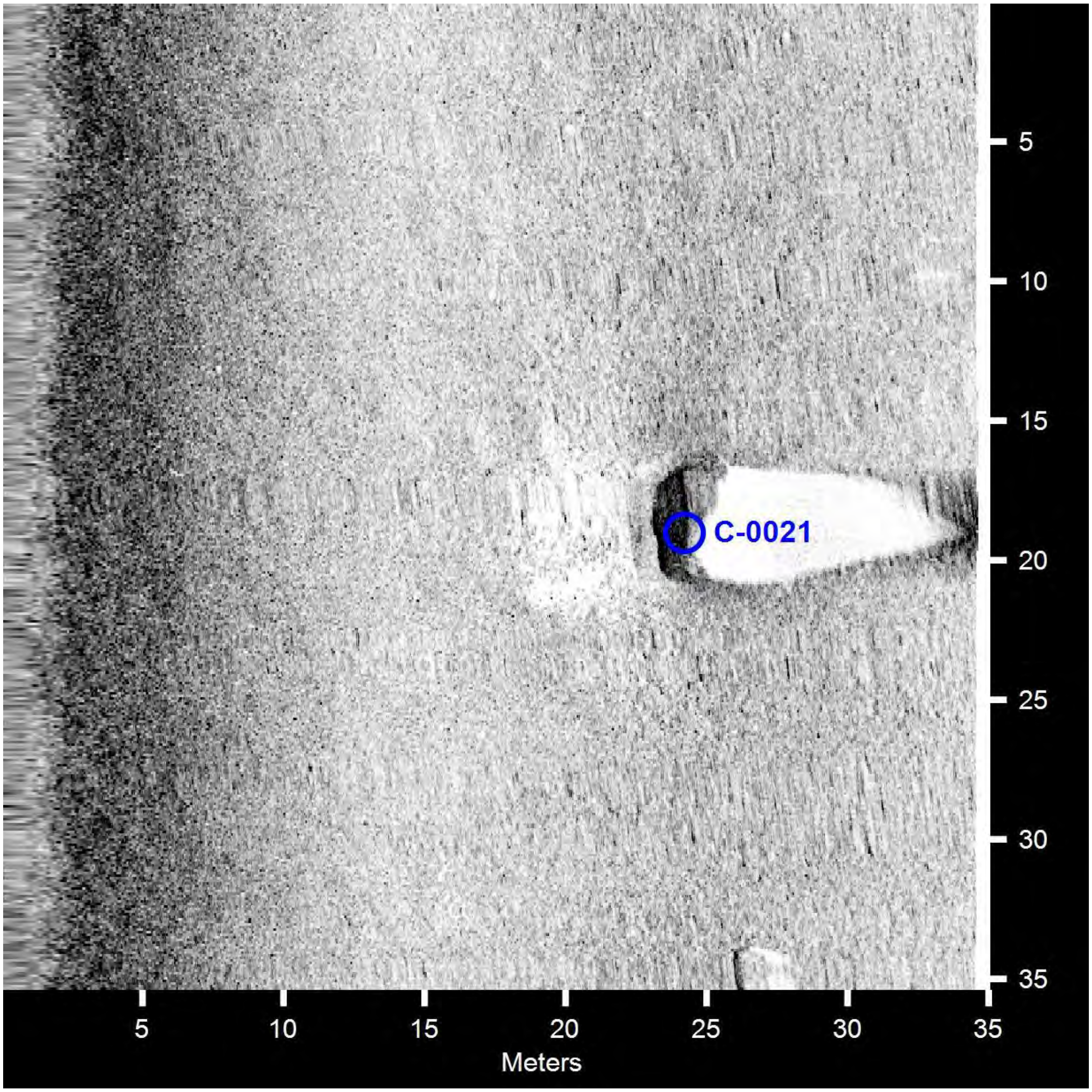


C-0020

- Click Position
  41.5095040664 -70.6099175484 (WGS84)
  (X) 365649.28 (Y) 4596570.47 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210831163900H.xtf

Dimensions and attributes

- Target Width: 2.7 Meters
- Target Height: 1.4 Meters
- Target Length: 3.7 Meters
- Target Shadow: 8.0 Meters
- Classification1: **Boulder**
- Description:

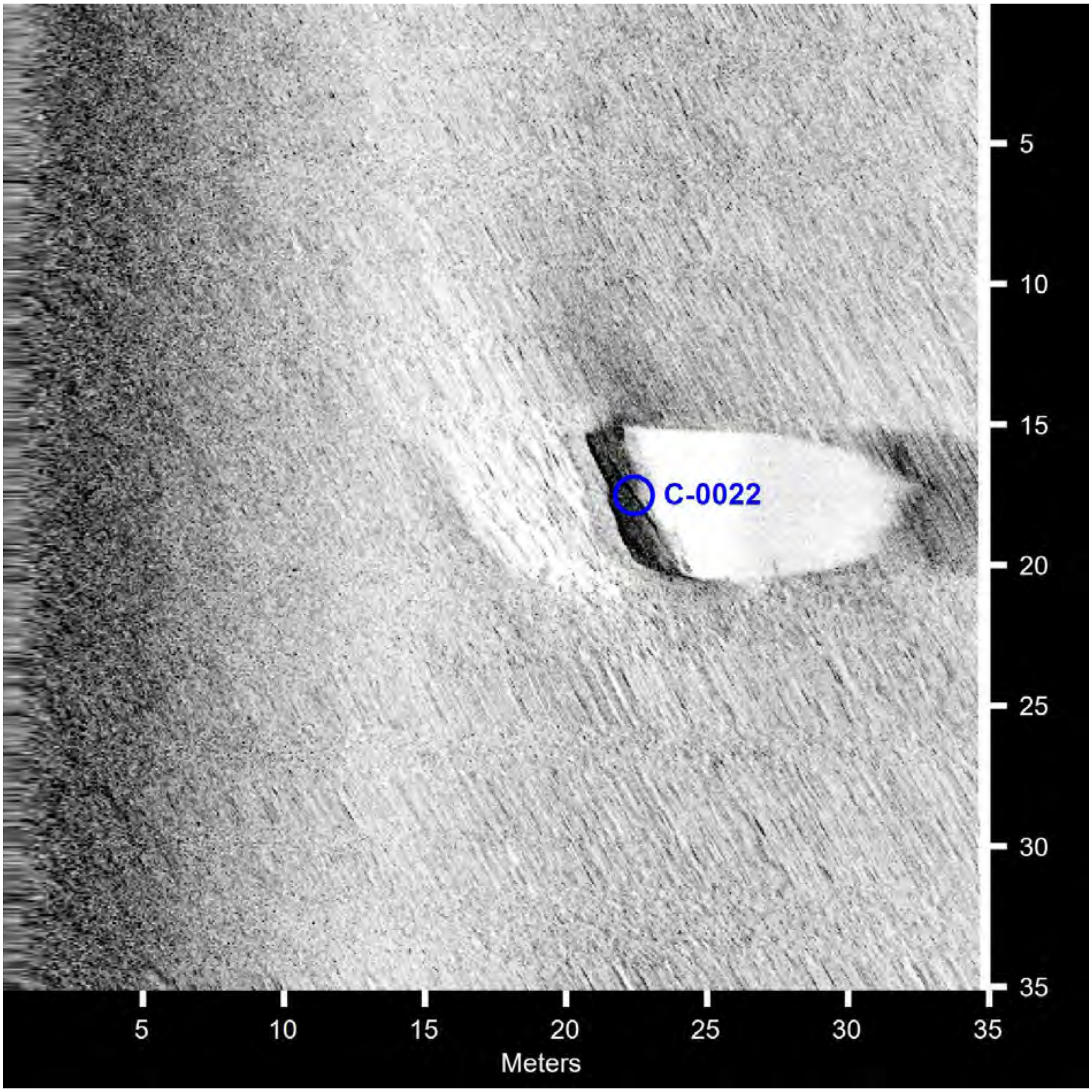


C-0021

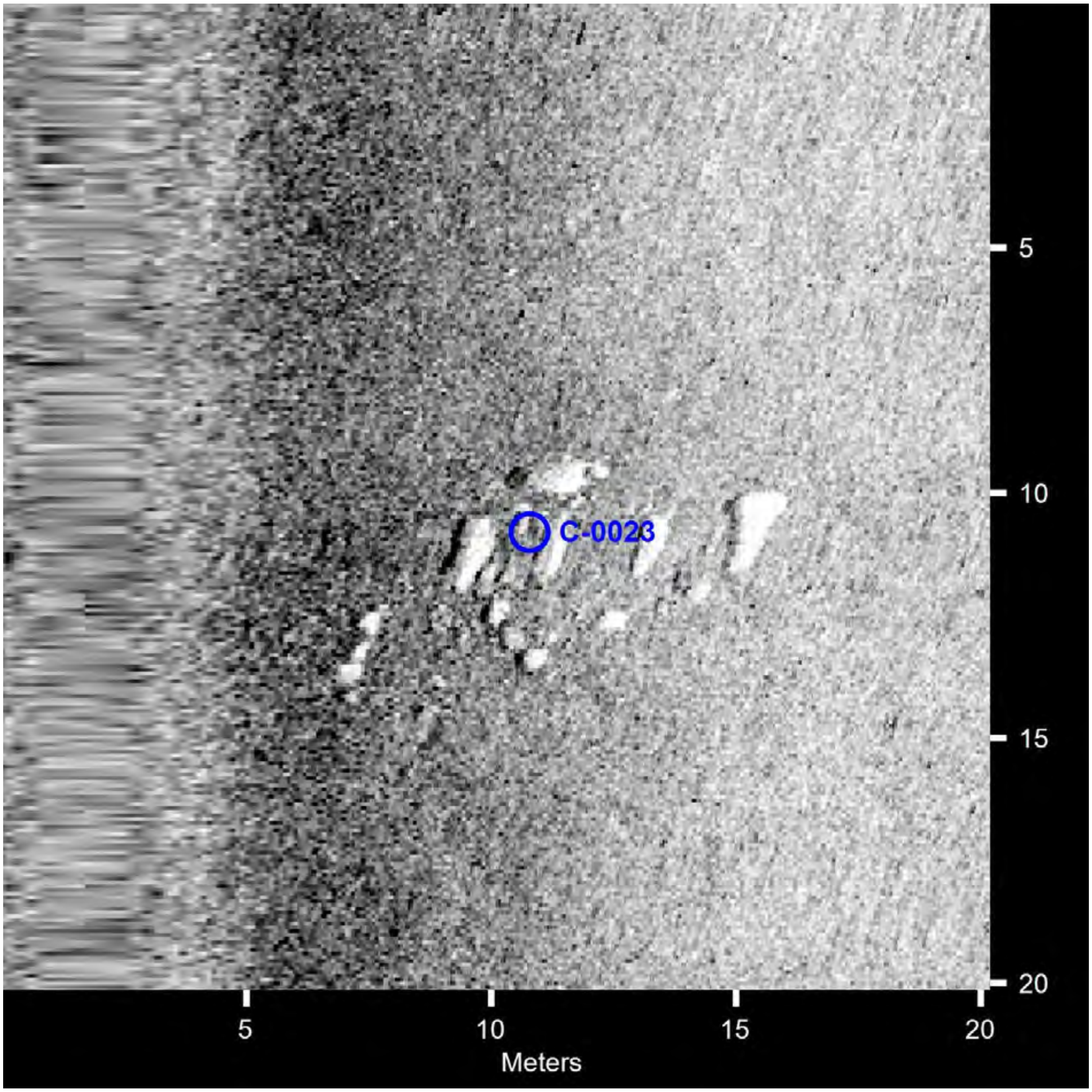
- Click Position
  41.5088630921 -70.6088308050 (WGS84)
  (X) 365738.65 (Y) 4596497.62 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210823172732H.xtf

Dimensions and attributes

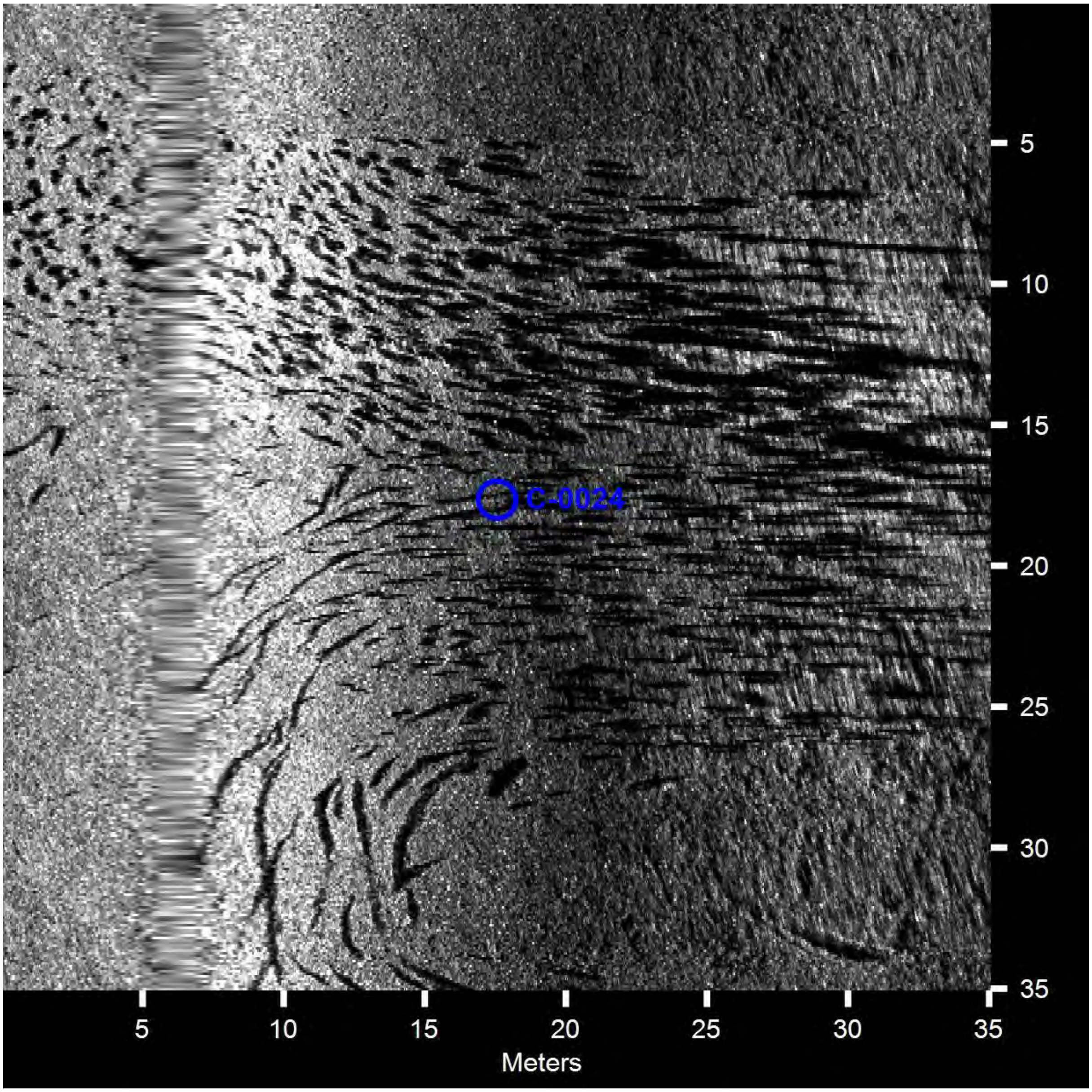
- Target Width: 3.0 Meters
- Target Height: 1.6 Meters
- Target Length: 5.7 Meters
- Target Shadow: 9.1 Meters
- Classification1: **Boulder**
- Description:



C-0022	Dimensions and attributes
● Click Position 41.5088180891 -70.6086501676 (WGS84) (X) 365753.64 (Y) 4596492.34 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210823185032H.xtf	● Target Width: 2.8 Meters ● Target Height: 1.6 Meters ● Target Length: 5.5 Meters ● Target Shadow: 9.2 Meters ● Classification1: **Boulder** ● Description:



C-0023	Dimensions and attributes
● Click Position 41.5083013009 -70.6061721485 (WGS84) (X) 365959.37 (Y) 4596431.12 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210831200614H.xtf	● Target Width: 9.7 Meters ● Target Height: 1.1 Meters ● Target Length: 5.2 Meters ● Target Shadow: 1.3 Meters ● Classification1: **Boulder field** ● Description: Anomalous cluster of rocks

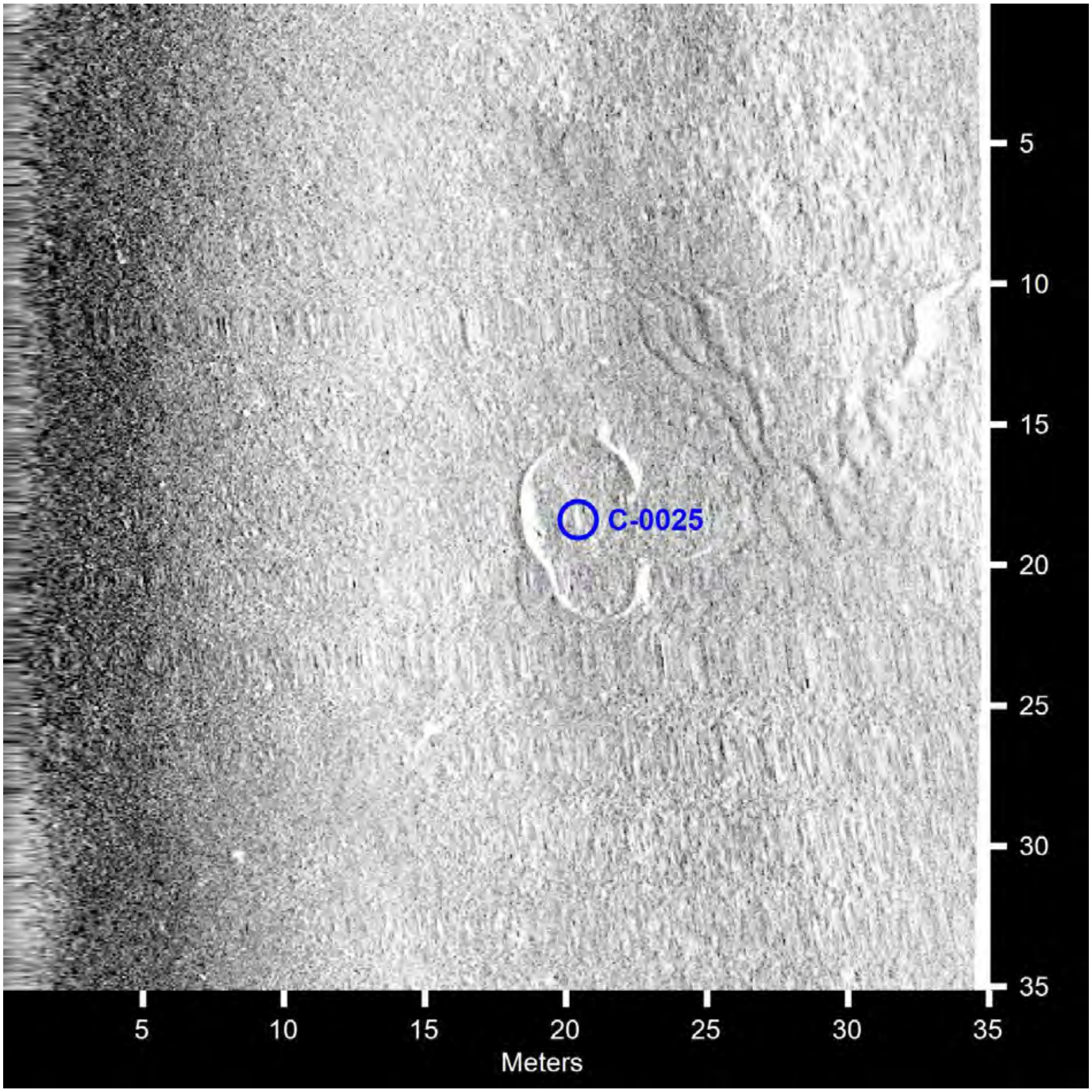


C-0024

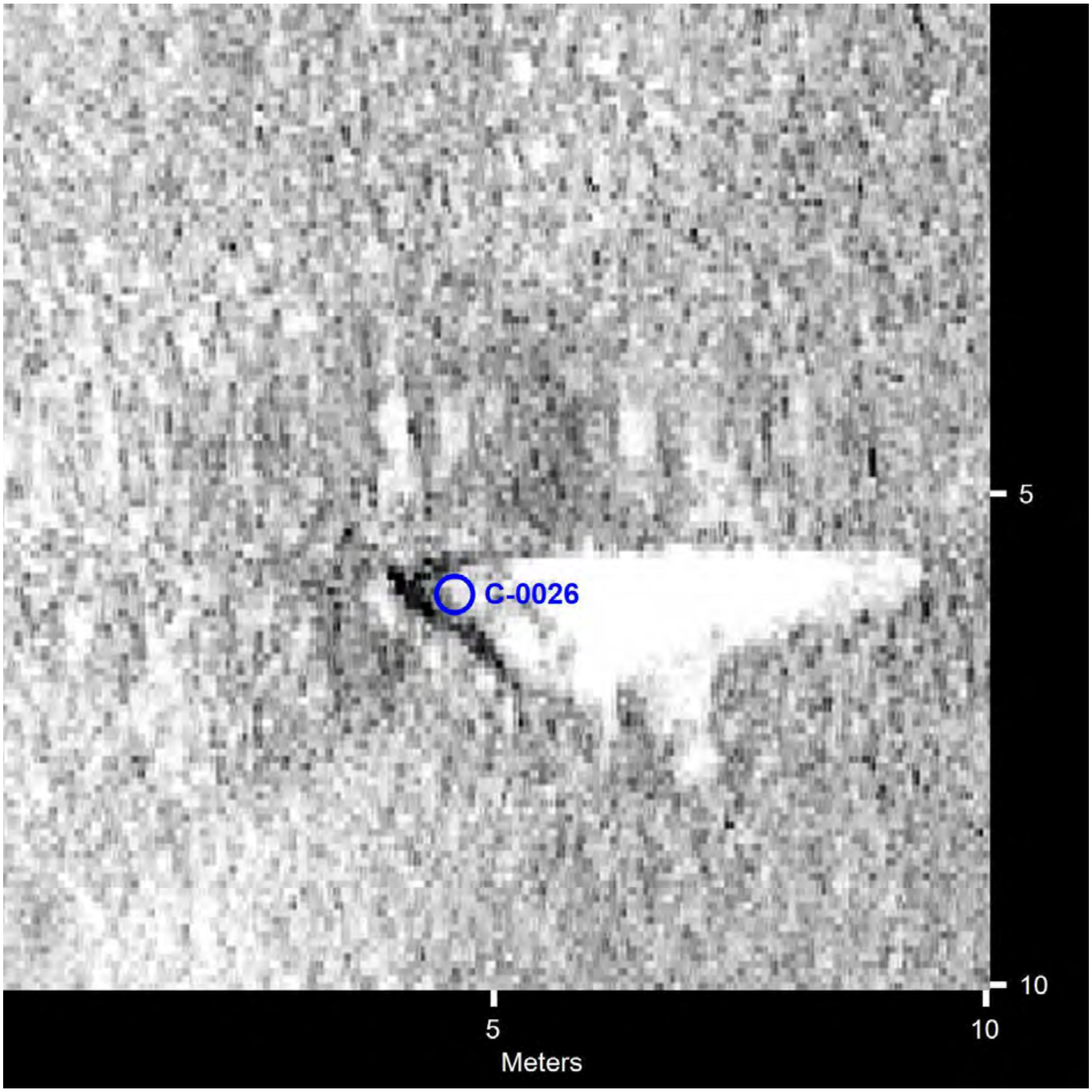
- Click Position
  41.4992888126 -70.5983853310 (WGS84)
  (X) 366590.73 (Y) 4595418.47 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210831144539H.xtf

Dimensions and attributes

- Target Width: 0.0 Meters
- Target Height: 0.0 Meters
- Target Length: 0.0 Meters
- Target Shadow: 0.0 Meters
- Classification1: **Fish shoal (typical**) Likely False albacore
- Description: Inverted image



C-0025	**Dimensions and attributes**
● Click Position 41.4970761789 -70.5925056244 (WGS84) (X) 367076.97 (Y) 4595163.75 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210831170623H.xtf	● Target Width: 3.6 Meters ● Target Height: 0.2 Meters ● Target Length: 5.1 Meters ● Target Shadow: 0.8 Meters ● Classification1: **Sand** ● Description: **Anomalous sand formation. Possible buried object**.

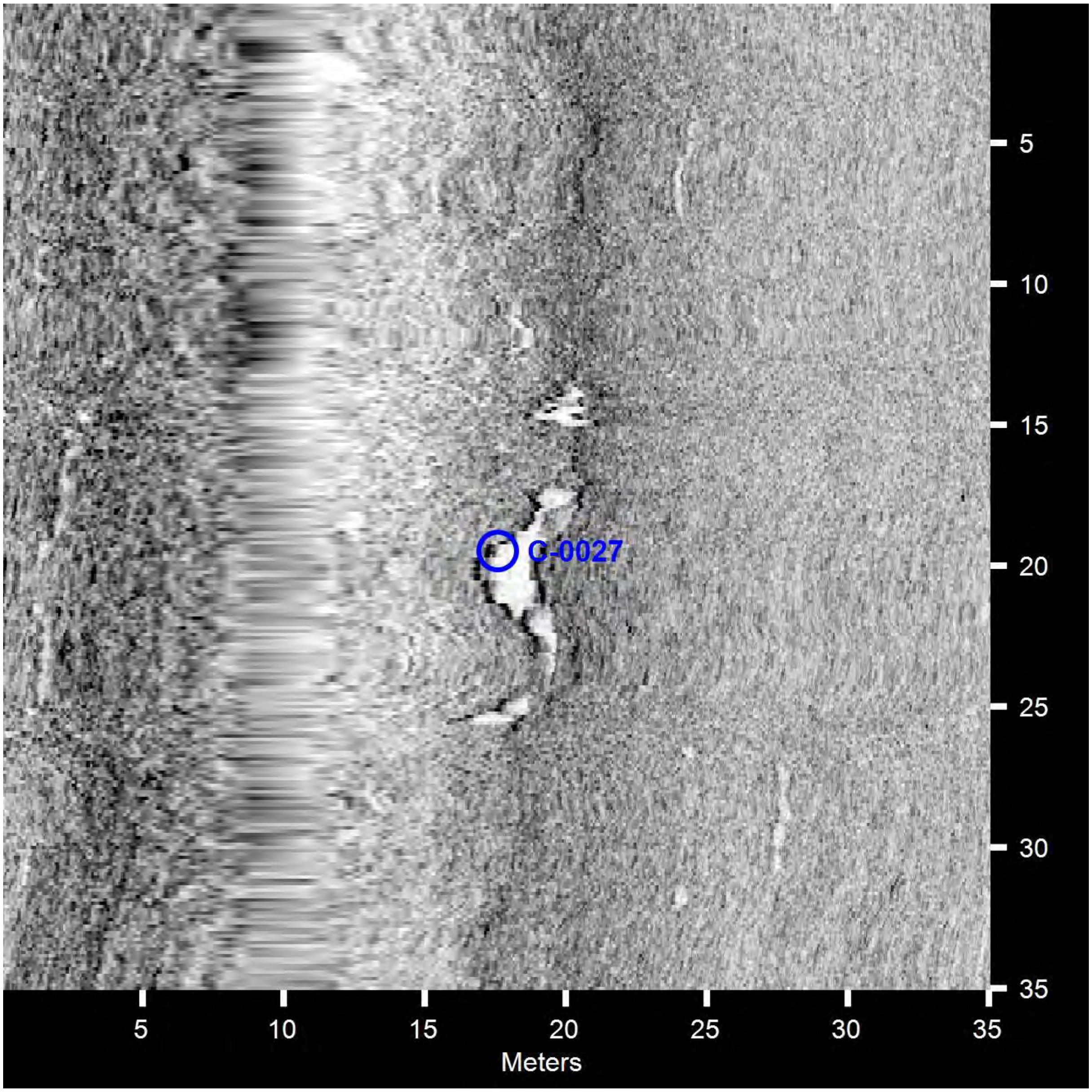


C-0026

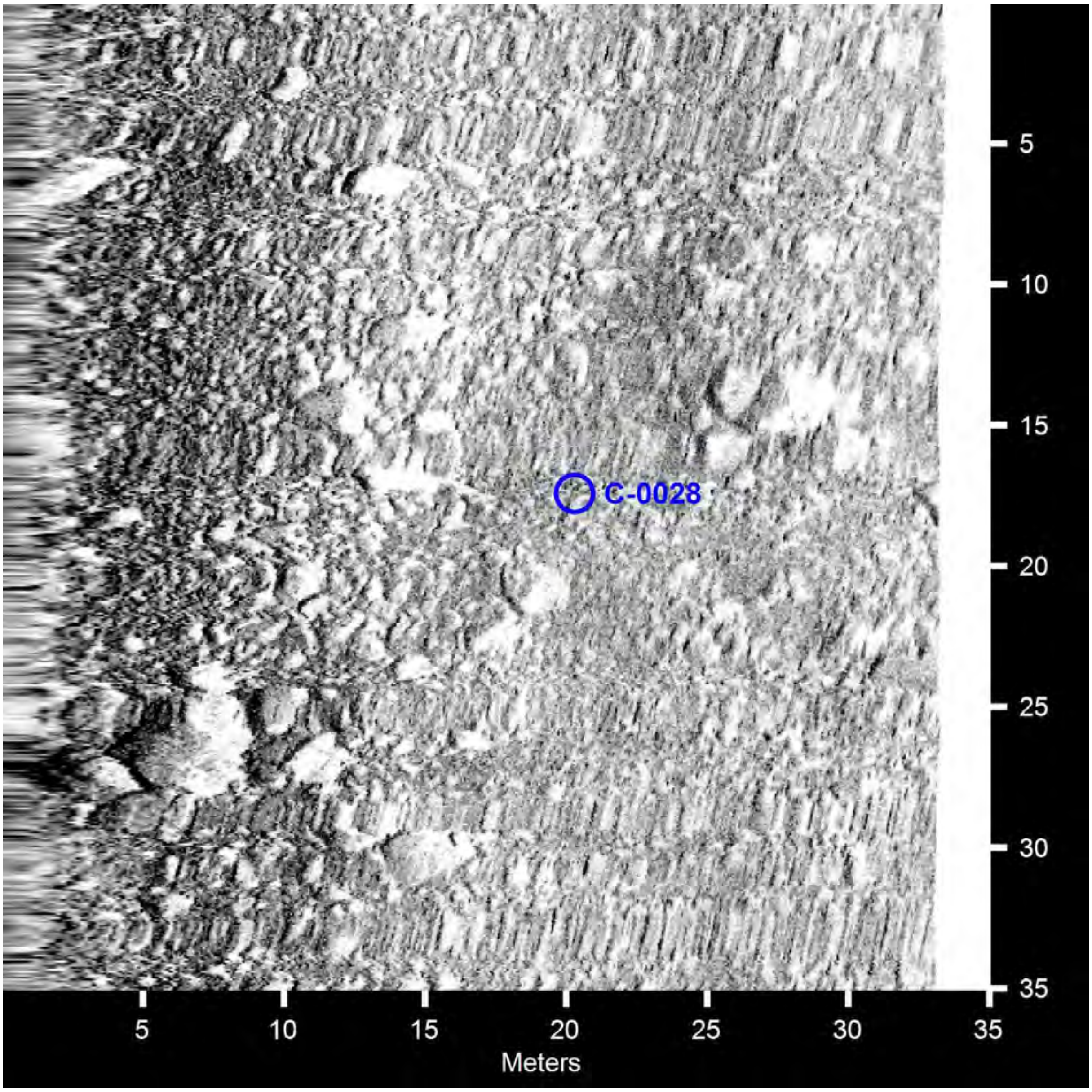
- Click Position
  41.4966533297 -70.5943280316 (WGS84)
  (X) 366923.99 (Y) 4595119.61 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210823172732H.xtf

Dimensions and attributes

- Target Width: 1.0 Meters
- Target Height: 1.2 Meters
- Target Length: 1.3 Meters
- Target Shadow: 3.5 Meters
- Classification1: Fishing gear
- Description: **Likely conch trap**



C-0027	Dimensions and attributes
● Click Position 41.4963296647 -70.5914420811 (WGS84) (X) 367164.22 (Y) 4595079.24 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210820171530H.xtf	● Target Width: 1.9 Meters ● Target Height: 0.0 Meters ● Target Length: 6.2 Meters ● Target Shadow: 0.0 Meters ● Classification1: **Debris** ● Description:

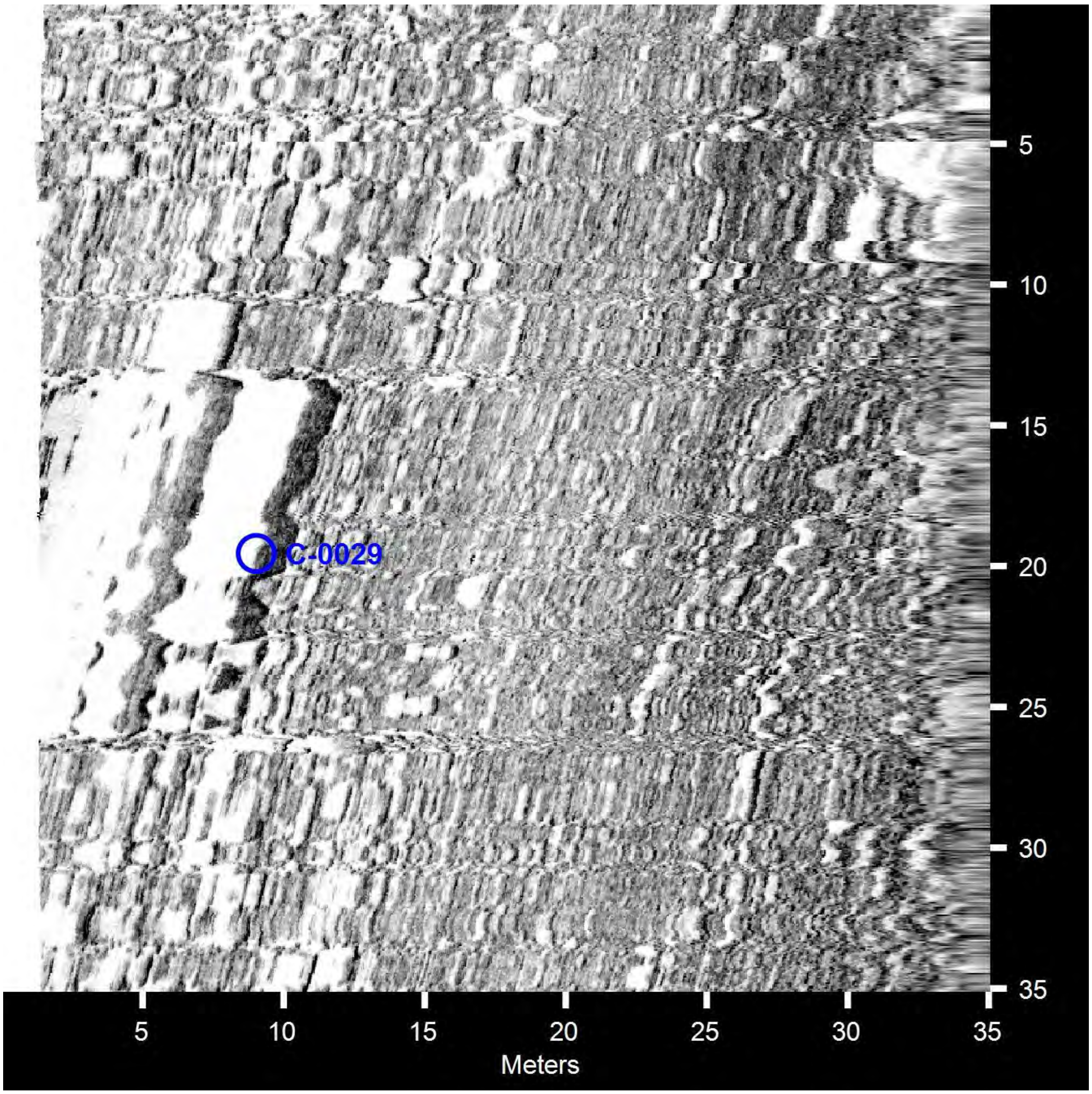


C-0028

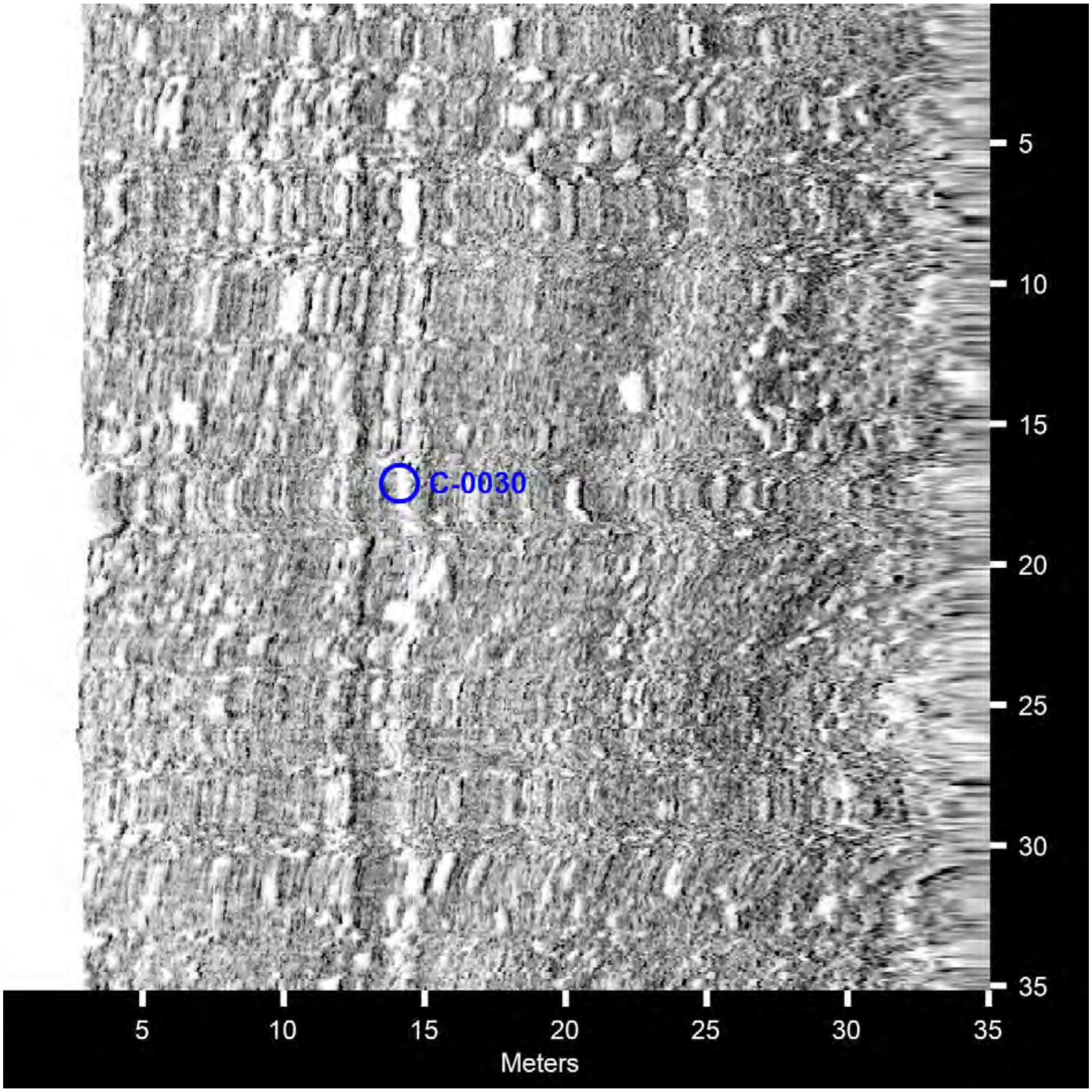
- Click Position
  41.4926324776 -70.5866721371 (WGS84)
  (X) 367554.84 (Y) 4594661.44 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210820154415H.xtf

Dimensions and attributes

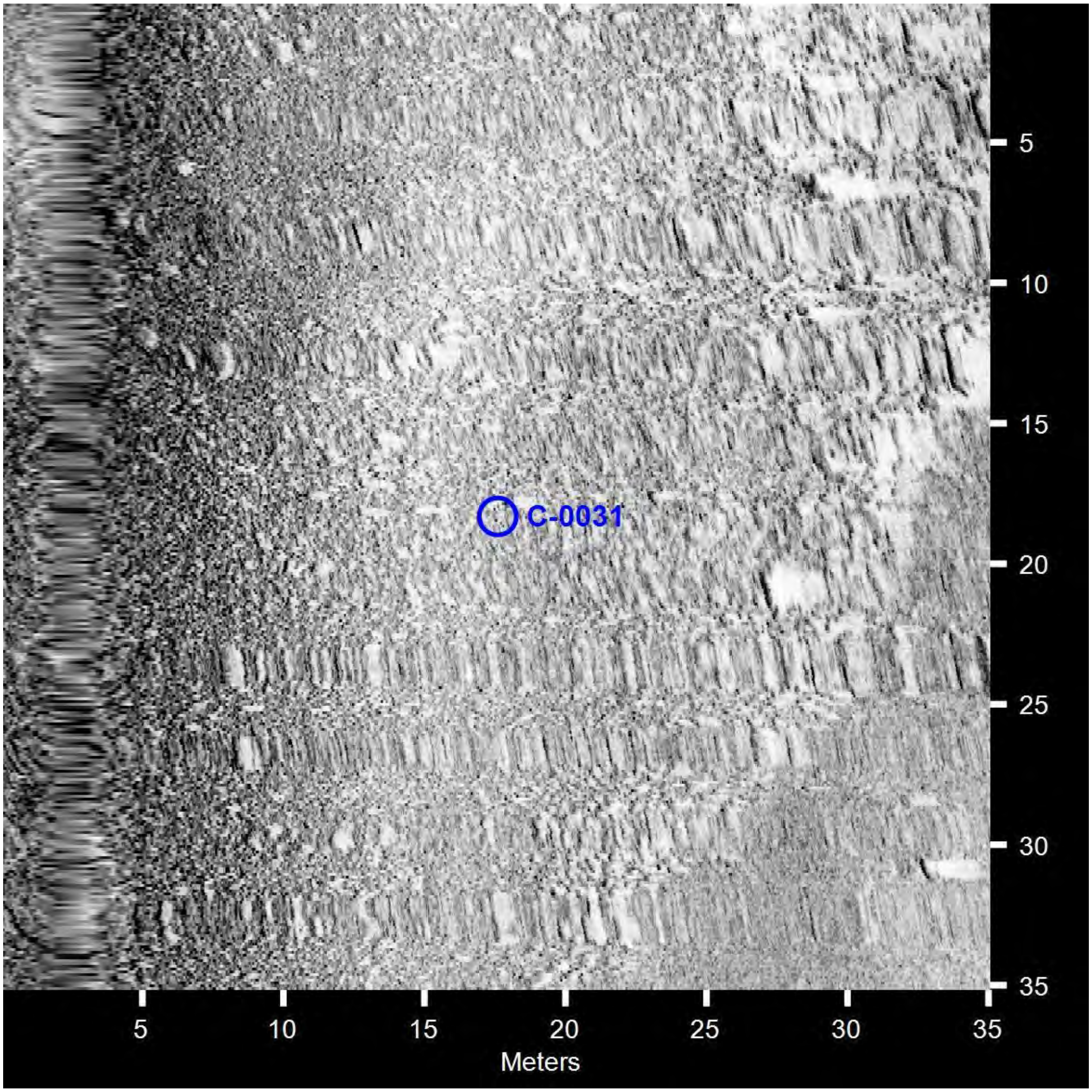
- Target Width: 1.6 Meters
- Target Height: 1.1 Meters
- Target Length: 2.3 Meters
- Target Shadow: 2.3 Meters
- Classification1: **Boulder Field**
- Description: **Measurements for typical boulder**



C-0029	Dimensions and attributes
● Click Position 41.4924422269 -70.5862037121 (WGS84) (X) 367593.55 (Y) 4594639.60 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210820171530H.xtf	● Target Width: 3.1 Meters ● Target Height: 0.8 Meters ● Target Length: 7.2 Meters ● Target Shadow: 2.4 Meters ● Classification1: **Boulder or ledge** ● Description:



C-0030	Dimensions and attributes
● Click Position 41.4923911148 -70.5859864309 (WGS84) (X) 367611.59 (Y) 4594633.59 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210820162534H.xtf	● Target Width: 2.5 Meters ● Target Height: 0.0 Meters ● Target Length: 20.1 Meters ● Target Shadow: 0.0 Meters ● Classification1: **Trench** ● Description:

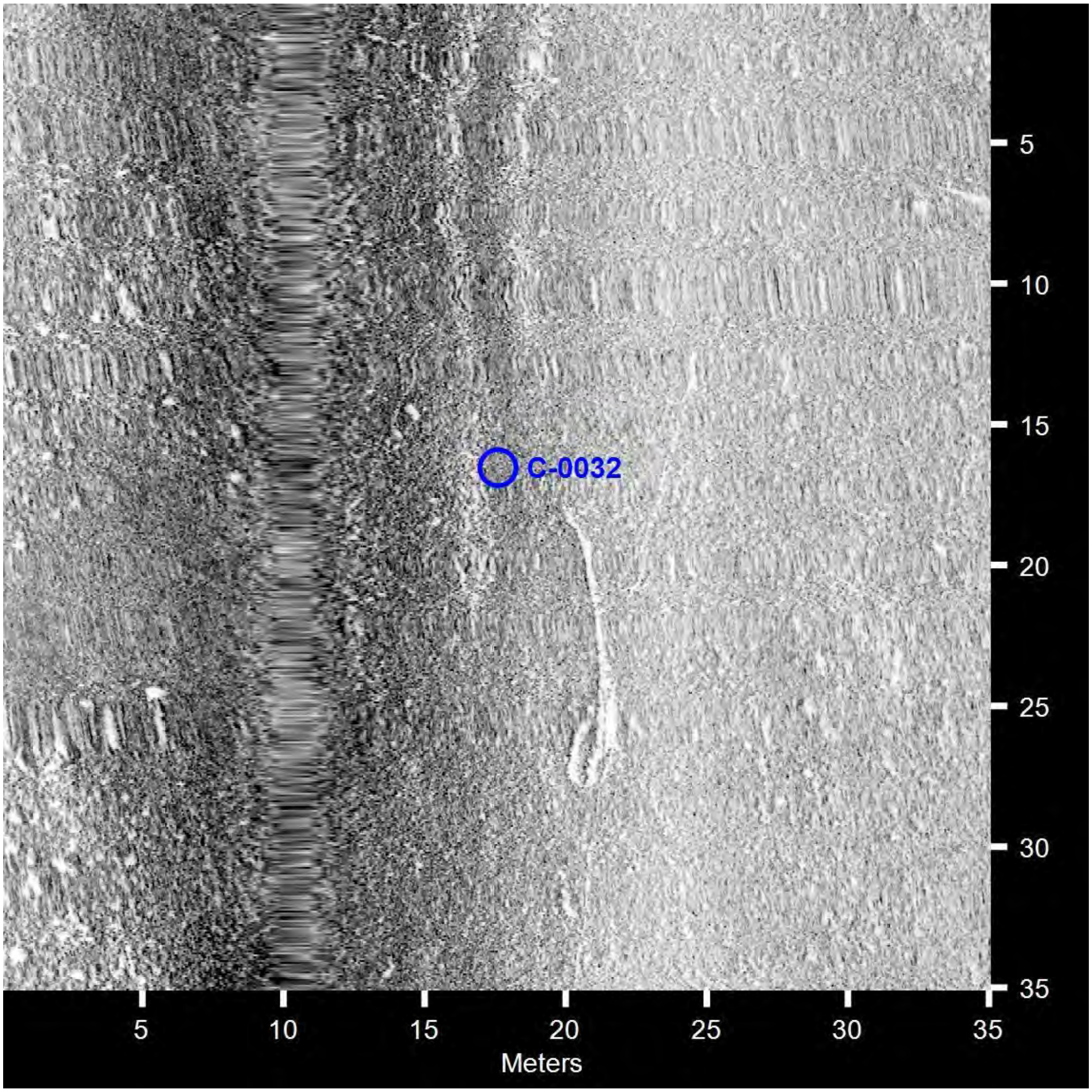


C-0031

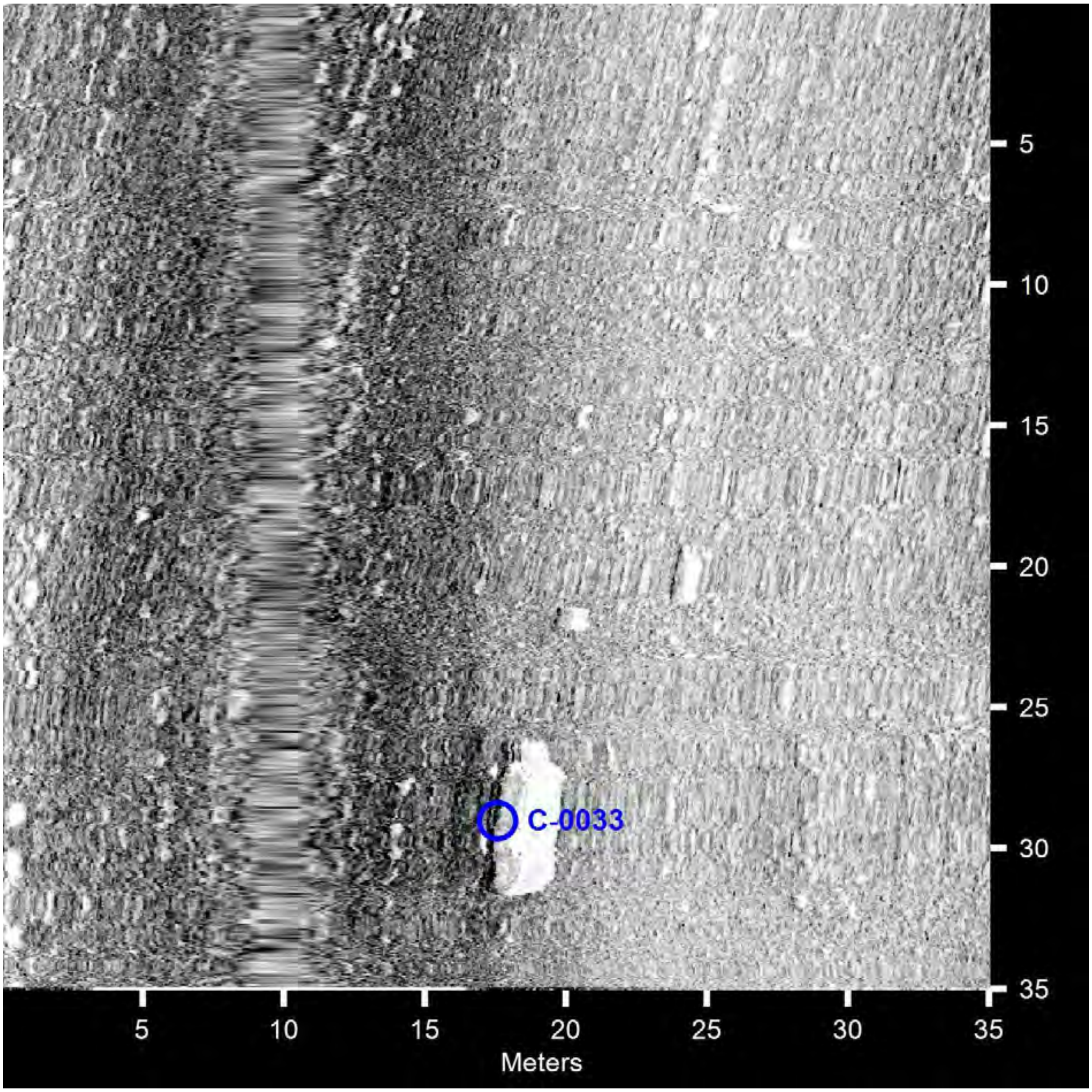
- Click Position
  41.4921524543 -70.5874889485 (WGS84)
  (X) 367485.68 (Y) 4594609.40 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210820152548H.xtf

Dimensions and attributes

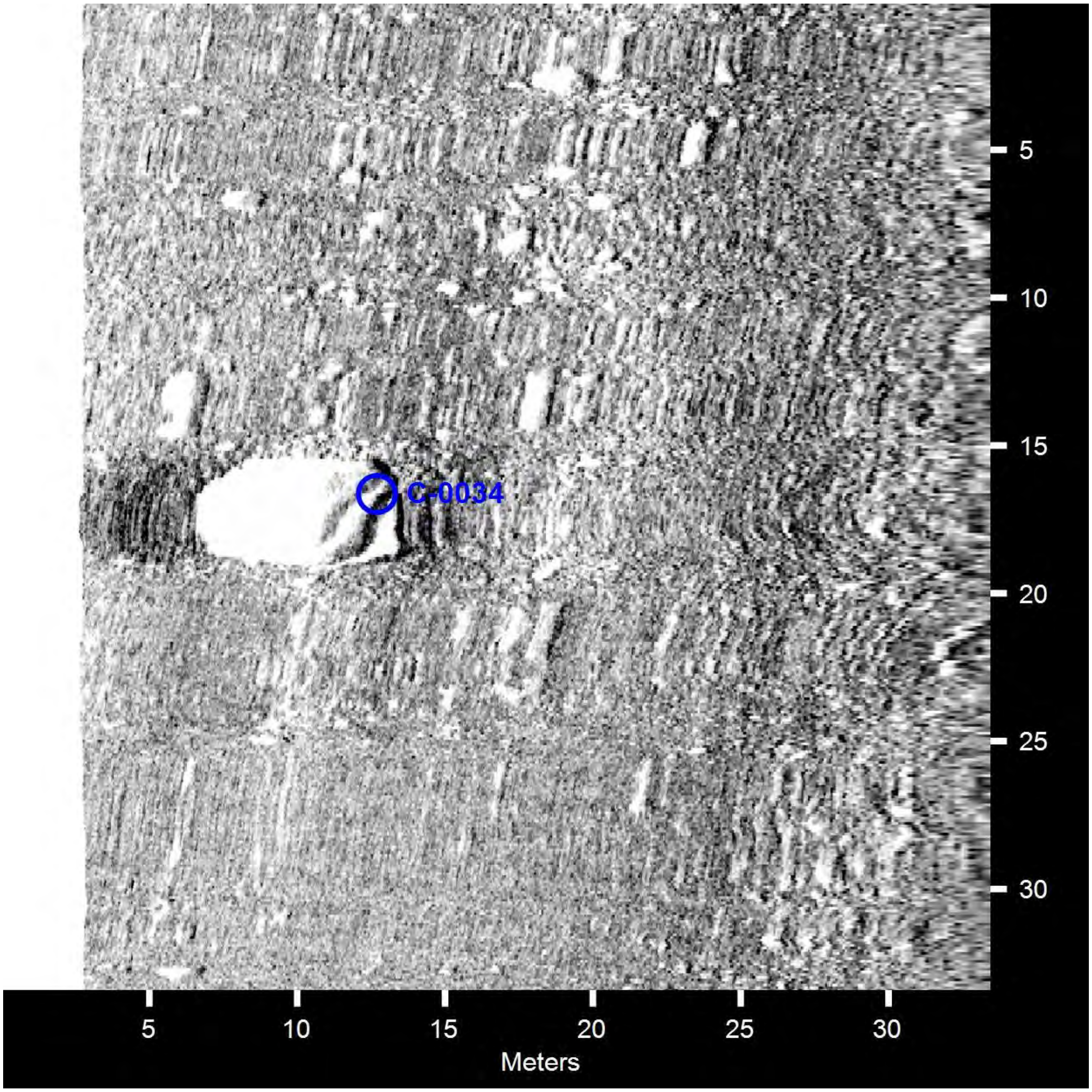
- Target Width: 0.0 Meters
- Target Height: 0.0 Meters
- Target Length: 0.0 Meters
- Target Shadow: 0.0 Meters
- Classification1: **Boulder Field**
- Description: **Boulder Ridge**



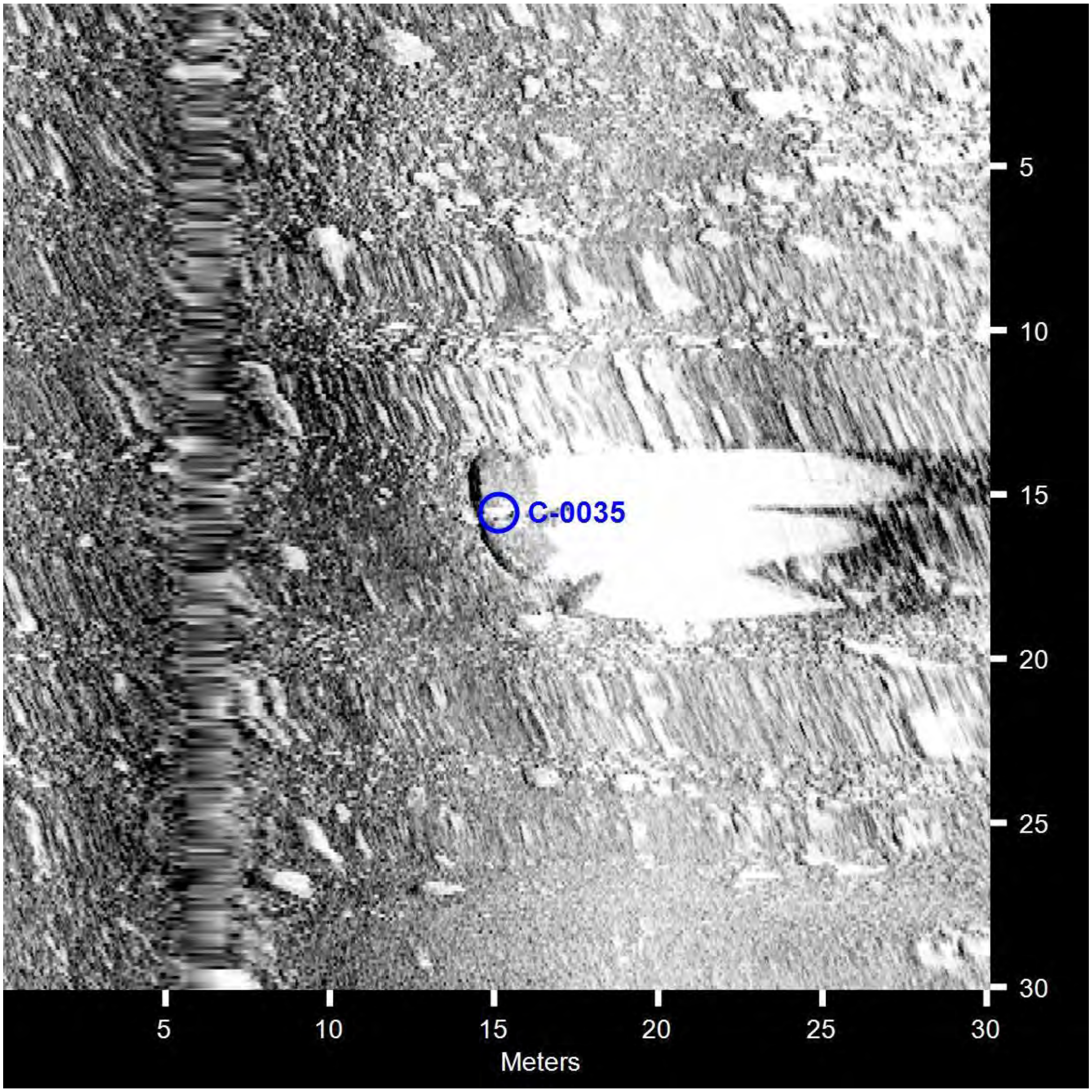
C-0032	Dimensions and attributes
● Click Position 41.4912037096 -70.5837658813 (WGS84) (X) 367794.54 (Y) 4594498.36 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210820144521H.xtf	● Target Width: 0.0 Meters ● Target Height: 0.0 Meters ● Target Length: 0.0 Meters ● Target Shadow: 0.0 Meters ● Classification1: **Trench with possible cable segment** ● Description:



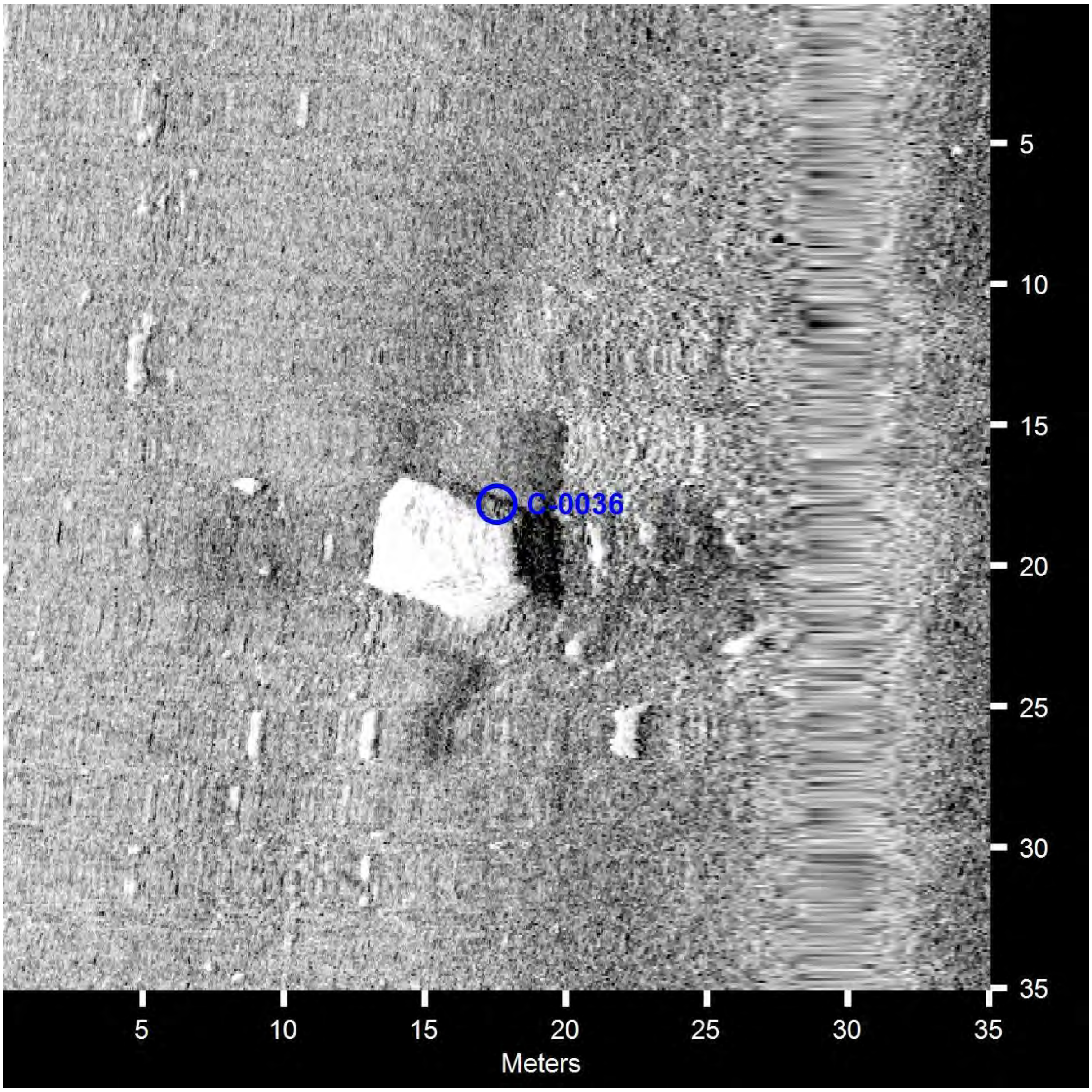
C-0033	Dimensions and attributes
● Click Position 41.4909839855 -70.5850891965 (WGS84) (X) 367683.62 (Y) 4594475.99 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210820171530H.xtf	● Target Width: 1.7 Meters ● Target Height: 1.3 Meters ● Target Length: 3.0 Meters ● Target Shadow: 1.7 Meters ● Classification1: **Boulder** ● Description:



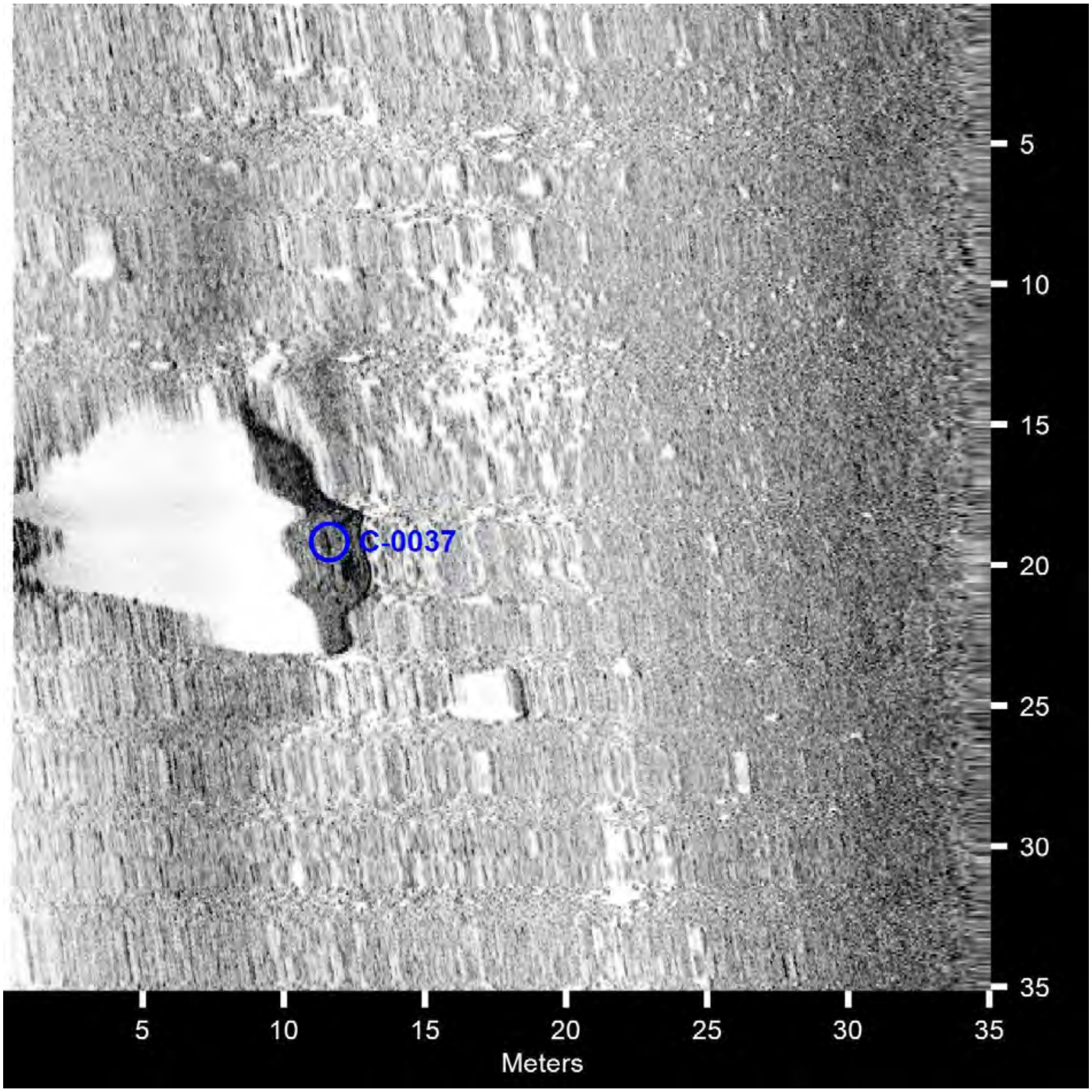
C-0034	Dimensions and attributes
● Click Position 41.4900791619 -70.5875808398 (WGS84) (X) 367473.78 (Y) 4594379.35 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210823160139H.xtf	● Target Width: 2.6 Meters ● Target Height: 2.5 Meters ● Target Length: 3.2 Meters ● Target Shadow: 4.9 Meters ● Classification1: **Boulder or debris** ● Description:



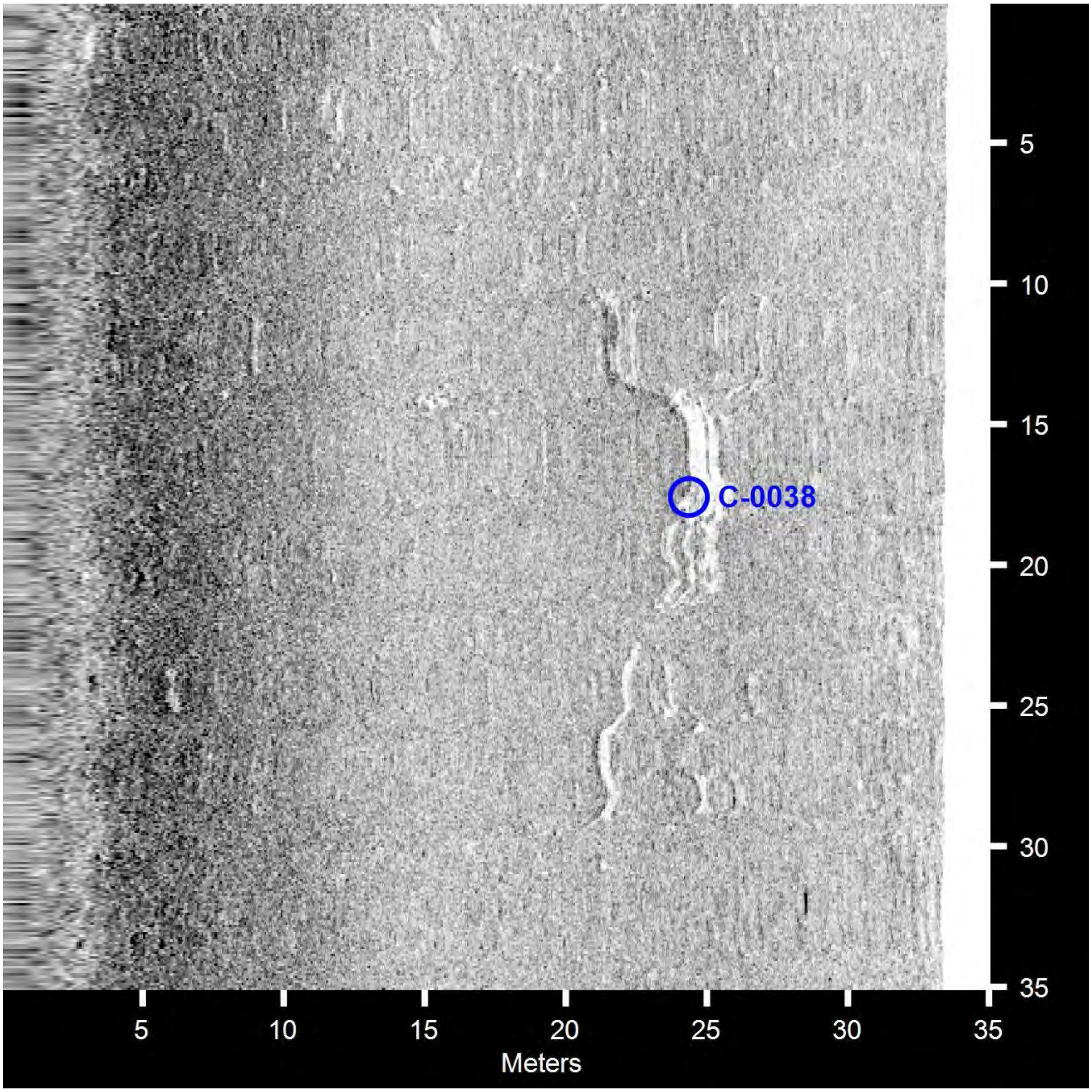
C-0035	Dimensions and attributes
● Click Position 41.4900723813 -70.5873429792 (WGS84) (X) 367493.62 (Y) 4594378.24 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210820181740H.xtf	● Target Width: 3.3 Meters ● Target Height: 2.4 Meters ● Target Length: 5.4 Meters ● Target Shadow: 9.3 Meters ● Classification1**: Boulder or debris** ● Description:



C-0036	Dimensions and attributes
● Click Position 41.4872811490 -70.5797578888 (WGS84) (X) 368121.16 (Y) 4594056.74 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210820154415H.xtf	● Target Width: 3.4 Meters ● Target Height: 3.8 Meters ● Target Length: 6.1 Meters ● Target Shadow: 5.2 Meters ● Classification1**: Boulder or debris** ● Description:



C-0037	Dimensions and attributes
● Click Position 41.4872400762 -70.5797998076 (WGS84) (X) 368117.58 (Y) 4594052.25 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210820144521H.xtf	● Target Width: 3.1 Meters ● Target Height: 1.5 Meters ● Target Length: 9.2 Meters ● Target Shadow: 10.0 Meters ● Classification1: **Boulder or debris** ● Description:

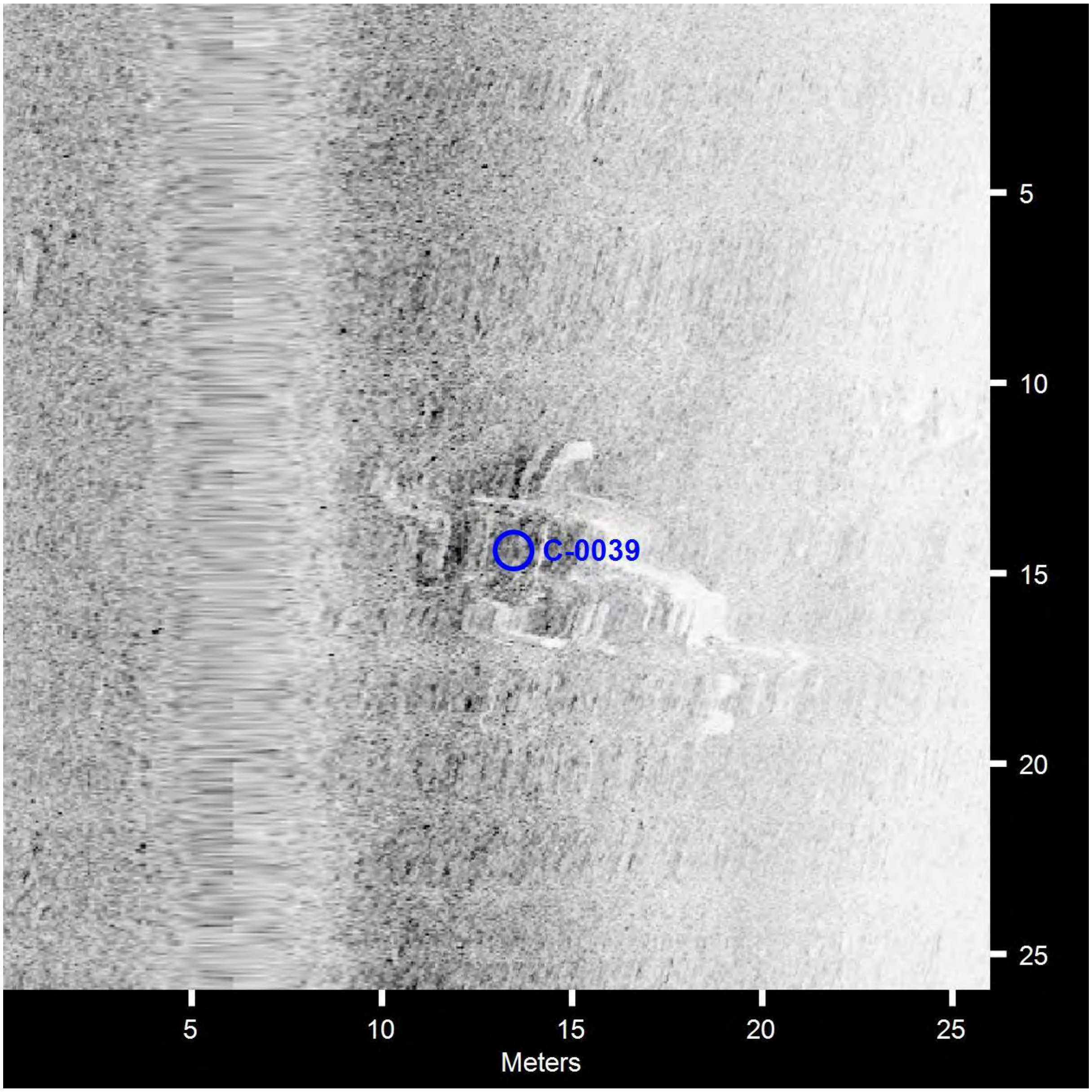


C-0038

- Click Position
  41.4870963519 -70.5811232381 (WGS84)
  (X) 368006.80 (Y) 4594038.31 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210823161907H.xtf

Dimensions and attributes

- Target Width: 0.3 Meters
- Target Height: 0.6 Meters
- Target Length: 17.4 Meters
- Target Shadow: 1.5 Meters
- Classification1: **Possible cable segment**
- Description:

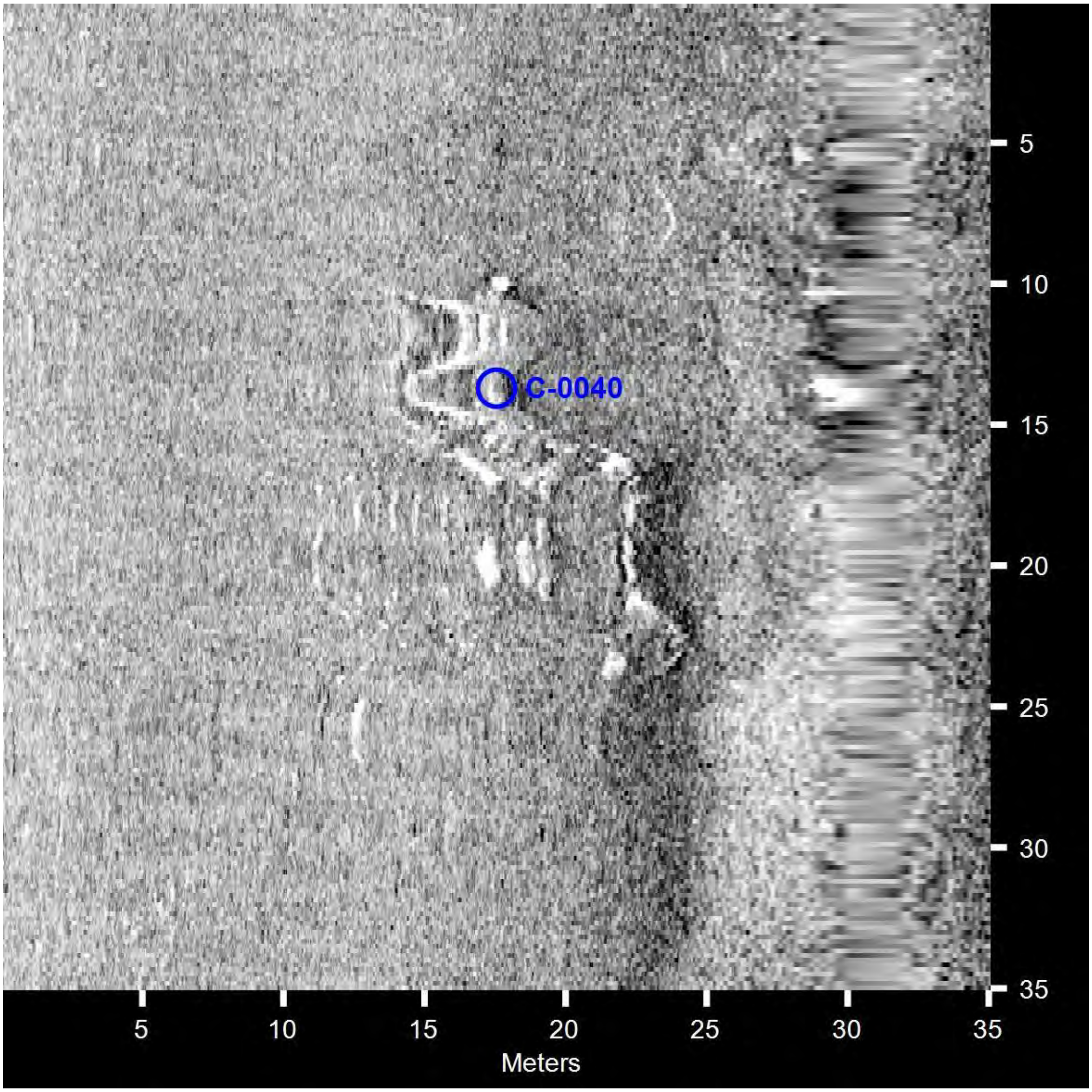


C-0039

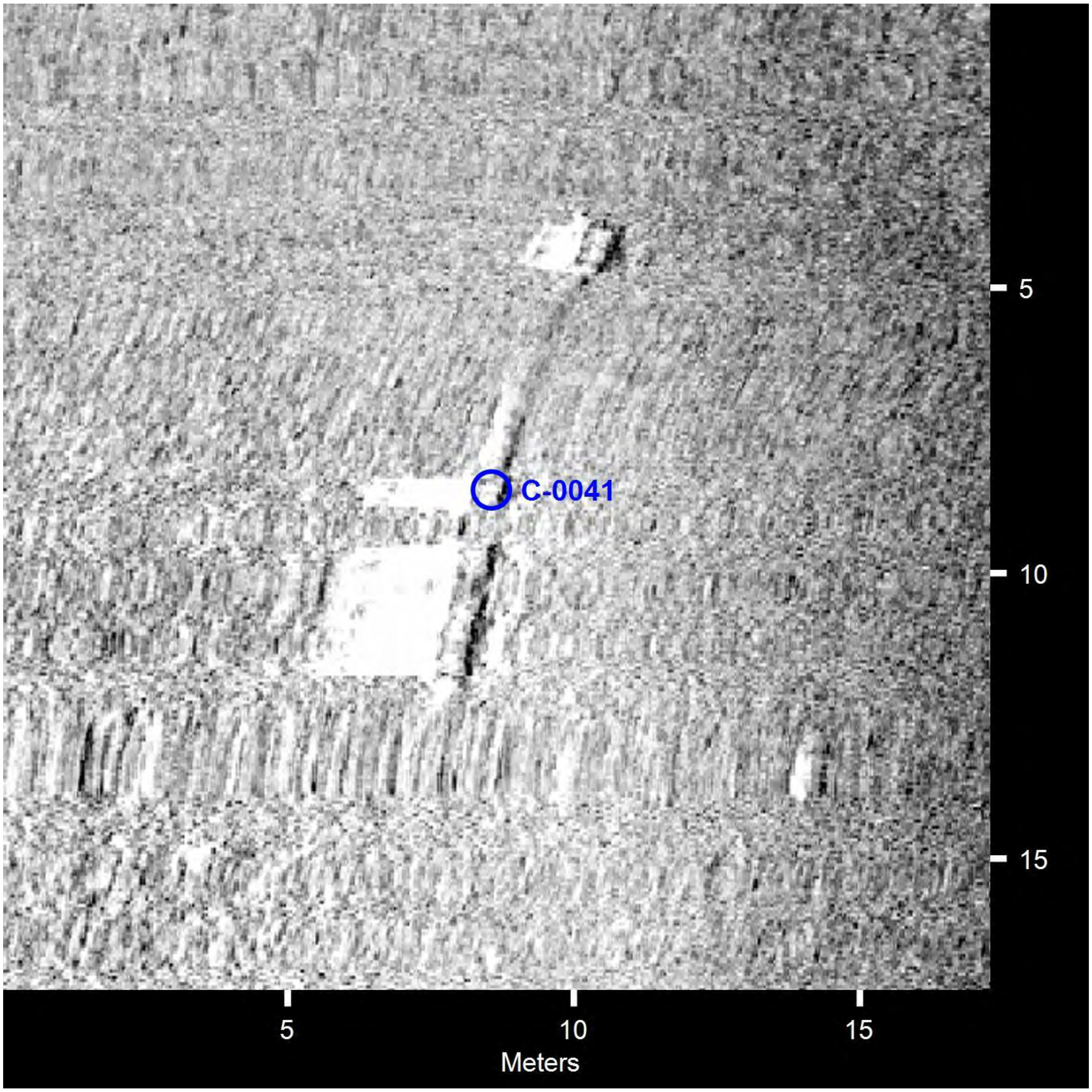
- Click Position
  41.4867884055 -70.5802290501 (WGS84)
  (X) 368080.82 (Y) 4594002.76 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210820191625H.xtf

Dimensions and attributes

- Target Width: 3.9 Meters
- Target Height: 1.6 Meters
- Target Length: 6.7 Meters
- Target Shadow: 1.9 Meters
- Classification1: Debris
- Description: **Possible debris field**



C-0040	Dimensions and attributes
● Click Position 41.4866767009 -70.5802348852 (WGS84) (X) 368080.11 (Y) 4593990.36 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210823165225H.xtf	● Target Width: 1.8 Meters ● Target Height: 0.2 Meters ● Target Length: 11.2 Meters ● Target Shadow: 0.3 Meters ● Classification1: **Possible cable segment** ● Description:

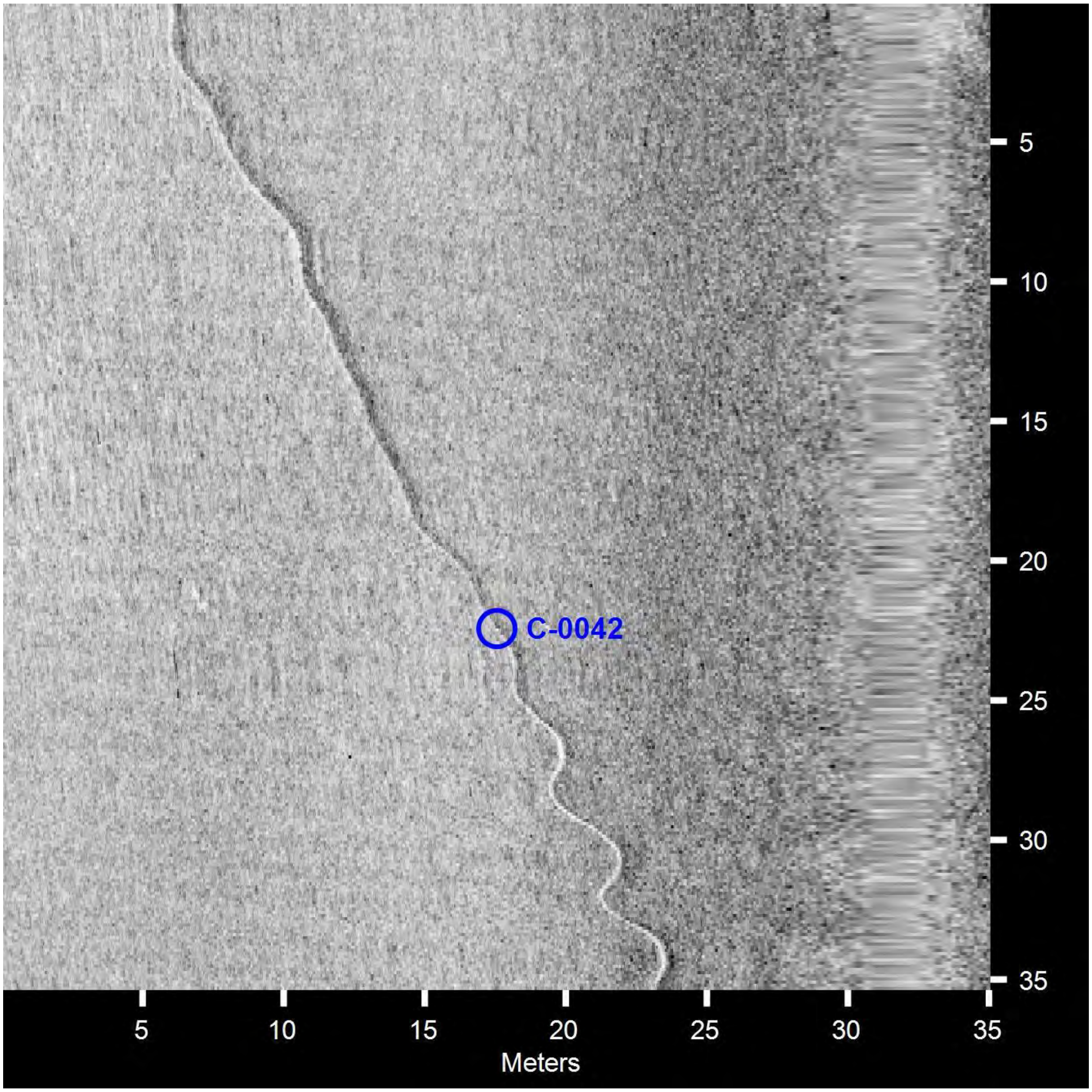


C-0041

- Click Position
  41.4851867174 -70.5787615252 (WGS84)
  (X) 368200.09 (Y) 4593822.69 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
  ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210823182903H.xtf

Dimensions and attributes

- Target Width: 0.7 Meters
- Target Height: 0.5 Meters
- Target Length: 6.5 Meters
- Target Shadow: 2.3 Meters
- Classification1: **Debris**
- Description:

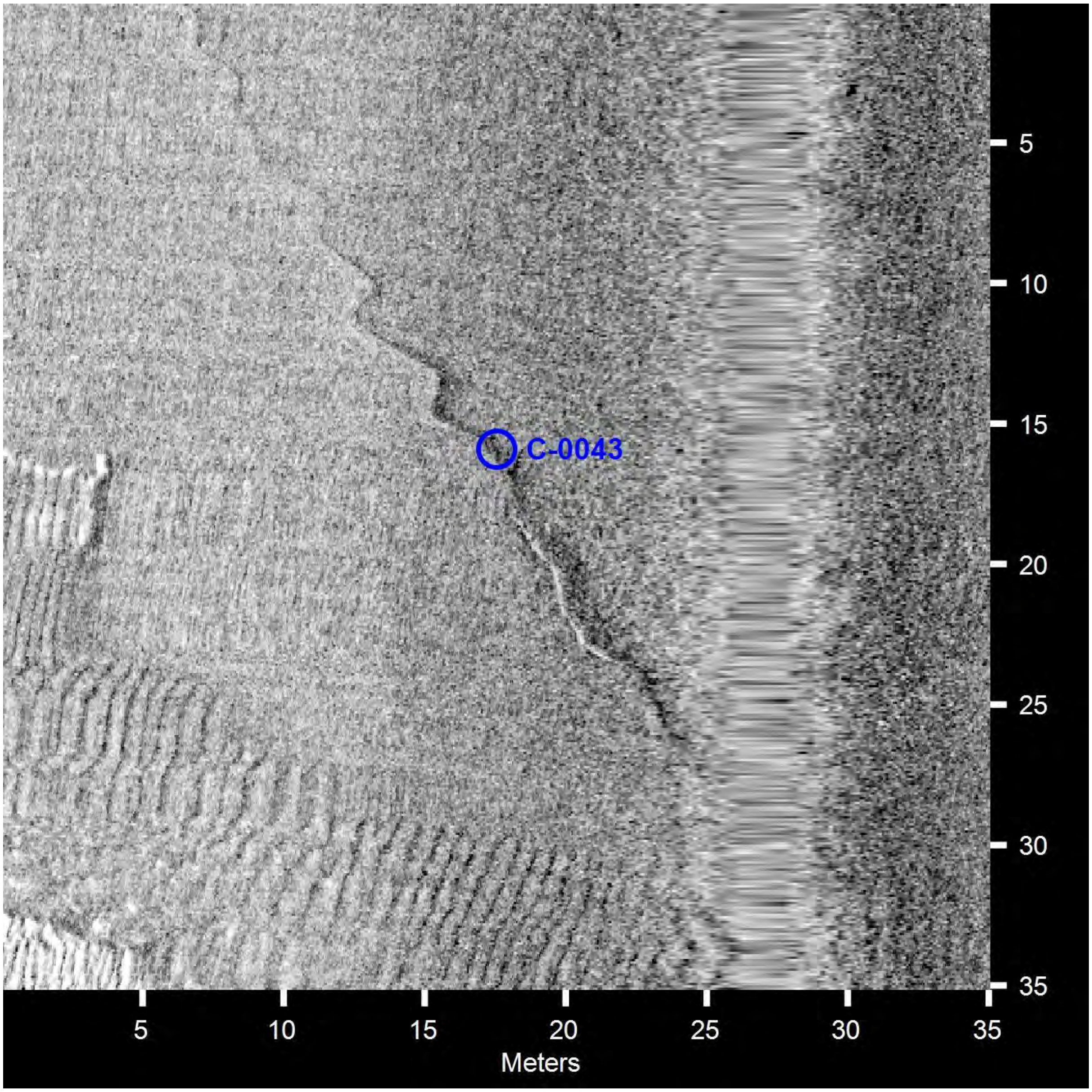


C-0042

- Click Position
  41.4849665490 -70.5768132015 (WGS84)
  (X) 368362.30 (Y) 4593795.28 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210820144521H.xtf

Dimensions and attributes

- Target Width: 0.2 Meters
- Target Height: 0.0 Meters
- Target Length: 35.1 Meters
- Target Shadow: 0.0 Meters
- Classification1: **Cable**
- Description:

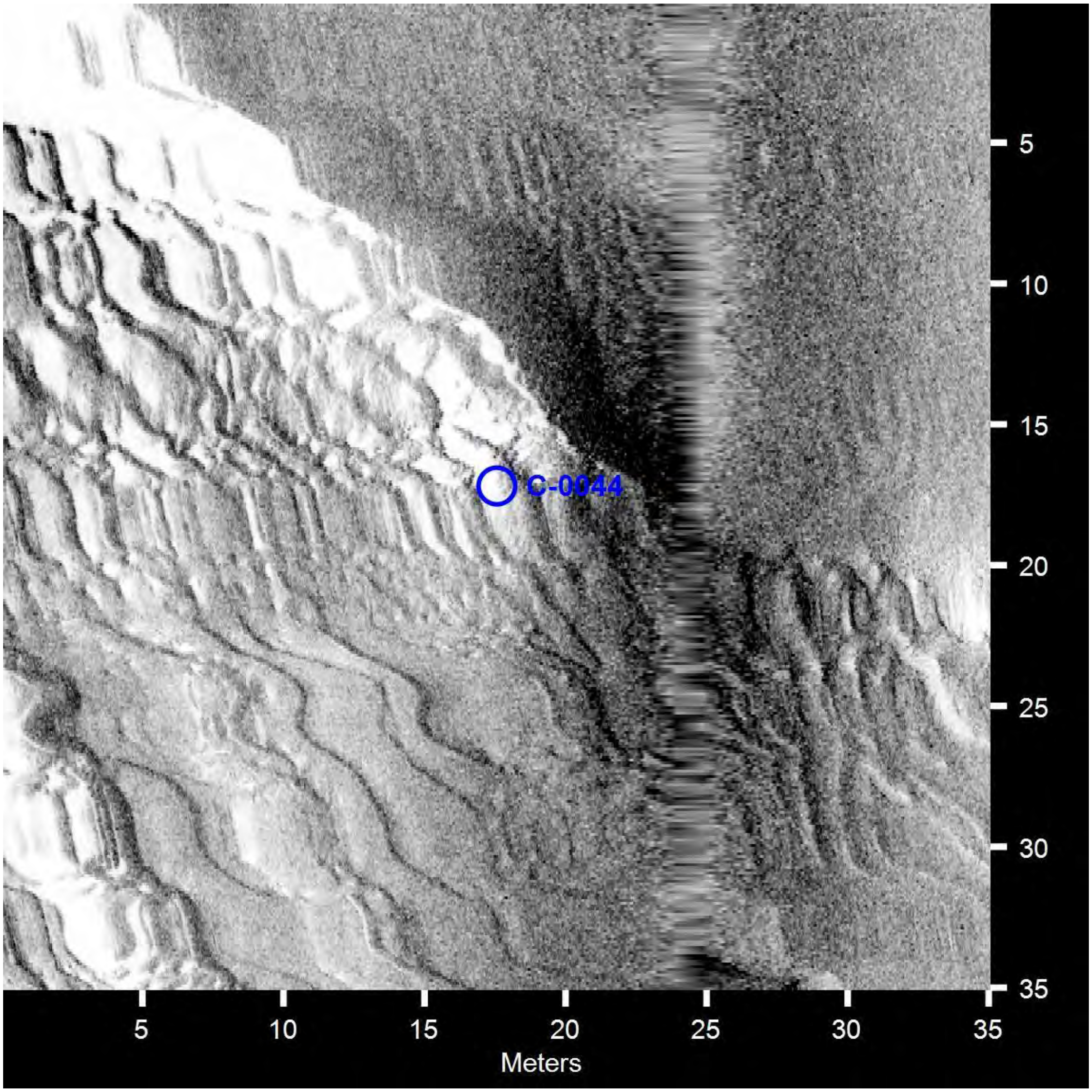


C-0043

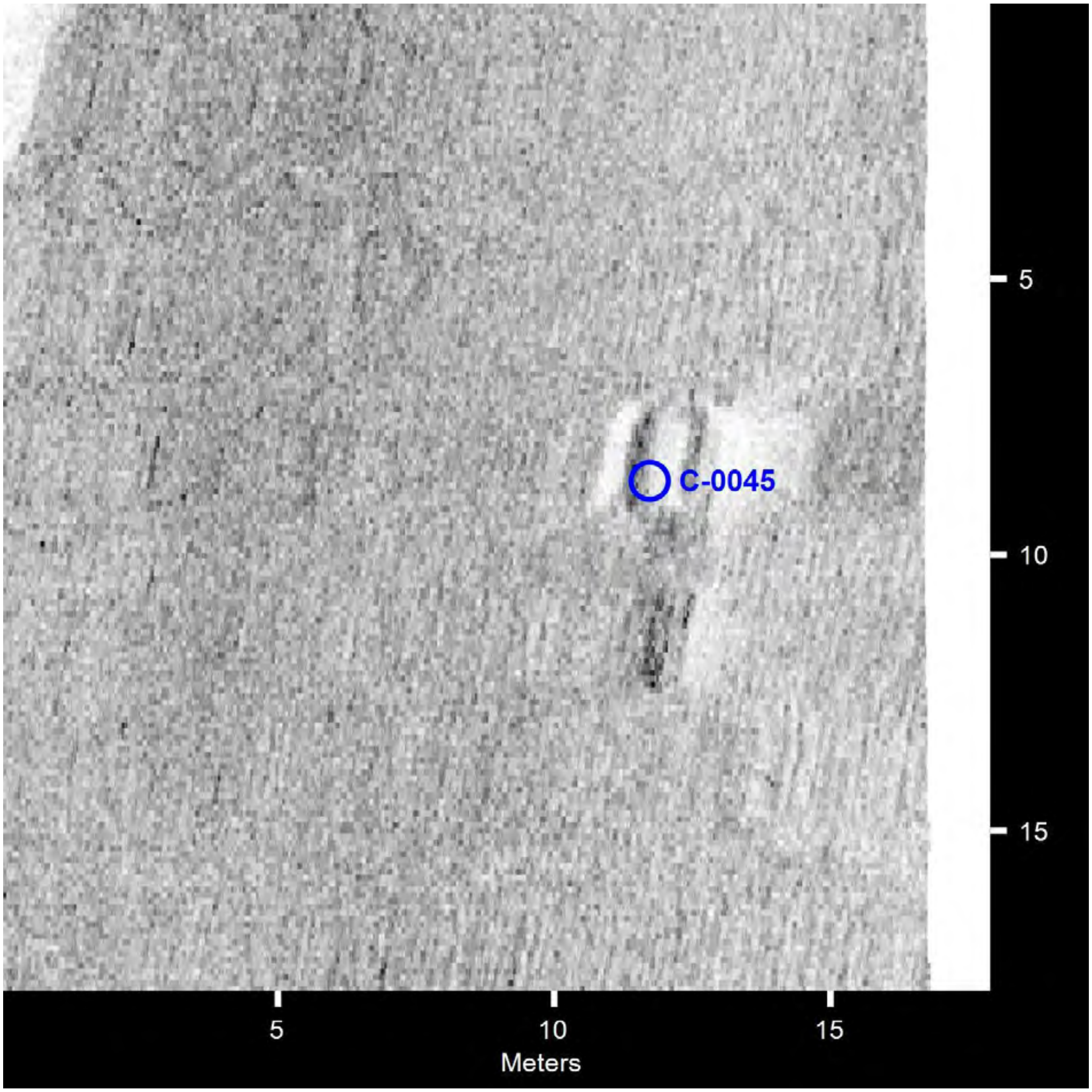
- Click Position
  41.4846264744 -70.5766804560 (WGS84)
  (X) 368372.70 (Y) 4593757.32 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210820154415H.xtf

Dimensions and attributes

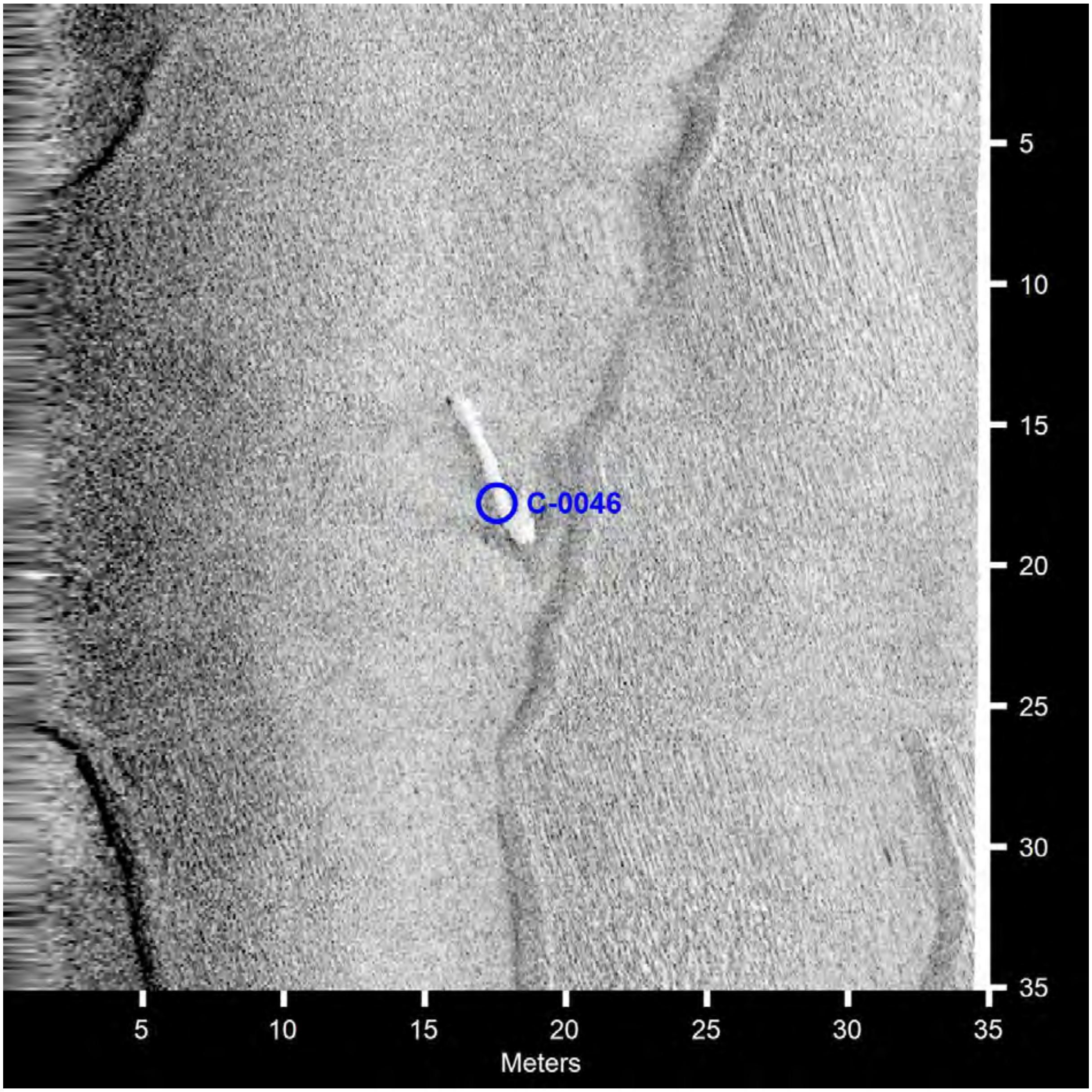
- Target Width: 0.0 Meters
- Target Height: 0.0 Meters
- Target Length: 27.6 Meters
- Target Shadow: 0.0 Meters
- Classification1**: Cable**
- Description:



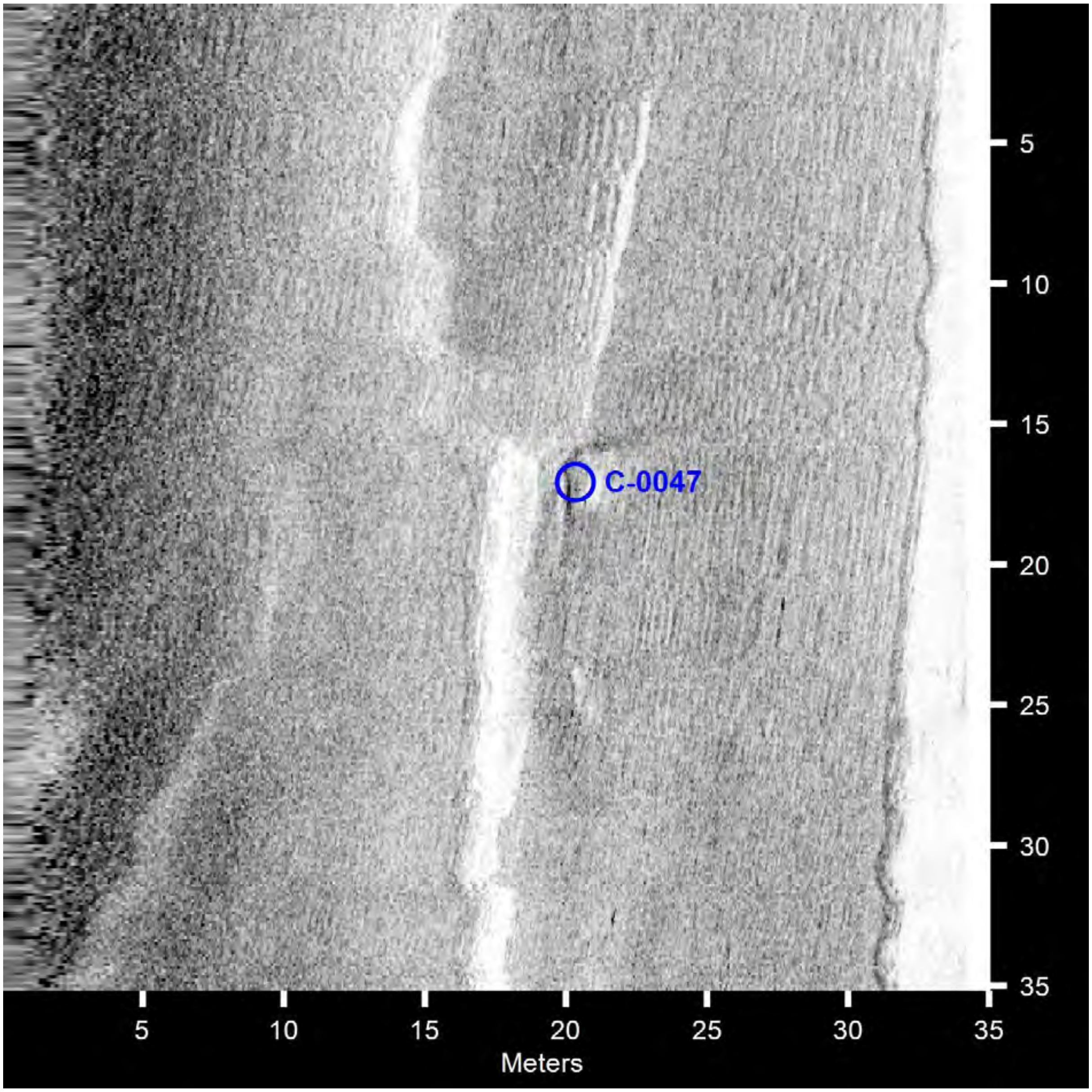
C-0044	Dimensions and attributes
● Click Position 41.4845196836 -70.5787199972 (WGS84) (X) 368202.21 (Y) 4593748.57 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210820152548H.xtf	● Target Width: 1.7 Meters ● Target Height: 0.0 Meters ● Target Length: 0.0 Meters ● Target Shadow: 0.0 Meters ● Classification1: **Sand waves** ● Description: Width = approximate wavelength (peak to peak)



C-0045	Dimensions and attributes
● Click Position 41.4787268264 -70.5787780936 (WGS84) (X) 368185.62 (Y) 4593105.52 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210908165942H.xtf	● Target Width: 1.3 Meters ● Target Height: 0.6 Meters ● Target Length: 3.2 Meters ● Target Shadow: 1.9 Meters ● Classification1: **Debris** ● Description:



C-0046	**Dimensions and attributes**
● Click Position 41.4782460911 -70.5804772272 (WGS84) (X) 368042.77 (Y) 4593054.73 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210908173709H.xtf	● Target Width: 0.4 Meters ● Target Height: 0.4 Meters ● Target Length: 6.4 Meters ● Target Shadow: 0.9 Meters ● Classification1: Debris ● Description: **Debris in sand waves**

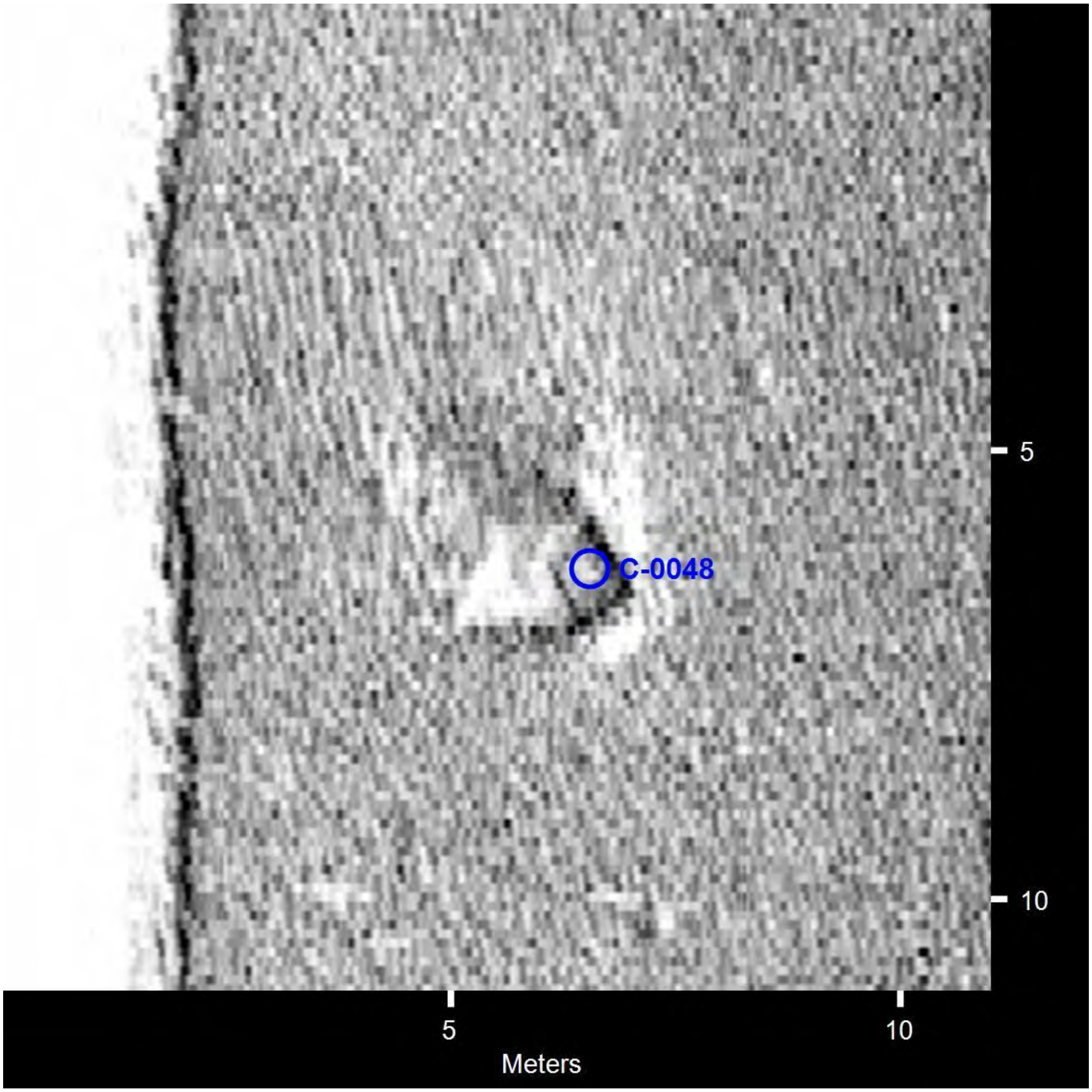


C-0047

- Click Position
  41.4782018305 -70.5787392673 (WGS84)
  (X) 368187.79 (Y) 4593047.17 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210908165942H.xtf

Dimensions and attributes

- Target Width: 2.5 Meters
- Target Height: 0.2 Meters
- Target Length: 1.6 Meters
- Target Shadow: 0.7 Meters
- Classification1: Debris
- Description: **Debris in sand waves**

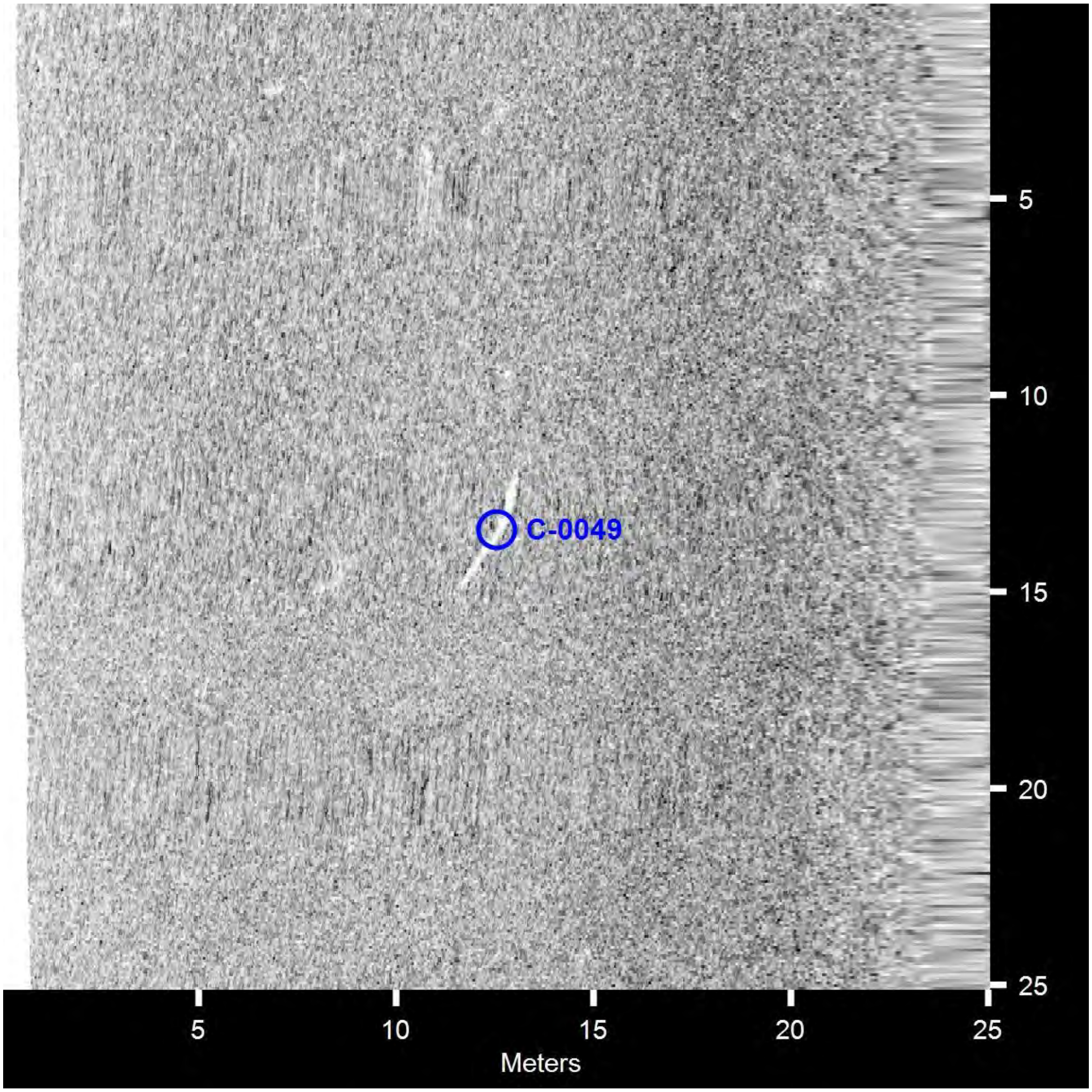


C-0048

- Click Position
  41.4760532880 -70.5793263909 (WGS84)
  (X) 368134.42 (Y) 4592809.52 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210908134150H.xtf

Dimensions and attributes

- Target Width: 0.8 Meters
- Target Height: 0.3 Meters
- Target Length: 1.3 Meters
- Target Shadow: 1.0 Meters
- Classification1: Fishing gear
- Description: **Likely conch trap near sand ridge**

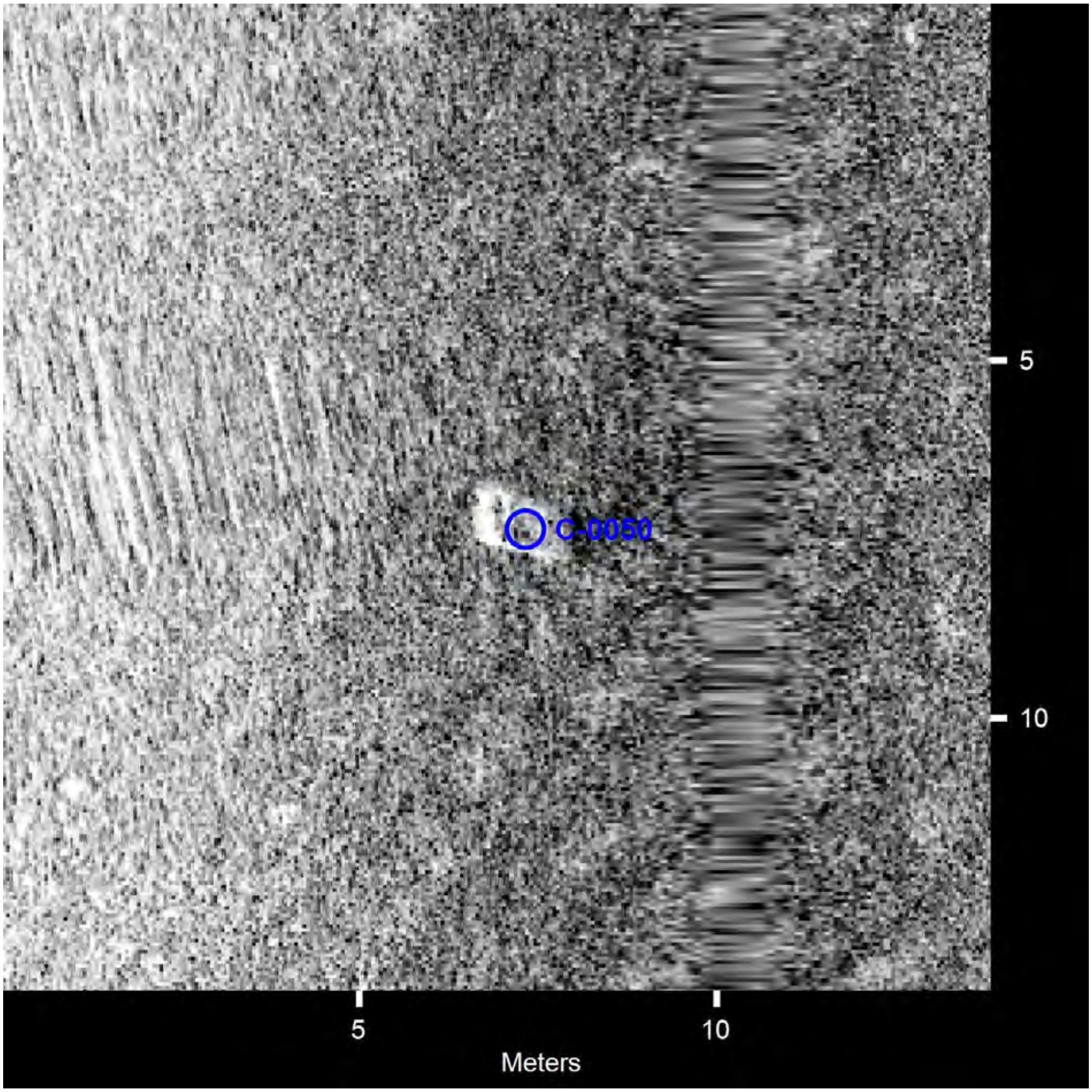


C-0049

- Click Position
  41.4734926455 -70.5787582907 (WGS84)
  (X) 368176.66 (Y) 4592524.37 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819195304H.xtf

Dimensions and attributes

- Target Width: 0.1 Meters
- Target Height: 0.1 Meters
- Target Length: 3.1 Meters
- Target Shadow: 0.2 Meters
- Classification1: **Debris**
- Description:

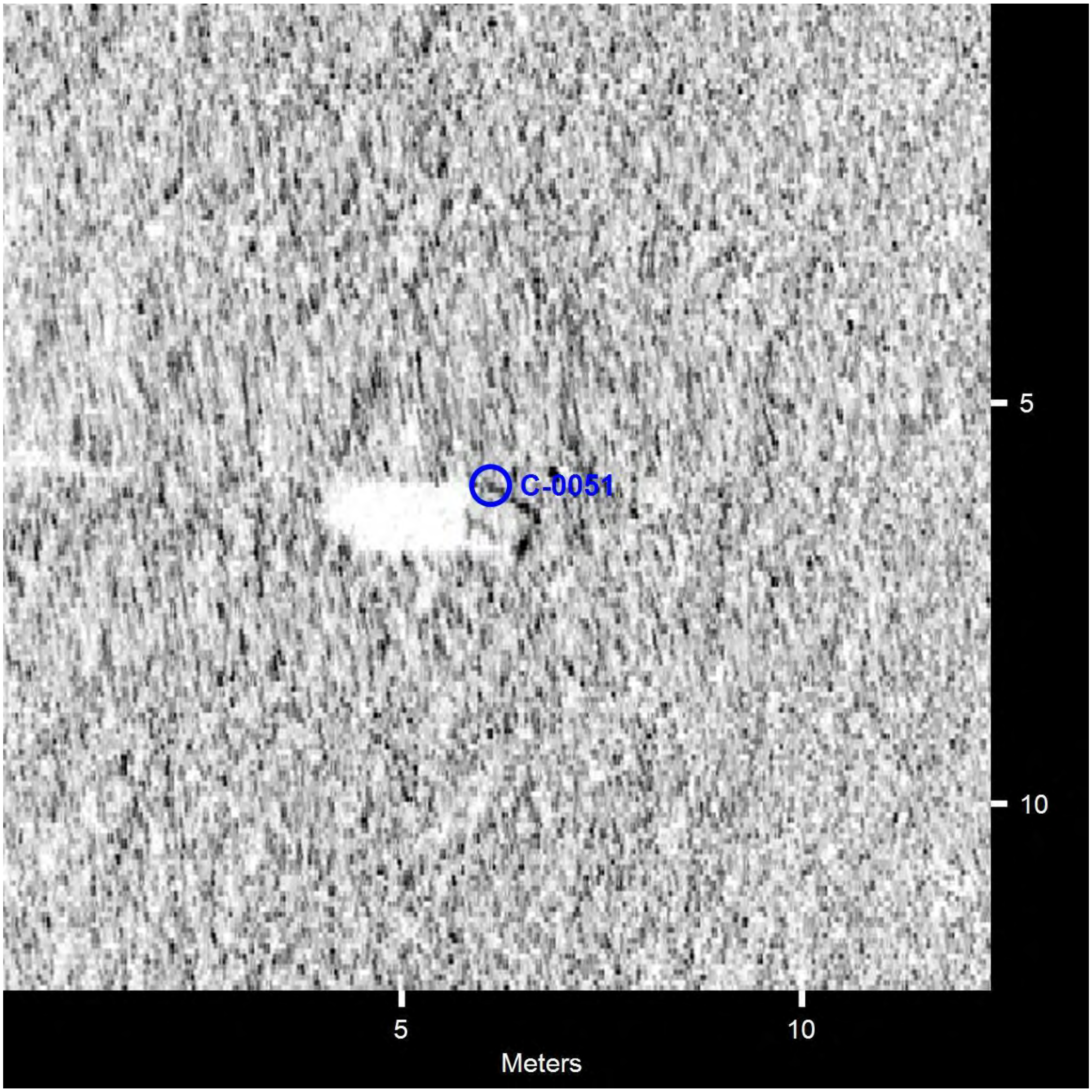


C-0050

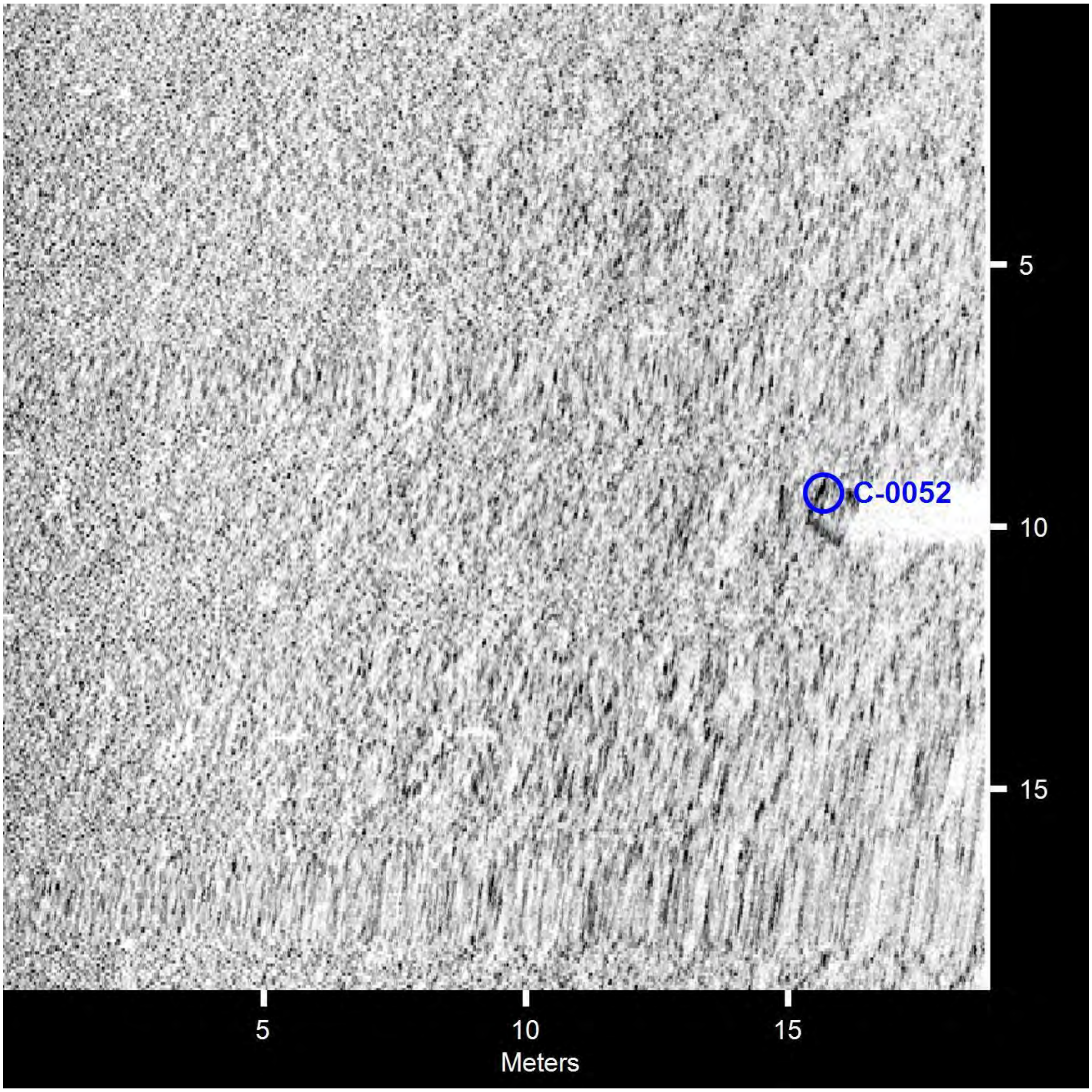
- Click Position
  41.4705608239 -70.5786399239 (WGS84)
  (X) 368180.60 (Y) 4592198.68 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819173032H.xtf

Dimensions and attributes

- Target Width: 0.7 Meters
- Target Height: 0.2 Meters
- Target Length: 1.5 Meters
- Target Shadow: 0.2 Meters
- Classification1: Fishing Gear
- Description: **Likely conch trap**



C-0051	**Dimensions and attributes**
● Click Position 41.4704669793 -70.5790566508 (WGS84) (X) 368145.62 (Y) 4592188.90 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819193952H.xtf	● Target Width: 0.9 Meters ● Target Height: 0.3 Meters ● Target Length: 1.0 Meters ● Target Shadow: 1.8 Meters ● Classification1: Fishing Gear ● Description: **Likely conch trap**

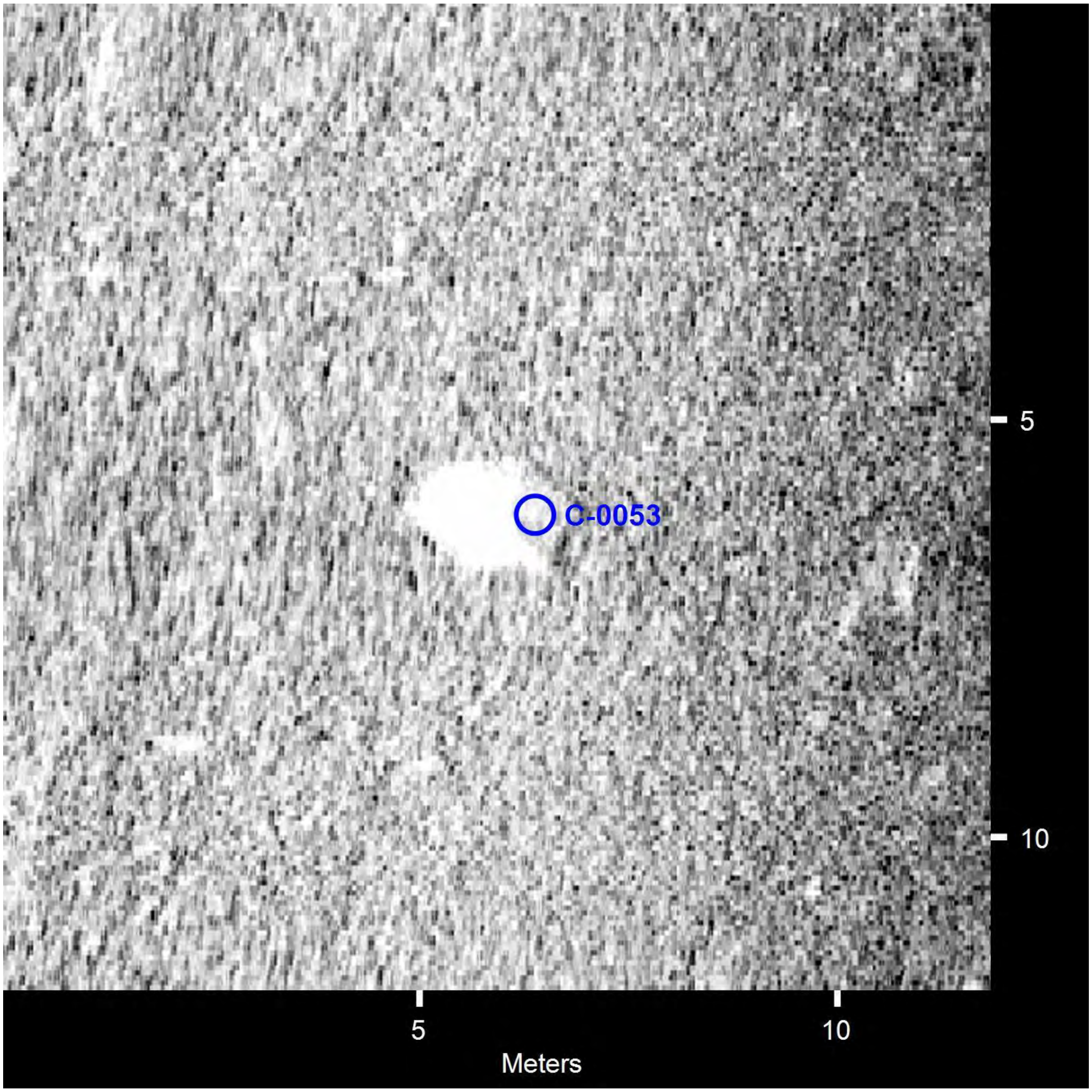


C-0052

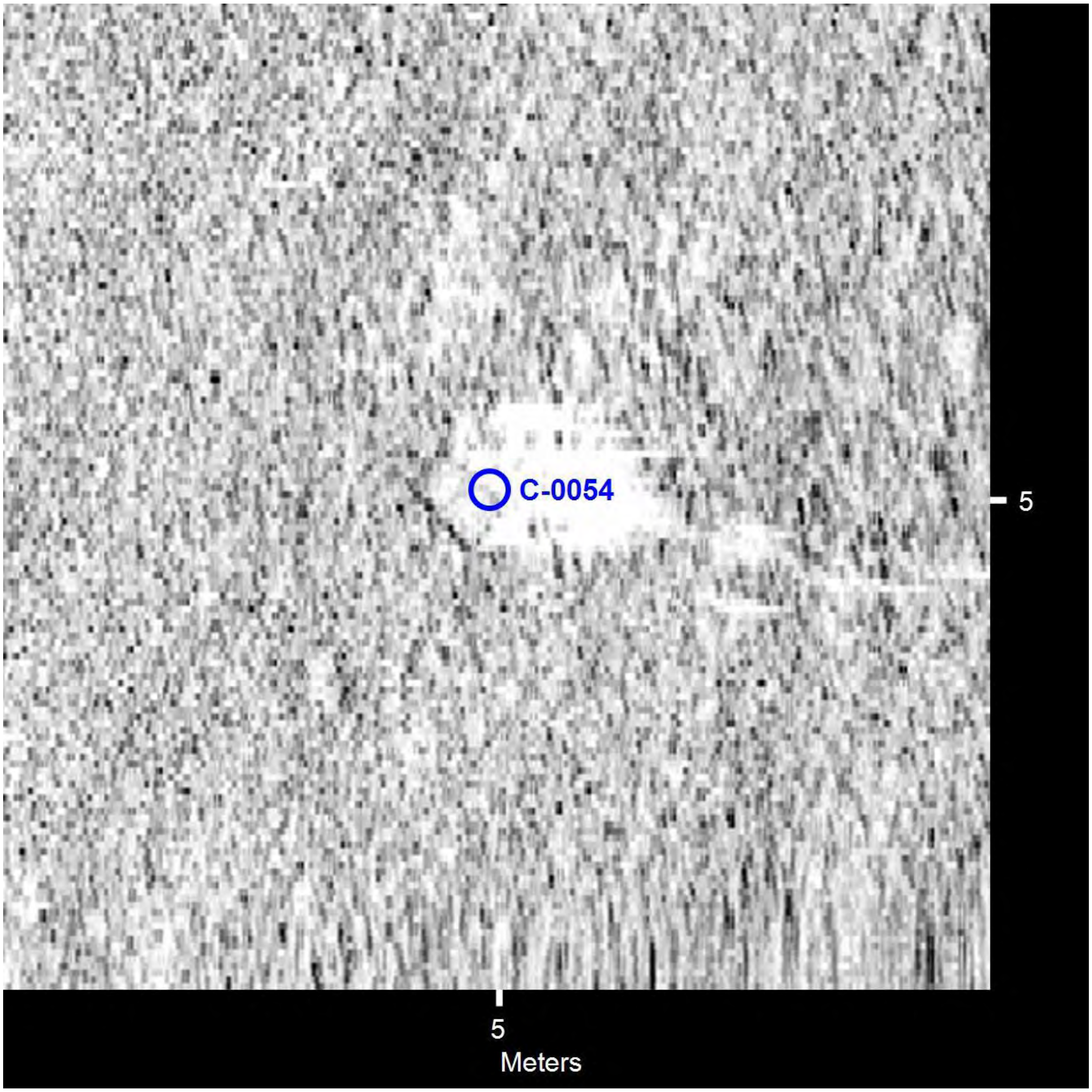
- Click Position
  41.4703899029 -70.5791416143 (WGS84)
  (X) 368138.36 (Y) 4592180.47 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819190749H.xtf

Dimensions and attributes

- Target Width: 0.6 Meters
- Target Height: 0.2 Meters
- Target Length: 1.0 Meters
- Target Shadow: 2.3 Meters
- Classification1: Fishing Gear
- Description: **Likely conch trap**



C-0053	Dimensions and attributes
● Click Position 41.4703383557 -70.5795095104 (WGS84) (X) 368107.54 (Y) 4592175.31 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819190749H.xtf	● Target Width: 0.5 Meters ● Target Height: 0.3 Meters ● Target Length: 1.1 Meters ● Target Shadow: 1.3 Meters ● Classification1: Fishing Gear ● Description**: Likely conch trap**

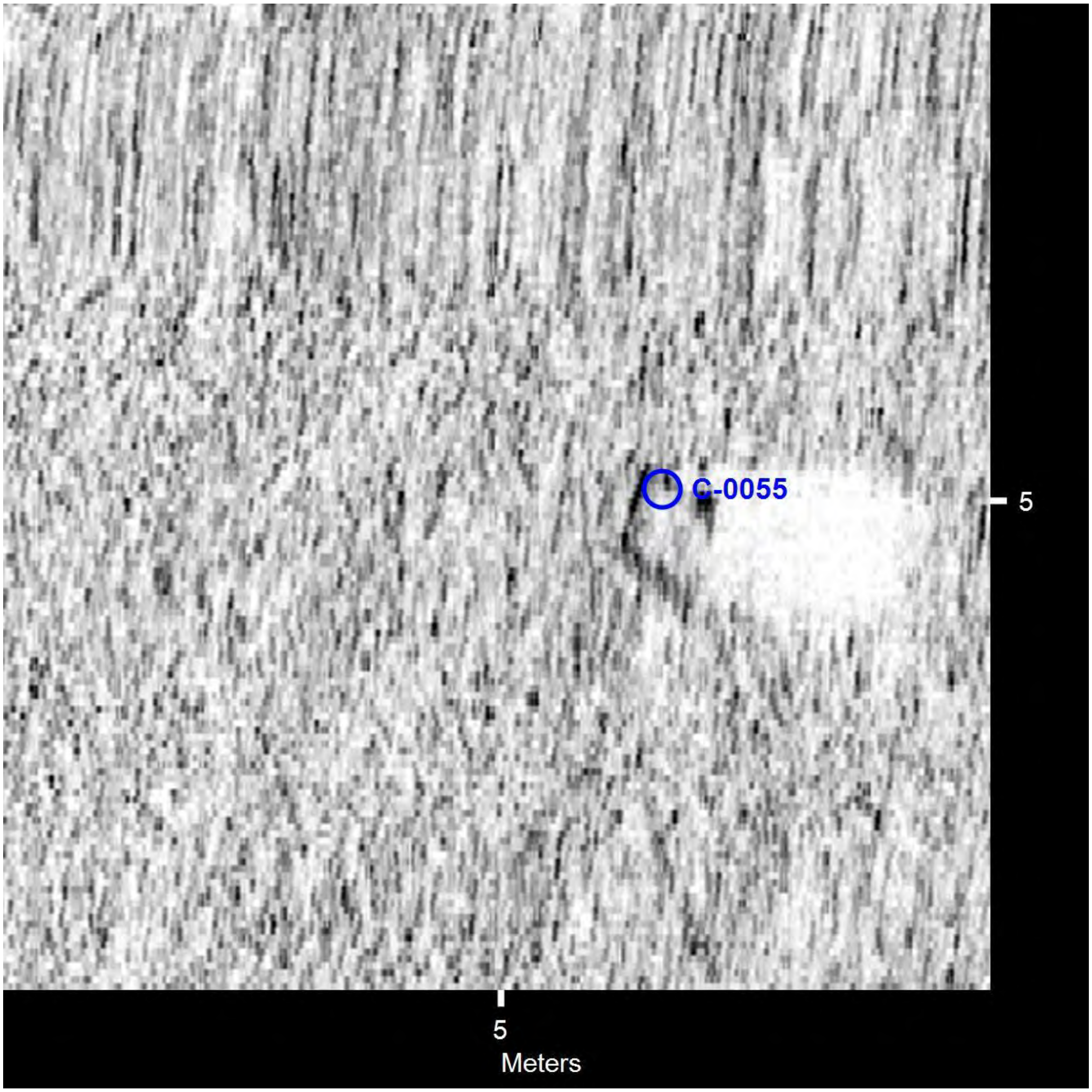


C-0054

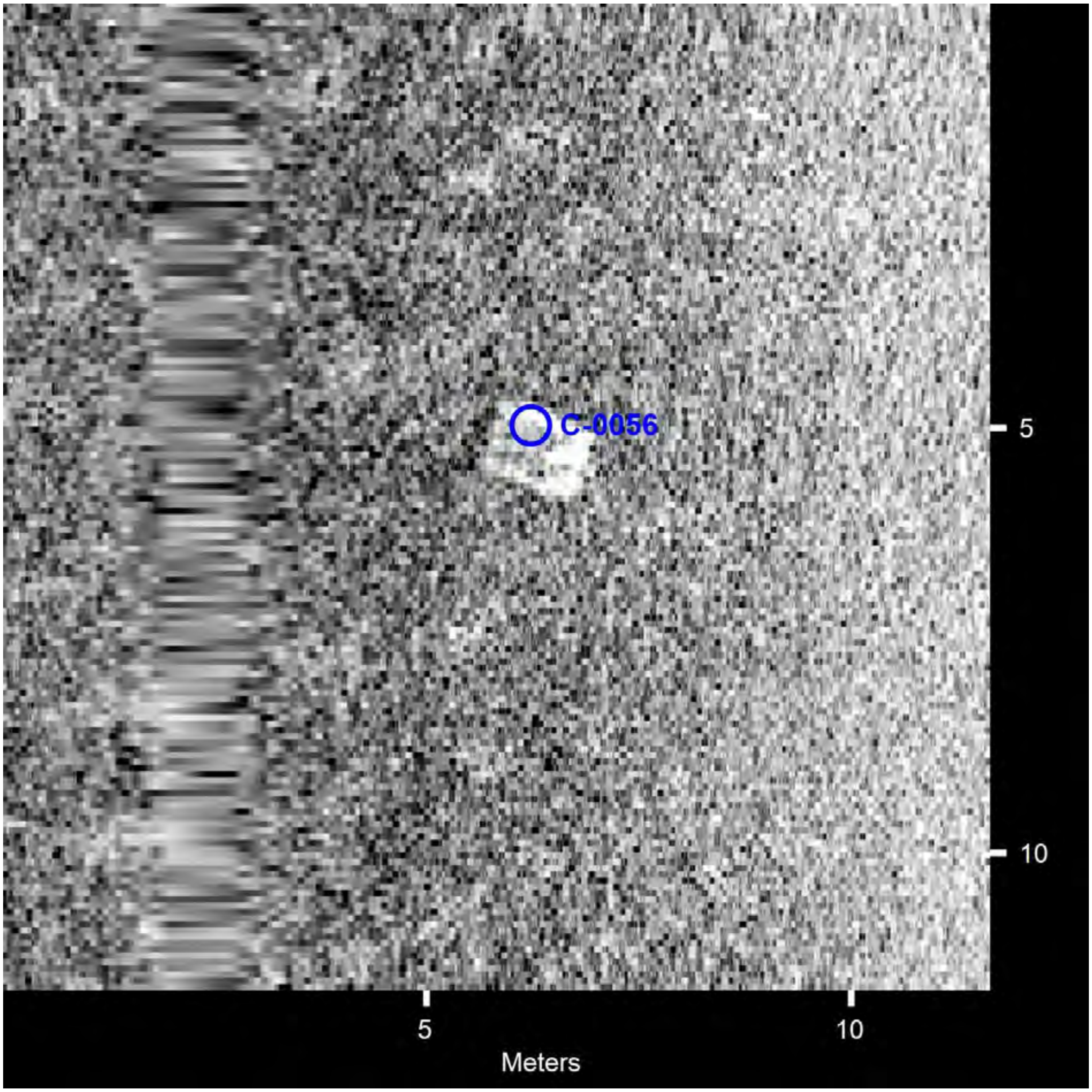
- Click Position
  41.4702584092 -70.5797829710 (WGS84)
  (X) 368084.54 (Y) 4592166.85 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819183719H.xtf

Dimensions and attributes

- Target Width: 0.5 Meters
- Target Height: 0.3 Meters
- Target Length: 0.8 Meters
- Target Shadow: 1.9 Meters
- Classification1: Fishing Gear
- Description: **Likely conch trap**



C-0055	Dimensions and attributes
● Click Position 41.4700972913 -70.5807205320 (WGS84) (X) 368005.92 (Y) 4592150.39 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819171858H.xtf	● Target Width: 0.8 Meters ● Target Height: 0.3 Meters ● Target Length: 0.9 Meters ● Target Shadow: 2.2 Meters ● Classification1: Fishing Gear ● Description: **Likely conch trap**

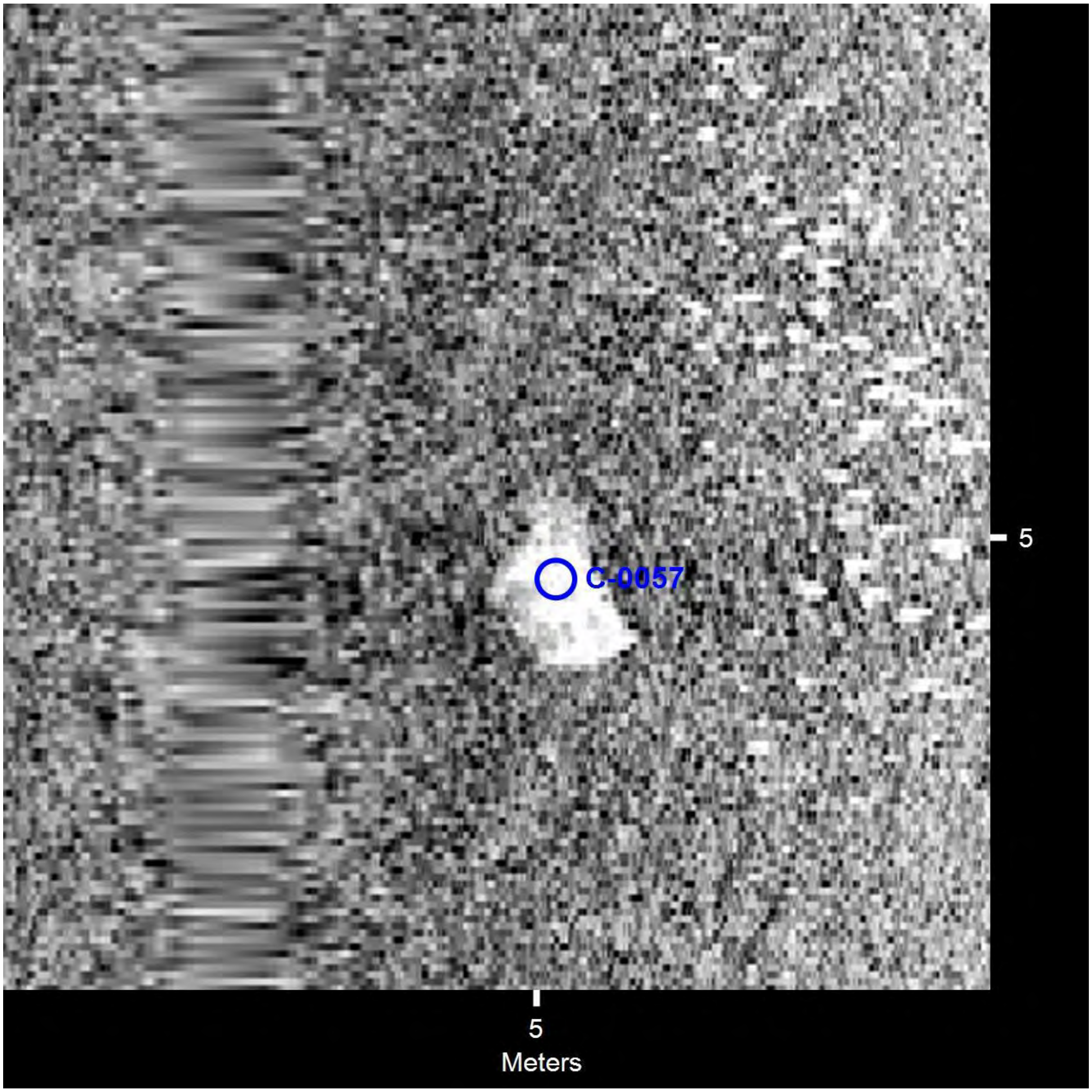


C-0056

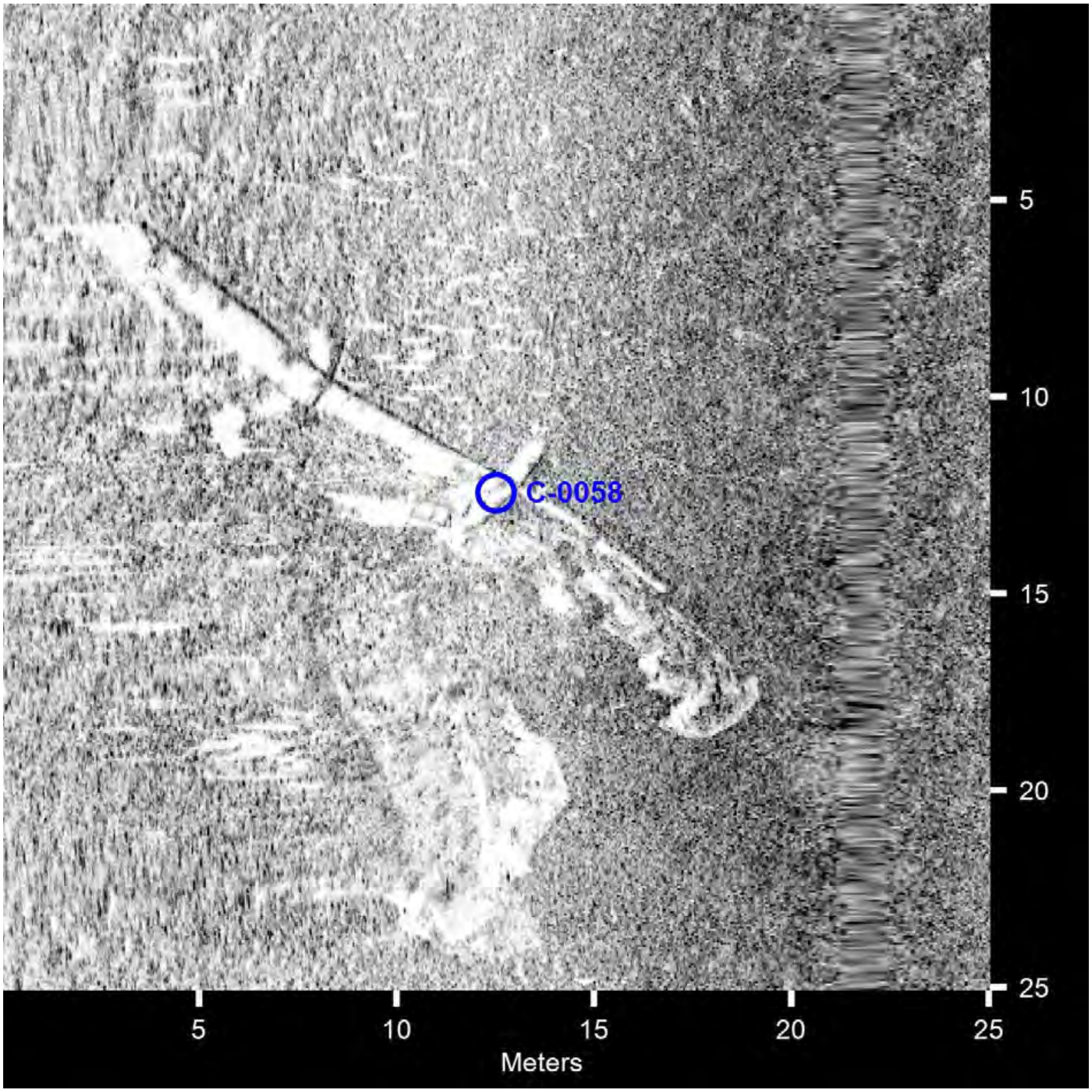
- Click Position
  41.4698999264 -70.5818536770 (WGS84)
  (X) 367910.90 (Y) 4592130.21 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819155101H.xtf

Dimensions and attributes

- Target Width: 0.7 Meters
- Target Height: 0.1 Meters
- Target Length: 1.3 Meters
- Target Shadow: 0.2 Meters
- Classification1: Fishing Gear
- Description: **Likely conch trap**



C-0057	Dimensions and attributes
● Click Position 41.4688784018 -70.5795060570 (WGS84) (X) 368104.87 (Y) 4592013.21 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819193952H.xtf	● Target Width: 0.7 Meters ● Target Height: 0.6 Meters ● Target Length: 1.2 Meters ● Target Shadow: 0.8 Meters ● Classification1: Fishing Gear ● Description: **Likely conch trap**

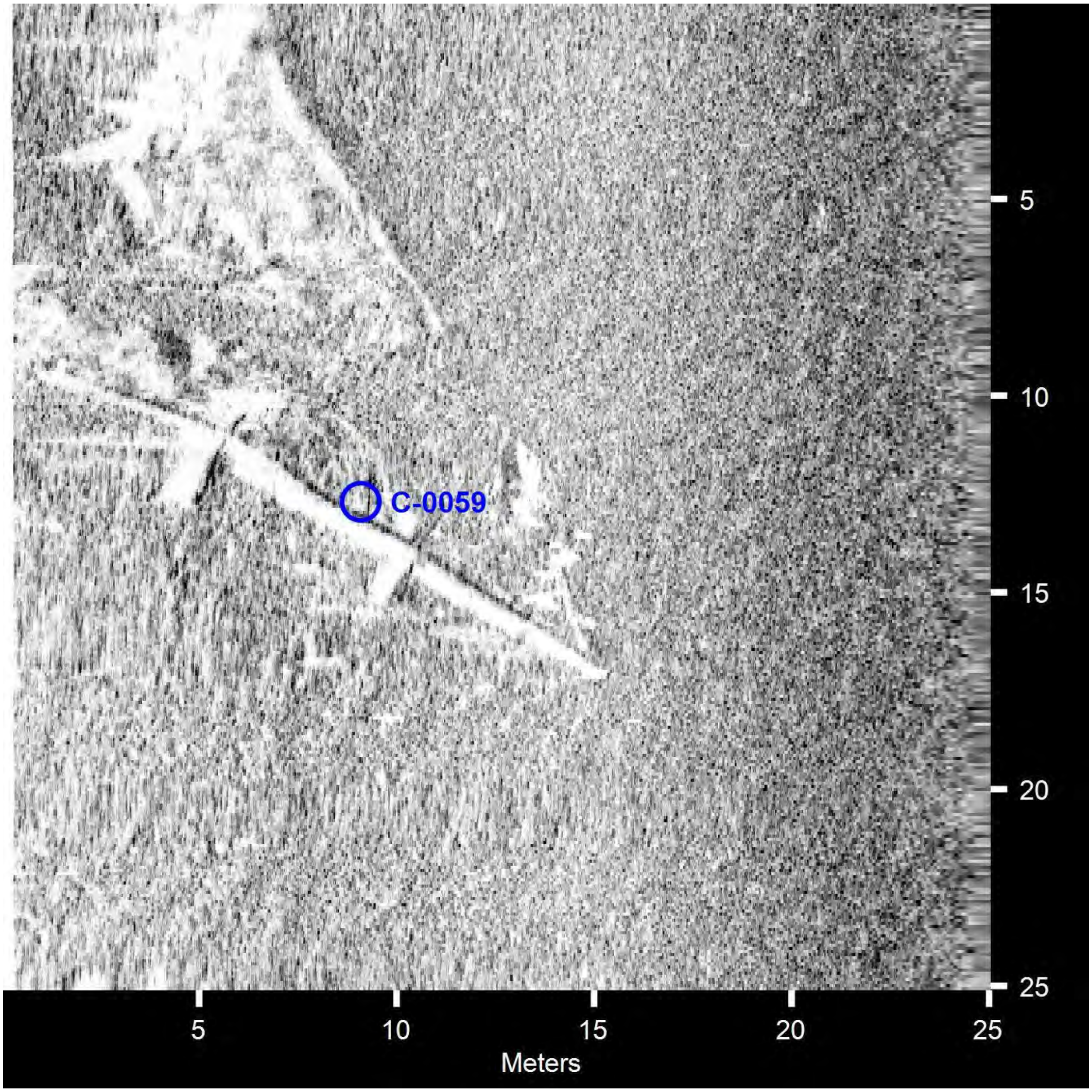


C-0058

- Click Position
  41.4681286119 -70.5814828018 (WGS84)
  (X) 367938.27 (Y) 4591932.99 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819160212H.xtf

Dimensions and attributes

- Target Width: 3.5 Meters
- Target Height: 0.8 Meters
- Target Length: 19.3 Meters
- Target Shadow: 3.6 Meters
- Classification1: **Wreck**
- Description**: Northern portion**

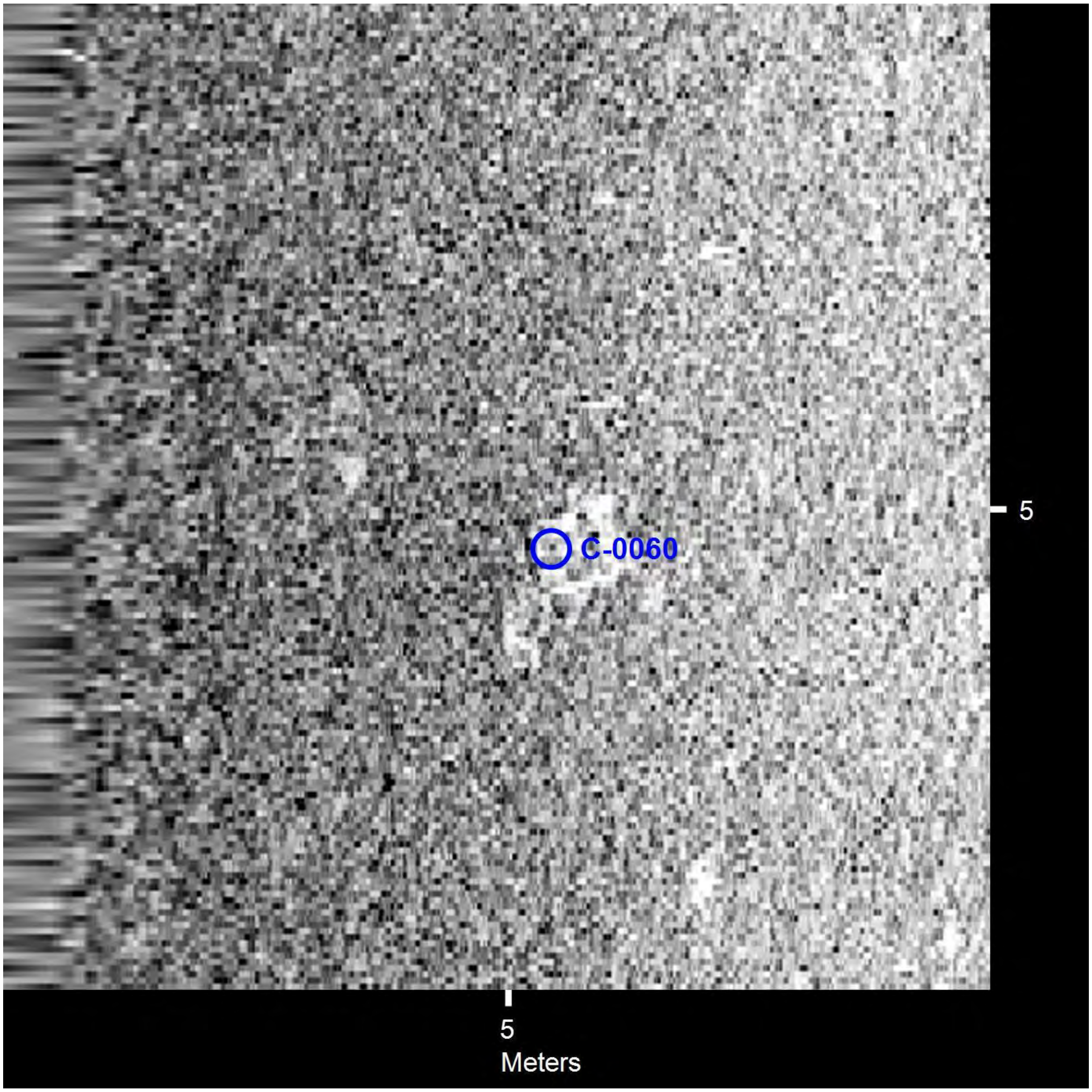


C-0059

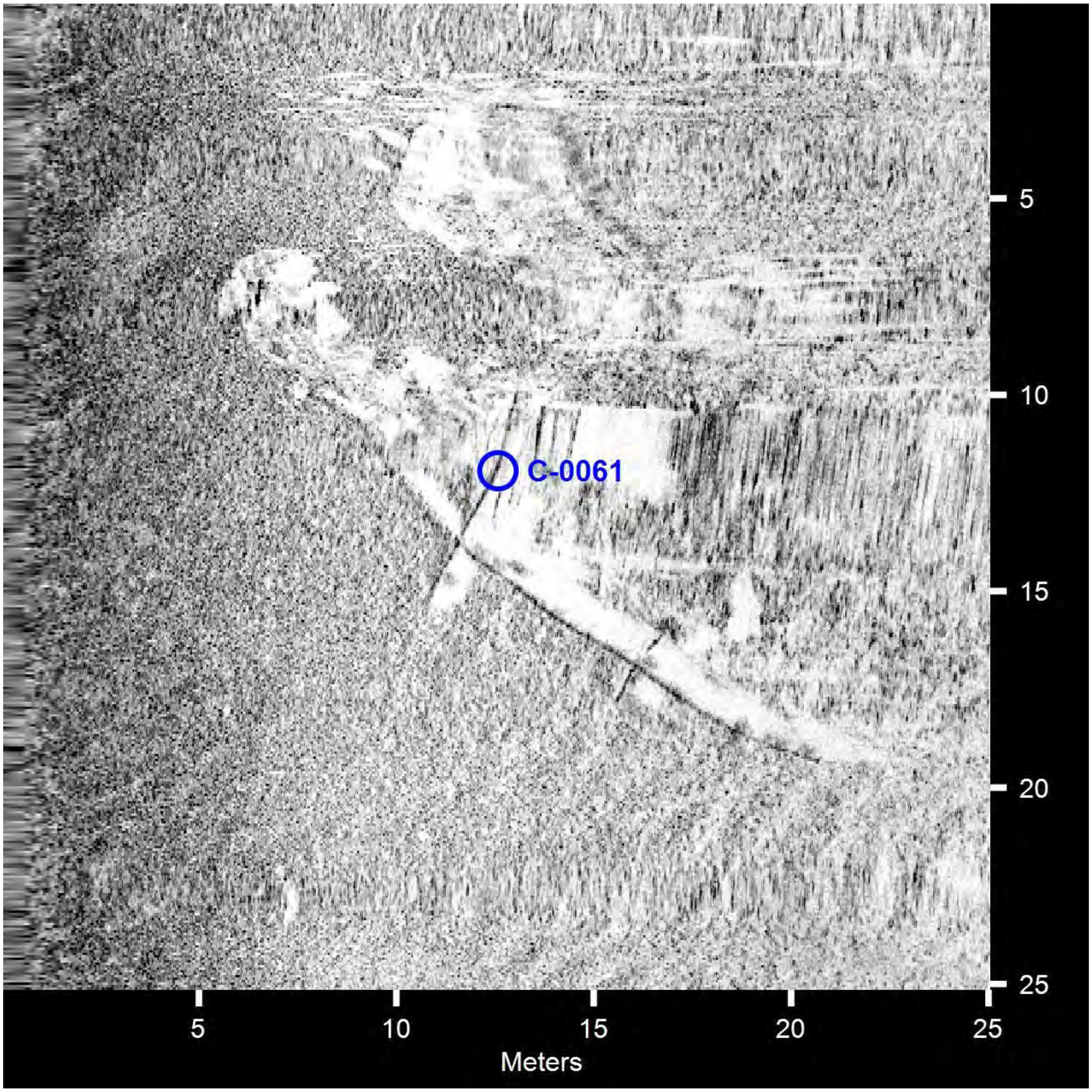
- Click Position
  41.4681240780 -70.5815470599 (WGS84)
  (X) 367932.90 (Y) 4591932.58 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
  ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819165802H.xtf

Dimensions and attributes

- Target Width: 3.0 Meters
- Target Height: 0.2 Meters
- Target Length: 15.8 Meters
- Target Shadow: 0.9 Meters
- Classification1: **Wreck**
- Description:



C-0060	Dimensions and attributes
● Click Position 41.4681200216 -70.5796945996 (WGS84) (X) 368087.58 (Y) 4591929.30 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819190749H.xtf	● Target Width: 0.7 Meters ● Target Height: 0.0 Meters ● Target Length: 1.1 Meters ● Target Shadow: 0.0 Meters ● Classification1: Fishing Gear ● Description: **Likely conch trap**

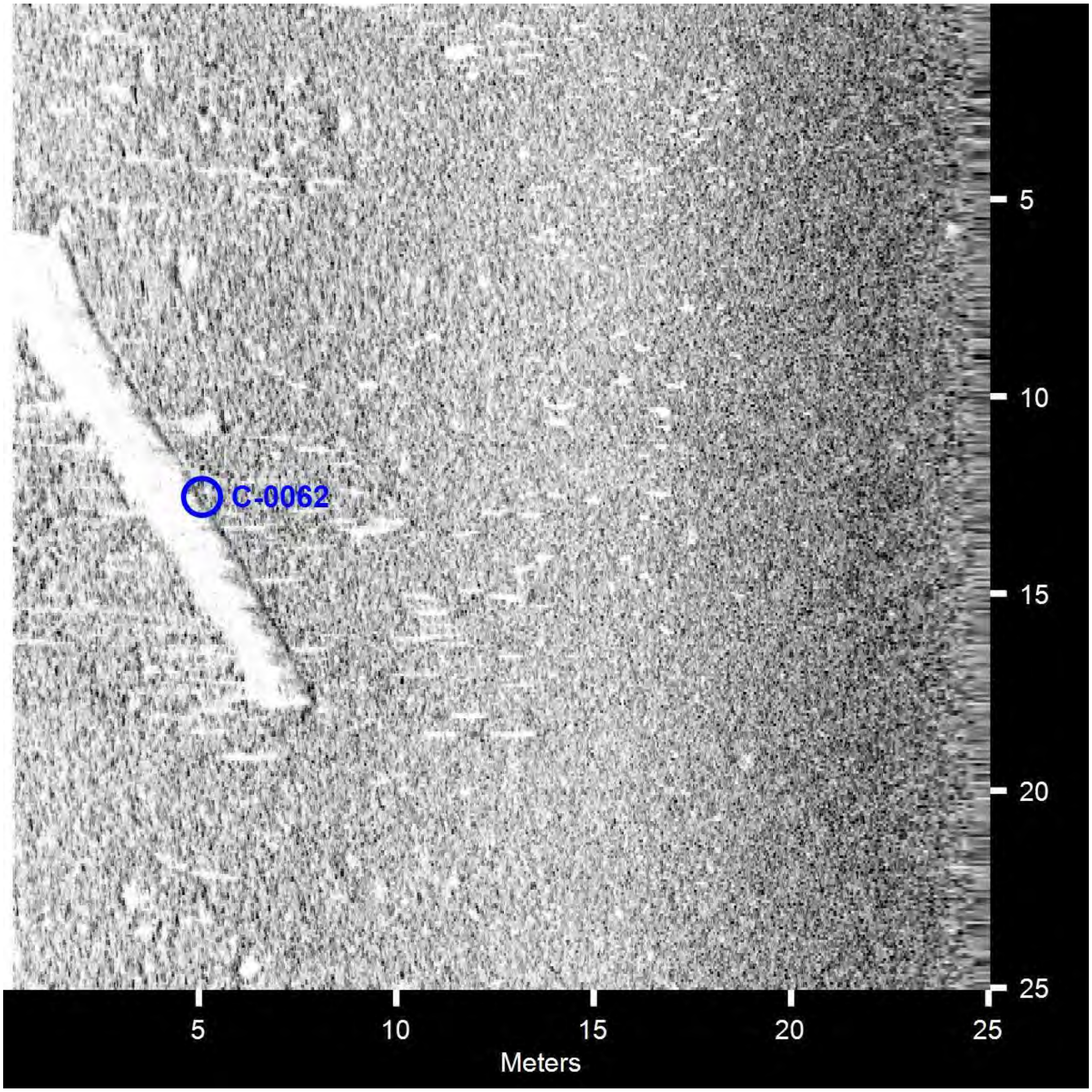


C-0061

- Click Position
  41.4680979383 -70.5815842049 (WGS84)
  (X) 367929.74 (Y) 4591929.74 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819163714H.xtf

Dimensions and attributes

- Target Width: 8.0 Meters
- Target Height: 0.5 Meters
- Target Length: 18.8 Meters
- Target Shadow: 2.9 Meters
- Classification1: **Wreck**
- Description:

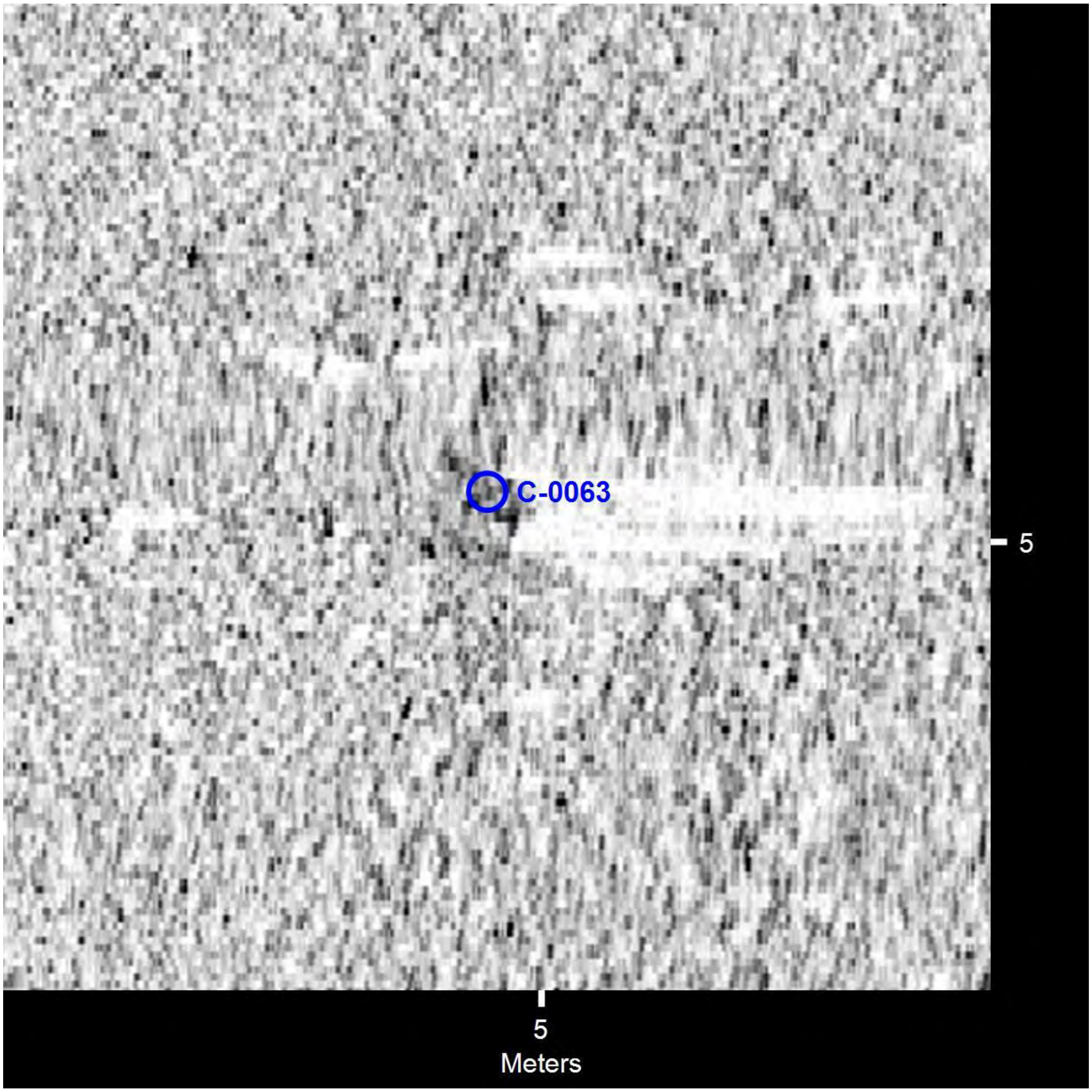


C-0062

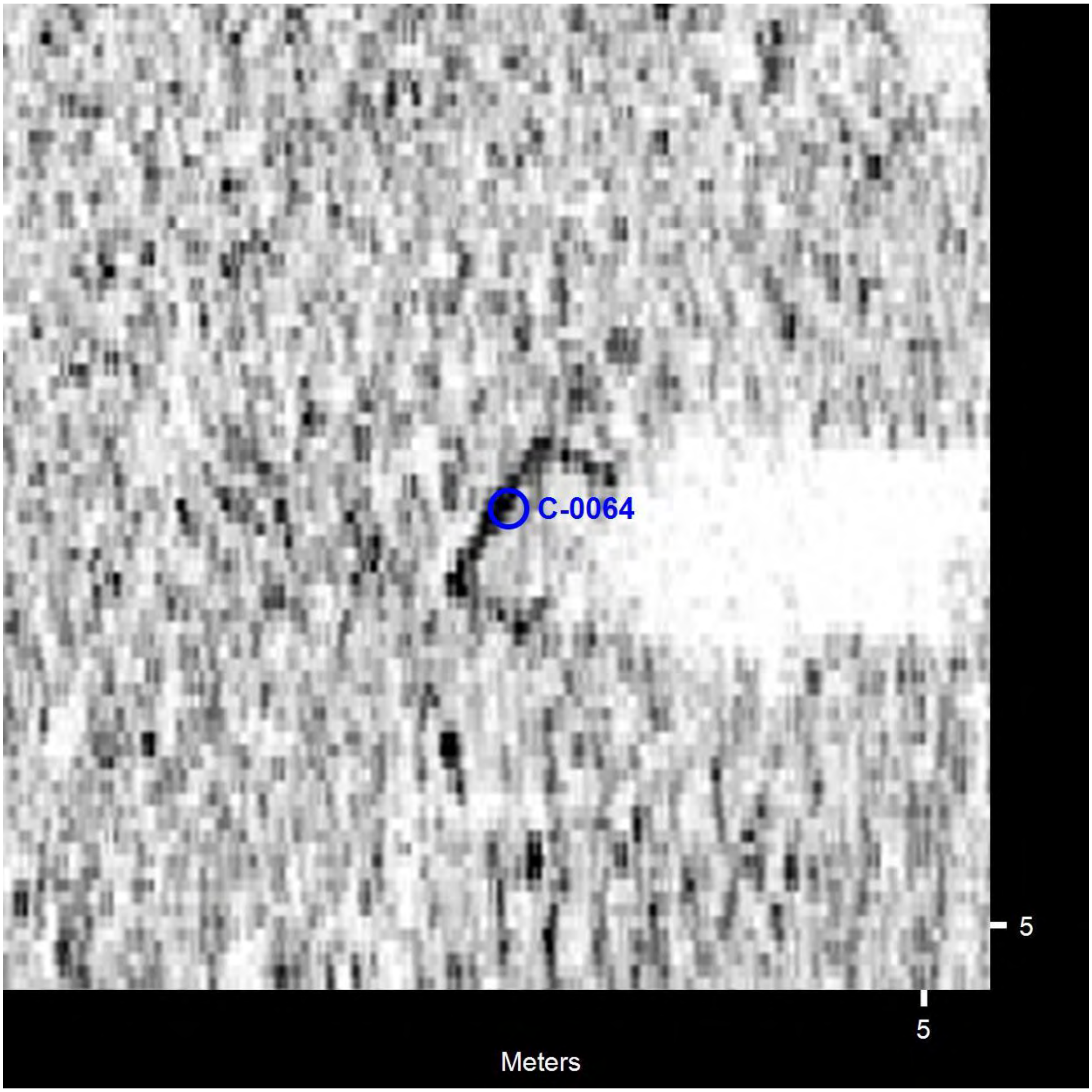
- Click Position
  41.4677814427 -70.5782931308 (WGS84)
  (X) 368203.93 (Y) 4591889.58 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819191839H.xtf

Dimensions and attributes

- Target Width: 1.0 Meters
- Target Height: 0.3 Meters
- Target Length: 15.0 Meters
- Target Shadow: 2.0 Meters
- Classification1: Debris
- Description: **Debris likely associated with wreckage to the west**



C-0063	Dimensions and attributes
● Click Position 41.4672841615 -70.5807724029 (WGS84) (X) 367995.88 (Y) 4591838.15 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819182637H.xtf	● Target Width: 0.9 Meters ● Target Height: 0.5 Meters ● Target Length: 1.2 Meters ● Target Shadow: 3.5 Meters ● Classification1: Fishing Gear ● Description: **Likely conch trap**

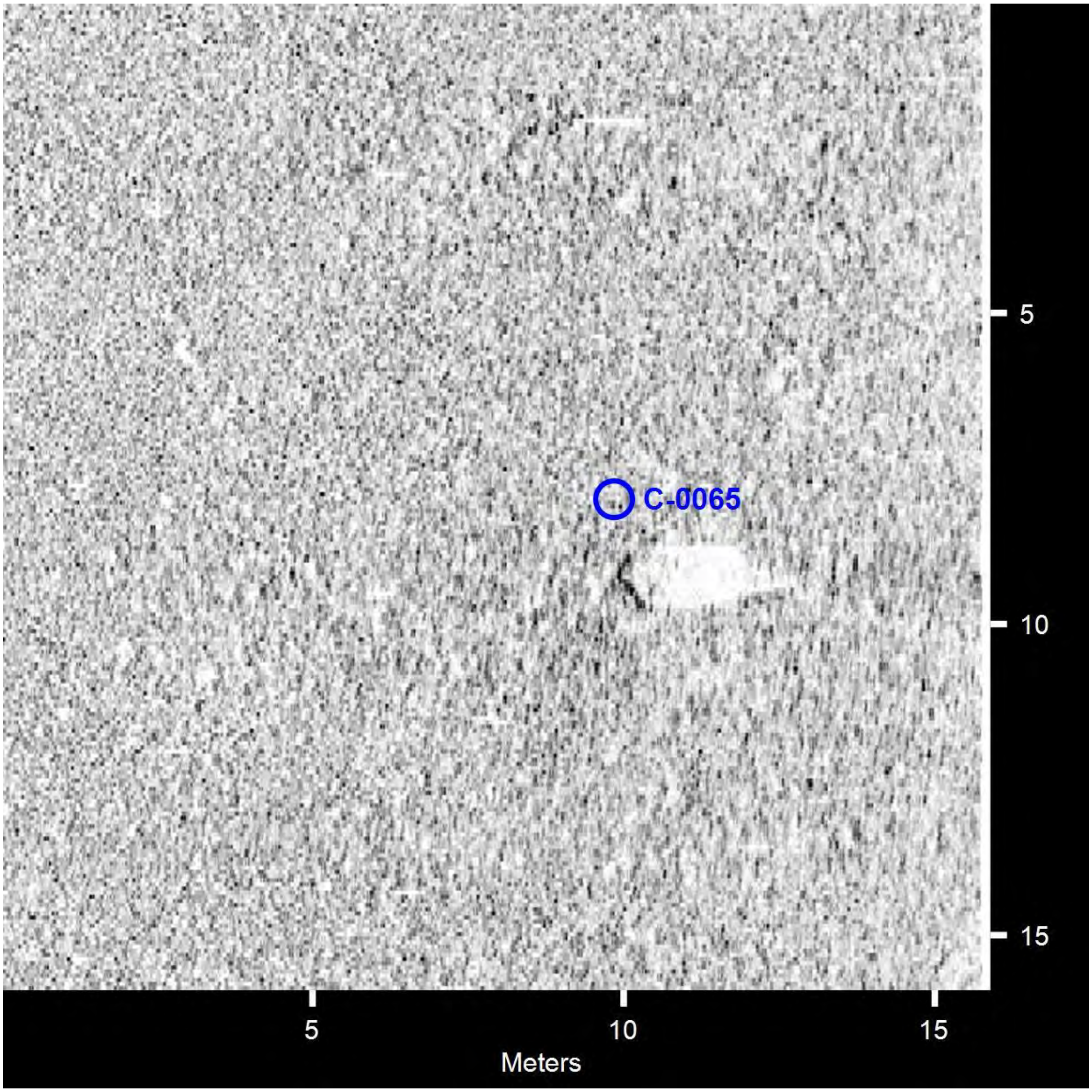


C-0064

- Click Position
  41.4670948819 -70.5793998556 (WGS84)
  (X) 368110.12 (Y) 4591815.04 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819173032H.xtf

Dimensions and attributes

- Target Width: 0.4 Meters
- Target Height: 0.3 Meters
- Target Length: 1.2 Meters
- Target Shadow: 2.0 Meters
- Classification1: Fishing Gear
- Description: **Likely conch trap**

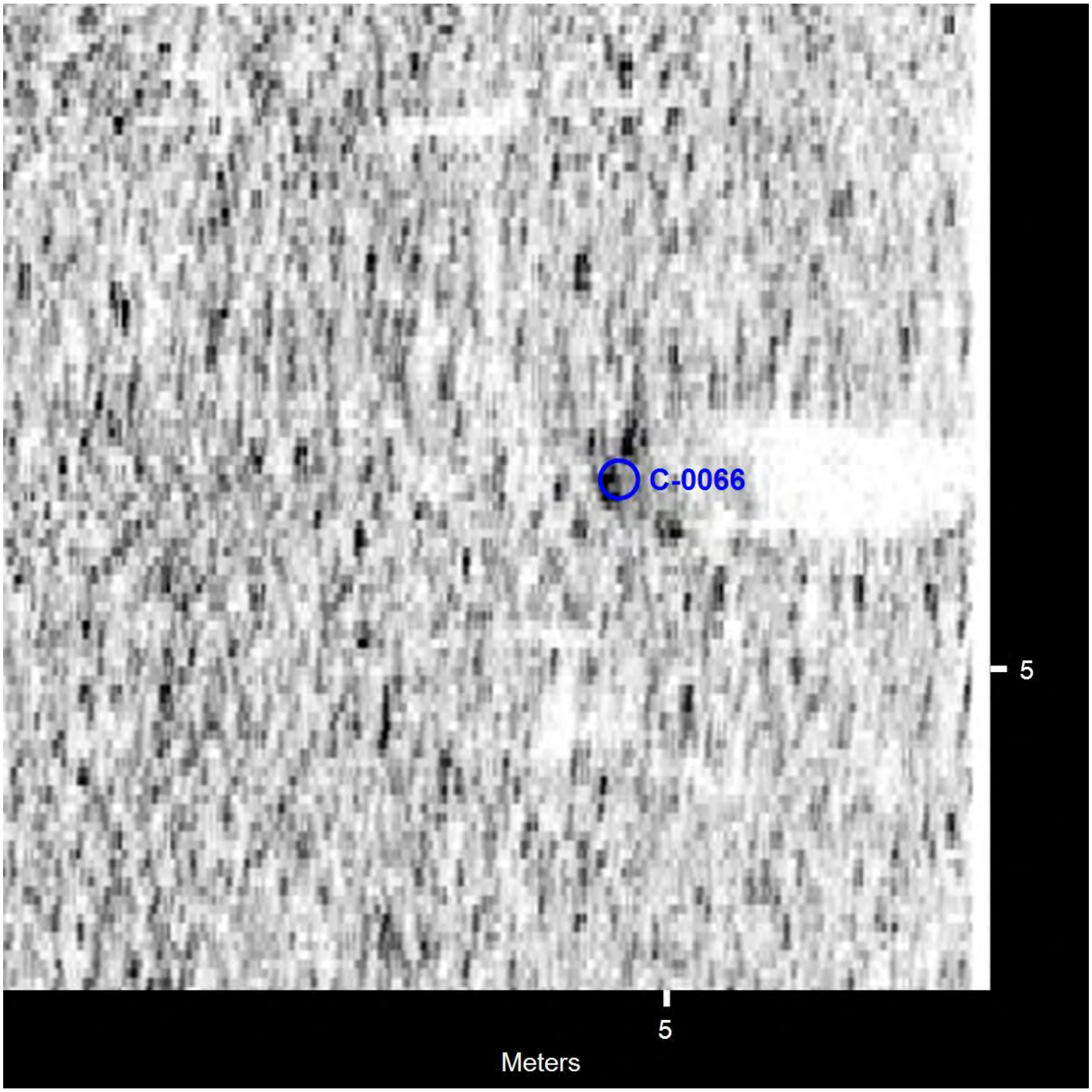


C-0065

- Click Position
  41.4668685821 -70.5808190029 (WGS84)
  (X) 367991.15 (Y) 4591792.08 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819182637H.xtf

Dimensions and attributes

- Target Width: 0.5 Meters
- Target Height: 0.3 Meters
- Target Length: 1.2 Meters
- Target Shadow: 2.6 Meters
- Classification1: Fishing Gear
- Description: **Likely conch trap**

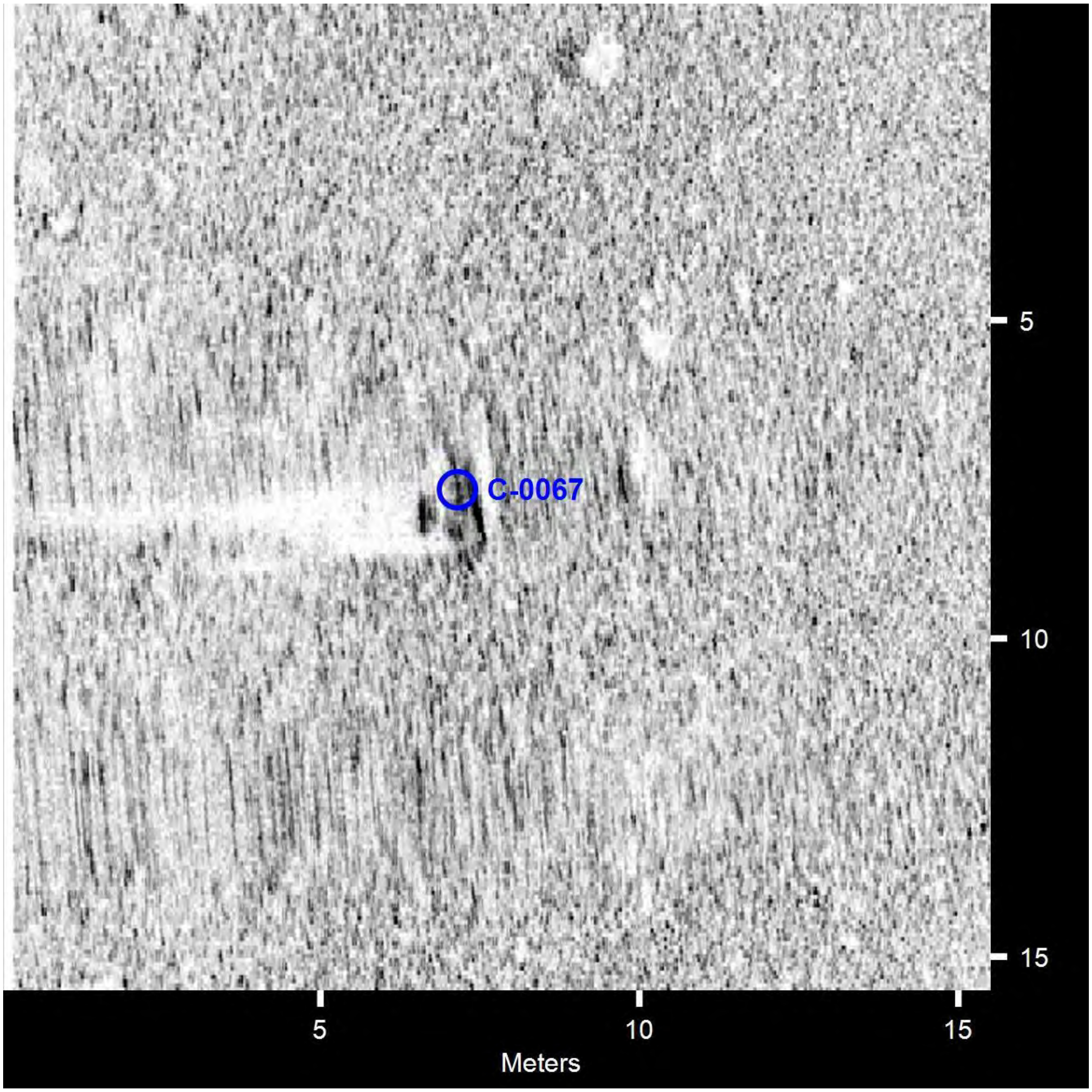


C-0066

- Click Position
  41.4667154553 -70.5808591280 (WGS84)
  (X) 367987.49 (Y) 4591775.14 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819182637H.xtf

Dimensions and attributes

- Target Width: 0.5 Meters
- Target Height: 0.2 Meters
- Target Length: 0.9 Meters
- Target Shadow: 2.0 Meters
- Classification1: Fishing Gear
- Description: **Likely conch trap**

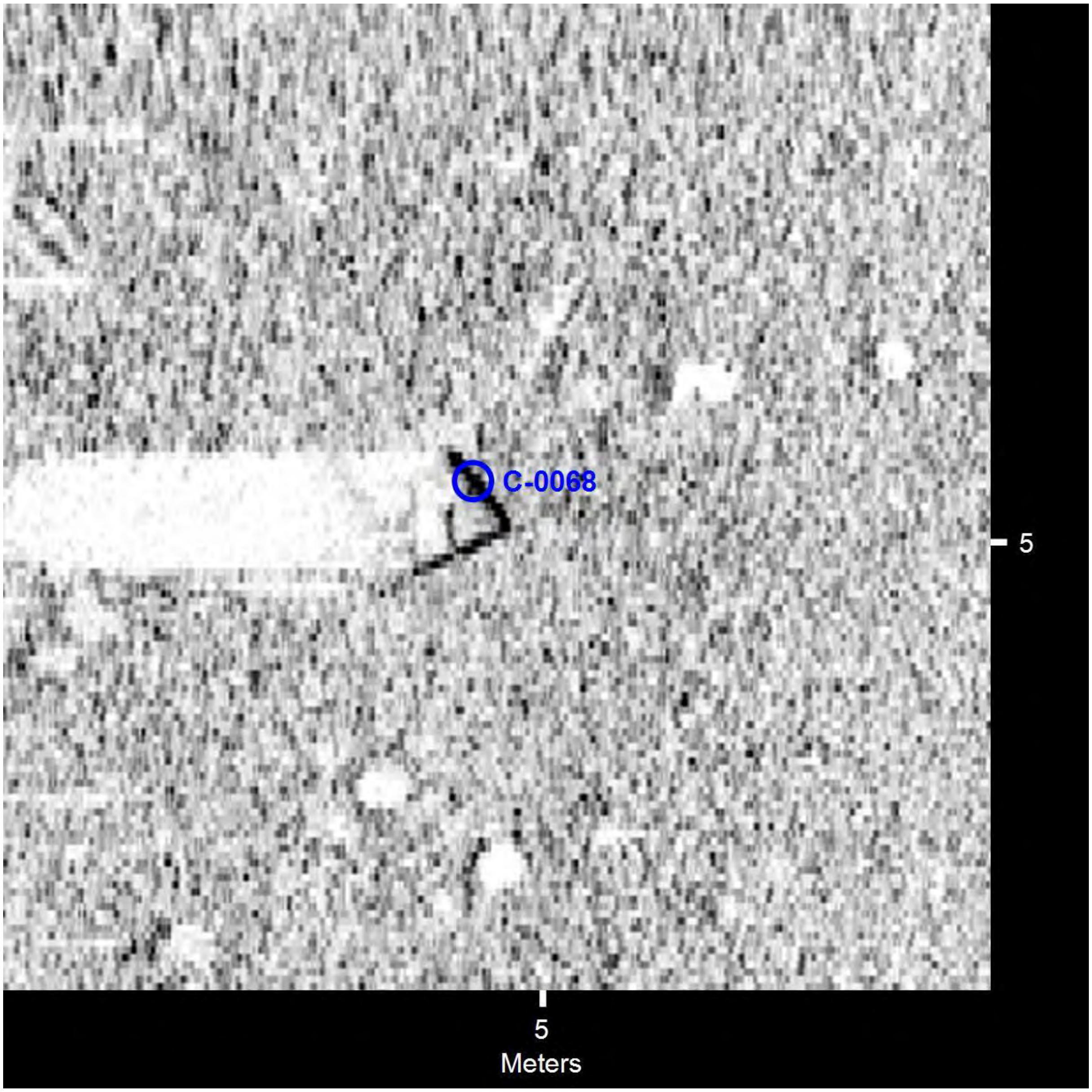


C-0067

- Click Position
  41.4662185689 -70.5791383567 (WGS84)
  (X) 368130.18 (Y) 4591717.35 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819173032H.xtf

Dimensions and attributes

- Target Width: 0.7 Meters
- Target Height: 0.6 Meters
- Target Length: 1.7 Meters
- Target Shadow: 4.8 Meters
- Classification1: Fishing Gear
- Description: **Likely conch trap**

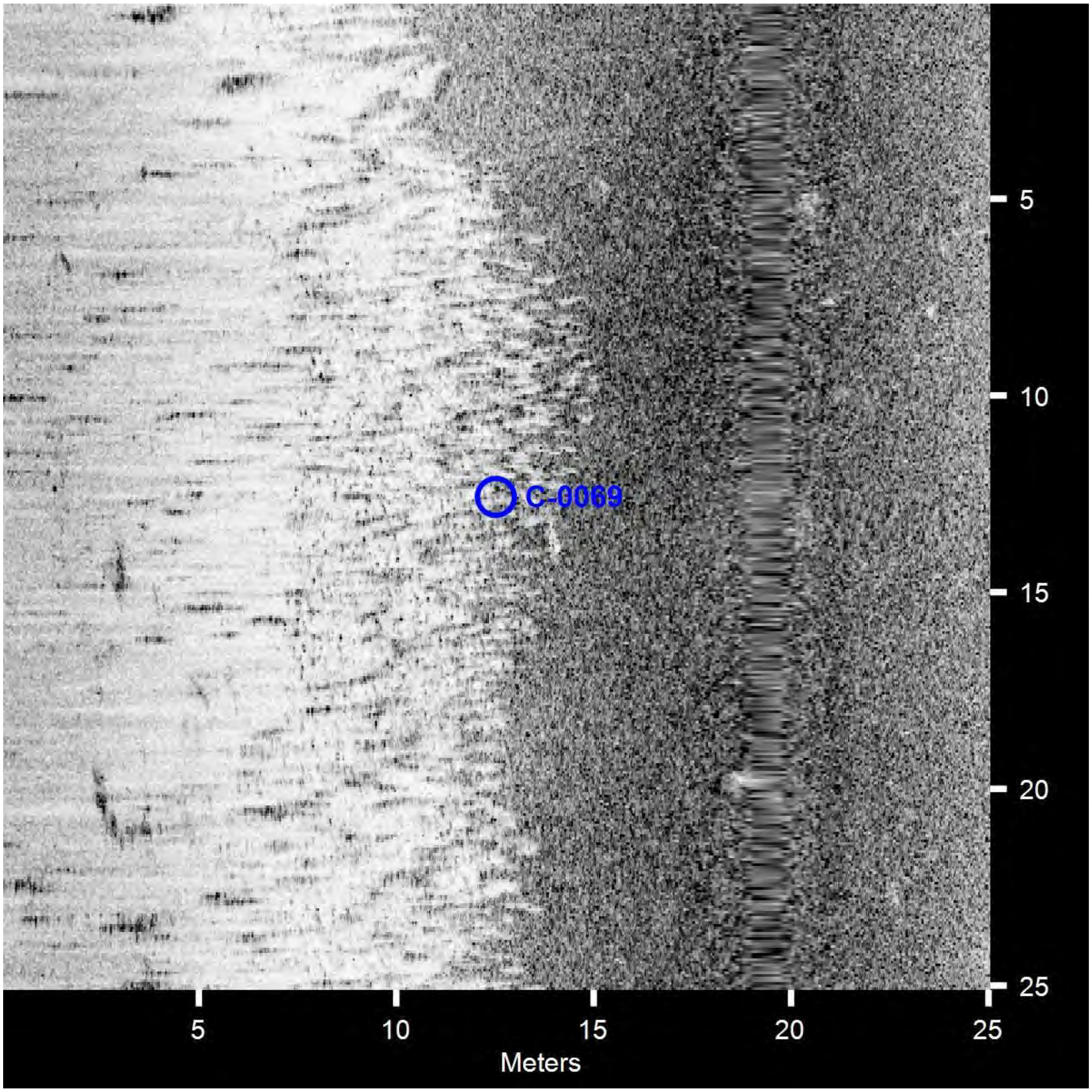


C-0068

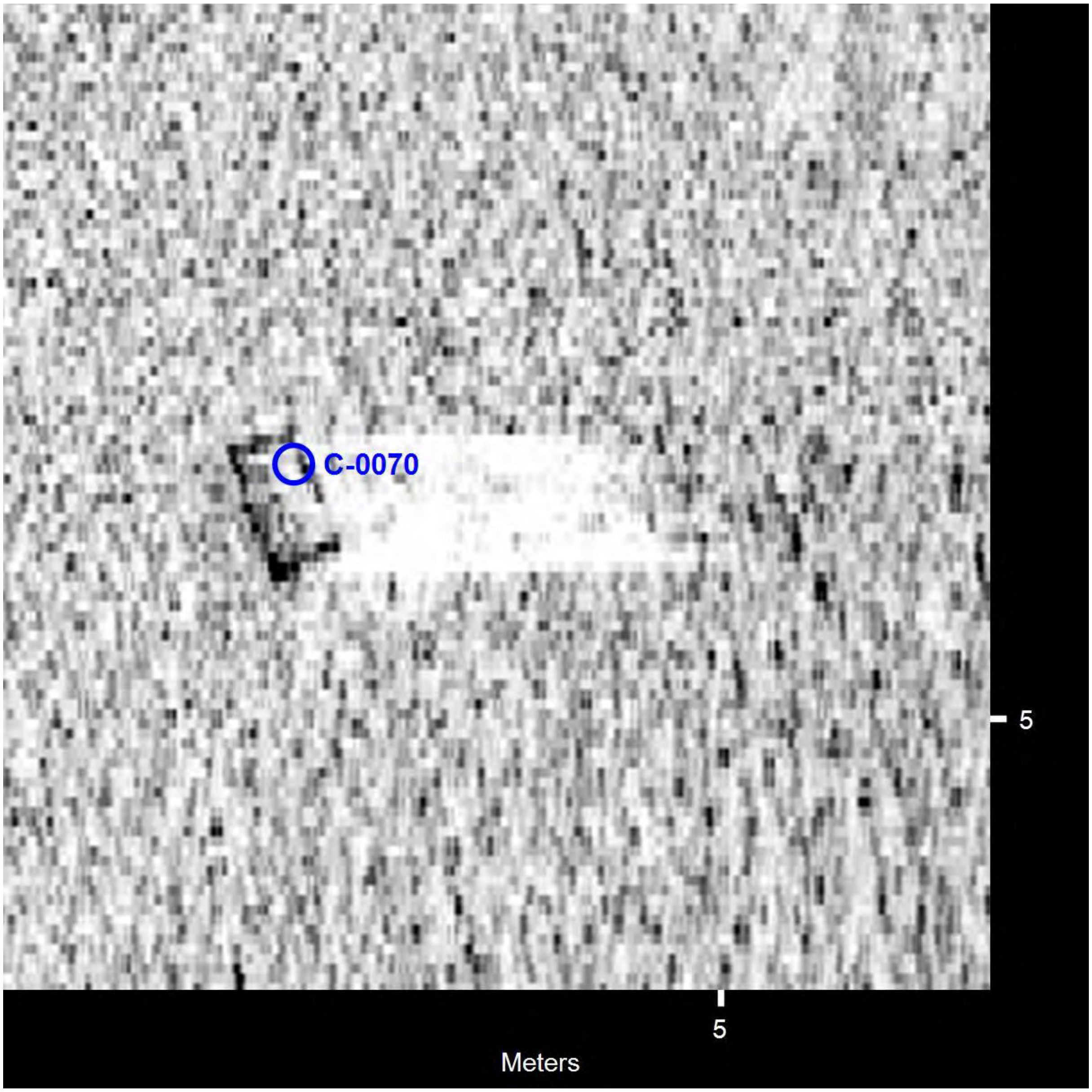
- Click Position
  41.4660262569 -70.5791620656 (WGS84)
  (X) 368127.81 (Y) 4591696.03 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819173032H.xtf

Dimensions and attributes

- Target Width: 1.0 Meters
- Target Height: 0.5 Meters
- Target Length: 1.4 Meters
- Target Shadow: 4.0 Meters
- Classification1: Fishing Gear
- Description: **Likely conch trap**



C-0069	**Dimensions and attributes**
● Click Position 41.4660129541 -70.5814213950 (WGS84) (X) 367939.11 (Y) 4591698.00 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819180311H.xtf	● Target Width: 0.0 Meters ● Target Height: 0.0 Meters ● Target Length: 0.0 Meters ● Target Shadow: 0.0 Meters ● Classification1**: Fish shoal (typical)** Likely False albacore ● Description:

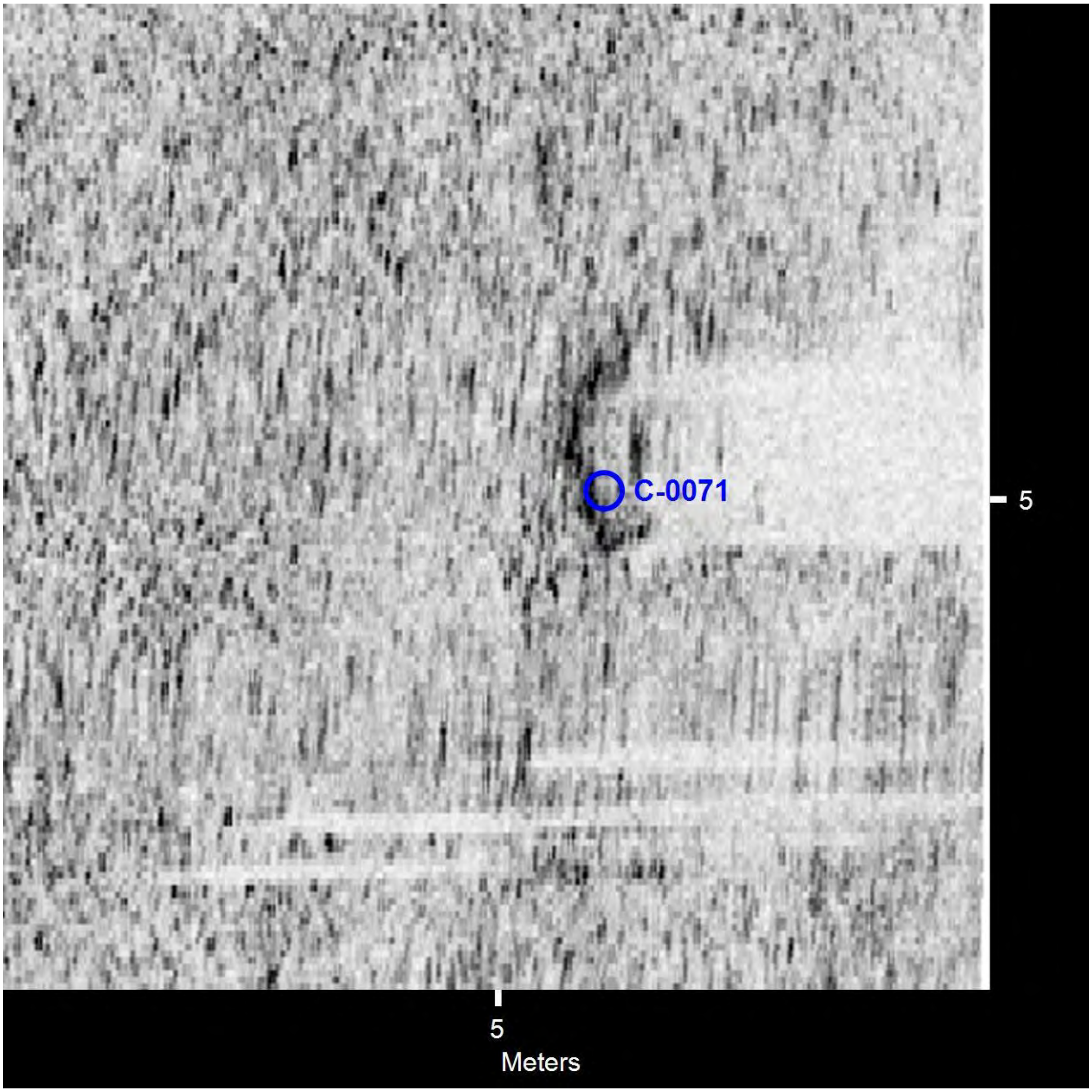


C-0070

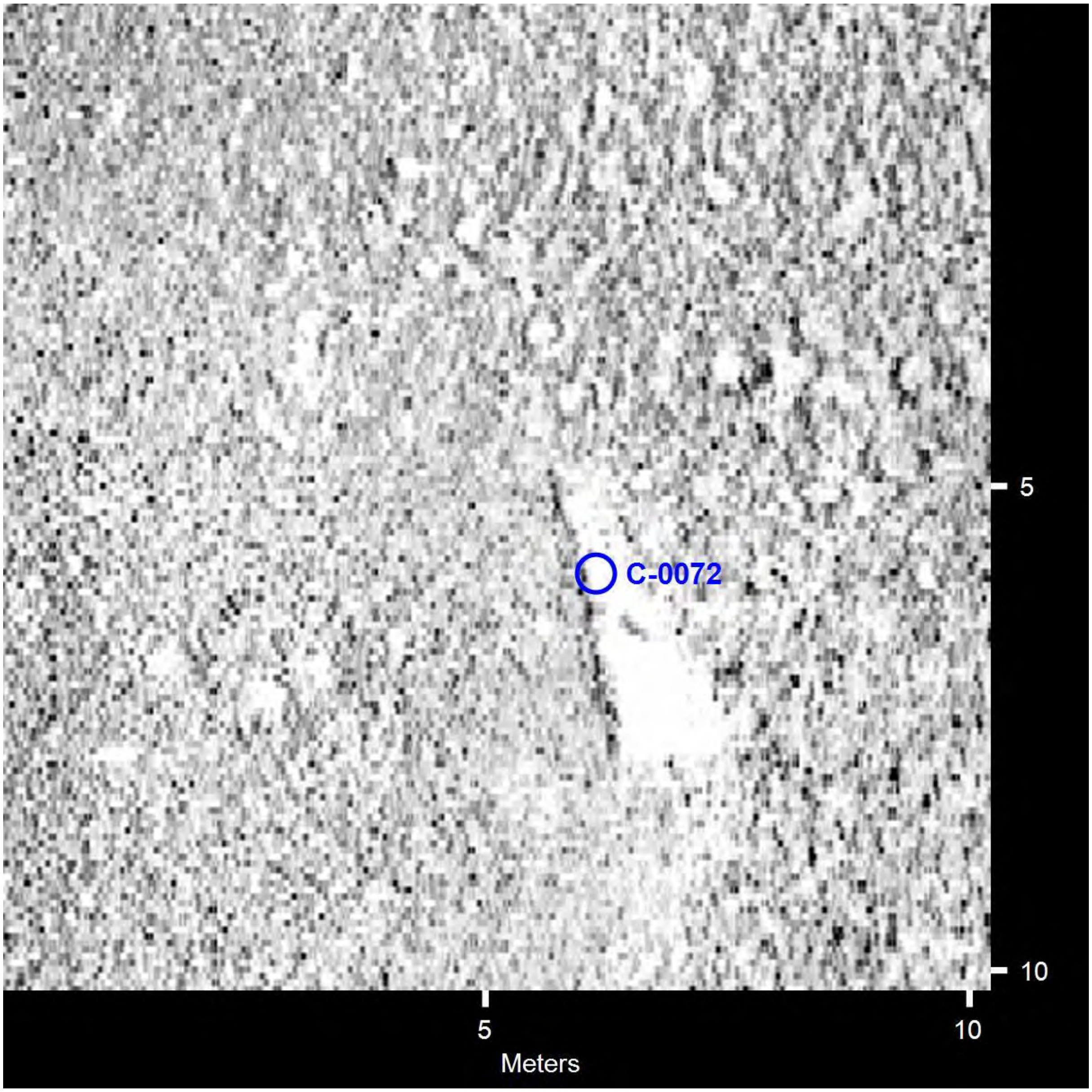
- Click Position
  41.4658535738 -70.5795433837 (WGS84)
  (X) 368095.62 (Y) 4591677.44 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819173032H.xtf

Dimensions and attributes

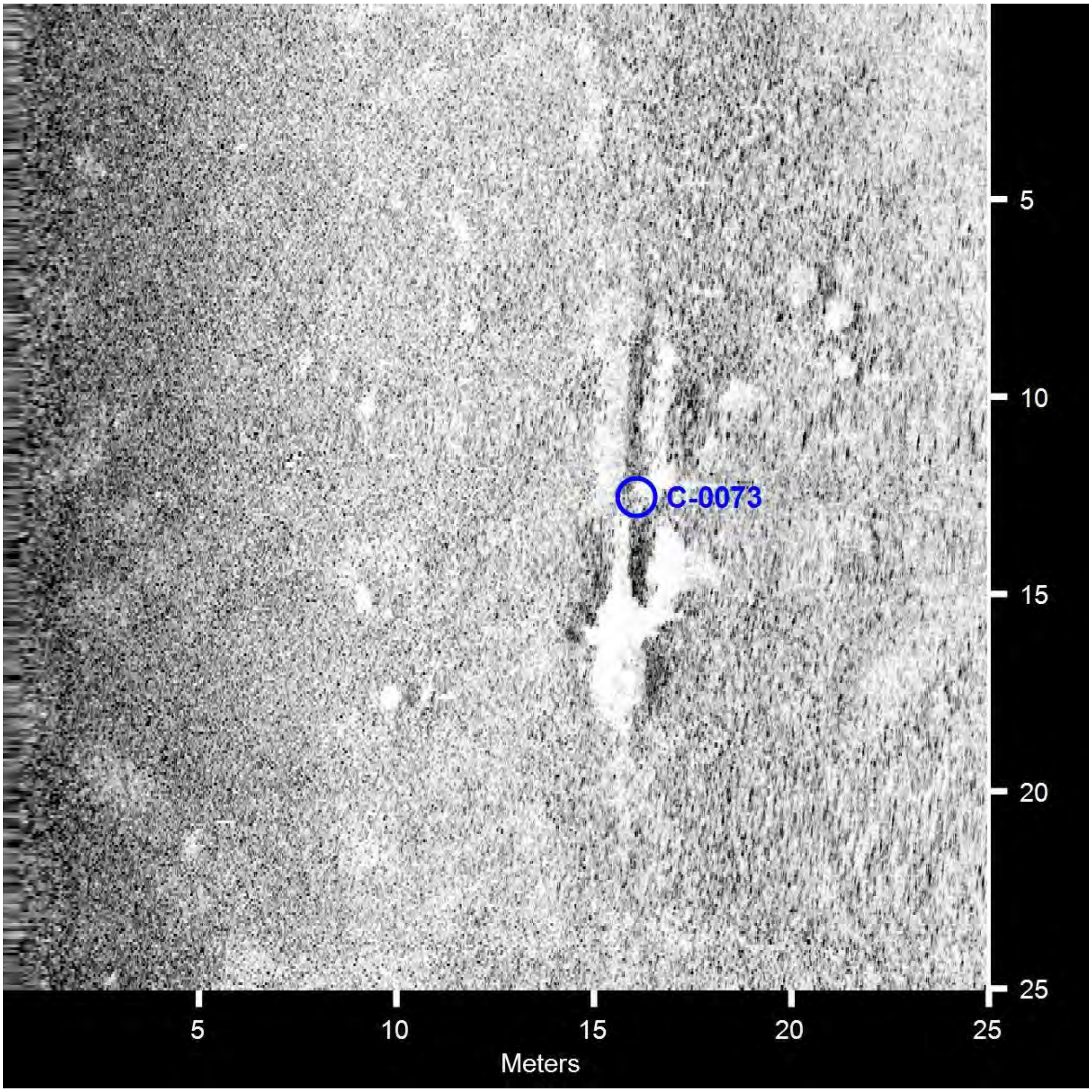
- Target Width: 0.6 Meters
- Target Height: 0.3 Meters
- Target Length: 1.0 Meters
- Target Shadow: 2.2 Meters
- Classification1: Fishing Gear
- Description: **Likely conch trap**



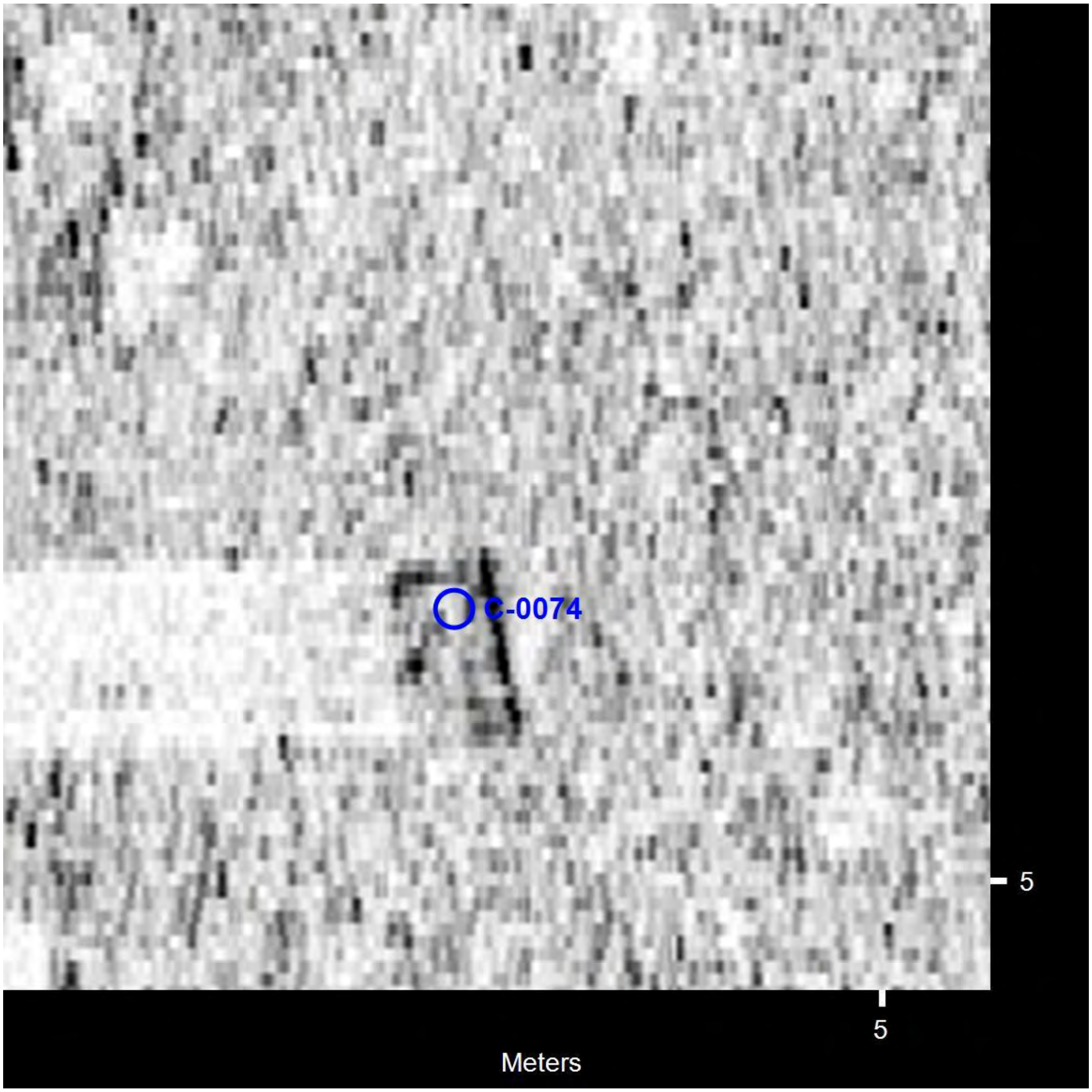
C-0071	Dimensions and attributes
● Click Position 41.4655569425 -70.5811618046 (WGS84) (X) 367959.86 (Y) 4591646.98 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819180311H.xtf	● Target Width: 0.8 Meters ● Target Height: 0.3 Meters ● Target Length: 1.6 Meters ● Target Shadow: 2.9 Meters ● Classification1: Fishing Gear ● Description: **Likely conch trap**



C-0072	Dimensions and attributes
● Click Position 41.4654899177 -70.5796009636 (WGS84) (X) 368090.07 (Y) 4591637.16 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819195304H.xtf	● Target Width: 0.3 Meters ● Target Height: 0.2 Meters ● Target Length: 3.0 Meters ● Target Shadow: 1.2 Meters ● Classification1: **Debris** ● Description:



C-0073	Dimensions and attributes
● Click Position 41.4653001367 -70.5819732187 (WGS84) (X) 367891.58 (Y) 4591619.71 (Projected Coordinates) ● Map Projection: UTM83-19 ● Acoustic Source File: ¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819163714H.xtf	● Target Width: 1.1 Meters ● Target Height: 0.0 Meters ● Target Length: 9.4 Meters ● Target Shadow: 0.0 Meters ● Classification1**: Trench** ● Description:



C-0074

- Click Position
  41.4650620872 -70.5802790628 (WGS84)
  (X) 368032.58 (Y) 4591590.69 (Projected Coordinates)
- Map Projection: UTM83-19
- Acoustic Source File:
¥¥Amesbury_1817¥CR_Projects¥Eversource_MV_2021¥eversource_sss_data¥20210819183719H.xtf

Dimensions and attributes

- Target Width: 0.5 Meters
- Target Height: 0.3 Meters
- Target Length: 1.3 Meters
- Target Shadow: 2.1 Meters
- Classification1: Fishing Gear
- Description: **Likely conch trap**

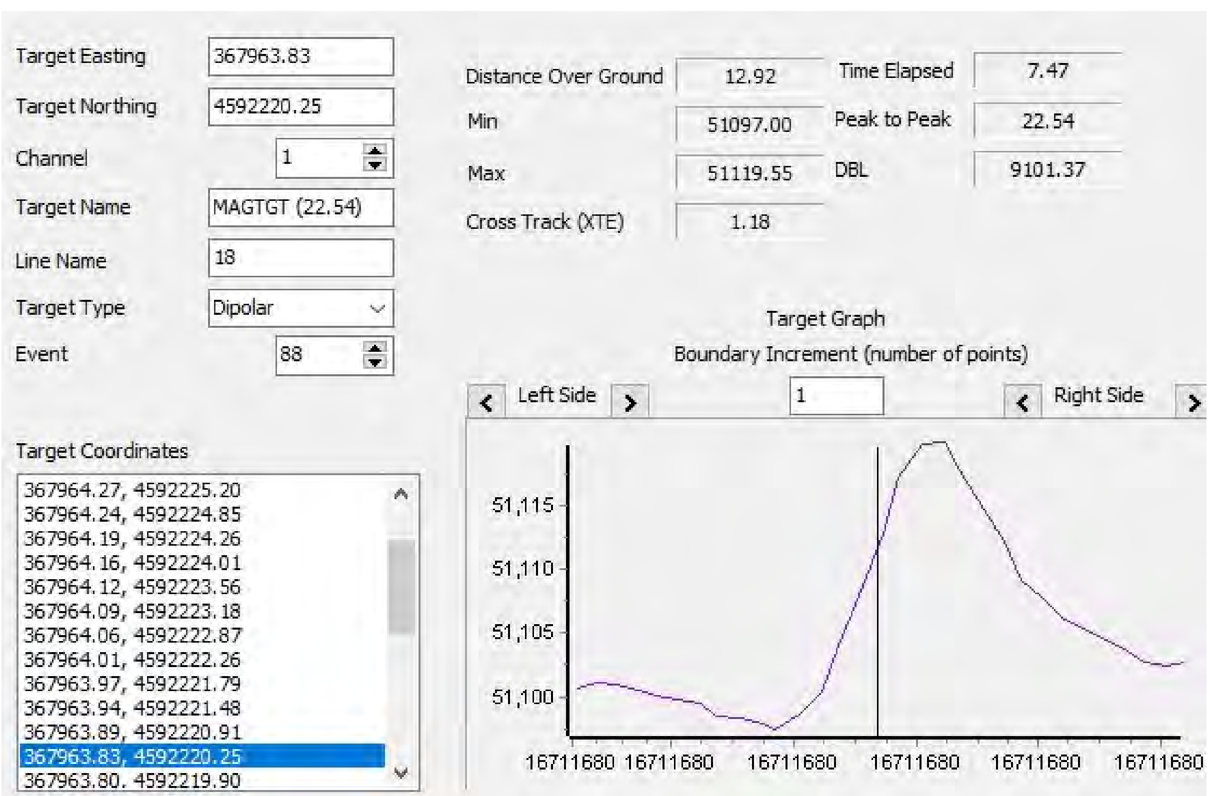
APPENDIX B

Digitized Magnetic Anomalies

APPENDIX B

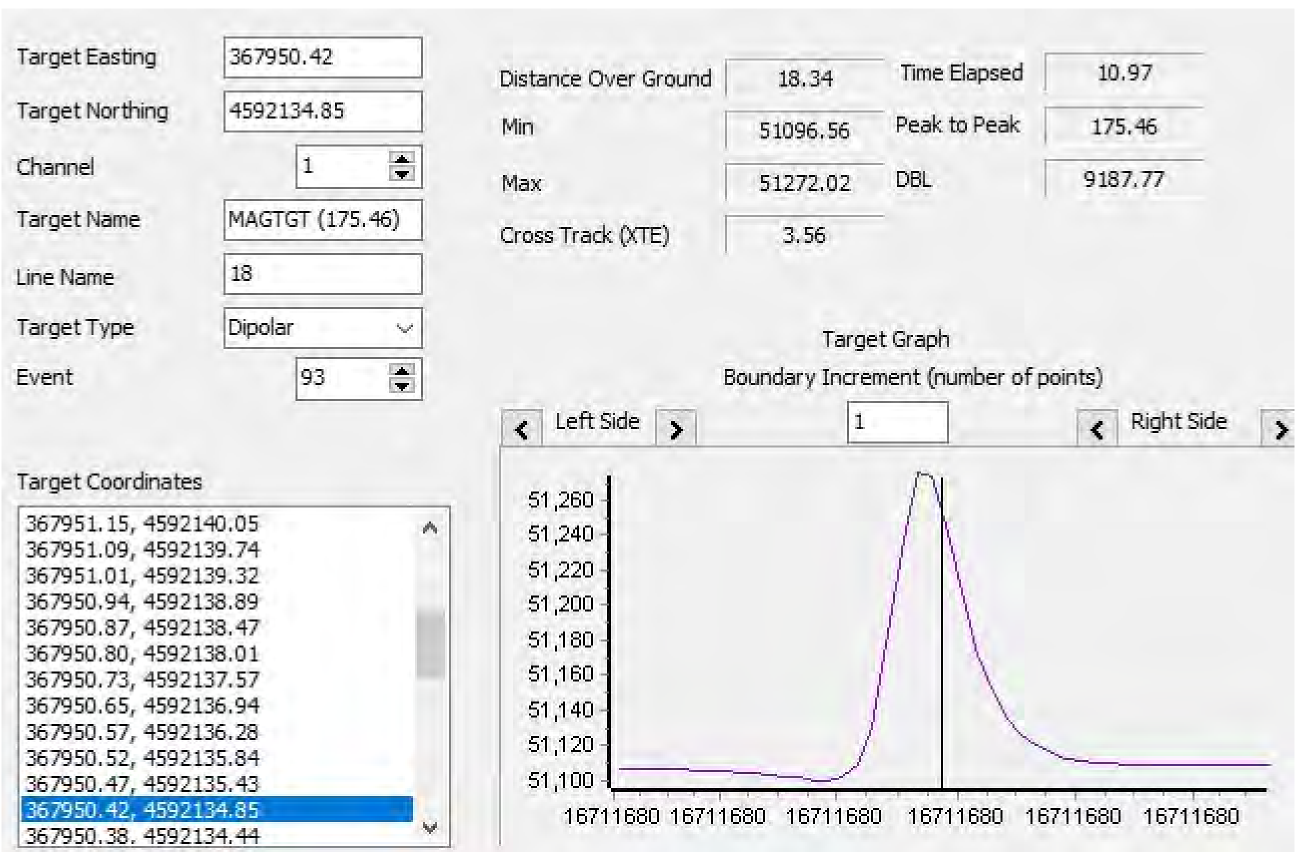
Digitized Magnetic Anomalies
Eversource 5th Cable Survey Corridor
Vineyard Sound, MA

Name	Date	10/05/2021
MAGTGT (22.54)	Time	10:54:08
Survey File	Event	88
18	X	367963.0
Capture File	Y	4592220.0
367963.83.4592220.25.22.54.51112.31.1.jpg	WGS84 Latitude	41 28 14.5811 N
	WGS84 Longitude	070 34 52.4986 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0



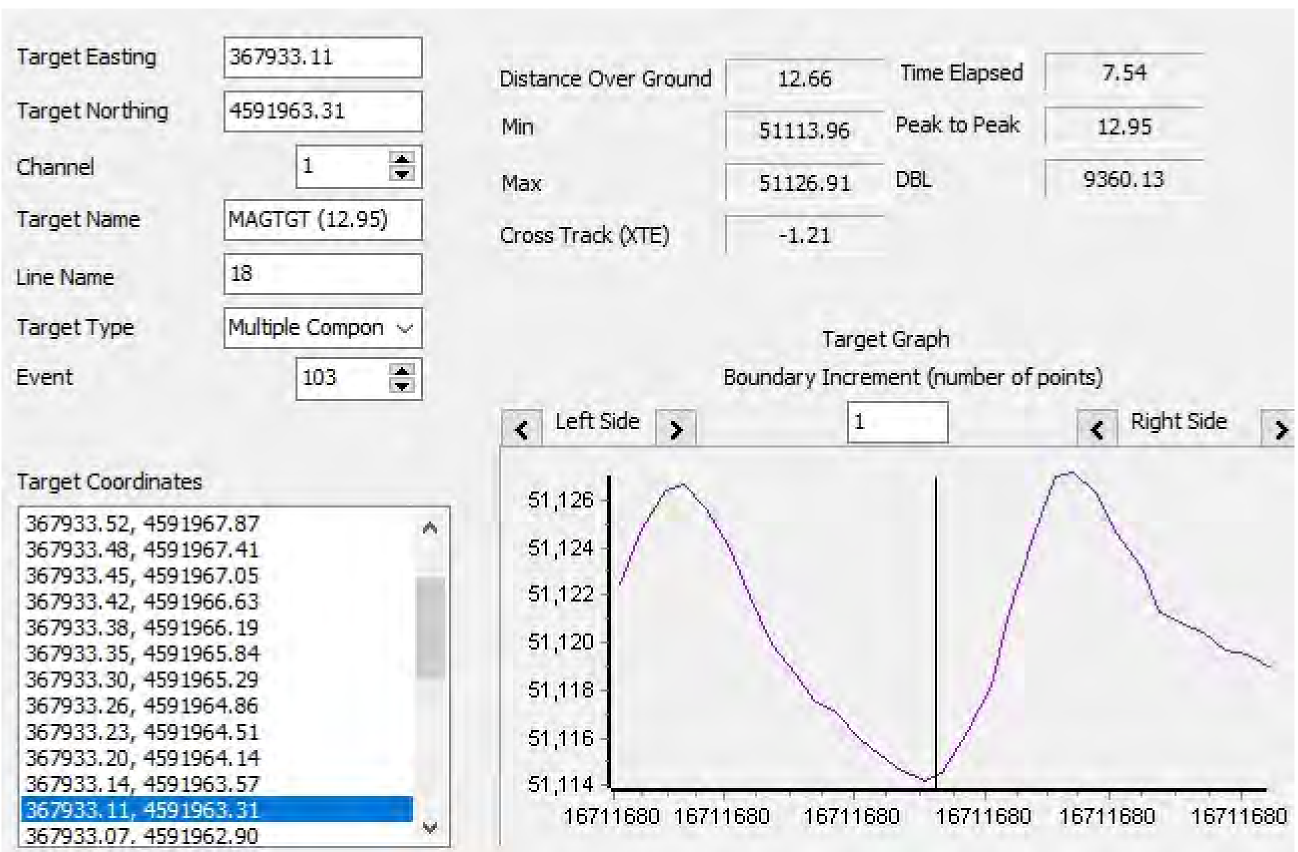
Name	Date	10/05/2021
MAGTGT (175.46)	Time	10:54:25
Survey File	Event	93
18	X	367950.0
Capture File	Y	4592134.0
367950.42.4592134.85.175.46.51237.78.1.jpg	WGS84 Latitude	41 28 11.7857 N
	WGS84 Longitude	070 34 53 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



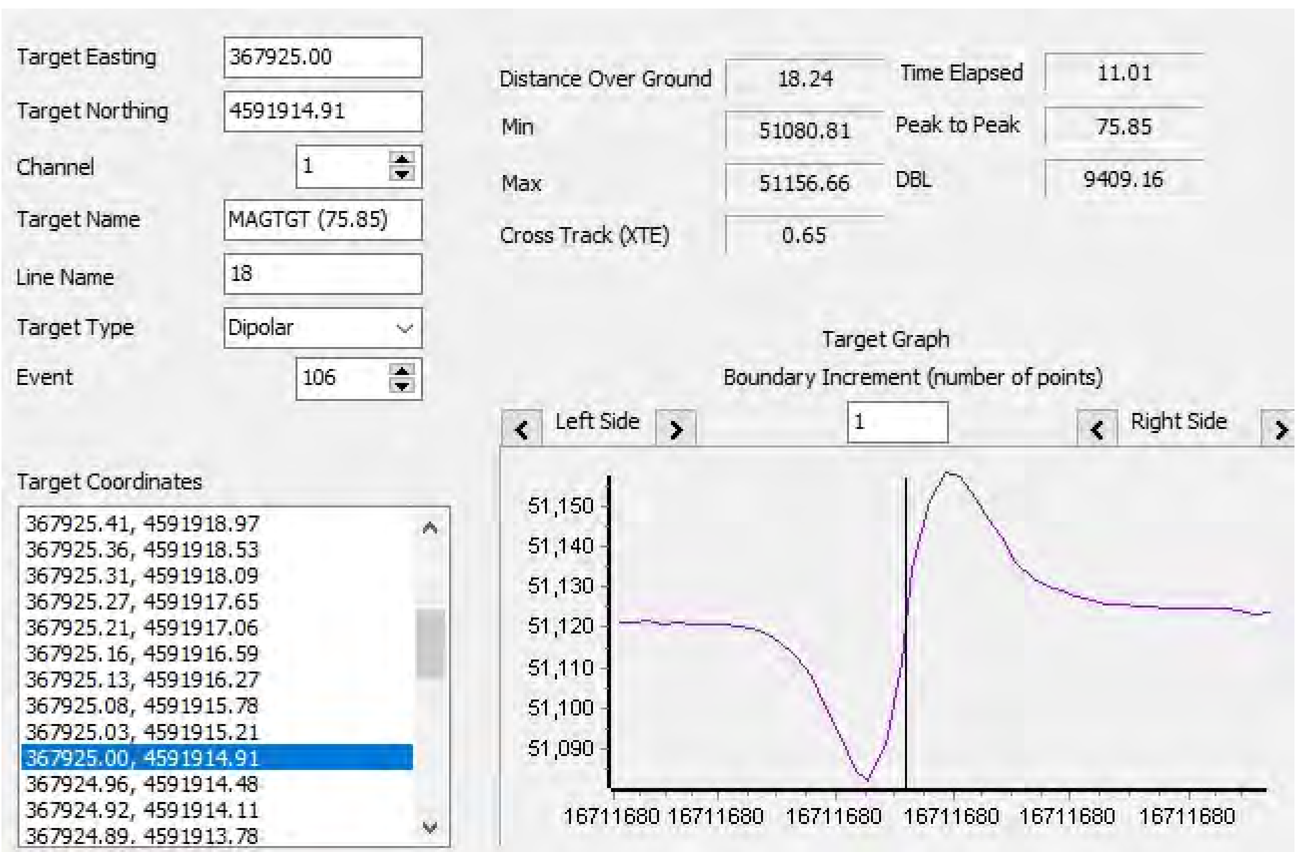
Name	Date	10/05/2021
MAGTGT (12.95)	Time	10:54:39
Survey File	Event	103
18	X	367933.0
Capture File	Y	4591963.0
367933.11.4591963.31.12.95.51114.29.1.jpg	WGS84 Latitude	41 28 6.2328 N
	WGS84 Longitude	070 34 53.589 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



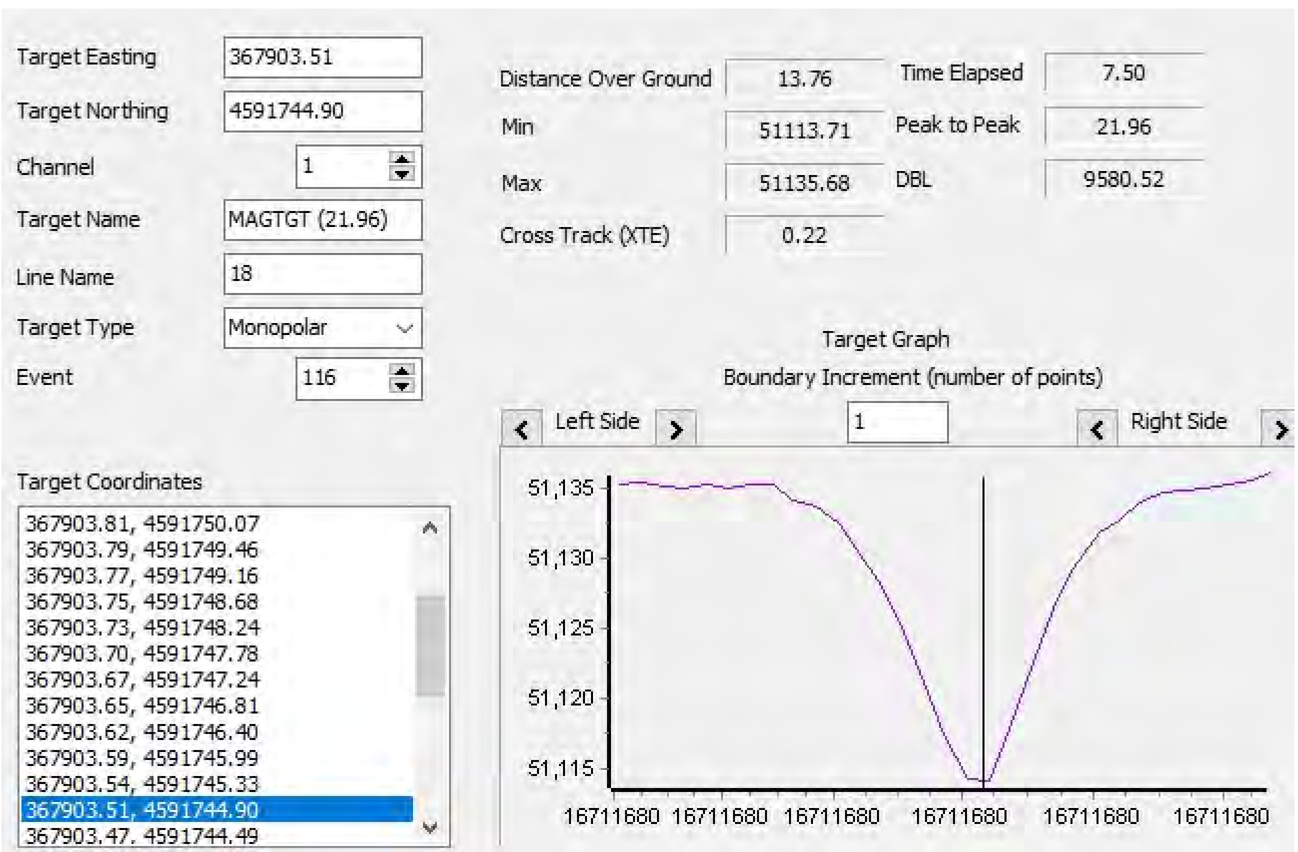
Name	Date	10/05/2021
MAGTGT (75.85)	Time	10:55:02
Survey File	Event	106
18	X	367924.0
Capture File	Y	4591914.0
367925.00.4591914.91.75.85.51156.66.1.jpg	WGS84 Latitude	41 28 4.6391 N
	WGS84 Longitude	070 34 53.9383 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



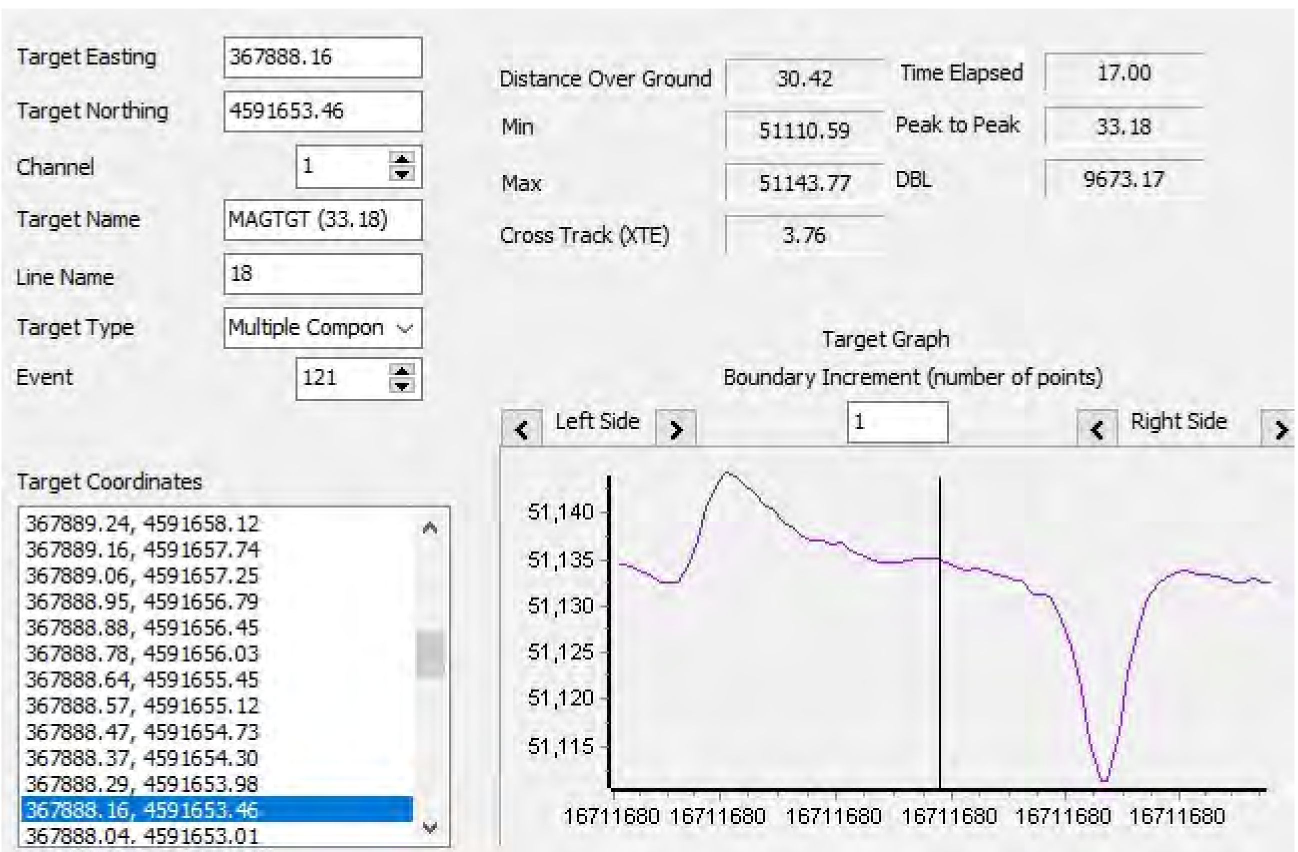
Name	Date	10/05/2021
MAGTGT (21.96)	Time	10:55:19
Survey File	Event	116
18	X	367903.0
Capture File	Y	4591744.0
367903.51.4591744.90.21.96.51116.96.1.jpg	WGS84 Latitude	41 27 59.1162 N
	WGS84 Longitude	070 34 54.7093 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



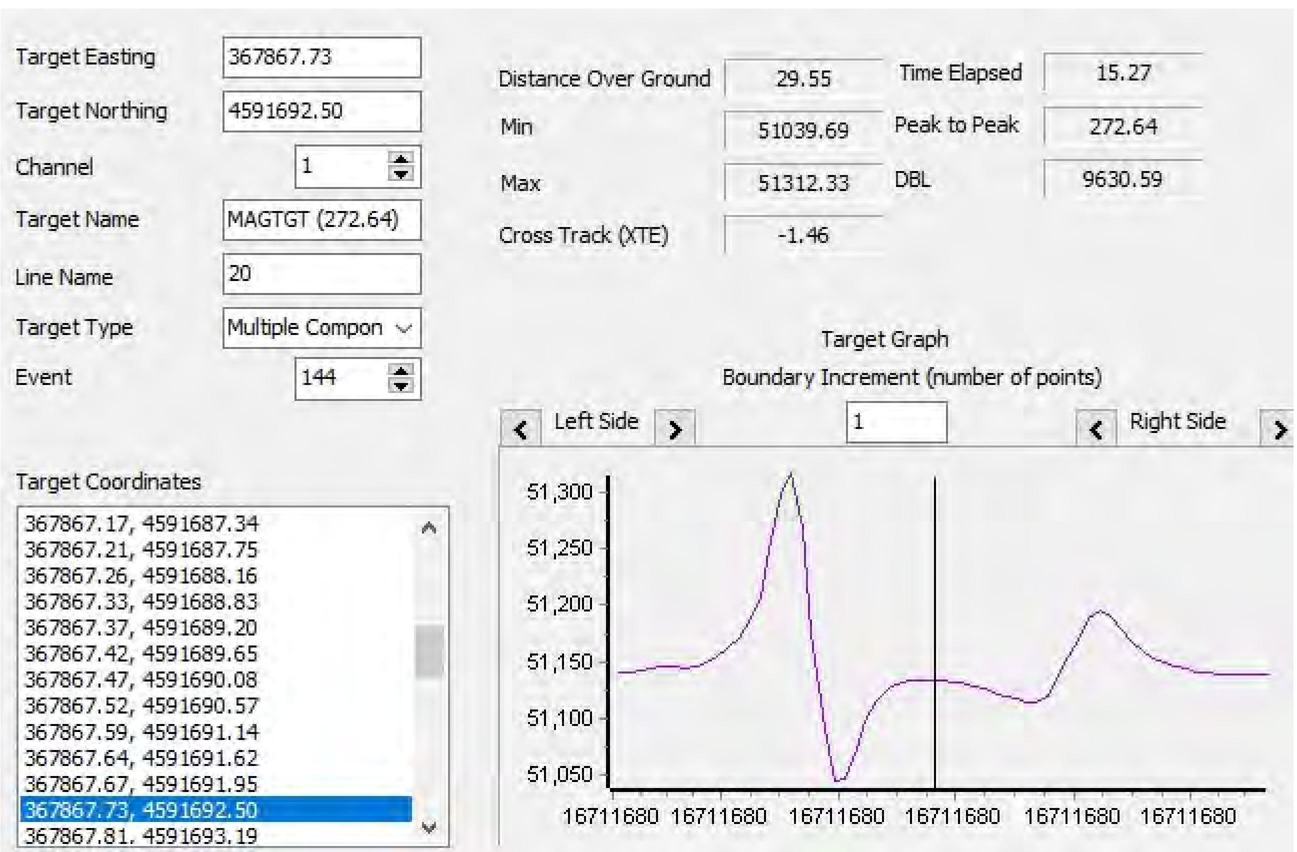
Name	Date	10/05/2021
MAGTGT (33.18)	Time	10:55:36
Survey File	Event	121
18	X	367888.0
Capture File	Y	4591653.0
367888.16.4591653.46.33.18.51134.11.1.jpg	WGS84 Latitude	41 27 56.1576 N
	WGS84 Longitude	070 34 55.284 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



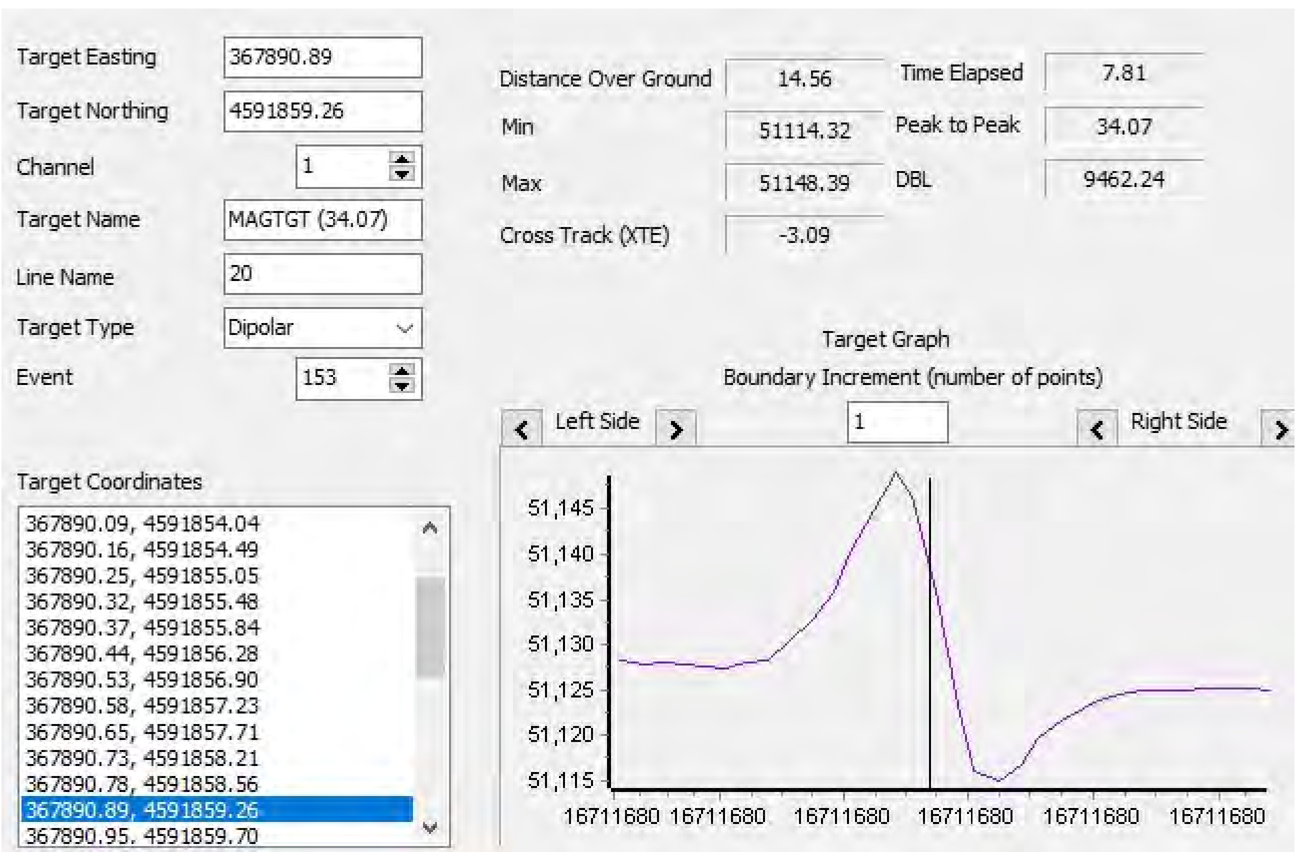
Name	Date	10/05/2021
MAGTGT (272.64)	Time	10:55:55
Survey File	Event	144
20	X	367867.0
Capture File	Y	4591692.0
367867.73.4591692.50.272.64.51127.52.2.jpg	WGS84 Latitude	41 27 57.4093 N
	WGS84 Longitude	070 34 56.2197 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



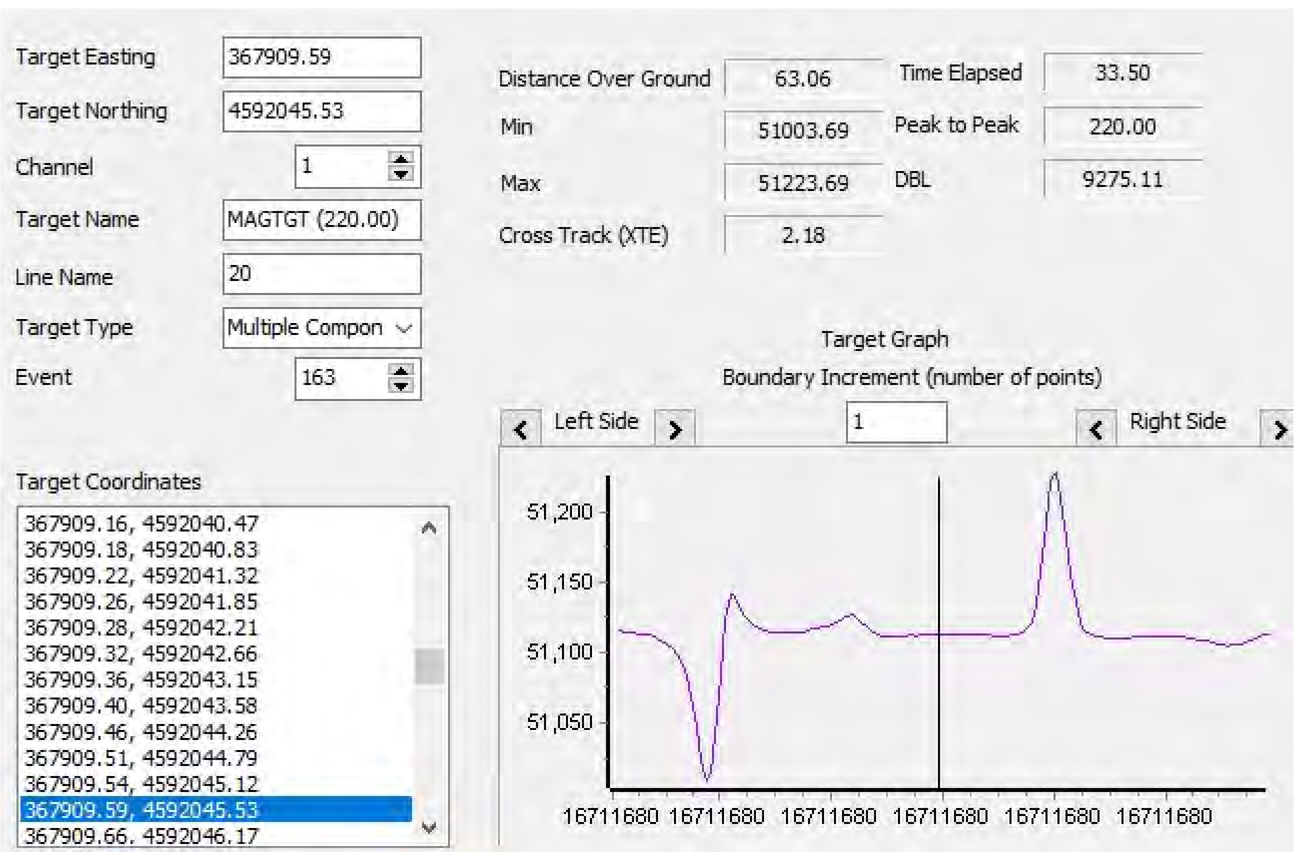
Name	Date	10/05/2021
MAGTGT (34.07)	Time	10:56:35
Survey File	Event	153
20	X	367890.0
Capture File	Y	4591859.0
367890.89.4591859.26.34.07.51135.30.2.jpg	WGS84 Latitude	41 28 2.8362 N
	WGS84 Longitude	070 34 55.3602 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



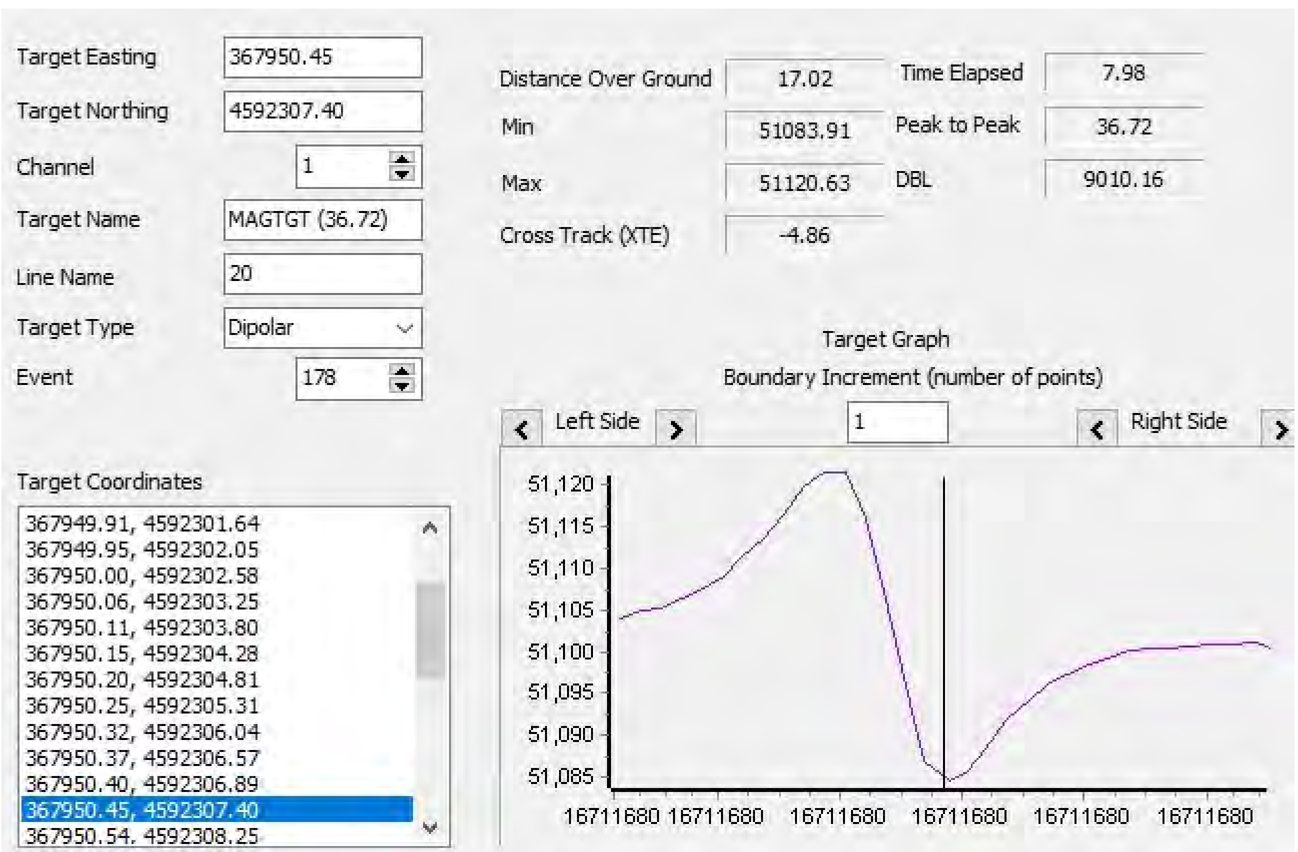
Name	Date	10/05/2021
MAGTGT (220.00)	Time	10:56:50
Survey File	Event	163
20	X	367909.0
Capture File	Y	4592045.0
367909.59.4592045.53.220.00.51108.08.2.jpg	WGS84 Latitude	41 28 8.8765 N
	WGS84 Longitude	070 34 54.6879 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



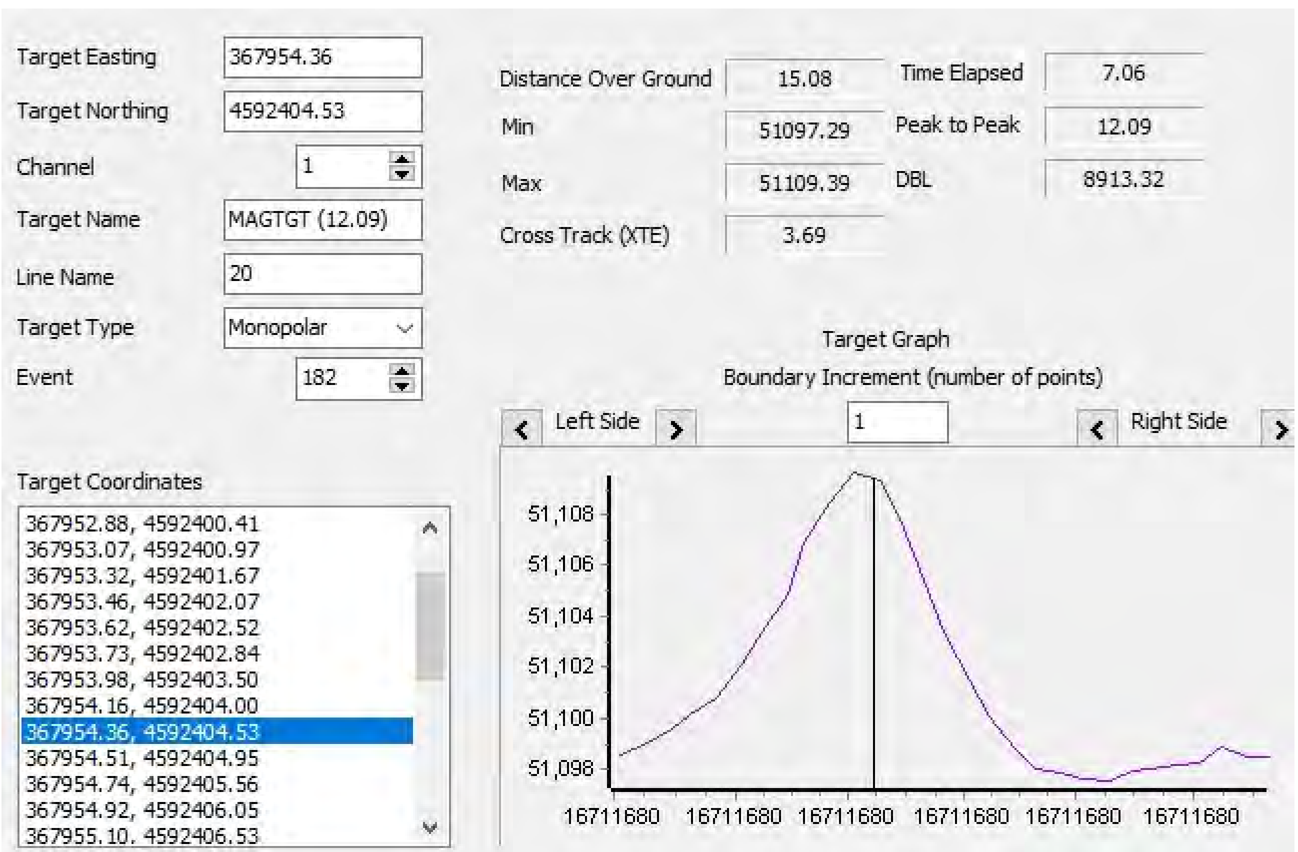
Name	Date	10/05/2021
MAGTGT (36.72)	Time	10:57:07
Survey File	Event	178
20	X	367950.0
Capture File	Y	4592307.0
367950.45.4592307.40.36.72. 51083.91.2.jpg	WGS84 Latitude	41 28 17.3935 N
	WGS84 Longitude	070 34 53.1274 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



Name	Date	10/05/2021
MAGTGT (12.09)	Time	10:57:29
Survey File	Event	182
20	X	367954.0
Capture File	Y	4592404.0
367954.36.4592404.53.12.09. 51103.14.2.jpg	WGS84 Latitude	41 28 20.5401 N
	WGS84 Longitude	070 34 53.0315 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	

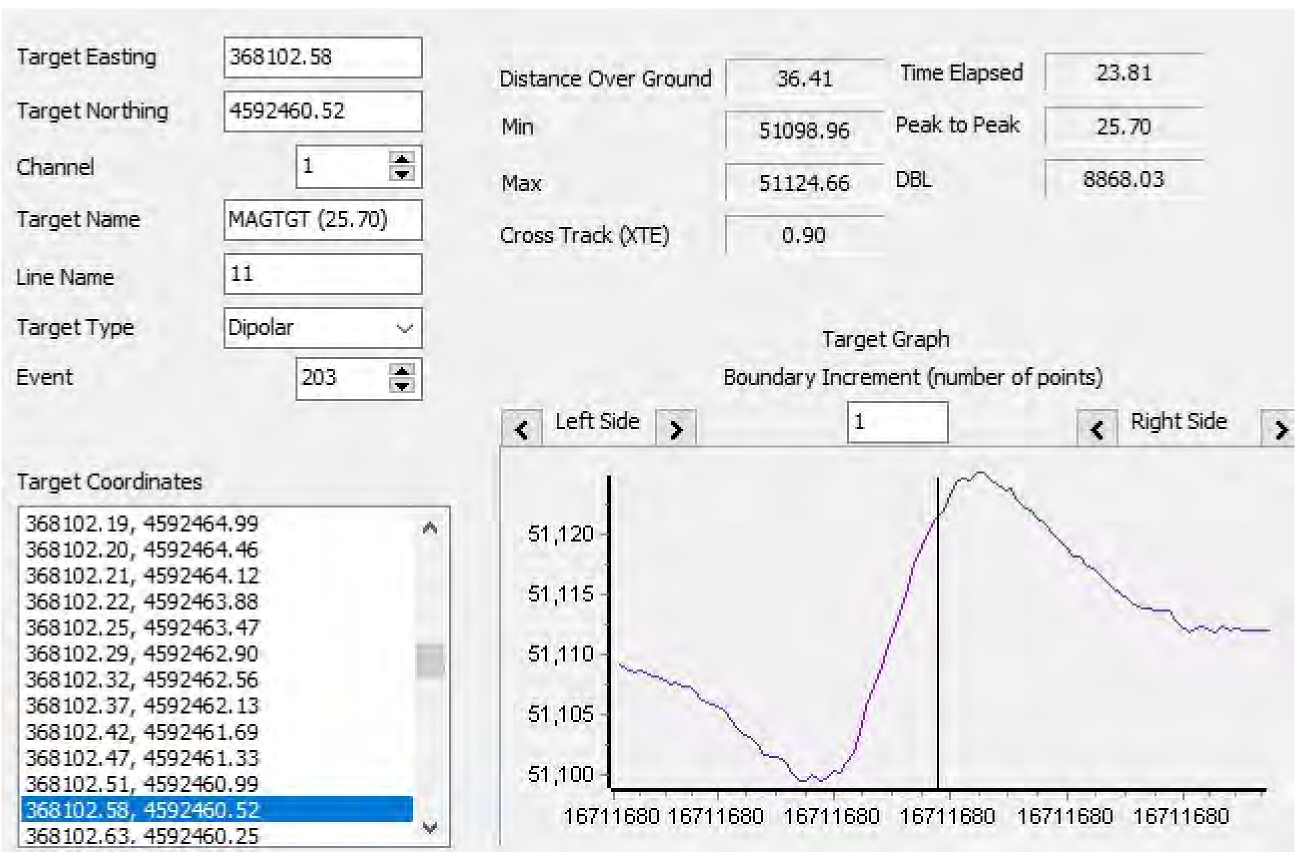


Name	Date	10/05/2021
MAGTGT (25.70)	Time	10:59:59
Survey File	Event	203
11	X	368102.0
Capture File	Y	4592460.0
	WGS84 Latitude	41 28 22.4429 N
	WGS84 Longitude	070 34 46.697 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	

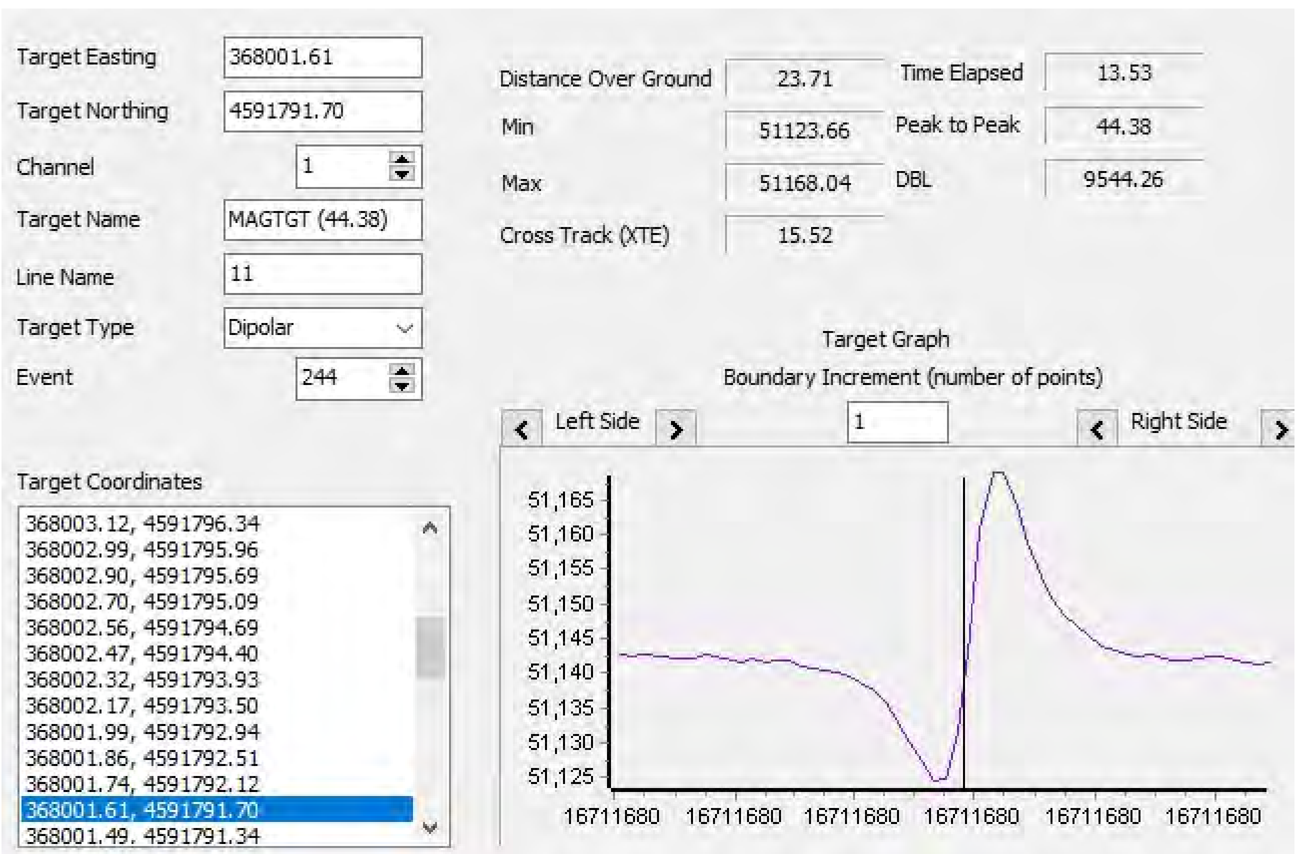
Name	Date	10/05/2021
MAGTGT (25.70)	Time	11:00:04
Survey File	Event	203
11	X	368102.0
Capture File	Y	4592460.0
368102.58.4592460.52.25.70.51121.48.0.jpg	WGS84 Latitude	41 28 22.4429 N
	WGS84 Longitude	070 34 46.697 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



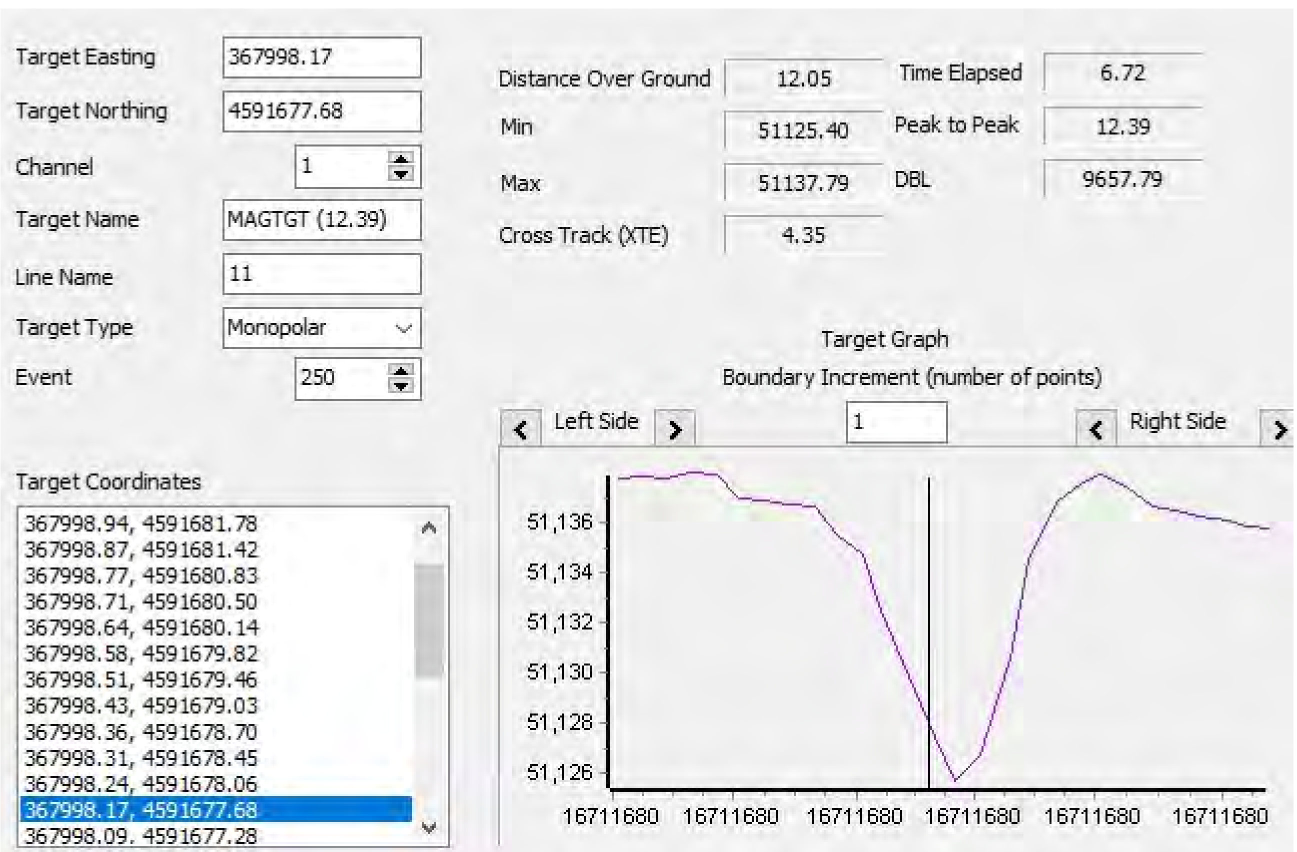
Name	Date	10/05/2021
MAGTGT (44.38)	Time	11:00:44
Survey File	Event	244
11	X	368001.0
Capture File	Y	4591791.0
368001.61.4591791.70.44.38. 51144.57.0.jpg	WGS84 Latitude	41 28 0.6977 N
	WGS84 Longitude	070 34 50.5231 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



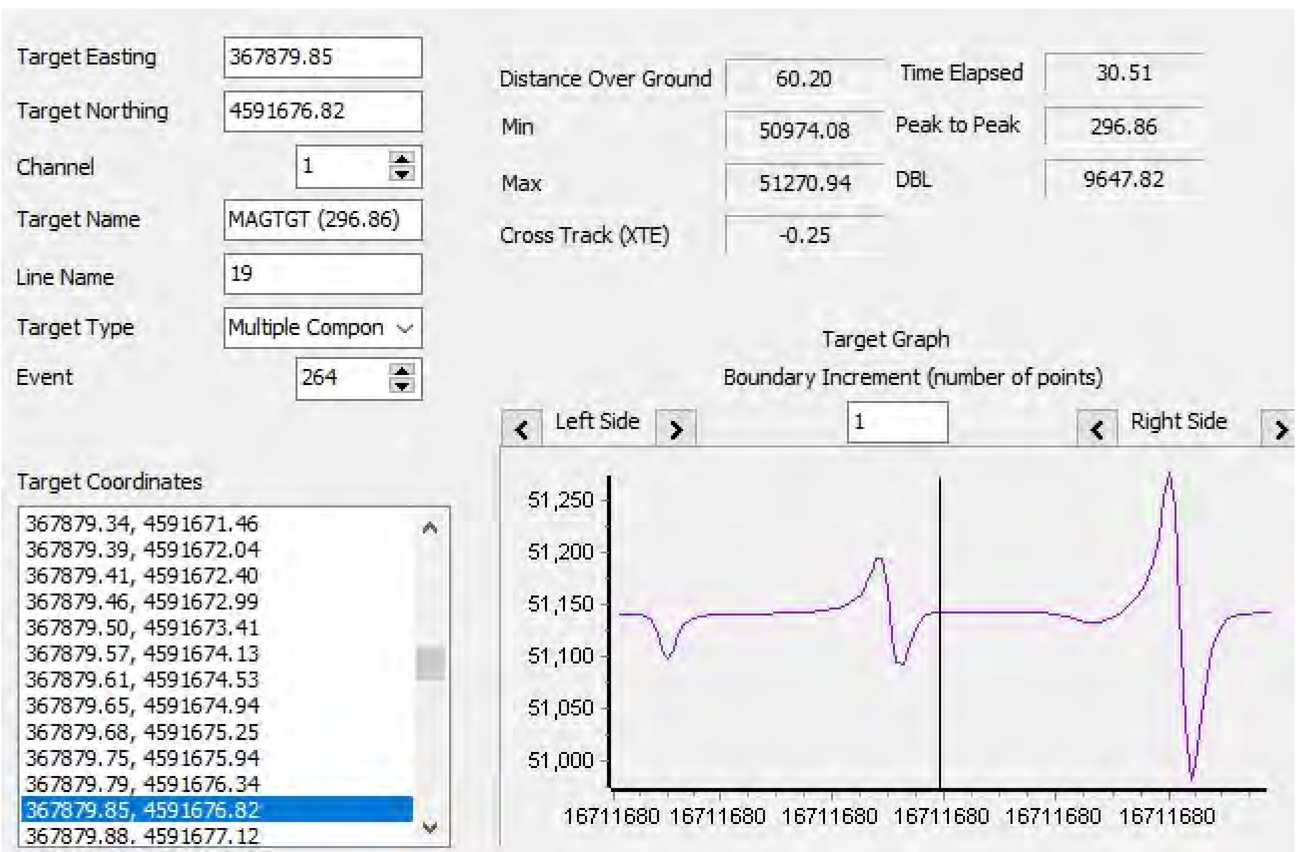
Name	Date	10/05/2021
MAGTGT (12.39)	Time	11:01:08
Survey File	Event	250
11	X	367998.0
Capture File	Y	4591677.0
367998.17.4591677.68.12.39. 51127.19.0.jpg	WGS84 Latitude	41 27 57 N
	WGS84 Longitude	070 34 50.5626 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



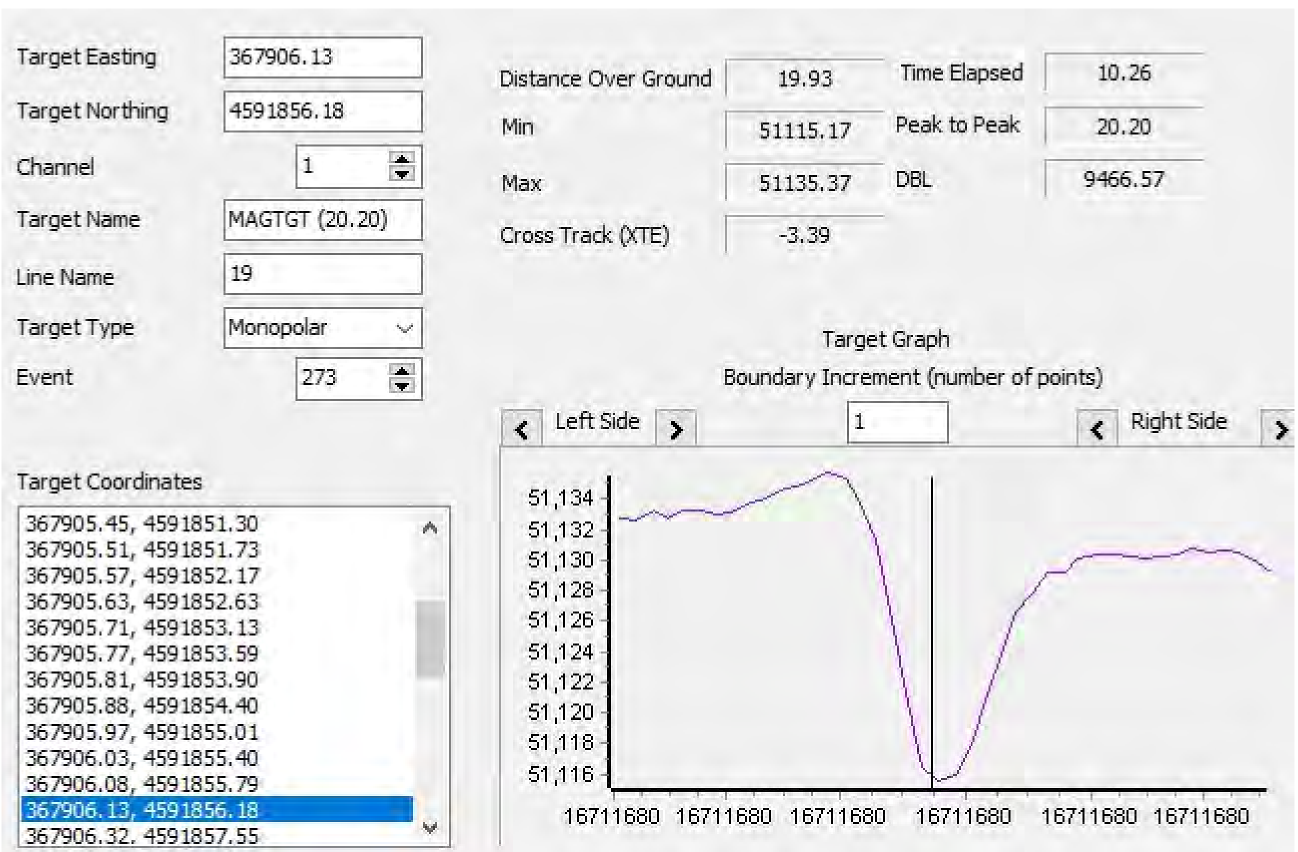
Name	Date	10/05/2021
MAGTGT (296.86)	Time	11:01:32
Survey File	Event	264
19	X	367879.0
Capture File	Y	4591676.0
367879.85.4591676.82.296.86 .51135.55.1.jpg	WGS84 Latitude	41 27 56.8978 N
	WGS84 Longitude	070 34 55.69 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



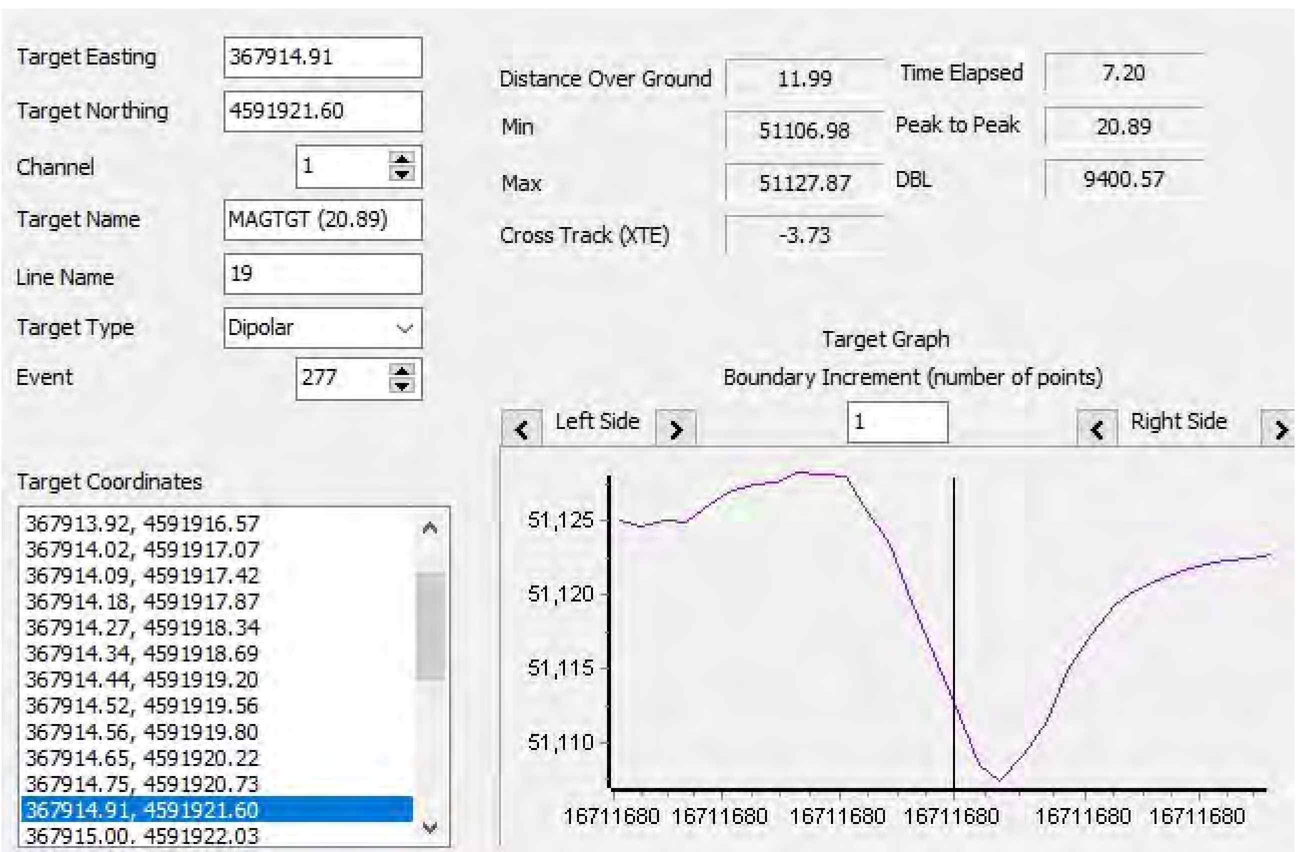
Name	Date	10/05/2021
MAGTGT (20.20)	Time	11:01:57
Survey File	Event	273
19	X	367906.0
Capture File	Y	4591856.0
367906.13.4591856.18.20.20.51115.17.1.jpg	WGS84 Latitude	41 28 2.7484 N
	WGS84 Longitude	070 34 54.6683 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



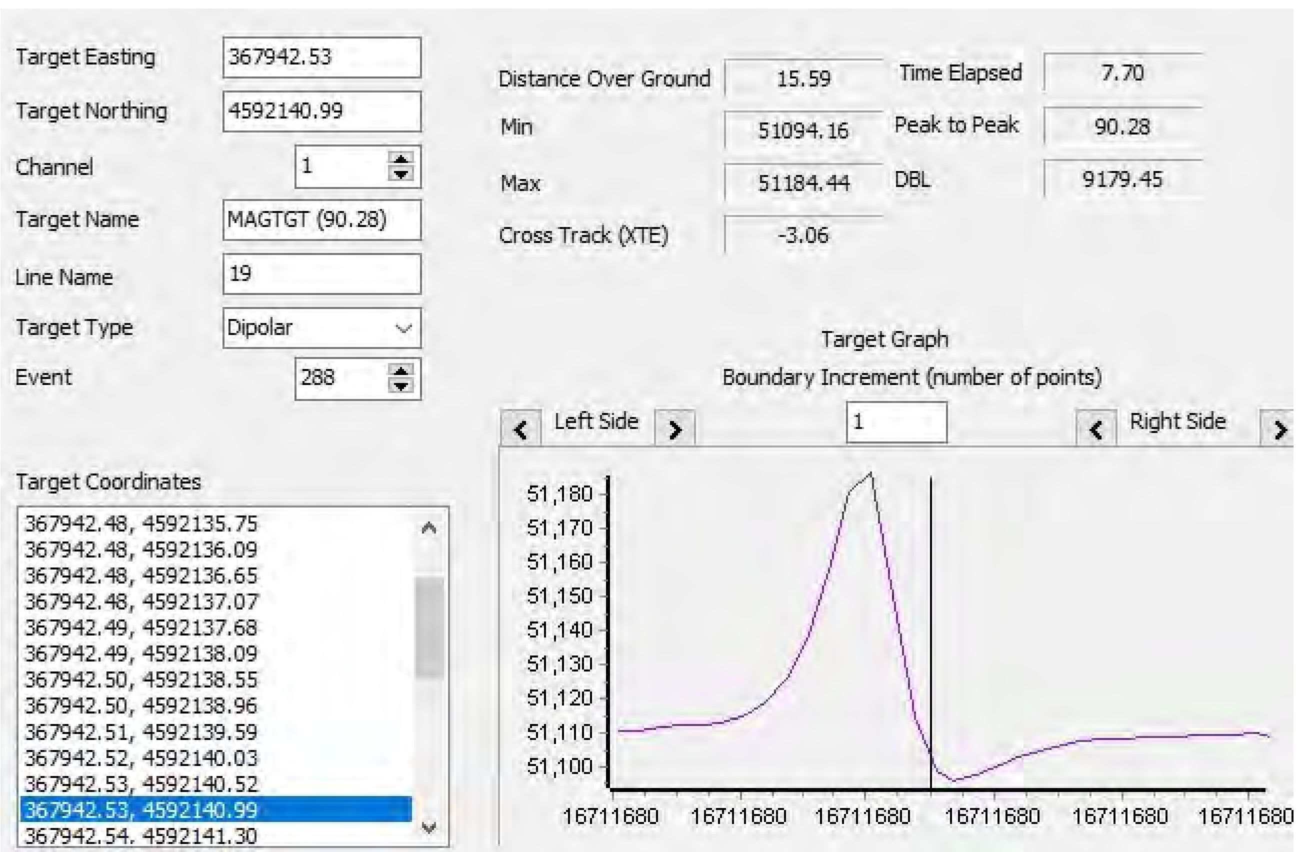
Name	Date	10/05/2021
MAGTGT (20.89)	Time	11:02:11
Survey File	Event	277
19	X	367914.0
Capture File	Y	4591921.0
367914.91.4591921.60.20.89.51111.26.1.jpg	WGS84 Latitude	41 28 4.8601 N
	WGS84 Longitude	070 34 54.3747 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



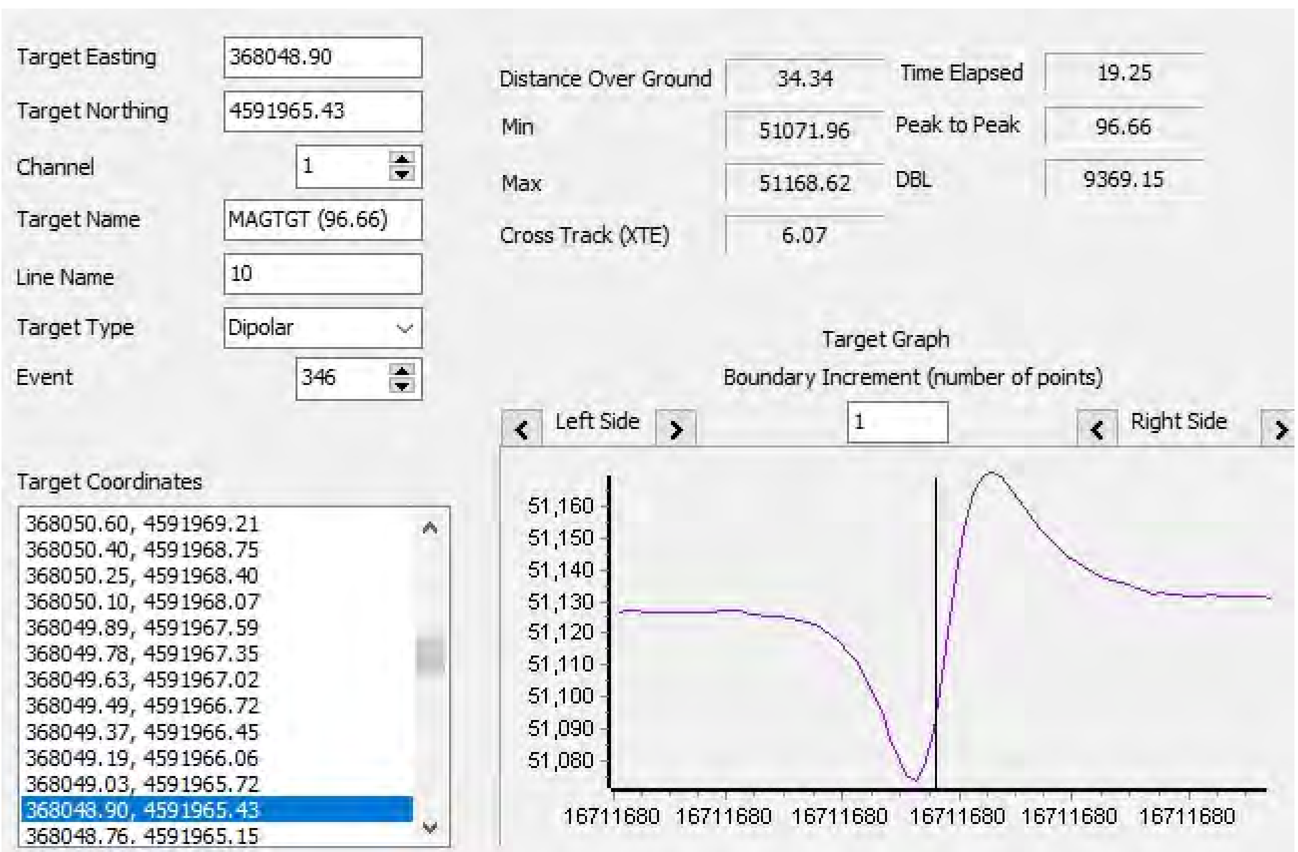
Name	Date	10/05/2021
MAGTGT (90.28)	Time	11:02:27
Survey File	Event	288
19	X	367942.0
Capture File	Y	4592140.0
367942.53.4592140.99.90.28. 51096.88.1.jpg	WGS84 Latitude	41 28 11.9755 N
	WGS84 Longitude	070 34 53.3406 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



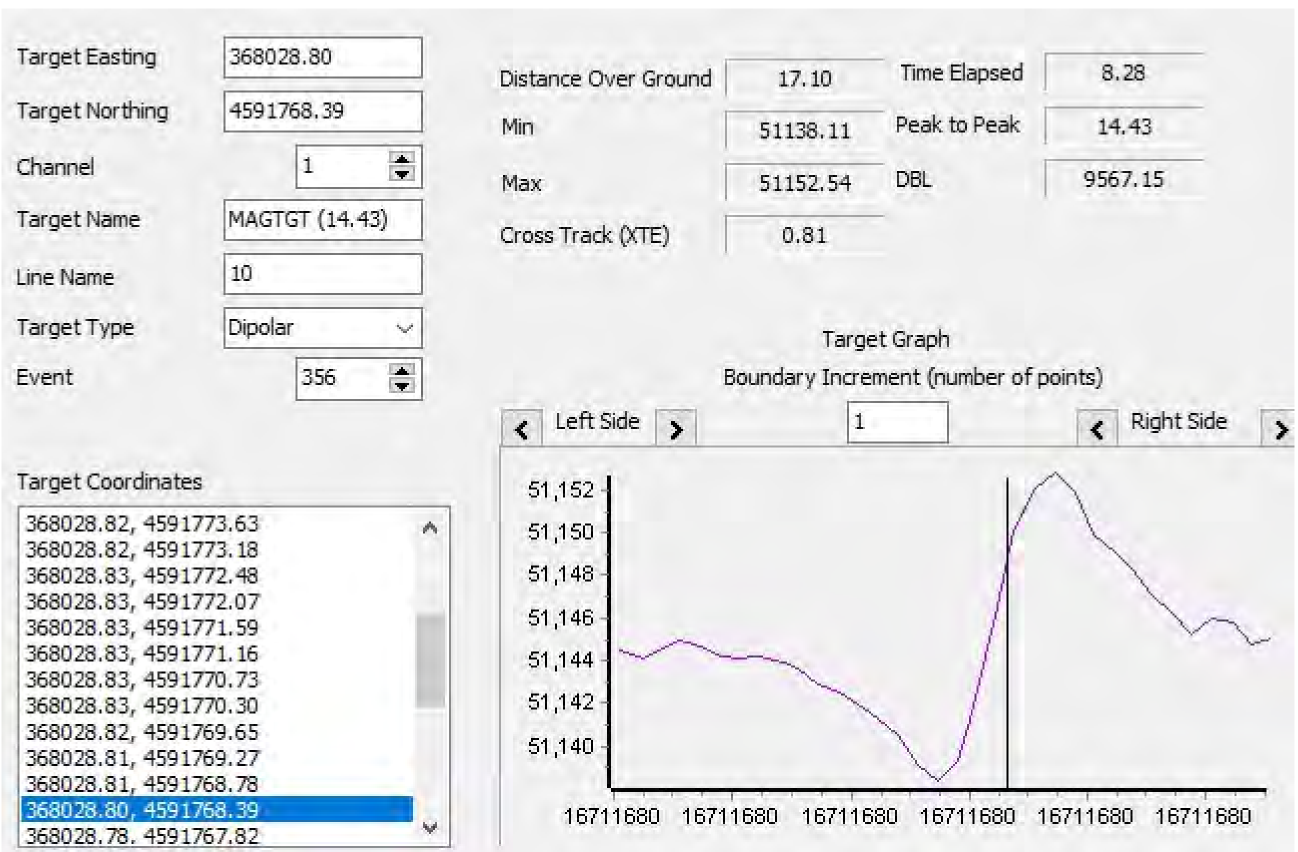
Name	Date	10/05/2021
MAGTGT (96.66)	Time	11:02:50
Survey File	Event	346
10	X	368048.0
Capture File	Y	4591965.0
368048.90.4591965.43.96.66. 51104.48.2.jpg	WGS84 Latitude	41 28 6.3657 N
	WGS84 Longitude	070 34 48.6346 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



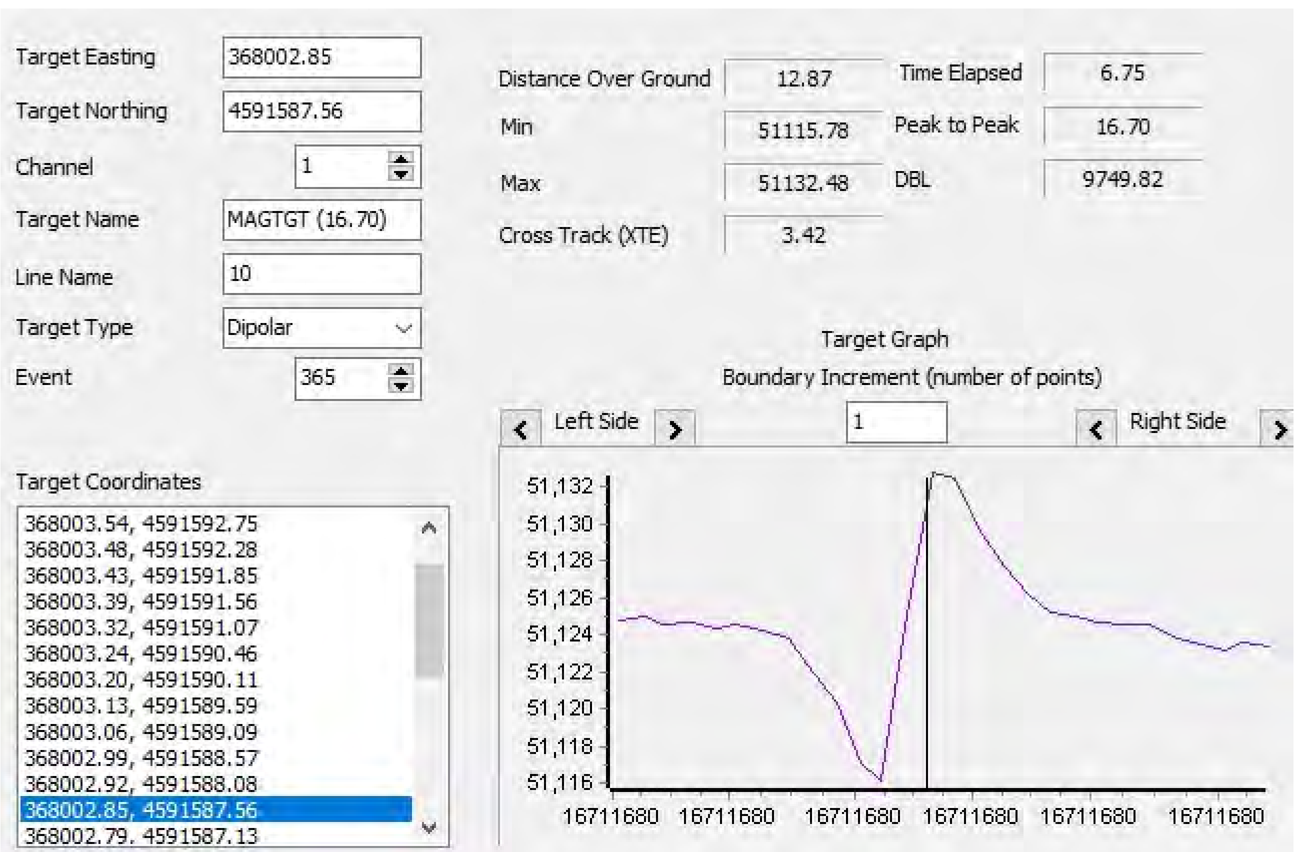
Name	Date	10/05/2021
MAGTGT (14.43)	Time	11:03:07
Survey File	Event	356
10	X	368028.0
Capture File	Y	4591768.0
368028.80.4591768.39.14.43. 51138.11.2.jpg	WGS84 Latitude	41 27 59.9682 N
	WGS84 Longitude	070 34 49.3414 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



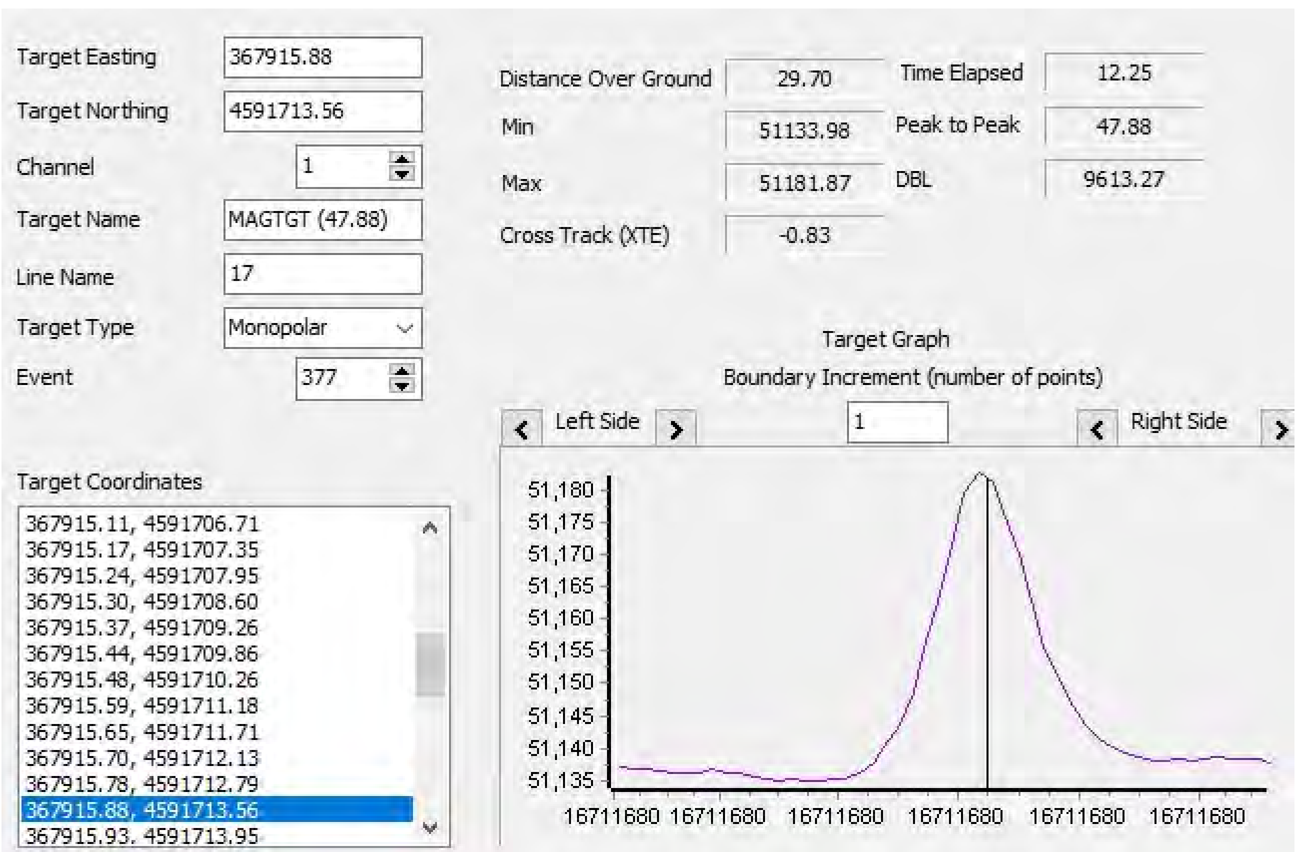
Name	Date	10/05/2021
MAGTGT (16.70)	Time	11:03:18
Survey File	Event	365
10	X	368002.0
Capture File	Y	4591587.0
368002.85.4591587.56.16.70.51132.48.2.jpg	WGS84 Latitude	41 27 54.0857 N
	WGS84 Longitude	070 34 50.3193 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



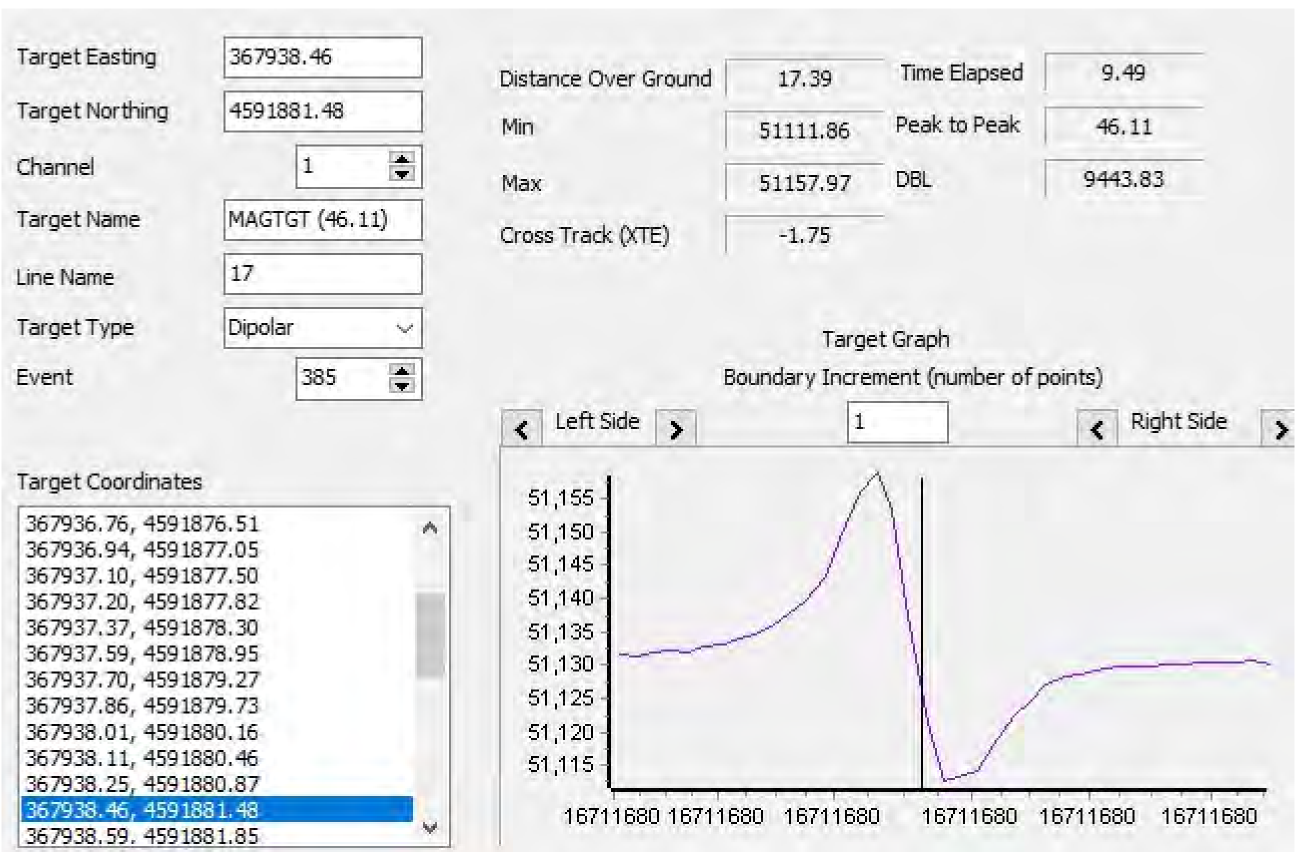
Name	Date	10/05/2021
MAGTGT (47.88)	Time	11:03:42
Survey File	Event	377
17	X	367915.0
Capture File	Y	4591713.0
367915.88.4591713.56.47.88.51162.89.3.jpg	WGS84 Latitude	41 27 58.1184 N
	WGS84 Longitude	070 34 54.1677 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



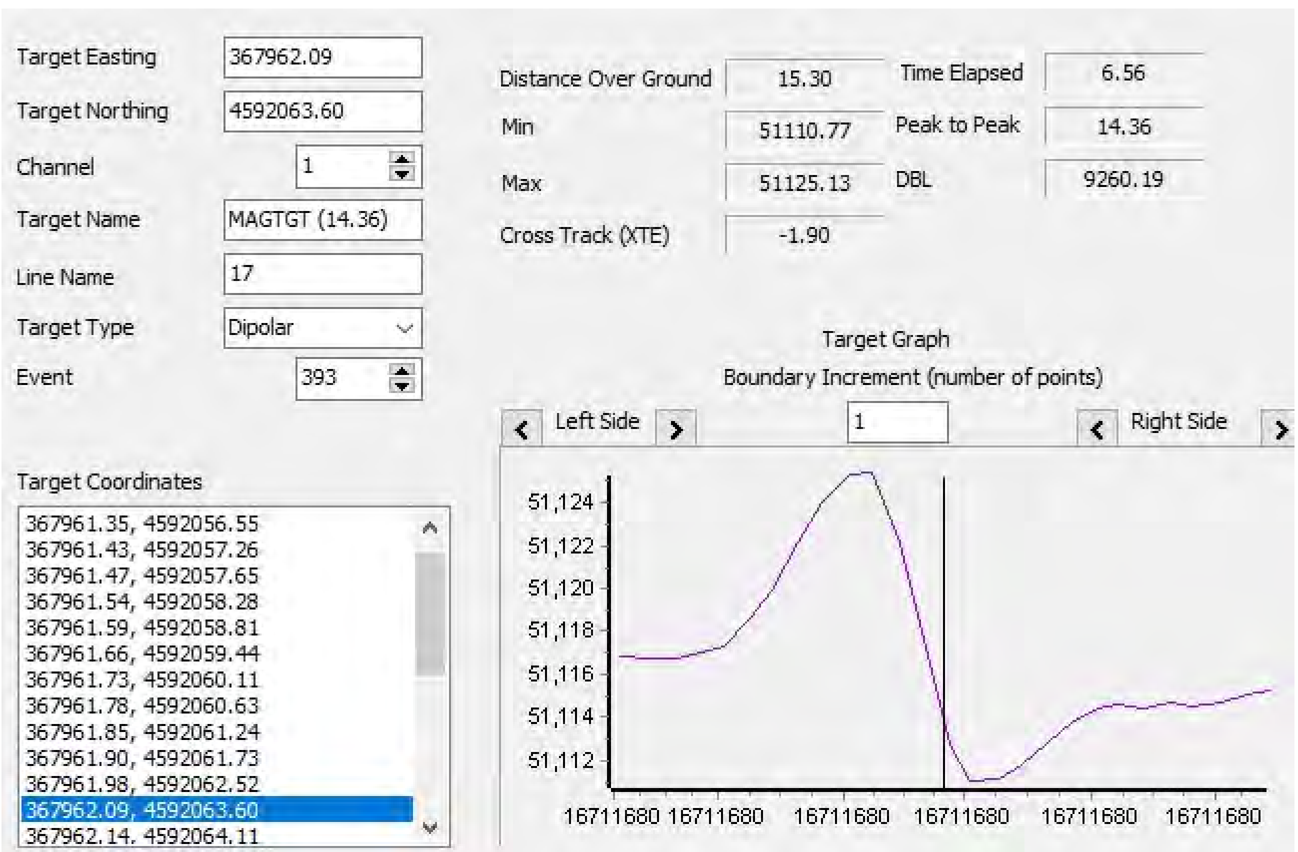
Name	Date	10/05/2021
MAGTGT (46.11)	Time	11:04:00
Survey File	Event	385
17	X	367938.0
Capture File	Y	4591881.0
367938.46.4591881.48.46.11.51120.42.3.jpg	WGS84 Latitude	41 28 3.5777 N
	WGS84 Longitude	070 34 53.3089 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



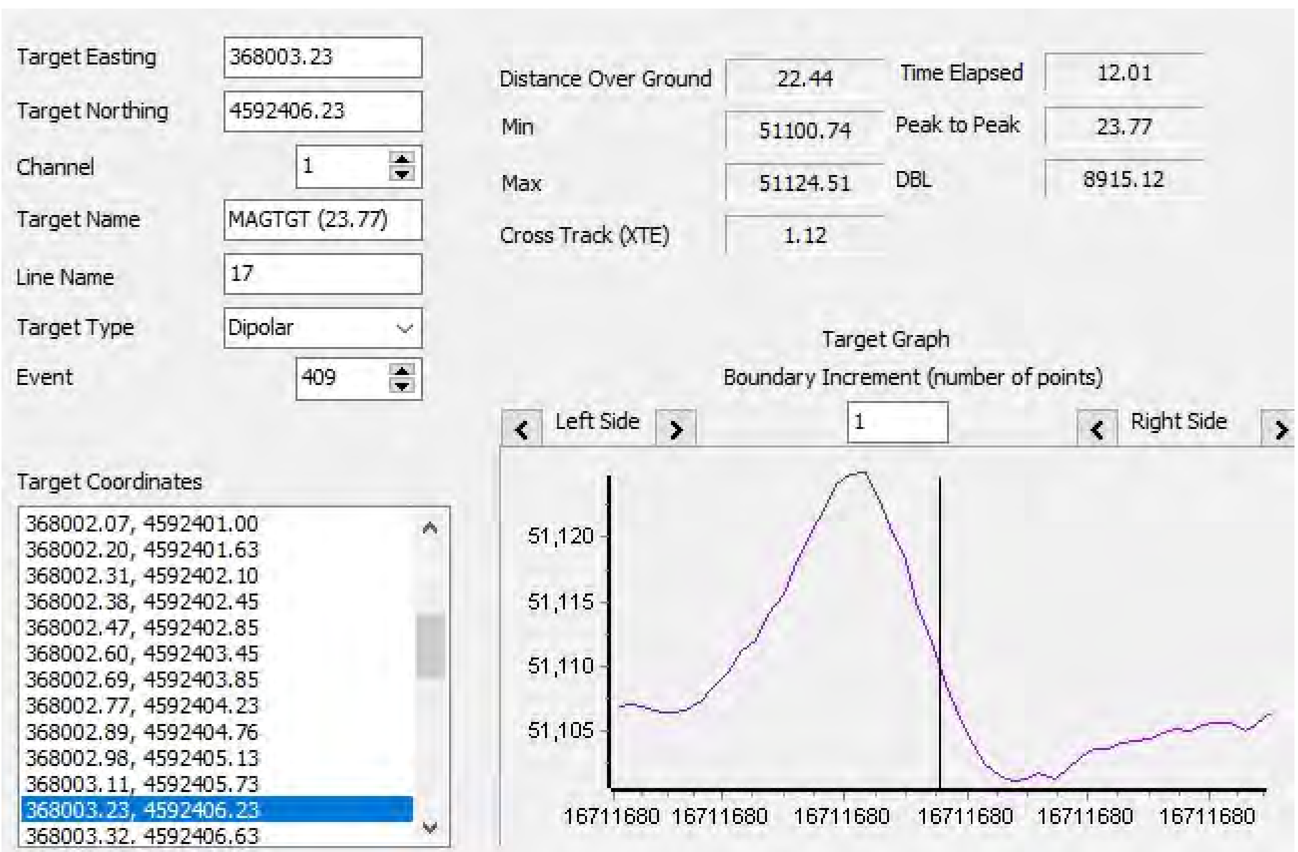
Name	Date	10/05/2021
MAGTGT (14.36)	Time	11:04:15
Survey File	Event	393
17	X	367962.0
Capture File	Y	4592063.0
367962.09.4592063.60.14.36. 51112.45.3.jpg	WGS84 Latitude	41 28 9.4914 N
	WGS84 Longitude	070 34 52.418 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



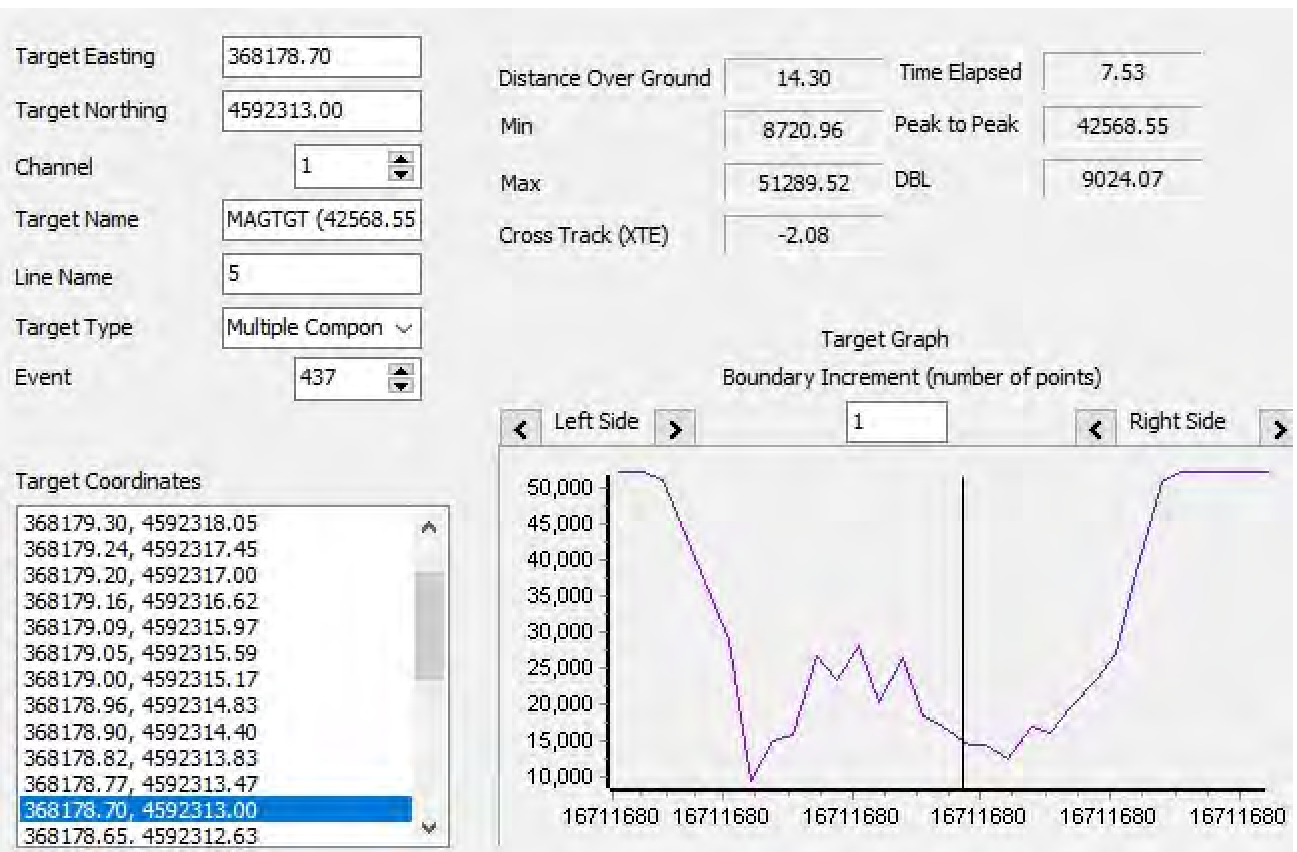
Name	Date	10/05/2021
MAGTGT (23.77)	Time	11:04:30
Survey File	Event	409
17	X	368003.0
Capture File	Y	4592406.0
368003.23.4592406.23.23.77.51108.20.3.jpg	WGS84 Latitude	41 28 20.6339 N
	WGS84 Longitude	070 34 50.9212 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



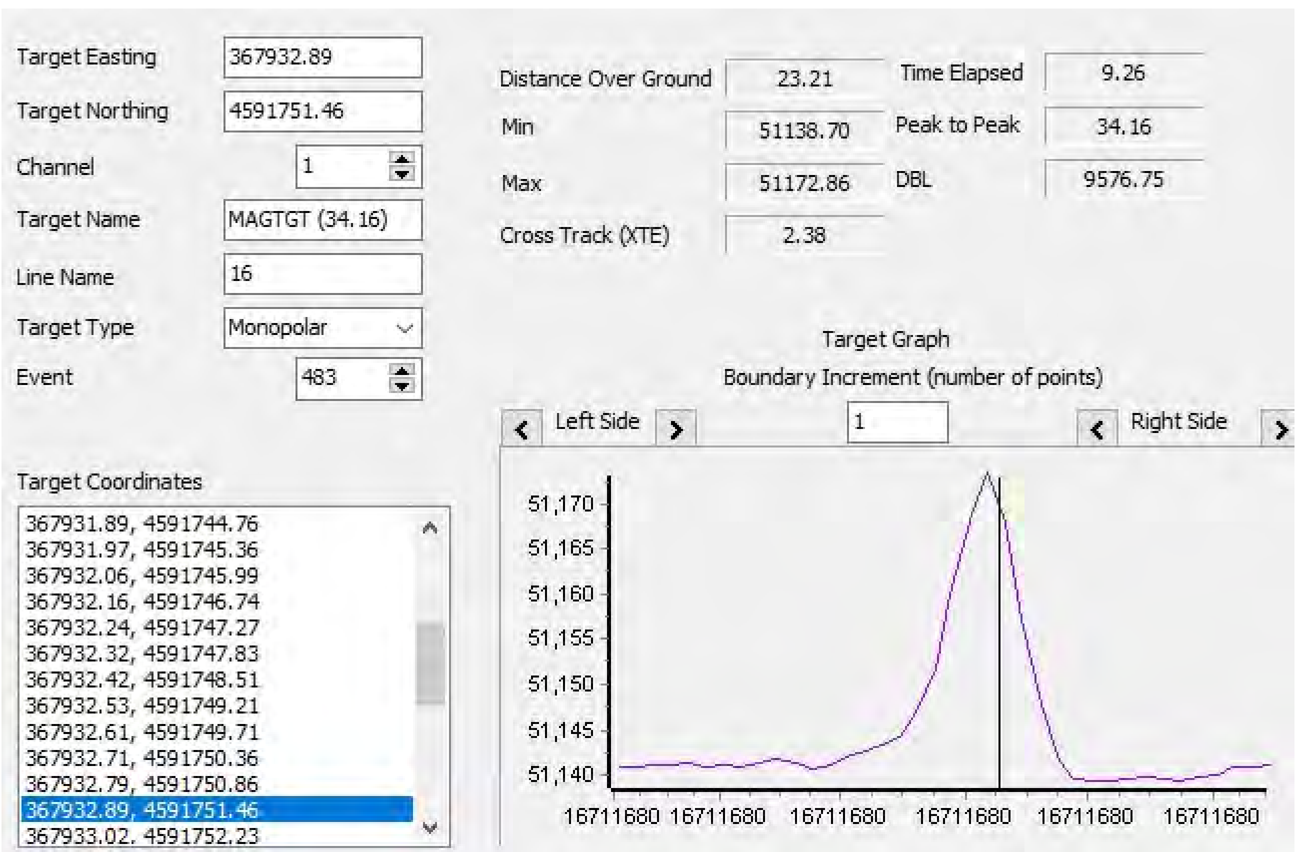
Name	Date	10/05/2021
MAGTGT (42568.55)	Time	11:05:38
Survey File	Event	437
5	X	368178.0
Capture File	Y	4592312.0
368178.70.4592313.00.42568.55.13758.72.4.jpg	WGS84 Latitude	41 28 17.6906 N
	WGS84 Longitude	070 34 43.3051 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



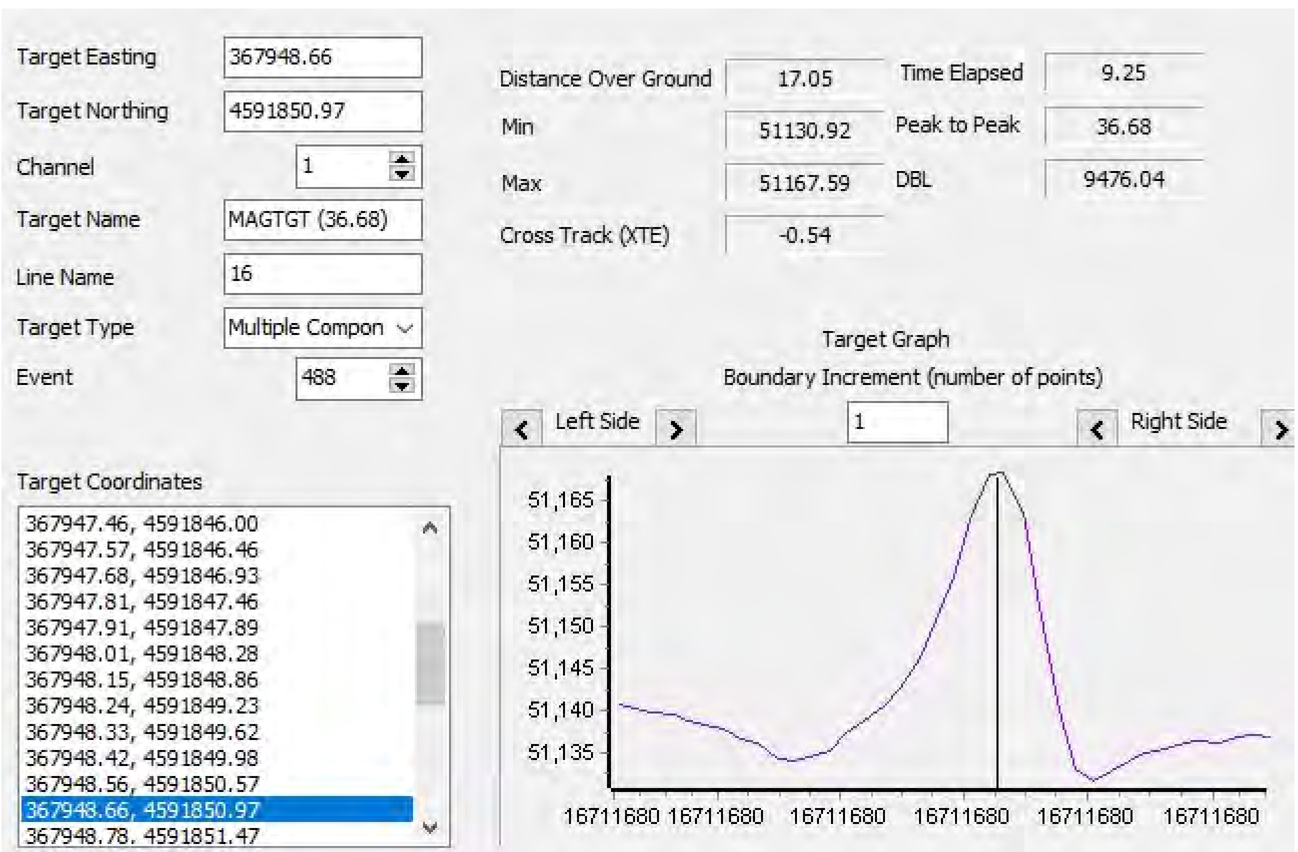
Name	Date	10/05/2021
MAGTGT (34.16)	Time	11:06:26
Survey File	Event	483
16	X	367932.0
Capture File	Y	4591751.0
367932.89.4591751.46.34.16.51151.09.5.jpg	WGS84 Latitude	41 27 59.3603 N
	WGS84 Longitude	070 34 53.4651 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



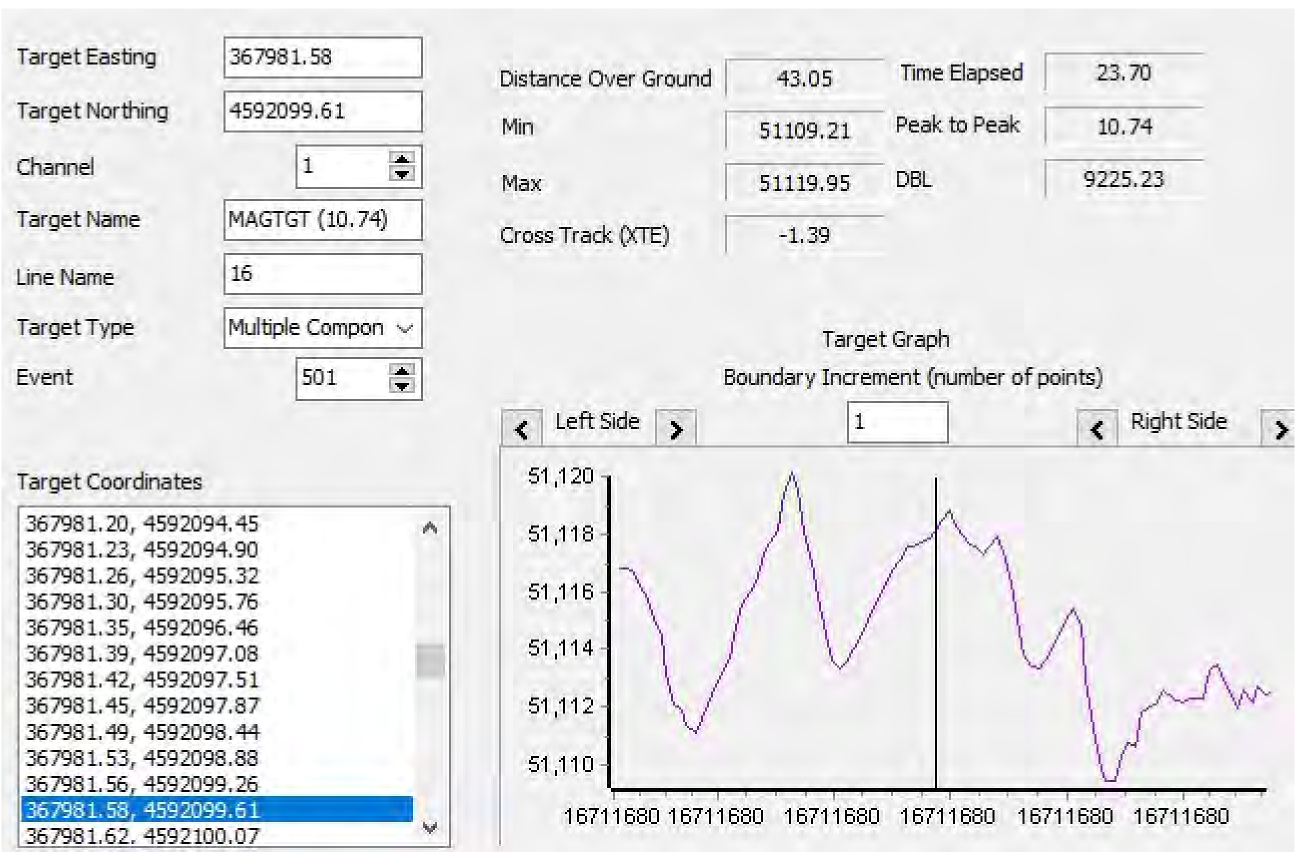
Name	Date	10/05/2021
MAGTGT (36.68)	Time	11:06:40
Survey File	Event	488
16	X	367948.0
Capture File	Y	4591850.0
367948.66.4591850.97.36.68. 51149.96.5.jpg	WGS84 Latitude	41 28 2.5788 N
	WGS84 Longitude	070 34 52.8536 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



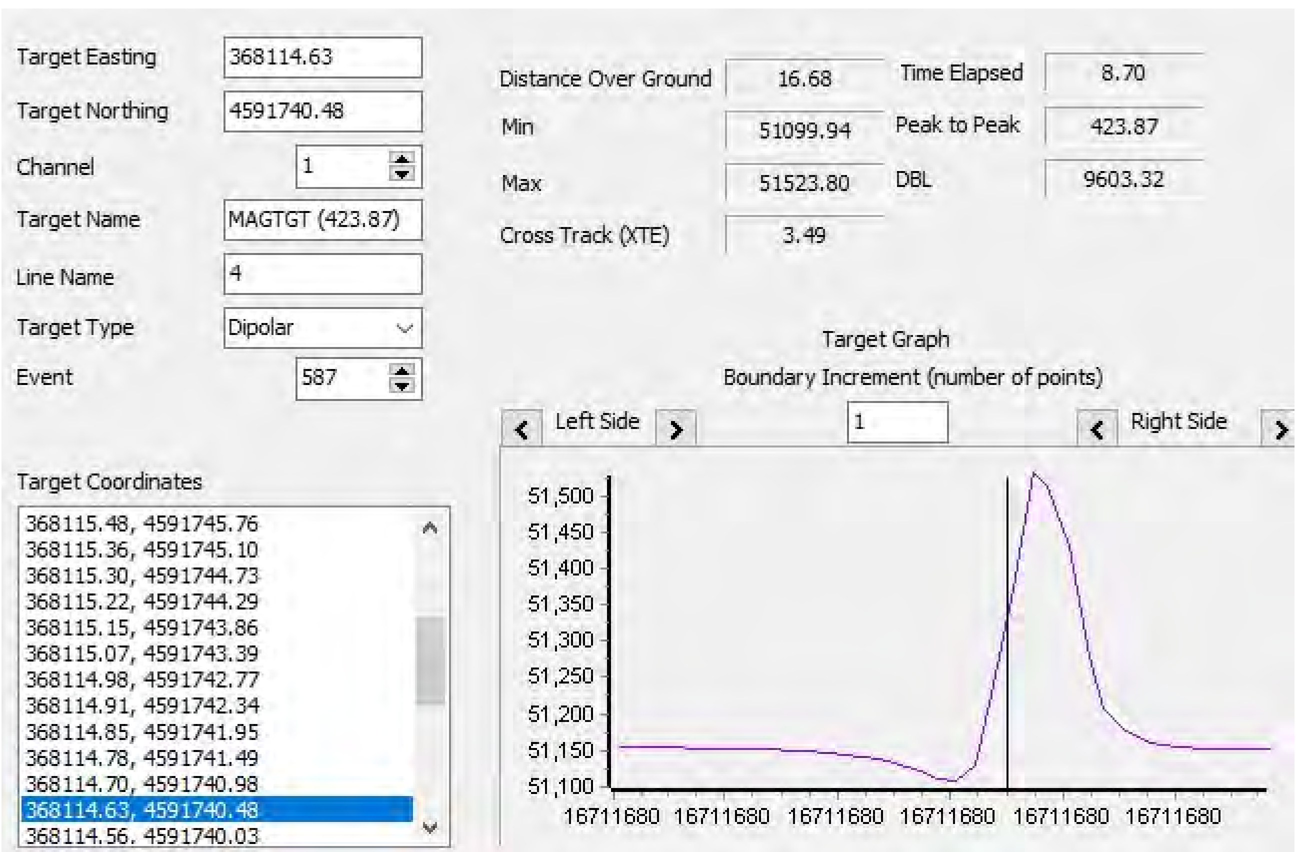
Name	Date	10/05/2021
MAGTGT (10.74)	Time	11:06:51
Survey File	Event	501
16	X	367981.0
Capture File	Y	4592099.0
367981.58.4592099.61.10.74.51118.27.5.jpg	WGS84 Latitude	41 28 10.6696 N
	WGS84 Longitude	070 34 51.6275 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



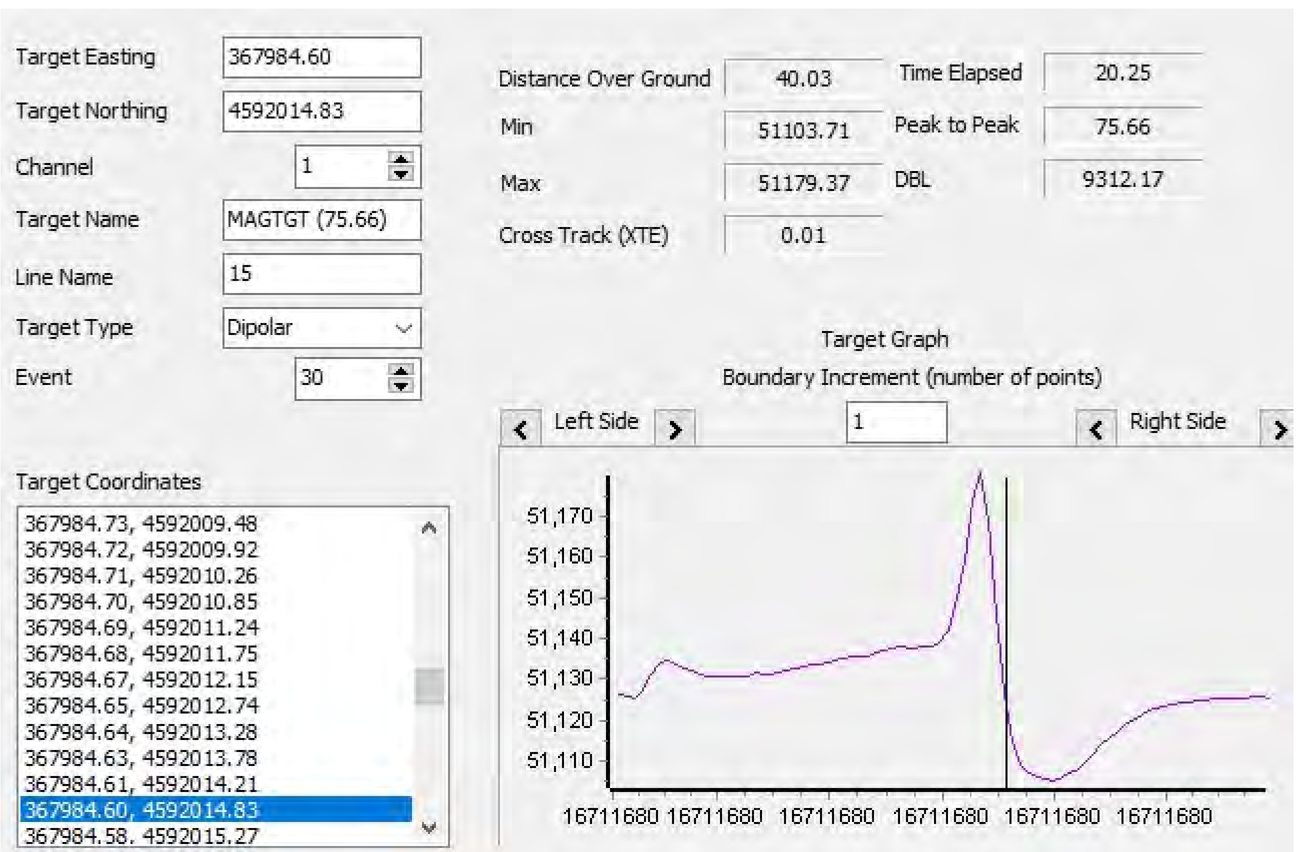
Name	Date	10/05/2021
MAGTGT (423.87)	Time	11:07:43
Survey File	Event	587
4	X	368114.0
Capture File	Y	4591740.0
368114.63.4591740.48.423.87 .51103.35.6.jpg	WGS84 Latitude	41 27 59.1115 N
	WGS84 Longitude	070 34 45.6132 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



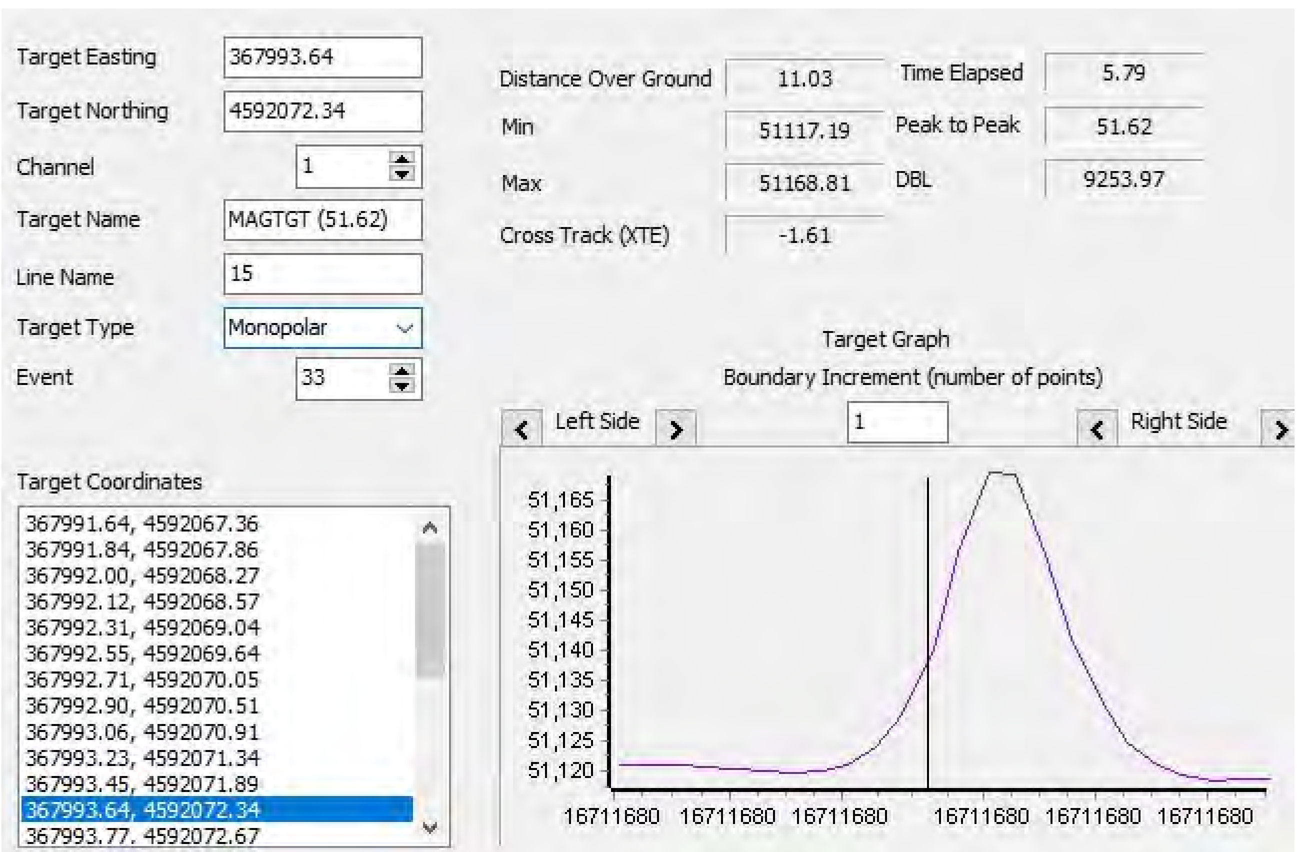
Name	Date	10/05/2021
MAGTGT (75.66)	Time	11:08:02
Survey File	Event	30
15	X	367984.0
Capture File	Y	4592014.0
367984.60.4592014.83.75.66.51137.66.7.jpg	WGS84 Latitude	41 28 7.9161 N
	WGS84 Longitude	070 34 51.4313 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



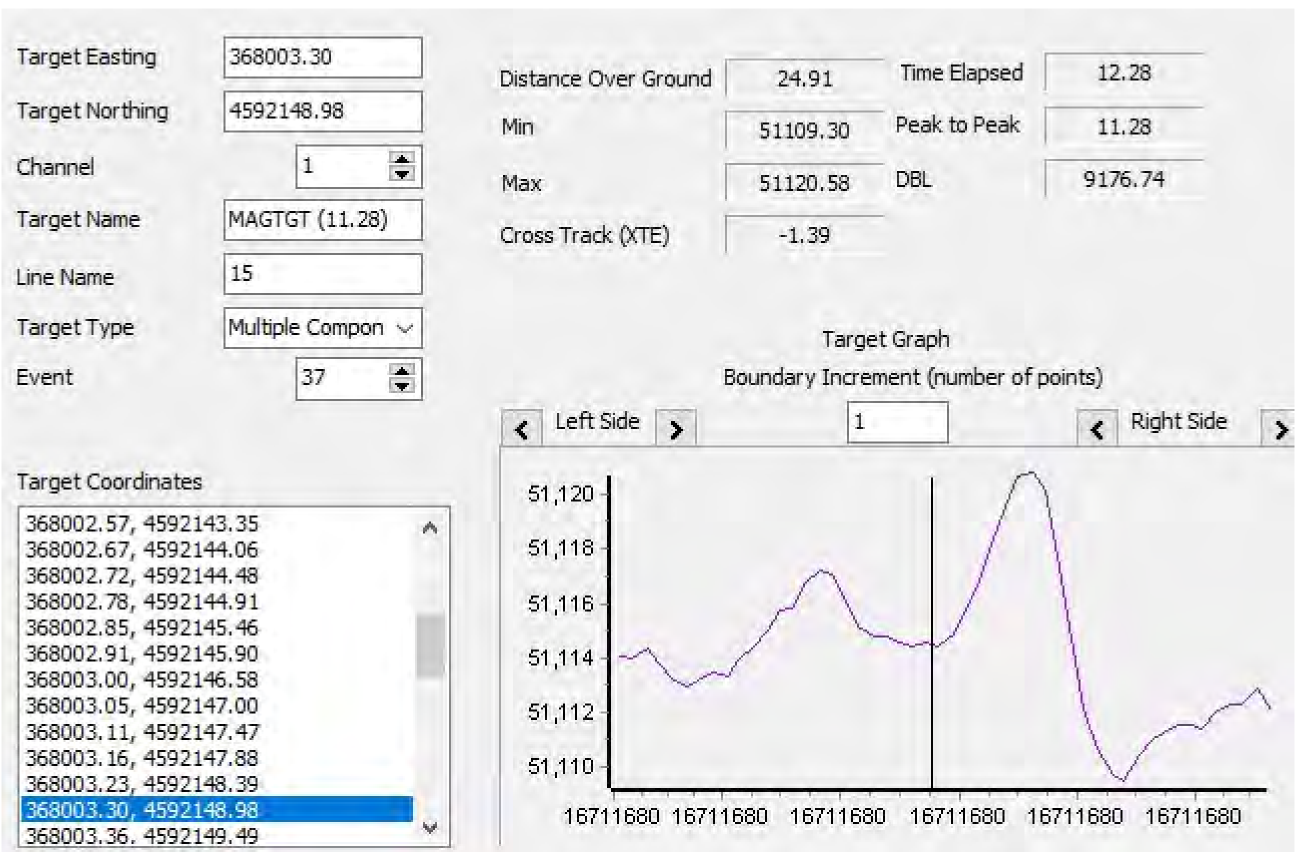
Name	Date	10/05/2021
MAGTGT (51.62)	Time	11:08:14
Survey File	Event	33
15	X	367993.0
Capture File	Y	4592072.0
367993.64.4592072.34.51.62.51139.05.7.jpg	WGS84 Latitude	41 28 9.8015 N
	WGS84 Longitude	070 34 51.0891 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



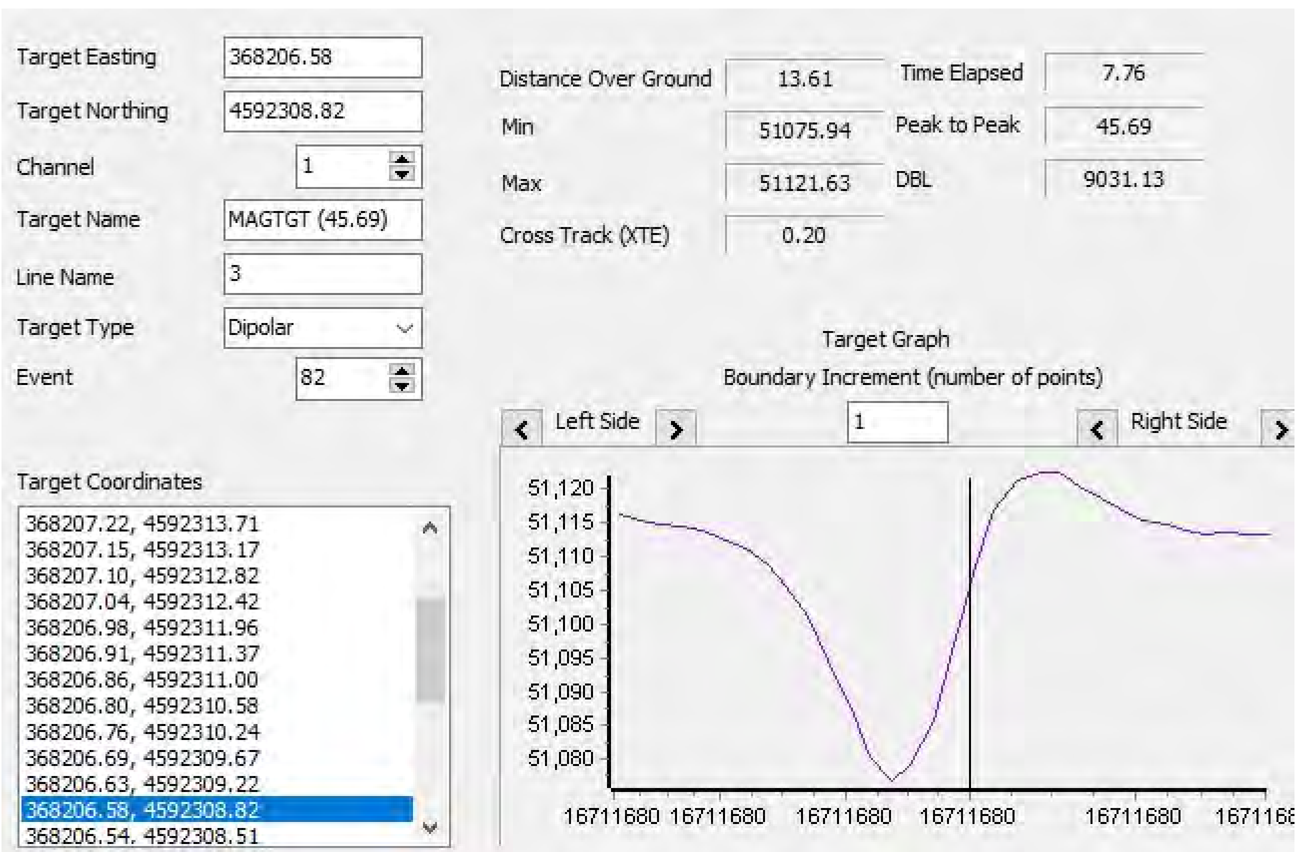
Name	Date	10/05/2021
MAGTGT (11.28)	Time	11:08:28
Survey File	Event	37
15	X	368003.0
Capture File	Y	4592148.0
368003.30.4592148.98.11.28.51114.23.7.jpg	WGS84 Latitude	41 28 12.271 N
	WGS84 Longitude	070 34 50.718 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



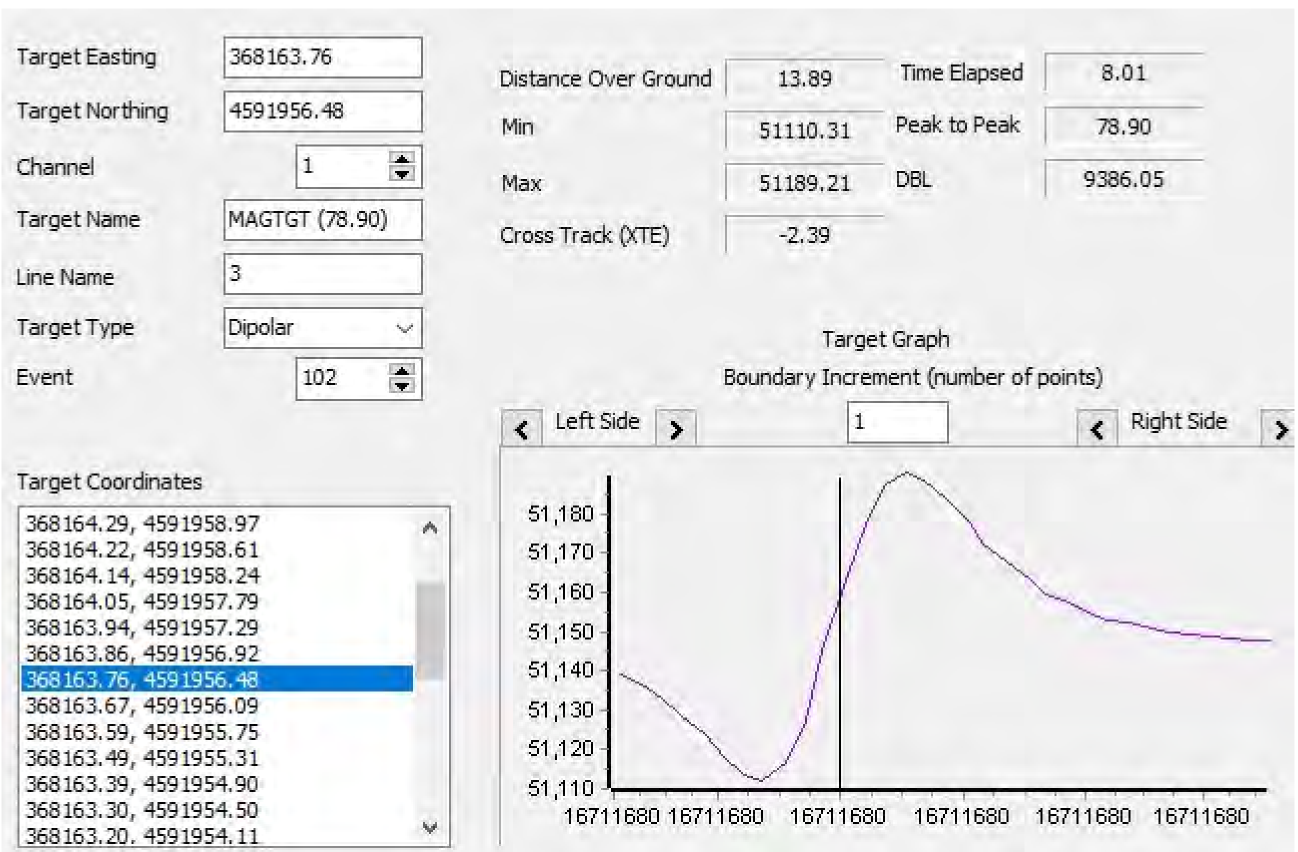
Name	Date	10/05/2021
MAGTGT (45.69)	Time	11:08:50
Survey File	Event	82
3	X	368206.0
Capture File	Y	4592308.0
368206.58.4592308.82.45.69. 51078.33.8.jpg	WGS84 Latitude	41 28 17.5775 N
	WGS84 Longitude	070 34 42.0952 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



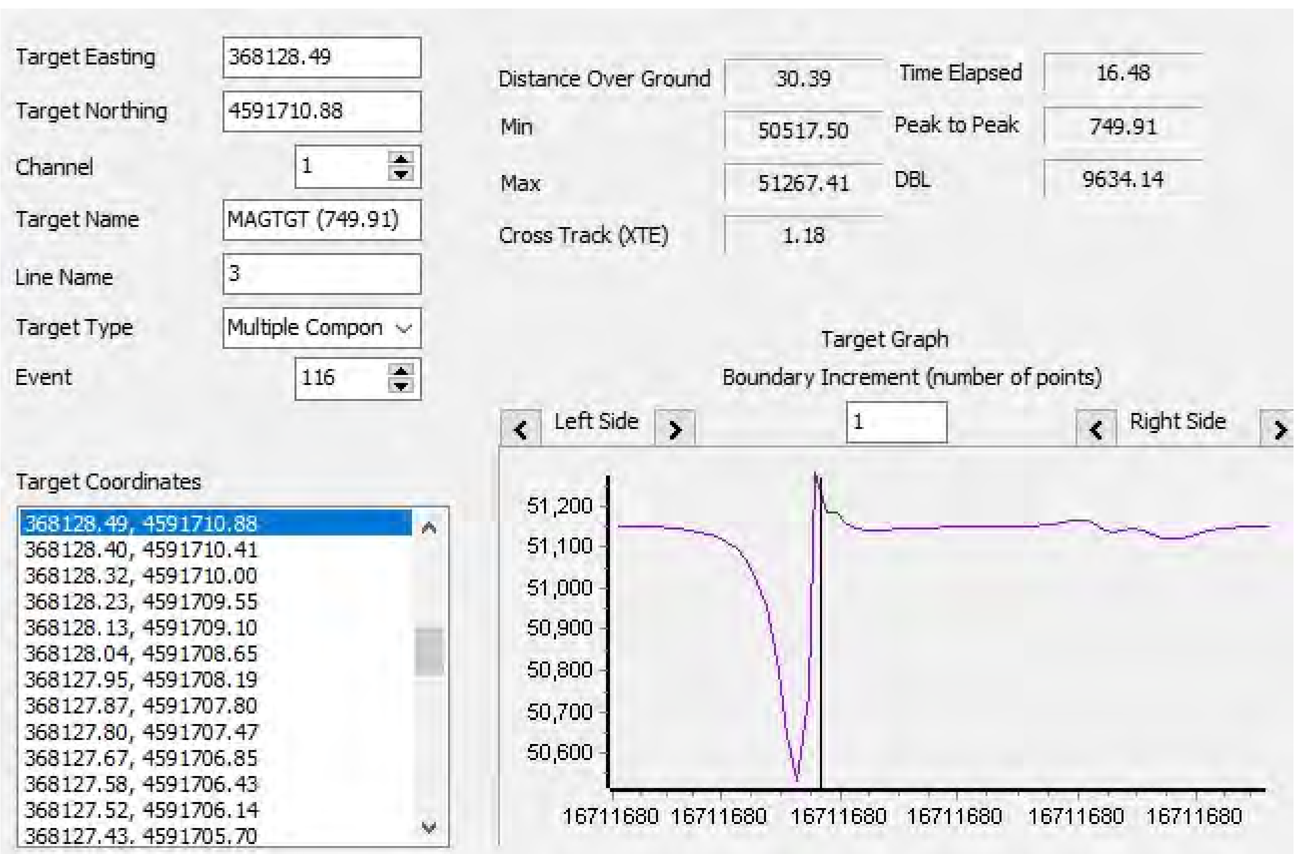
Name	Date	10/05/2021
MAGTGT (78.90)	Time	11:09:04
Survey File	Event	102
3	X	368163.0
Capture File	Y	4591956.0
368163.76.4591956.48.78.90. 51182.10.8.jpg	WGS84 Latitude	41 28 6.1421 N
	WGS84 Longitude	070 34 43.6715 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



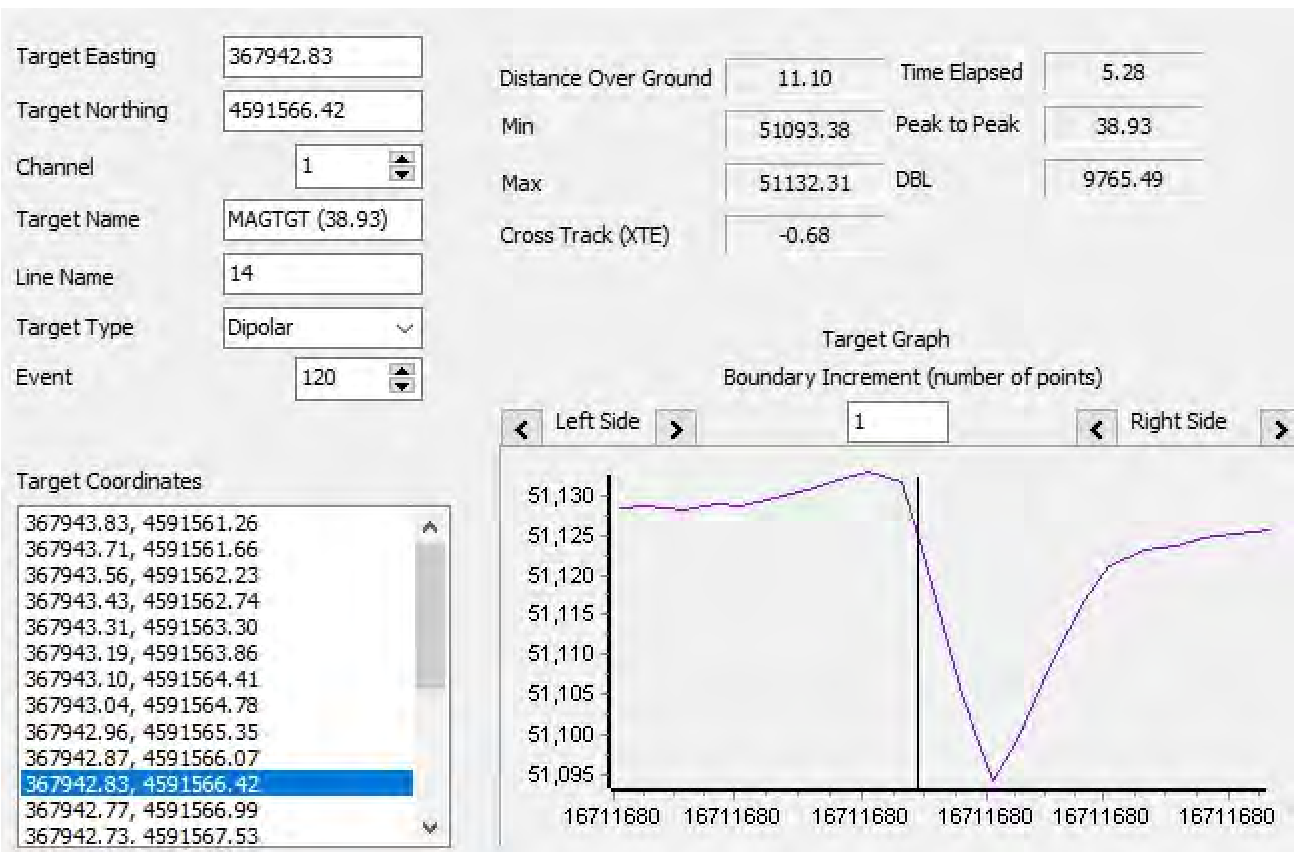
Name	Date	10/05/2021
MAGTGT (749.91)	Time	11:09:22
Survey File	Event	116
3	X	368128.0
Capture File	Y	4591710.0
368128.49.4591710.88.749.91.51134.18.8.jpg	WGS84 Latitude	41 27 58.1473 N
	WGS84 Longitude	070 34 44.9863 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



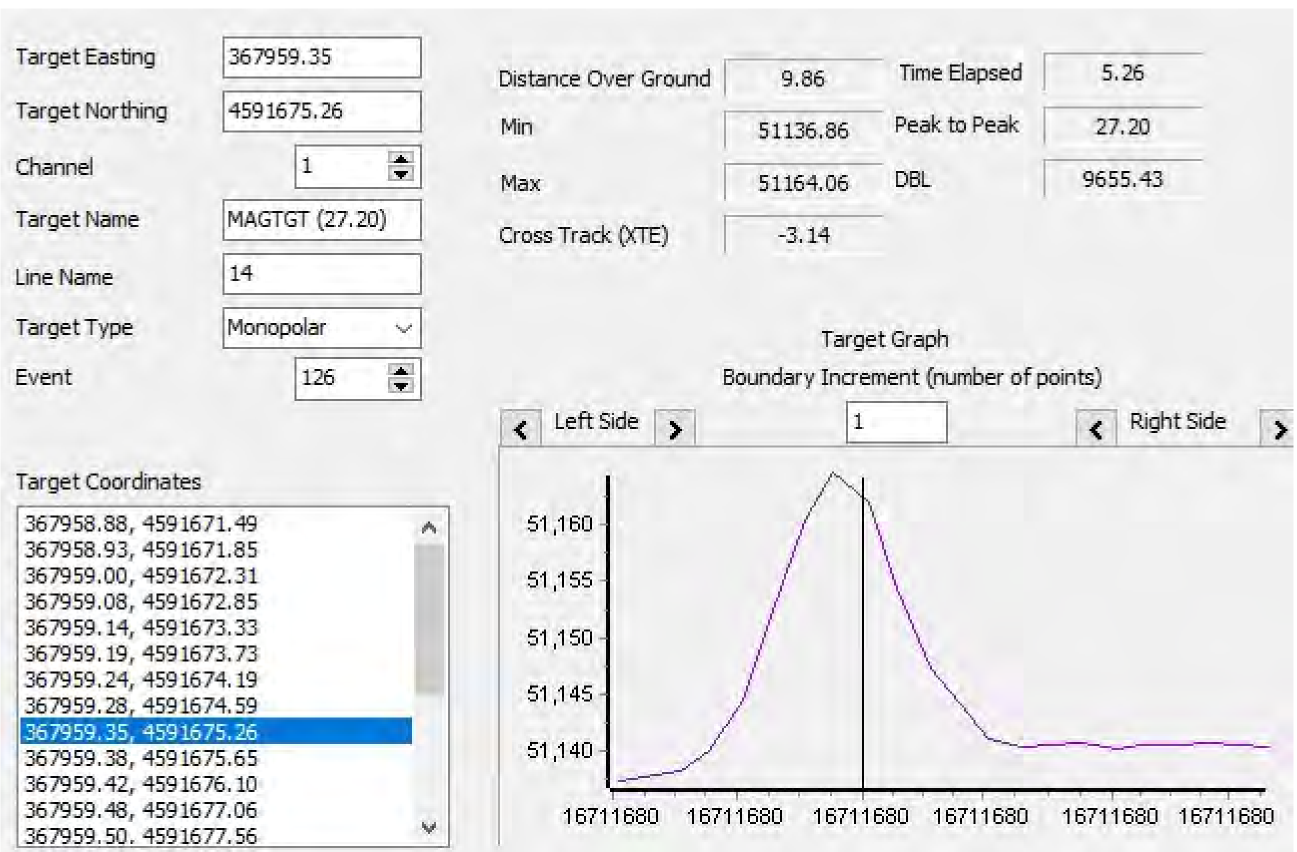
Name	Date	10/05/2021
MAGTGT (38.93)	Time	11:10:00
Survey File	Event	120
14	X	367942.0
Capture File	Y	4591566.0
367942.83.4591566.42.38.93.51121.73.9.jpg	WGS84 Latitude	41 27 53.3695 N
	WGS84 Longitude	070 34 52.8884 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



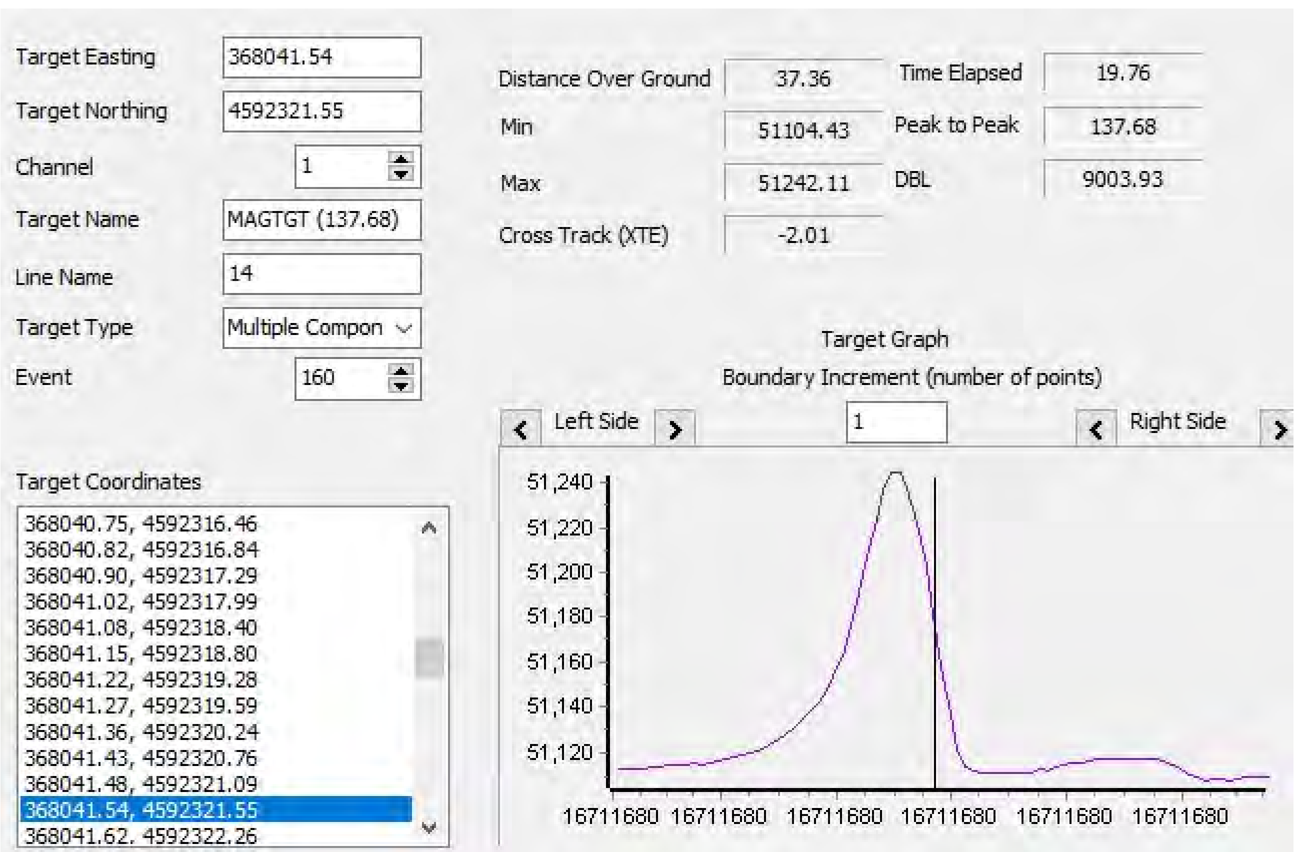
Name	Date	10/05/2021
MAGTGT (27.20)	Time	11:10:13
Survey File	Event	126
14	X	367959.0
Capture File	Y	4591675.0
367959.35.4591675.26.27.20. 51146.70.9.jpg	WGS84 Latitude	41 27 56.9128 N
	WGS84 Longitude	070 34 52.2417 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



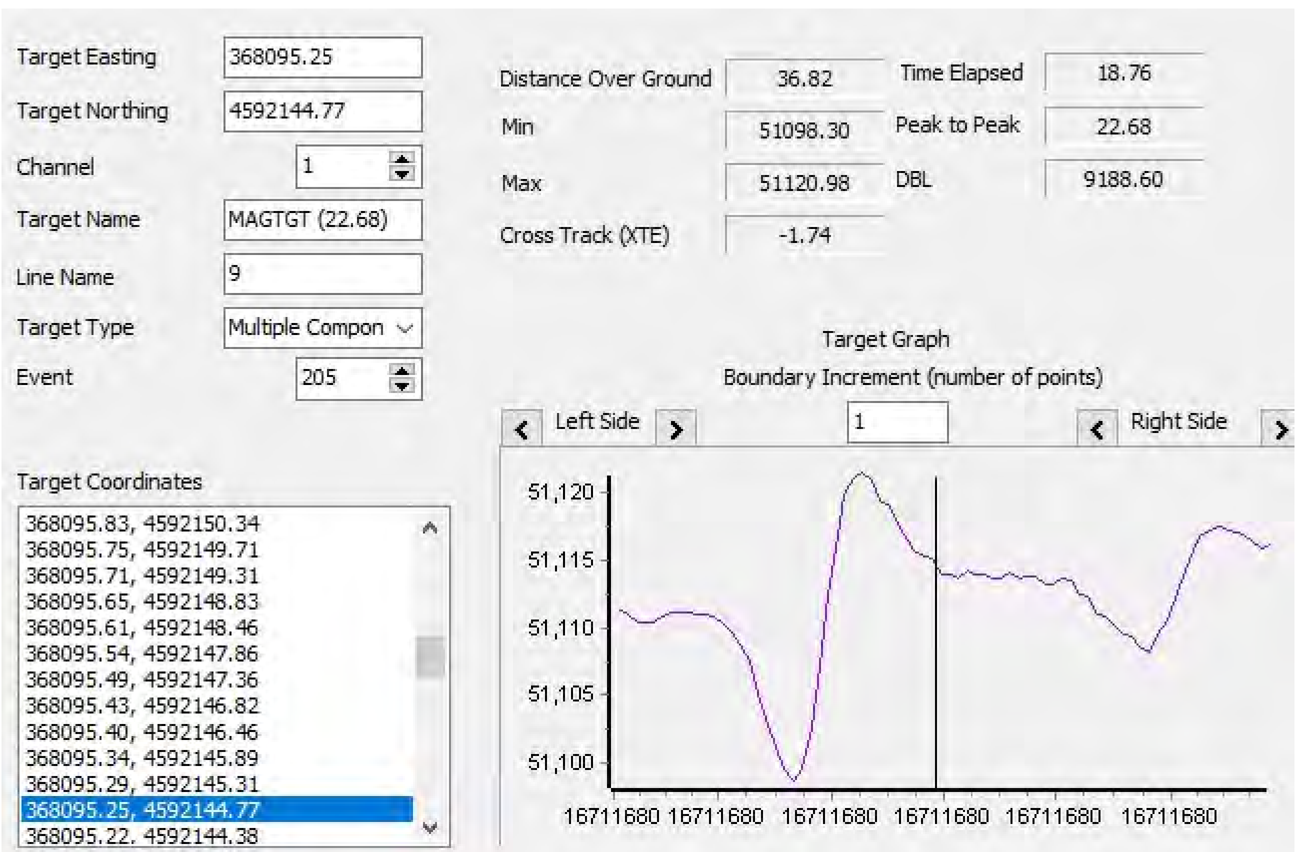
Name	Date	10/05/2021
MAGTGT (137.68)	Time	11:10:32
Survey File	Event	160
14	X	368041.0
Capture File	Y	4592321.0
368041.54.4592321.55.137.68 .51155.62.9.jpg	WGS84 Latitude	41 28 17.9012 N
	WGS84 Longitude	070 34 49.2166 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



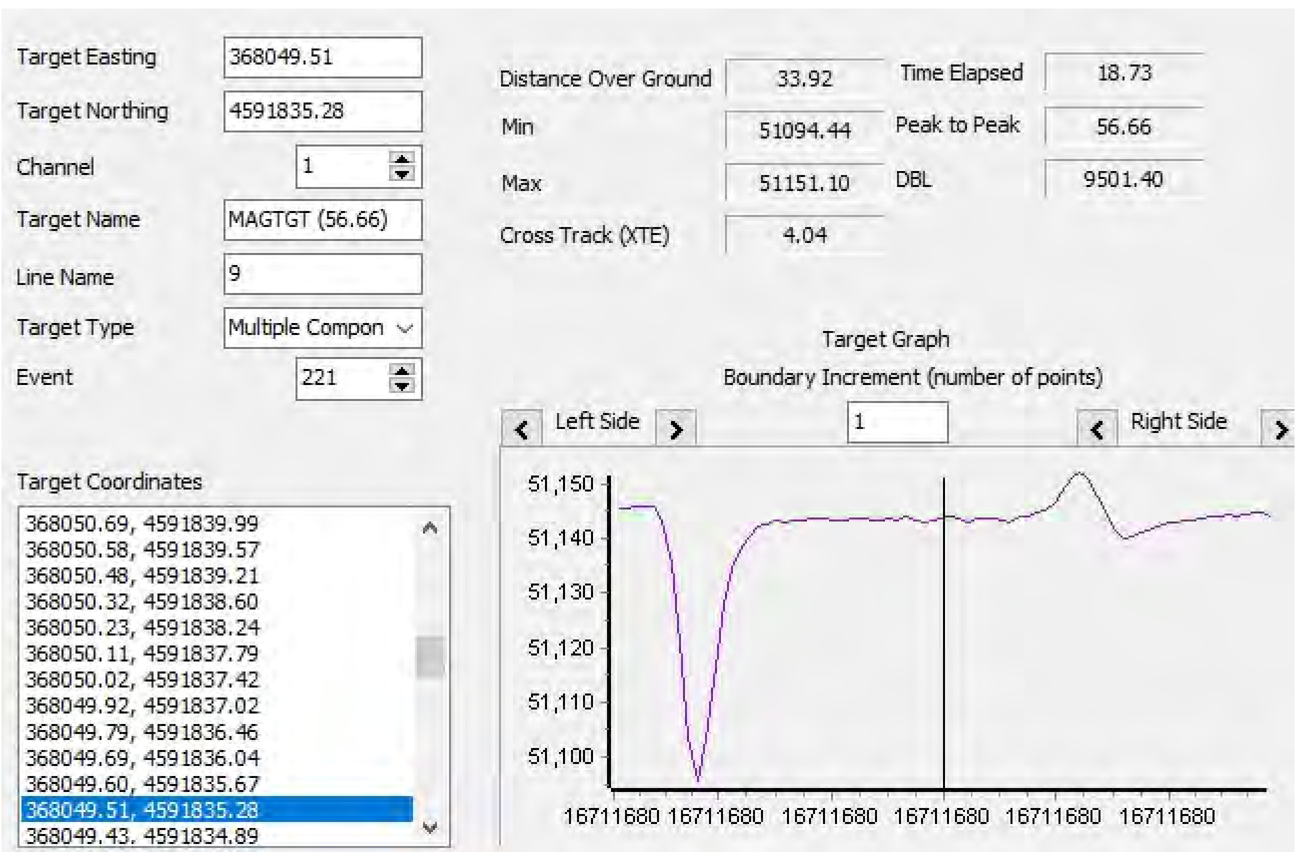
Name	Date	10/05/2021
MAGTGT (22.68)	Time	11:11:01
Survey File	Event	205
9	X	368095.0
Capture File	Y	4592144.0
368095.25.4592144.77.22.68.51113.41.10.jpg	WGS84 Latitude	41 28 12.1958 N
	WGS84 Longitude	070 34 46.75 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



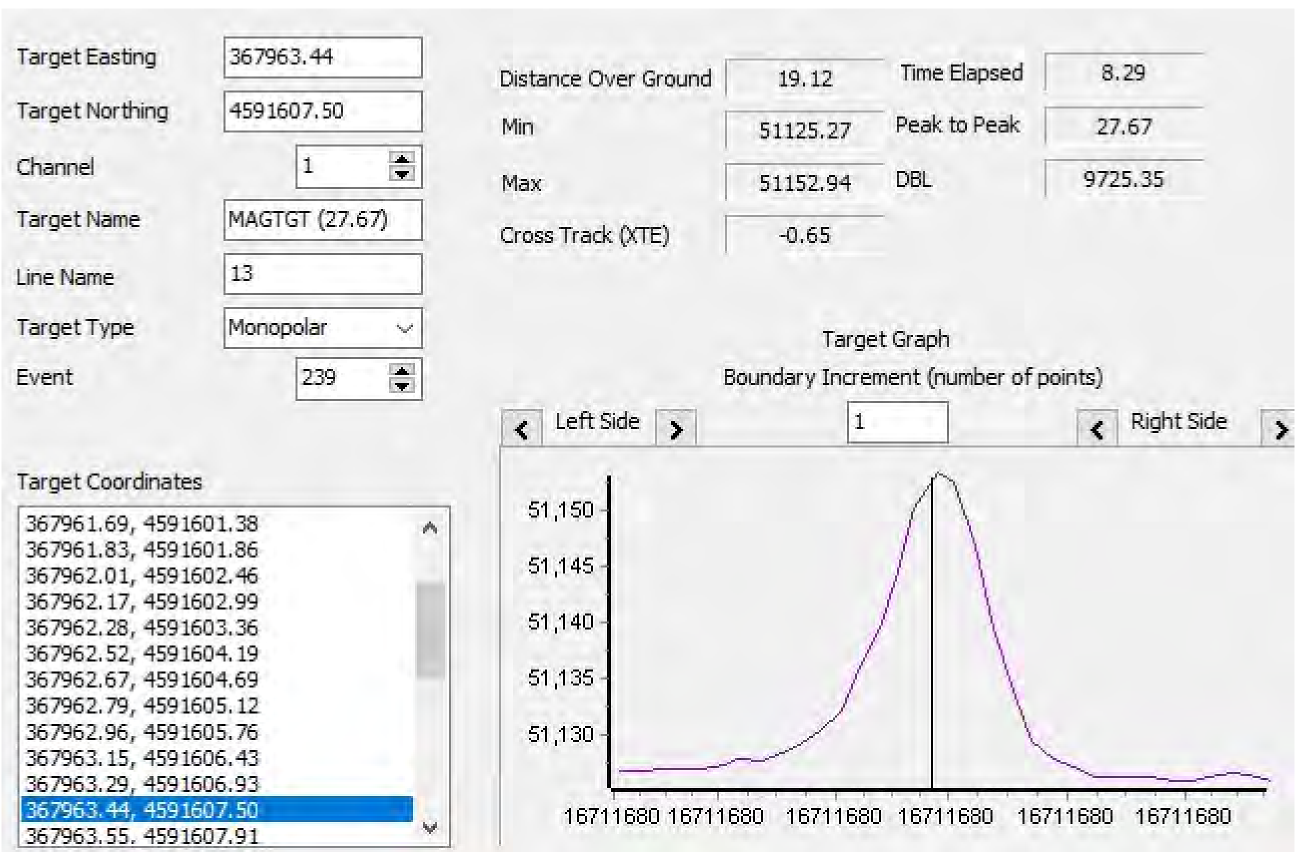
Name	Date	10/05/2021
MAGTGT (56.66)	Time	11:11:12
Survey File	Event	221
9	X	368049.0
Capture File	Y	4591835.0
368049.51.4591835.28.56.66.51142.93.10.jpg	WGS84 Latitude	41 28 2.1524 N
	WGS84 Longitude	070 34 48.4892 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



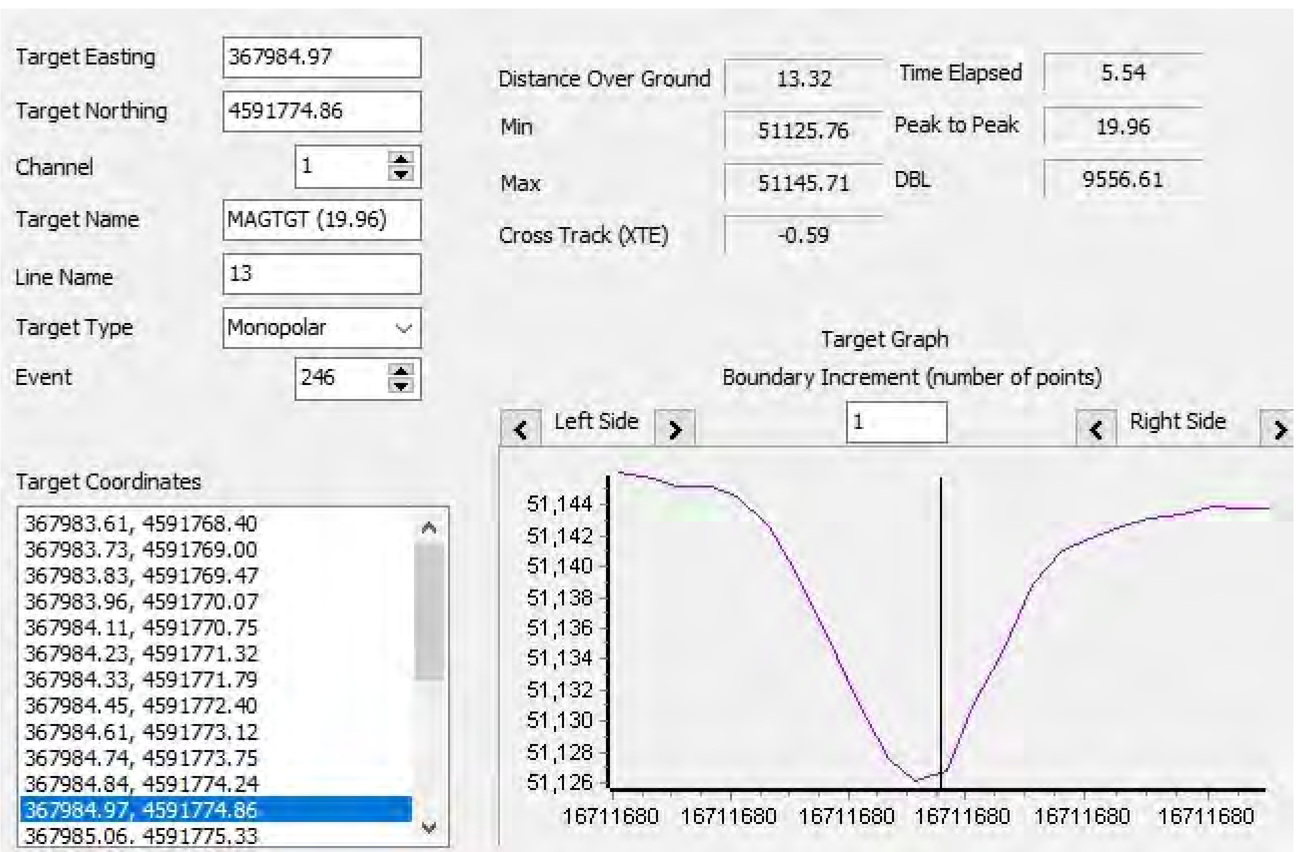
Name	Date	10/05/2021
MAGTGT (27.67)	Time	11:11:33
Survey File	Event	239
13	X	367963.0
Capture File	Y	4591607.0
367963.44.4591607.50.27.67.51152.94.11.jpg	WGS84 Latitude	41 27 54.7109 N
	WGS84 Longitude	070 34 52.0157 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



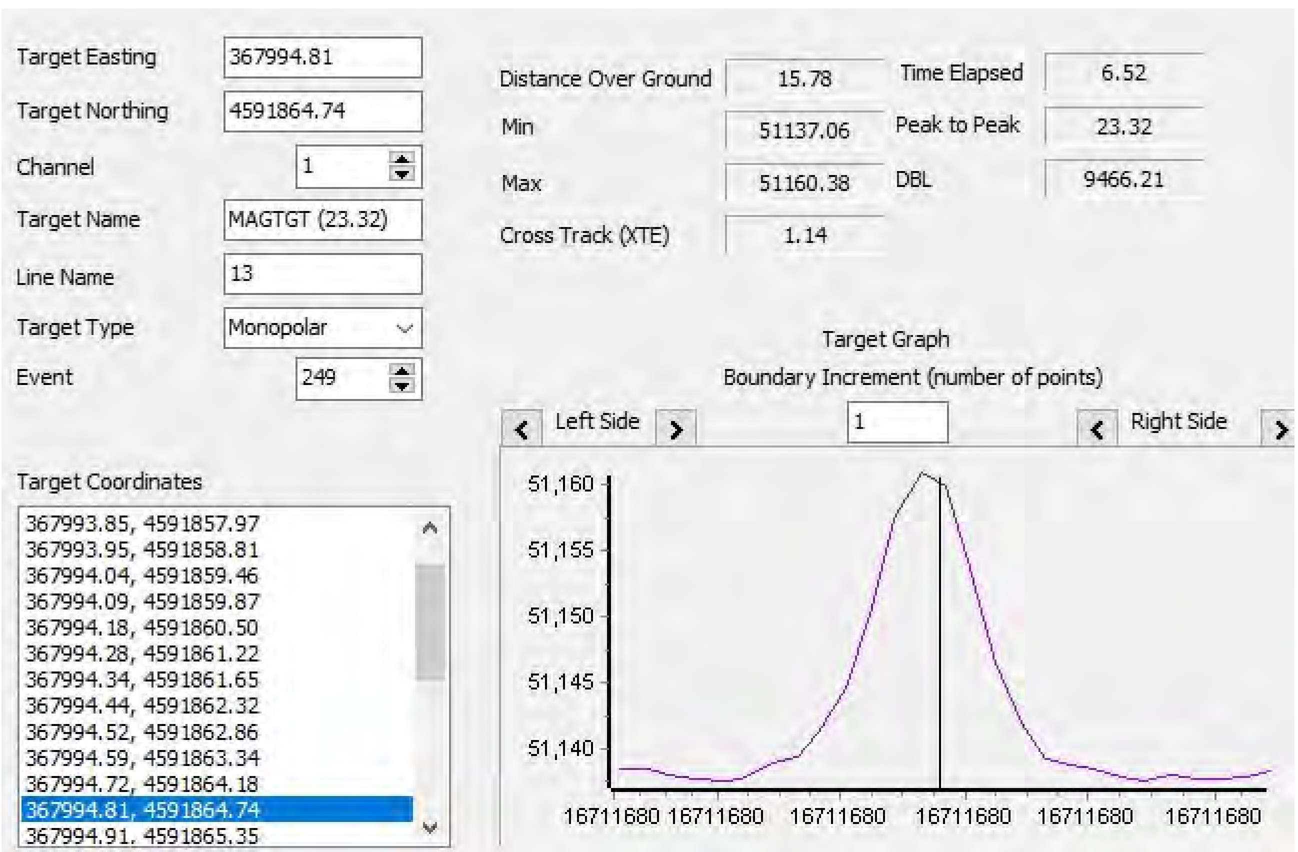
Name	Date	10/05/2021
MAGTGT (19.96)	Time	11:11:44
Survey File	Event	246
13	X	367984.0
Capture File	Y	4591774.0
367984.97.4591774.86.19.96. 51126.41.11.jpg	WGS84 Latitude	41 28 0.1366 N
	WGS84 Longitude	070 34 51.2423 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



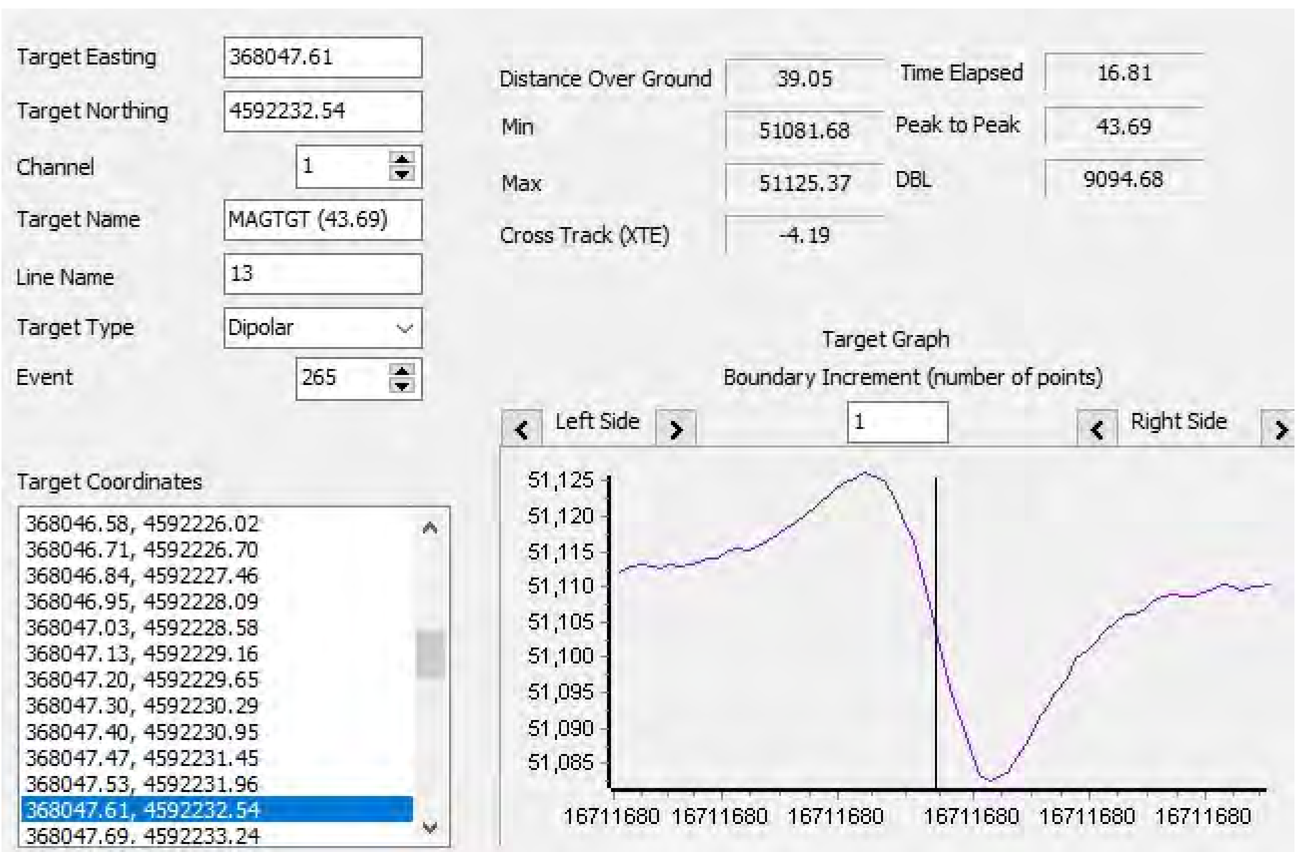
Name	Date	10/05/2021
MAGTGT (23.32)	Time	11:11:54
Survey File	Event	249
13	X	367994.0
Capture File	Y	4591864.0
367994.81.4591864.74.23.32.51159.27.11.jpg	WGS84 Latitude	41 28 3.0599 N
	WGS84 Longitude	070 34 50.8822 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



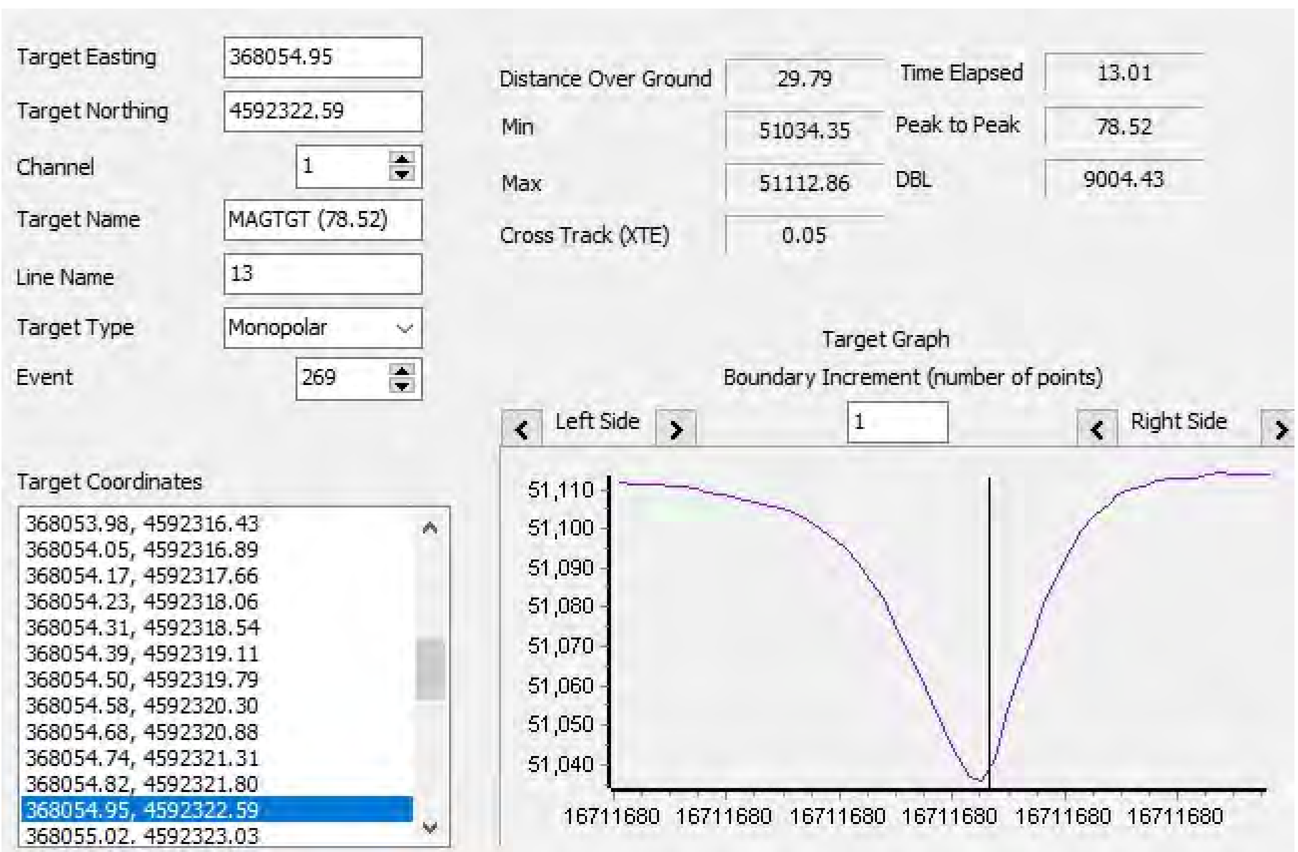
Name	Date	10/05/2021
MAGTGT (43.69)	Time	11:12:09
Survey File	Event	265
13	X	368047.0
Capture File	Y	4592232.0
368047.61.4592232.54.43.69.51099.29.11.jpg	WGS84 Latitude	41 28 15.0198 N
	WGS84 Longitude	070 34 48.8879 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



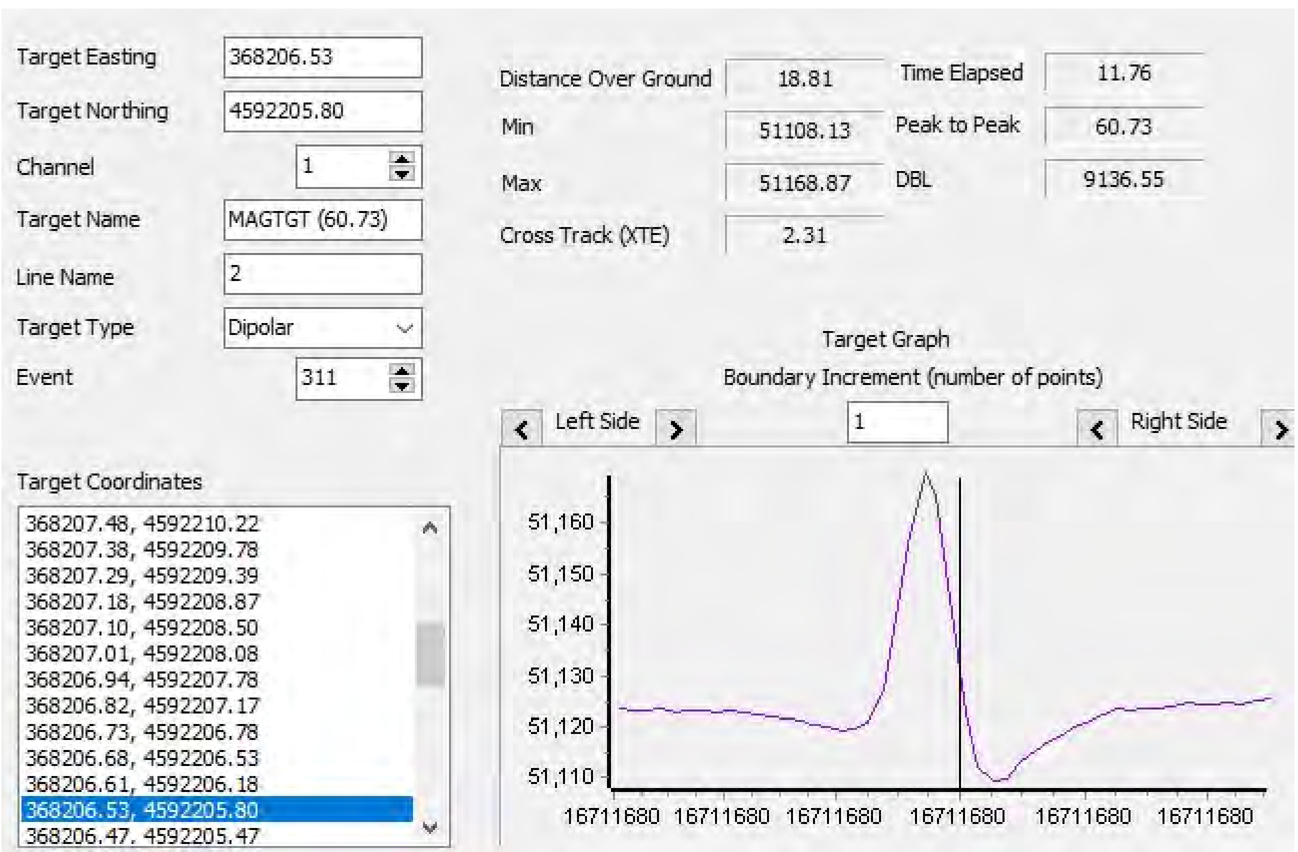
Name	Date	10/05/2021
MAGTGT (78.52)	Time	11:12:24
Survey File	Event	269
13	X	368054.0
Capture File	Y	4592322.0
368054.95.4592322.59.78.52.51047.54.11.jpg	WGS84 Latitude	41 28 17.9413 N
	WGS84 Longitude	070 34 48.6571 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



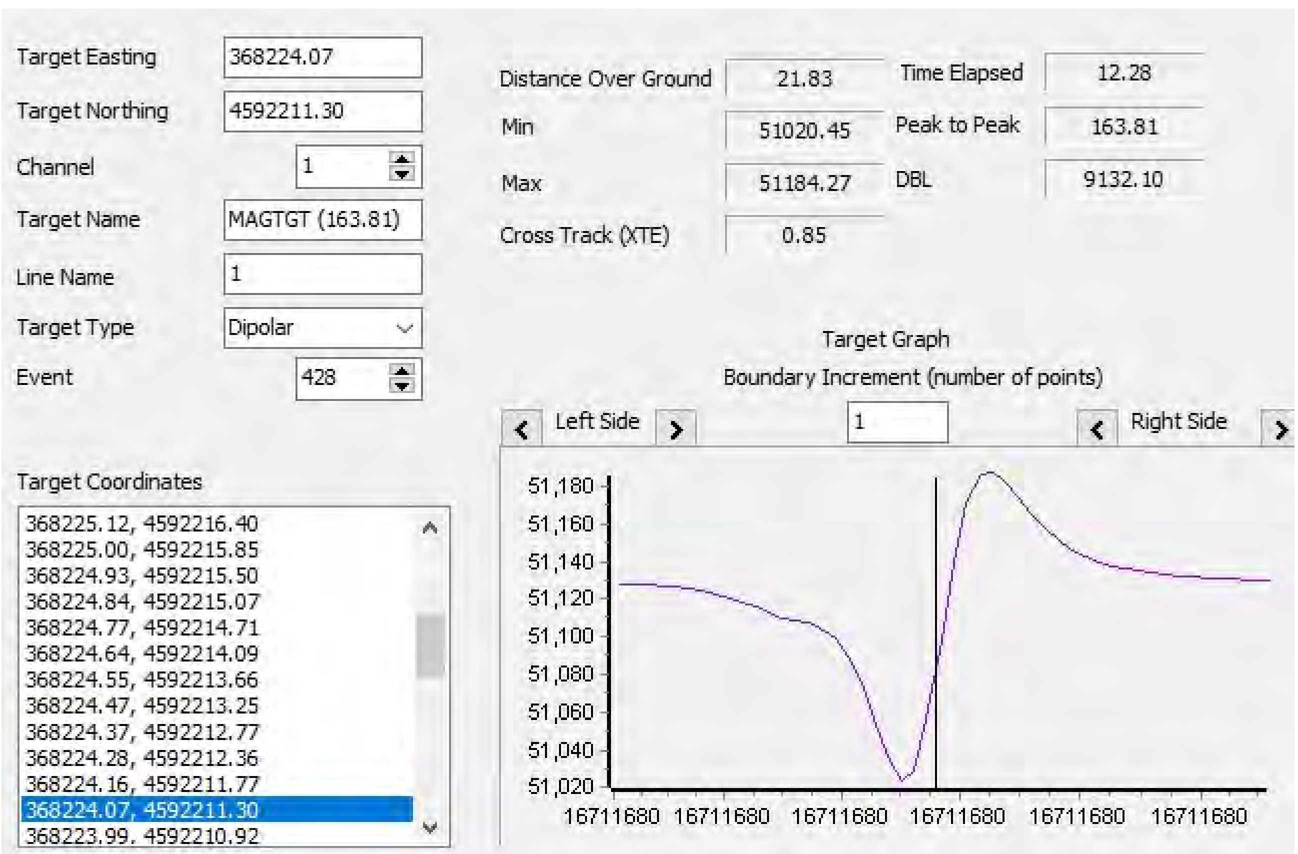
Name	Date	10/05/2021
MAGTGT (60.73)	Time	11:12:50
Survey File	Event	311
2	X	368206.0
Capture File	Y	4592205.0
368206.53.4592205.80.60.73.51164.18.12.jpg	WGS84 Latitude	41 28 14.2388 N
	WGS84 Longitude	070 34 42.0142 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



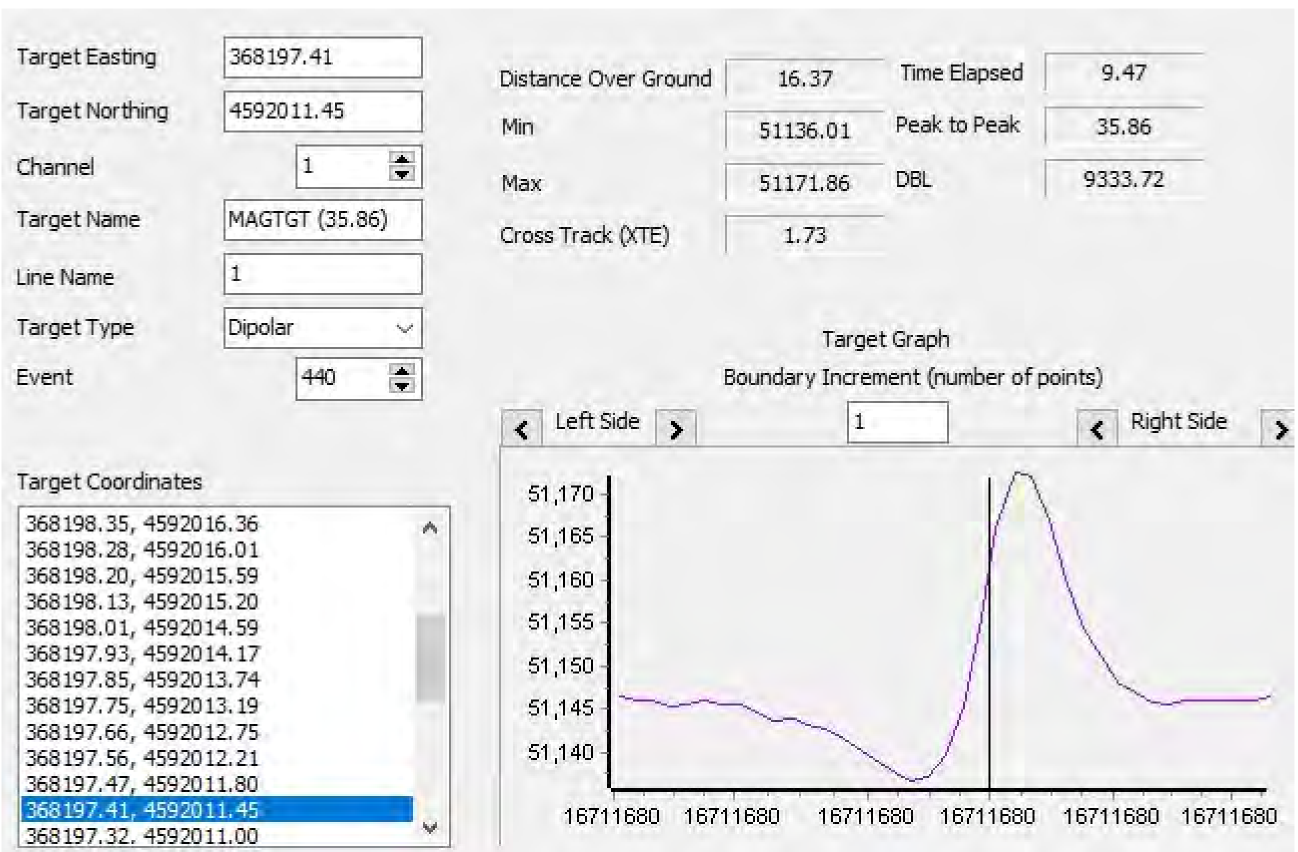
Name	Date	10/05/2021
MAGTGT (163.81)	Time	11:13:12
Survey File	Event	428
1	X	368224.0
Capture File	Y	4592211.0
368224.07.4592211.30.163.81.51094.81.14.jpg	WGS84 Latitude	41 28 14.4439 N
	WGS84 Longitude	070 34 41.2432 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



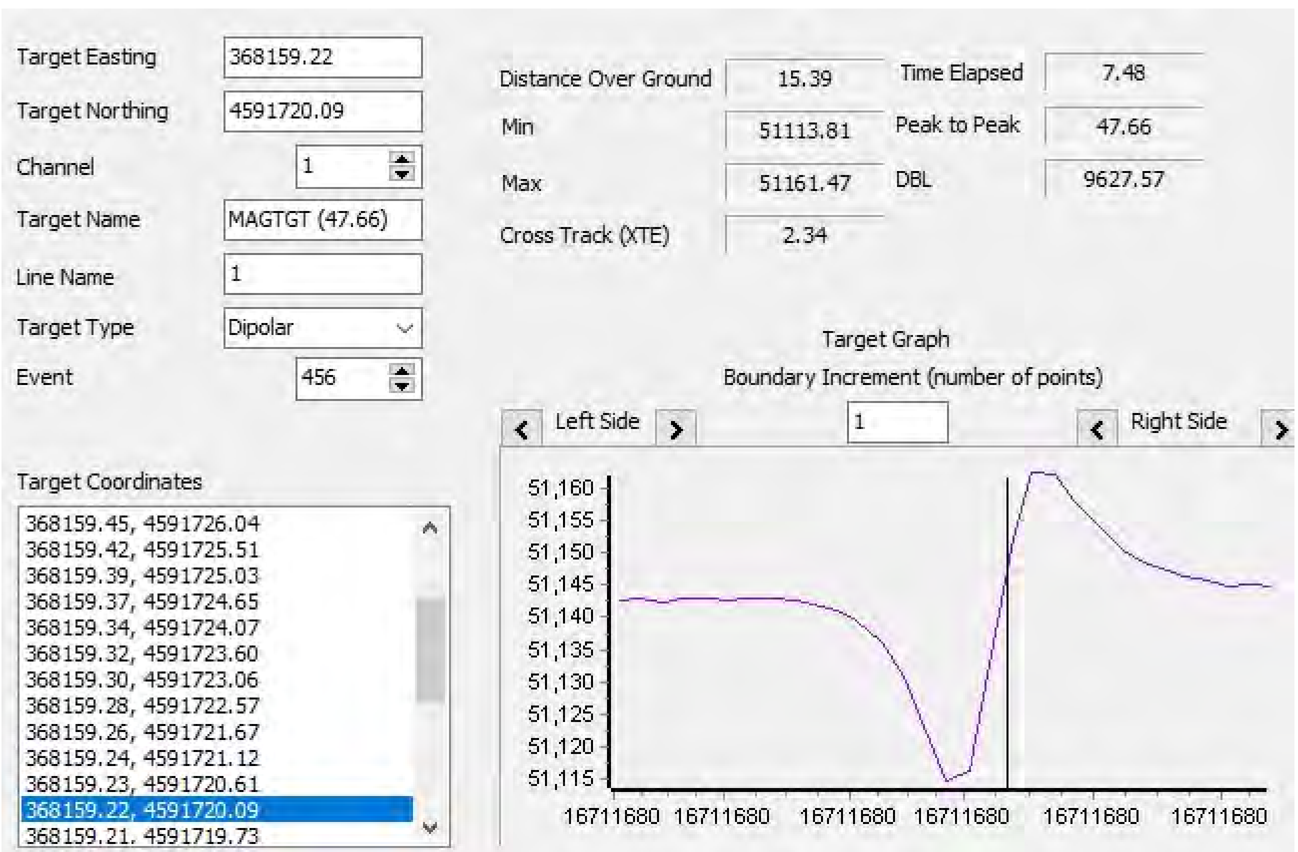
Name	Date	10/05/2021
MAGTGT (35.86)	Time	11:13:23
Survey File	Event	440
1	X	368197.0
Capture File	Y	4592011.0
368197.41.4592011.45.35.86.51138.96.14.jpg	WGS84 Latitude	41 28 7.945 N
	WGS84 Longitude	070 34 42.2495 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



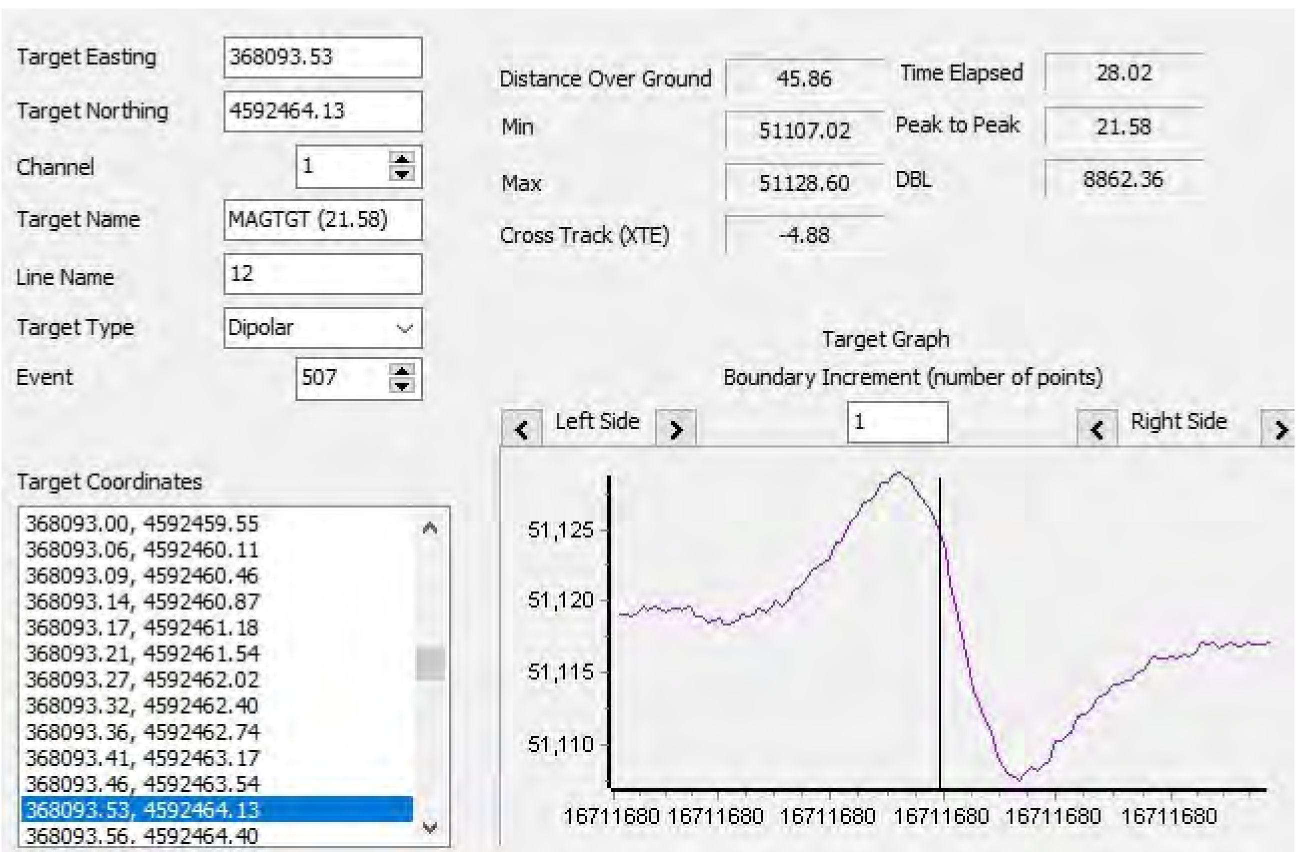
Name	Date	10/05/2021
MAGTGT (47.66)	Time	11:13:38
Survey File	Event	456
1	X	368159.0
Capture File	Y	4591720.0
368159.22.4591720.09.47.66. 51113.81.14.jpg	WGS84 Latitude	41 27 58.4898 N
	WGS84 Longitude	070 34 43.6583 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



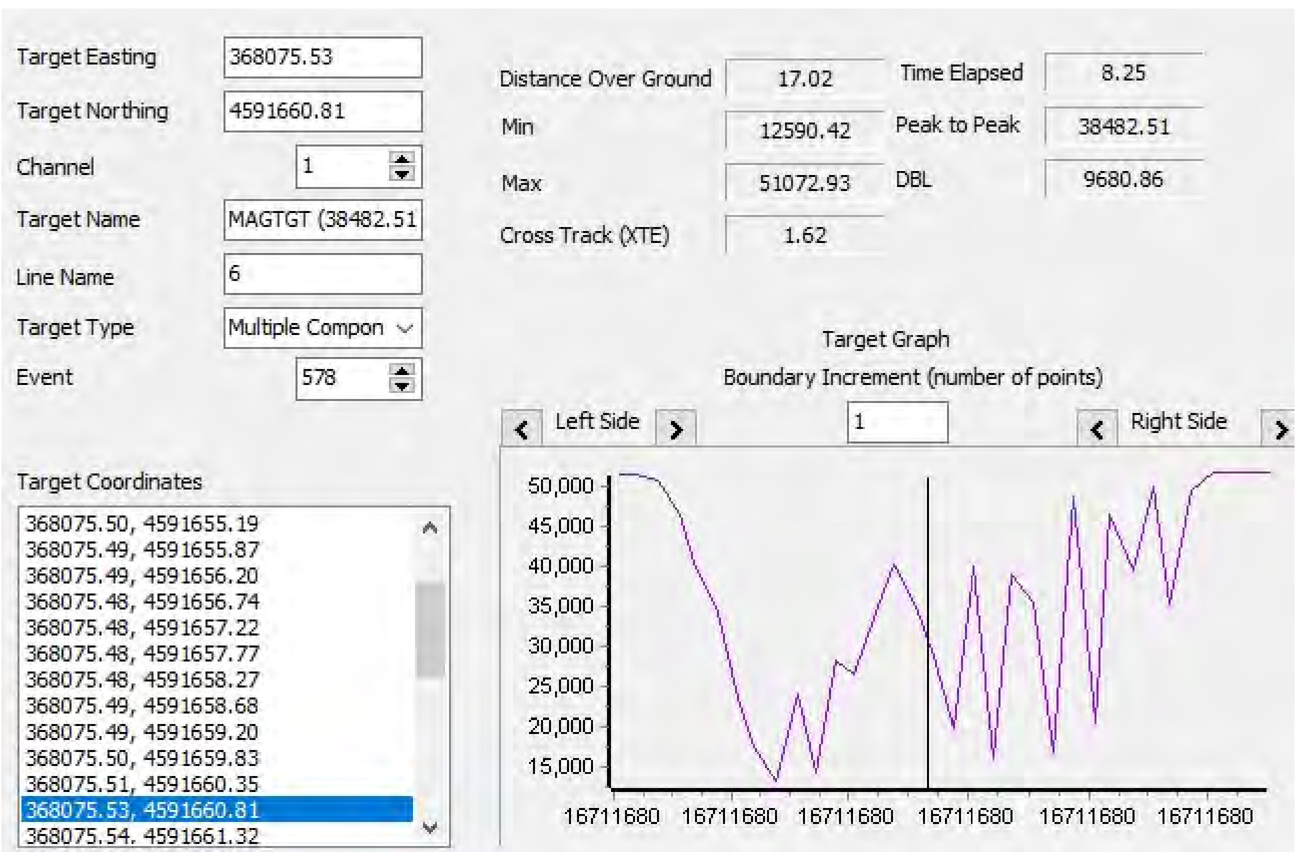
Name	Date	10/05/2021
MAGTGT (21.58)	Time	11:14:02
Survey File	Event	507
12	X	368093.0
Capture File	Y	4592464.0
368093.53.4592464.13.21.58.51123.20.15.jpg	WGS84 Latitude	41 28 22.5673 N
	WGS84 Longitude	070 34 47.088 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



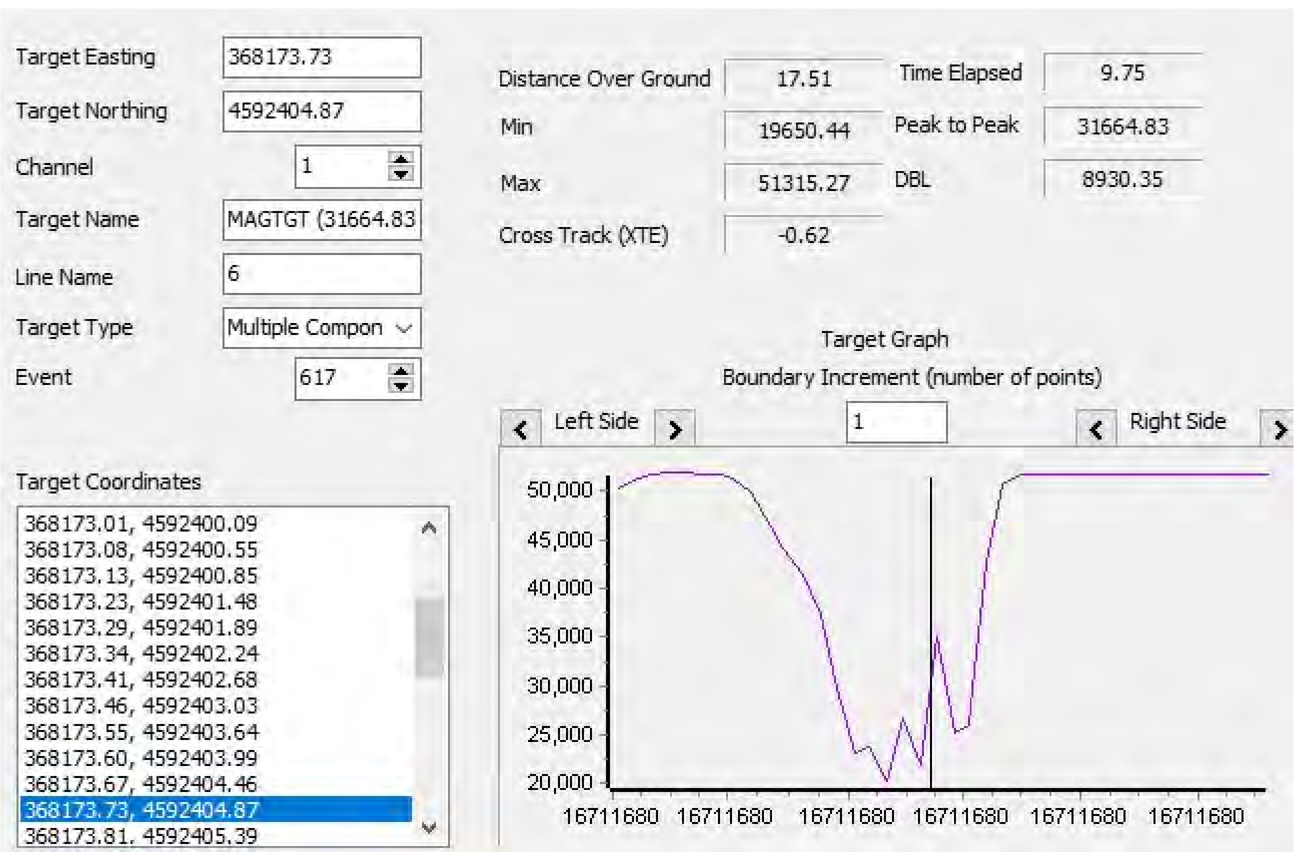
Name	Date	10/05/2021
MAGTGT (38482.51)	Time	11:14:45
Survey File	Event	578
6	X	368075.0
Capture File	Y	4591660.0
368075.53.4591660.81.38482.51.28153.85.17.jpg	WGS84 Latitude	41 27 56.4952 N
	WGS84 Longitude	070 34 47.231 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



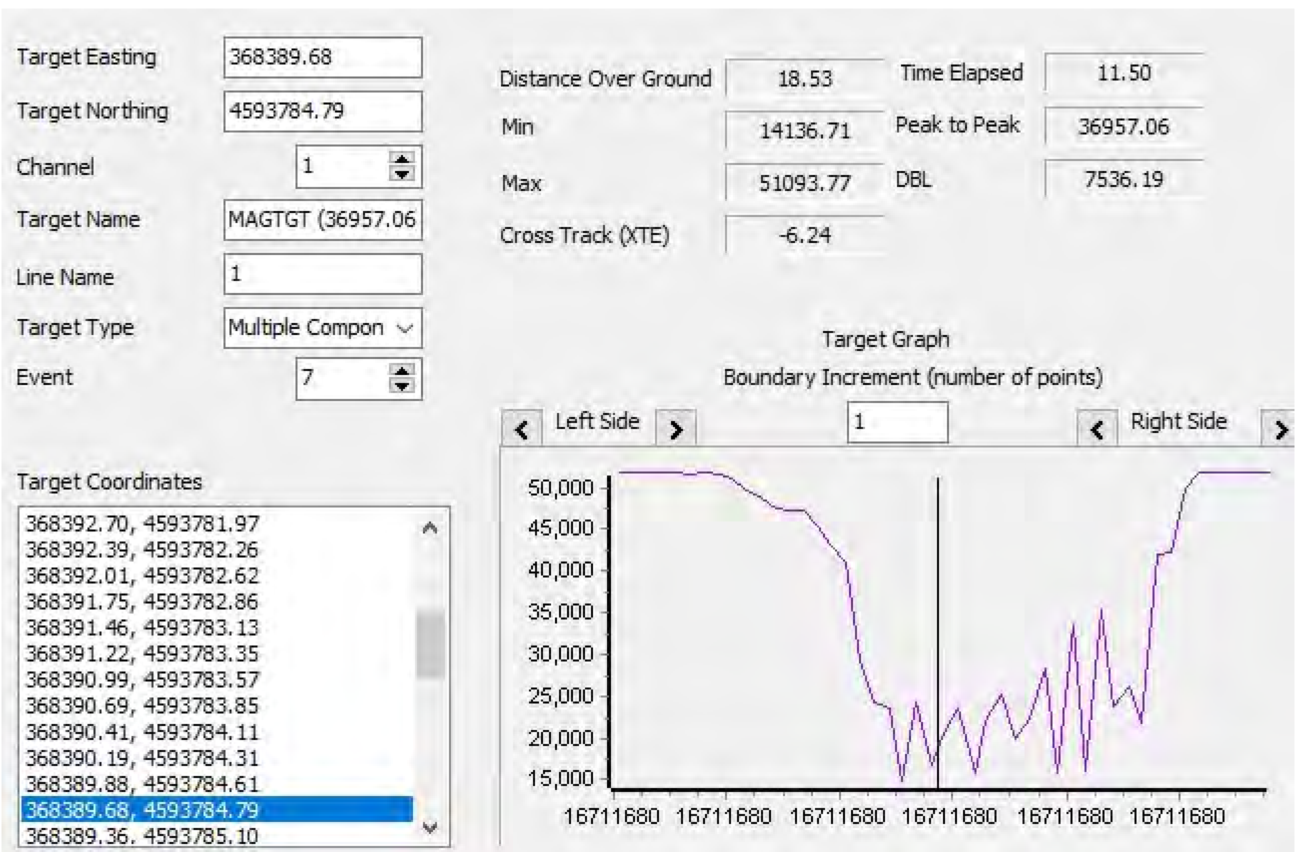
Name	Date	10/05/2021
MAGTGT (31664.83)	Time	11:14:56
Survey File	Event	617
6	X	368173.0
Capture File	Y	4592404.0
368173.73.4592404.87.31664.83.34390.79.17.jpg	WGS84 Latitude	41 28 20.6697 N
	WGS84 Longitude	070 34 43.5929 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



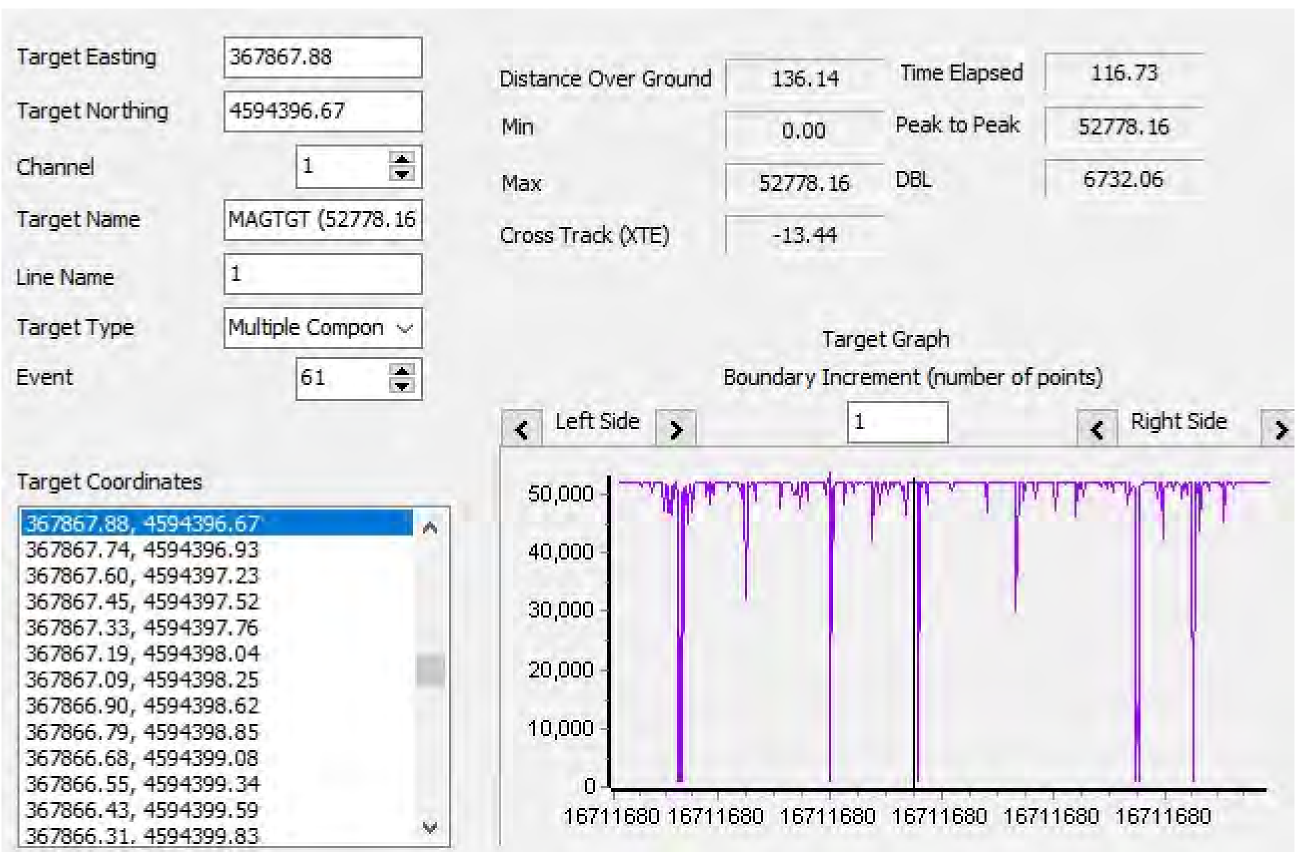
Name	Date	10/05/2021
MAGTGT (36957.06)	Time	11:33:22
Survey File	Event	7
1	X	368389.0
Capture File	Y	4593784.0
368389.68.4593784.79.36957.06.20015.09.0.jpg	WGS84 Latitude	41 29 5.5297 N
	WGS84 Longitude	070 34 35.3679 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



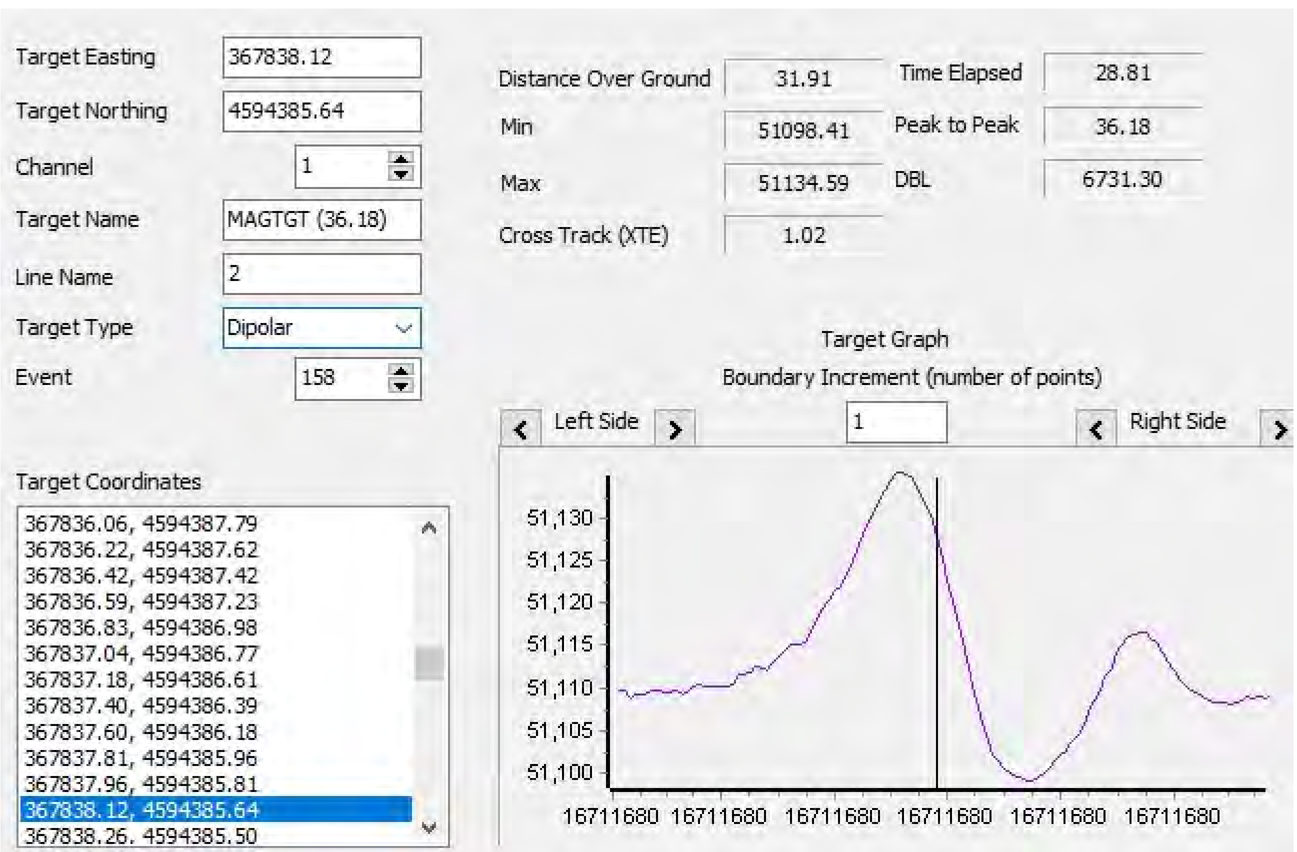
Name	Date	10/05/2021
MAGTGT (52778.16)	Time	11:33:55
Survey File	Event	61
1	X	367867.0
Capture File	Y	4594396.0
367867.88.4594396.67.52778.16.51118.27.0.jpg	WGS84 Latitude	41 29 25.0583 N
	WGS84 Longitude	070 34 58.3524 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



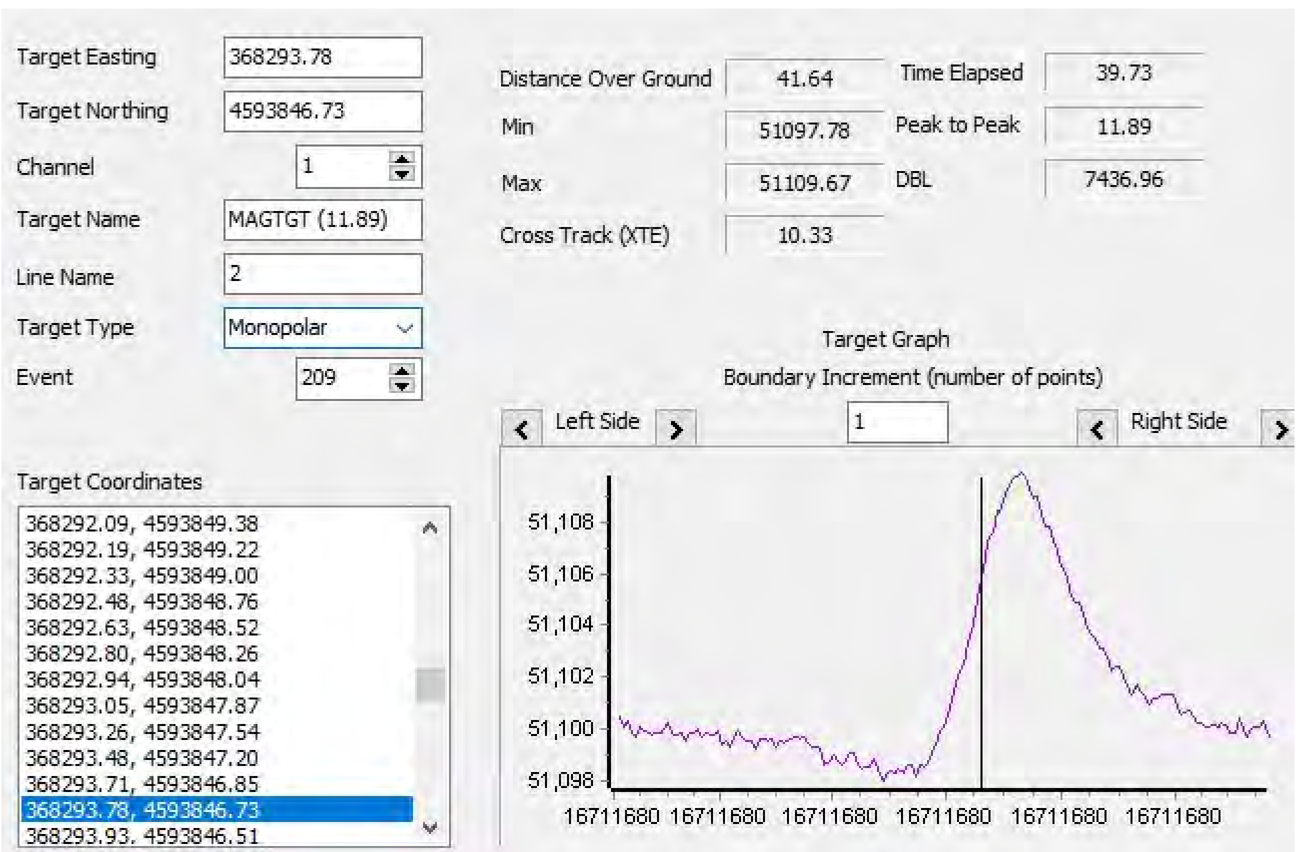
Name	Date	10/05/2021
MAGTGT (36.18)	Time	11:35:38
Survey File	Event	158
2	X	367838.0
Capture File	Y	4594385.0
367838.12.4594385.64.36.18. 51124.50.1.jpg	WGS84 Latitude	41 29 24.6845 N
	WGS84 Longitude	070 34 59.5939 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



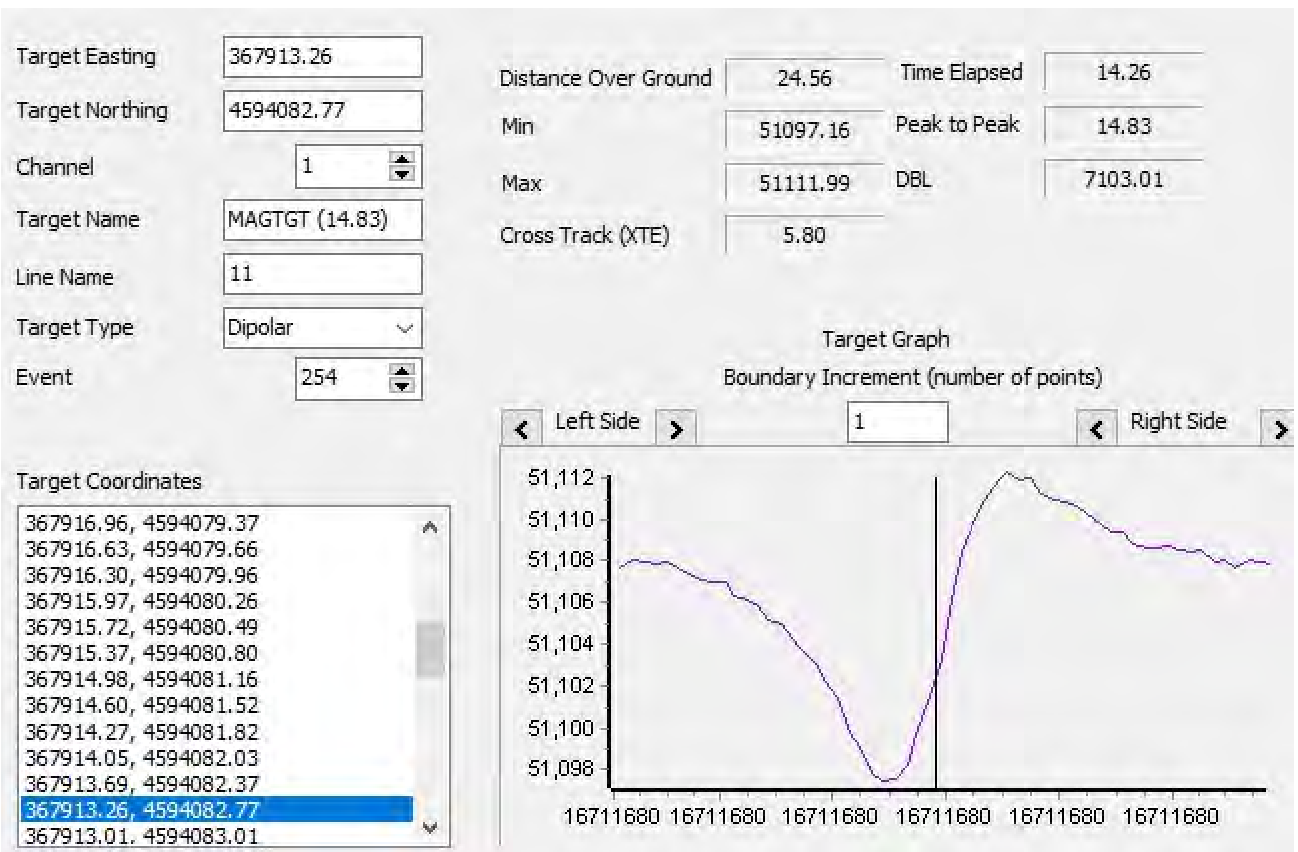
Name	Date	10/05/2021
MAGTGT (11.89)	Time	11:36:05
Survey File	Event	209
2	X	368293.0
Capture File	Y	4593846.0
368293.78.4593846.73.11.89.51099.68.1.jpg	WGS84 Latitude	41 29 7.4826 N
	WGS84 Longitude	070 34 39.5549 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



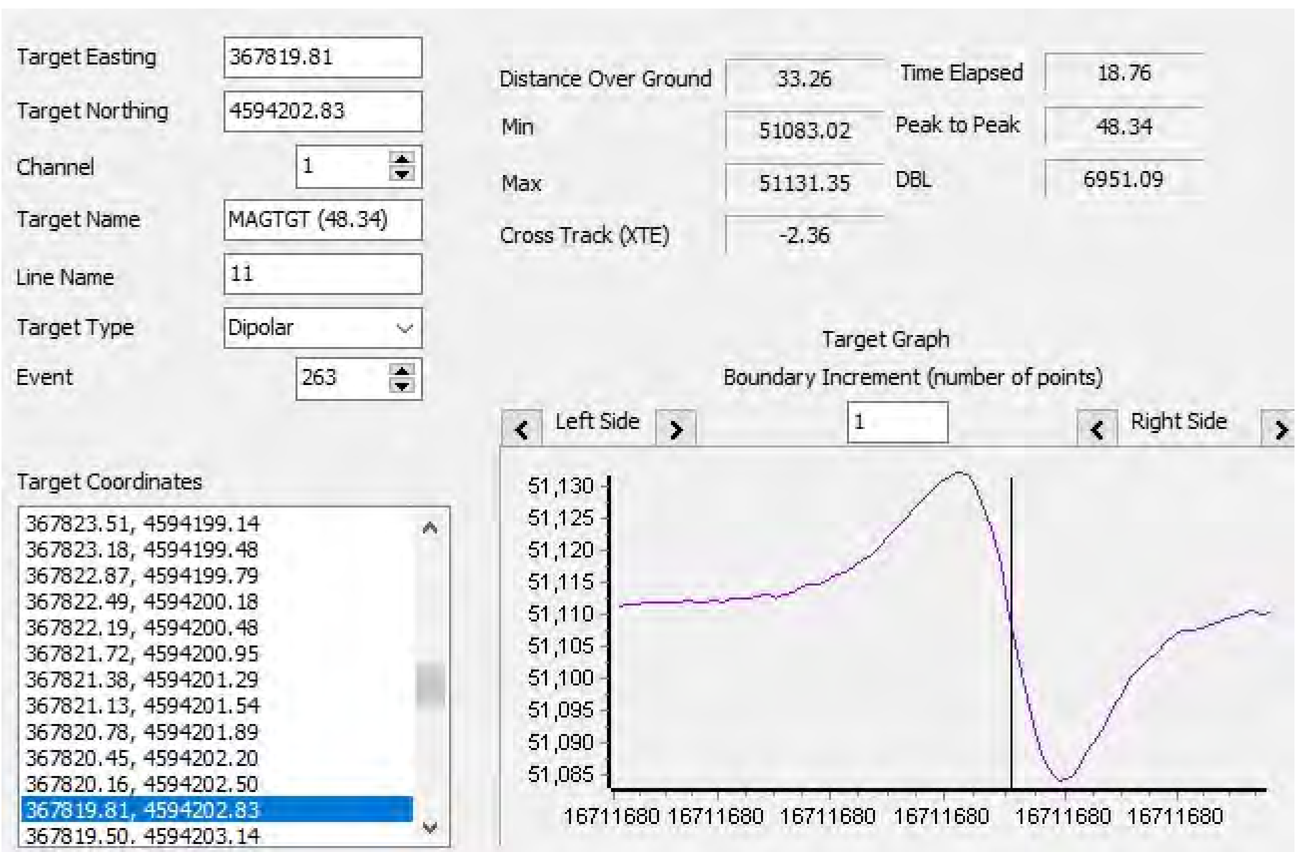
Name	Date	10/05/2021
MAGTGT (14.83)	Time	11:44:09
Survey File	Event	254
11	X	367913.0
Capture File	Y	4594082.0
367913.26.4594082.77.14.83.51102.91.2.jpg	WGS84 Latitude	41 29 14.9074 N
	WGS84 Longitude	070 34 56.1216 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



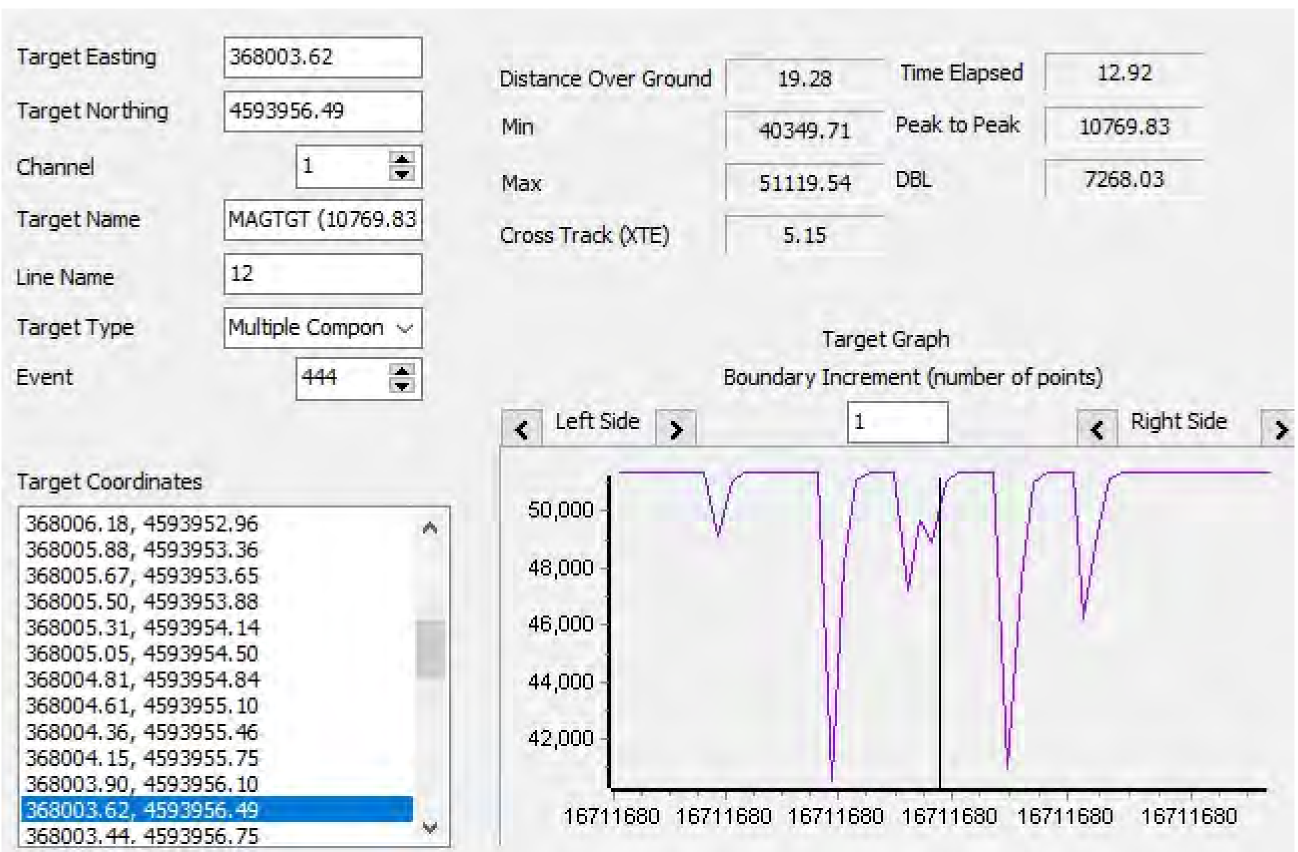
Name	Date	10/05/2021
MAGTGT (48.34)	Time	11:44:25
Survey File	Event	263
11	X	367819.0
Capture File	Y	4594202.0
367819.81.4594202.83.48.34.51129.65.2.jpg	WGS84 Latitude	41 29 18.7414 N
	WGS84 Longitude	070 35 0.2685 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



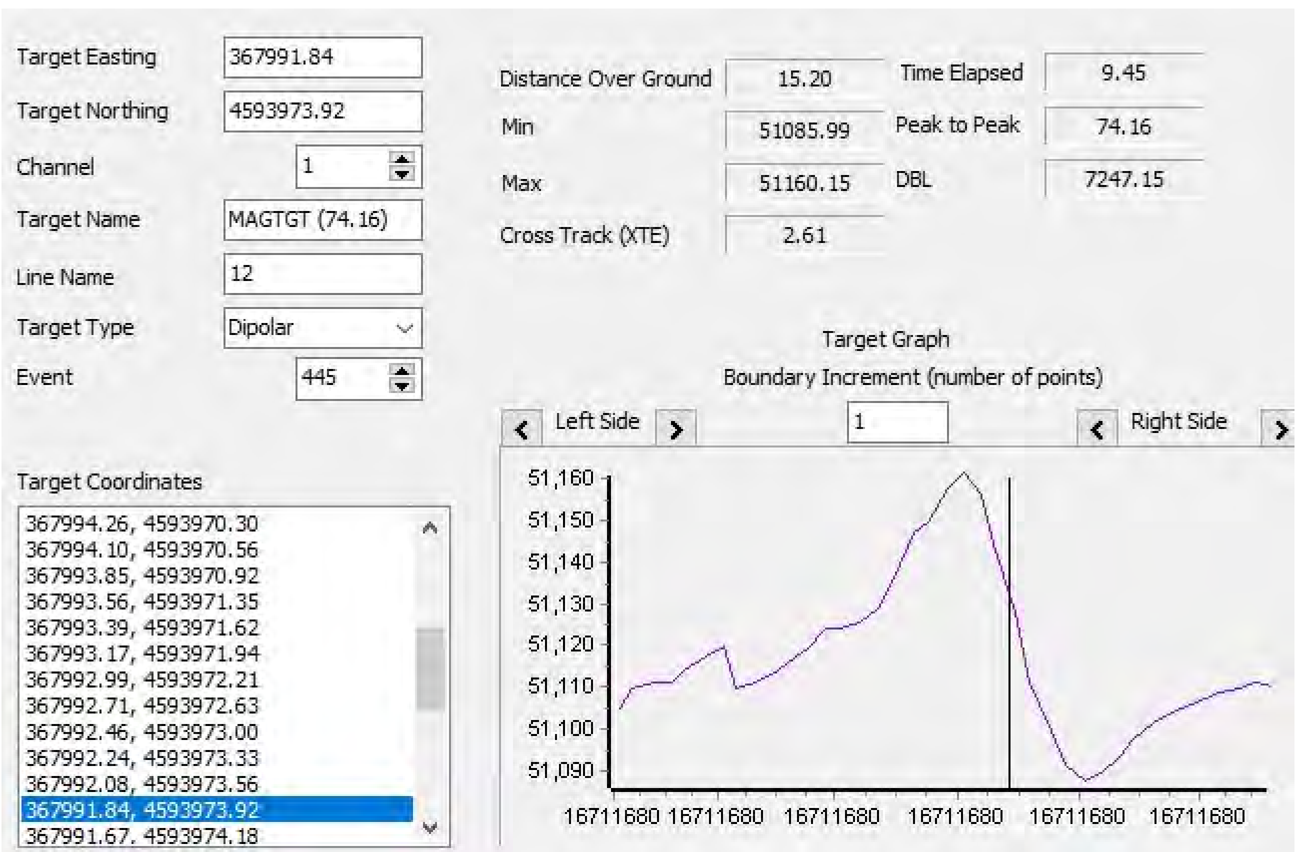
Name	Date	10/05/2021
MAGTGT (10769.83)	Time	11:45:03
Survey File	Event	444
12	X	368003.0
Capture File	Y	4593956.0
368003.62.4593956.49.10769.83.50776.90.5.jpg	WGS84 Latitude	41 29 10.8765 N
	WGS84 Longitude	070 34 52.1426 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



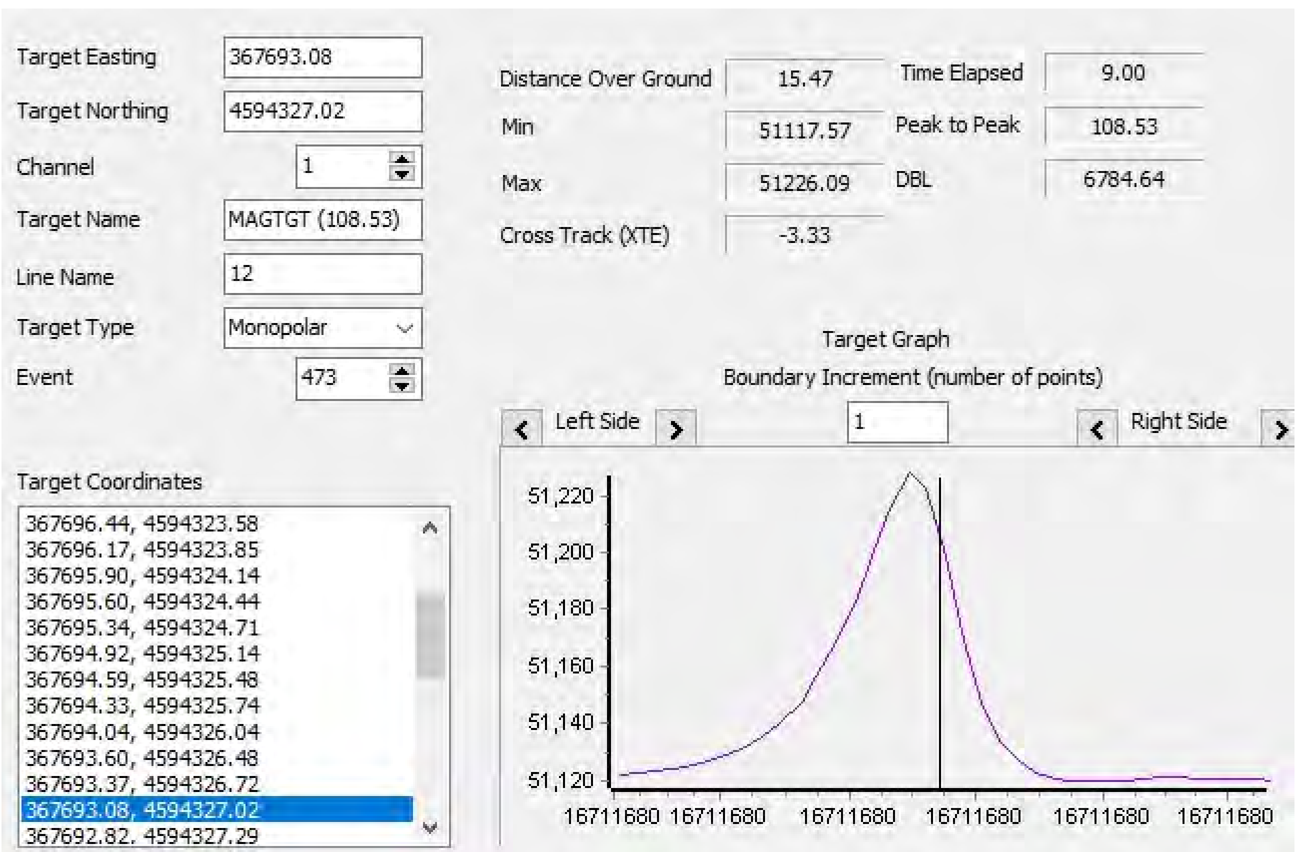
Name	Date	10/05/2021
MAGTGT (74.16)	Time	11:45:39
Survey File	Event	445
12	X	367991.0
Capture File	Y	4593973.0
367991.84.4593973.92.74.16. 51147.90.5.jpg	WGS84 Latitude	41 29 11.4205 N
	WGS84 Longitude	070 34 52.6733 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



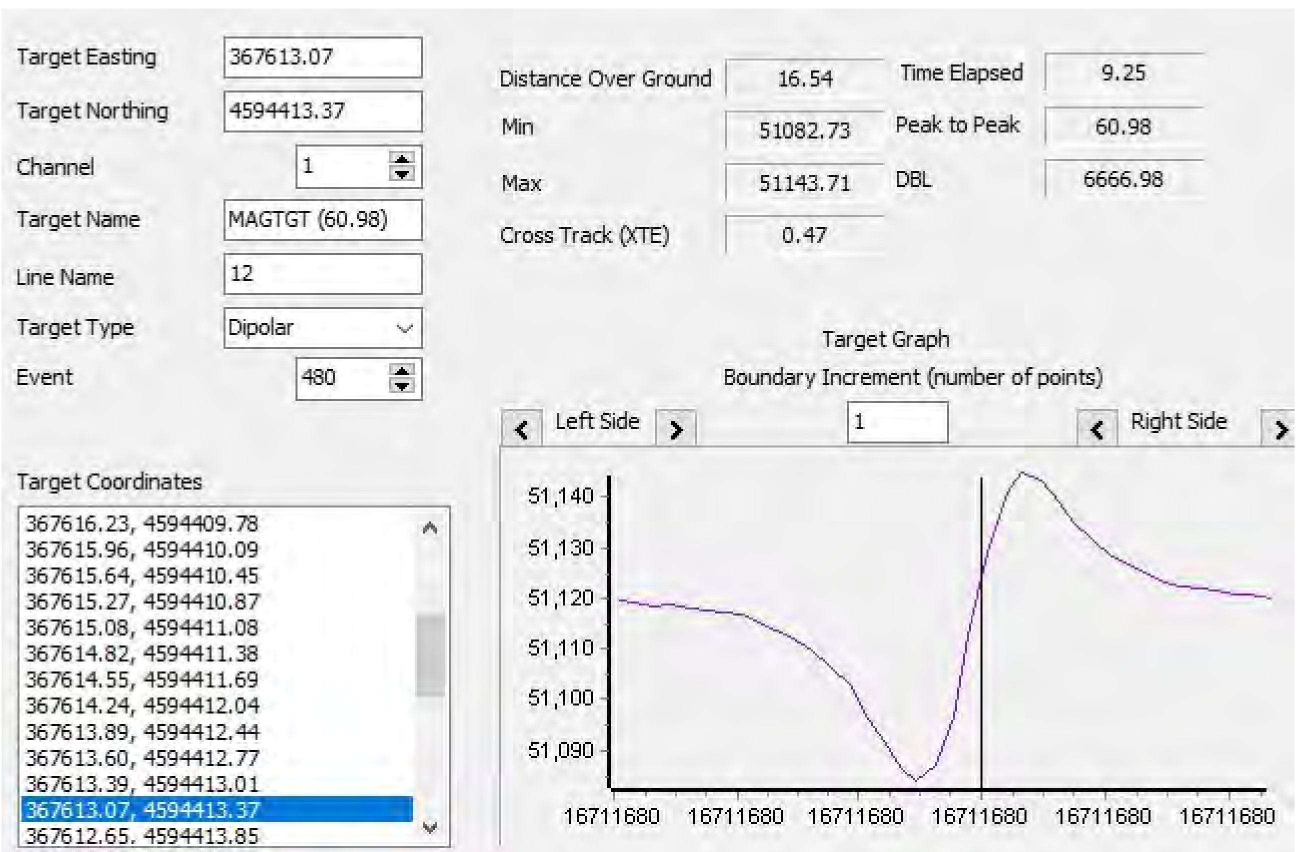
Name	Date	10/05/2021
MAGTGT (108.53)	Time	11:45:56
Survey File	Event	473
12	X	367693.0
Capture File	Y	4594327.0
367693.08.4594327.02.108.53 .51196.80.5.jpg	WGS84 Latitude	41 29 22.7183 N
	WGS84 Longitude	070 35 5.799 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



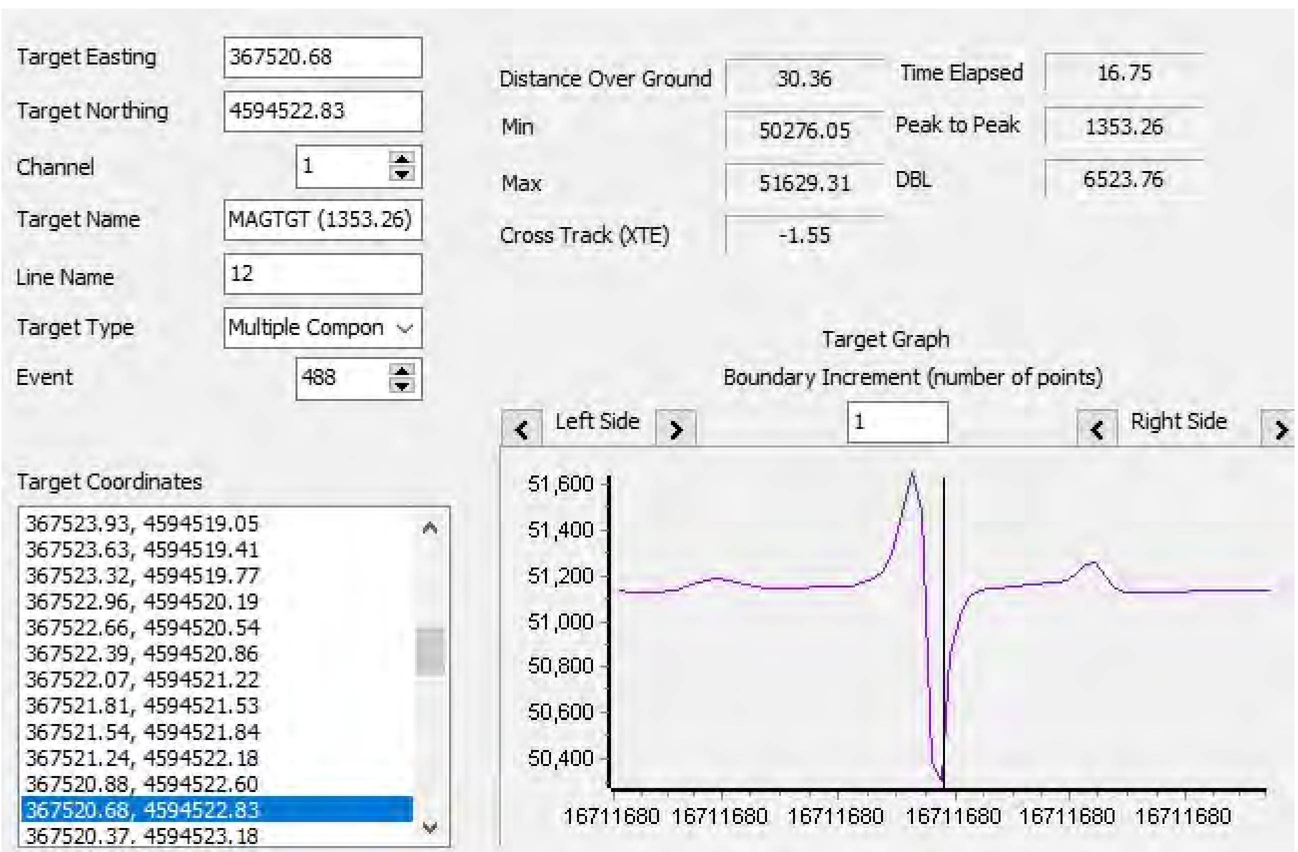
Name	Date	10/05/2021
MAGTGT (60.98)	Time	11:46:12
Survey File	Event	480
12	X	367613.0
Capture File	Y	4594413.0
367613.07.4594413.37.60.98. 51086.00.5.jpg	WGS84 Latitude	41 29 25.4584 N
	WGS84 Longitude	070 35 9.3158 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



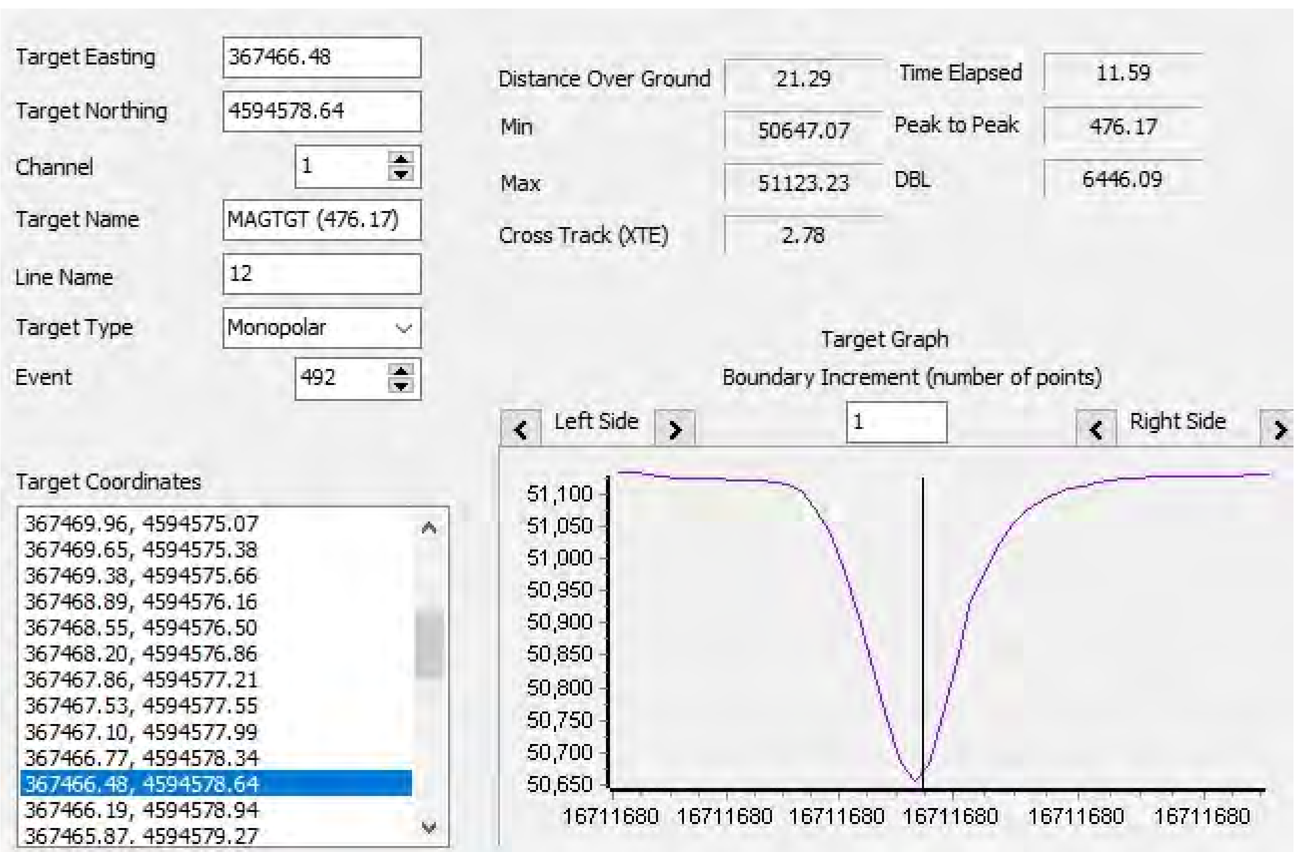
Name	Date	10/05/2021
MAGTGT (1353.26)	Time	11:46:37
Survey File	Event	488
12	X	367520.0
Capture File	Y	4594522.0
367520.68.4594522.83.1353.26.50829.50.5.jpg	WGS84 Latitude	41 29 28.9363 N
	WGS84 Longitude	070 35 13.4113 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



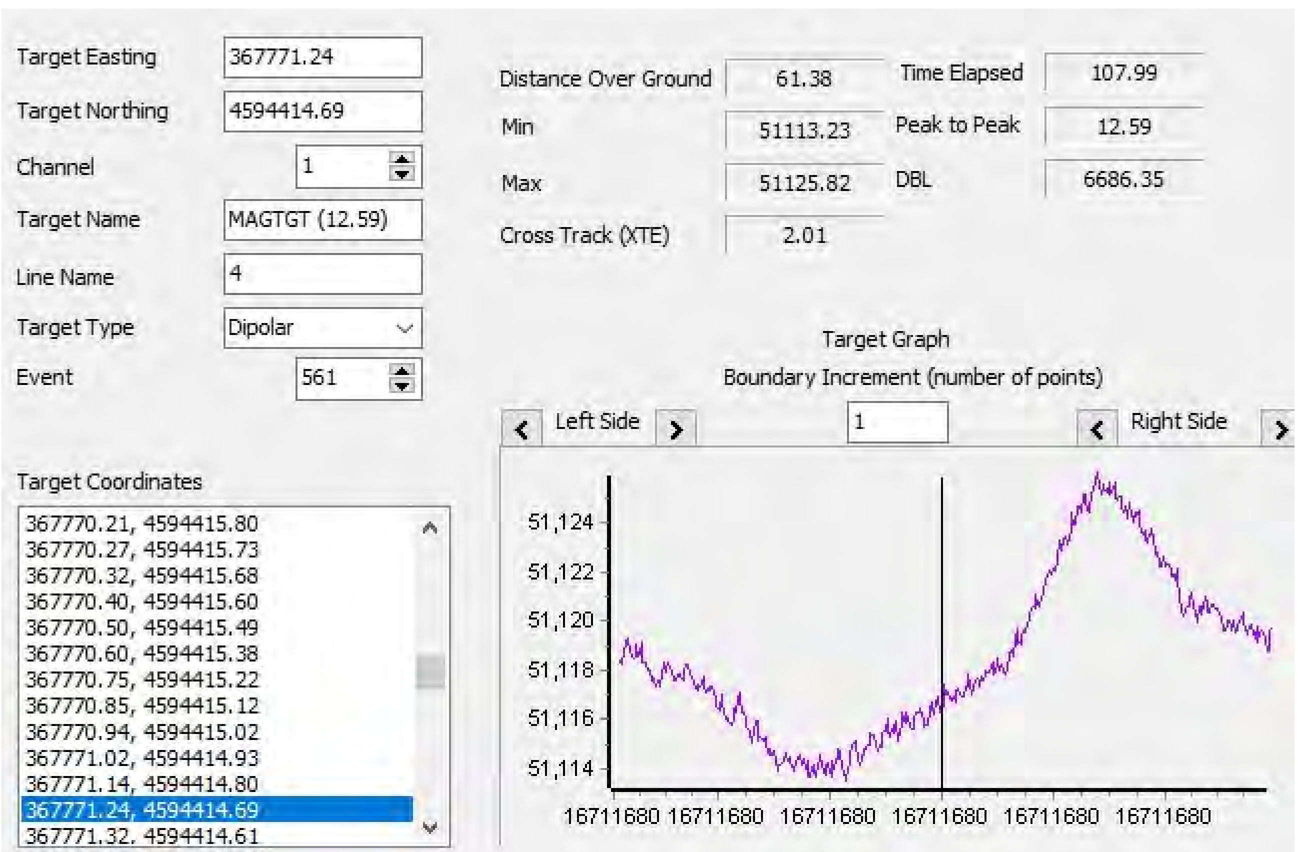
Name	Date	10/05/2021
MAGTGT (476.17)	Time	11:46:57
Survey File	Event	492
12	X	367466.0
Capture File	Y	4594578.0
367466.48.4594578.64.476.17 .50749.29.5.jpg	WGS84 Latitude	41 29 30.7194 N
	WGS84 Longitude	070 35 15.7836 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



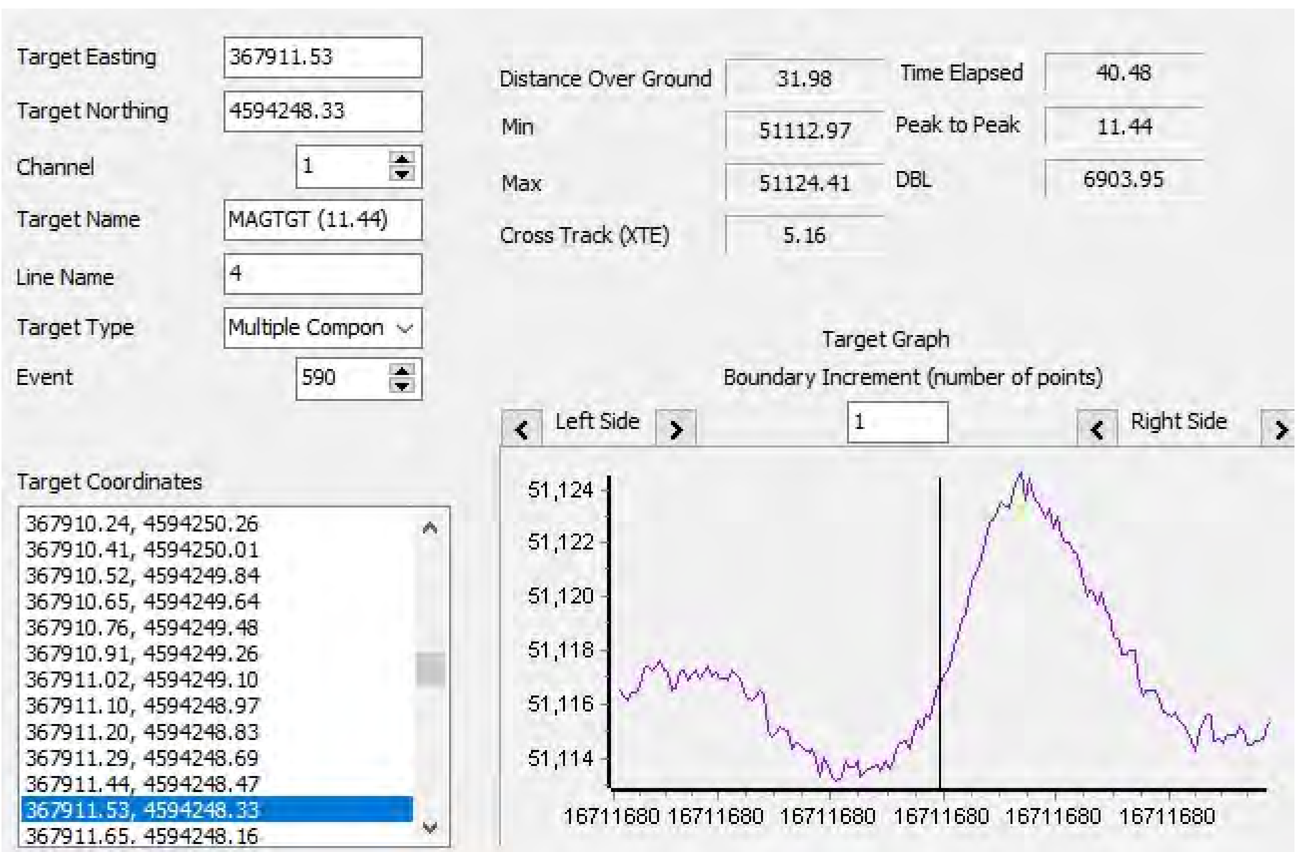
Name	Date	10/05/2021
MAGTGT (12.59)	Time	11:47:30
Survey File	Event	561
4	X	367771.0
Capture File	Y	4594414.0
367771.24.4594414.69.12.59. 51116.80.6.jpg	WGS84 Latitude	41 29 25.5847 N
	WGS84 Longitude	070 35 2.5052 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



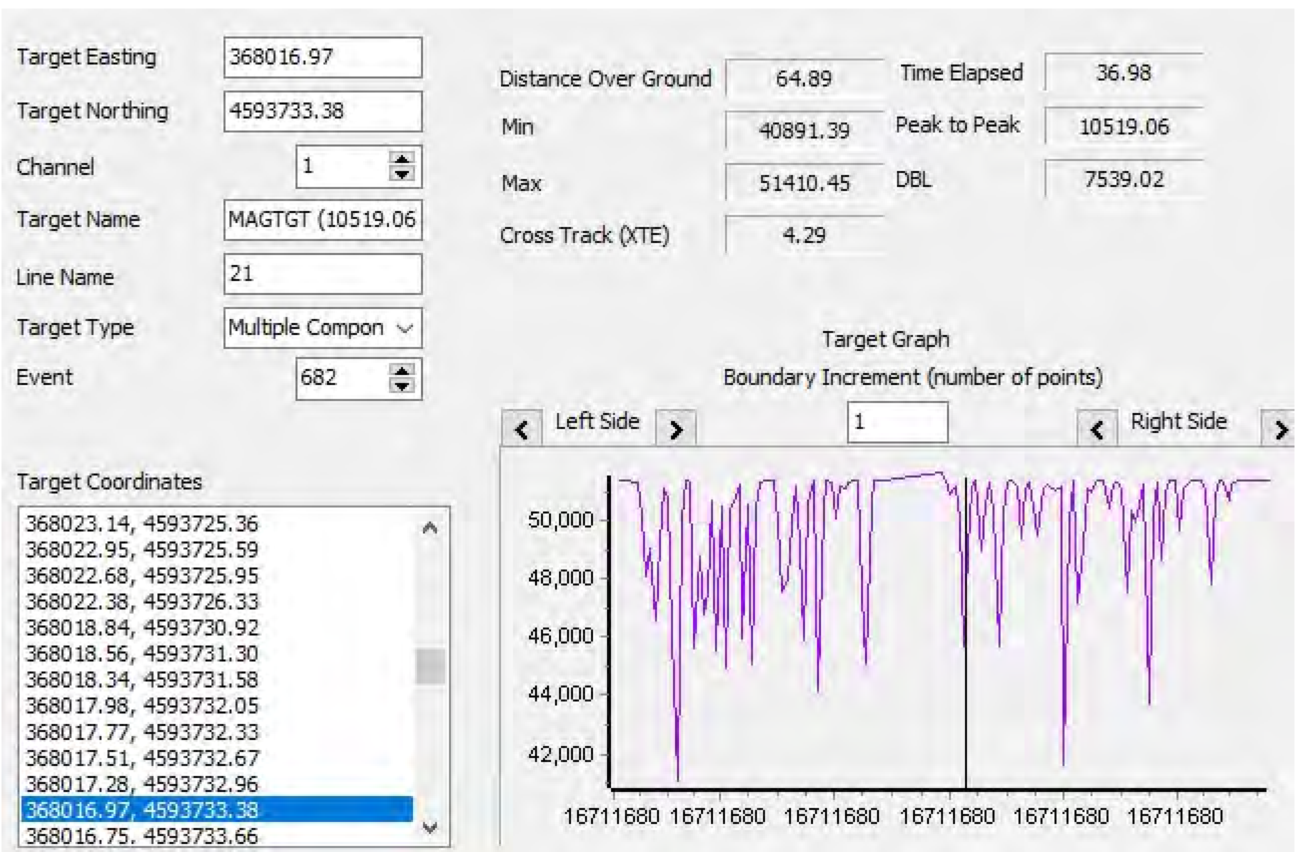
Name	Date	10/05/2021
MAGTGT (11.44)	Time	11:47:43
Survey File	Event	590
4	X	367911.0
Capture File	Y	4594248.0
367911.53.4594248.33.11.44.51116.96.6.jpg	WGS84 Latitude	41 29 20.287 N
	WGS84 Longitude	070 34 56.3388 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



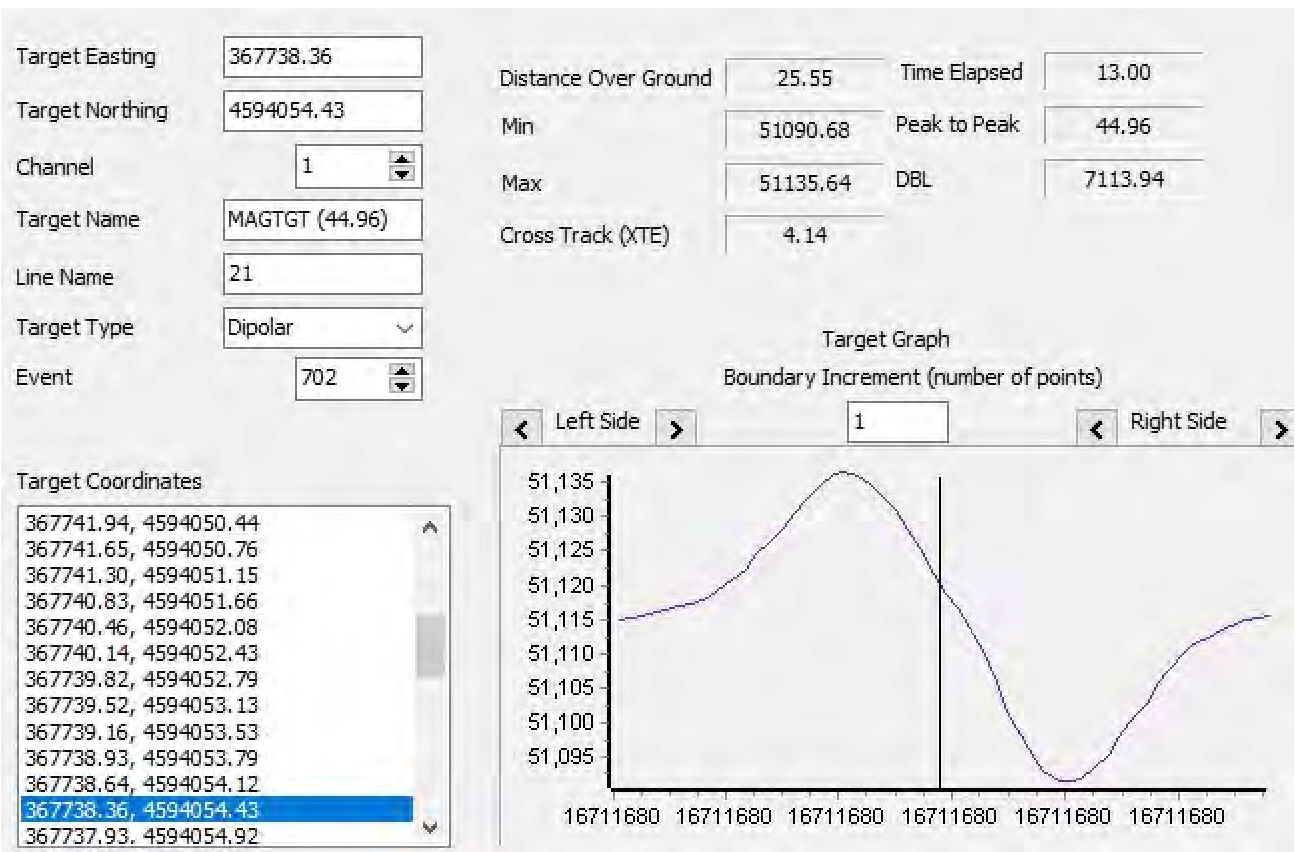
Name	Date	10/05/2021
MAGTGT (10519.06)	Time	11:48:05
Survey File	Event	682
21	X	368016.0
Capture File	Y	4593733.0
368016.97.4593733.38.10519.06.50890.71.7.jpg	WGS84 Latitude	41 29 3.6558 N
	WGS84 Longitude	070 34 51.4064 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



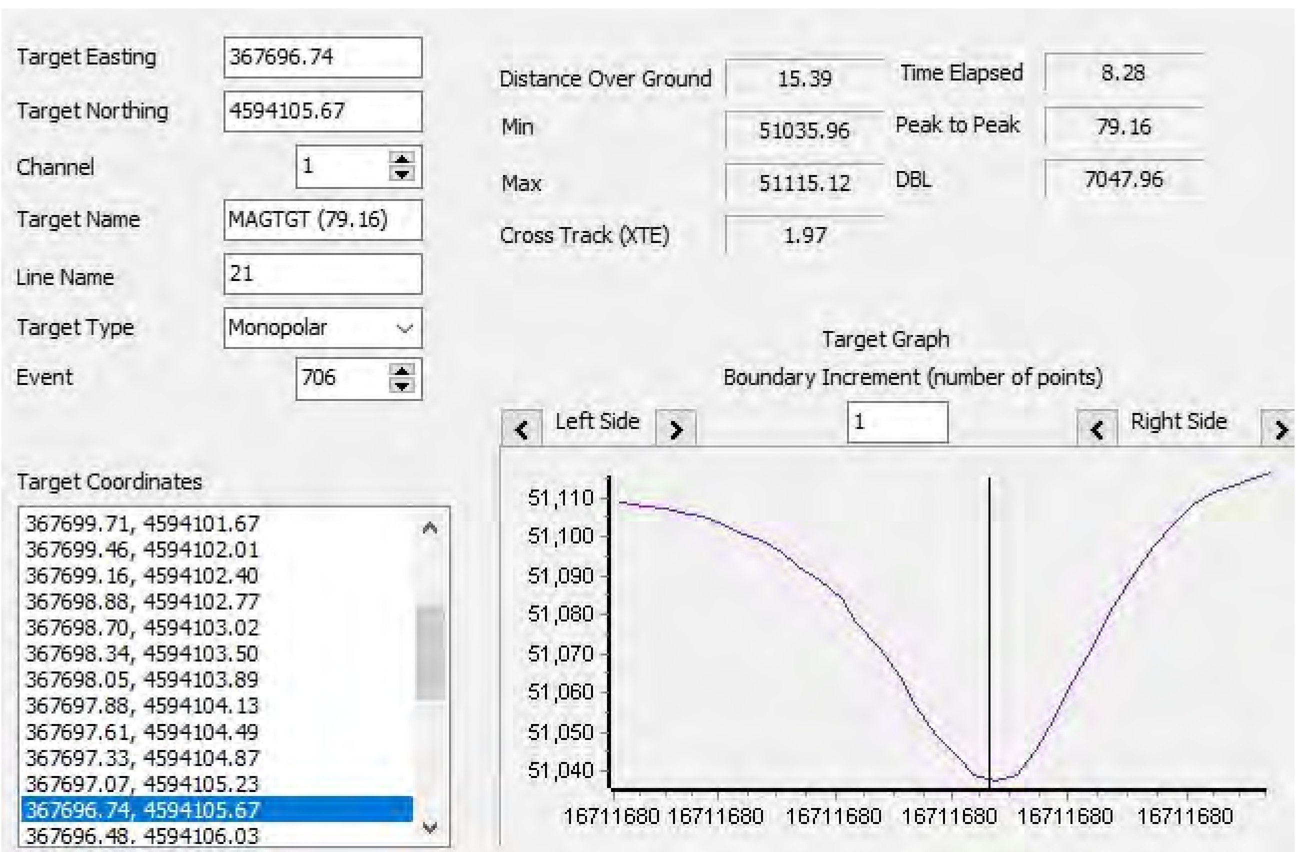
Name	Date	10/05/2021
MAGTGT (44.96)	Time	11:48:32
Survey File	Event	702
21	X	367738.0
Capture File	Y	4594054.0
367738.36.4594054.43.44.96.51117.82.7.jpg	WGS84 Latitude	41 29 13.8959 N
	WGS84 Longitude	070 35 3.6435 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



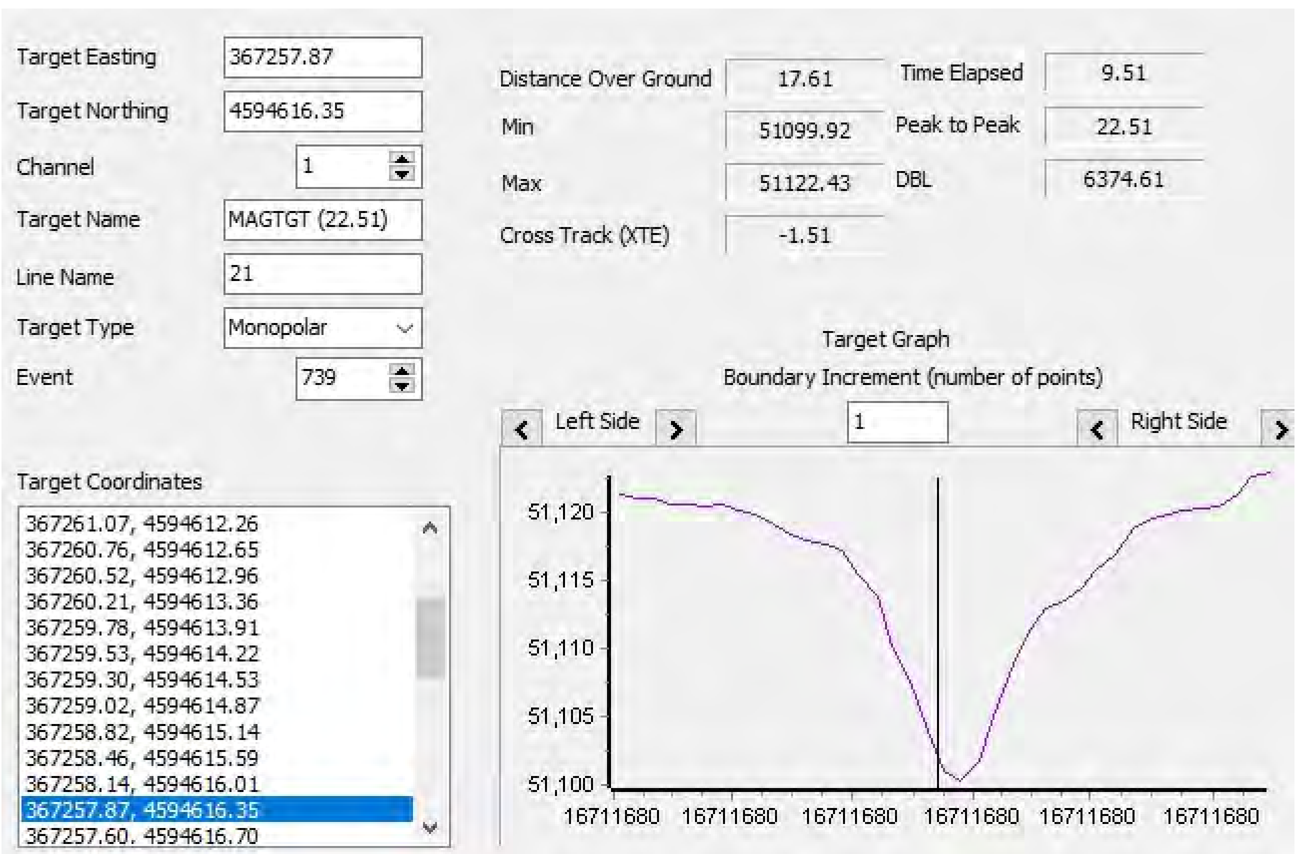
Name	Date	10/05/2021
MAGTGT (79.16)	Time	11:48:50
Survey File	Event	706
21	X	367696.0
Capture File	Y	4594105.0
367696.74.4594105.67.79.16. 51047.78.7.jpg	WGS84 Latitude	41 29 15.5241 N
	WGS84 Longitude	070 35 5.4943 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



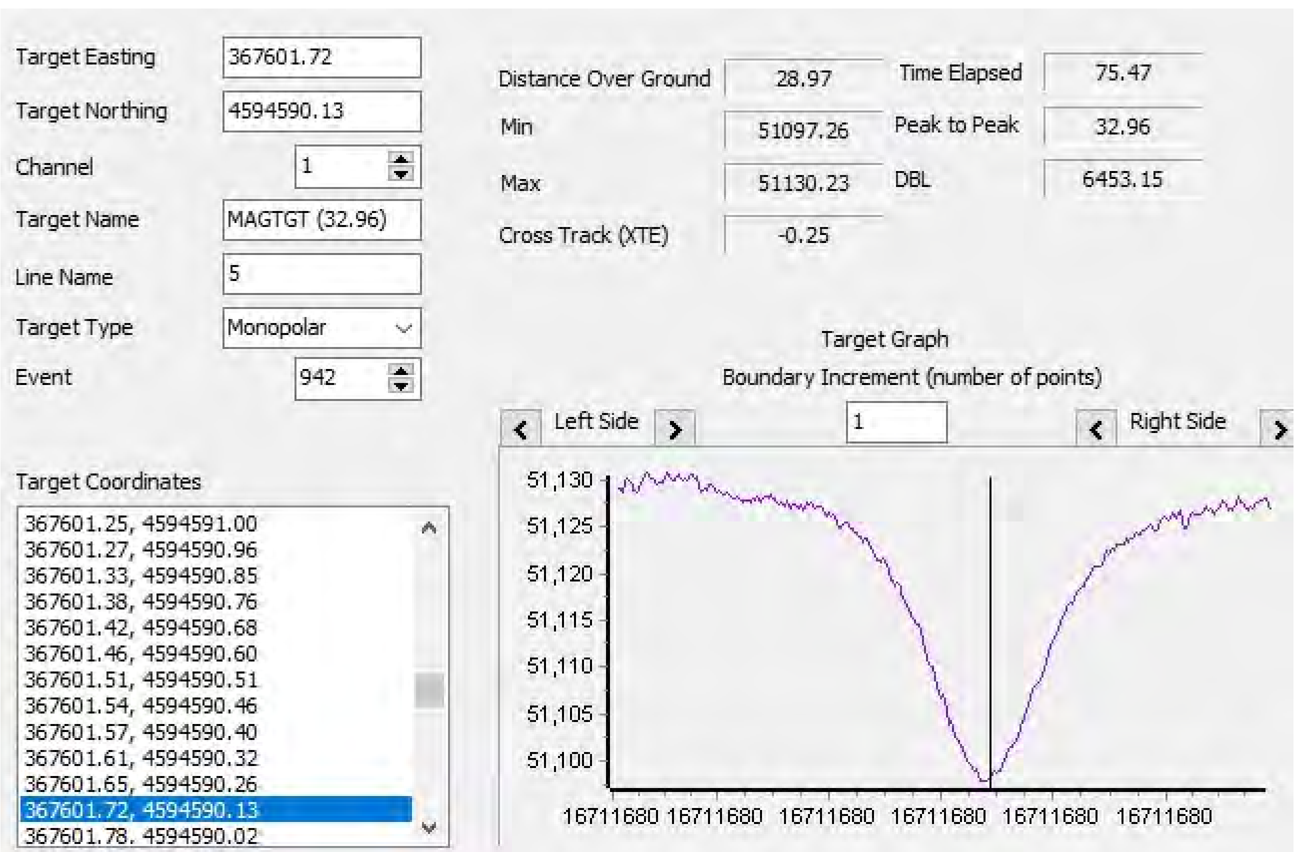
Name	Date	10/05/2021
MAGTGT (22.51)	Time	11:49:10
Survey File	Event	739
21	X	367257.0
Capture File	Y	4594616.0
367257.87.4594616.35.22.51.51100.66.7.jpg	WGS84 Latitude	41 29 31.8266 N
	WGS84 Longitude	070 35 24.8239 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



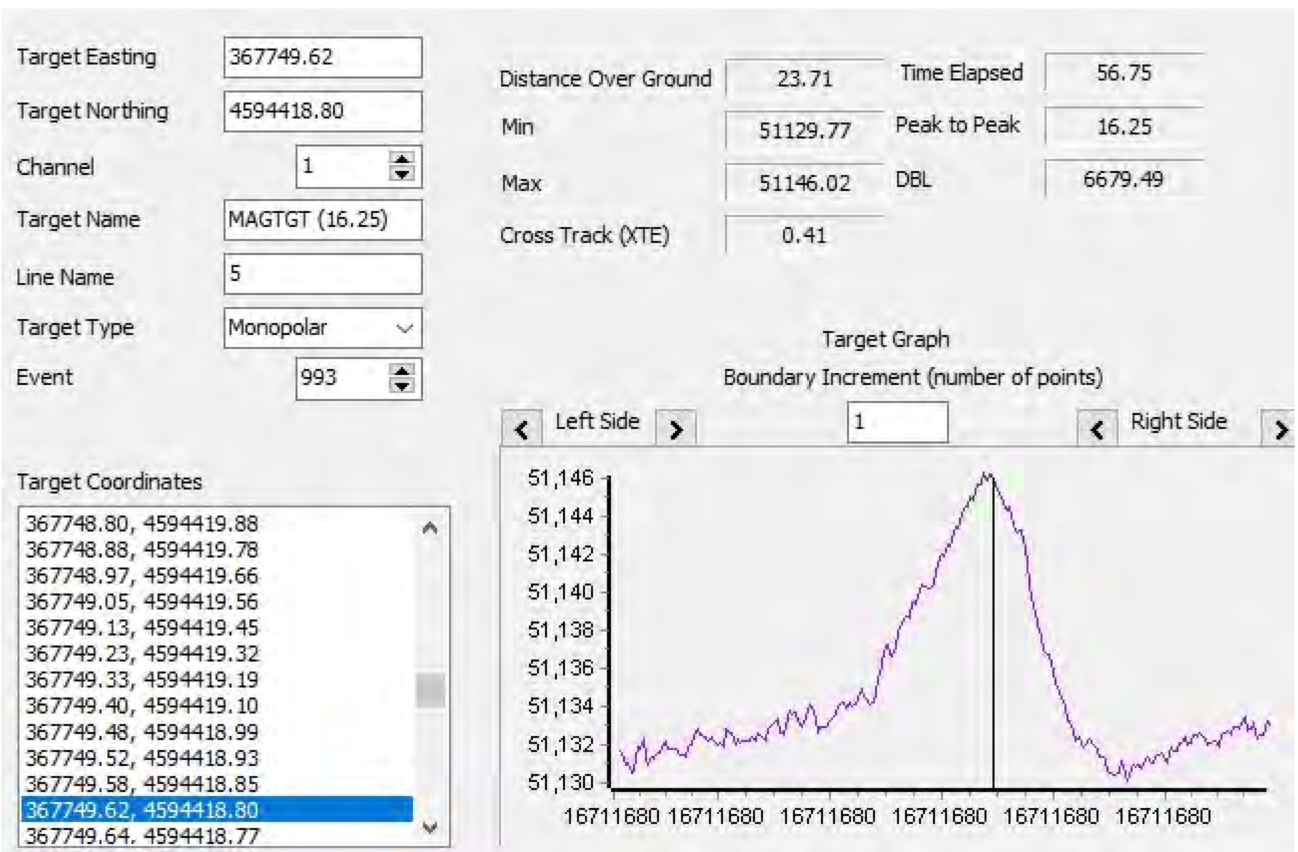
Name	Date	10/05/2021
MAGTGT (32.96)	Time	11:49:33
Survey File	Event	942
5	X	367601.0
Capture File	Y	4594590.0
367601.72.4594590.13.32.96. 51105.92.8.jpg	WGS84 Latitude	41 29 31.1887 N
	WGS84 Longitude	070 35 9.9731 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



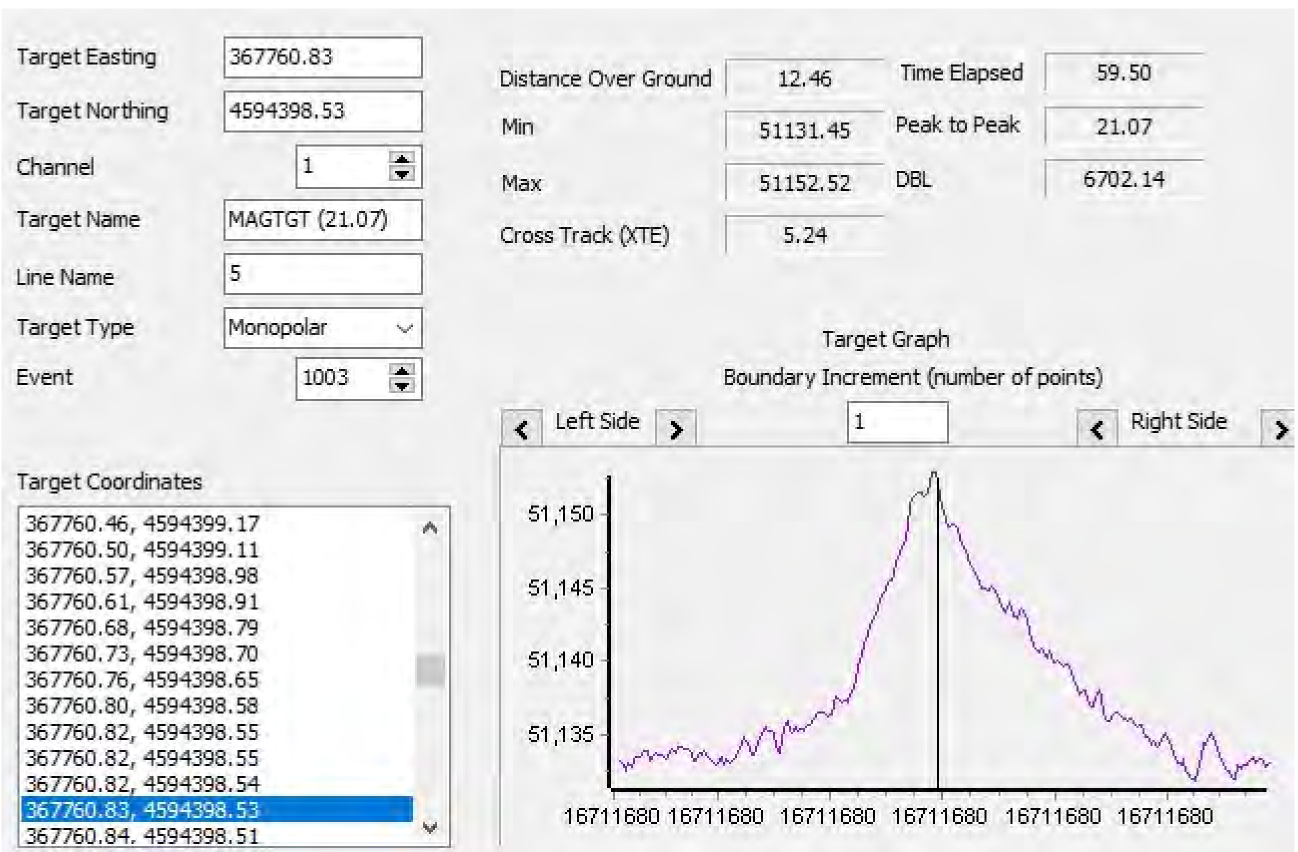
Name	Date	10/05/2021
MAGTGT (16.25)	Time	11:49:47
Survey File	Event	993
5	X	367749.0
Capture File	Y	4594418.0
367749.62.4594418.80.16.25. 51141.61.8.jpg	WGS84 Latitude	41 29 25.7013 N
	WGS84 Longitude	070 35 3.4568 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



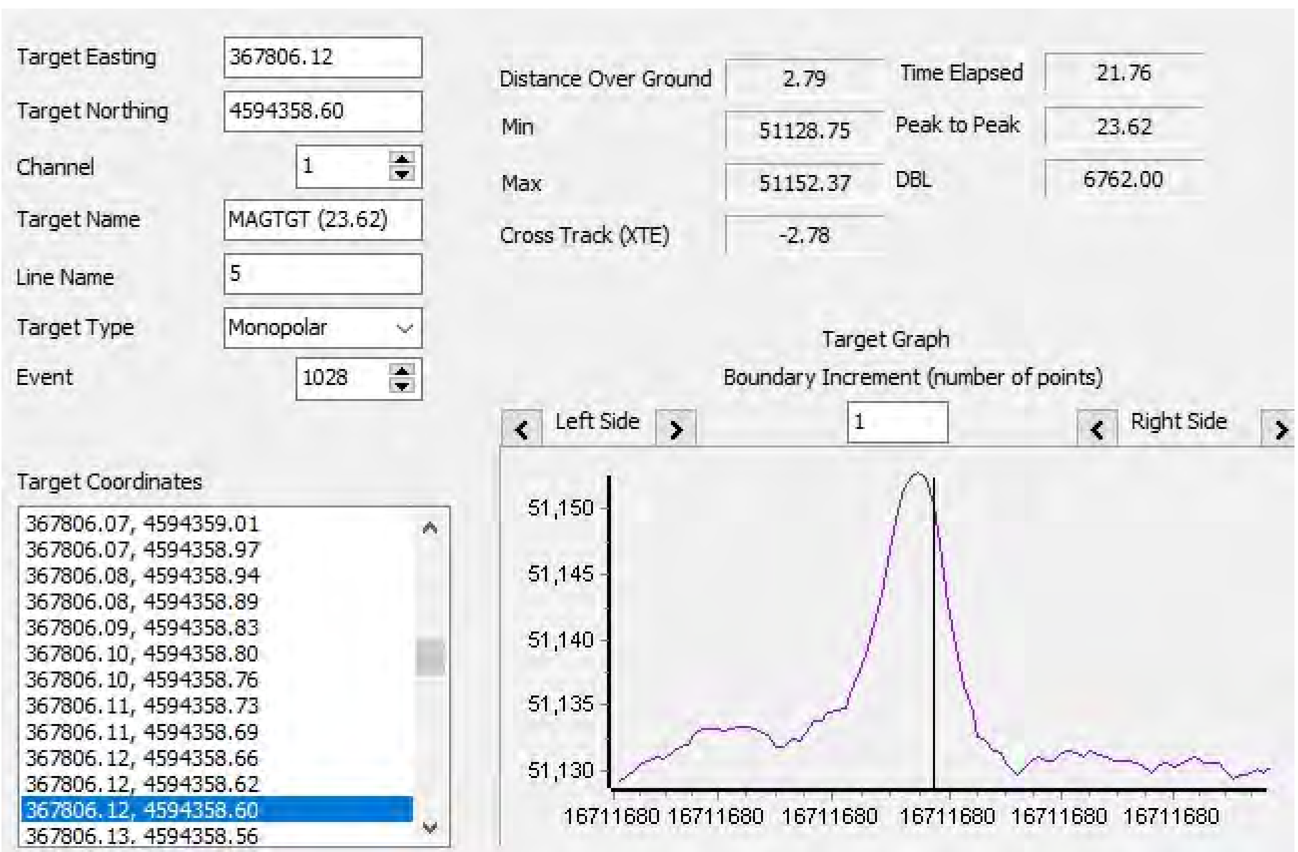
Name	Date	10/05/2021
MAGTGT (21.07)	Time	11:49:58
Survey File	Event	1003
5	X	367760.0
Capture File	Y	4594398.0
367760.83.4594398.53.21.07.51149.74.8.jpg	WGS84 Latitude	41 29 25.0596 N
	WGS84 Longitude	070 35 2.9668 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



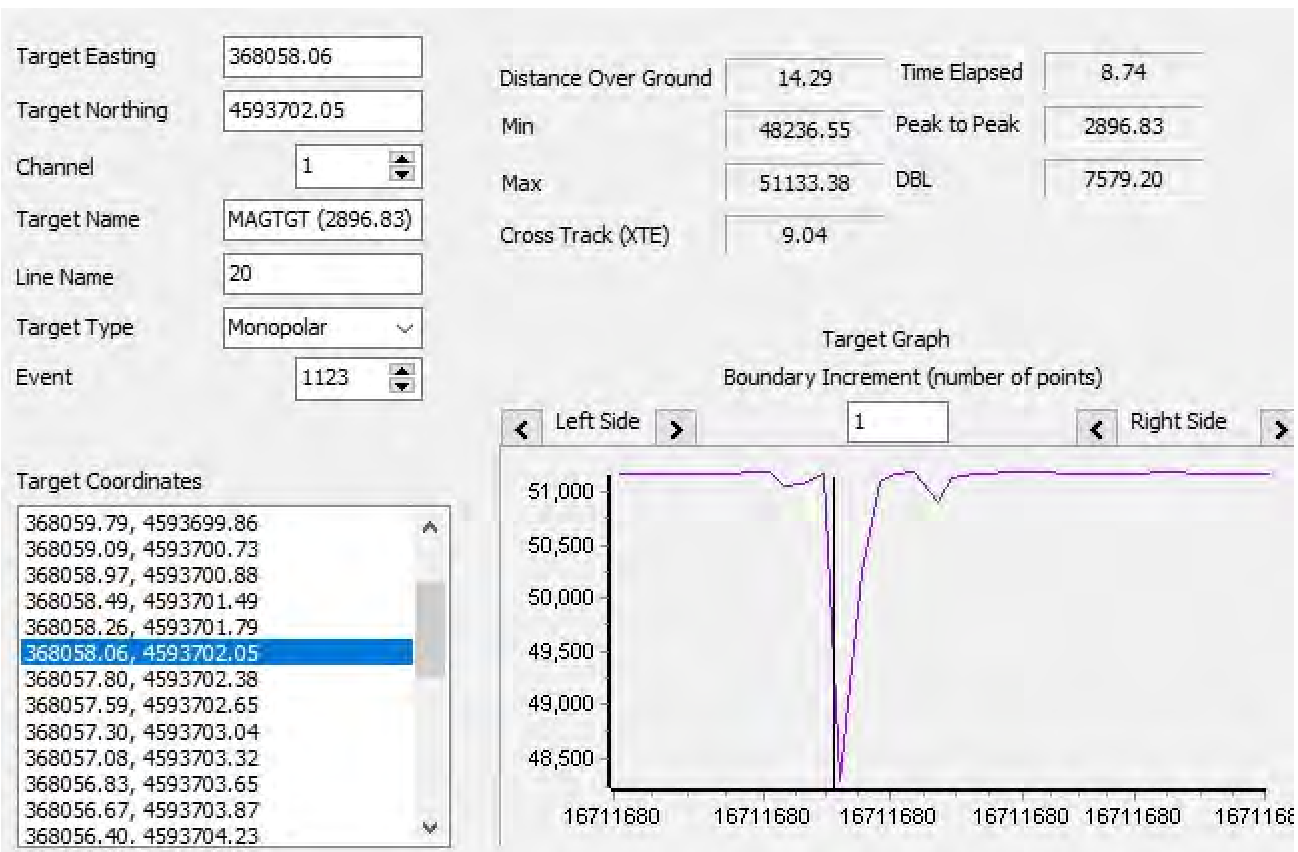
Name	Date	10/05/2021
MAGTGT (23.62)	Time	11:50:14
Survey File	Event	1028
5	X	367806.0
Capture File	Y	4594358.0
367806.12.4594358.60.23.62. 51146.89.8.jpg	WGS84 Latitude	41 29 23.7903 N
	WGS84 Longitude	070 35 0.9521 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



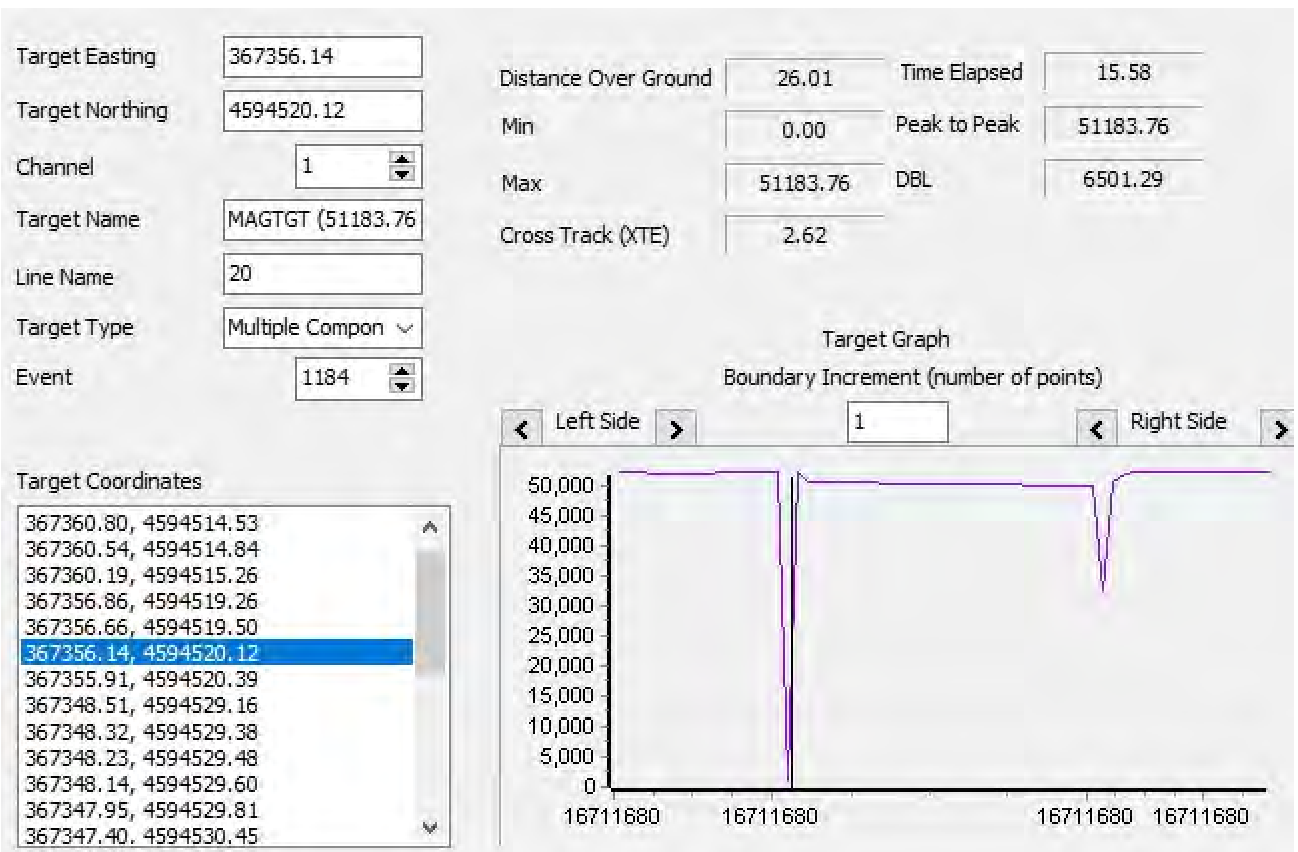
Name	Date	10/05/2021
MAGTGT (2896.83)	Time	11:50:39
Survey File	Event	1123
20	X	368058.0
Capture File	Y	4593702.0
368058.06.4593702.05.2896.83.51078.86.9.jpg	WGS84 Latitude	41 29 2.6758 N
	WGS84 Longitude	070 34 49.5716 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



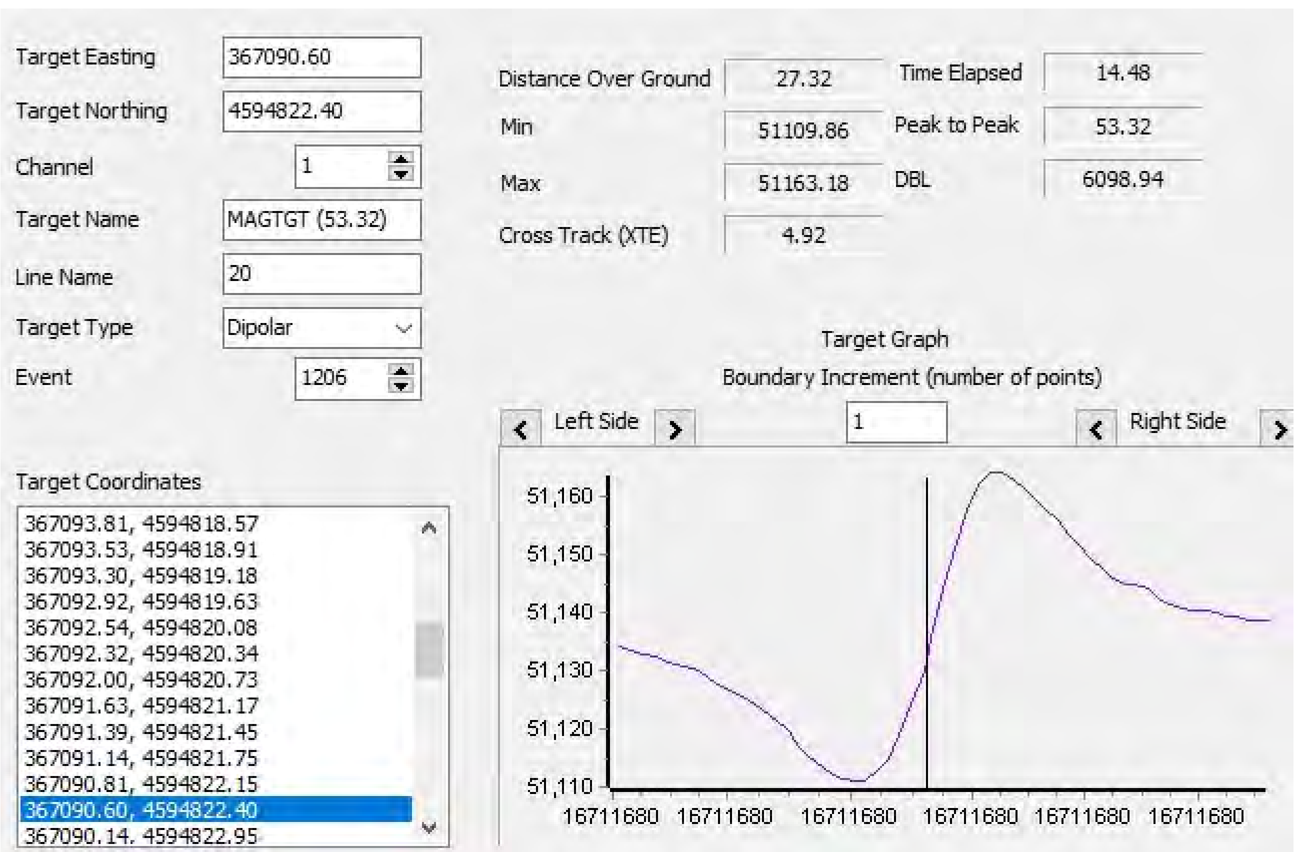
Name	Date	10/05/2021
MAGTGT (51183.76)	Time	11:51:00
Survey File	Event	1184
20	X	367356.0
Capture File	Y	4594520.0
367356.14.4594520.12.51183.76.51183.76.9.jpg	WGS84 Latitude	41 29 28.7738 N
	WGS84 Longitude	070 35 20.4799 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



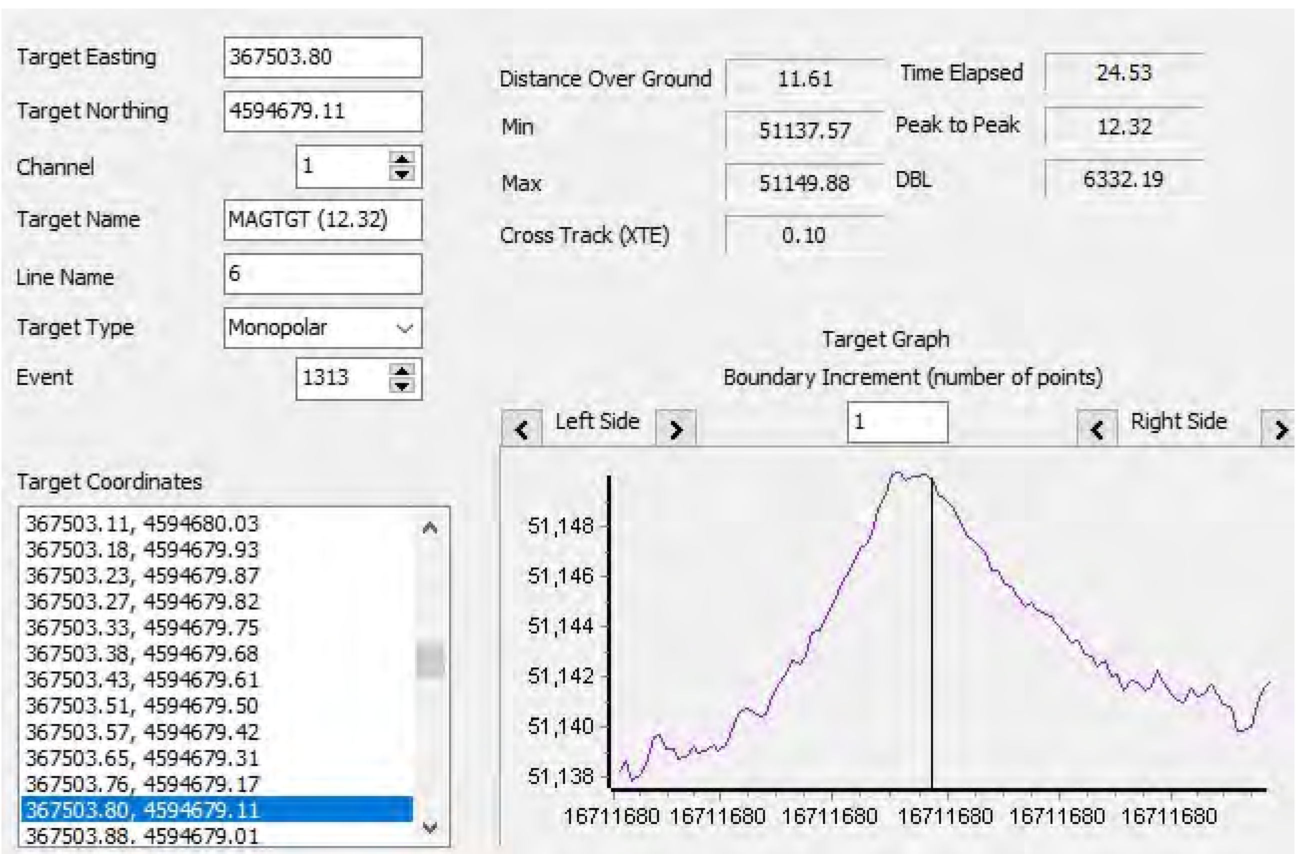
Name	Date	10/05/2021
MAGTGT (53.32)	Time	11:51:26
Survey File	Event	1206
20	X	367090.0
Capture File	Y	4594822.0
367090.60.4594822.40.53.32.51136.25.9.jpg	WGS84 Latitude	41 29 38.4043 N
	WGS84 Longitude	070 35 32.1871 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



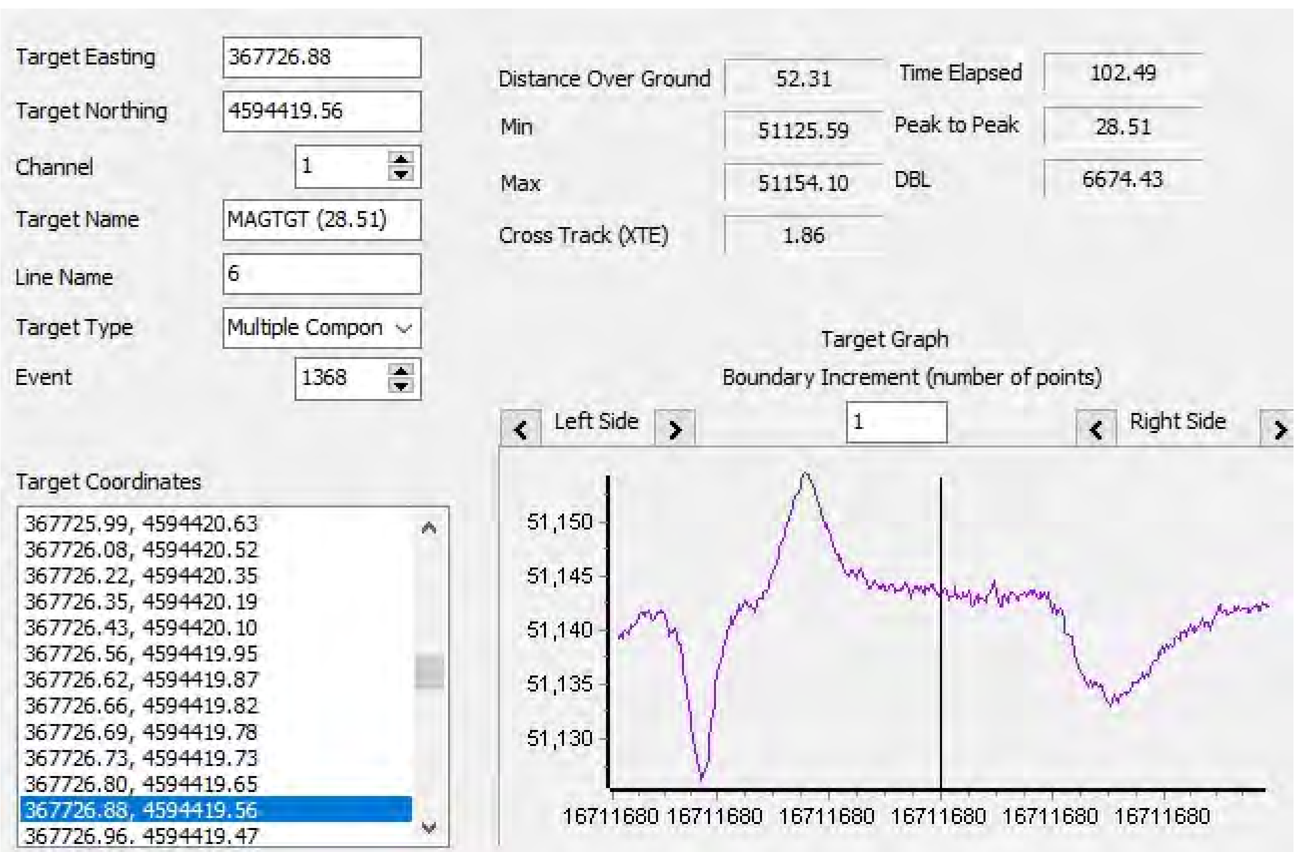
Name	Date	10/05/2021
MAGTGT (12.32)	Time	11:51:52
Survey File	Event	1313
6	X	367503.0
Capture File	Y	4594679.0
367503.80.4594679.11.12.32. 51149.04.10.jpg	WGS84 Latitude	41 29 34.0152 N
	WGS84 Longitude	070 35 14.2684 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



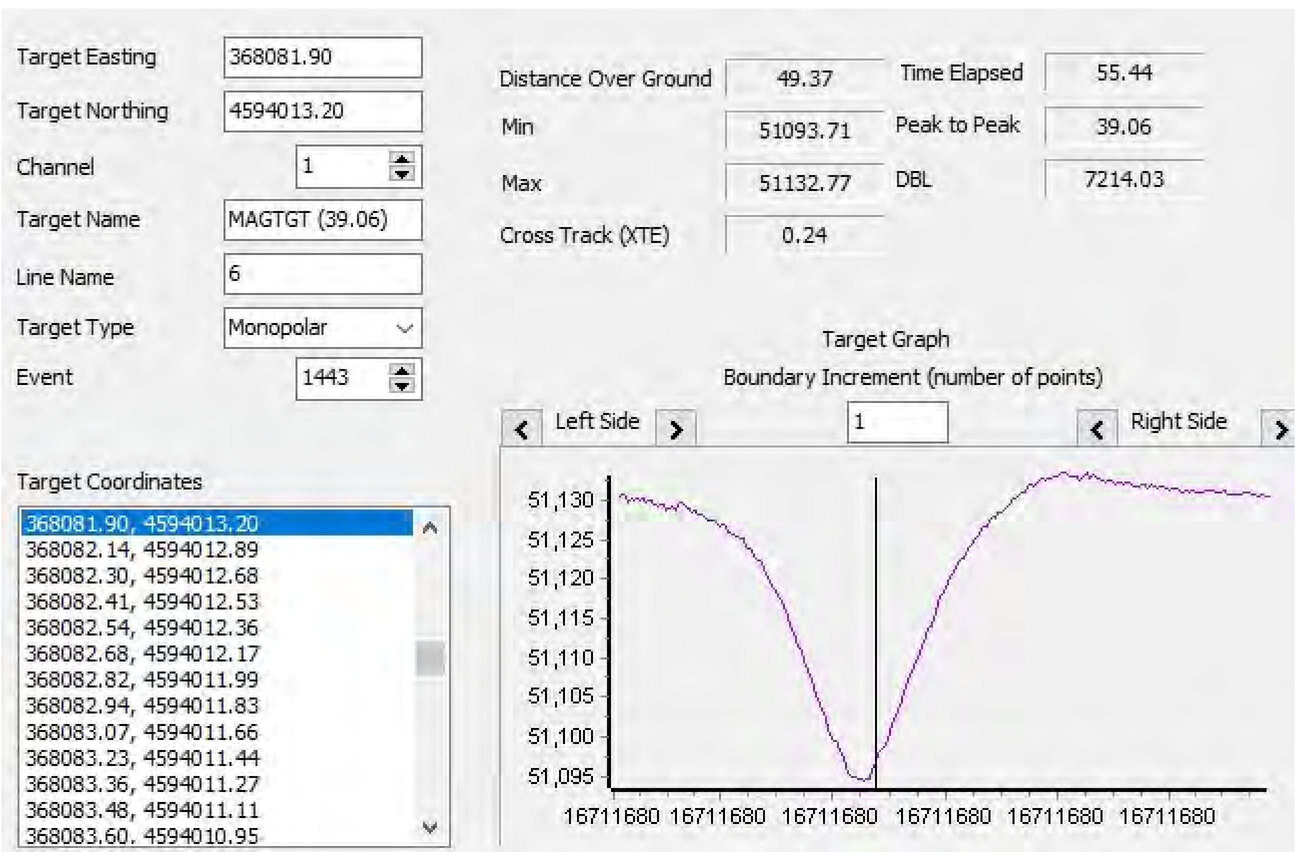
Name	Date	10/05/2021
MAGTGT (28.51)	Time	11:52:08
Survey File	Event	1368
6	X	367726.0
Capture File	Y	4594419.0
367726.88.4594419.56.28.51.51143.23.10.jpg	WGS84 Latitude	41 29 25.7201 N
	WGS84 Longitude	070 35 4.4491 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



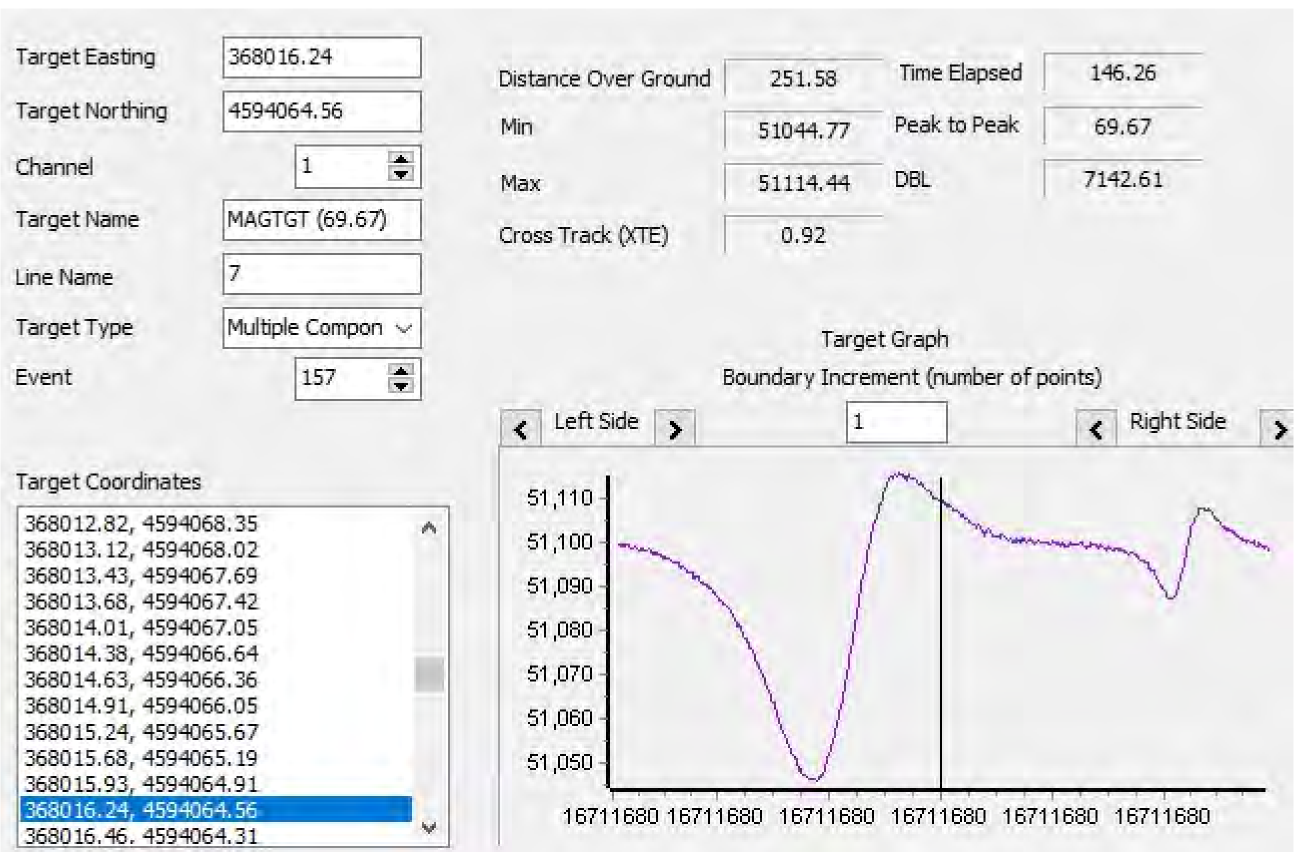
Name	Date	10/05/2021
MAGTGT (39.06)	Time	11:52:24
Survey File	Event	1443
6	X	368081.0
Capture File	Y	4594013.0
368081.90.4594013.20.39.06.51118.91.10.jpg	WGS84 Latitude	41 29 12.7704 N
	WGS84 Longitude	070 34 48.8251 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



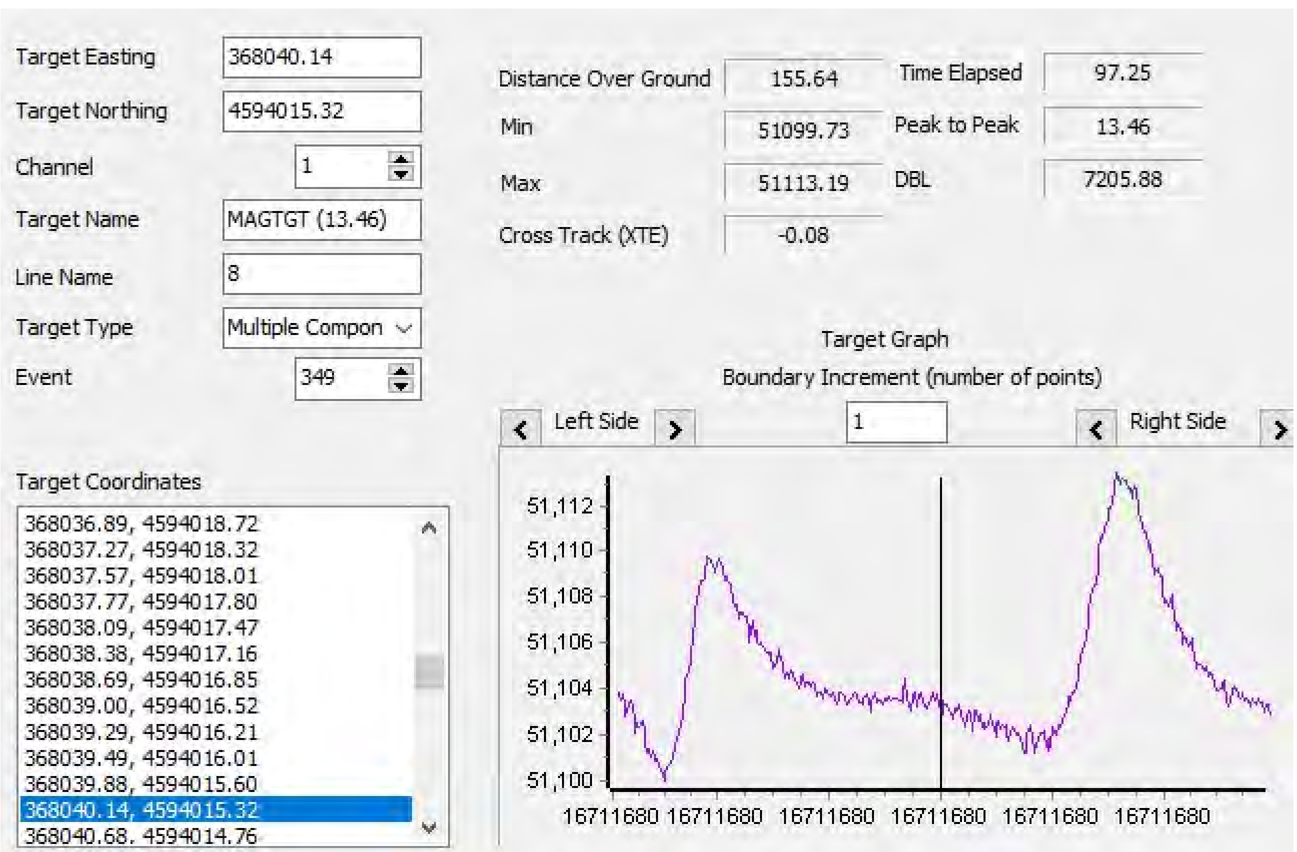
Name	Date	10/05/2021
MAGTGT (69.67)	Time	11:54:58
Survey File	Event	157
7	X	368016.0
Capture File	Y	4594064.0
368016.24.4594064.56.69.67.51106.92.1.jpg	WGS84 Latitude	41 29 14.385 N
	WGS84 Longitude	070 34 51.6673 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



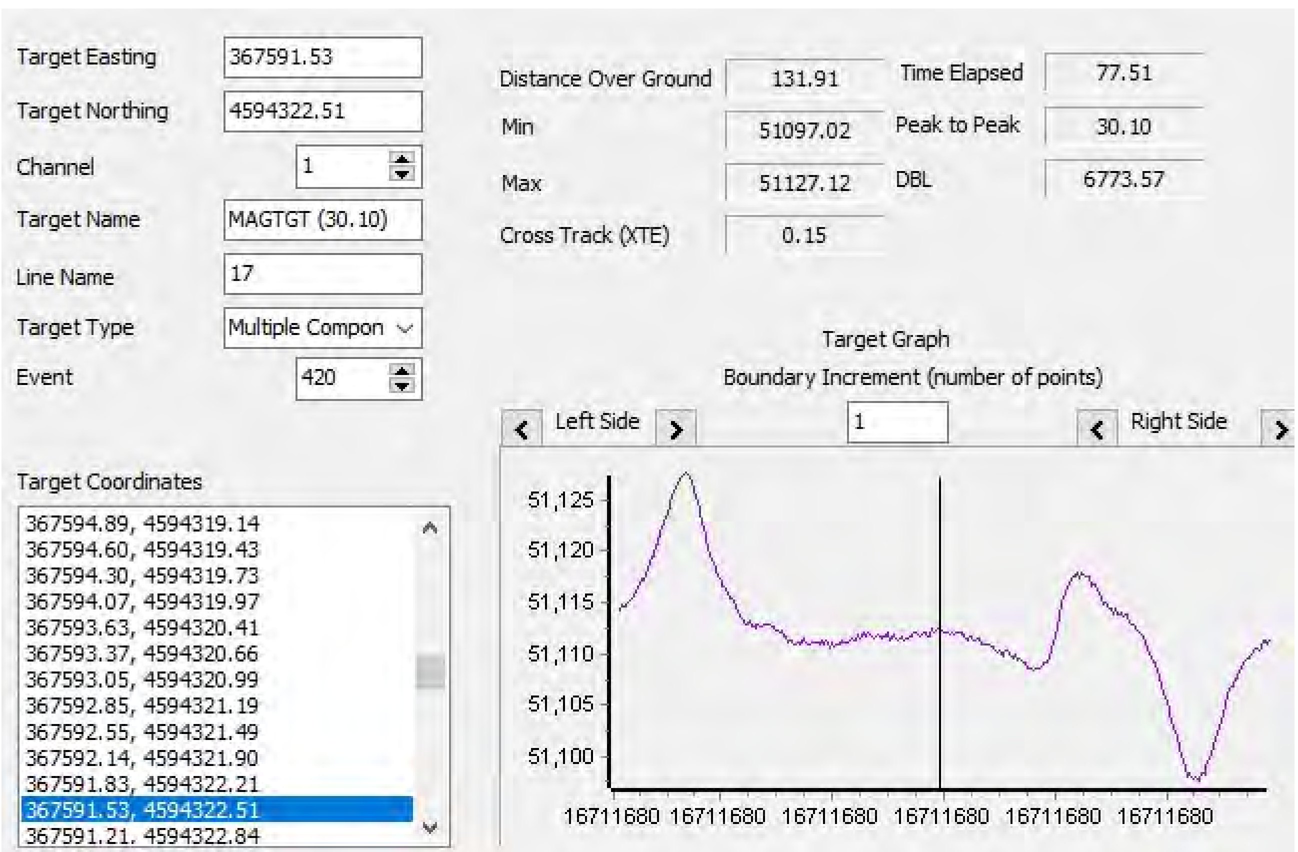
Name	Date	10/05/2021
MAGTGT (13.46)	Time	11:55:20
Survey File	Event	349
8	X	368040.0
Capture File	Y	4594015.0
368040.14.4594015.32.13.46.51103.04.3.jpg	WGS84 Latitude	41 29 12.8109 N
	WGS84 Longitude	070 34 50.5941 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



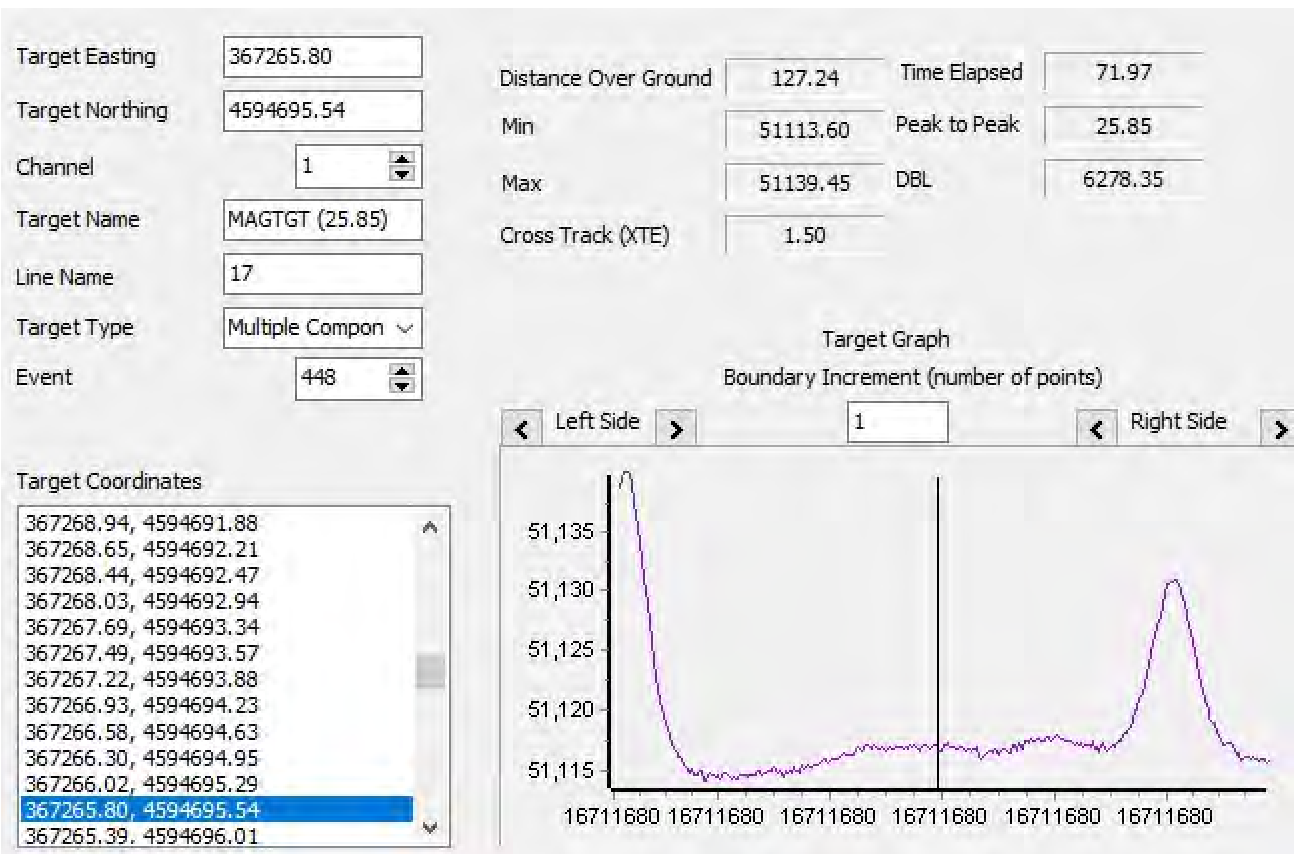
Name	Date	10/05/2021
MAGTGT (30.10)	Time	11:55:40
Survey File	Event	420
17	X	367591.0
Capture File	Y	4594322.0
367591.53.4594322.51.30.10.51111.49.4.jpg	WGS84 Latitude	41 29 22.4956 N
	WGS84 Longitude	070 35 10.1923 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



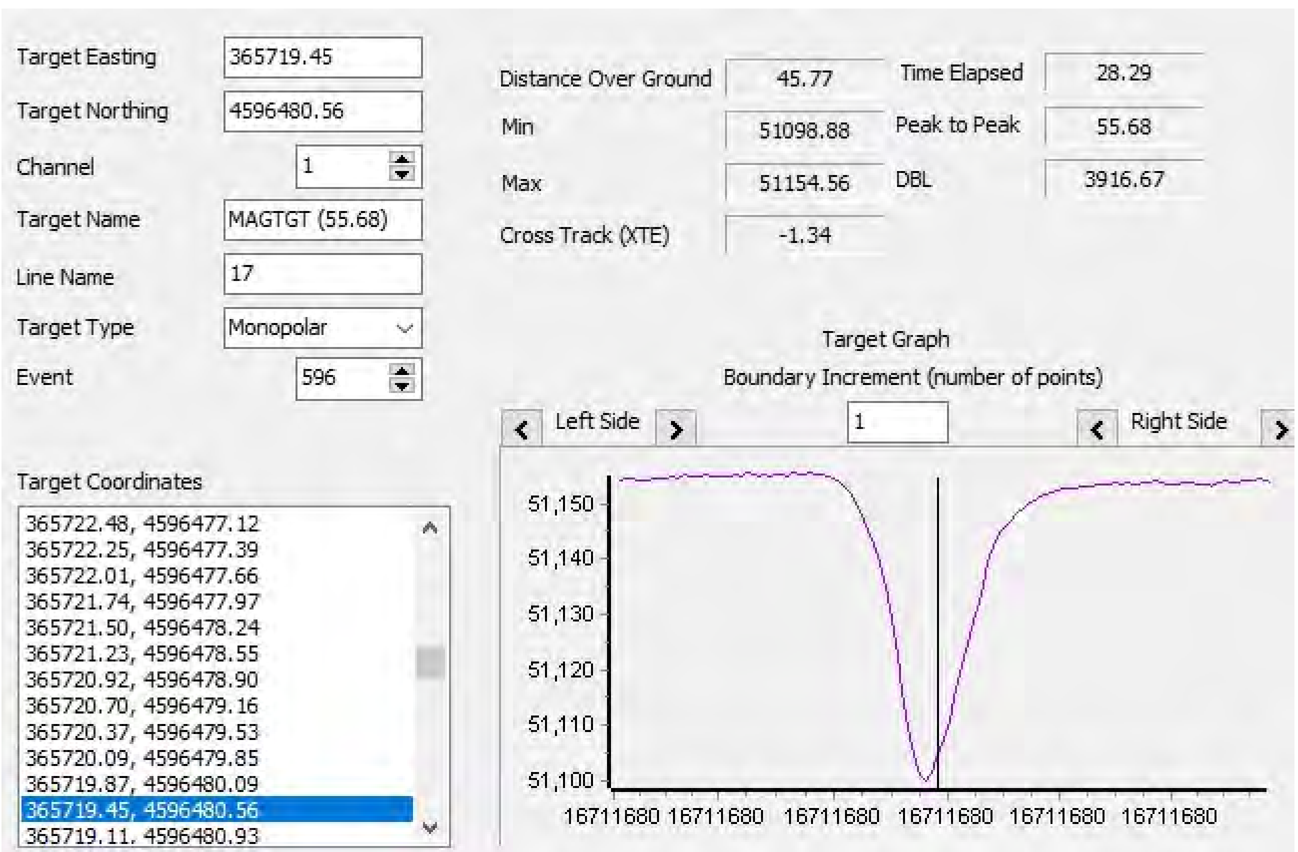
Name	Date	10/05/2021
MAGTGT (25.85)	Time	11:55:52
Survey File	Event	448
17	X	367265.0
Capture File	Y	4594695.0
367265.80.4594695.54.25.85.51116.57.4.jpg	WGS84 Latitude	41 29 34.3921 N
	WGS84 Longitude	070 35 24.5417 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



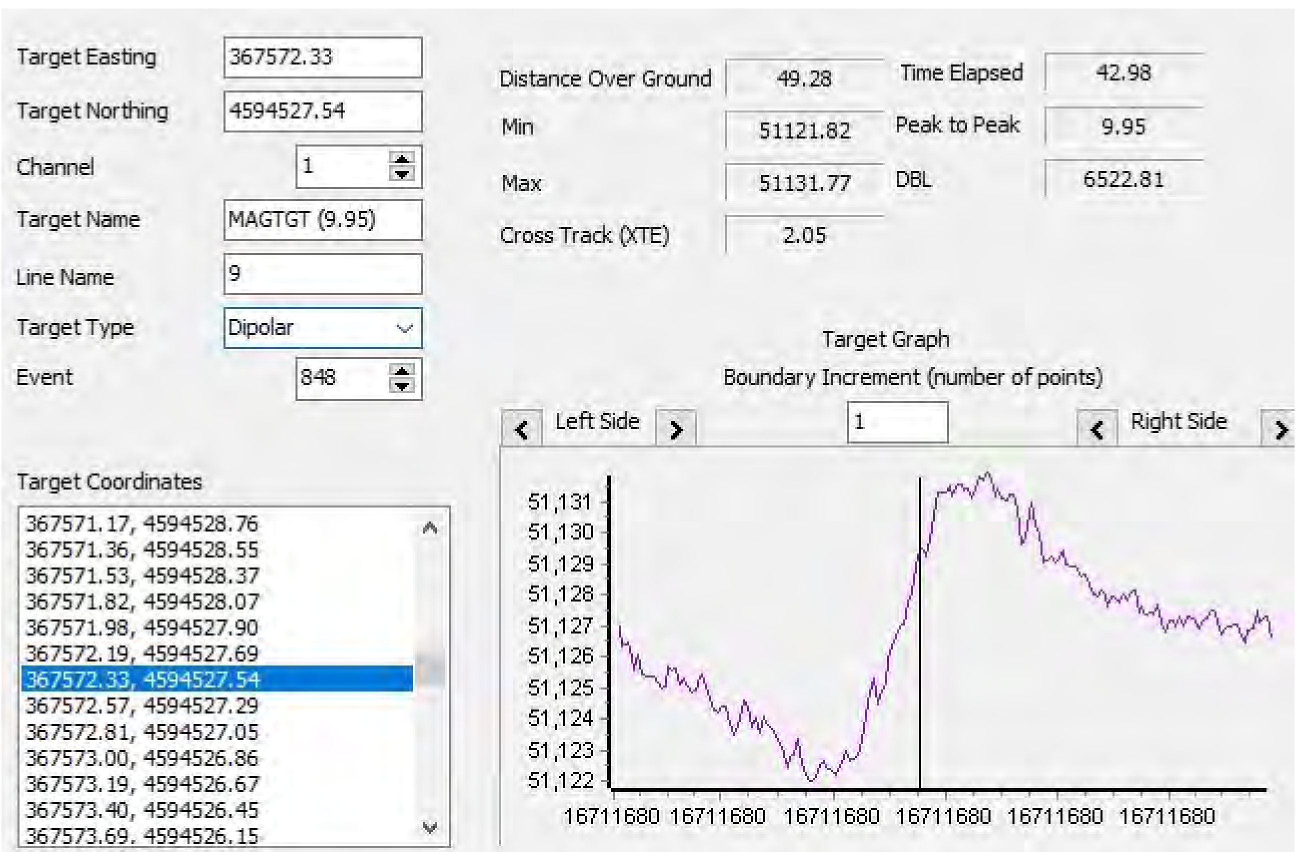
Name	Date	10/05/2021
MAGTGT (55.68)	Time	11:56:06
Survey File	Event	596
17	X	365719.0
Capture File	Y	4596480.0
365719.45.4596480.56.55.68.51106.60.4.jpg	WGS84 Latitude	41 30 31.3241 N
	WGS84 Longitude	070 36 32.6242 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



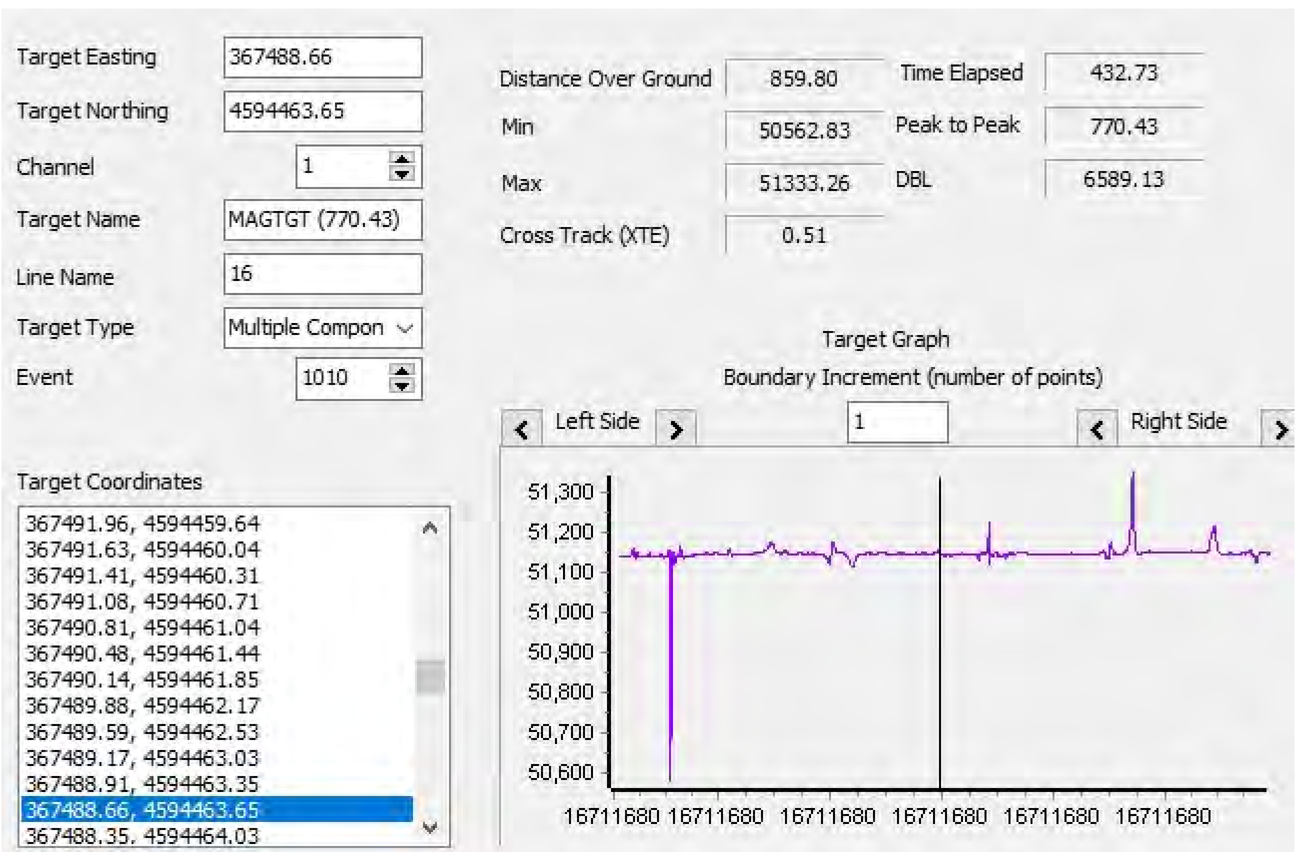
Name	Date	10/05/2021
MAGTGT (9.95)	Time	11:56:23
Survey File	Event	848
9	X	367572.0
Capture File	Y	4594527.0
367572.33.4594527.54.9.95.5 1131.14.5.jpg	WGS84 Latitude	41 29 29.1293 N
	WGS84 Longitude	070 35 11.1735 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



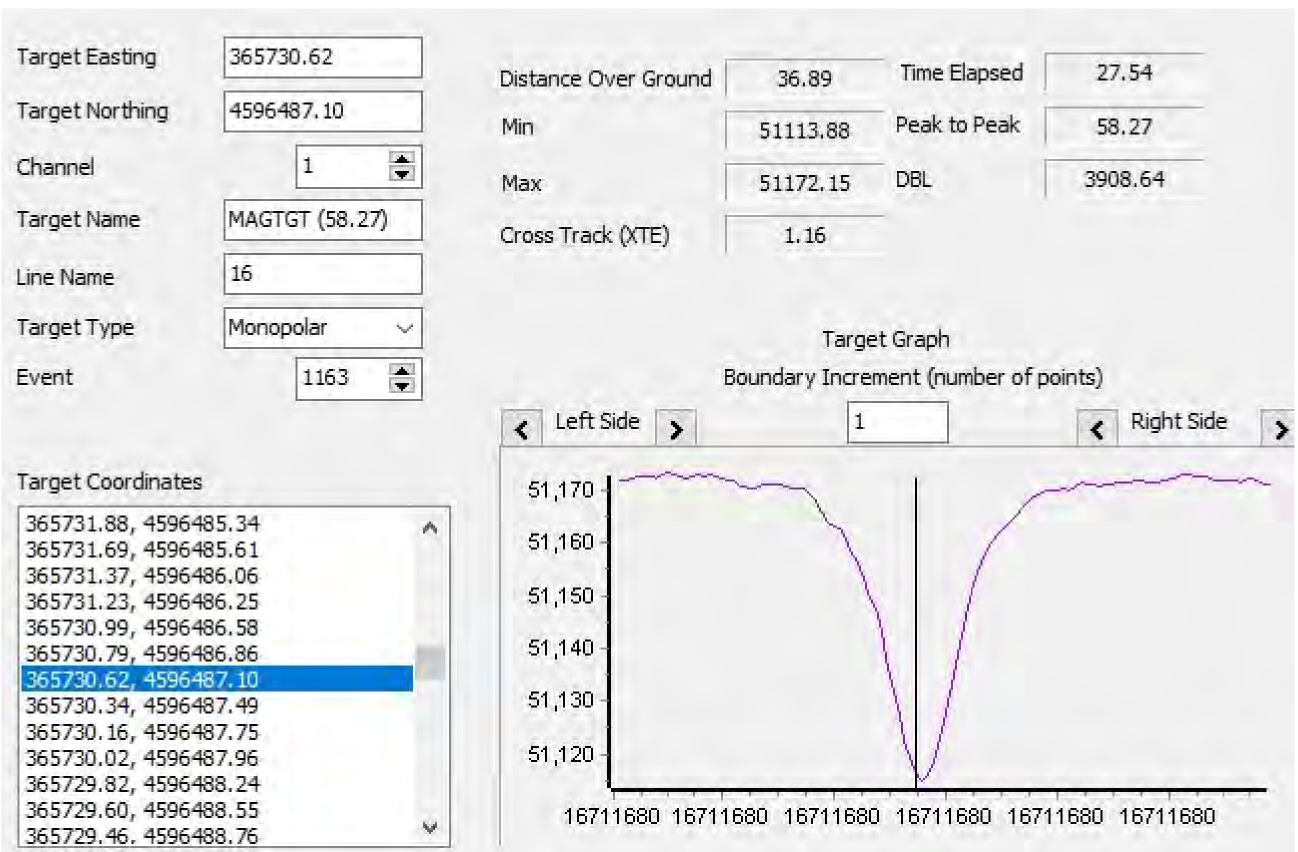
Name	Date	10/05/2021
MAGTGT (770.43)	Time	11:57:06
Survey File	Event	1010
16	X	367488.0
Capture File	Y	4594463.0
367488.66.4594463.65.770.43.51127.13.6.jpg	WGS84 Latitude	41 29 27 N
	WGS84 Longitude	070 35 14.7441 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



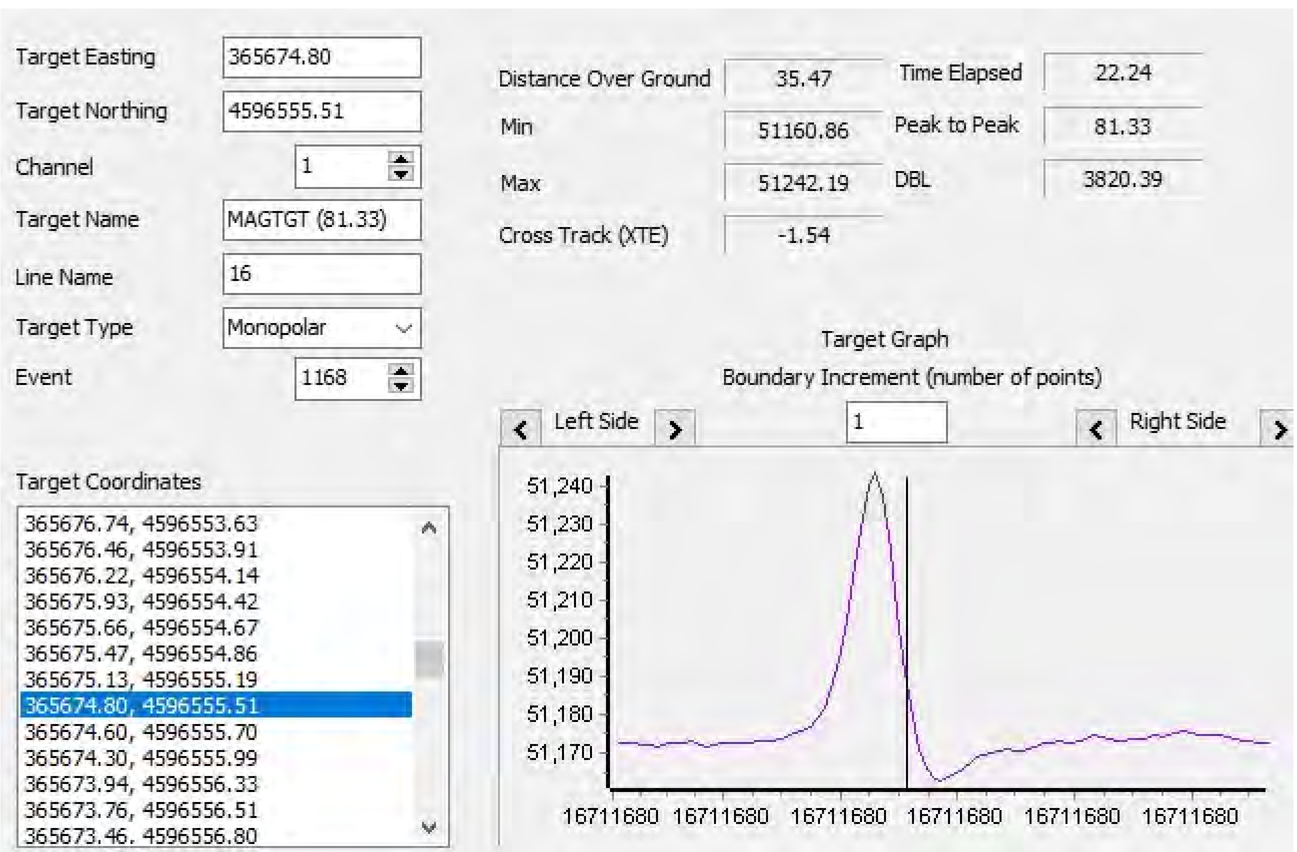
Name	Date	10/05/2021
MAGTGT (58.27)	Time	11:57:25
Survey File	Event	1163
16	X	365730.0
Capture File	Y	4596487.0
365730.62.4596487.10.58.27.51132.09.6.jpg	WGS84 Latitude	41 30 31.5576 N
	WGS84 Longitude	070 36 32.1555 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



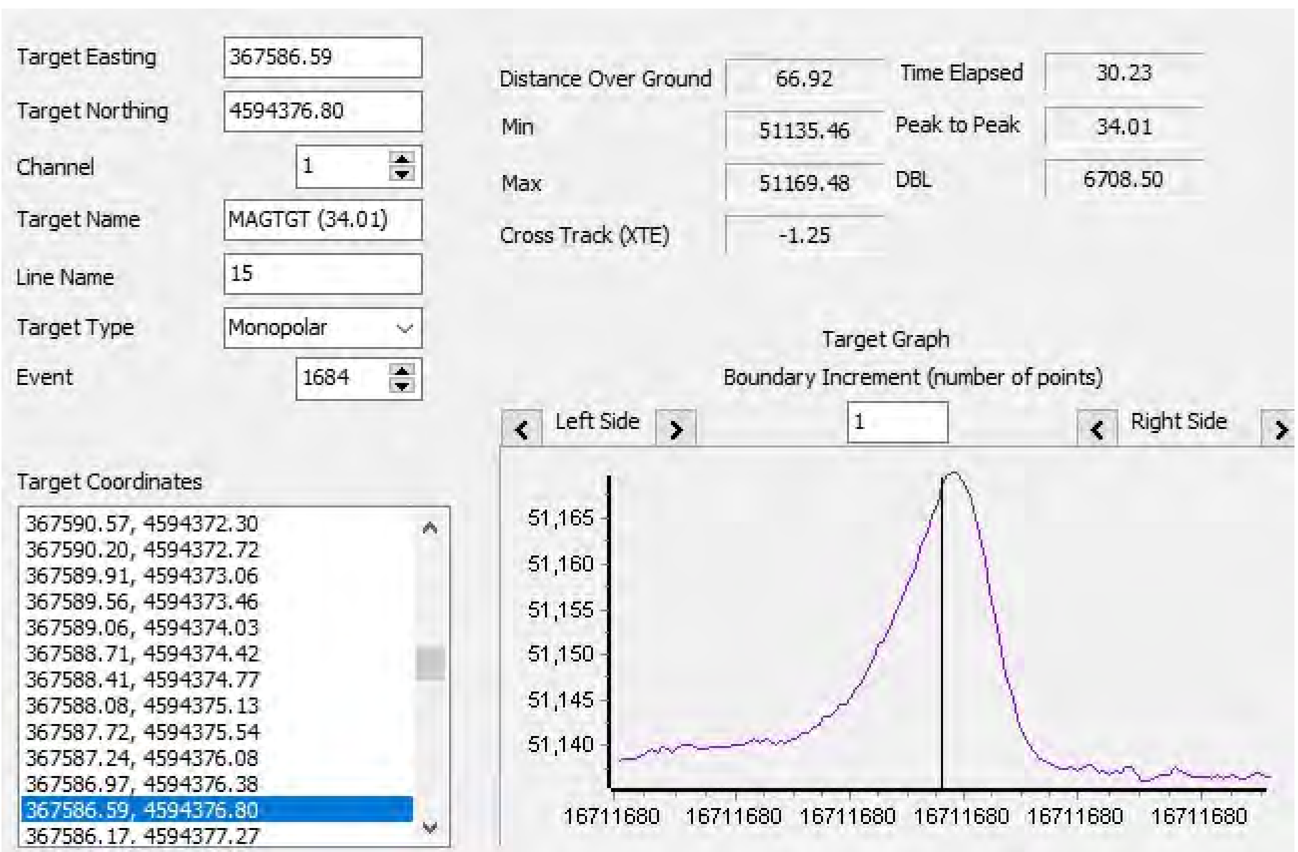
Name	Date	10/05/2021
MAGTGT (81.33)	Time	11:57:44
Survey File	Event	1168
16	X	365674.0
Capture File	Y	4596555.0
365674.80.4596555.51.81.33.51160.86.6.jpg	WGS84 Latitude	41 30 33.728 N
	WGS84 Longitude	070 36 34.625 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



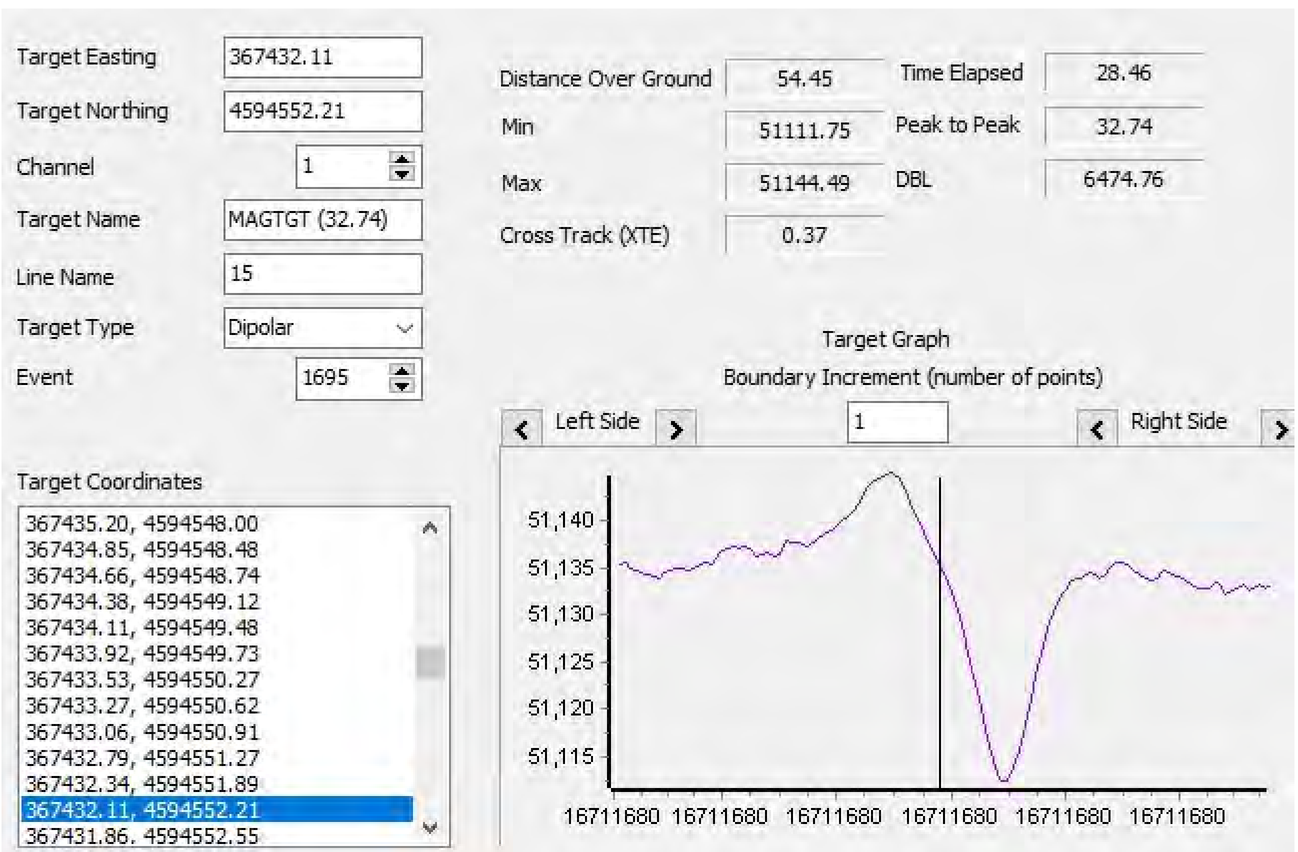
Name	Date	10/05/2021
MAGTGT (34.01)	Time	11:58:08
Survey File	Event	1684
15	X	367586.0
Capture File	Y	4594376.0
367586.59.4594376.80.34.01. 51169.18.9.jpg	WGS84 Latitude	41 29 24.243 N
	WGS84 Longitude	070 35 10.4505 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



Name	Date	10/05/2021
MAGTGT (32.74)	Time	11:58:20
Survey File	Event	1695
15	X	367432.0
Capture File	Y	4594552.0
367432.11.4594552.21.32.74.51133.40.9.jpg	WGS84 Latitude	41 29 29.8564 N
	WGS84 Longitude	070 35 17.2288 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



Name	Date	10/05/2021
MAGTGT (19.82)	Time	11:58:42
Survey File	Event	1708
15	X	367260.0
Capture File	Y	4594744.0
	WGS84 Latitude	41 29 35.9774 N
	WGS84 Longitude	070 35 24.7961 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	

Name	Date	10/05/2021
MAGTGT (23.18)	Time	11:58:55
Survey File	Event	1756
15	X	366650.0
Capture File	Y	4595447.0
	WGS84 Latitude	41 29 58.4001 N
	WGS84 Longitude	070 35 51.6544 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	

Name	Date	10/05/2021
MAGTGT (48.41)	Time	11:59:15
Survey File	Event	1840
15	X	365602.0
Capture File	Y	4596665.0
	WGS84 Latitude	41 30 37.25 N
	WGS84 Longitude	070 36 37.8181 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

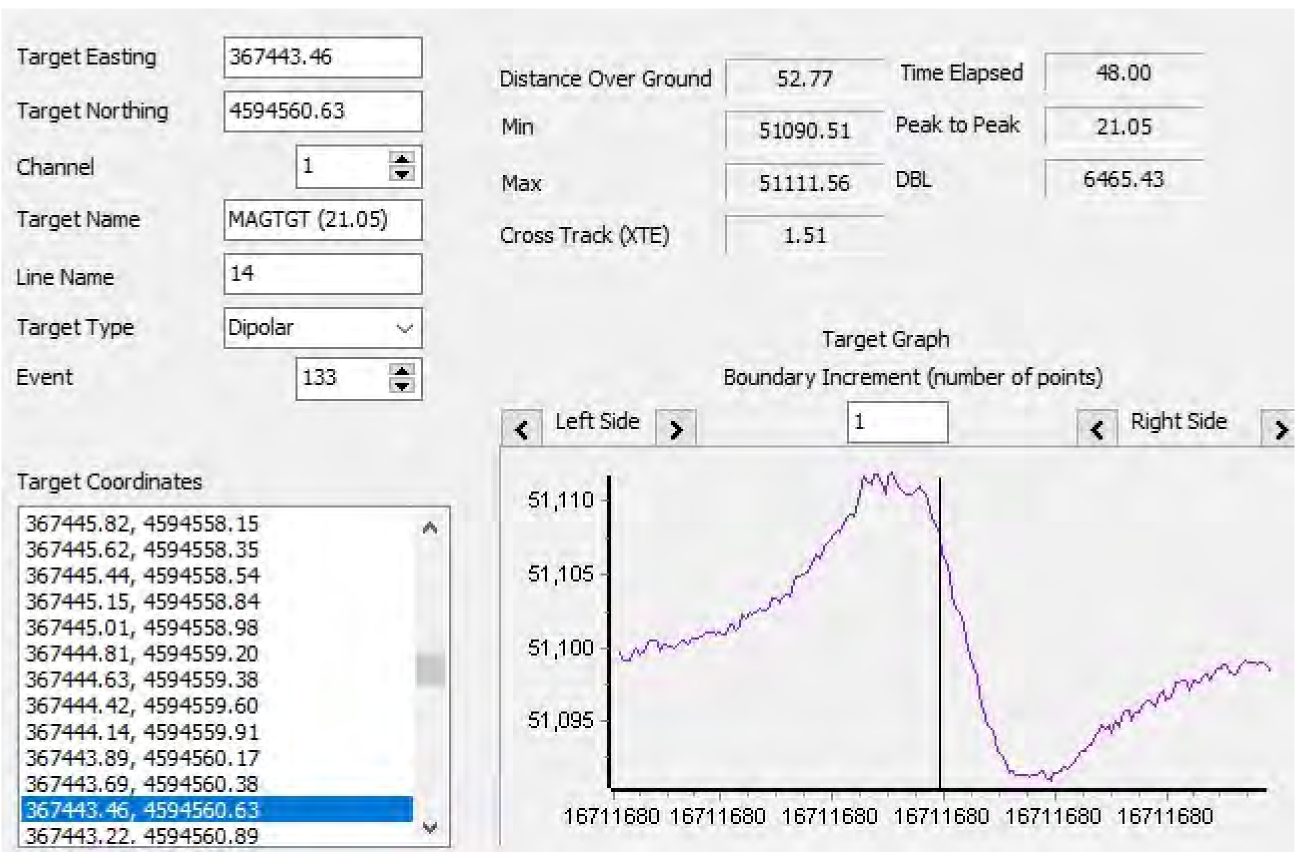
Notes	

Name	Date	10/05/2021
MAGTGT (21.05)	Time	12:01:00
Survey File	Event	133
14	X	367443.0
Capture File	Y	4594560.0
	WGS84 Latitude	41 29 30.1222 N
	WGS84 Longitude	070 35 16.7609 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	

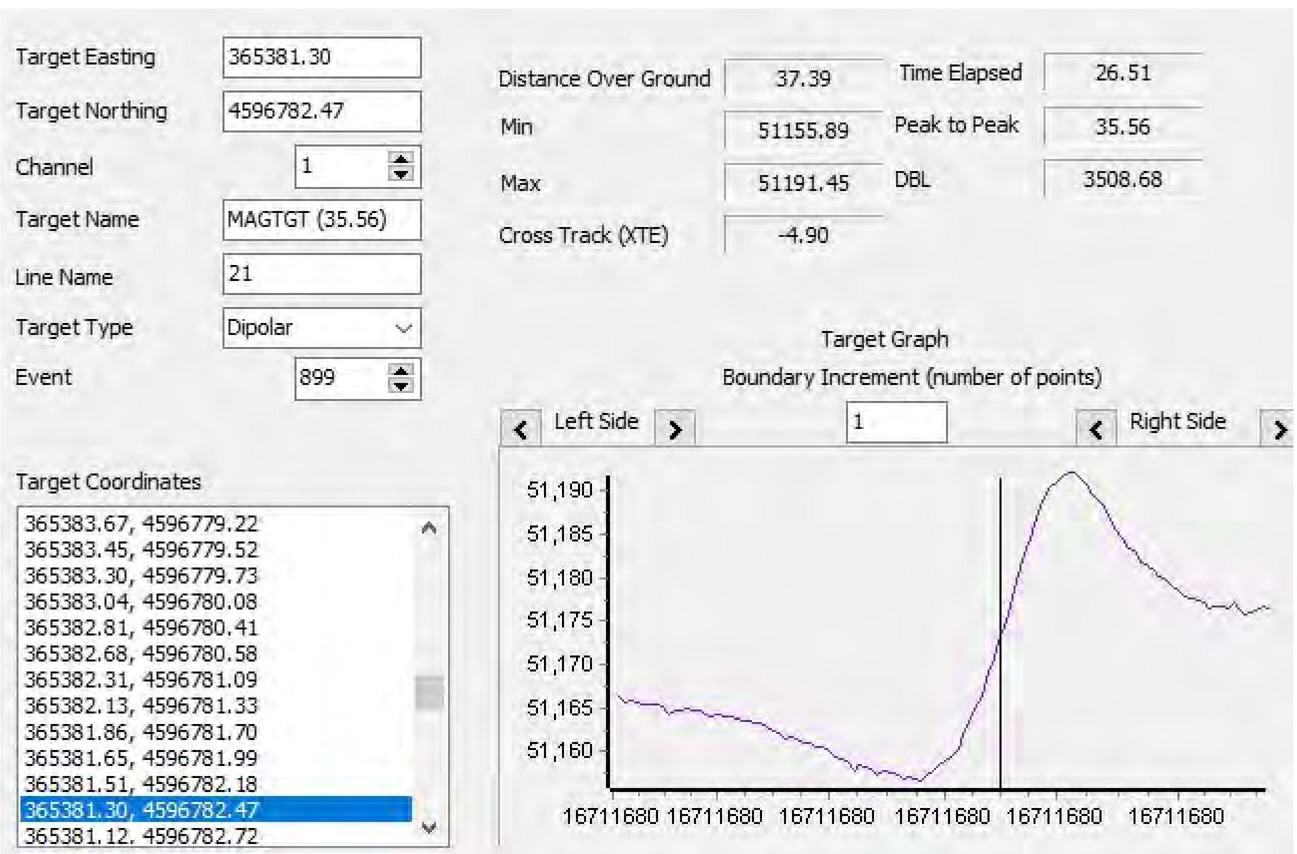
Name	Date	10/05/2021
MAGTGT (21.05)	Time	12:01:04
Survey File	Event	133
14	X	367443.0
Capture File	Y	4594560.0
367443.46.4594560.63.21.05.51105.48.0.jpg	WGS84 Latitude	41 29 30.1222 N
	WGS84 Longitude	070 35 16.7609 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



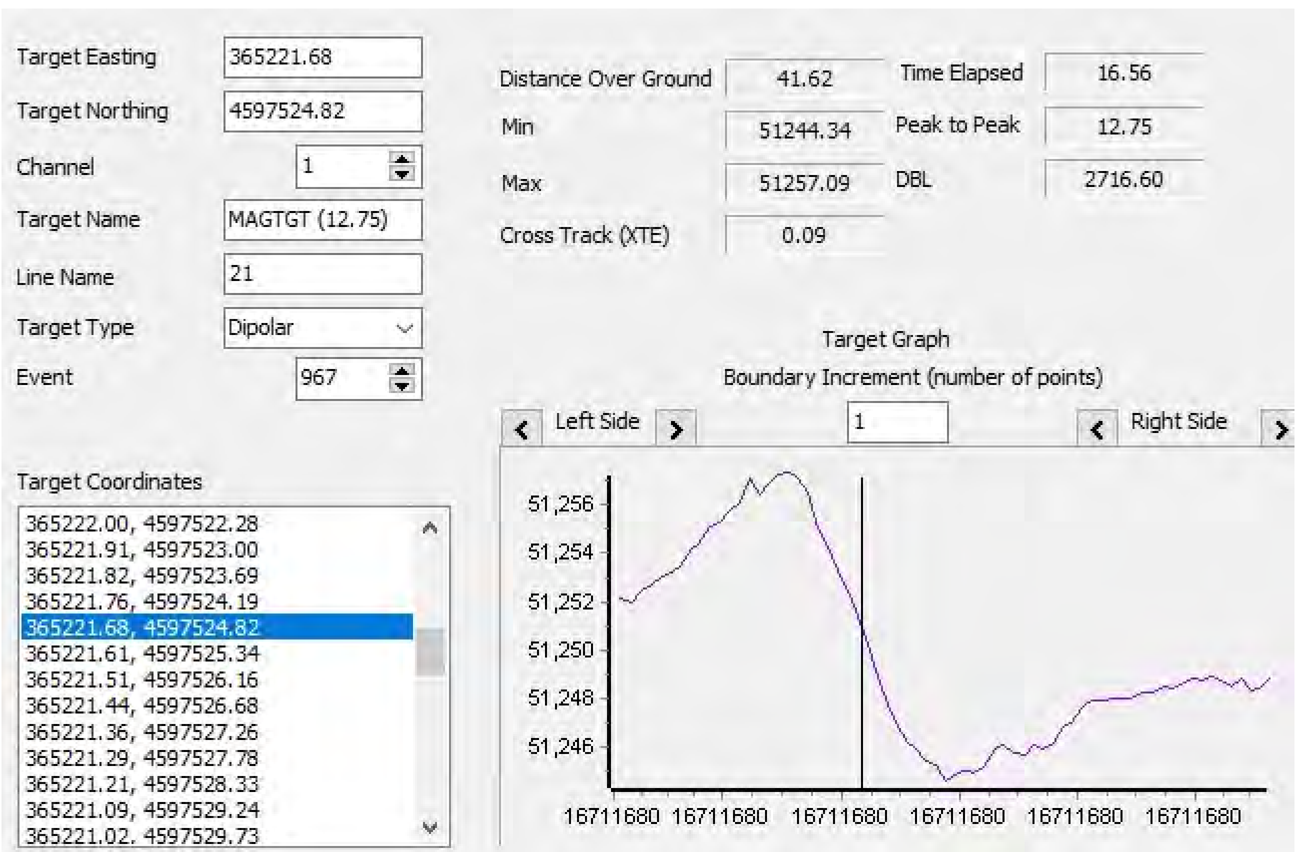
Name	Date	10/05/2021
MAGTGT (35.56)	Time	12:01:24
Survey File	Event	899
21	X	365381.0
Capture File	Y	4596782.0
365381.30.4596782.47.35.56.51156.65.3.jpg	WGS84 Latitude	41 30 40.9089 N
	WGS84 Longitude	070 36 47.4424 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



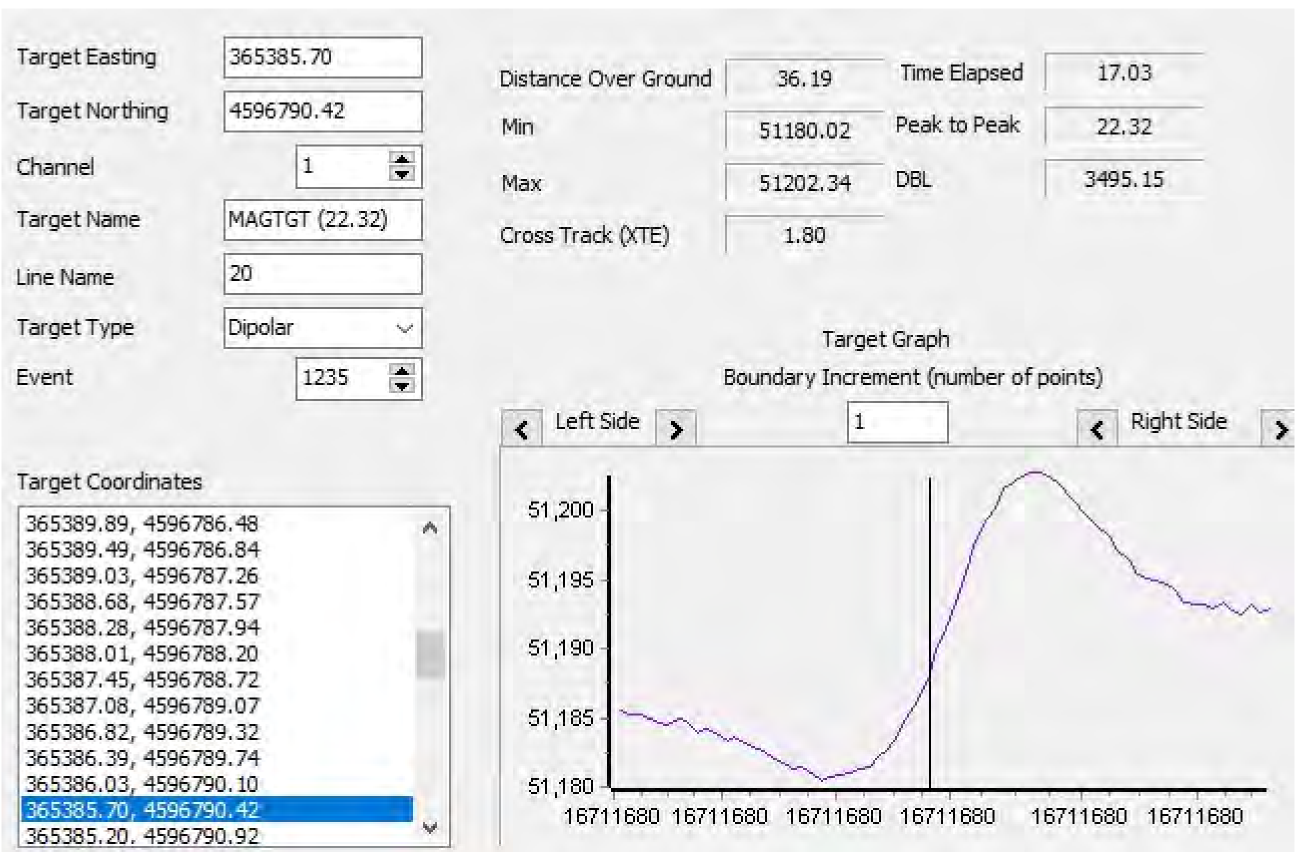
Name	Date	10/05/2021
MAGTGT (12.75)	Time	12:01:39
Survey File	Event	967
21	X	365221.0
Capture File	Y	4597524.0
365221.68.4597524.82.12.75.51244.99.4.jpg	WGS84 Latitude	41 31 4.8631 N
	WGS84 Longitude	070 36 54.9402 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



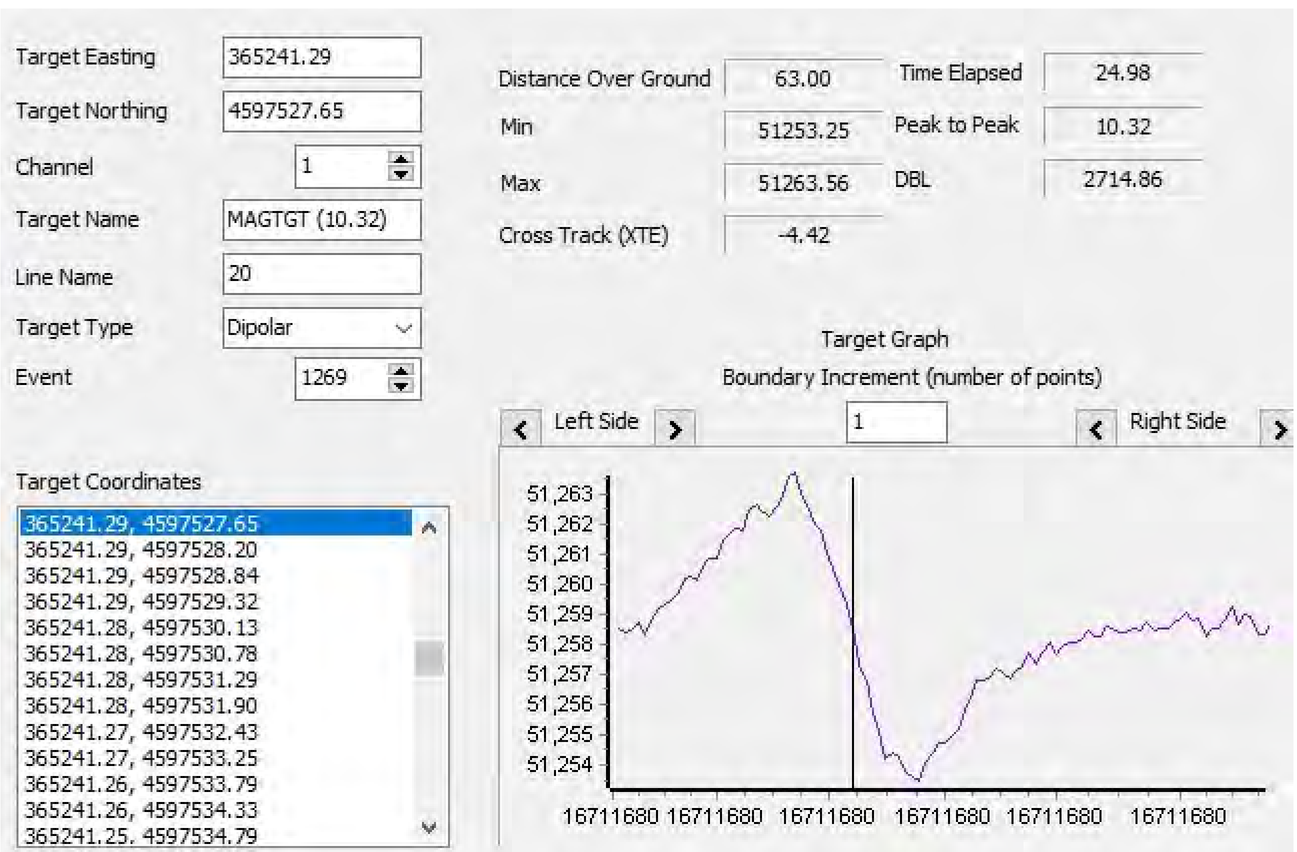
Name	Date	10/05/2021
MAGTGT (22.32)	Time	12:02:14
Survey File	Event	1235
20	X	365385.0
Capture File	Y	4596790.0
365385.70.4596790.42.22.32.51189.38.7.jpg	WGS84 Latitude	41 30 41.1706 N
	WGS84 Longitude	070 36 47.2764 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



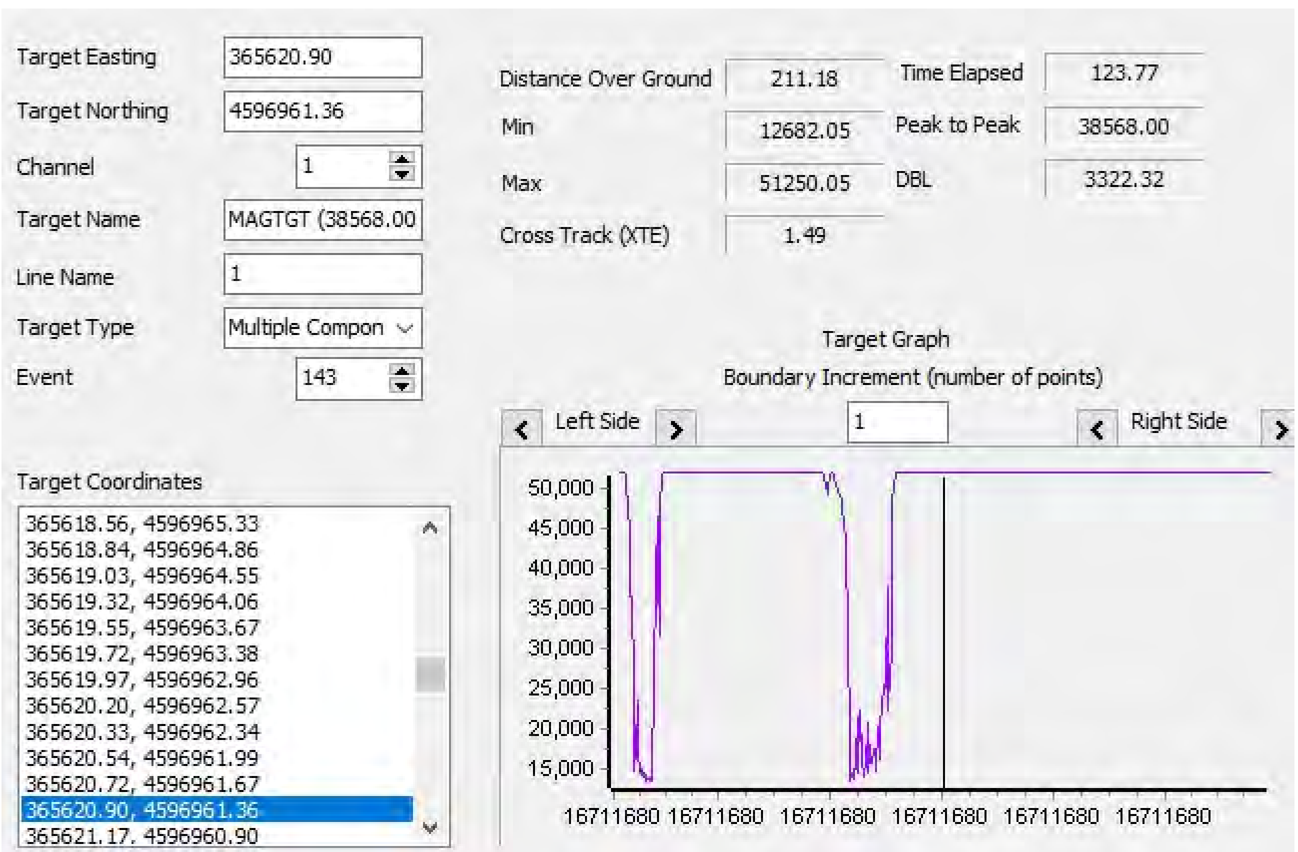
Name	Date	10/05/2021
MAGTGT (10.32)	Time	12:02:27
Survey File	Event	1269
20	X	365241.0
Capture File	Y	4597527.0
365241.29.4597527.65.10.32.51254.54.7.jpg	WGS84 Latitude	41 31 4.9724 N
	WGS84 Longitude	070 36 54.0801 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



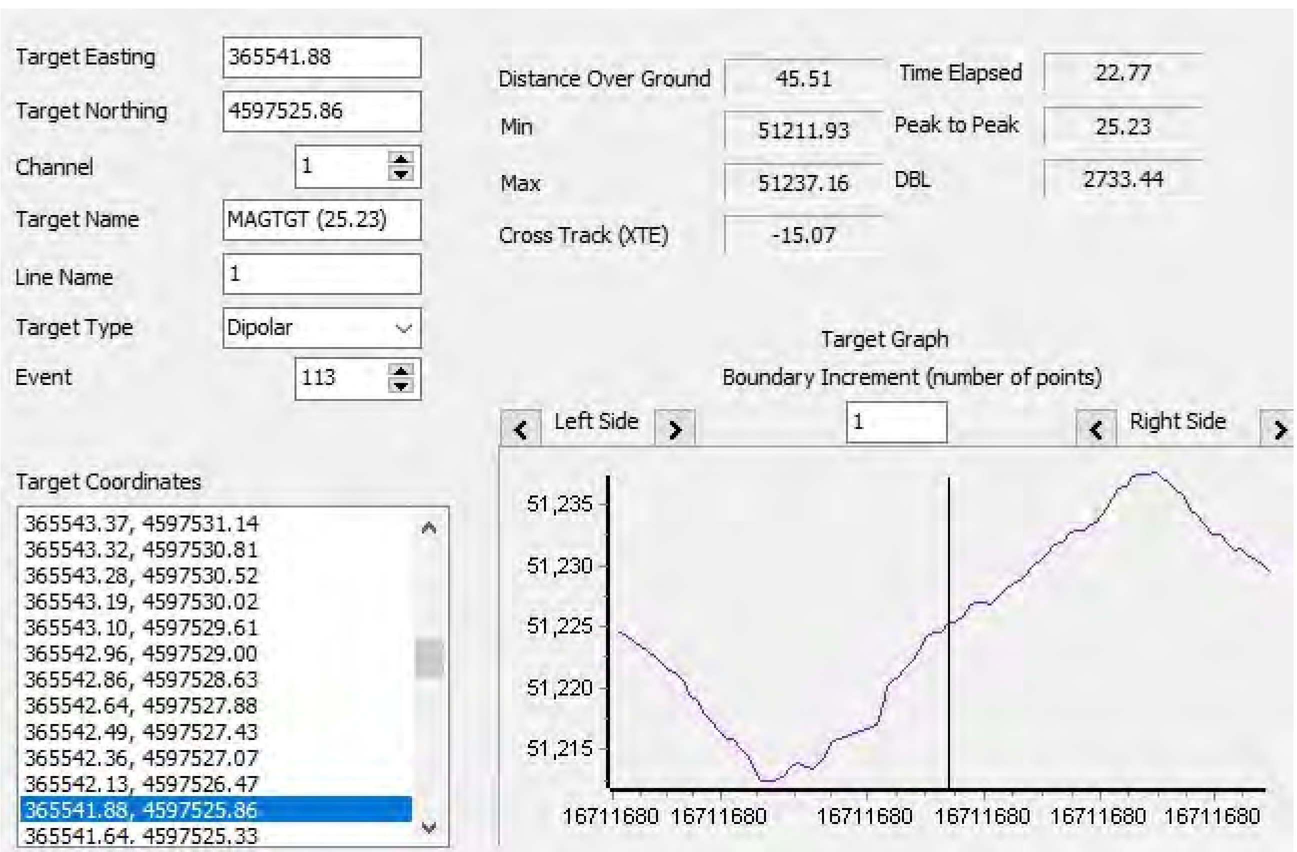
Name	Date	10/05/2021
MAGTGT (38568.00)	Time	12:02:54
Survey File	Event	143
1	X	365620.0
Capture File	Y	4596961.0
365620.90.4596961.36.38568.00.51174.78.8.jpg	WGS84 Latitude	41 30 46.8554 N
	WGS84 Longitude	070 36 37.2798 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



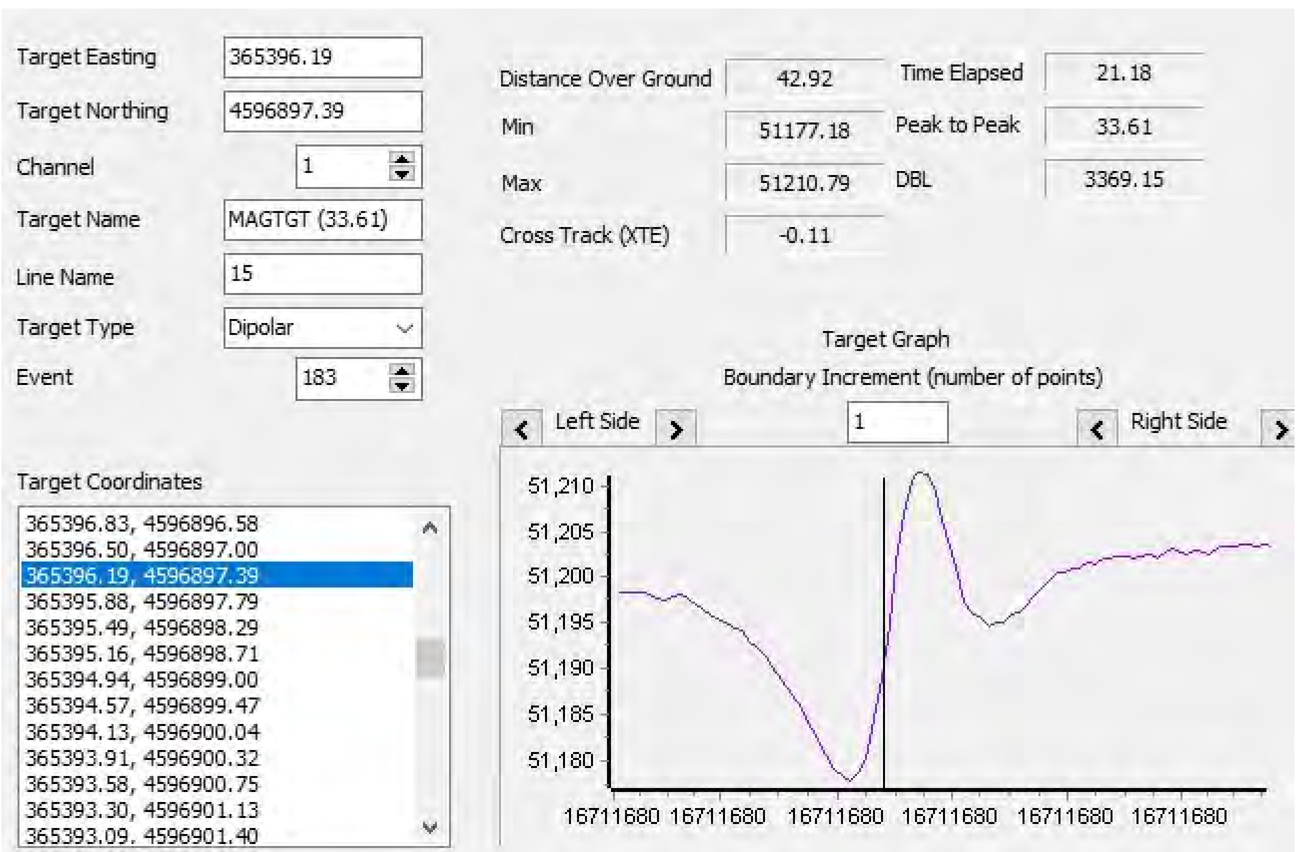
Name	Date	10/05/2021
MAGTGT (25.23)	Time	12:03:10
Survey File	Event	113
1	X	365541.0
Capture File	Y	4597525.0
365541.88.4597525.86.25.23.51224.85.8.jpg	WGS84 Latitude	41 31 5.0892 N
	WGS84 Longitude	070 36 41.1401 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



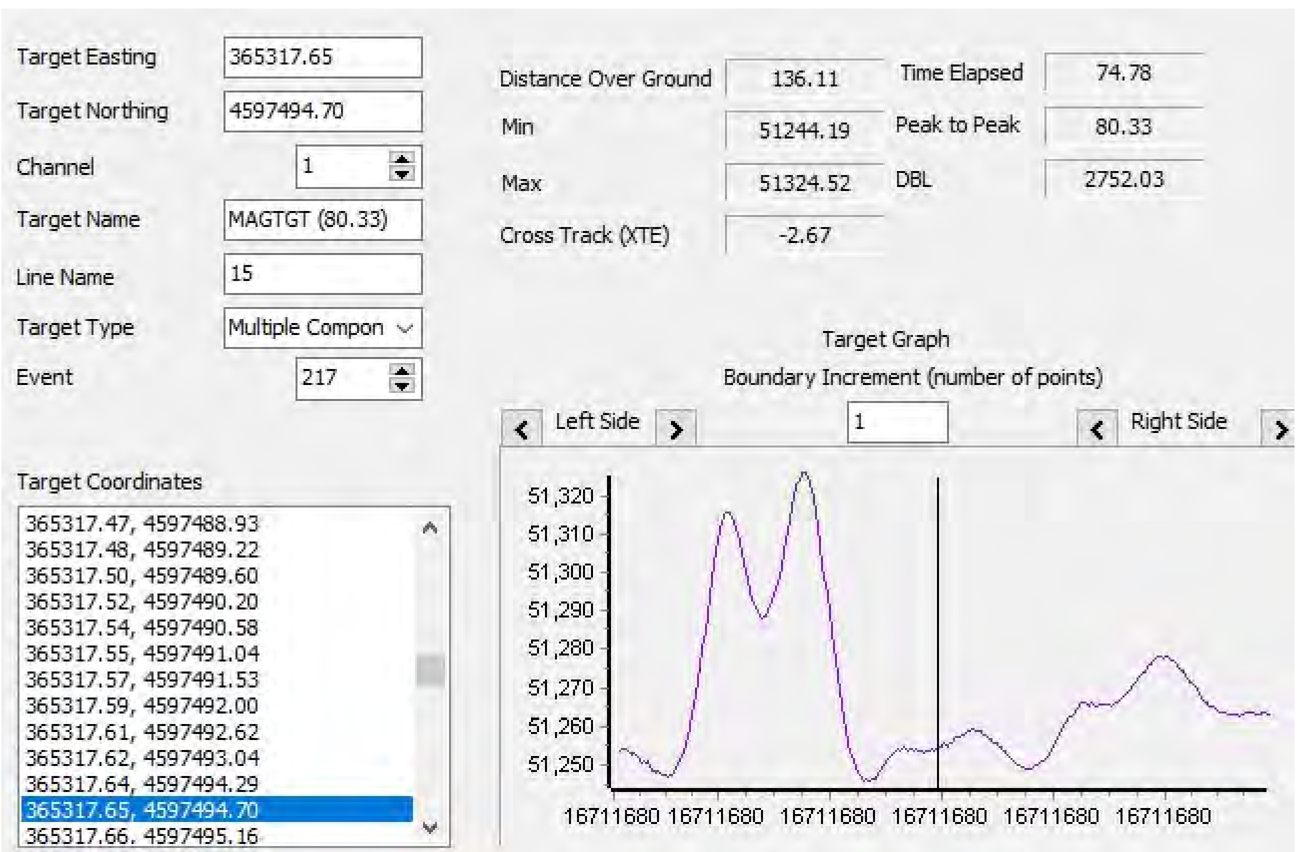
Name	Date	10/05/2021
MAGTGT (33.61)	Time	12:03:36
Survey File	Event	183
15	X	365396.0
Capture File	Y	4596897.0
365396.19.4596897.39.33.61.51199.63.9.jpg	WGS84 Latitude	41 30 44.6456 N
	WGS84 Longitude	070 36 46.8881 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



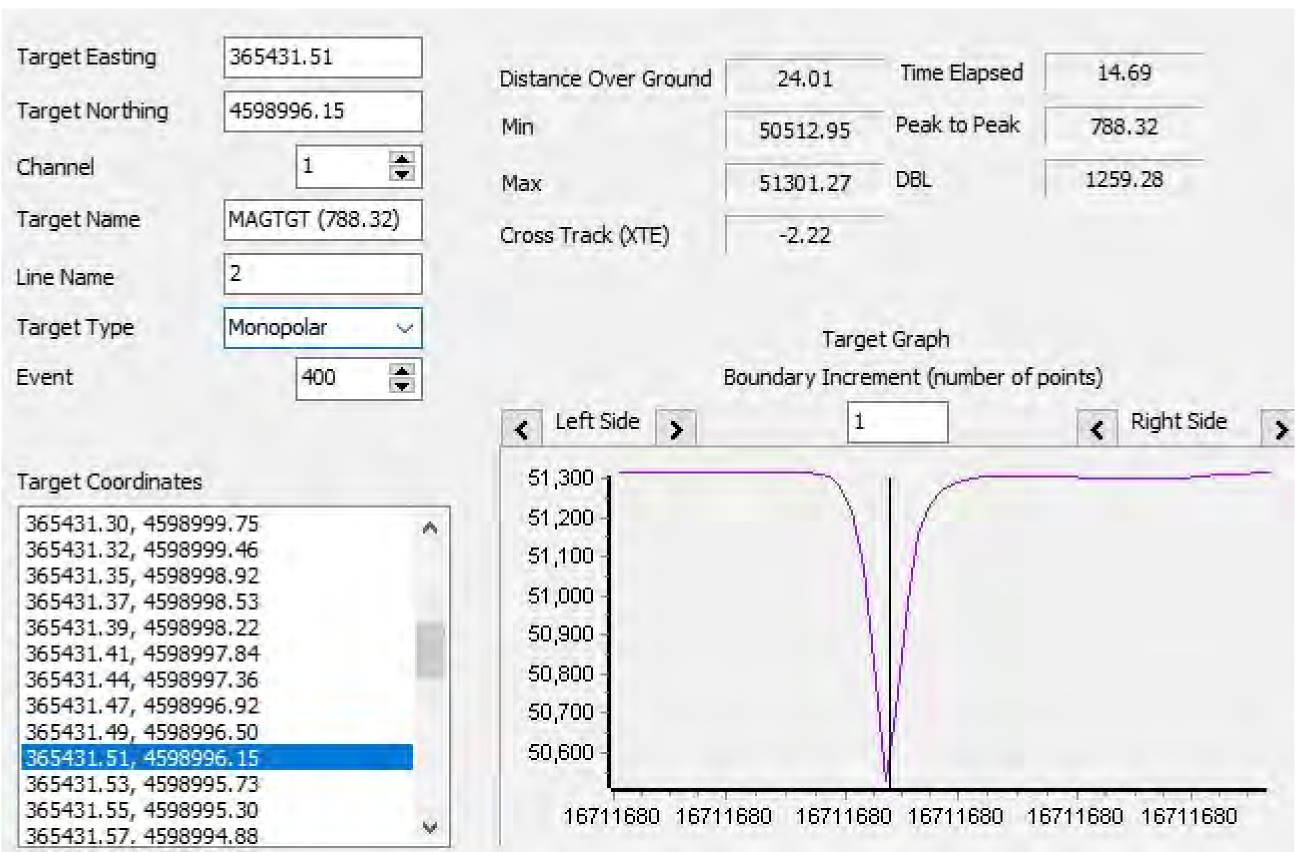
Name	Date	10/05/2021
MAGTGT (80.33)	Time	12:03:50
Survey File	Event	217
15	X	365317.0
Capture File	Y	4597494.0
365317.65.4597494.70.80.33.51253.84.9.jpg	WGS84 Latitude	41 31 3.9488 N
	WGS84 Longitude	070 36 50.7758 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



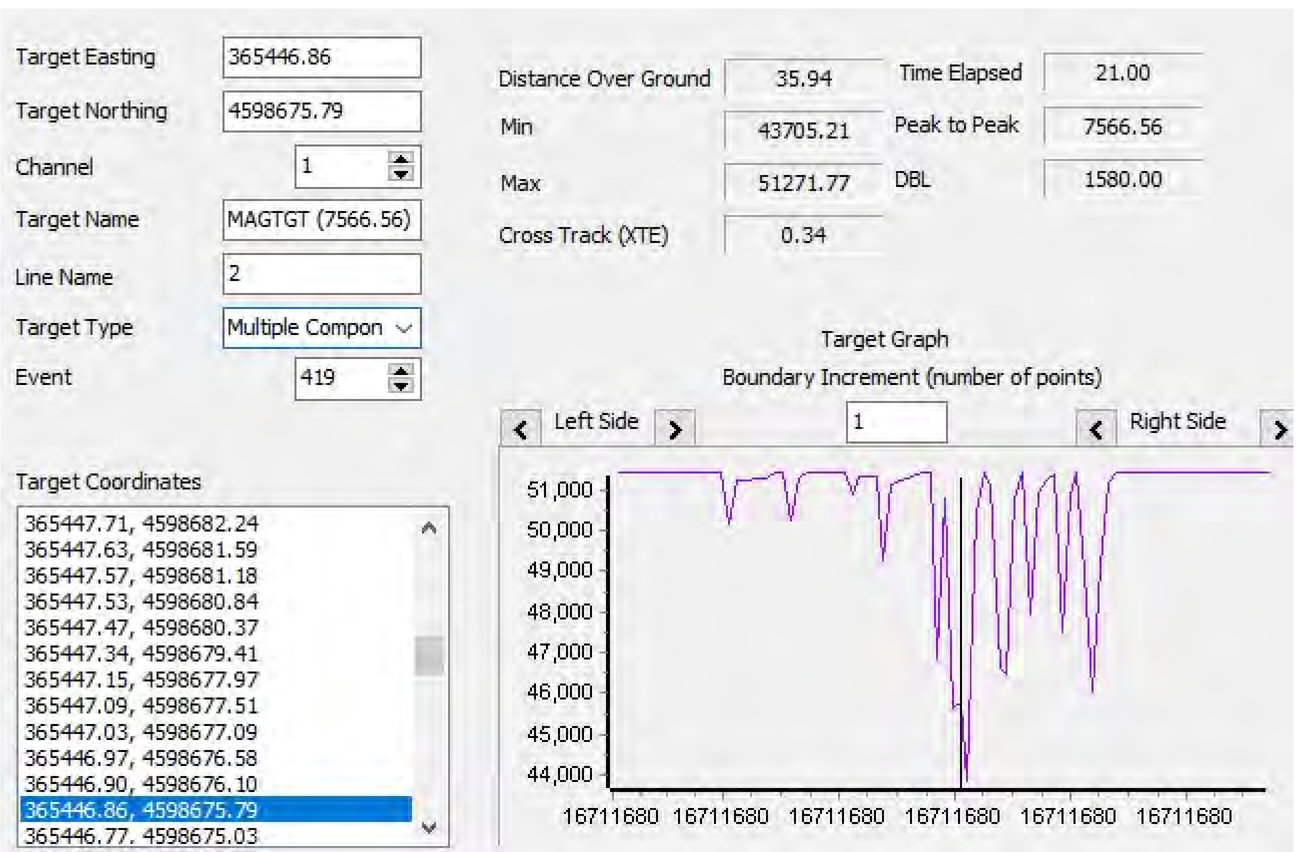
Name	Date	10/05/2021
MAGTGT (788.32)	Time	12:04:29
Survey File	Event	400
2	X	365431.0
Capture File	Y	4598996.0
365431.51.4598996.15.788.32.51144.60.10.jpg	WGS84 Latitude	41 31 52.7034 N
	WGS84 Longitude	070 36 47.0686 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



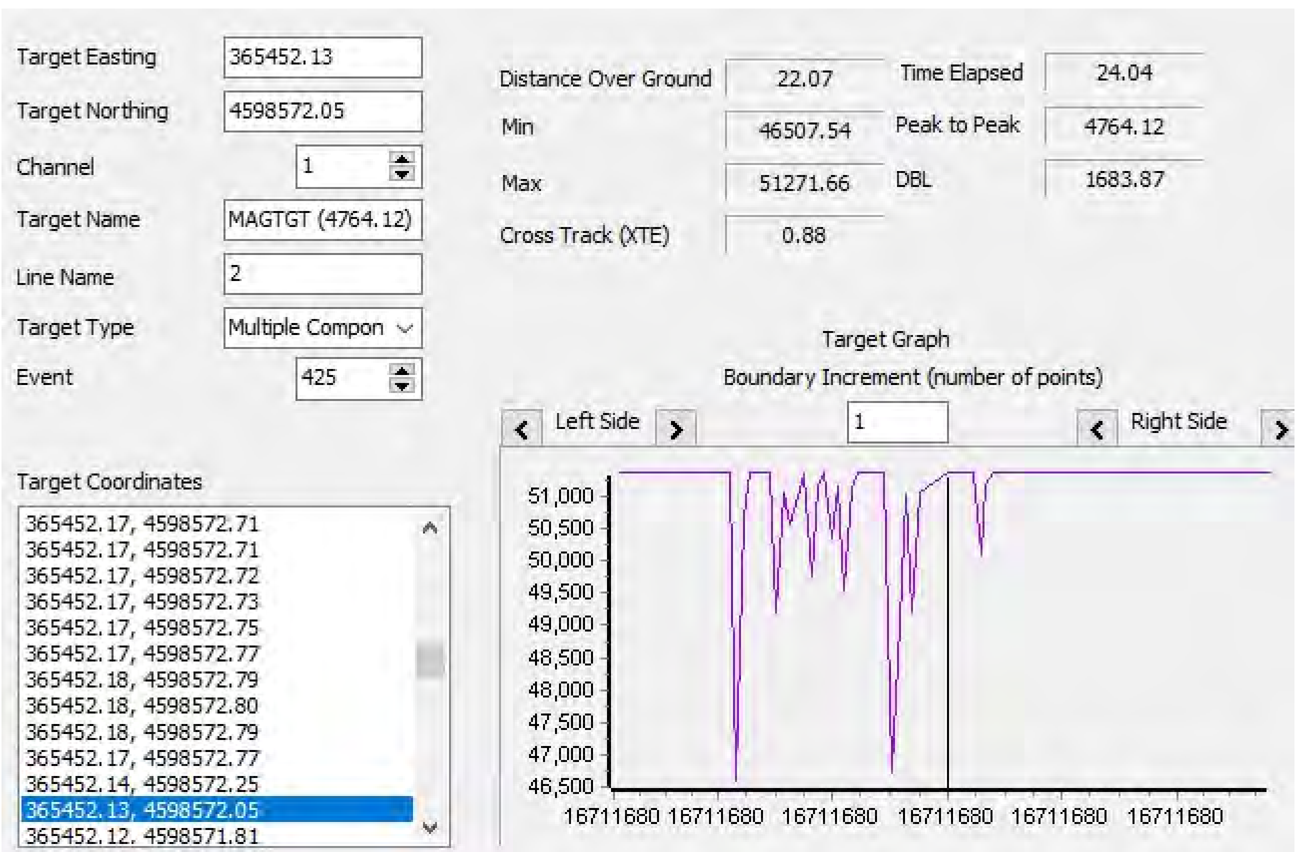
Name	Date	10/05/2021
MAGTGT (7566.56)	Time	12:04:43
Survey File	Event	419
2	X	365446.0
Capture File	Y	4598675.0
365446.86.4598675.79.7566.56.43705.21.10.jpg	WGS84 Latitude	41 31 42.3076 N
	WGS84 Longitude	070 36 46.163 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



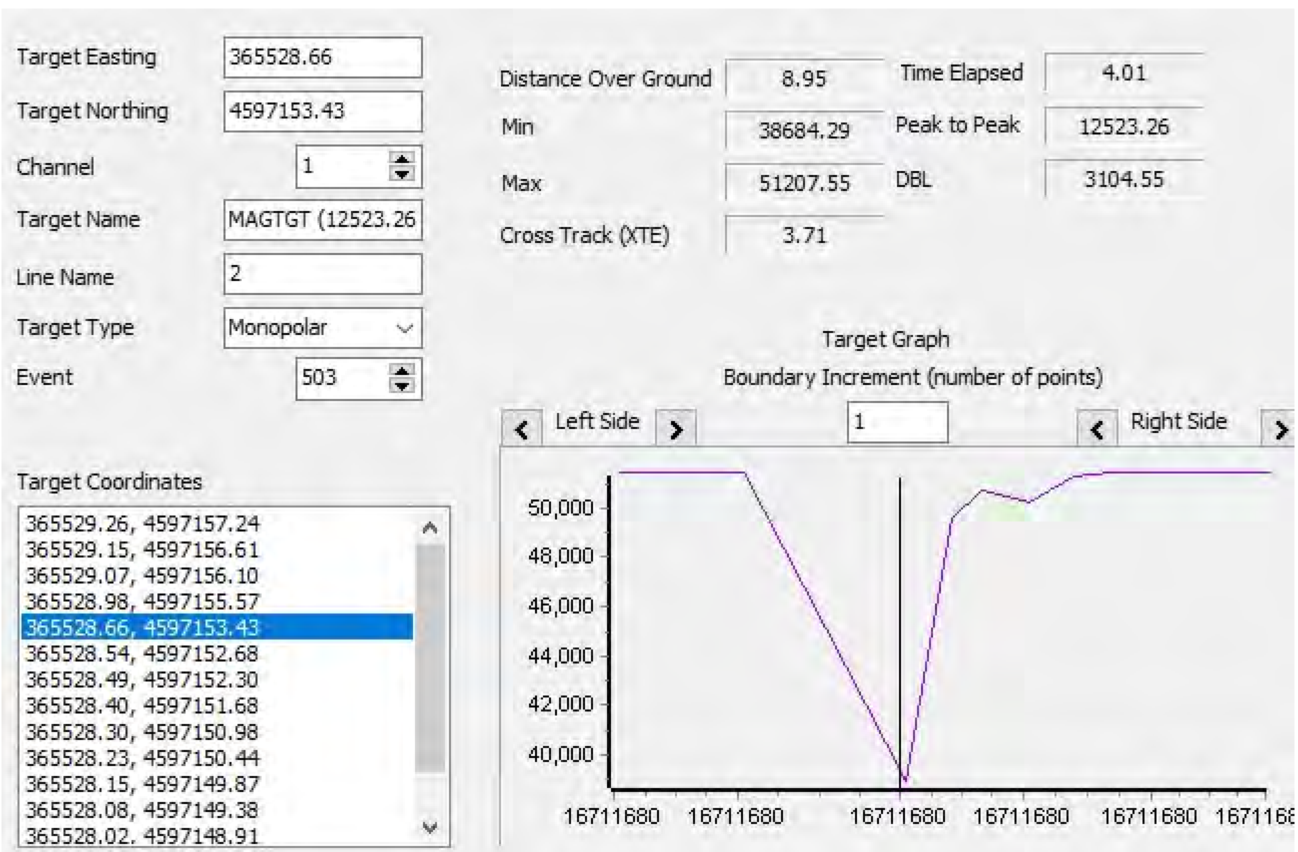
Name	Date	10/05/2021
MAGTGT (4764.12)	Time	12:04:54
Survey File	Event	425
2	X	365452.0
Capture File	Y	4598572.0
365452.13.4598572.05.4764.12.51269.69.10.jpg	WGS84 Latitude	41 31 38.9726 N
	WGS84 Longitude	070 36 45.8213 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



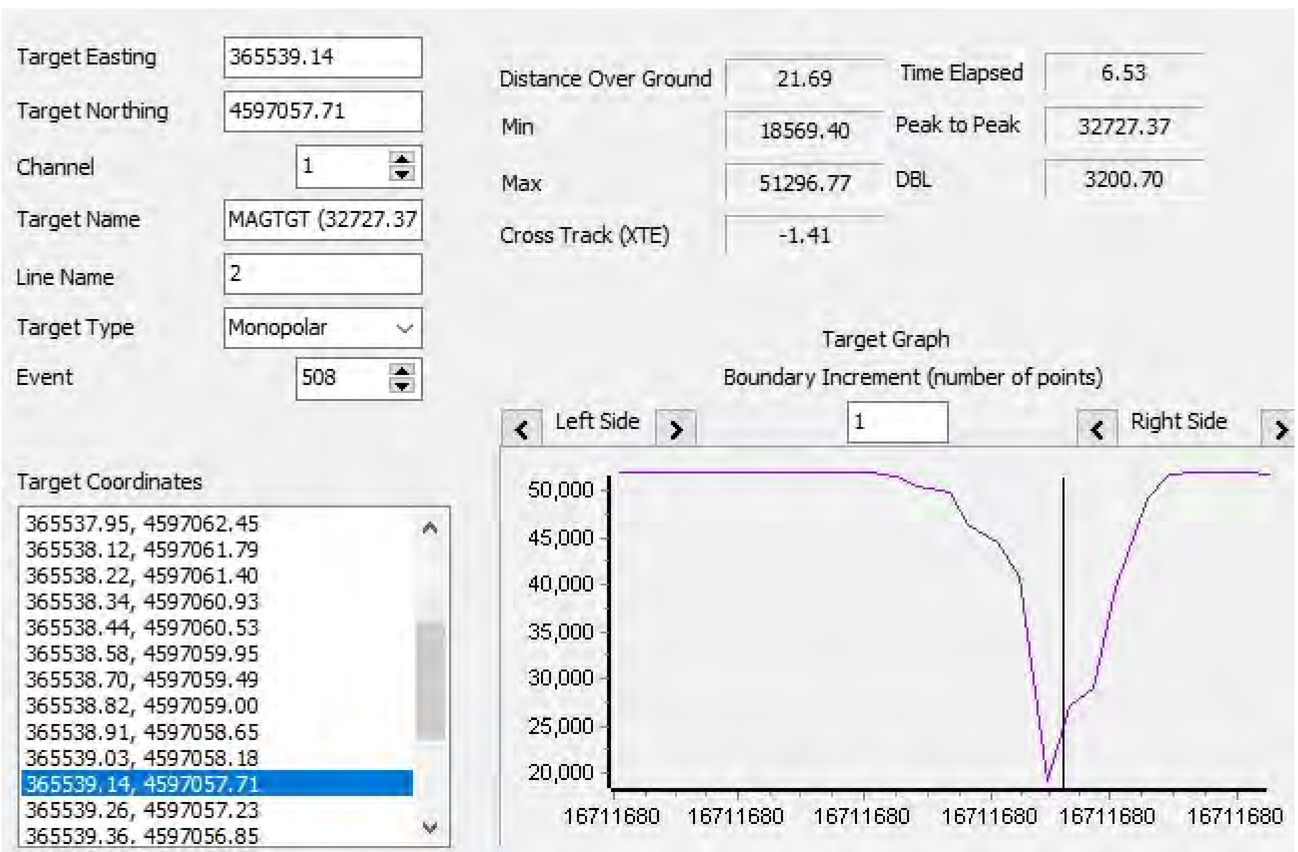
Name	Date	10/05/2021
MAGTGT (12523.26)	Time	12:05:45
Survey File	Event	503
2	X	365528.0
Capture File	Y	4597153.0
365528.66.4597153.43.12523.26.50442.62.10.jpg	WGS84 Latitude	41 30 53.0233 N
	WGS84 Longitude	070 36 41.4016 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



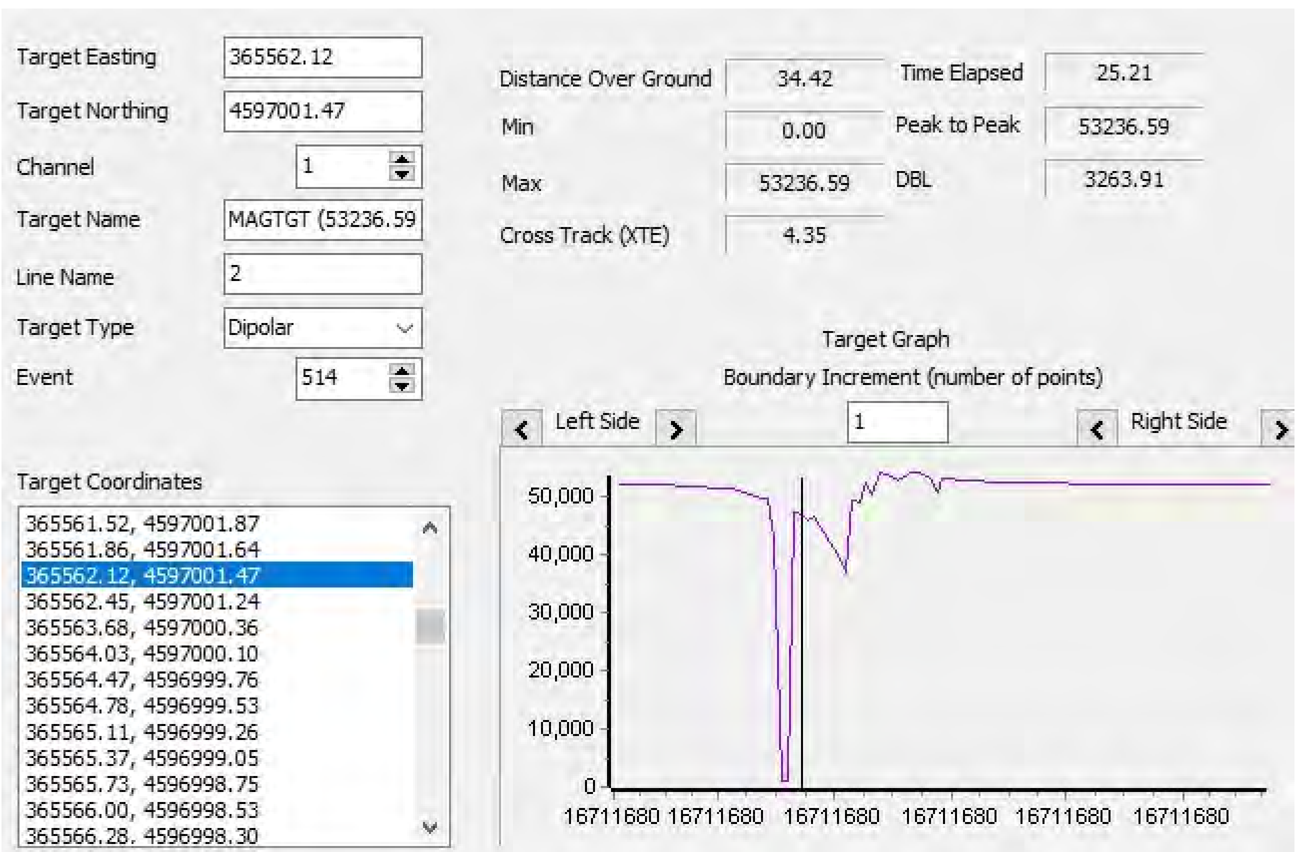
Name	Date	10/05/2021
MAGTGT (32727.37)	Time	12:05:58
Survey File	Event	508
2	X	365539.0
Capture File	Y	4597057.0
365539.14.4597057.71.32727.37.49192.13.10.jpg	WGS84 Latitude	41 30 49.9182 N
	WGS84 Longitude	070 36 40.85 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



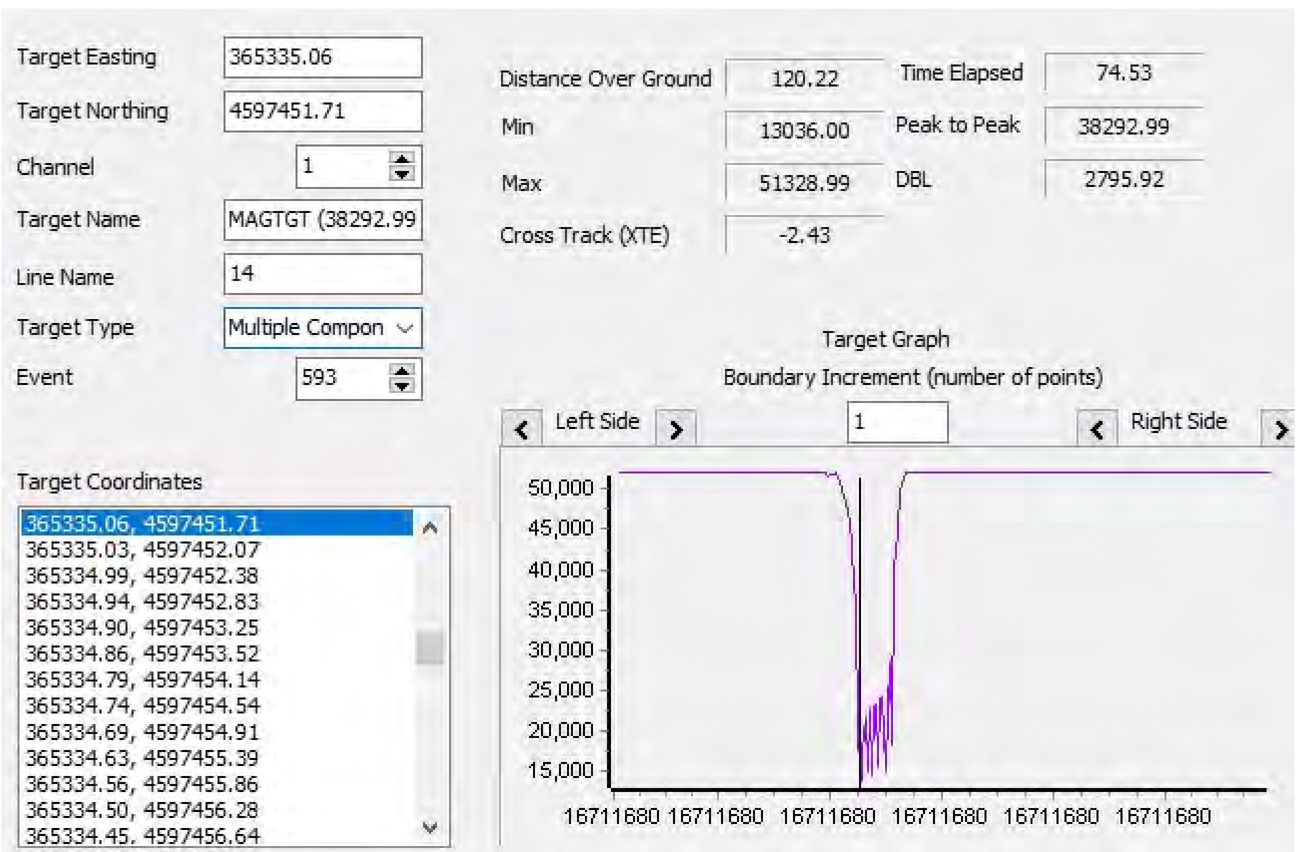
Name	Date	10/05/2021
MAGTGT (53236.59)	Time	12:06:17
Survey File	Event	514
2	X	365562.0
Capture File	Y	4597001.0
365562.12.4597001.47.53236.59.51923.51.10.jpg	WGS84 Latitude	41 30 48.117 N
	WGS84 Longitude	070 36 39.8131 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



Name	Date	10/05/2021
MAGTGT (38292.99)	Time	12:07:21
Survey File	Event	593
14	X	365335.0
Capture File	Y	4597451.0
365335.06.4597451.71.38292.99.51291.39.11.jpg	WGS84 Latitude	41 31 2.5659 N
	WGS84 Longitude	070 36 49.9649 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



Name	Date	10/05/2021
MAGTGT (7817.76)	Time	12:13:52
Survey File	Event	40
1	X	367186.0
Capture File	Y	4595171.0
	WGS84 Latitude	41 29 49.7742 N
	WGS84 Longitude	070 35 28.3252 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

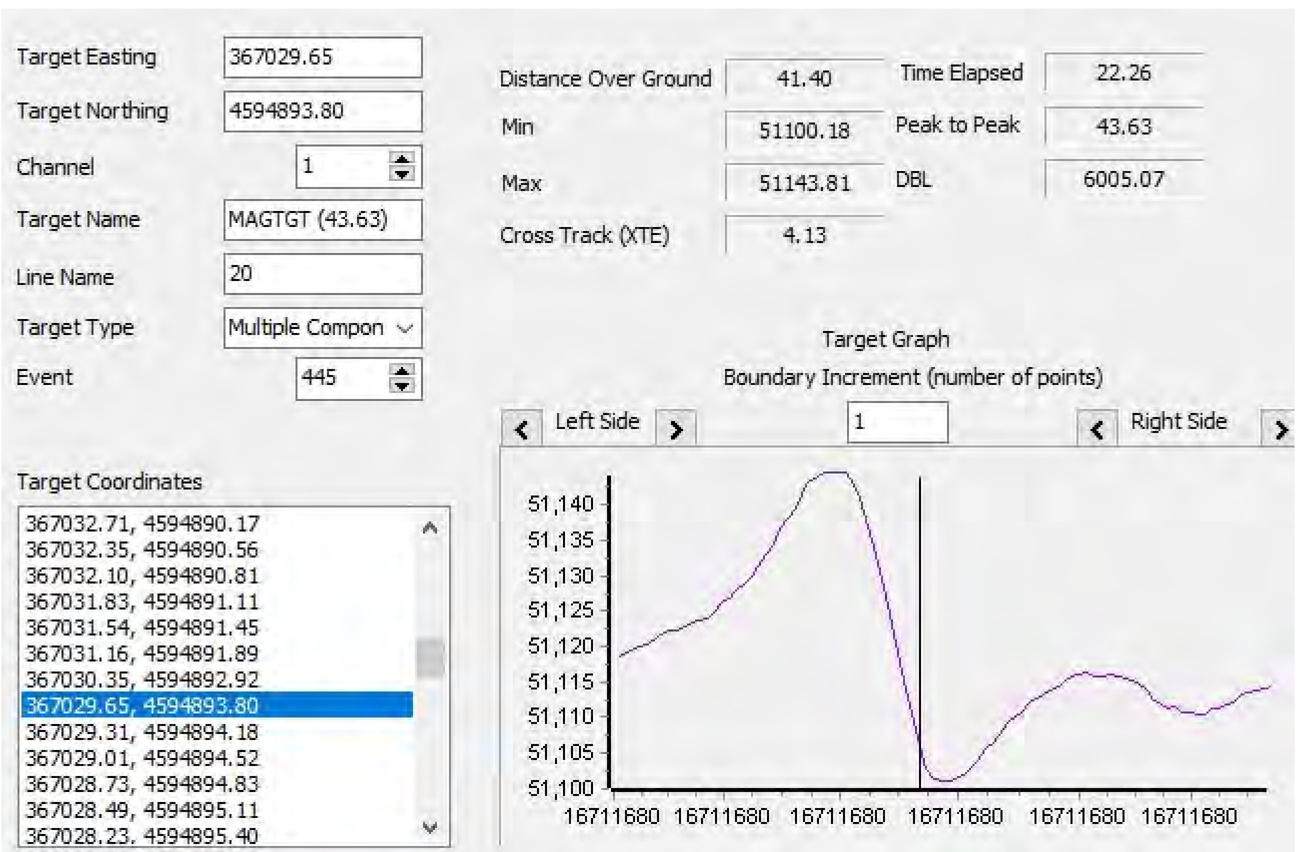
Notes	

Name	Date	10/05/2021
MAGTGT (365.48)	Time	12:14:37
Survey File	Event	164
1	X	365970.0
Capture File	Y	4596566.0
	WGS84 Latitude	41 30 34.263 N
	WGS84 Longitude	070 36 21.8696 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	

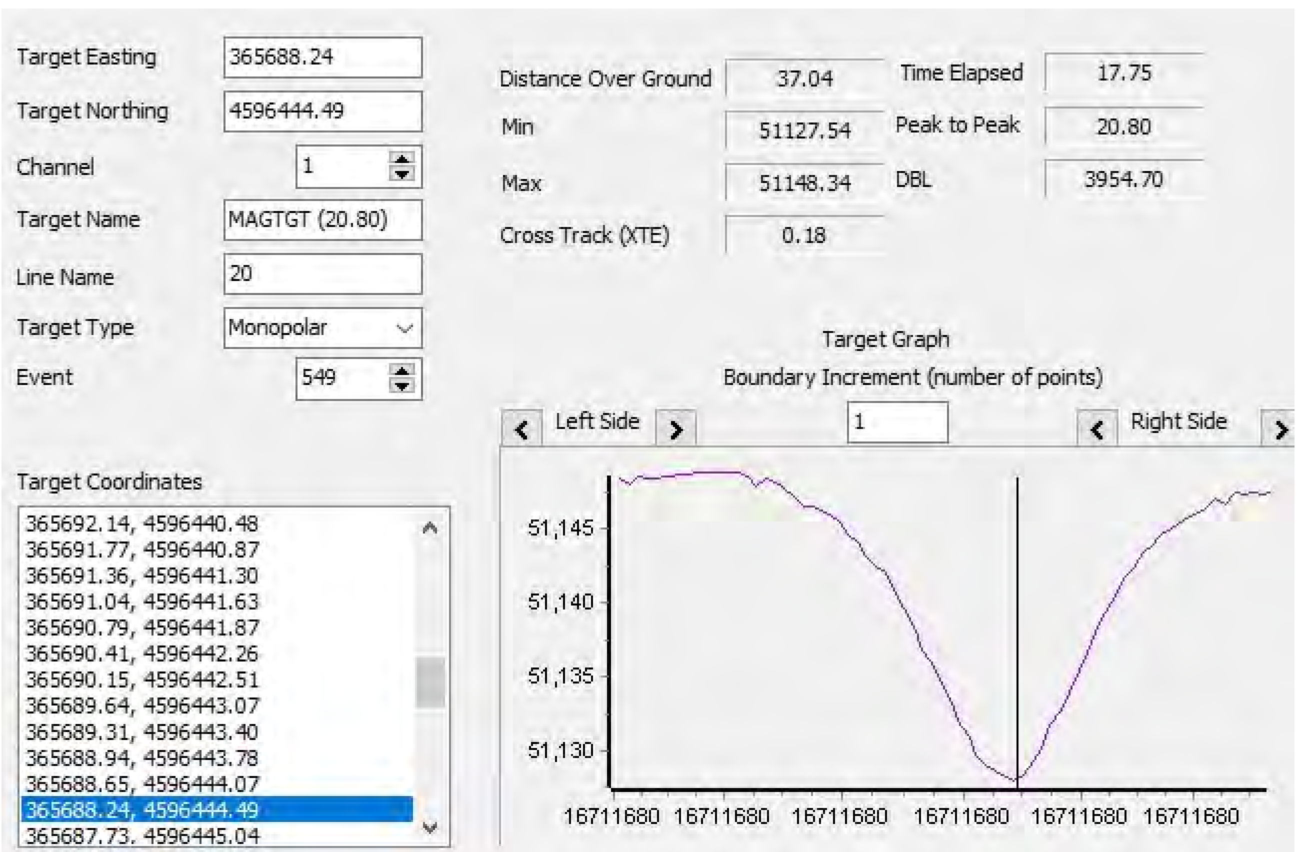
Name	Date	10/05/2021
MAGTGT (43.63)	Time	12:16:27
Survey File	Event	445
20	X	367029.0
Capture File	Y	4594893.0
367029.65.4594893.80.43.63.51100.42.2.jpg	WGS84 Latitude	41 29 40.6693 N
	WGS84 Longitude	070 35 34.8733 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



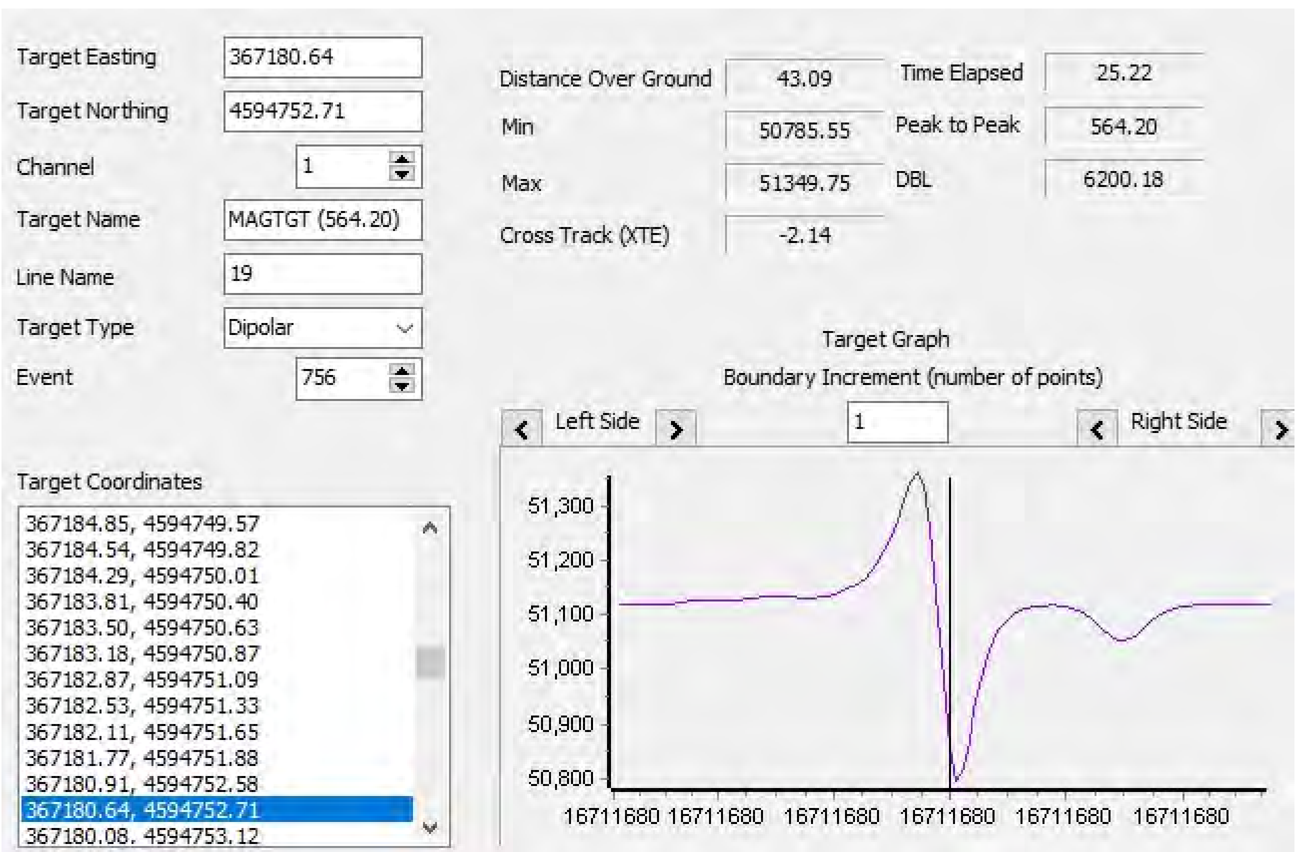
Name	Date	10/05/2021
MAGTGT (20.80)	Time	12:16:42
Survey File	Event	549
20	X	365688.0
Capture File	Y	4596444.0
365688.24.4596444.49.20.80. 51131.58.2.jpg	WGS84 Latitude	41 30 30.1385 N
	WGS84 Longitude	070 36 33.9321 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



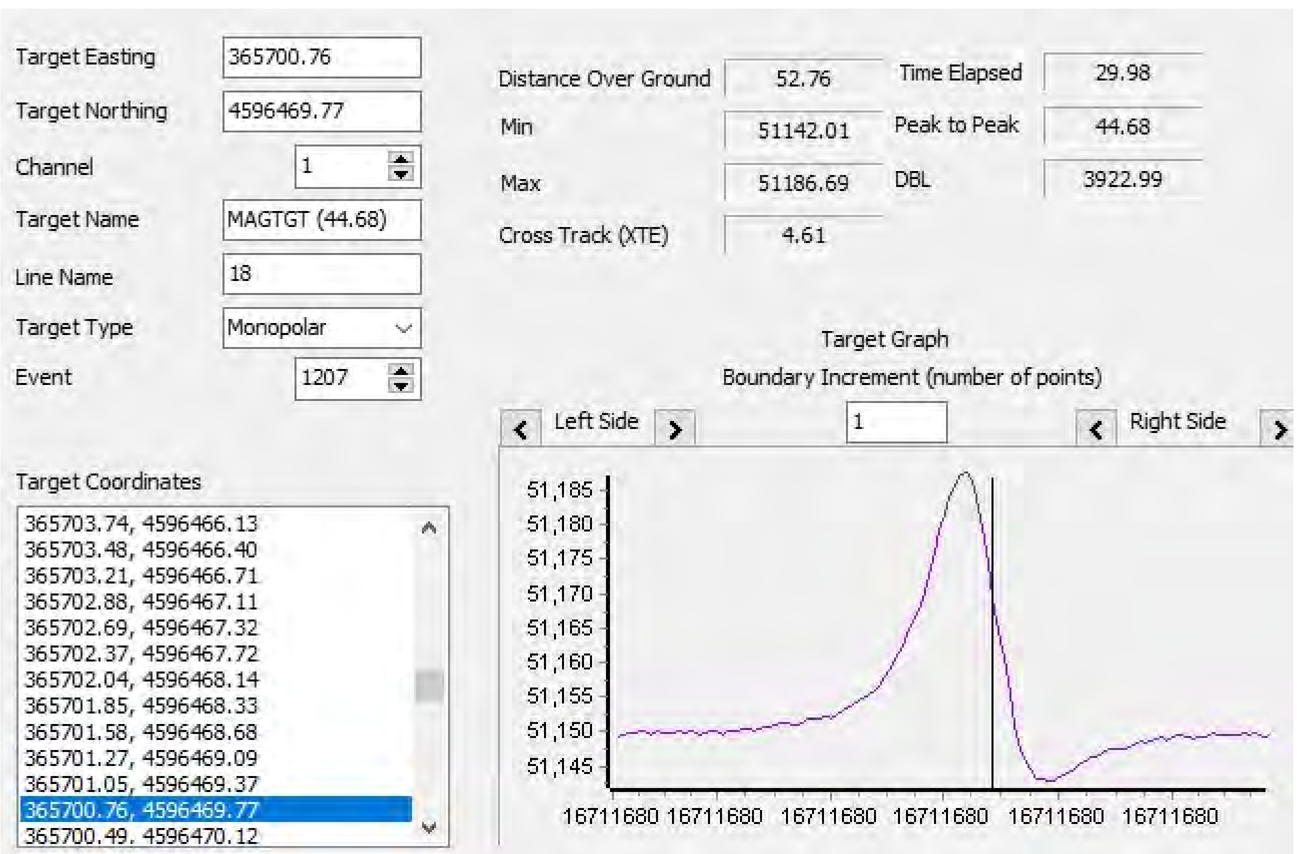
Name	Date	10/05/2021
MAGTGT (564.20)	Time	12:17:00
Survey File	Event	756
19	X	367180.0
Capture File	Y	4594752.0
367180.64.4594752.71.564.20 .50785.55.4.jpg	WGS84 Latitude	41 29 36.189 N
	WGS84 Longitude	070 35 28.2514 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



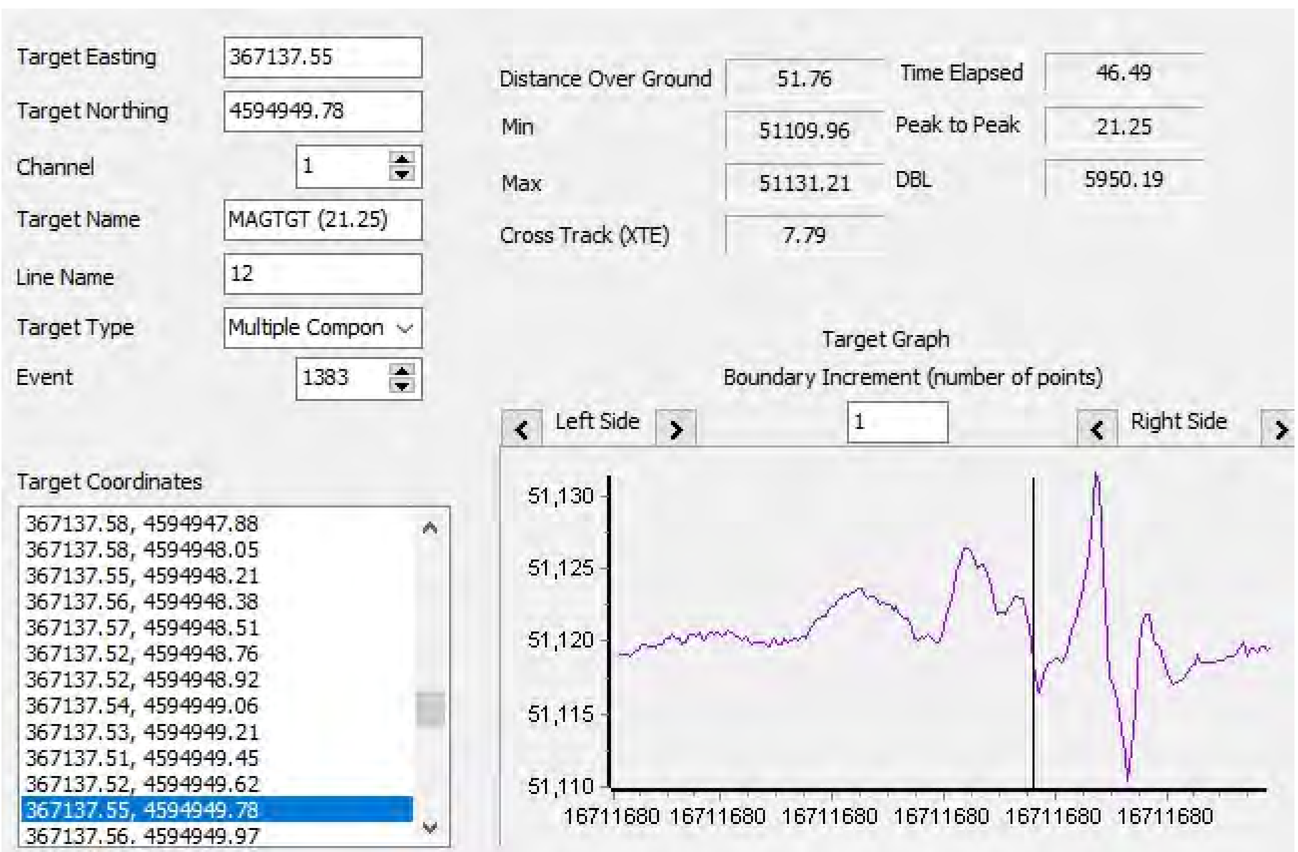
Name	Date	10/05/2021
MAGTGT (44.68)	Time	12:17:19
Survey File	Event	1207
18	X	365700.0
Capture File	Y	4596469.0
365700.76.4596469.77.44.68. 51180.70.6.jpg	WGS84 Latitude	41 30 30.9561 N
	WGS84 Longitude	070 36 33.4347 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



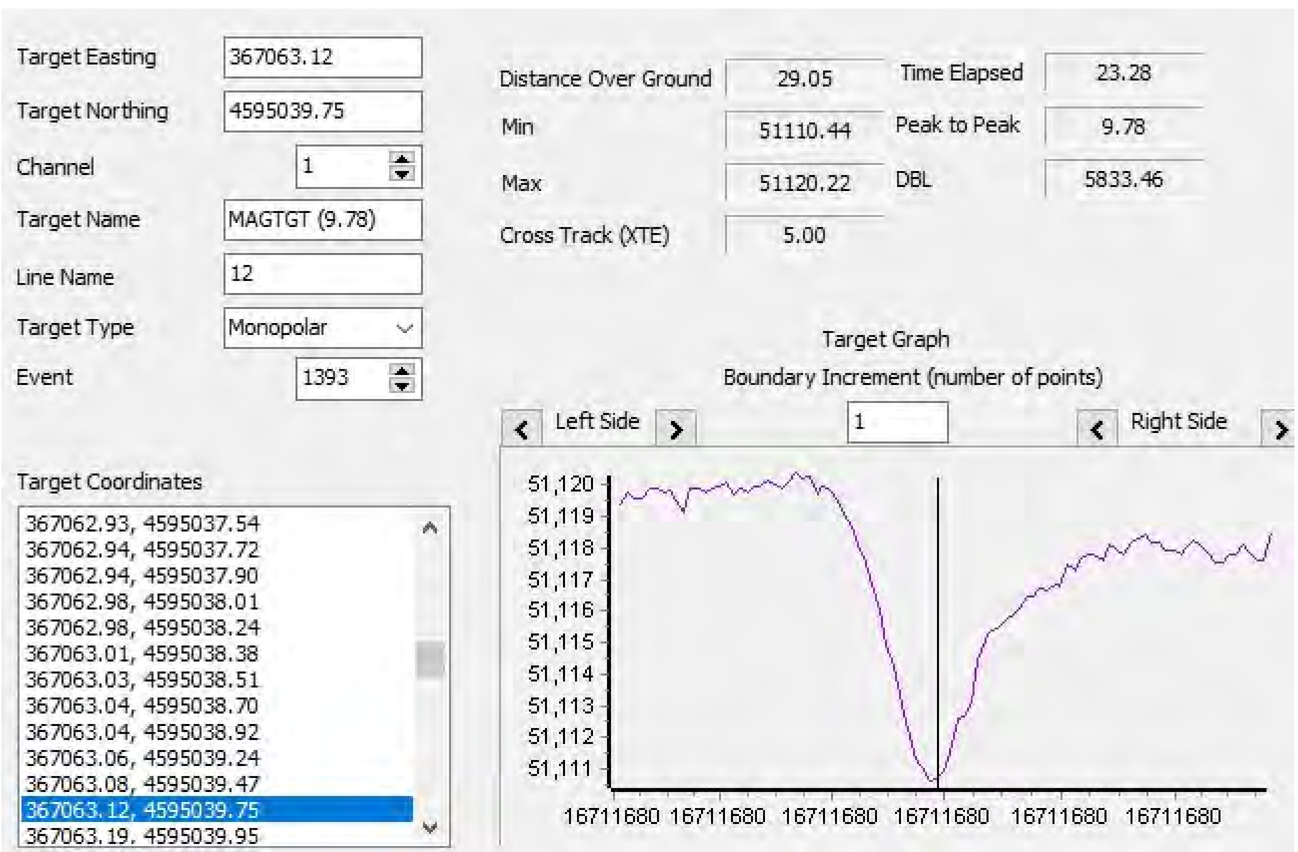
Name	Date	10/05/2021
MAGTGT (21.25)	Time	12:21:49
Survey File	Event	1383
12	X	367137.0
Capture File	Y	4594949.0
367137.55.4594949.78.21.25. 51119.48.8.jpg	WGS84 Latitude	41 29 42.549 N
	WGS84 Longitude	070 35 30.2616 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



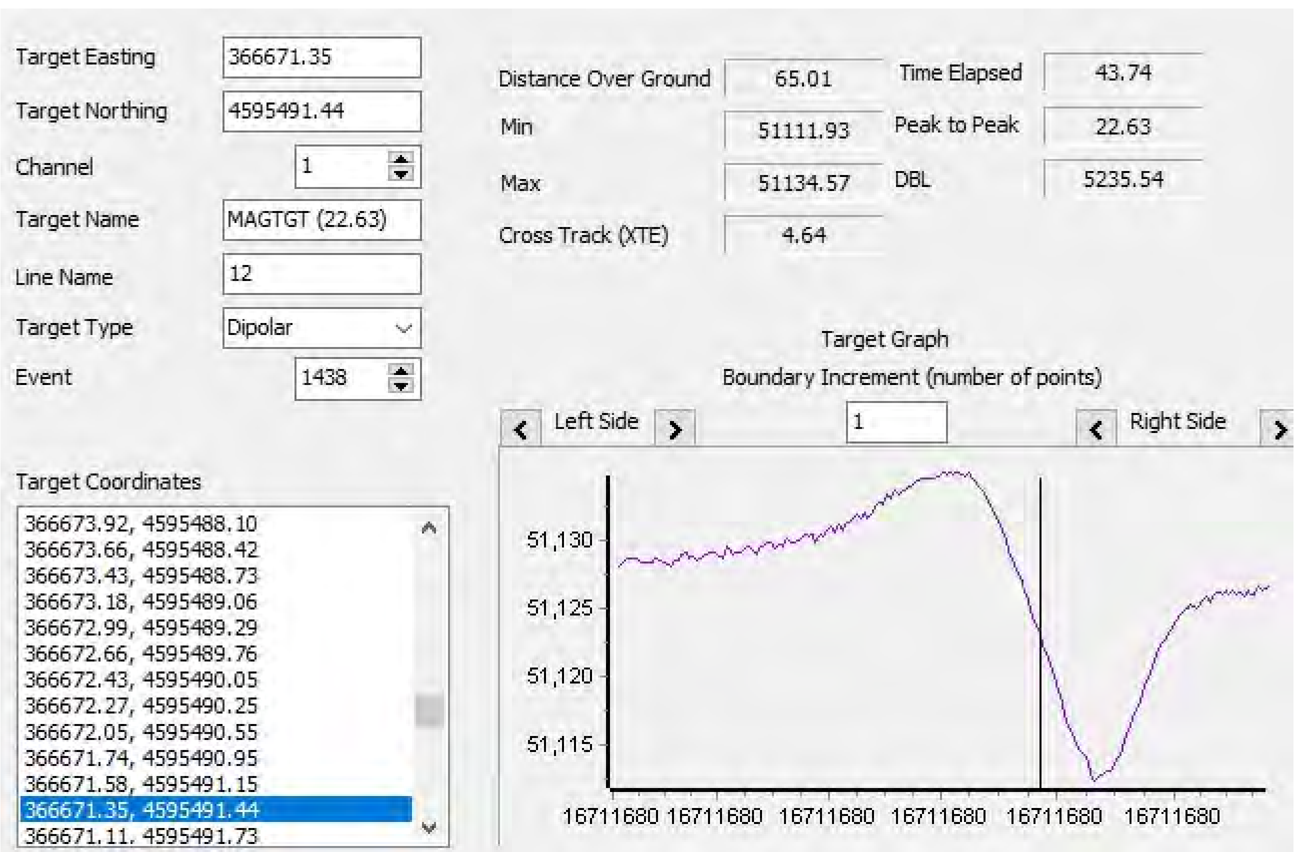
Name	Date	10/05/2021
MAGTGT (9.78)	Time	12:22:06
Survey File	Event	1393
12	X	367063.0
Capture File	Y	4595039.0
367063.12.4595039.75.9.78.5 1110.77.8.jpg	WGS84 Latitude	41 29 45.4221 N
	WGS84 Longitude	070 35 33.5234 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



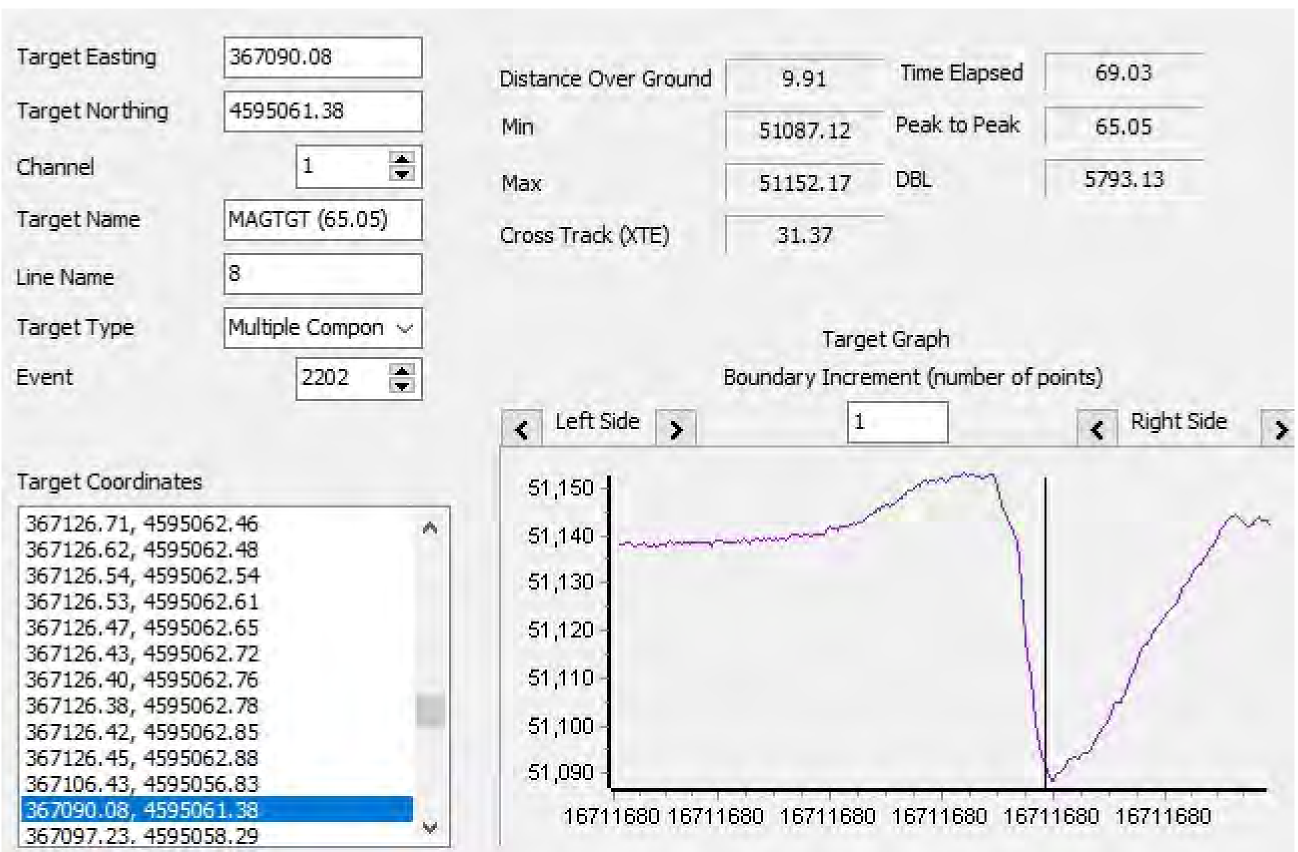
Name	Date	10/05/2021
MAGTGT (22.63)	Time	12:22:23
Survey File	Event	1438
12	X	366671.0
Capture File	Y	4595491.0
366671.35.4595491.44.22.63.51134.52.8.jpg	WGS84 Latitude	41 29 59.8389 N
	WGS84 Longitude	070 35 50.784 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



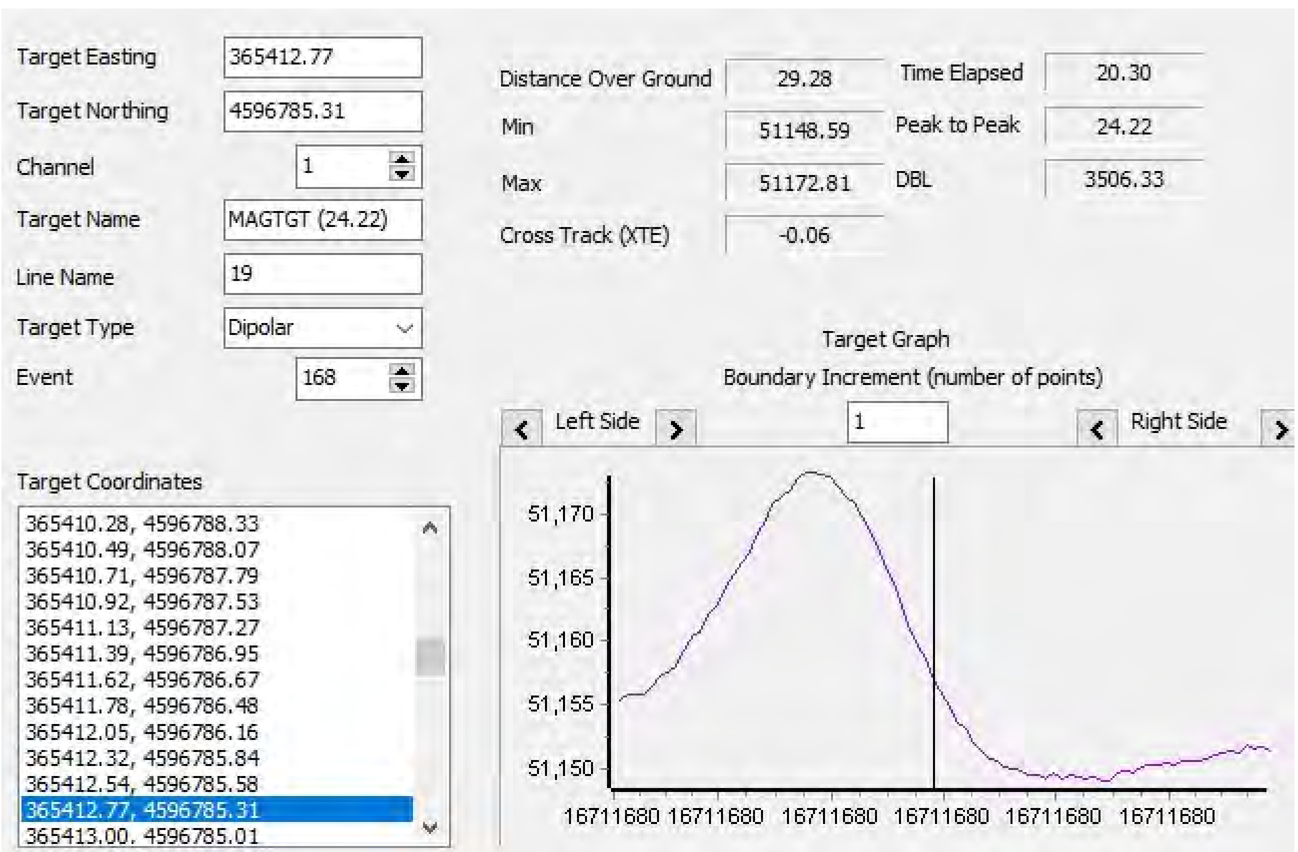
Name	Date	10/05/2021
MAGTGT (65.05)	Time	12:23:05
Survey File	Event	2202
8	X	367090.0
Capture File	Y	4595061.0
367090.08.4595061.38.65.05.51150.59.12.jpg	WGS84 Latitude	41 29 46.1514 N
	WGS84 Longitude	070 35 32.3768 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



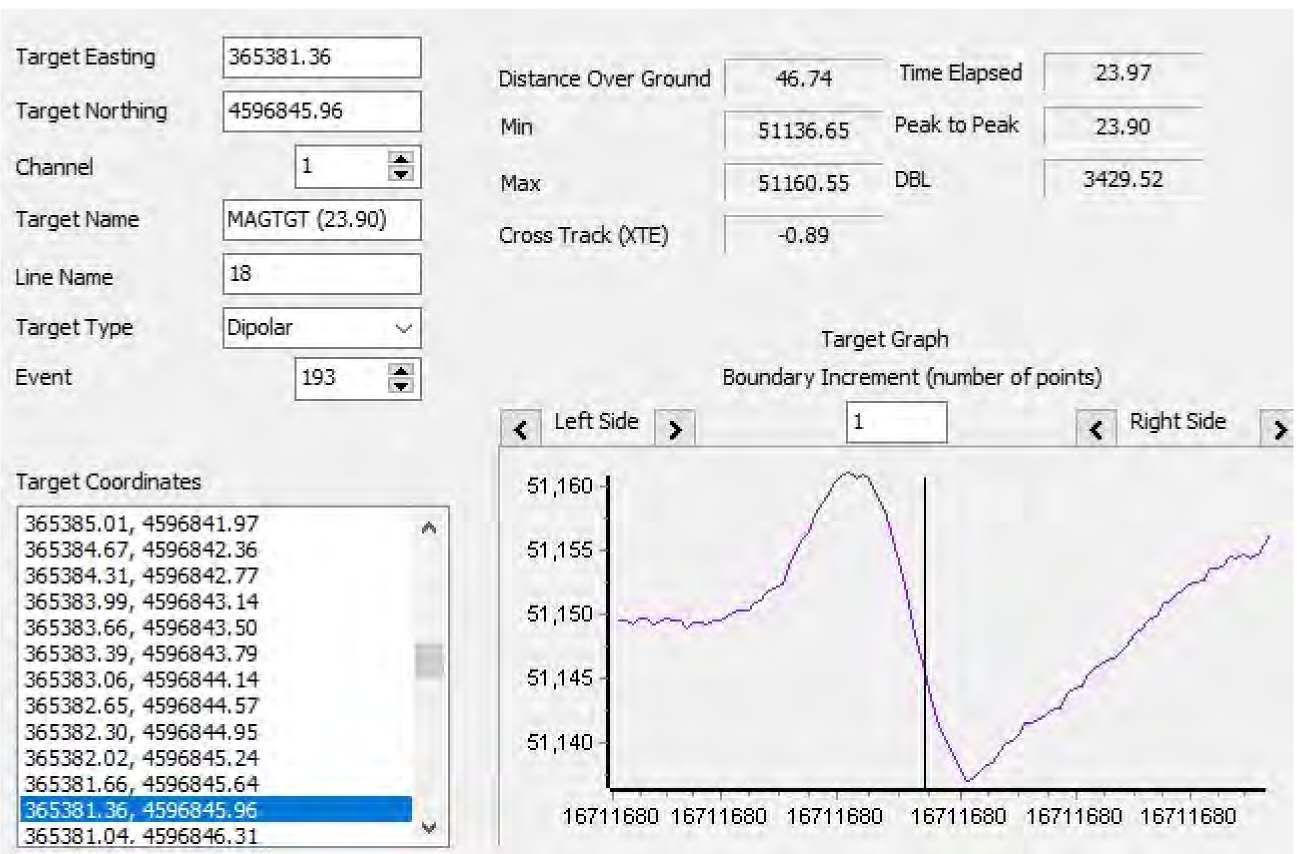
Name	Date	10/05/2021
MAGTGT (24.22)	Time	12:23:52
Survey File	Event	168
19	X	365412.0
Capture File	Y	4596785.0
365412.77.4596785.31.24.22.51155.70.0.jpg	WGS84 Latitude	41 30 41.0249 N
	WGS84 Longitude	070 36 46.108 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



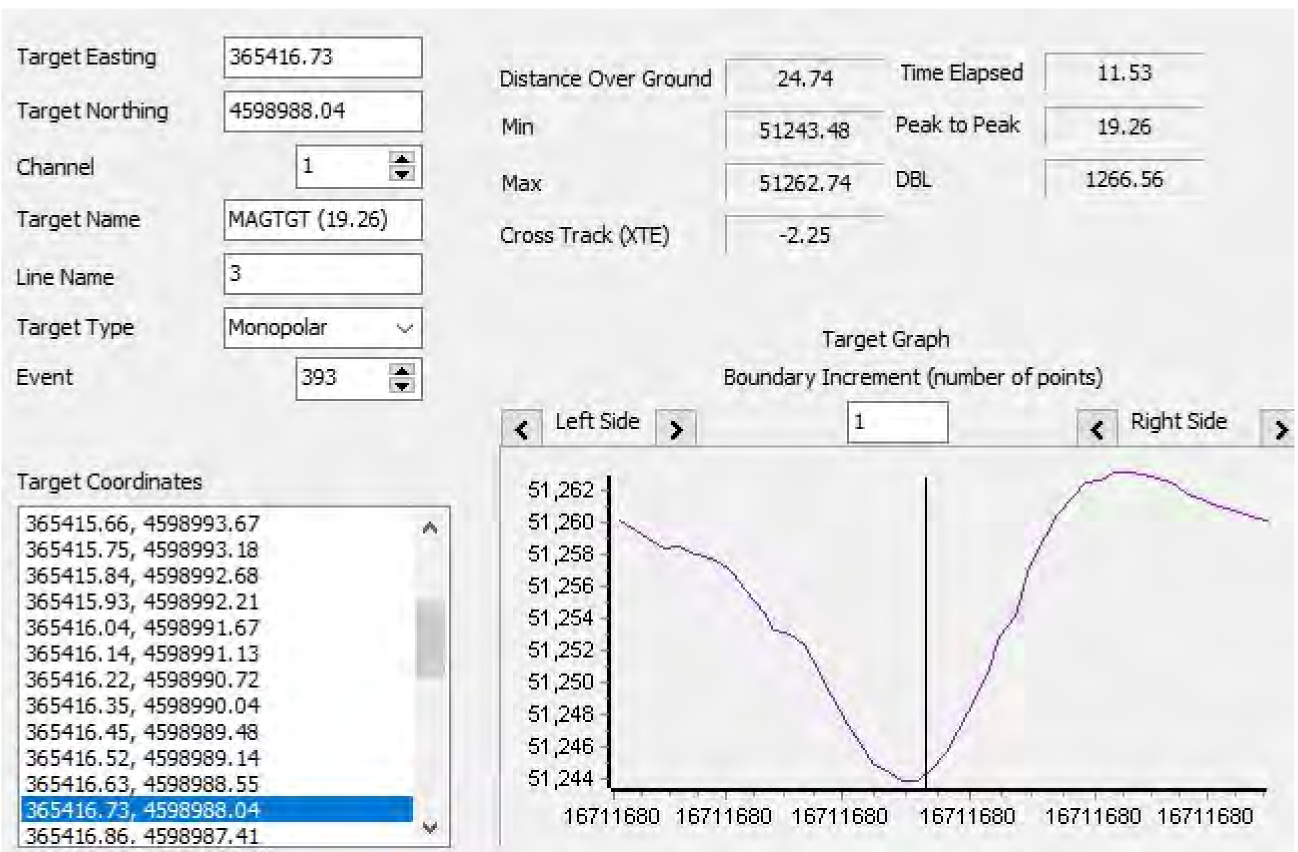
Name	Date	10/05/2021
MAGTGT (23.90)	Time	12:24:06
Survey File	Event	193
18	X	365381.0
Capture File	Y	4596845.0
365381.36.4596845.96.23.90.51142.95.1.jpg	WGS84 Latitude	41 30 42.951 N
	WGS84 Longitude	070 36 47.4931 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



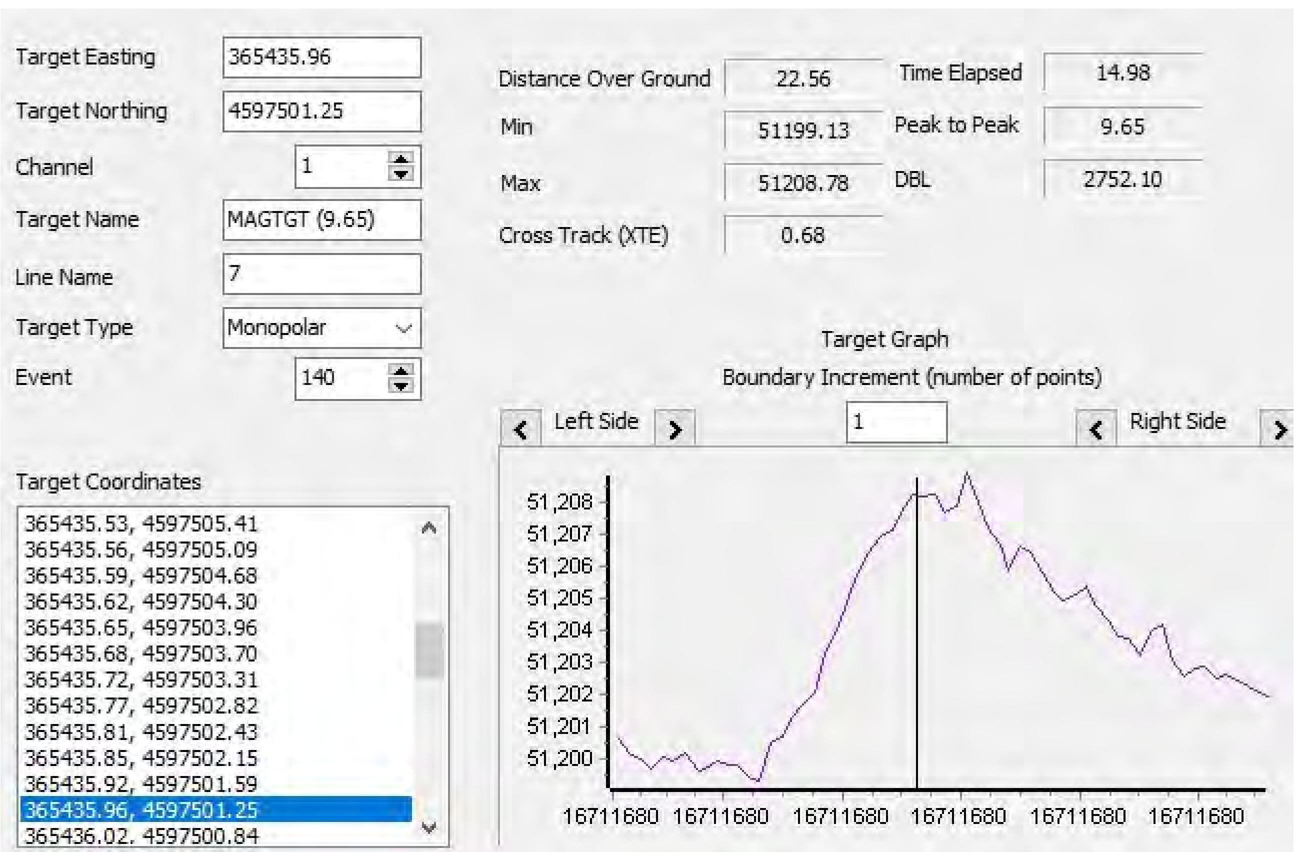
Name	Date	10/05/2021
MAGTGT (19.26)	Time	12:24:22
Survey File	Event	393
3	X	365416.0
Capture File	Y	4598988.0
365416.73.4598988.04.19.26. 51244.24.2.jpg	WGS84 Latitude	41 31 52.435 N
	WGS84 Longitude	070 36 47.7092 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



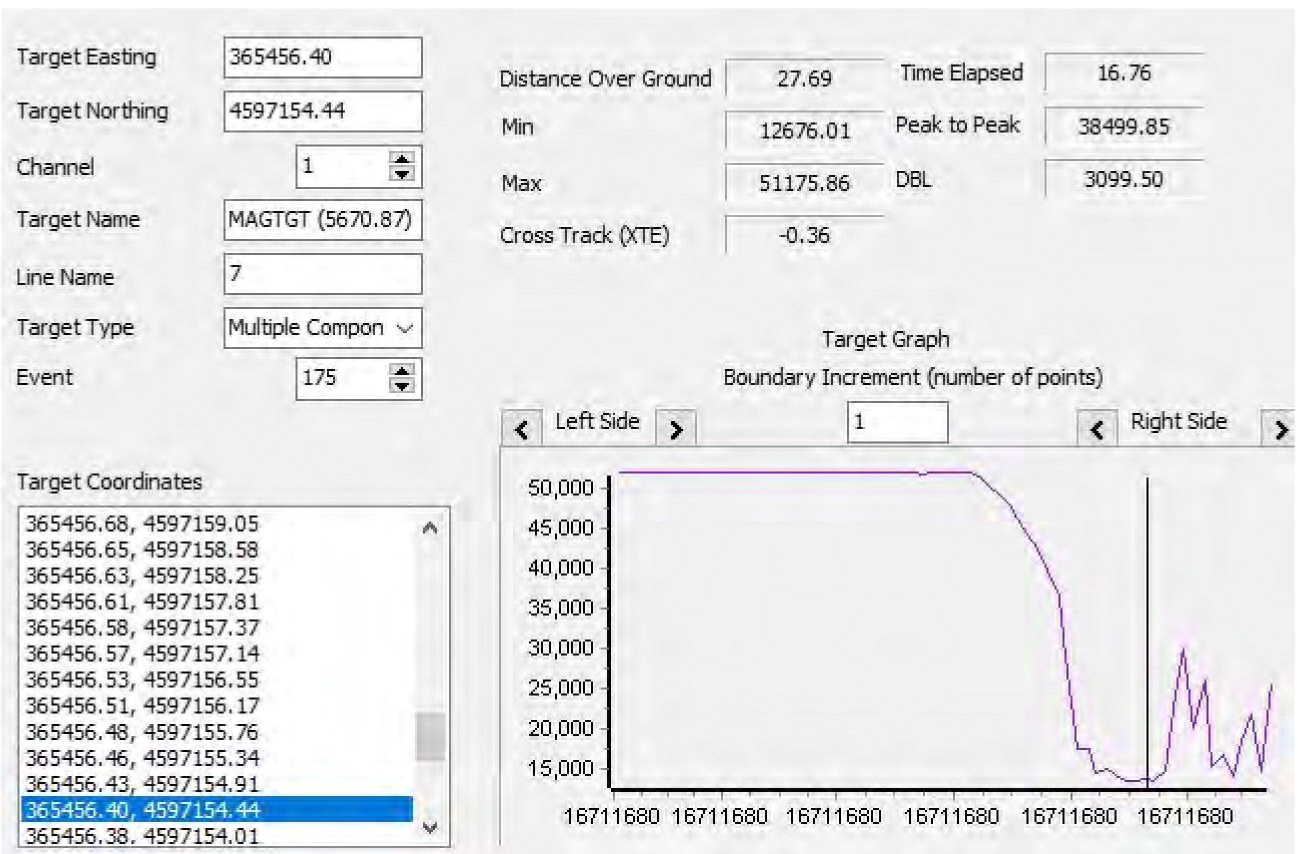
Name	Date	10/05/2021
MAGTGT (9.65)	Time	12:25:11
Survey File	Event	140
7	X	365435.0
Capture File	Y	4597501.0
365435.96.4597501.25.9.65.51208.05.0.jpg	WGS84 Latitude	41 31 4.2471 N
	WGS84 Longitude	070 36 45.6924 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



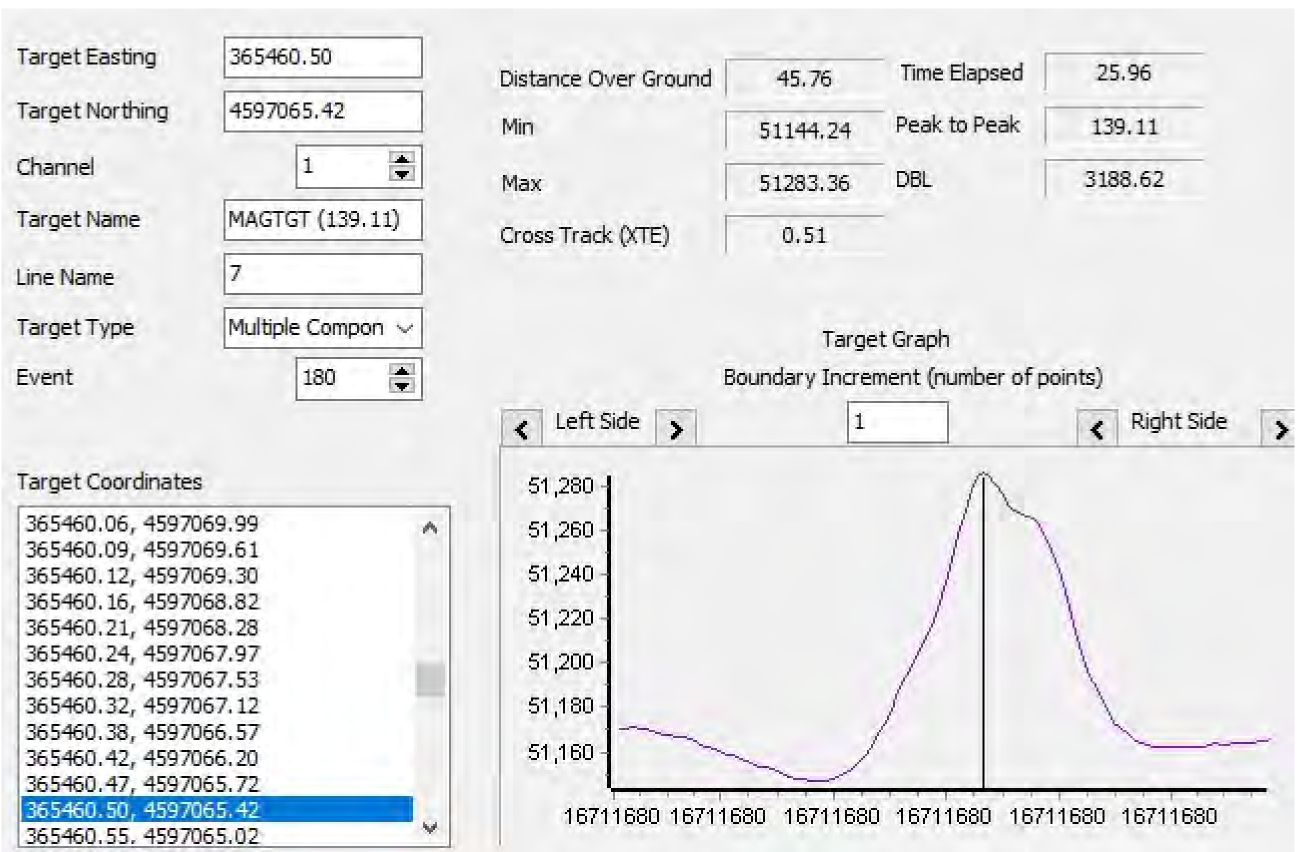
Name	Date	10/05/2021
MAGTGT (5670.87)	Time	12:25:47
Survey File	Event	175
7	X	365456.0
Capture File	Y	4597154.0
365456.40.4597154.44.38499.85.51151.96.1.jpg	WGS84 Latitude	41 30 53.0122 N
	WGS84 Longitude	070 36 44.5075 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



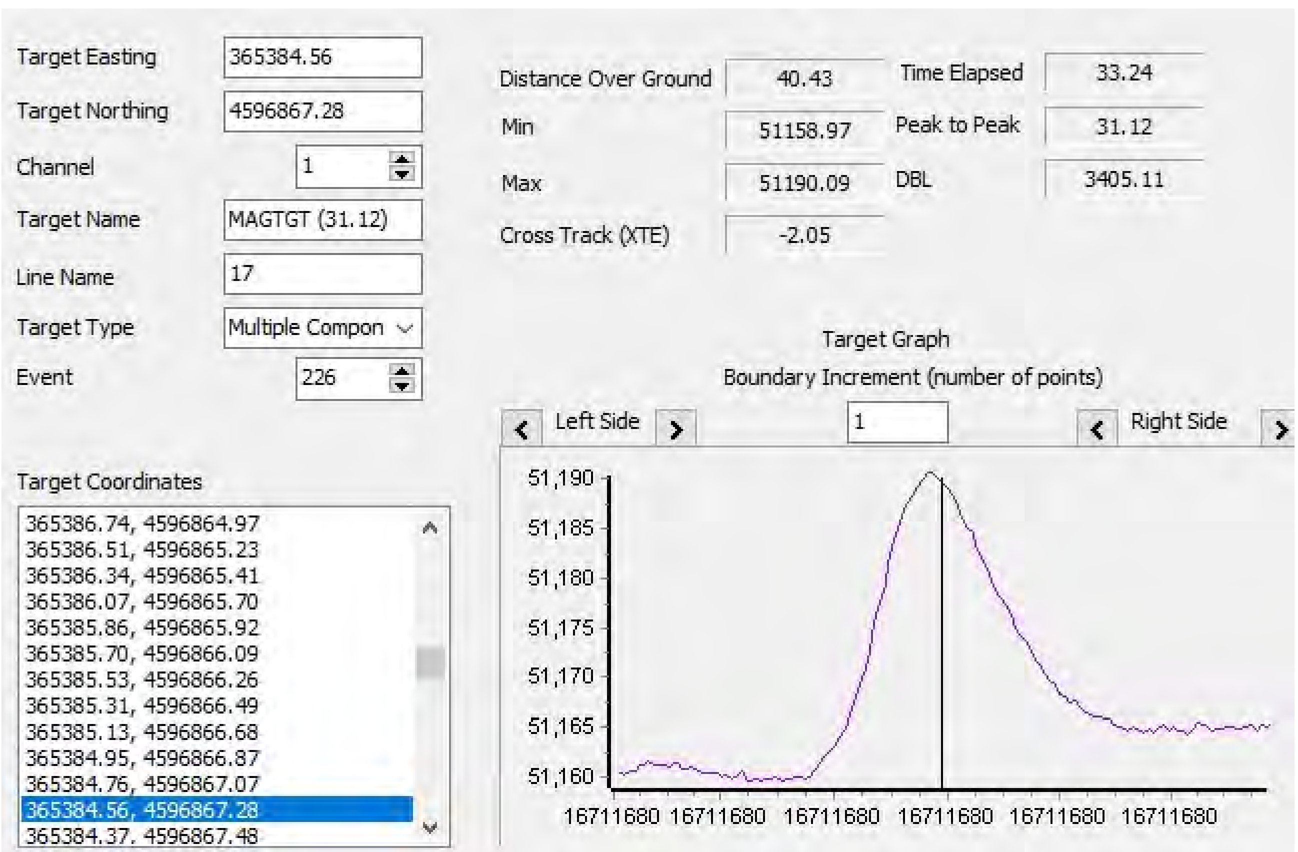
Name	Date	10/05/2021
MAGTGT (139.11)	Time	12:26:01
Survey File	Event	180
7	X	365460.0
Capture File	Y	4597065.0
365460.50.4597065.42.139.11.51233.82.1.jpg	WGS84 Latitude	41 30 50.1298 N
	WGS84 Longitude	070 36 44.2634 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



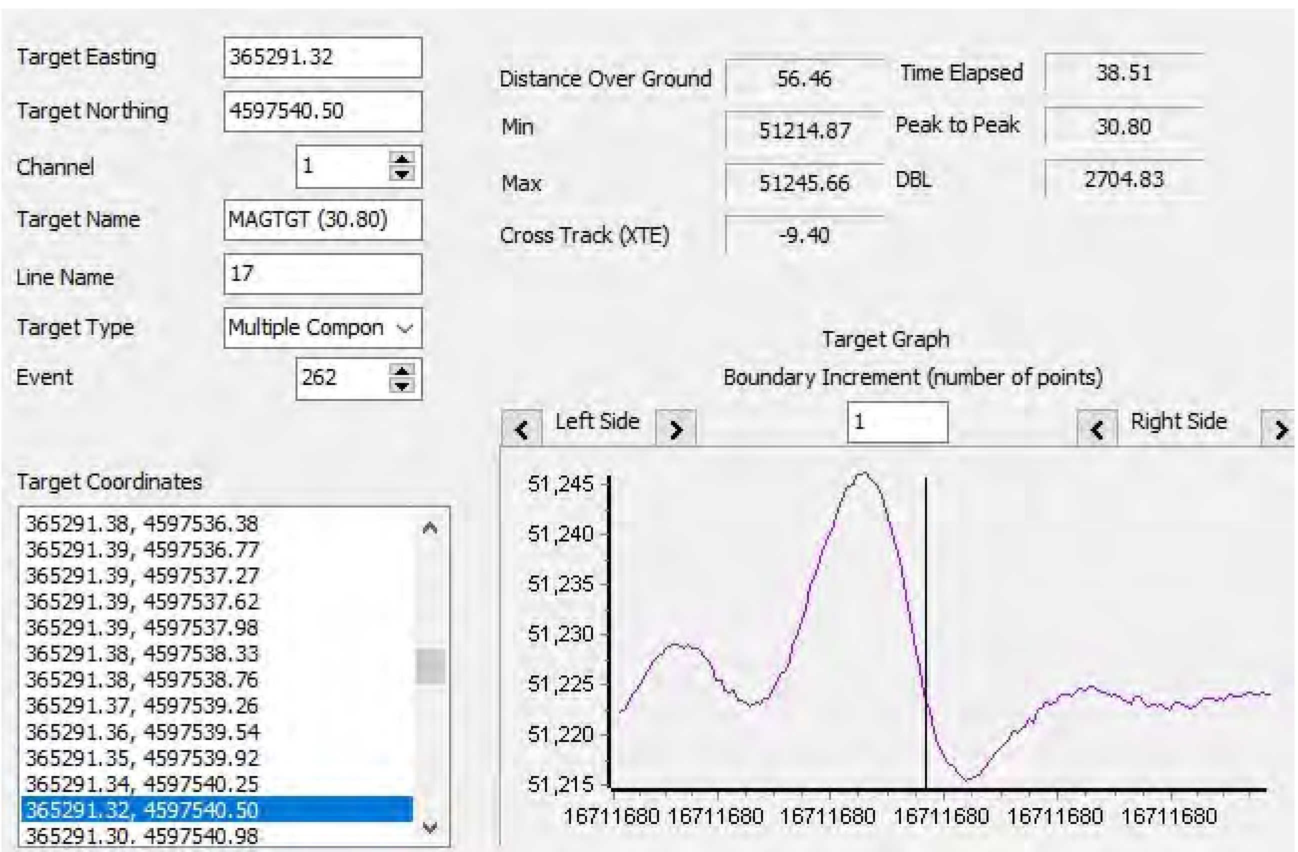
Name	Date	10/05/2021
MAGTGT (31.12)	Time	12:26:13
Survey File	Event	226
17	X	365384.0
Capture File	Y	4596867.0
365384.56.4596867.28.31.12.51188.44.2.jpg	WGS84 Latitude	41 30 43.6659 N
	WGS84 Longitude	070 36 47.3815 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



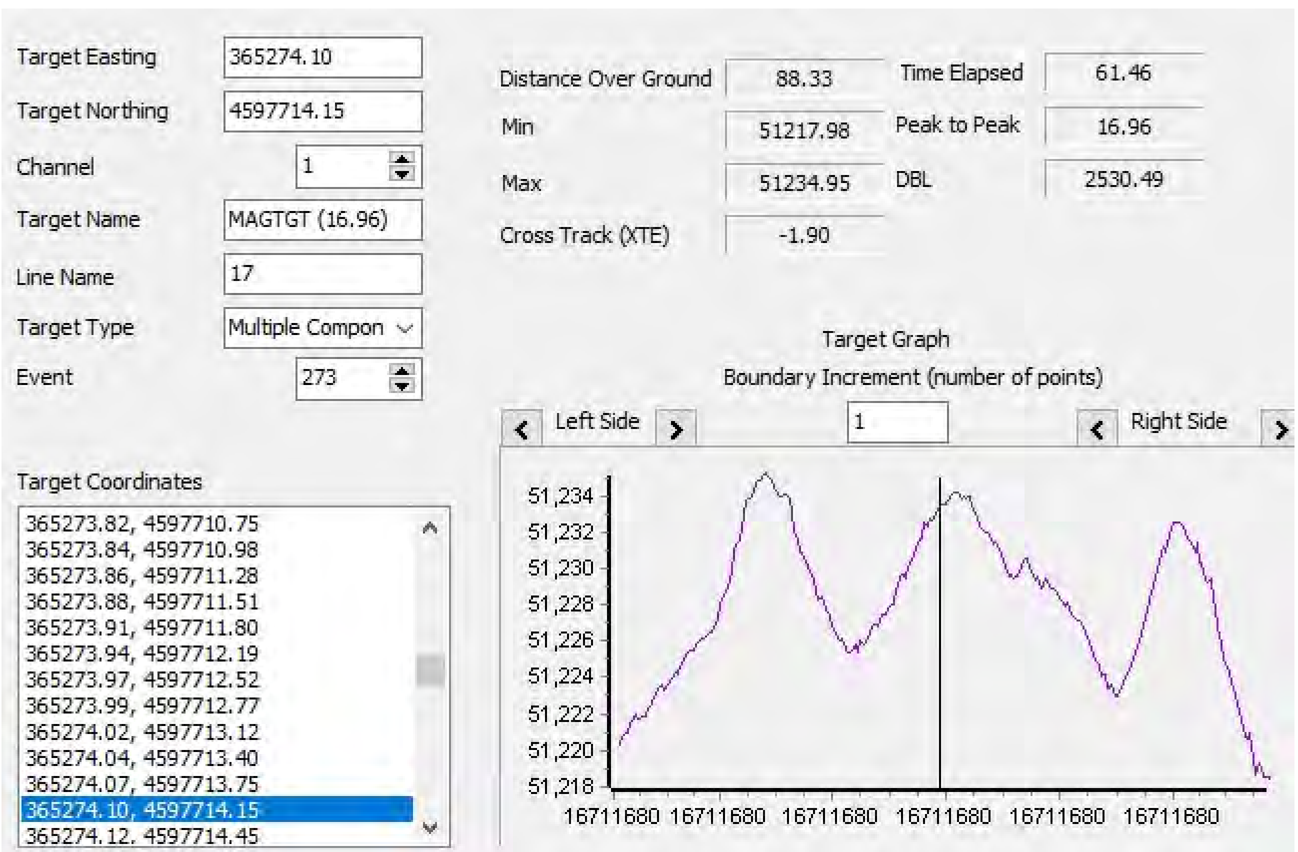
Name	Date	10/05/2021
MAGTGT (30.80)	Time	12:26:23
Survey File	Event	262
17	X	365291.0
Capture File	Y	4597540.0
365291.32.4597540.50.30.80. 51220.80.2.jpg	WGS84 Latitude	41 31 5.4241 N
	WGS84 Longitude	070 36 51.9342 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



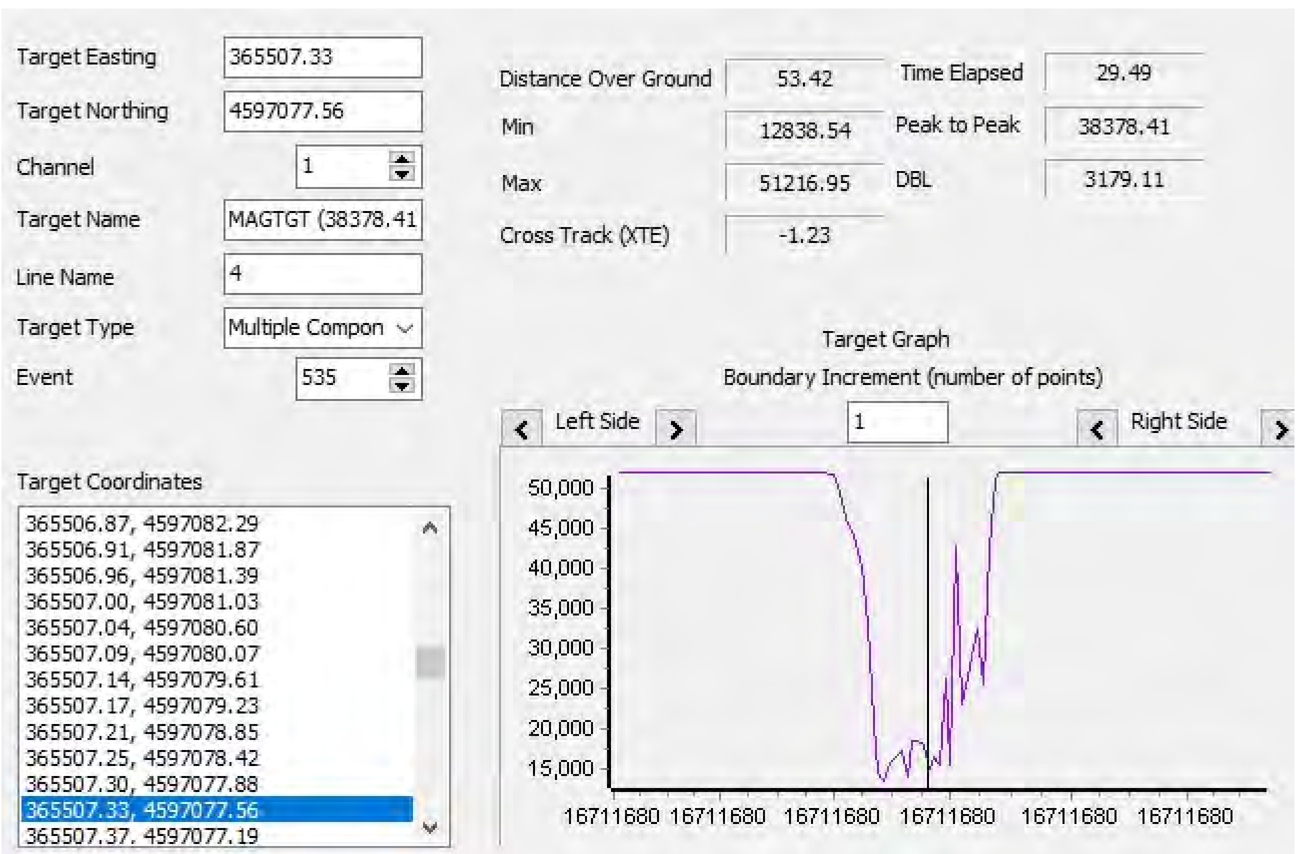
Name	Date	10/05/2021
MAGTGT (16.96)	Time	12:26:33
Survey File	Event	273
17	X	365274.0
Capture File	Y	4597714.0
365274.10.4597714.15.16.96.51233.22.2.jpg	WGS84 Latitude	41 31 11.0538 N
	WGS84 Longitude	070 36 52.8076 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



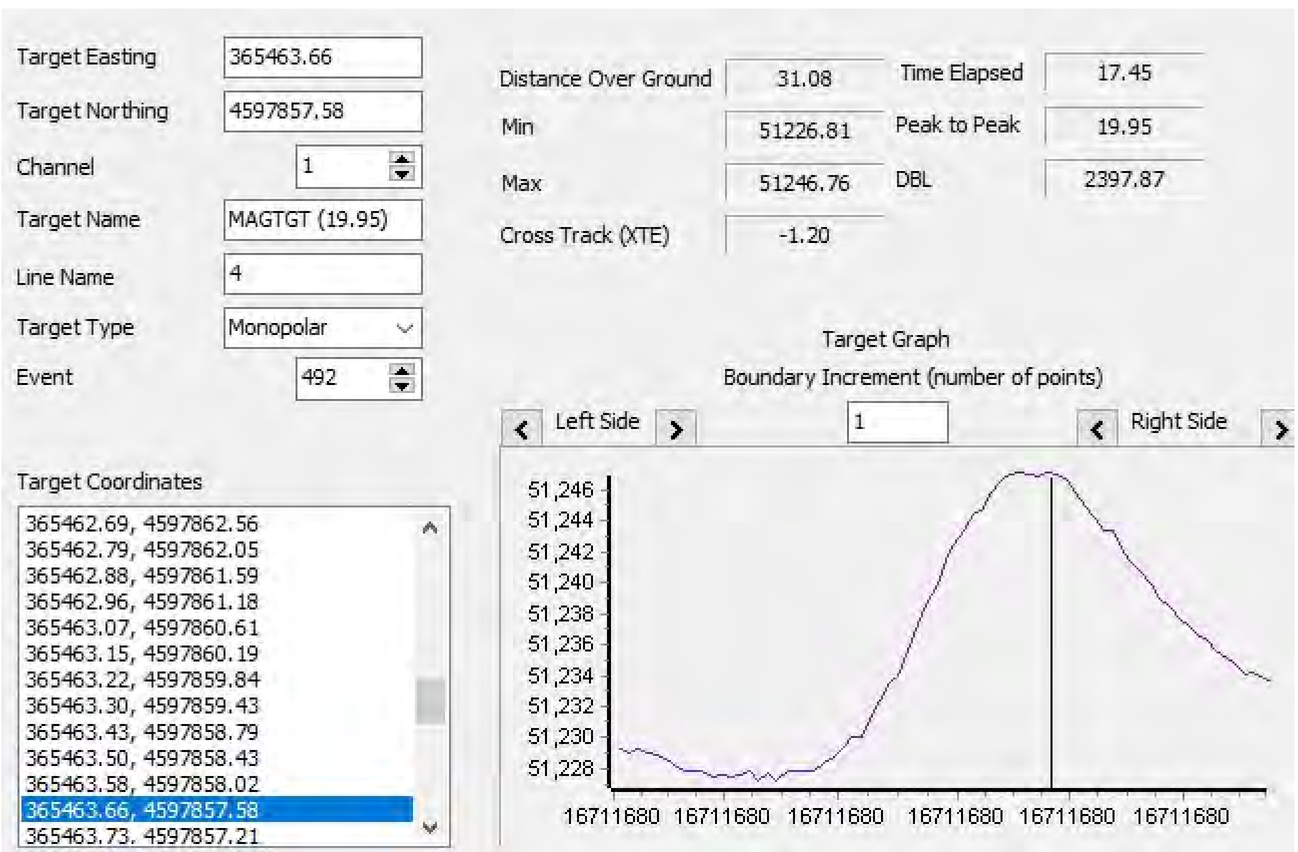
Name	Date	10/05/2021
MAGTGT (38378.41)	Time	12:26:50
Survey File	Event	535
4	X	365507.0
Capture File	Y	4597077.0
365507.33.4597077.56.38378.41.15948.32.3.jpg	WGS84 Latitude	41 30 50.5472 N
	WGS84 Longitude	070 36 42.2461 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



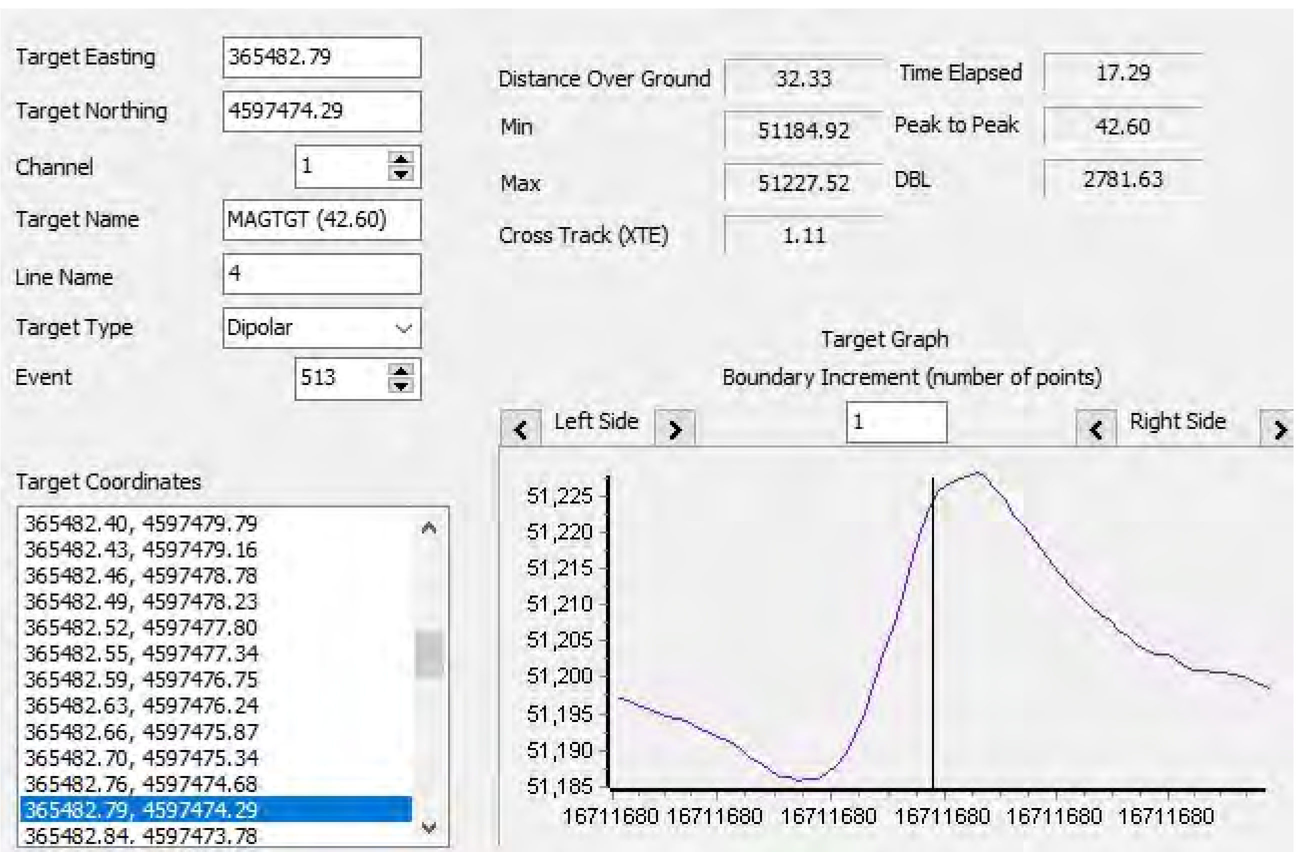
Name	Date	10/05/2021
MAGTGT (19.95)	Time	12:27:13
Survey File	Event	492
4	X	365463.0
Capture File	Y	4597857.0
365463.66.4597857.58.19.95. 51241.07.3.jpg	WGS84 Latitude	41 31 15.8034 N
	WGS84 Longitude	070 36 44.7713 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



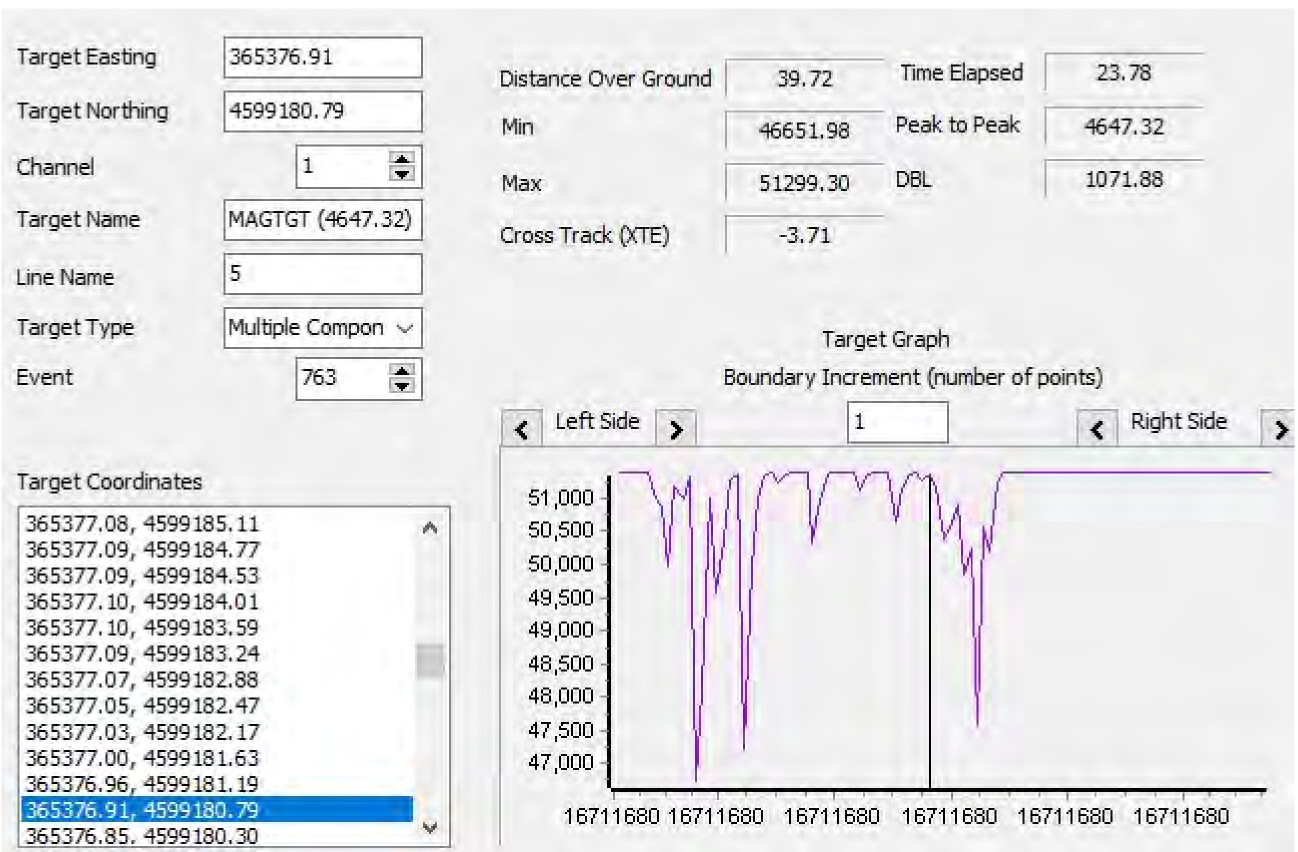
Name	Date	10/05/2021
MAGTGT (42.60)	Time	12:27:25
Survey File	Event	513
4	X	365482.0
Capture File	Y	4597474.0
365482.79.4597474.29.42.60.51225.16.3.jpg	WGS84 Latitude	41 31 3.4004 N
	WGS84 Longitude	070 36 43.6436 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



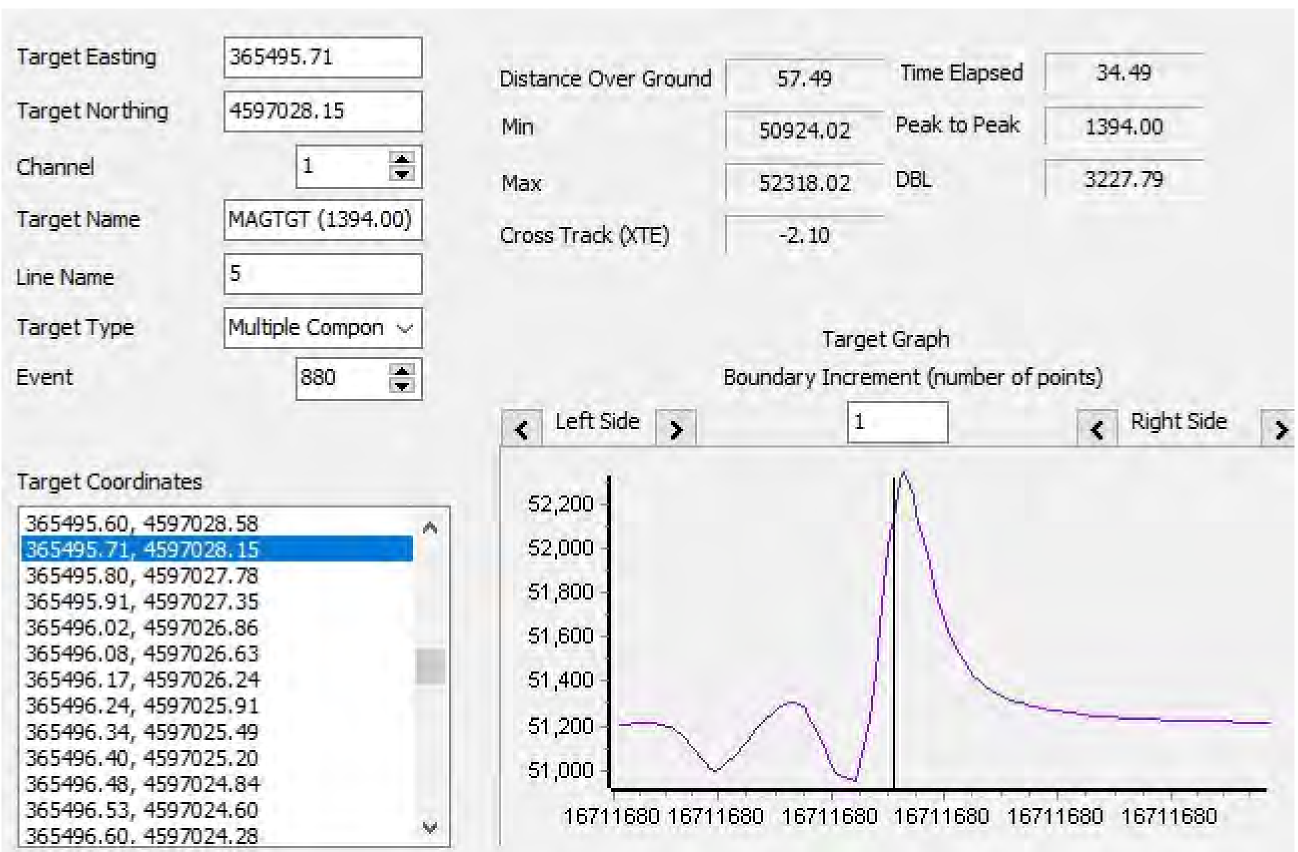
Name	Date	10/05/2021
MAGTGT (4647.32)	Time	12:28:37
Survey File	Event	763
5	X	365376.0
Capture File	Y	4599180.0
365376.91.4599180.79.4647.32.51078.74.5.jpg	WGS84 Latitude	41 31 58.6342 N
	WGS84 Longitude	070 36 49.5894 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



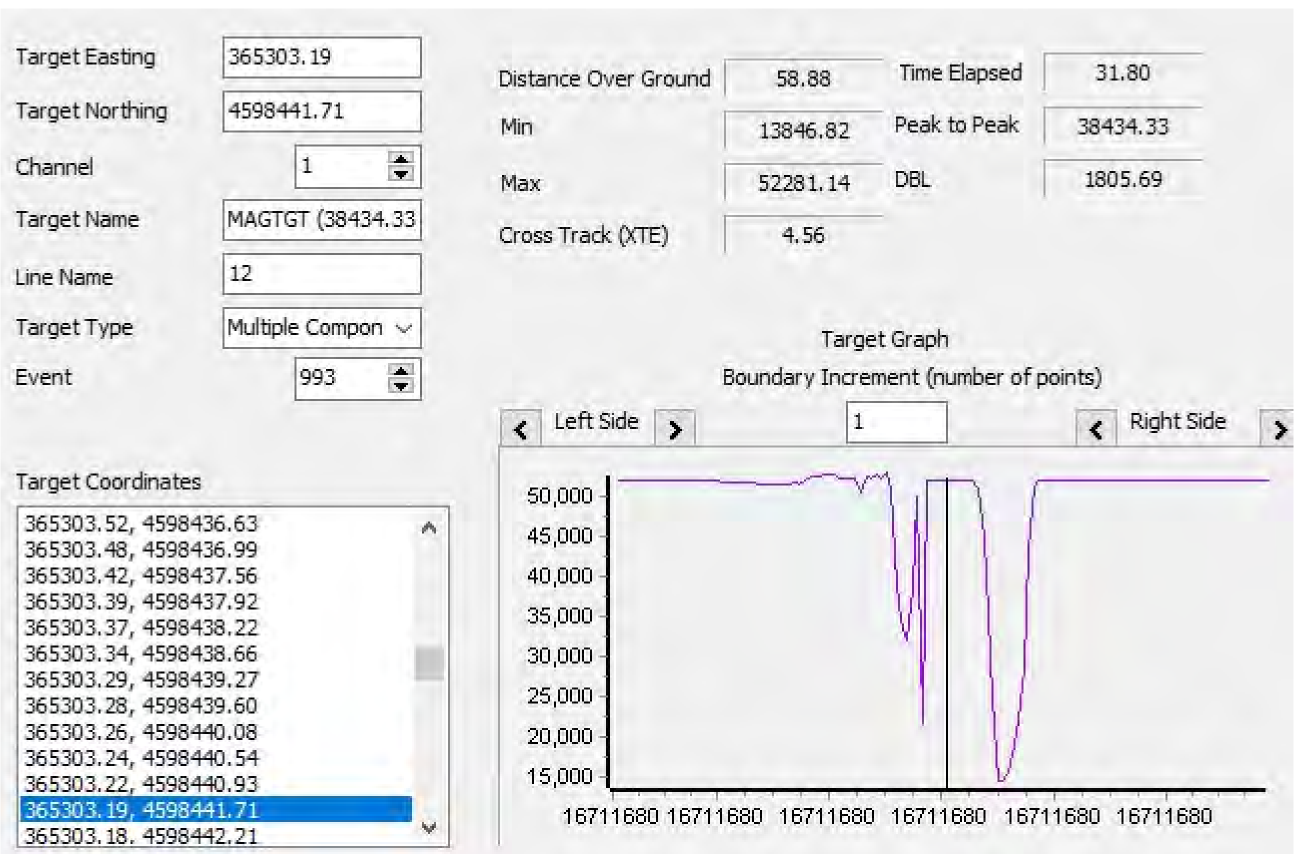
Name	Date	10/05/2021
MAGTGT (1394.00)	Time	12:28:55
Survey File	Event	880
5	X	365495.0
Capture File	Y	4597028.0
365495.71.4597028.15.1394.0 0.51626.82.5.jpg	WGS84 Latitude	41 30 48.9516 N
	WGS84 Longitude	070 36 42.7242 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



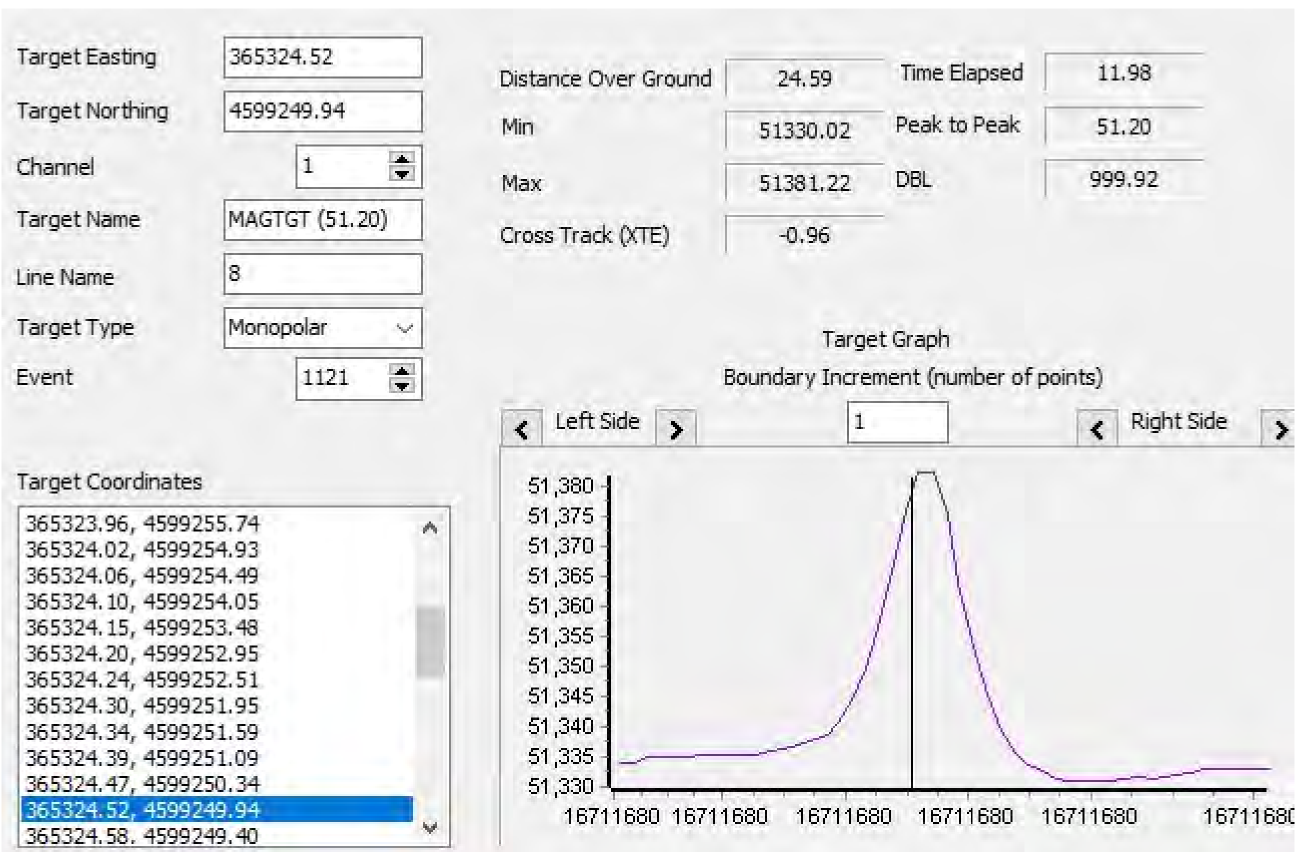
Name	Date	10/05/2021
MAGTGT (38434.33)	Time	12:29:21
Survey File	Event	993
12	X	365303.0
Capture File	Y	4598441.0
365303.19.4598441.71.38434.33.51244.21.6.jpg	WGS84 Latitude	41 31 34.6362 N
	WGS84 Longitude	070 36 52.1427 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



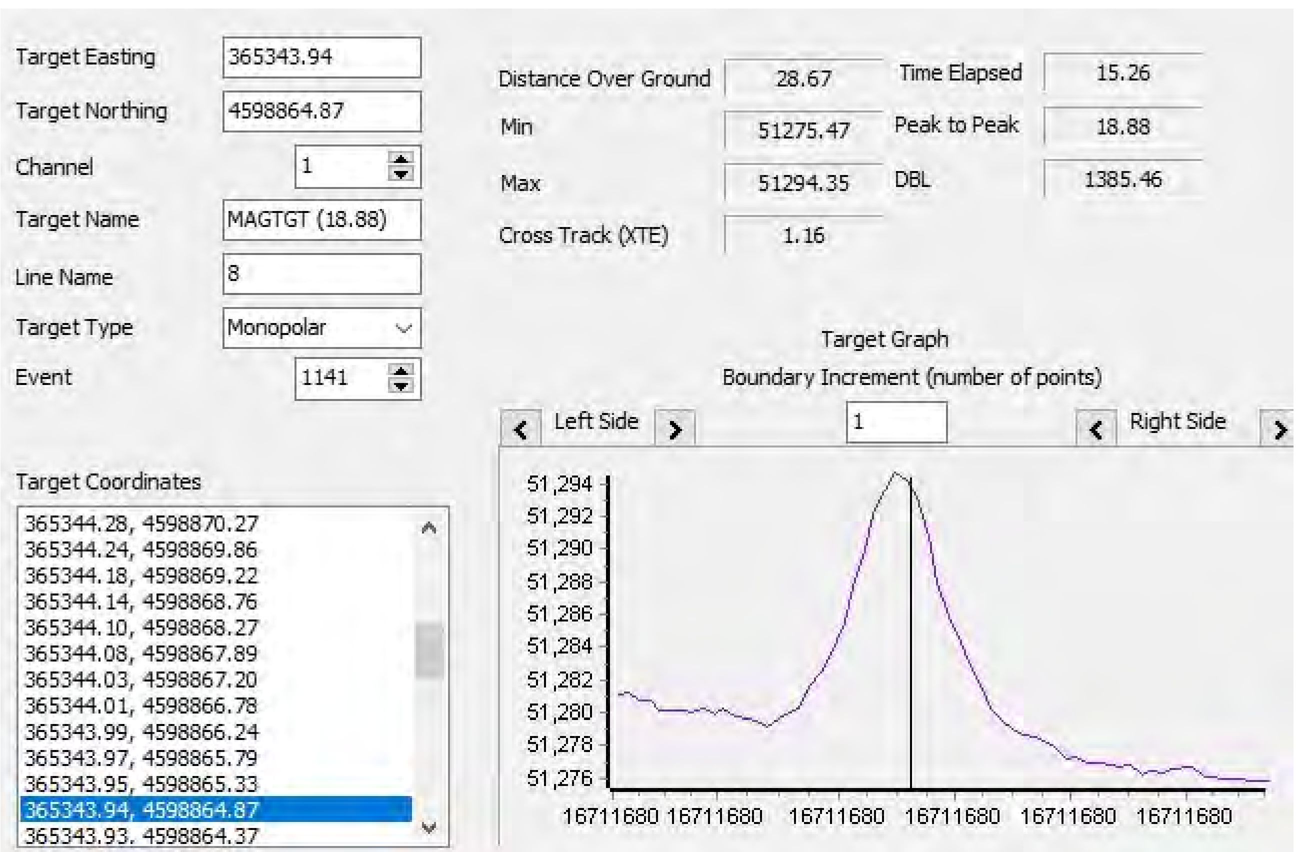
Name	Date	10/05/2021
MAGTGT (51.20)	Time	12:30:50
Survey File	Event	1121
8	X	365324.0
Capture File	Y	4599249.0
365324.52.4599249.94.51.20. 51381.22.8.jpg	WGS84 Latitude	41 32 0.8393 N
	WGS84 Longitude	070 36 51.8882 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



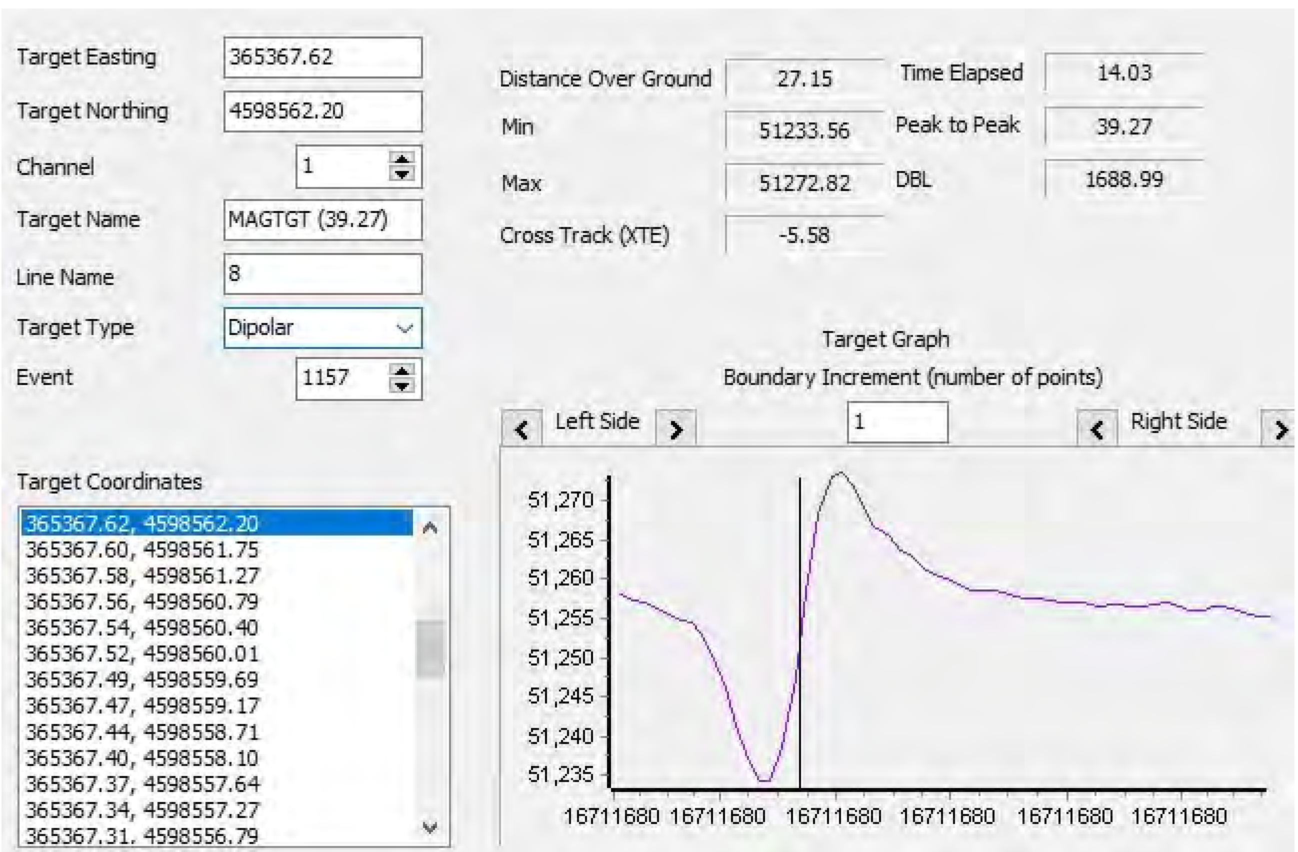
Name	Date	10/05/2021
MAGTGT (18.88)	Time	12:31:01
Survey File	Event	1141
8	X	365343.0
Capture File	Y	4598864.0
365343.94.4598864.87.18.88.51292.84.8.jpg	WGS84 Latitude	41 31 48.3715 N
	WGS84 Longitude	070 36 50.7582 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



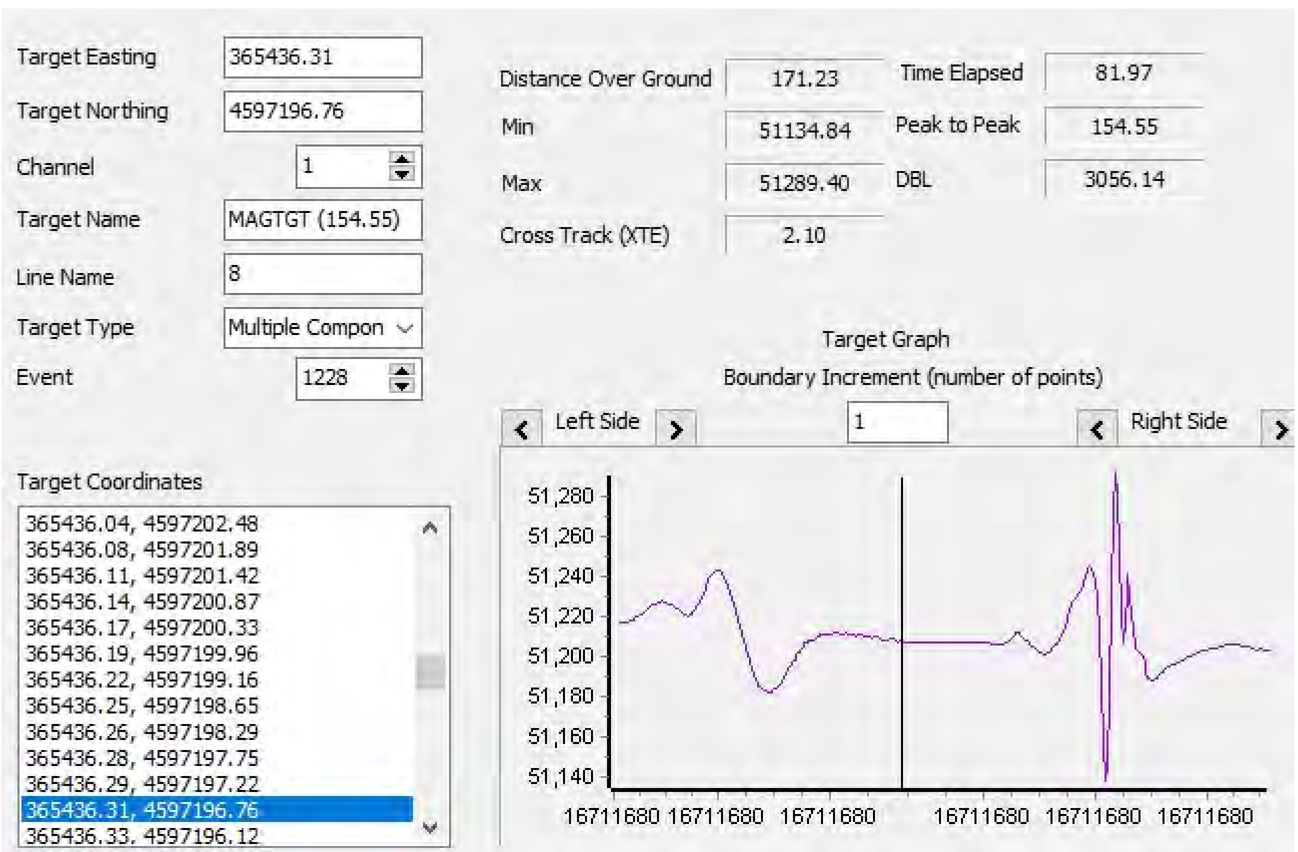
Name	Date	10/05/2021
MAGTGT (39.27)	Time	12:31:14
Survey File	Event	1157
8	X	365367.0
Capture File	Y	4598562.0
365367.62.4598562.20.39.27.51259.90.8.jpg	WGS84 Latitude	41 31 38.597 N
	WGS84 Longitude	070 36 49.4796 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



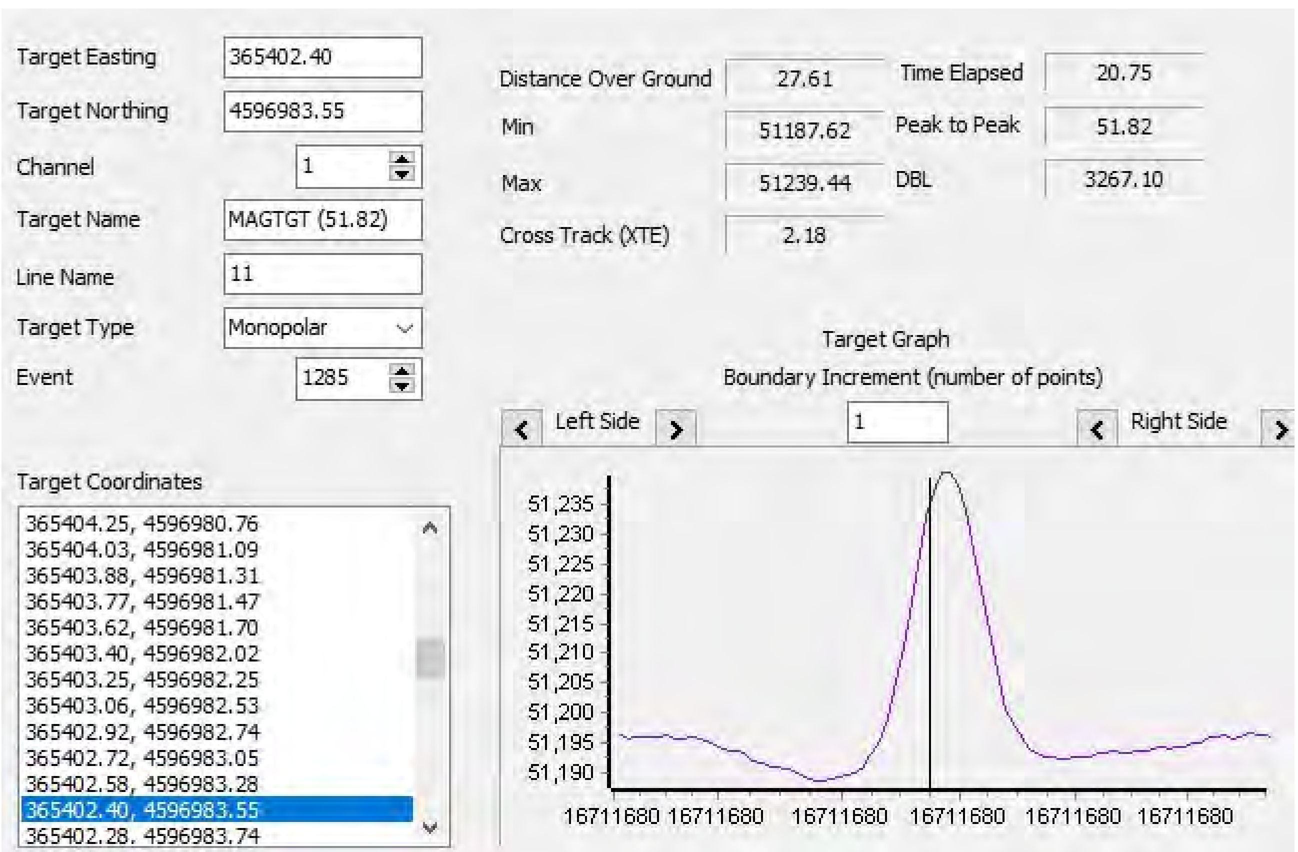
Name	Date	10/05/2021
MAGTGT (154.55)	Time	12:31:30
Survey File	Event	1228
8	X	365436.0
Capture File	Y	4597196.0
365436.31.4597196.76.154.55 .51204.33.8.jpg	WGS84 Latitude	41 30 54.3615 N
	WGS84 Longitude	070 36 45.4038 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



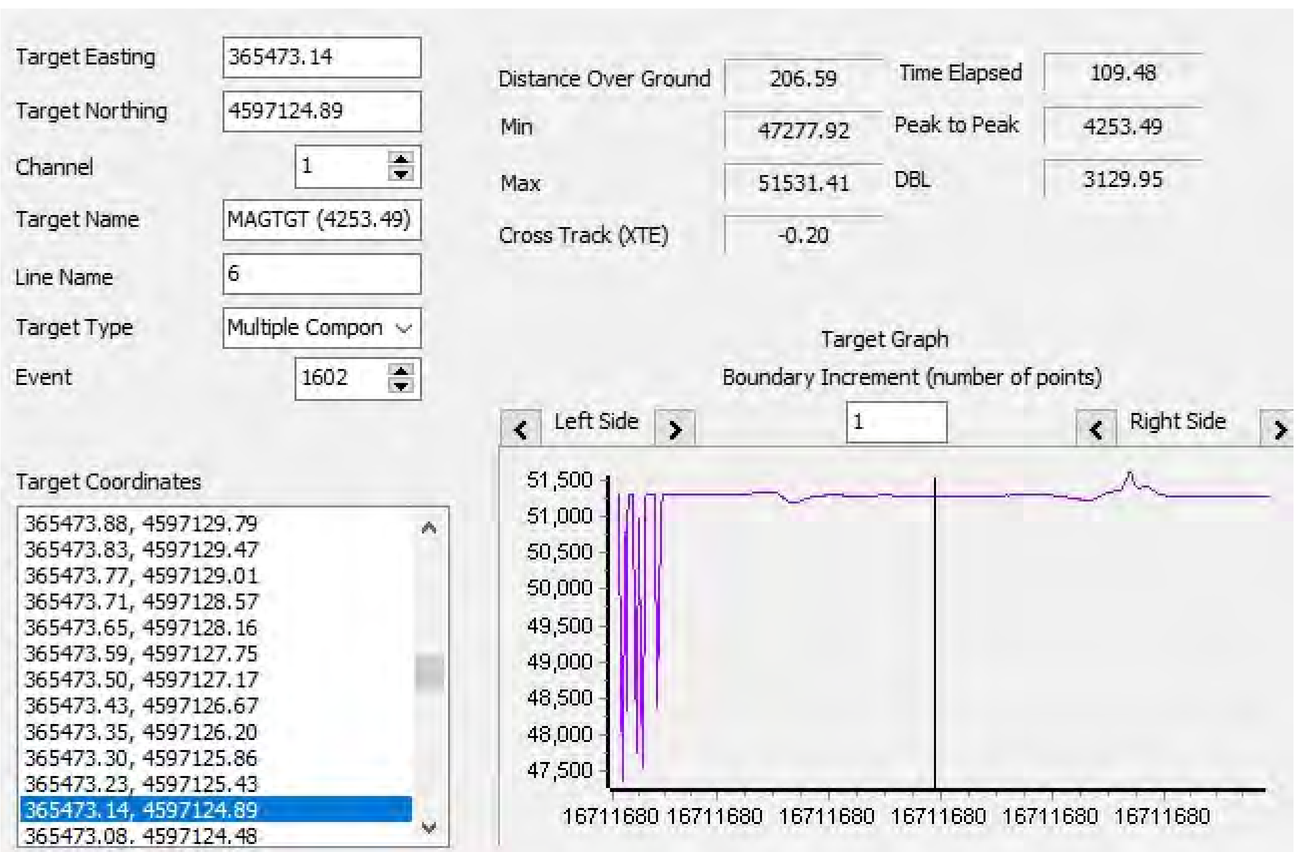
Name	Date	10/05/2021
MAGTGT (51.82)	Time	12:32:09
Survey File	Event	1285
11	X	365402.0
Capture File	Y	4596983.0
365402.40.4596983.55.51.82.51237.16.9.jpg	WGS84 Latitude	41 30 47.4368 N
	WGS84 Longitude	070 36 46.6986 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



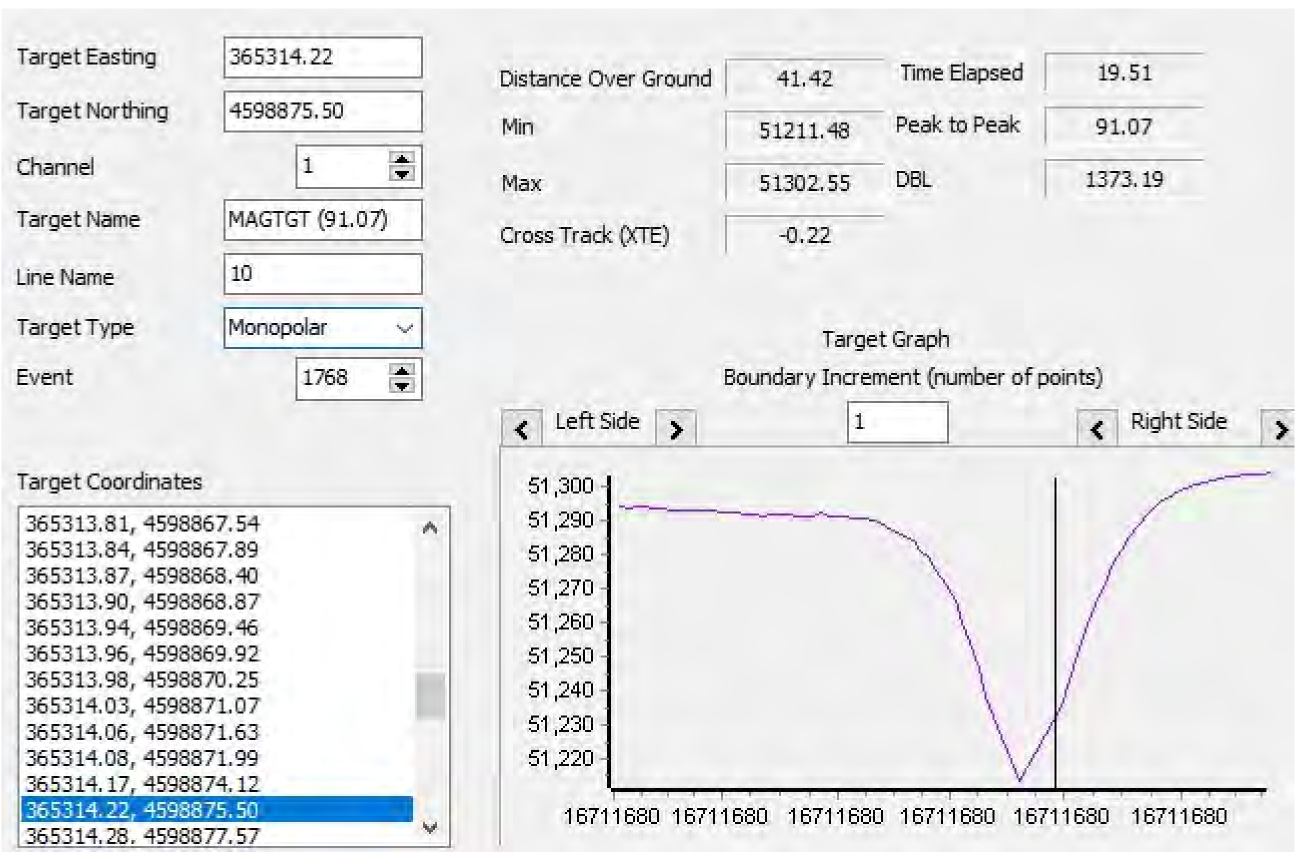
Name	Date	10/05/2021
MAGTGT (4253.49)	Time	12:32:48
Survey File	Event	1602
6	X	365473.0
Capture File	Y	4597124.0
365473.14.4597124.89.4253.49.51209.65.11.jpg	WGS84 Latitude	41 30 52.0501 N
	WGS84 Longitude	070 36 43.7502 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



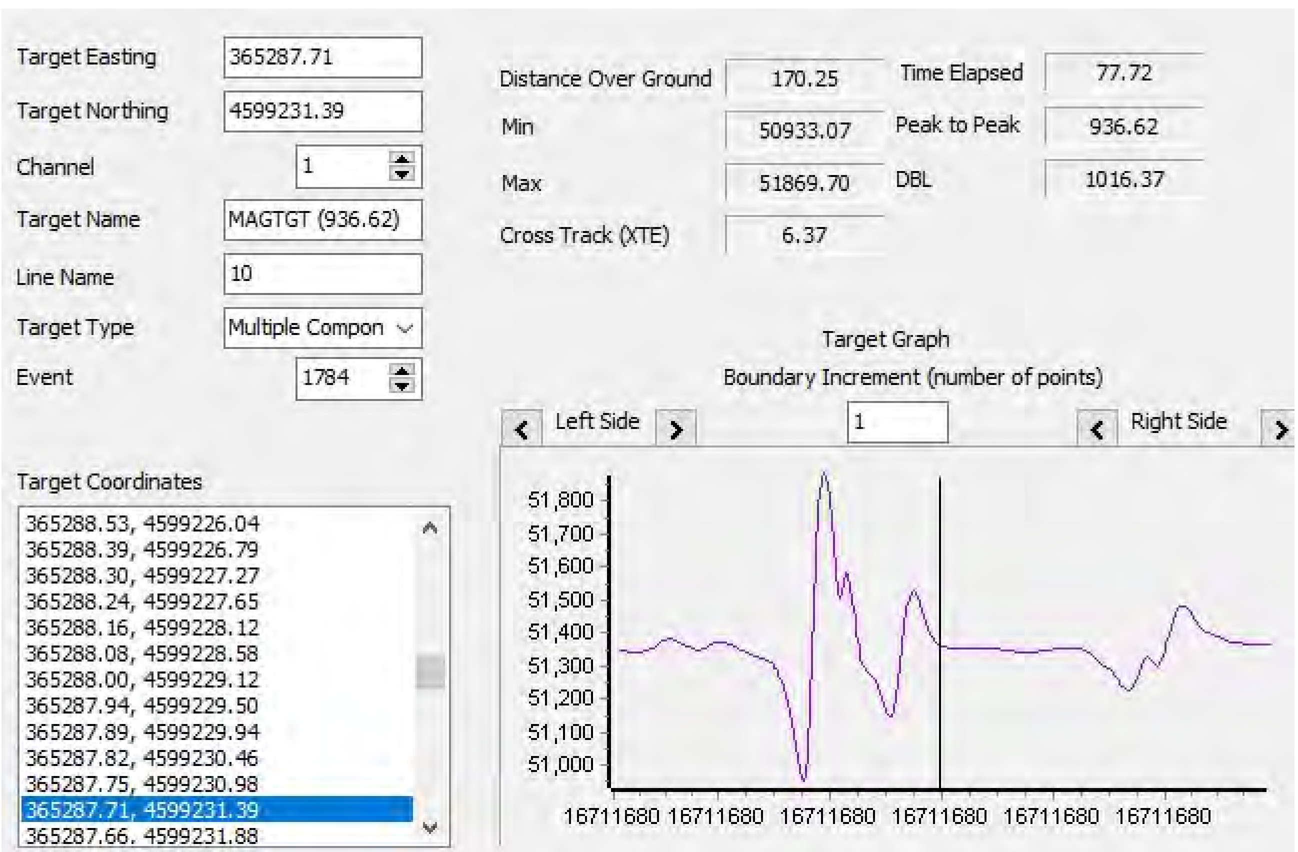
Name	Date	10/05/2021
MAGTGT (91.07)	Time	12:33:06
Survey File	Event	1768
10	X	365314.0
Capture File	Y	4598875.0
365314.22.4598875.50.91.07.51282.21.12.jpg	WGS84 Latitude	41 31 48.7105 N
	WGS84 Longitude	070 36 52.018 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



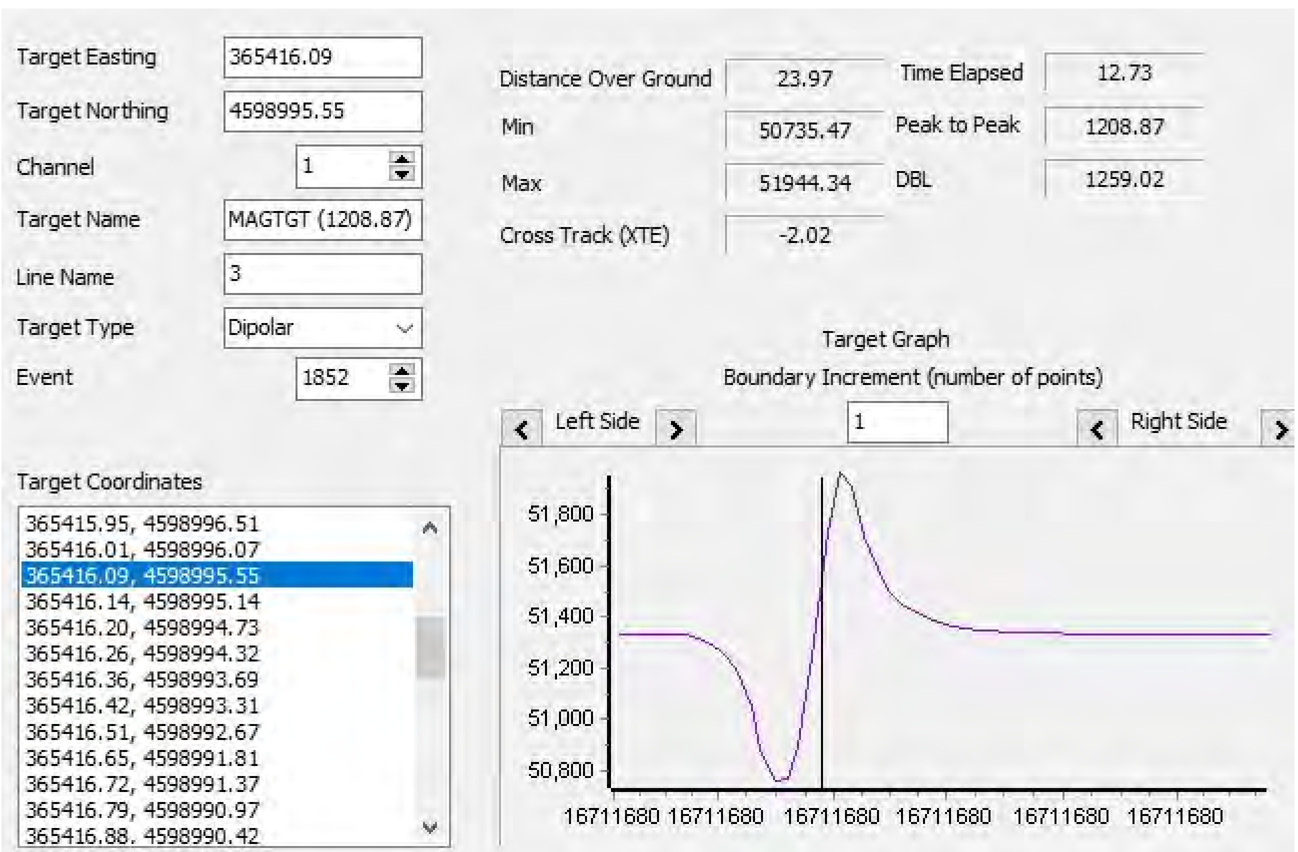
Name	Date	10/05/2021
MAGTGT (936.62)	Time	12:33:17
Survey File	Event	1784
10	X	365287.0
Capture File	Y	4599231.0
365287.71.4599231.39.936.62 .51337.70.12.jpg	WGS84 Latitude	41 32 0.2334 N
	WGS84 Longitude	070 36 53.4697 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



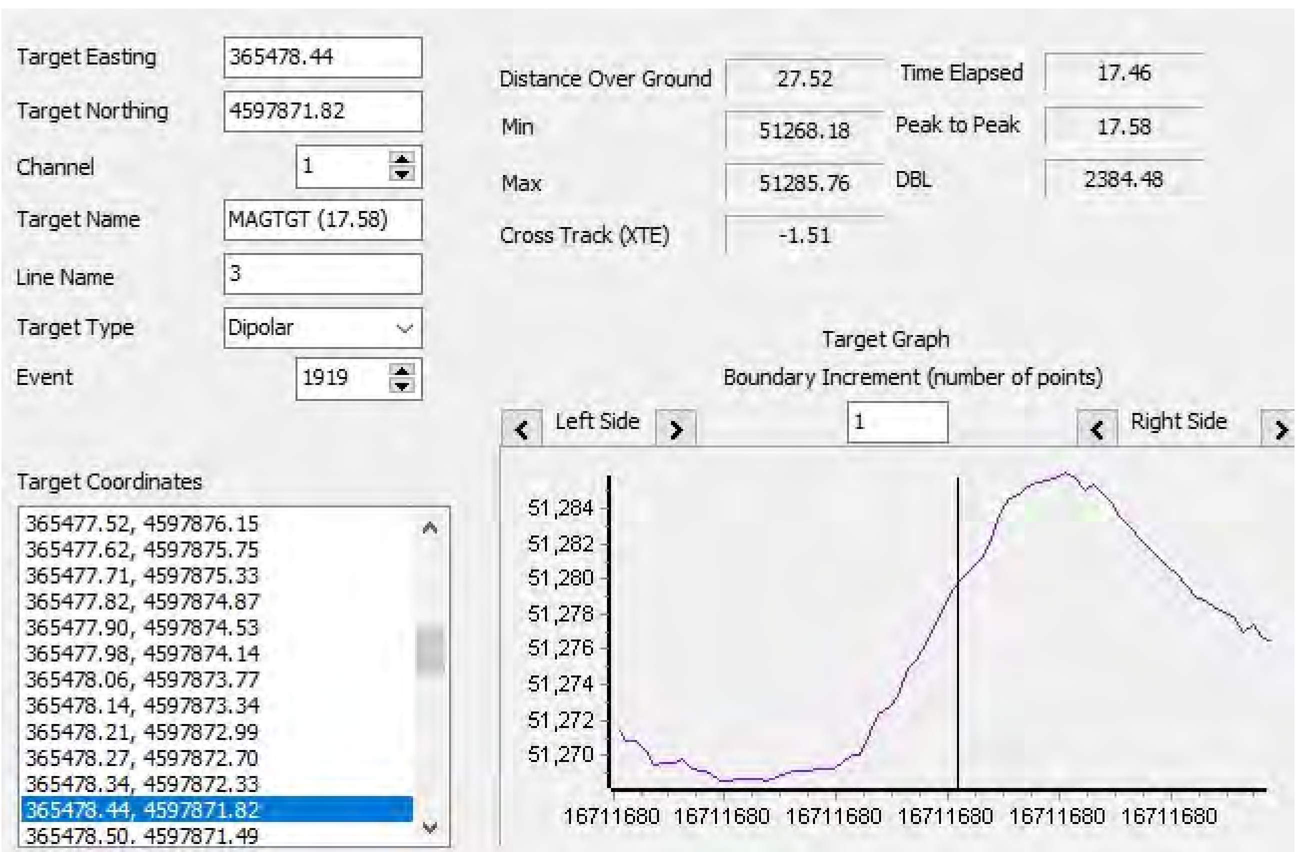
Name	Date	10/05/2021
MAGTGT (1208.87)	Time	12:33:37
Survey File	Event	1852
3	X	365416.0
Capture File	Y	4598995.0
365416.09.4598995.55.1208.87.51339.68.13.jpg	WGS84 Latitude	41 31 52.6619 N
	WGS84 Longitude	070 36 47.7148 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



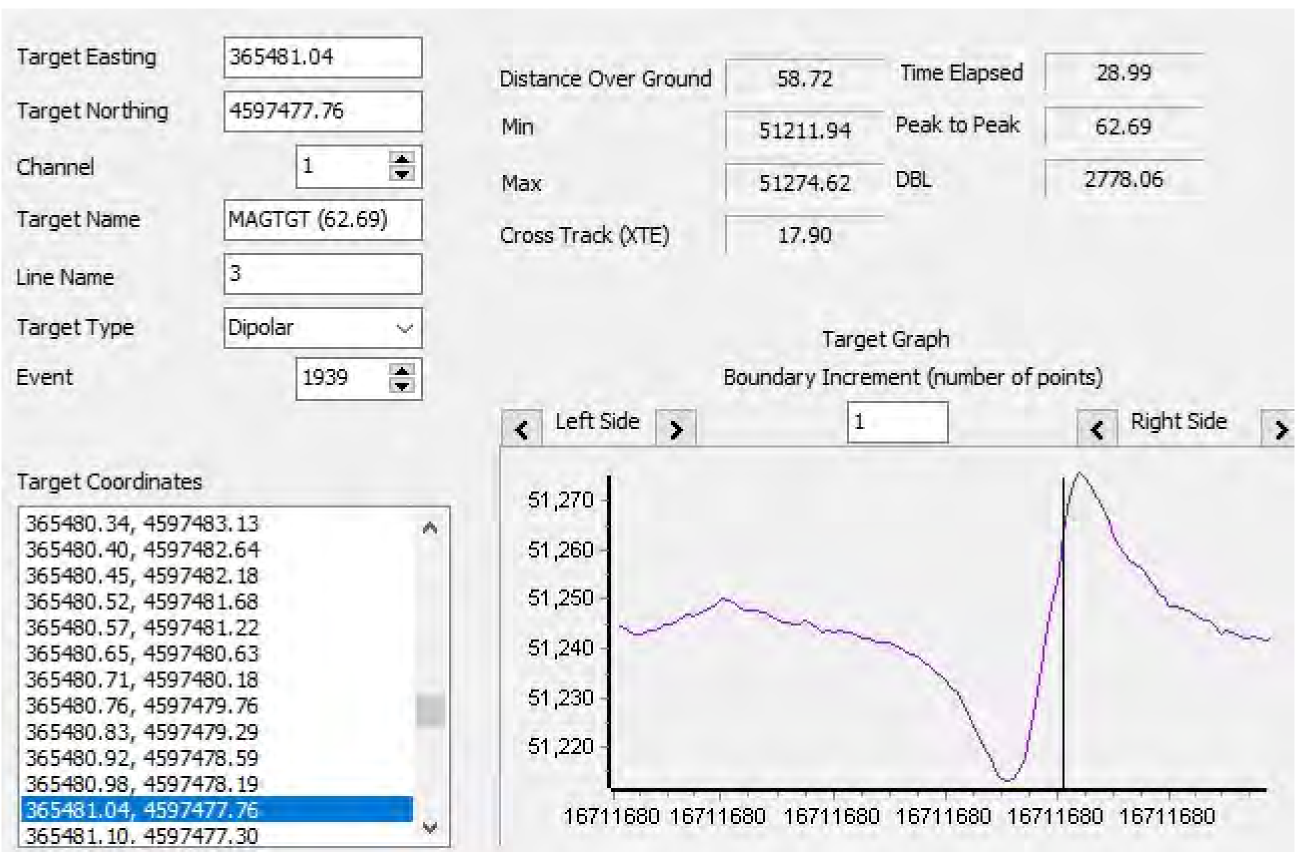
Name	Date	10/05/2021
MAGTGT (17.58)	Time	12:34:02
Survey File	Event	1919
3	X	365478.0
Capture File	Y	4597871.0
365478.44.4597871.82.17.58. 51279.77.13.jpg	WGS84 Latitude	41 31 16.2663 N
	WGS84 Longitude	070 36 44.1356 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



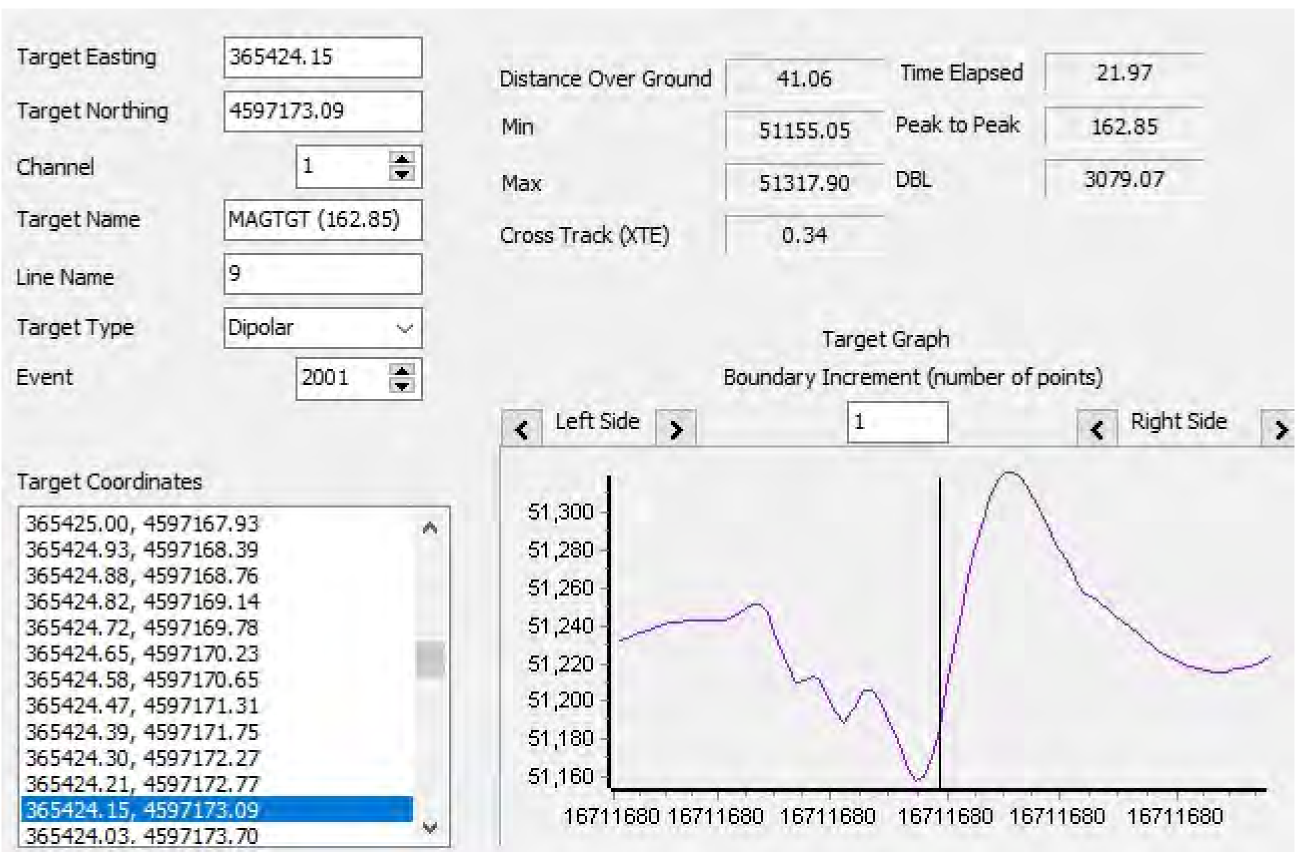
Name	Date	10/05/2021
MAGTGT (62.69)	Time	12:34:11
Survey File	Event	1939
3	X	365481.0
Capture File	Y	4597477.0
365481.04.4597477.76.62.69.51229.88.13.jpg	WGS84 Latitude	41 31 3.497 N
	WGS84 Longitude	070 36 43.6892 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



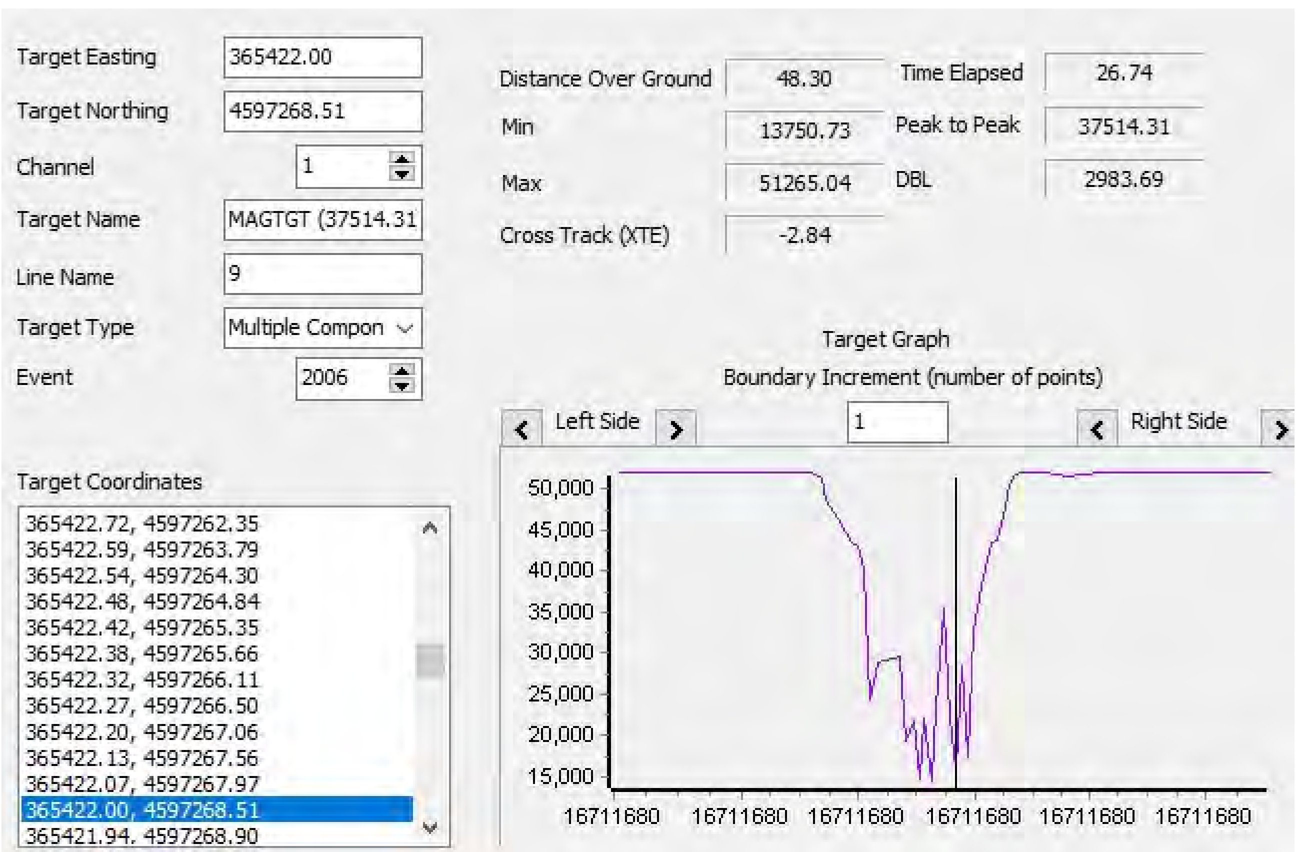
Name	Date	10/05/2021
MAGTGT (162.85)	Time	12:34:37
Survey File	Event	2001
9	X	365424.0
Capture File	Y	4597173.0
365424.15.4597173.09.162.85.51203.40.14.jpg	WGS84 Latitude	41 30 53.6087 N
	WGS84 Longitude	070 36 45.9028 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



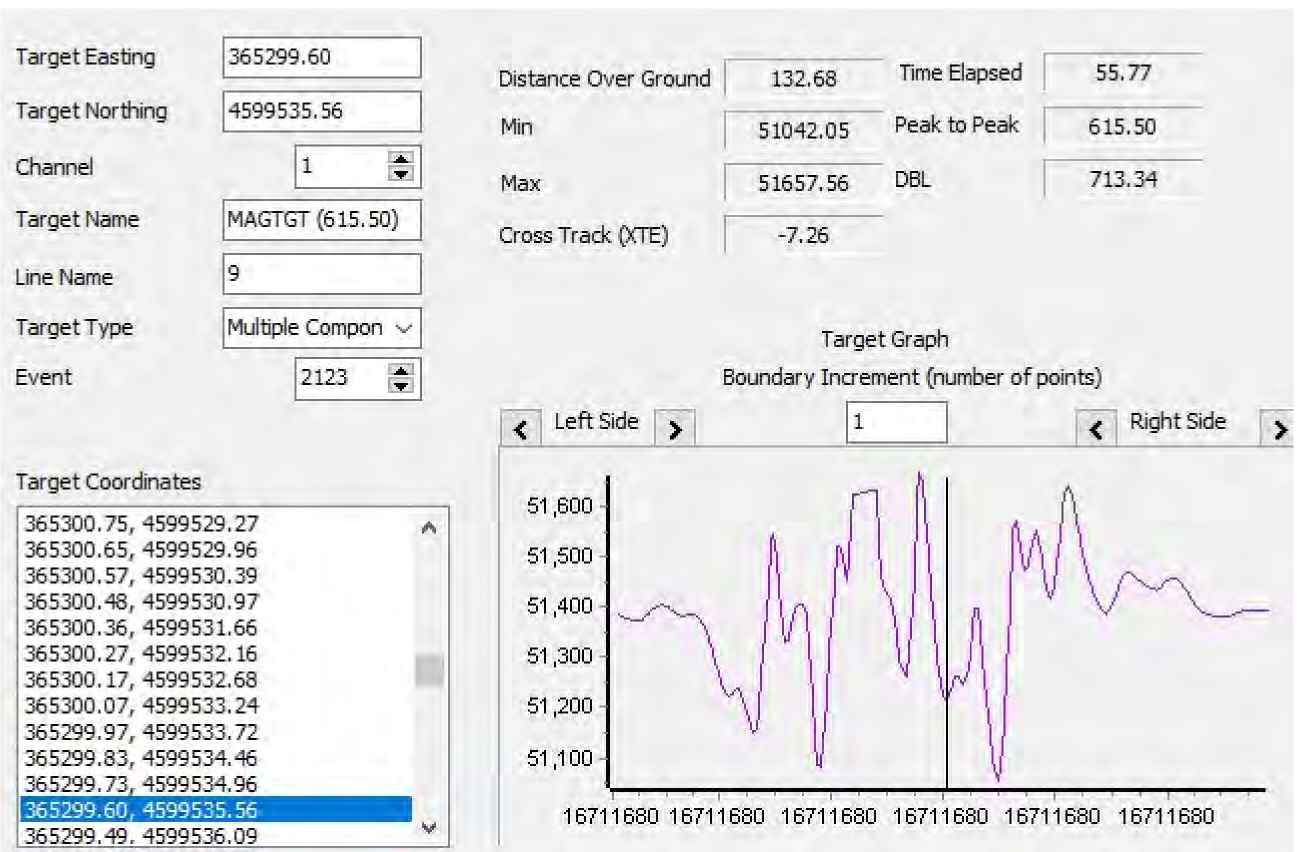
Name	Date	10/05/2021
MAGTGT (37514.31)	Time	12:34:51
Survey File	Event	2006
9	X	365421.0
Capture File	Y	4597268.0
365422.00.4597268.51.37514.31.27646.19.14.jpg	WGS84 Latitude	41 30 56.6862 N
	WGS84 Longitude	070 36 46.1086 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



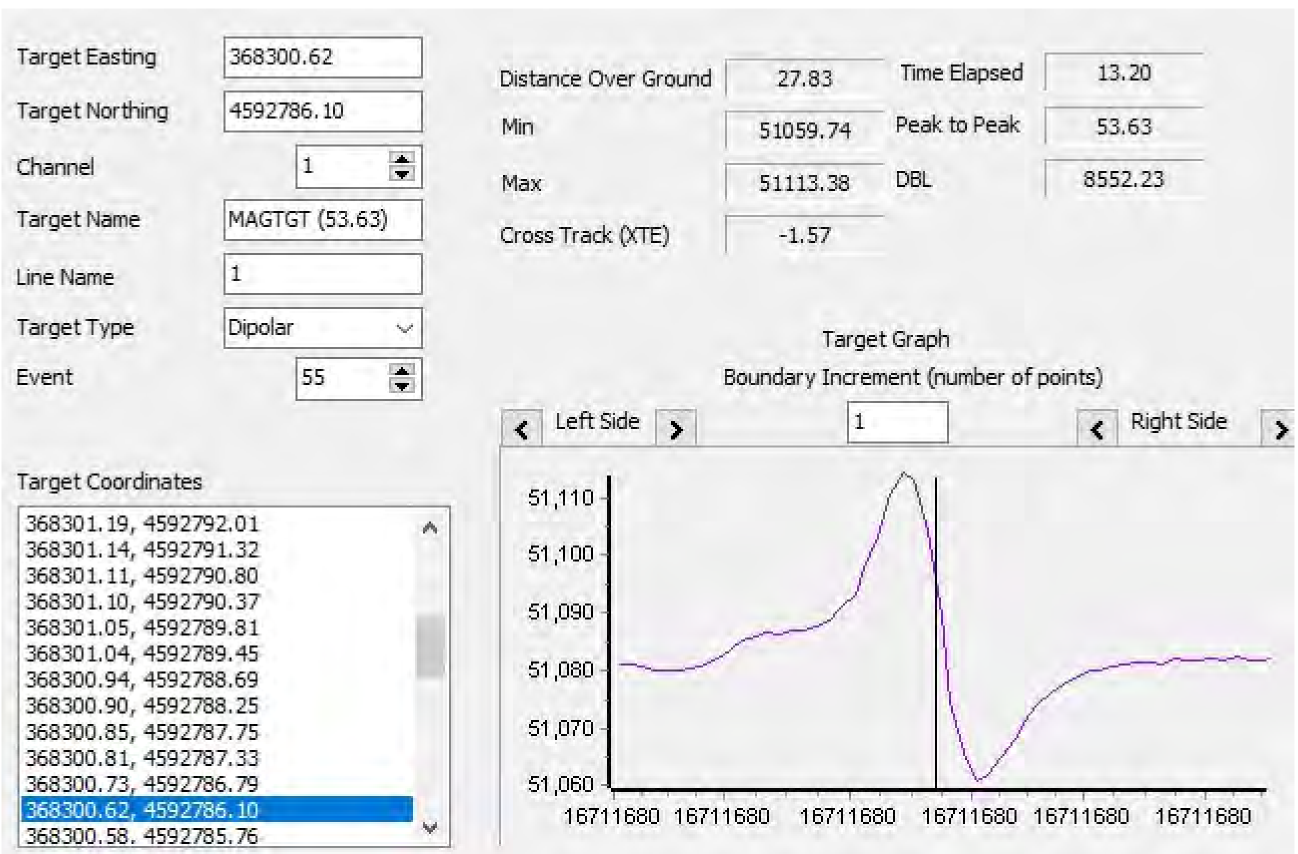
Name	Date	10/05/2021
MAGTGT (615.50)	Time	12:35:09
Survey File	Event	2123
9	X	365299.0
Capture File	Y	4599535.0
365299.60.4599535.56.615.50 .51235.32.14.jpg	WGS84 Latitude	41 32 10.0944 N
	WGS84 Longitude	070 36 53.1972 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



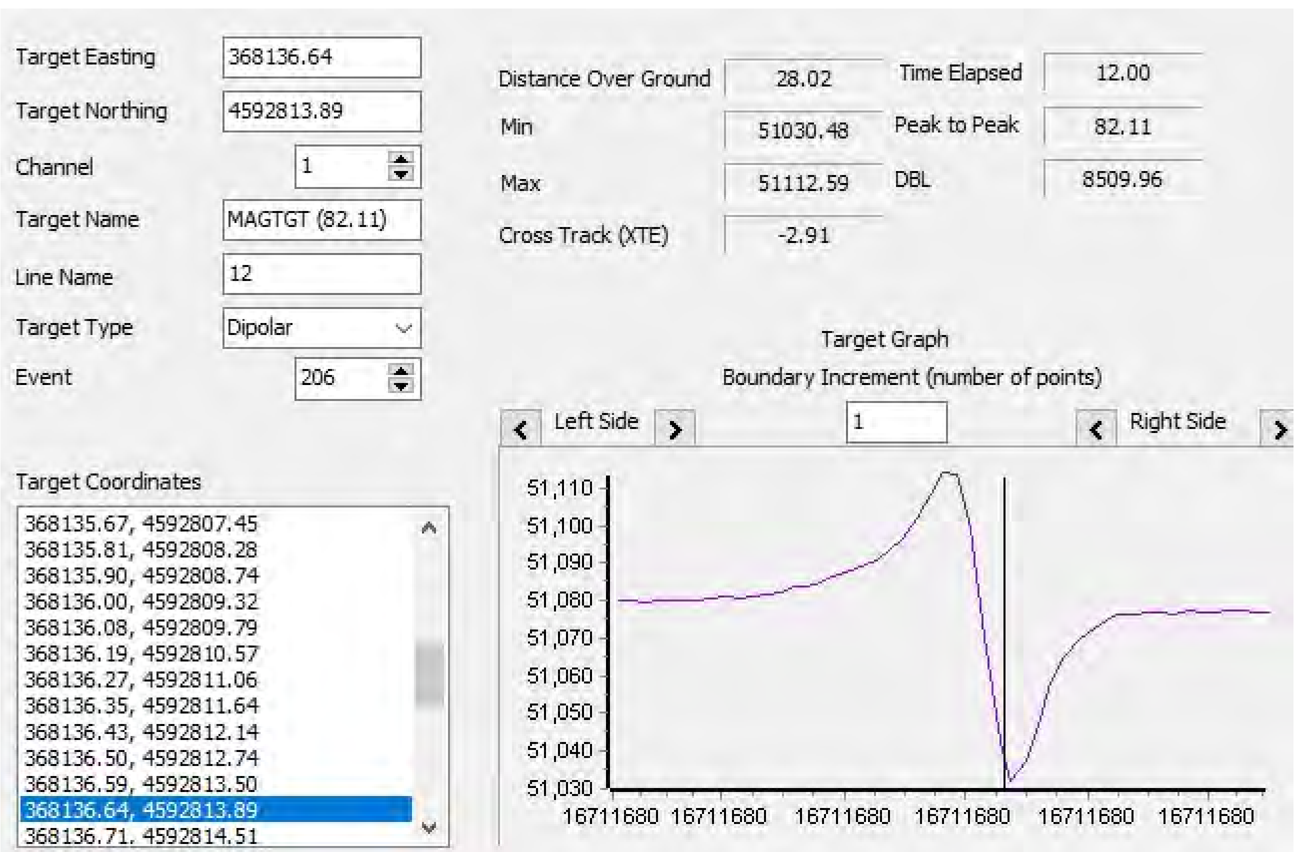
Name	Date	10/05/2021
MAGTGT (53.63)	Time	12:46:01
Survey File	Event	55
1	X	368300.0
Capture File	Y	4592786.0
368300.62.4592786.10.53.63. 51088.51.0.jpg	WGS84 Latitude	41 28 33.1273 N
	WGS84 Longitude	070 34 38.4197 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



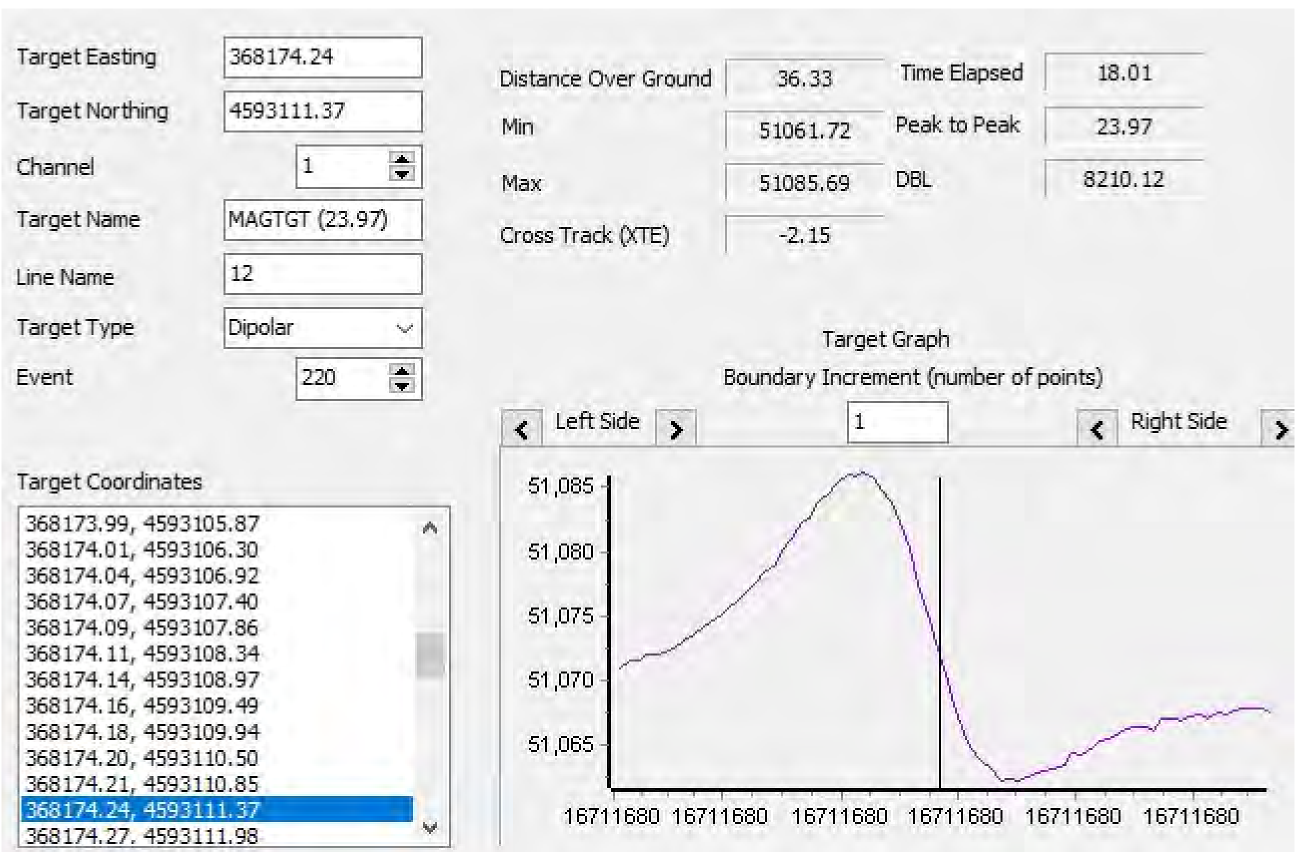
Name	Date	10/05/2021
MAGTGT (82.11)	Time	12:46:21
Survey File	Event	206
12	X	368136.0
Capture File	Y	4592813.0
368136.64.4592813.89.82.11.51112.59.3.jpg	WGS84 Latitude	41 28 33.9054 N
	WGS84 Longitude	070 34 45.5095 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



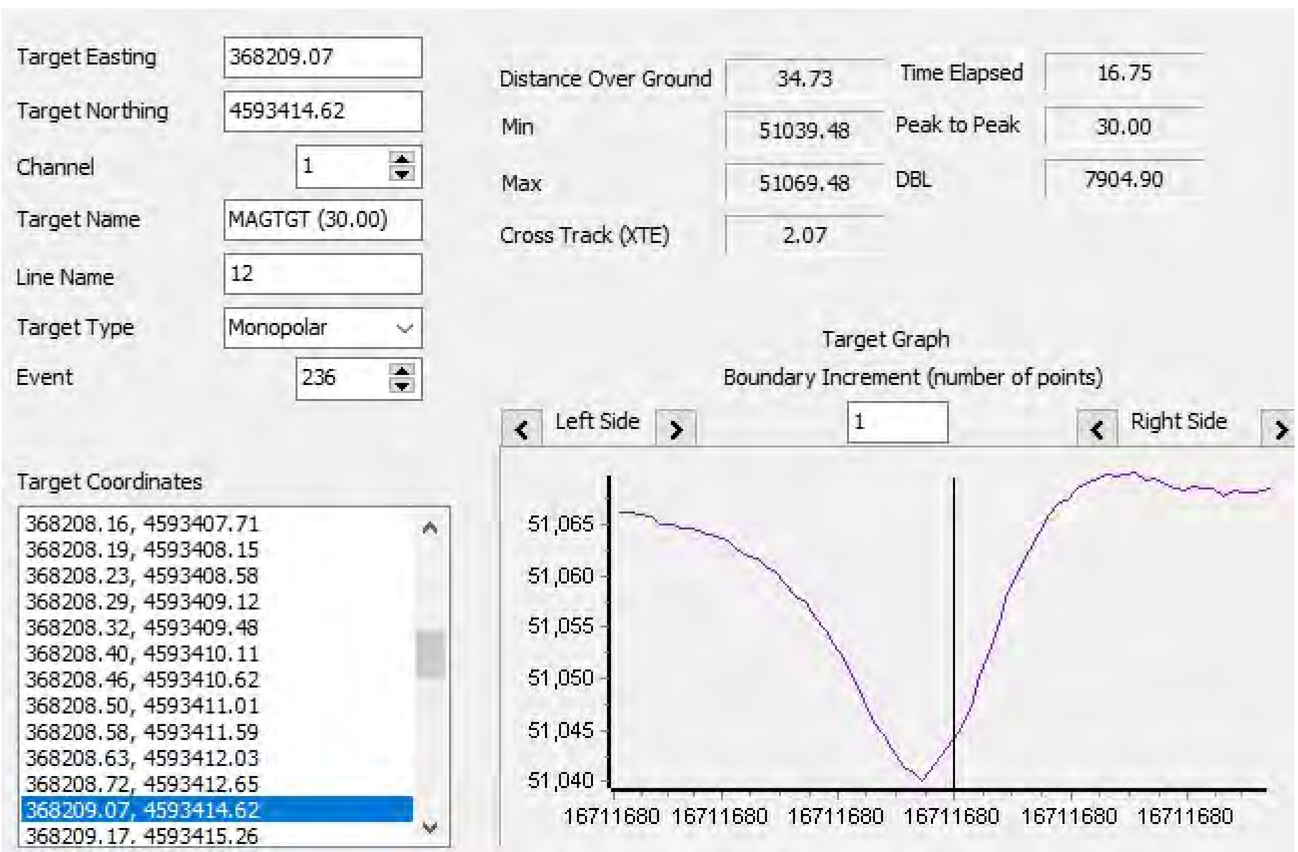
Name	Date	10/05/2021
MAGTGT (23.97)	Time	12:46:29
Survey File	Event	220
12	X	368174.0
Capture File	Y	4593111.0
368174.24.4593111.37.23.97.51069.93.3.jpg	WGS84 Latitude	41 28 43.5875 N
	WGS84 Longitude	070 34 44.1061 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



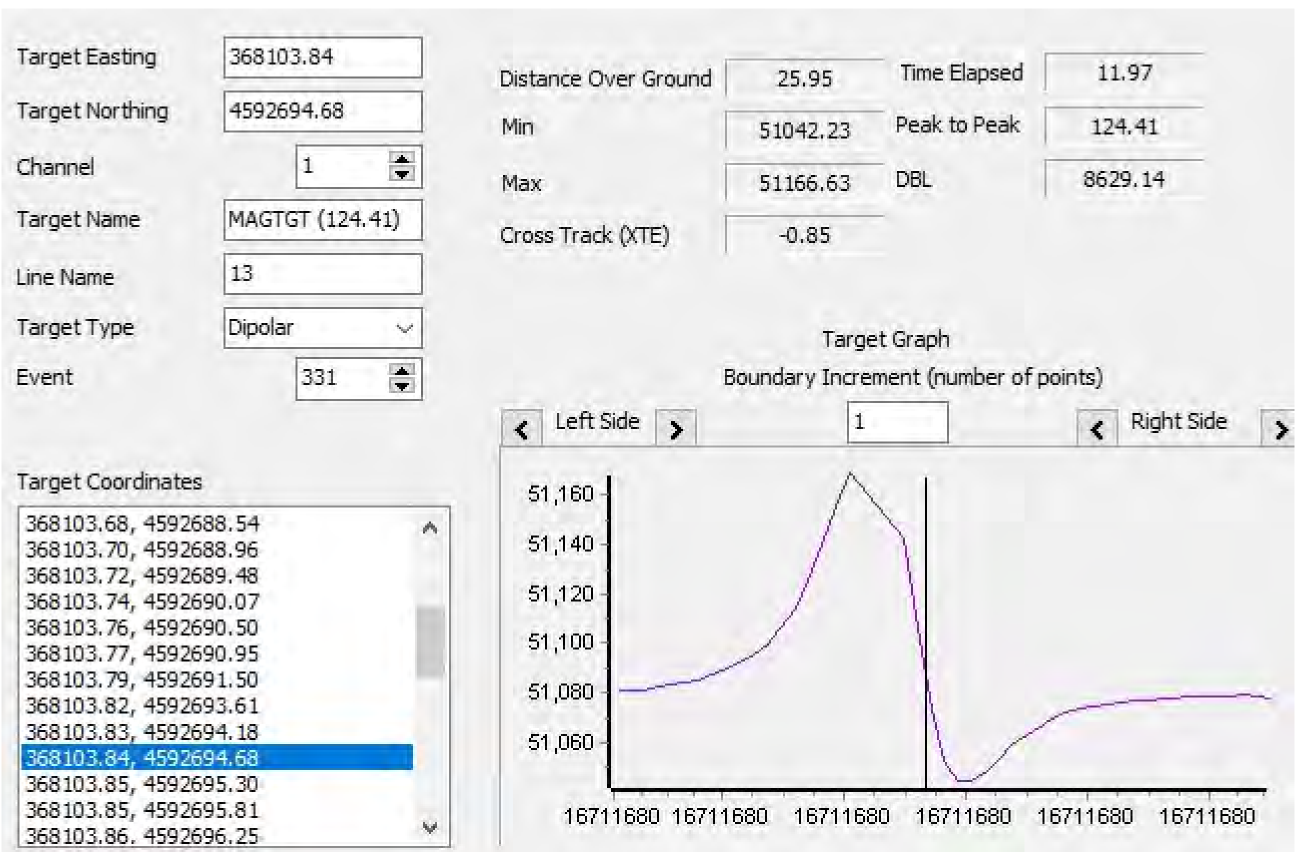
Name	Date	10/05/2021
MAGTGT (30.00)	Time	12:46:39
Survey File	Event	236
12	X	368209.0
Capture File	Y	4593414.0
368209.07.4593414.62.30.00.51044.27.3.jpg	WGS84 Latitude	41 28 53.4298 N
	WGS84 Longitude	070 34 42.8359 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



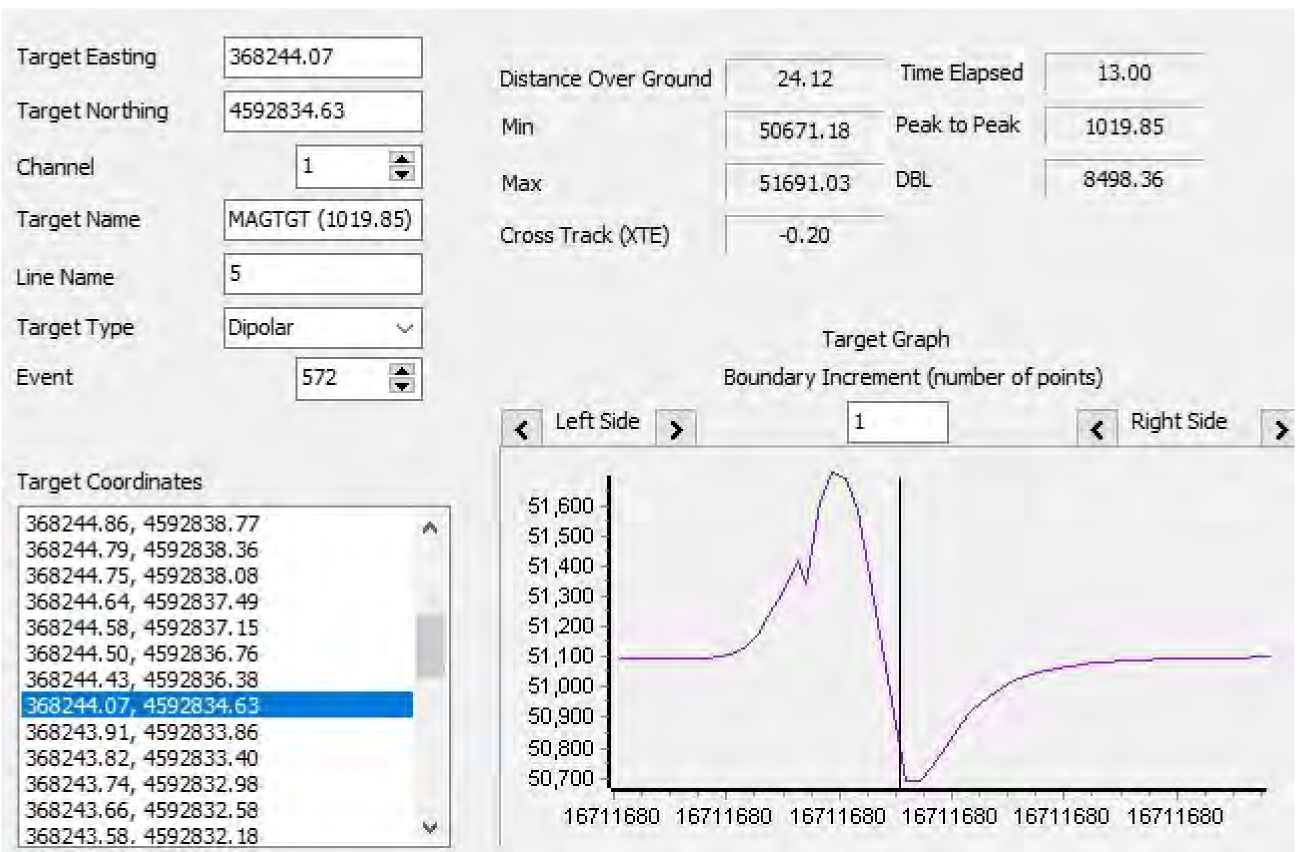
Name	Date	10/05/2021
MAGTGT (124.41)	Time	12:46:55
Survey File	Event	331
13	X	368103.0
Capture File	Y	4592694.0
368103.84.4592694.68.124.41 .51042.50.5.jpg	WGS84 Latitude	41 28 30.0286 N
	WGS84 Longitude	070 34 46.8381 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



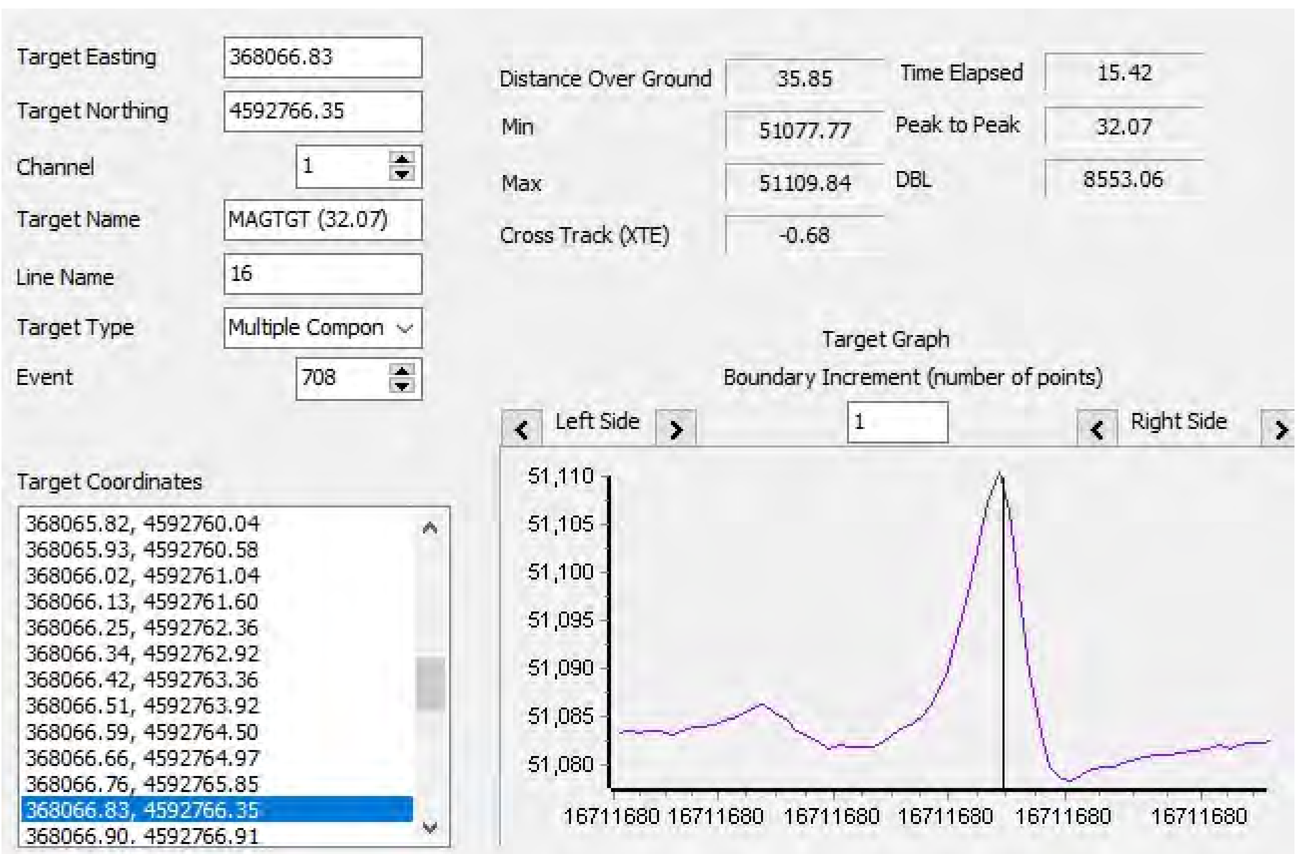
Name	Date	10/05/2021
MAGTGT (1019.85)	Time	12:47:28
Survey File	Event	572
5	X	368244.0
Capture File	Y	4592834.0
368244.07.4592834.63.1019.85.50842.88.8.jpg	WGS84 Latitude	41 28 34.65 N
	WGS84 Longitude	070 34 40.8711 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



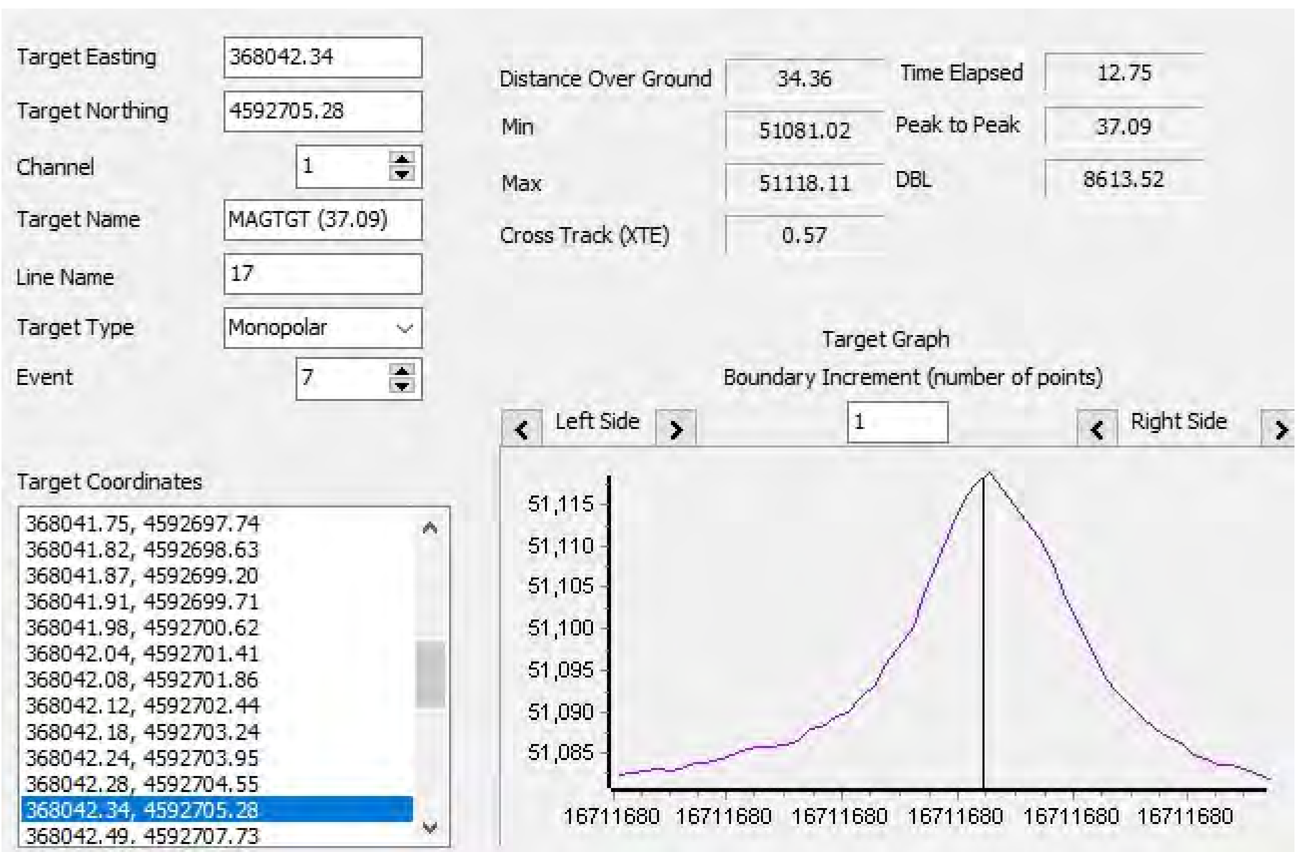
Name	Date	10/05/2021
MAGTGT (32.07)	Time	12:47:48
Survey File	Event	708
16	X	368066.0
Capture File	Y	4592766.0
368066.83.4592766.35.32.07.51084.55.11.jpg	WGS84 Latitude	41 28 32.3405 N
	WGS84 Longitude	070 34 48.4895 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



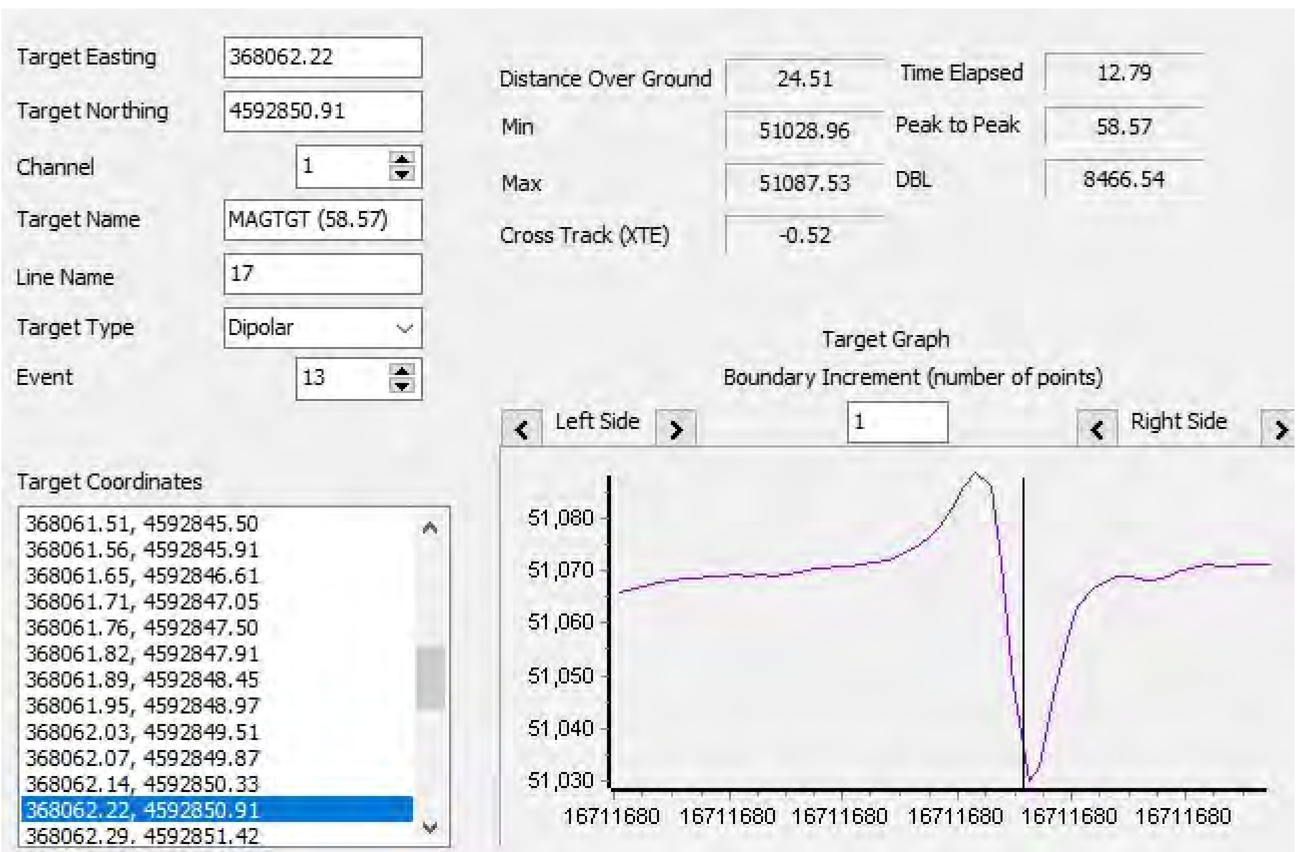
Name	Date	10/05/2021
MAGTGT (37.09)	Time	12:48:15
Survey File	Event	7
17	X	368042.0
Capture File	Y	4592705.0
368042.34.4592705.28.37.09.51103.40.12.jpg	WGS84 Latitude	41 28 30.349 N
	WGS84 Longitude	070 34 49.4759 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



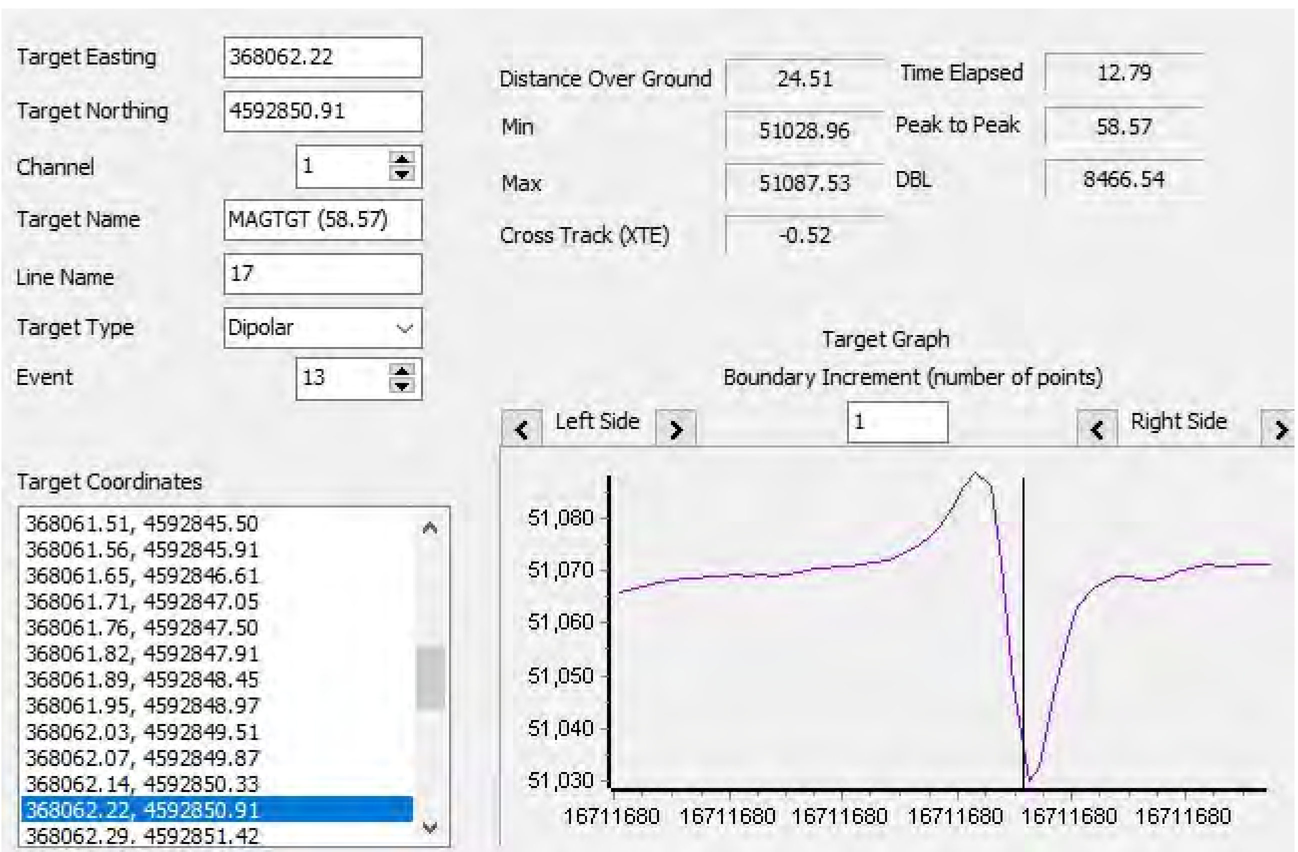
Name	Date	10/05/2021
MAGTGT (58.57)	Time	12:48:28
Survey File	Event	13
17	X	368062.0
Capture File	Y	4592850.0
368062.22.4592850.91.58.57. 51080.78.12.jpg	WGS84 Latitude	41 28 35.061 N
	WGS84 Longitude	070 34 48.728 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



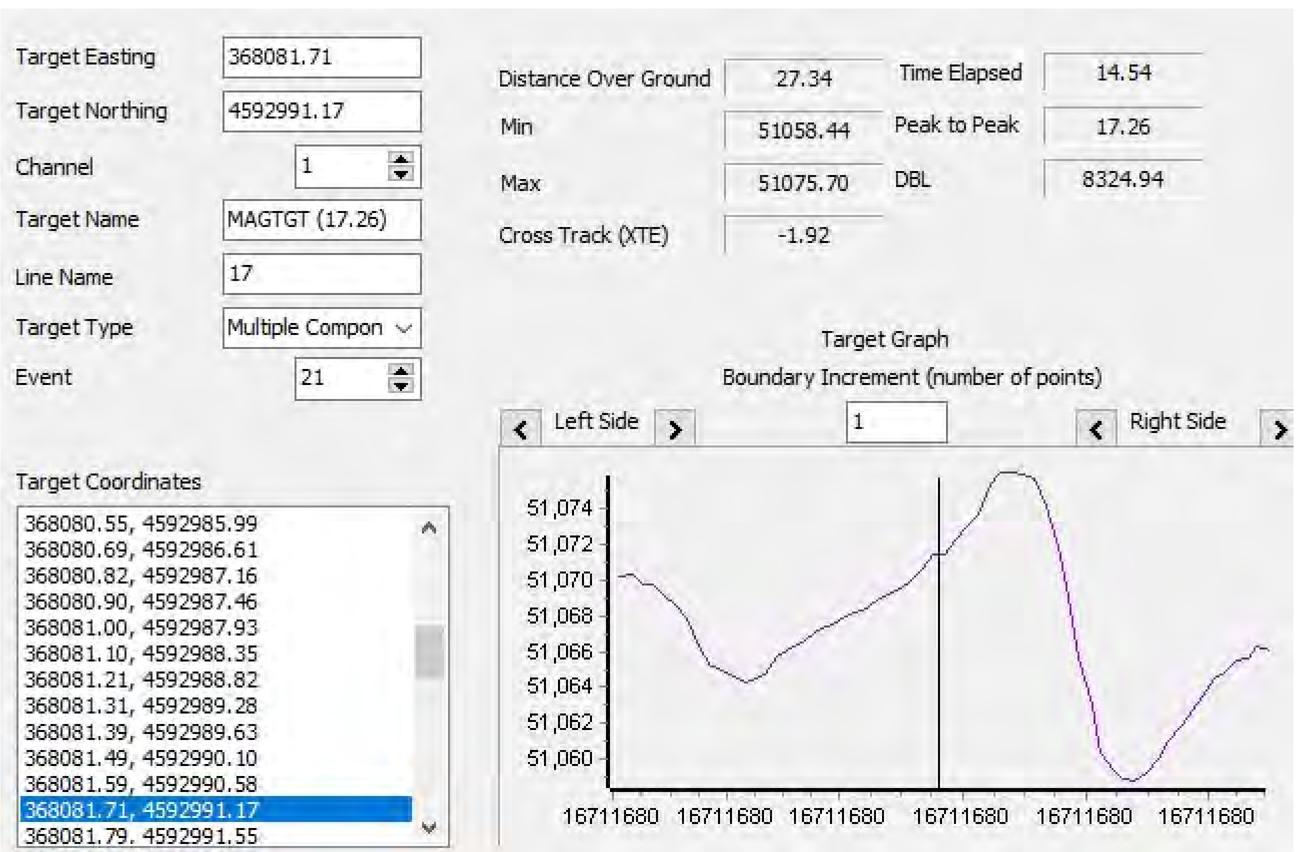
Name	Date	10/05/2021
MAGTGT (58.57)	Time	12:48:29
Survey File	Event	13
17	X	368062.0
Capture File	Y	4592850.0
368062.22.4592850.91.58.57. 51080.78.12.jpg	WGS84 Latitude	41 28 35.061 N
	WGS84 Longitude	070 34 48.728 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



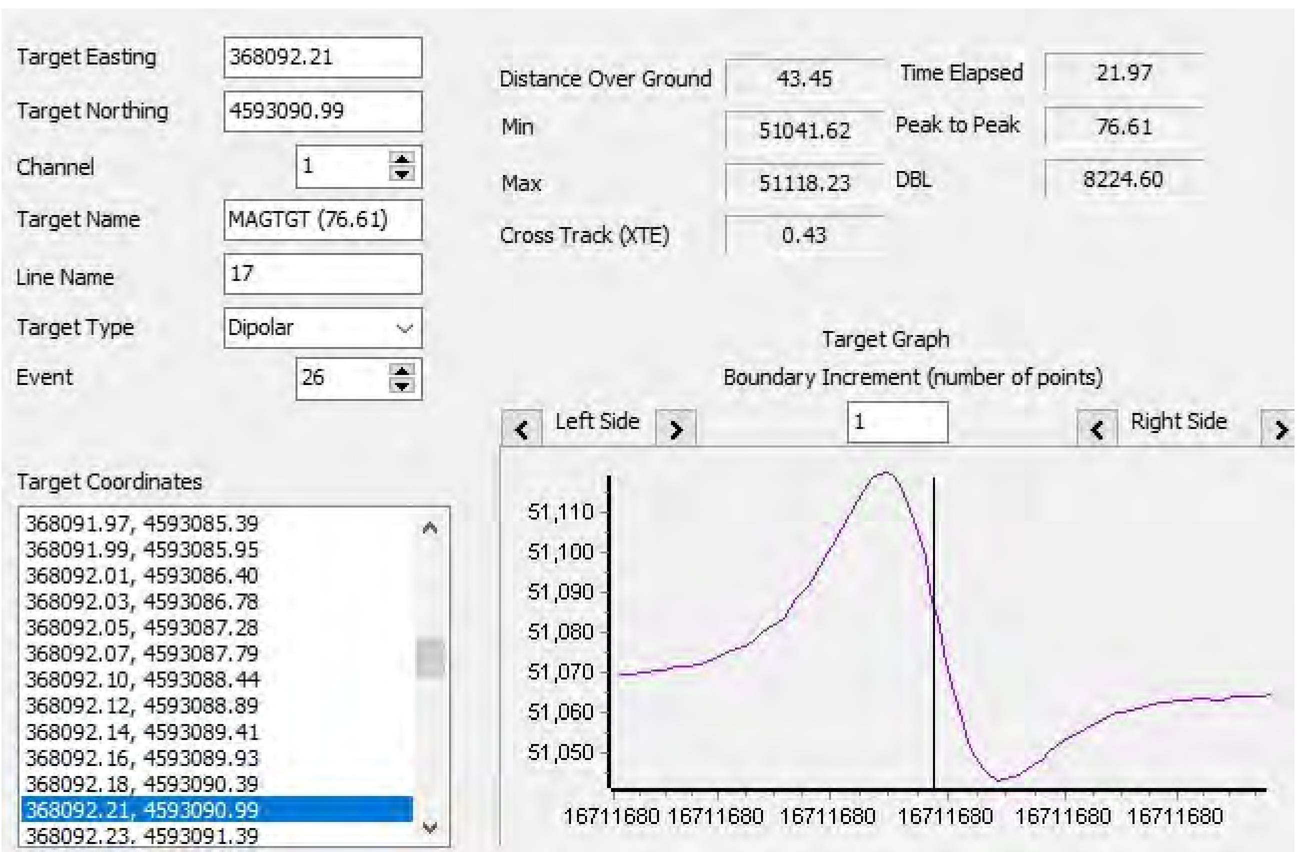
Name	Date	10/05/2021
MAGTGT (17.26)	Time	12:48:42
Survey File	Event	21
17	X	368081.0
Capture File	Y	4592991.0
368081.71.4592991.17.17.26. 51071.07.12.jpg	WGS84 Latitude	41 28 39.6427 N
	WGS84 Longitude	070 34 48.0202 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



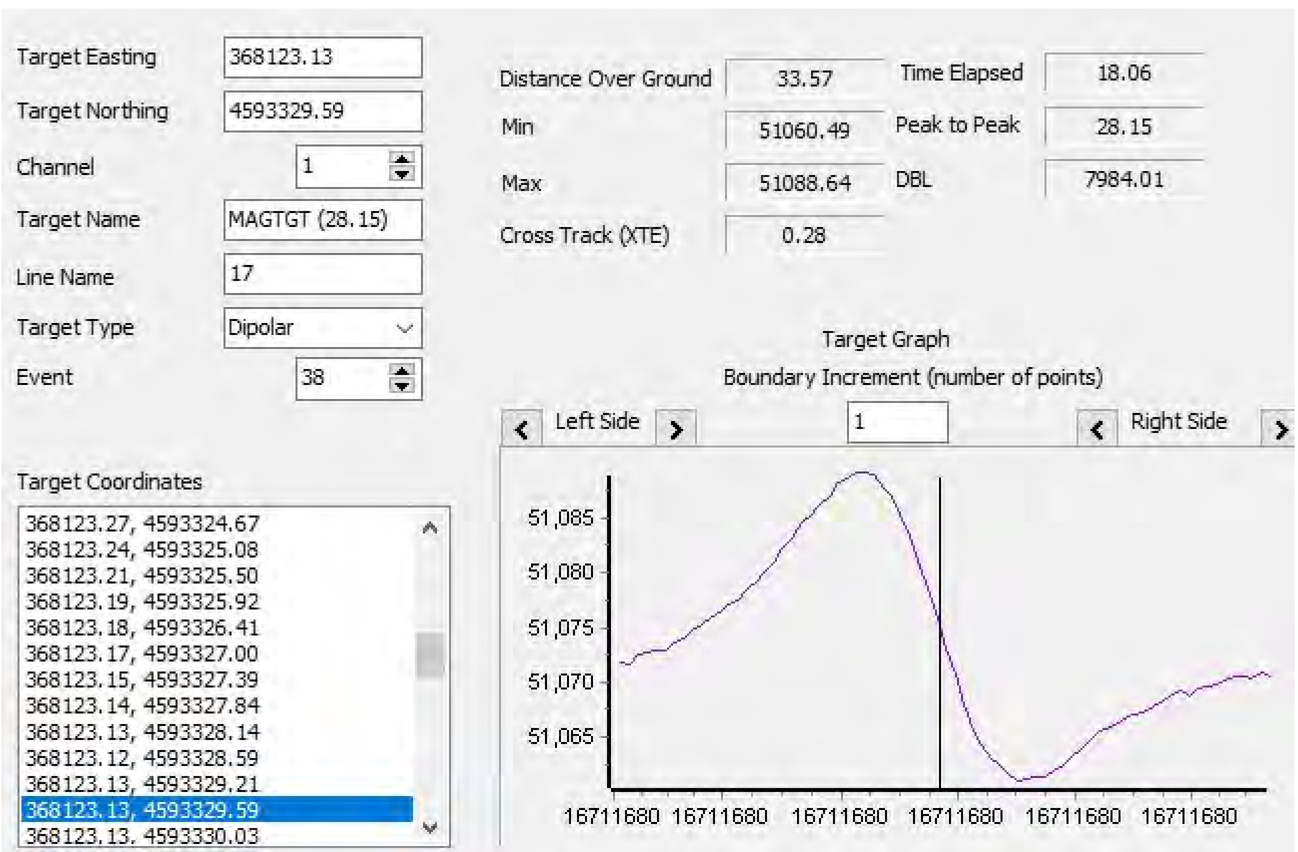
Name	Date	10/05/2021
MAGTGT (76.61)	Time	12:48:54
Survey File	Event	26
17	X	368092.0
Capture File	Y	4593090.0
368092.21.4593090.99.76.61.51079.89.12.jpg	WGS84 Latitude	41 28 42.8582 N
	WGS84 Longitude	070 34 47.624 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



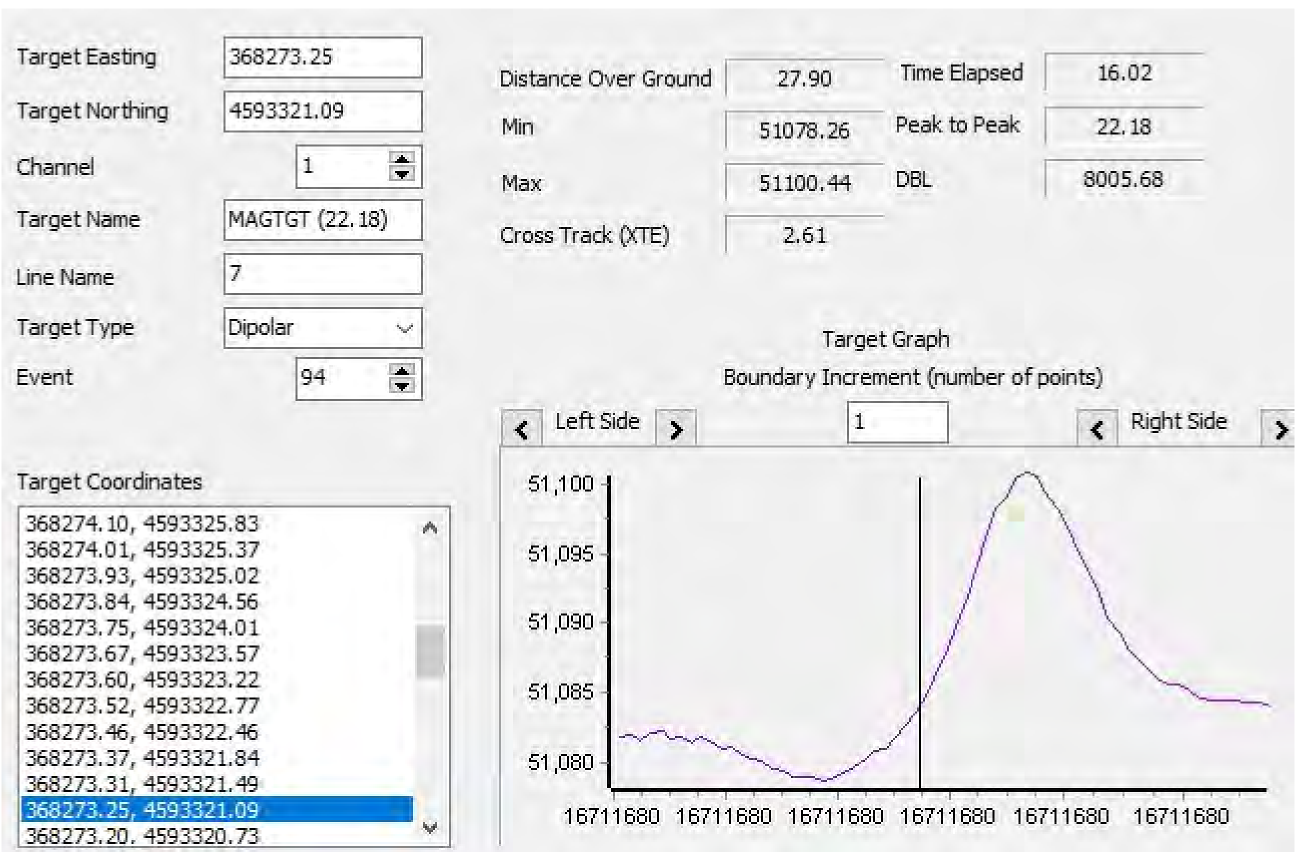
Name	Date	10/05/2021
MAGTGT (28.15)	Time	12:49:04
Survey File	Event	38
17	X	368123.0
Capture File	Y	4593329.0
368123.13.4593329.59.28.15. 51072.50.12.jpg	WGS84 Latitude	41 28 50.6237 N
	WGS84 Longitude	070 34 46.476 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



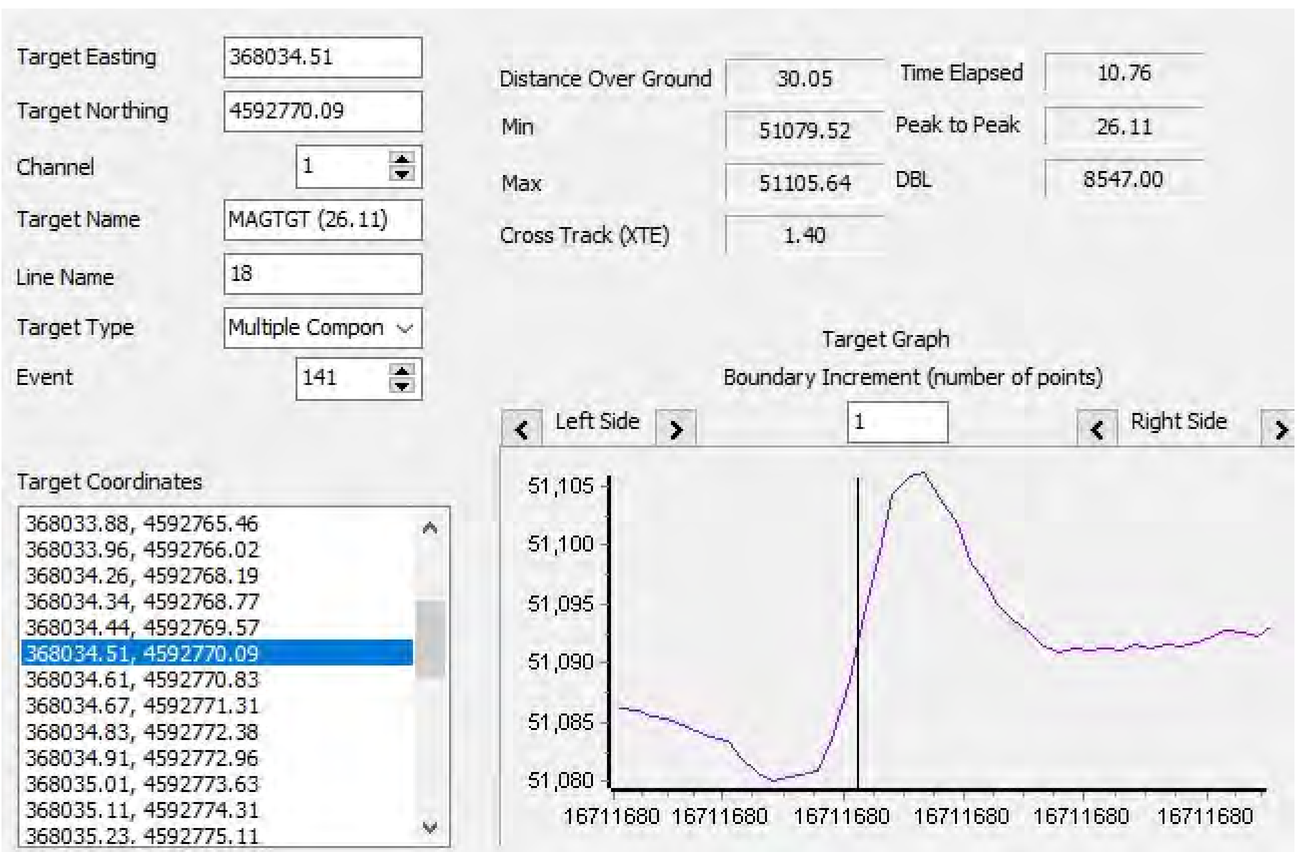
Name	Date	10/05/2021
MAGTGT (22.18)	Time	12:49:19
Survey File	Event	94
7	X	368273.0
Capture File	Y	4593321.0
368273.25.4593321.09.22.18.51084.31.13.jpg	WGS84 Latitude	41 28 50.4531 N
	WGS84 Longitude	070 34 40 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



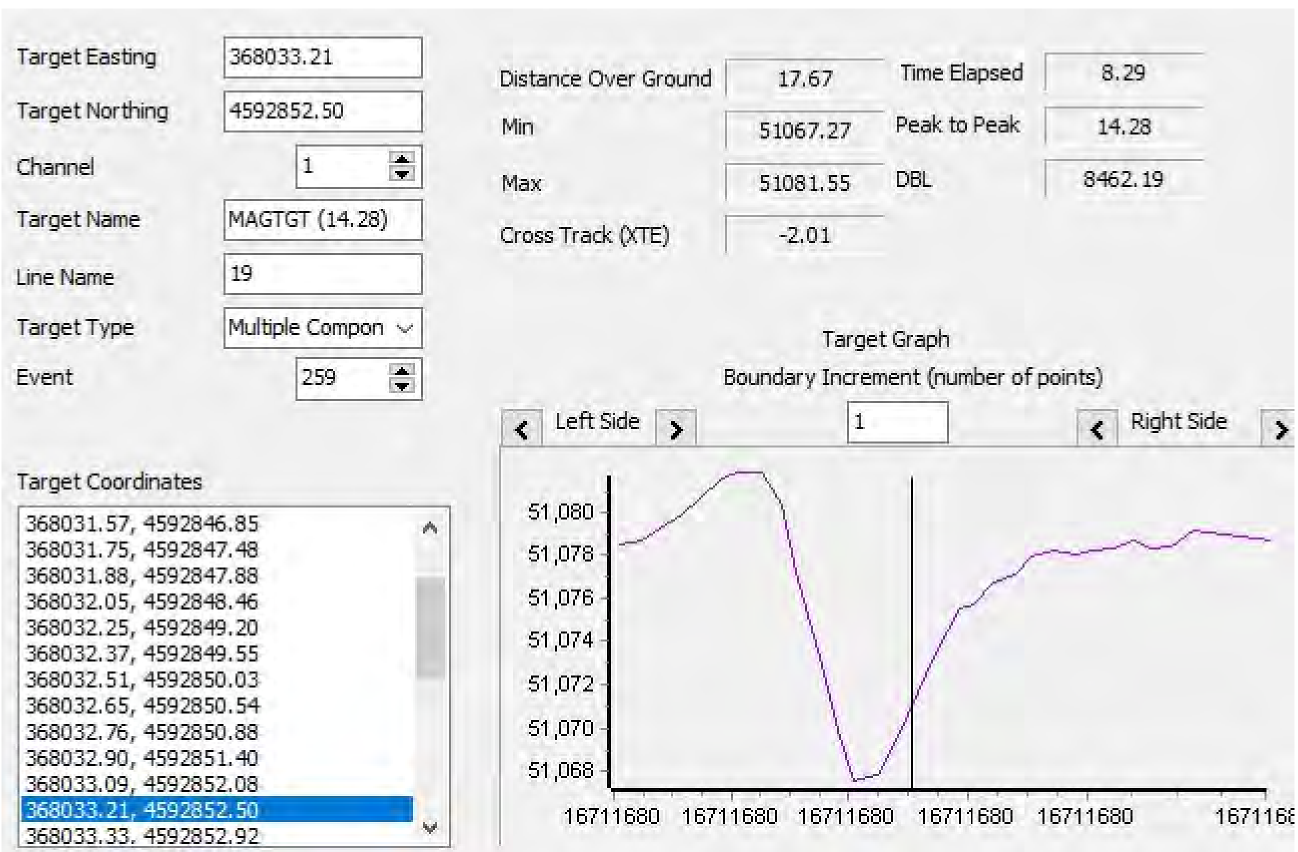
Name	Date	10/05/2021
MAGTGT (26.11)	Time	12:49:46
Survey File	Event	141
18	X	368034.0
Capture File	Y	4592770.0
368034.51.4592770.09.26.11.51101.16.14.jpg	WGS84 Latitude	41 28 32.4512 N
	WGS84 Longitude	070 34 49.8719 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



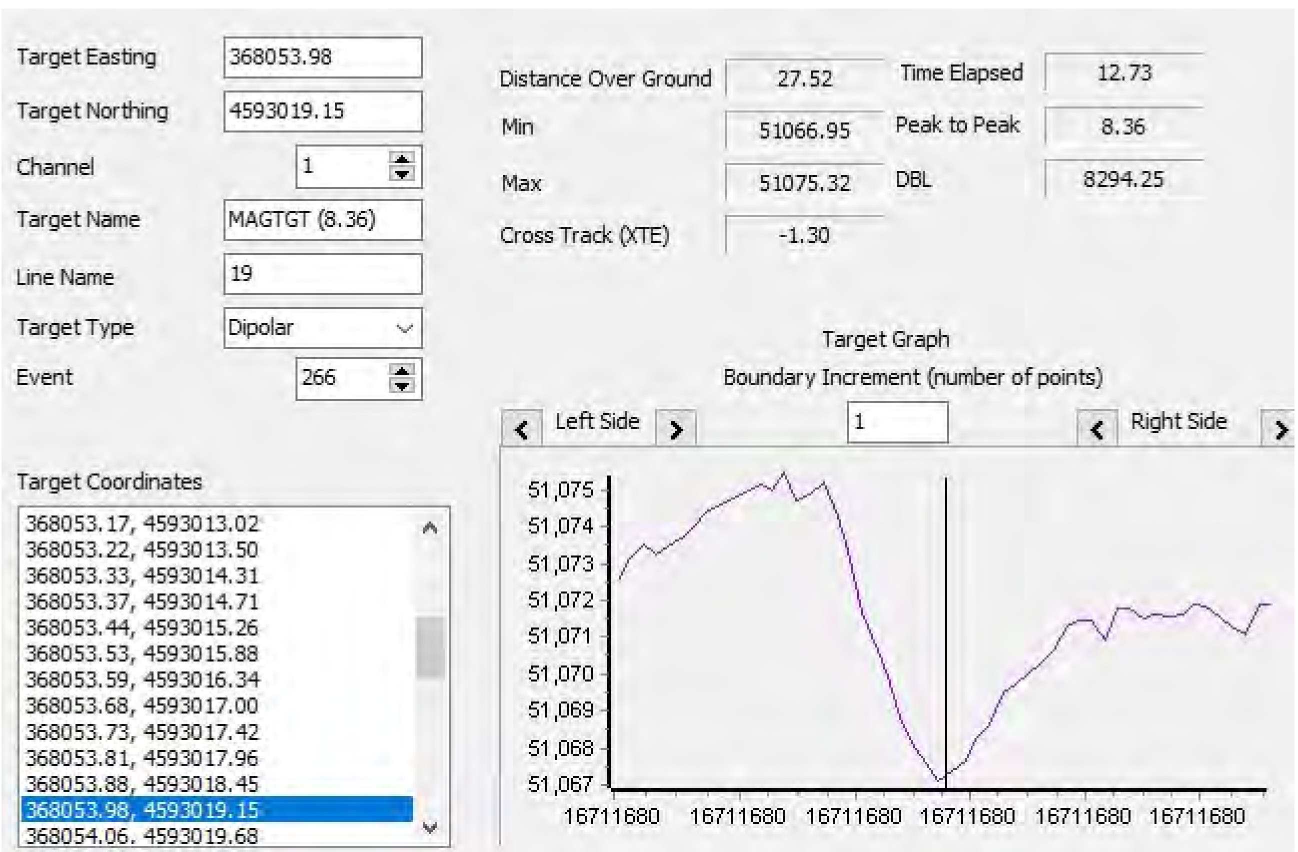
Name	Date	10/05/2021
MAGTGT (14.28)	Time	12:50:05
Survey File	Event	259
19	X	368033.0
Capture File	Y	4592852.0
368033.21.4592852.50.14.28.51071.40.16.jpg	WGS84 Latitude	41 28 35.1086 N
	WGS84 Longitude	070 34 49.9796 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



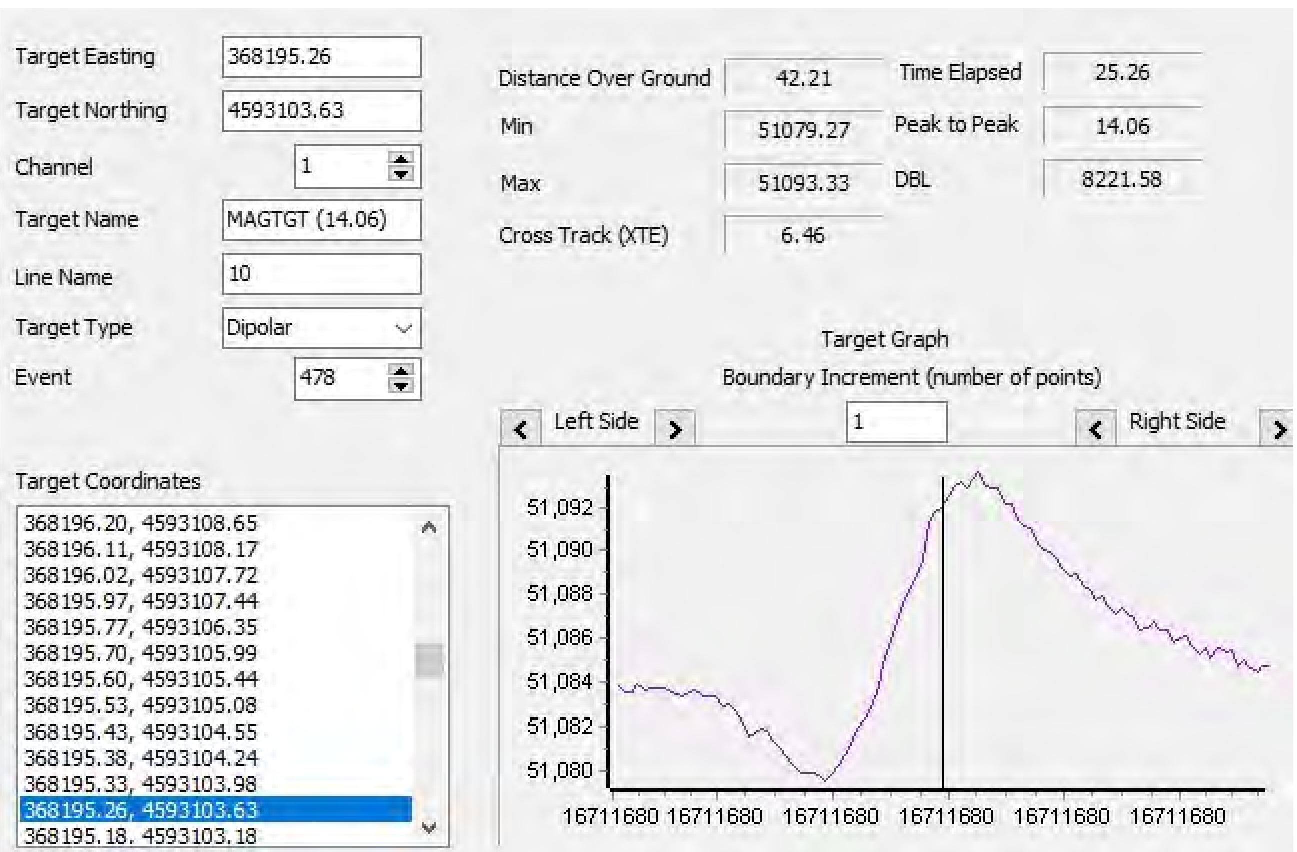
Name	Date	10/05/2021
MAGTGT (8.36)	Time	12:50:15
Survey File	Event	266
19	X	368053.0
Capture File	Y	4593019.0
368053.98.4593019.15.8.36.5 1067.25.16.jpg	WGS84 Latitude	41 28 40.5337 N
	WGS84 Longitude	070 34 49.2491 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



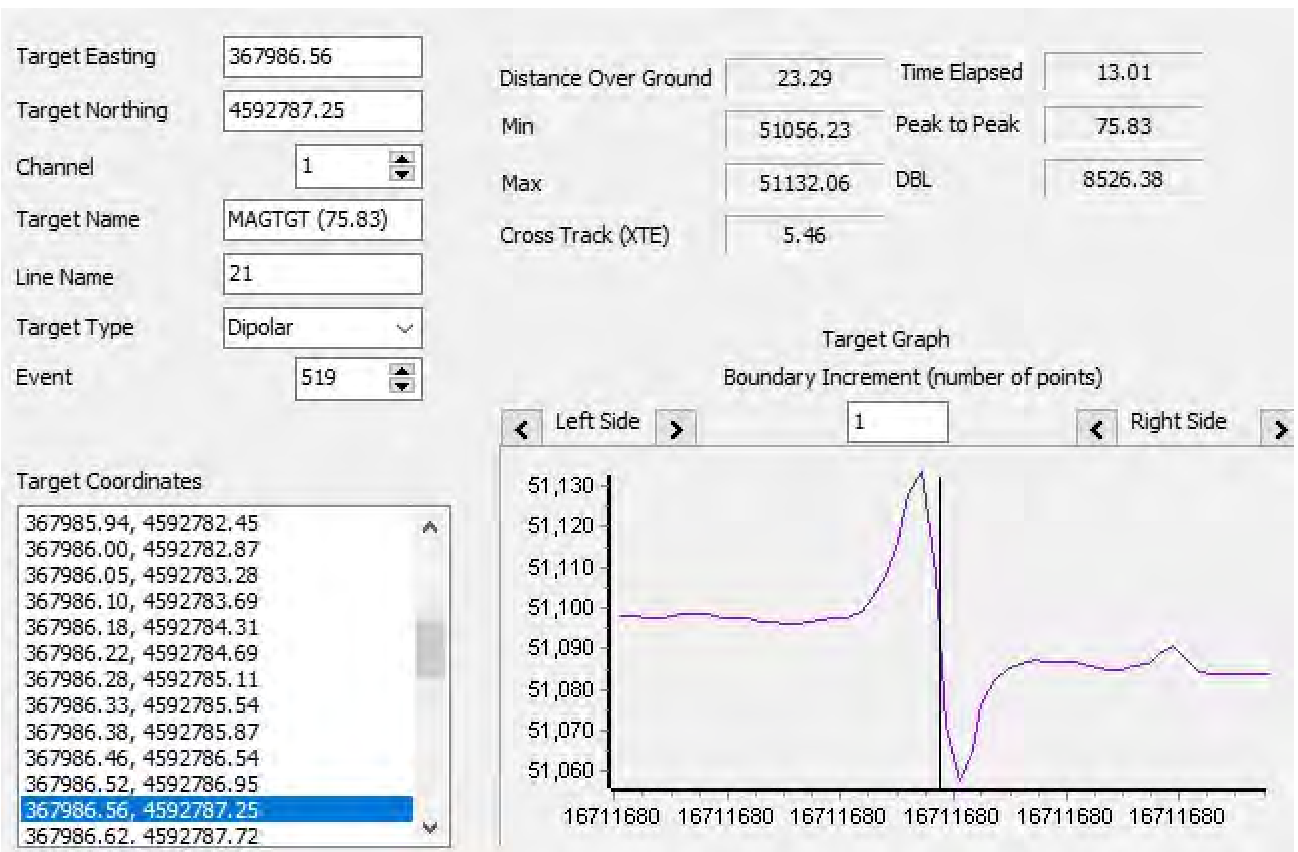
Name	Date	10/05/2021
MAGTGT (14.06)	Time	12:50:31
Survey File	Event	478
10	X	368195.0
Capture File	Y	4593103.0
368195.26.4593103.63.14.06.51092.21.19.jpg	WGS84 Latitude	41 28 43.3406 N
	WGS84 Longitude	070 34 43.1947 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



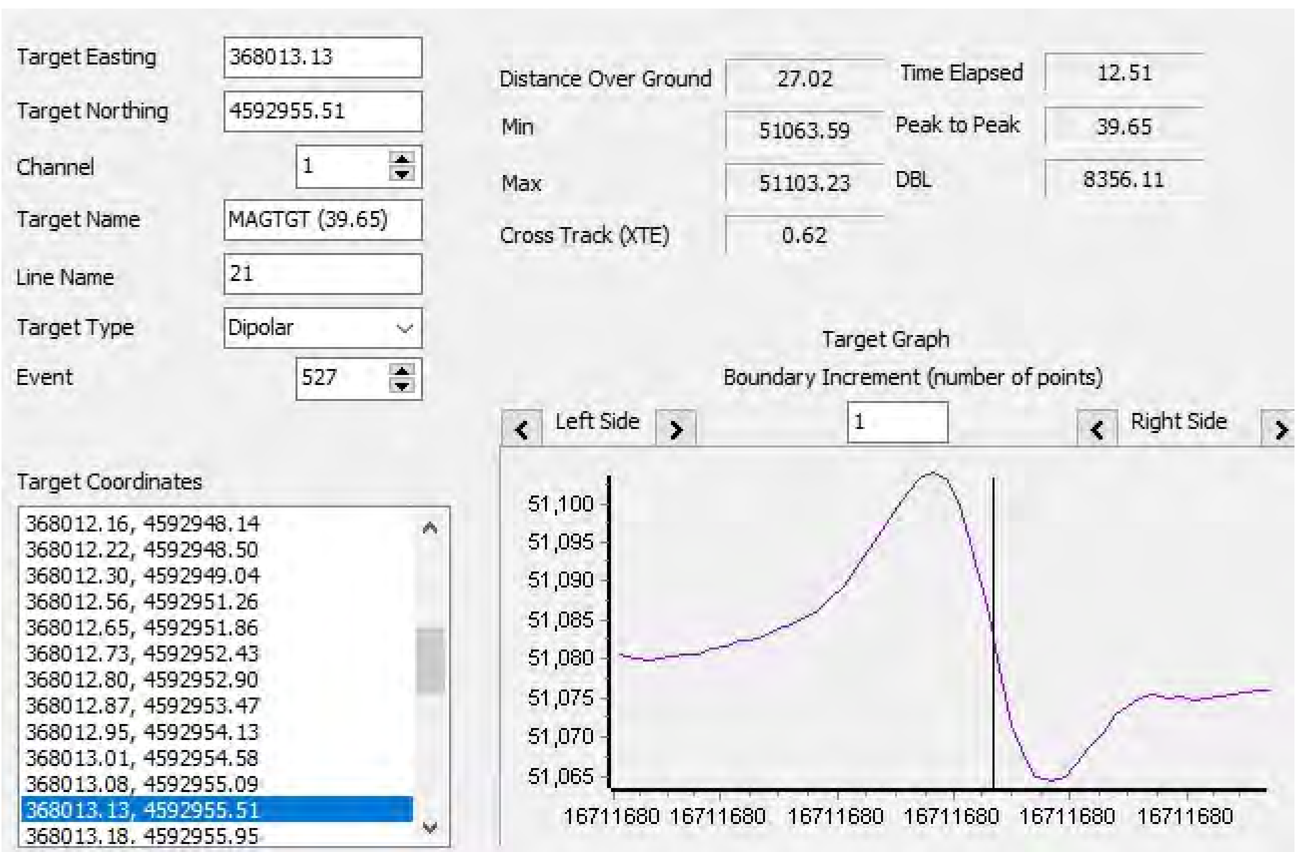
Name	Date	10/05/2021
MAGTGT (75.83)	Time	12:50:51
Survey File	Event	519
21	X	367986.0
Capture File	Y	4592787.0
367986.56.4592787.25.75.83. 51069.45.20.jpg	WGS84 Latitude	41 28 32.9738 N
	WGS84 Longitude	070 34 51.9541 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



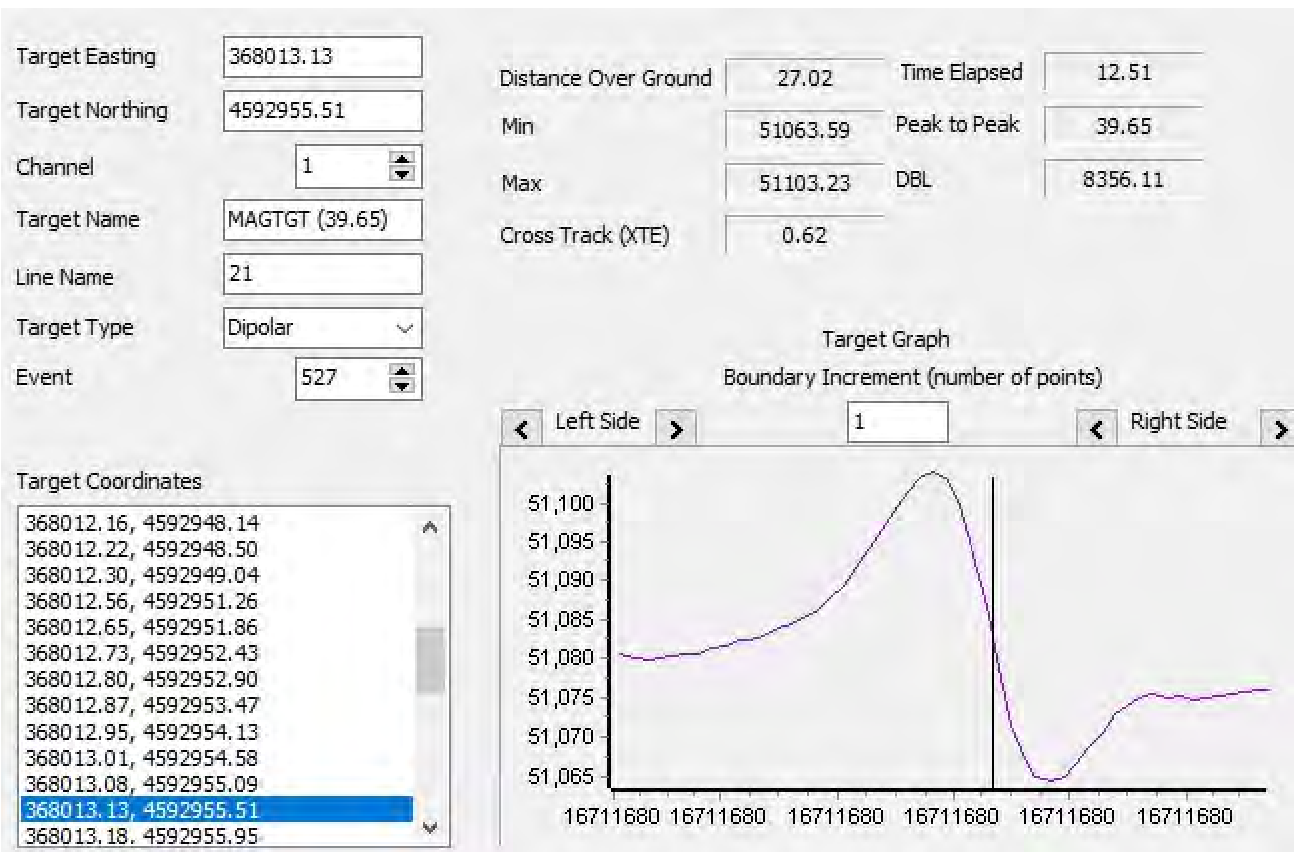
Name	Date	10/05/2021
MAGTGT (39.65)	Time	12:51:01
Survey File	Event	527
21	X	368013.0
Capture File	Y	4592955.0
368013.13.4592955.51.39.65.51098.93.20.jpg	WGS84 Latitude	41 28 38.4355 N
	WGS84 Longitude	070 34 50.9227 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



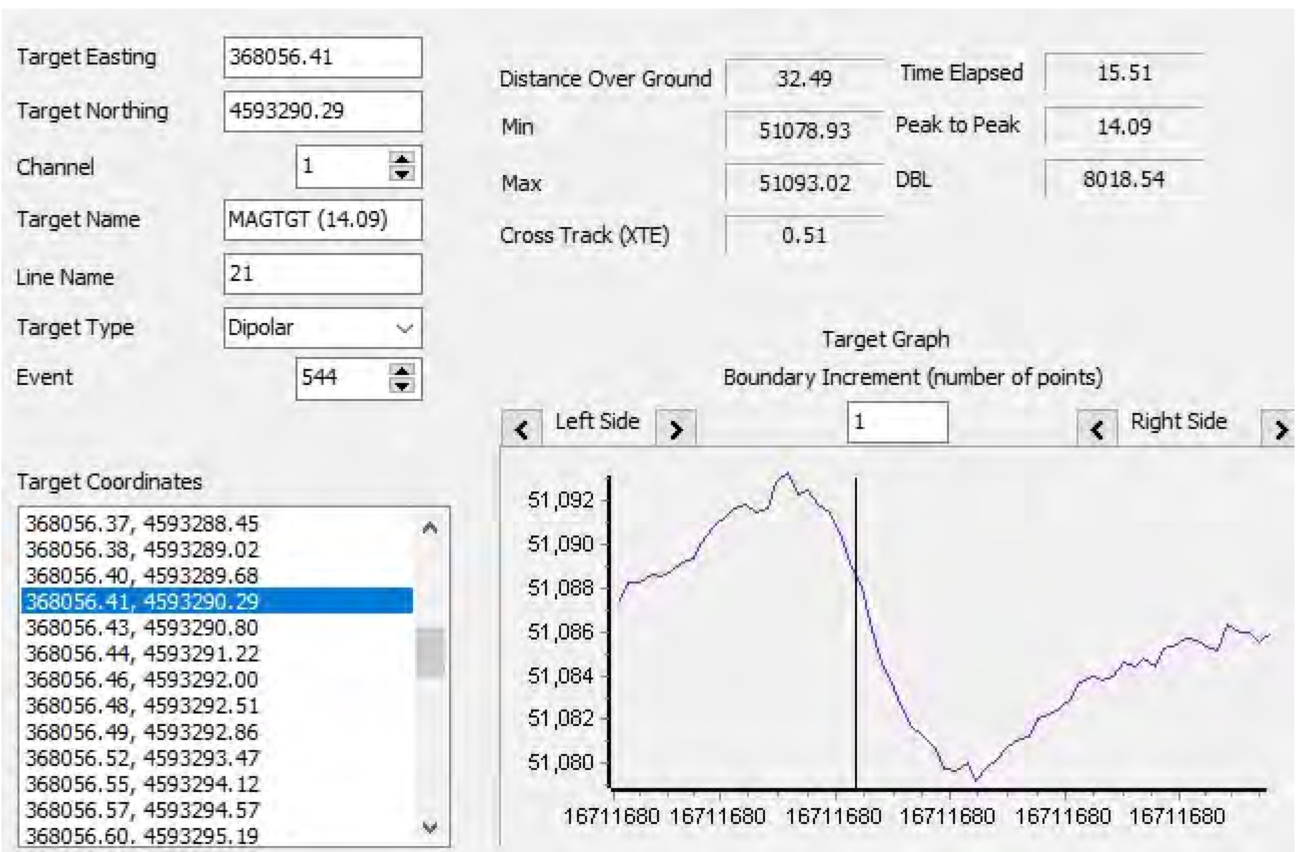
Name	Date	10/05/2021
MAGTGT (39.65)	Time	12:51:01
Survey File	Event	527
21	X	368013.0
Capture File	Y	4592955.0
368013.13.4592955.51.39.65.51098.93.20.jpg	WGS84 Latitude	41 28 38.4355 N
	WGS84 Longitude	070 34 50.9227 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



Name	Date	10/05/2021
MAGTGT (14.09)	Time	12:51:11
Survey File	Event	544
21	X	368056.0
Capture File	Y	4593290.0
368056.41.4593290.29.14.09. 51079.47.20.jpg	WGS84 Latitude	41 28 49.3198 N
	WGS84 Longitude	070 34 49.3332 W
	Heading	0.0
	Fish Altitude	0.00
	Range to Target	0.0
	Height Above Bottom	0.0
	Length	0.0
	Width	0.0

Notes	



APPENDIX C

GoPro Plates of Screen Captures by Transect

A 1:00

B 1:27

C 2:22

D 2:57

E 3:55

F 7:05

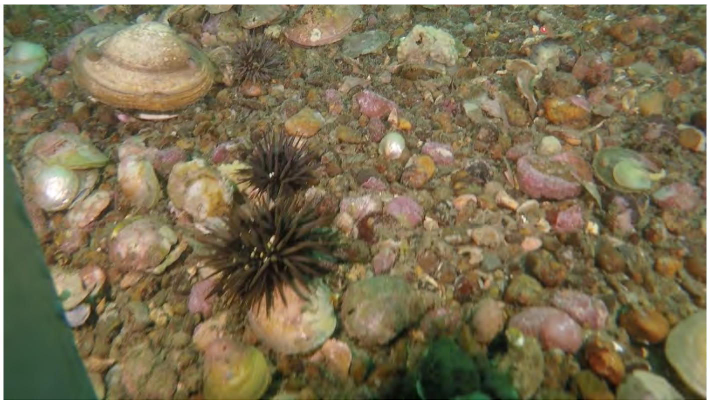
G 9:18

H 9:39

Plate 1a. Transect VS-1B – Biotic community: attached sparse *Arbacia punculata* and co-occurring sparse *Didemnum* and *Lithothamnium* on pebble/granule in a sandy gravel matrix at 33 ft MLLW. Associated taxa: trace *Pagarus.*

A 0:59

B 1:29



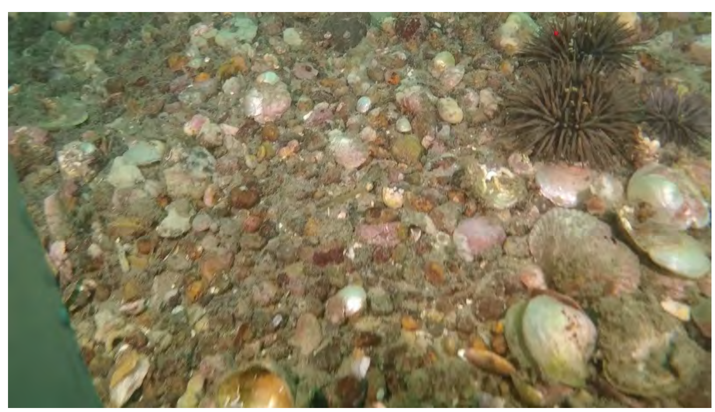
C 2:46

D 3:53

E 4:53

F 6:06

G 7:12



H 8:37

Plate 2a. **Transect VS-2**- Biotic community: attached sparse *Arbacia punculata* and co-occurring moderate *Lithothamnium*, trace *Didemnum* and *Amaroucium* on gravel pavement of pebble/granules at 32 ft MLLW. Associated taxa: *Limulus, Prionotus*

I 9:30

J 10:21

K 11:57

L 12:39

M 13:26

N 14:30

O 15:28

P 16:39

Plate 2b. **Transect VS-2** - Biotic community: attached sparse *Arbacia punculata* and co-occurring moderate *Lithothamnium*, trace *Didemnum* and *Amaroucium* on gravel pavement of pebble/granules at 32 ft MLLW. Associated taxa: *Limulus, Prionotus*

Q 17:02

R 17:38

S 18:53

T 19:46

U 20:53

V 21:42

W 21:45

X 22:49

Plate 2c. Transect VS-2 - Biotic community: attached sparse *Arbacia punculata* and co-occurring moderate *Lithothamnium*, trace *Didemnum* and *Amaroucium* on gravel pavement of pebble/granules at 32 ft MLLW. Associated taxa: *Limulus, Prionotus*

A 2:21

B 3:00

C 3:57

D 5:12

E 6:24

F 8:09

G 9:00

H 9:47

Plate 3a. Video Transect VS-3 - Biotic community: attached sparse *Arbacia punculata* and co-occuring sparse *Schizoporella, Bugula, Didemnum, Astrangia, Mytilus,* and *Anachis*; and trace *Lithothamnium* on gravel pavement of pebble/granules at 49 ft MLLW. Associated taxa: trace *Pagarus* and *Centropristes*

I 11:30

J 12:31

K 13:26

L 14:32

M 15:01

N 16:09

O 17:01

P 17:56

Plate 3b. Video Transect VS-3 - Biotic community: attached sparse *Arbacia punculata* and co-occuring sparse *Schizoporella, Bugula, Didemnum, Astrangia, Mytilus,* and *Anachis*; and trace *Lithothamnium* on gravel pavement of pebble/granules at 49 ft MLLW. Associated taxa: trace *Pagarus* and *Centropristes*

Q 18:43

R 19:59

S 21:25

T 22:24

U 23:15

V 24:22

W 25:18

X 25:30

Plate 3c. Transect VS-3 - Biotic community: attached sparse *Arbacia punculata* and co-occuring sparse *Schizoporella, Bugula, Didemnum, Astrangia, Mytilus,* and *Anachis*; and trace *Lithothamnium* on gravel pavement of pebble/granules at 49 ft MLLW. Associated taxa: trace *Pagarus* and *Centropristes*

A 1:43

B 2:53

C 4:02

D 4:58

E 5:58

F 6:30

G 8:04

H 8:59

Plate 4a. Transect VS-4 - Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Cliona* and *Amaroucium*, and trace *Schizoporella* and *Mytilus* on gravel pavement of cobbles at 61 ft MLLW. Associated taxa: moderate juvenile *Centropristes* and trace adult *Centropristes*

I 10:02 J 11:01

K 11:59 L 13:05

M 13:39 N 14:28

O 15:32 P 16:32

Plate 4b. Transect VS-4 - Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Cliona* and *Amaroucium*, and trace *Schizoporella* and *Mytilus* on gravel pavement of cobbles at 61 ft MLLW. Associated taxa: moderate juvenile *Centropristes* and trace adult *Centropristes*

Q 17:29

R 18:11

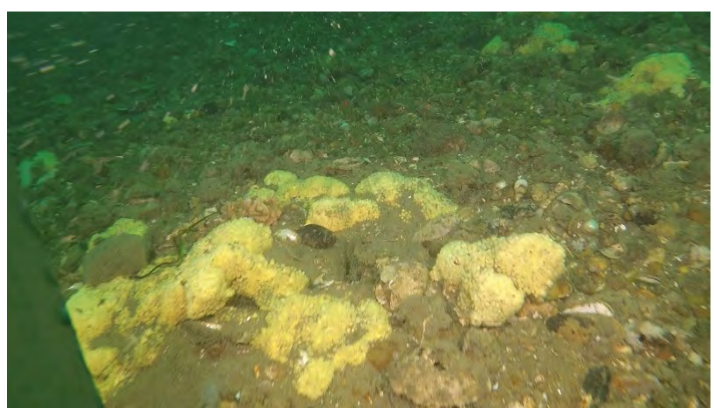
S 19:15

T 20:13

U 21:43

V 22:49

W 24:04



X 25:17

Plate 4c. Transect VS-4 - Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Cliona* and *Amaroucium*, and trace *Schizoporella* and *Mytilus* on gravel pavement of cobbles at 61 ft MLLW. Associated taxa: moderate juvenile *Centropristes* and trace adult *Centropristes*

A 1:22

B 1:58

C 7:04

D 9:19

E 10:09

F 13:32

G 15:09

H 15:55

Plate 5a. Transect VS-5 – Biotic Subclass: Soft sediment fauna associated with sand waves and associated mobile taxa: trace *Prionotus*, *Loligo*, and *Ovalipes* at 33 ft MLLW


A 1:30

B 2:16


C 2:51

D 3:27


E 4:15

F 4:44

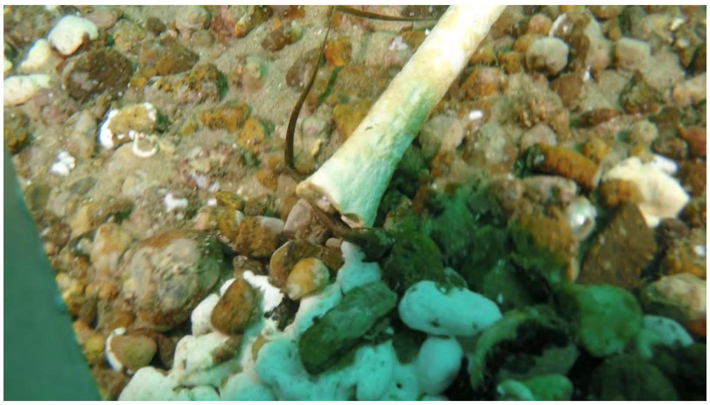

G 5:57

H 6:58

Plate 6a. Video Transect VS-6 – Biotic subclass: Soft sediment fauna associated with sand waves; and biotic community: attached sparse *Didemnum* and trace *Amaroucium* with co-occuring trace *Mytilis* and *Hydrozoa* in the pebble/granule substrate of the sand wave troughs at 30 ft MLLW. Associated taxa: *Pagarus*

I 10:02

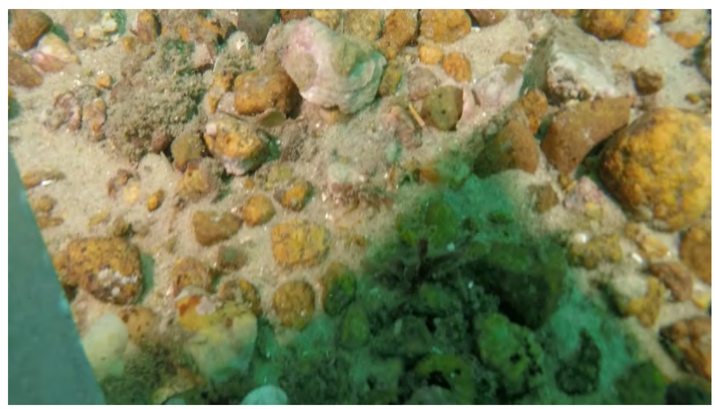
J 11:01



K 11:59

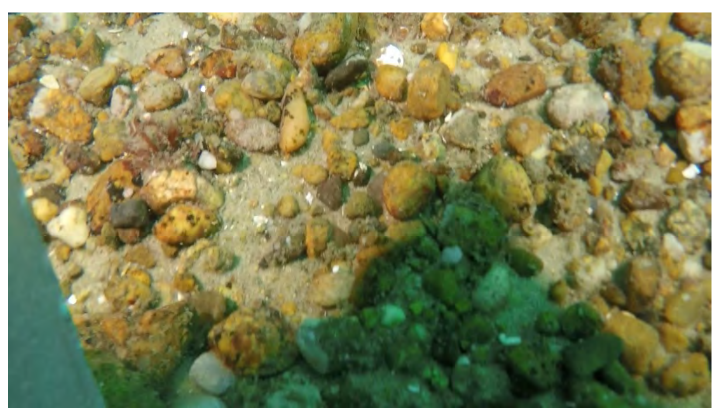
L 13:05

M 13:39



N 14:28

O 15:32



P 16:32

Plate 6b. Video Transect VS-6 – Biotic subclass: Soft sediment fauna associated with sand waves; and biotic community: attached sparse *Didemnum* and trace *Amaroucium* with co-occuring trace *Mytilis* and *Hydrozoa* in the pebble/granule substrate of the sand wave troughs at 30 ft MLLW. Associated taxa: *Pagarus*

A 1:09 B 1:46

C 4:27 D 5:04

E 6:25 F 8:53

G 10:34 H 11:58

Plate 7a. Video Transect VS-7 – Biotic community: attached sparse *Arbacia punculata* and co-occurring sparse *Amaroucium*, and *Lithothamnium* on gravel pavement of pebble/granule at 36 ft MLLW. Associated taxa: trace juvenile *Centropristes*

A 1:33

B 2:15

C 2:52

D 3:40

E 5:00

F 5:52

G 7:34

H 8:26

Plate 8a. Video Transect VS-8 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring Sparse **-** *Amaroucium/Didemnum*, *Cliona*, *Schizoporella*, *Arbacia*, and *Mytilis*, and *Anachis* on gravel pavement of cobble at 43 ft MLLW. Associated taxa: trace juvenile *Centropristes*

I 9:35

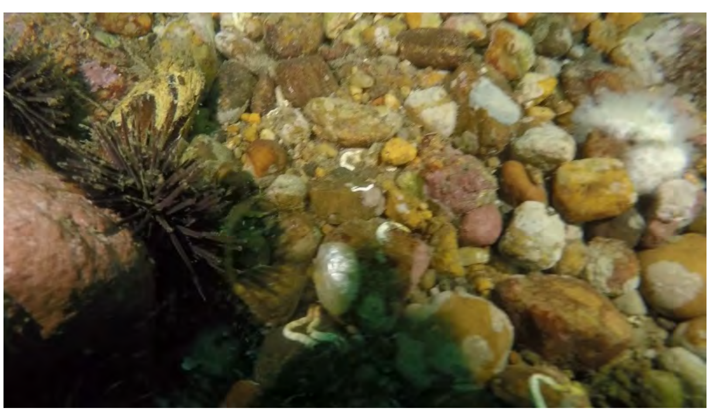
J 10:57

K 11:55

L 13:03

M 14:13

N 14:42

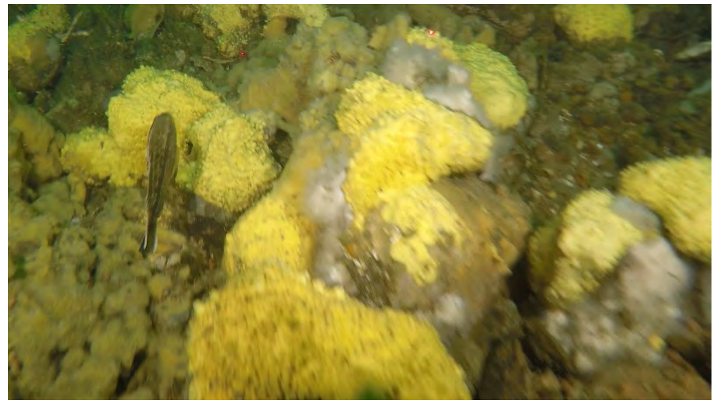


O 14:51

P 16:49

Plate 8b. Video Transect VS-8 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring sparse *Amaroucium/Didemnum*, *Cliona*, *Schizoporella*, *Arbacia*, *Mytilis*, and *Anachis* on gravel pavement of cobble at 43 ft MLLW. Associated taxa: trace juvenile *Centropristes*

A 2:49



B 3:39

C 4:28

D 5:47

E 6:56

F 7:35

G 8:52

H 10:30

Plate 9a. Video Transect VS-9 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Cliona* and *Mytilis*, sparse- *Amaroucium/Didemnum* and *Arbacia*, and trace *Astrangia* on gravel pavement of Cobble and pebble/granule at 63 ft MLLW. Associated taxa: trace adult *Centropristes*

I 11:49

J 13:02

K 13:19

L 14:33

M 15:00

N 15:22

O 16:04

P 16:37

Plate 9b. Video Transect VS-9 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Cliona* and *Mytilis*, sparse *Amaroucium/Didemnum* and *Arbacia*, and trace *Astrangia* on gravel pavement of Cobble and pebble/granule at 63 ft MLLW. Associated taxa: trace adult *Centropristes*

A 1:46

B 2:16

C 3:14

D 4:13

E 4:49

F 5:32

G 7:01

H 8:07

Plate 10a. Transect VS-10 – Biotic community: Attached Sparse *Arbacia punculata* and co-occurring sparse Mytilis and *Anachis* and trace *Astrangia* on gravel pavement of pebble/granule and cobbles at 65 ft MLLW. Associated taxa: trace juvenile *Centropristes*


I 8:48 | J 10:06


K 10:45 | L 11:35


M 12:07 | N 13:31


O 14:20 | P 15:17

Plate 10b. Video Transect VS-10 – Biotic community: Attached Sparse *Arbacia punculata* and co-occurring sparse Mytilis and *Anachis* and trace *Astrangia* on gravel pavement of pebble/granule and cobbles at 65 ft MLLW. Associated taxa: trace juvenile *Centropristes*

A 2:11

B 2:30

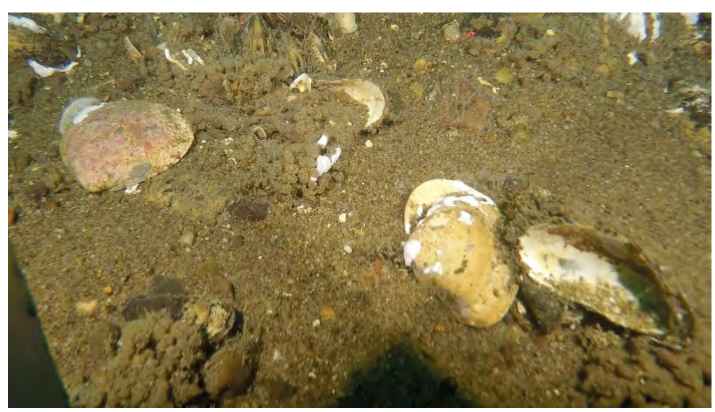
C 3:52

D 4:35

E 5:08

F 5:41

G 6:35



H 7:16

Plate 11a. Transect VS-11 – Biotic community: Attached Moderate *Arbacia punculata* and co-occurring moderate *Didemnum*, sparse *Mytilis*, and trace *Schizoporella* on gravel pavement of pebble/granule at 70 ft MLLW. Associated taxa: Mobile Arthopods - Trace *Pagurus*, and Fish – Sparse Juvenile *Centropristes*

A 2:11

B 2:30

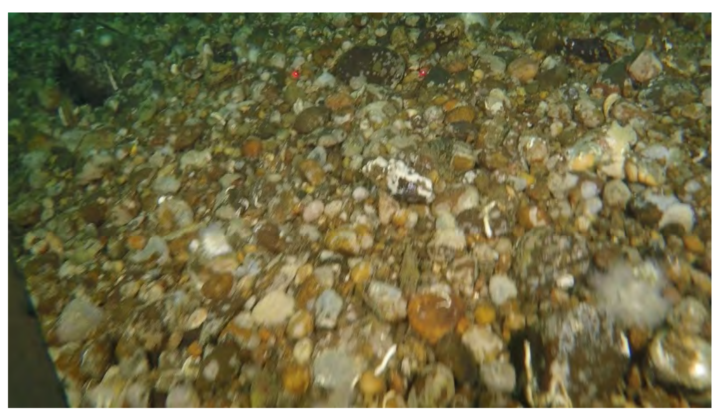
C 3:52

D 4:35

E 5:08

F 5:41

G 6:35



H 7:16

Plate 12a. Transect VS-12 – Biotic community: Attached Moderate *Arbacia punculata* and co-occurring sparse *Schizoporella*, *Halichondria*, *Mytilus*, *Anachis* and trace *Astrangia*, and Cliona on gravel pavement of pebble/granule at 64 ft MLLW. Associated taxa: Fish – Trace Juvenile *Centropristes*

I 8:00

J 8:39

K 9:07

L 9:58

M 10:34

N 10:56

O 11:34

P 12:21

Plate 12b. Transect VS-12 – Biotic community: Attached Moderate *Arbacia punculata* and co-occurring sparse *Schizoporella*, *Halichondria*, *Mytilus*, *Anachis* and trace *Astrangia*, and Cliona on gravel pavement of pebble/granule at 64 ft MLLW. Associated taxa: Fish – Trace Juvenile *Centropristes*

A 2:23

B 4:07

C 5:00

D 6:03

E 7:03

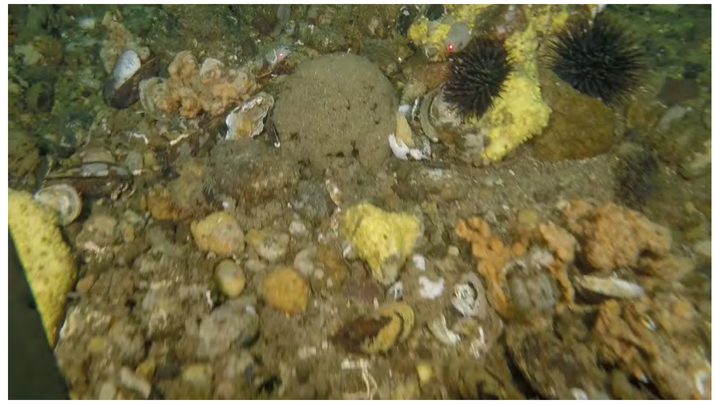
F 8:07

G 8:43

H 9:31

Plate 13a. Transect VS-13 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium*, and Arbacia; sparse *Cliona*, *Halichondria*, *Schizoporella*, and *Ananchis*; trace *Astrangia*, and *Didemnum* on gravel pavement of cobbles at 64 ft MLLW. Associated taxa: Mobile Arthopods - trace *Pagurus*; Fish – sparse Juvenile *Centropritis* and trace *Spaeroides*

I 10:33



J 11:32

K 12:08

L 12:32

M 13:07

N 14:02

O 15:01

P 15:30

Plate 13b. Transect VS-13 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium*, and Arbacia; sparse *Cliona*, *Halichondria*, *Schizoporella*, and *Ananchis*; trace *Astrangia*, and *Didemnum* on gravel pavement of cobbles at 64 ft MLLW. Associated taxa: Mobile Arthopods - trace *Pagurus*; Fish – sparse Juvenile *Centropritis* and trace Sphaeroides

A 4:10

B 5:30

C 8:28

D 9:14

E 10:58

F 11:43

G 12:30

H 14:03

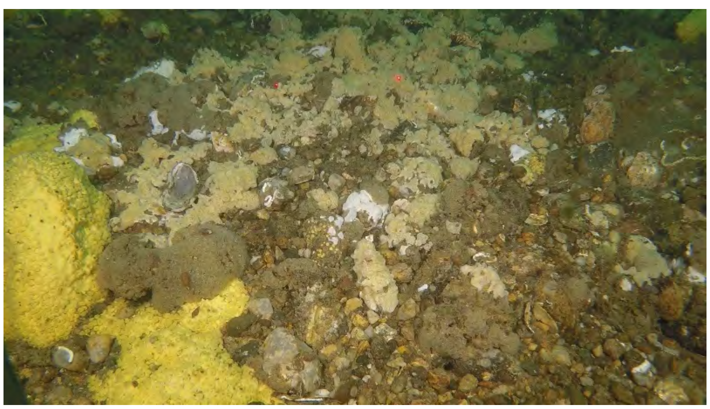
Plate 14a. Transect VS-14 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium*, *Halichondria* and *Mytilis*; sparse *Cliona*, *Schizoporella*, and *Arbacia*; trace *Astrangia* on gravel pavement of cobbles at 68 ft MLLW. Associated taxa: Mobile Arthopods - trace *Pagurus* and *Pycnogonida*; Fish – moderate Juvenile *Centropristes* and trace *Sphaeroides* and *Stenotomus*

I 17:44

J 21:18

K 25:10

L 27:28



M 29:38

N 31:24

O 33:42

P 35:46

Plate 14b. Transect VS-14 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium*, *Halichondria* and *Mytilis*; sparse *Cliona*, *Schizoporella*, and *Arbacia*; trace *Astrangia* on gravel pavement of cobbles at 68 ft MLLW. Associated taxa: Mobile Arthopods - trace *Pagurus* and *Pycnogonida*; Fish – moderate Juvenile *Centropristes* and trace *Sphaeroides* and *Stenotomus*

Q 38:19

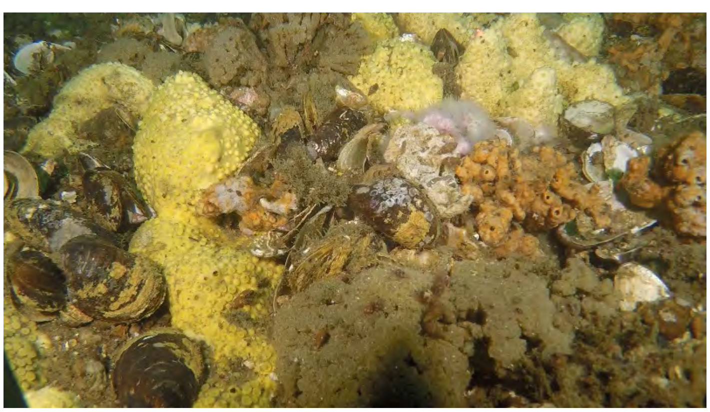
R 40:17

S 42:31

T 44:51

U 47:44

V 49:58



W 52:44

X 53:42

Plate 14c. Transect VS-14 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium*, *Halichondria* and *Mytilis*; sparse *Cliona*, *Schizoporella*, and *Arbacia*; trace *Astrangia* on gravel pavement of cobbles at 68 ft MLLW. Associated taxa: Mobile Arthopods - trace *Pagurus* and *Pycnogonida*; Fish – moderate Juvenile *Centropristes* and trace *Sphaeroides* and *Stenotomus*

A 2:35

B 3:53

C 5:08

D 5:33

E 6:32

F 7:39

G 8:40

H 9:02

Plate 15a. Transect VS-15 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium*, *Cliona*, and *Halichondria*; sparse *Schizoporella*, *Astrangia*, *Anachis*, and *Arbacia*; trace *Didemnum* on gravel pavement of cobbles at 72 ft MLLW. Associated taxa: Fish - Dense Juvenile *Centropristes,* trace Adult *Centropristes*; Mobile Arthropods - trace *Pycnogonida*

I 9:58

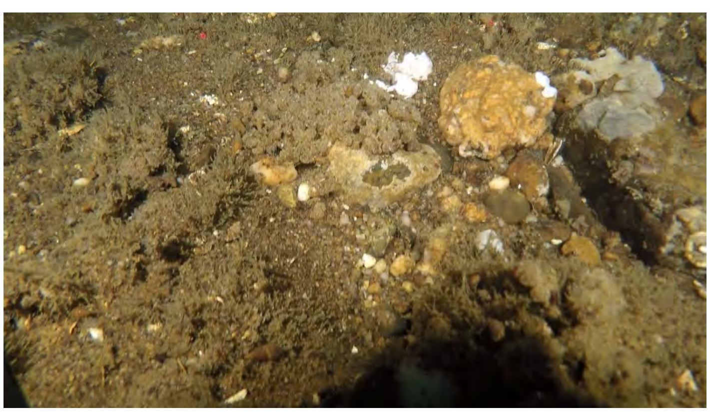
J 10:56

K 12:19

L 14:00

M 14:59

N 15:52



O 16:32

P 17:35

Plate 15b. Transect VS-15 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium*, *Cliona*, and *Halichondria*; sparse *Schizoporella*, *Astrangia*, *Anachis*, and *Arbacia*; trace *Didemnum* on gravel pavement of cobbles at 72 ft MLLW. Associated taxa: Fish - Dense Juvenile *Centropristes,* trace Adult *Centropristes*; Mobile Arthropods - trace *Pycnogonida*

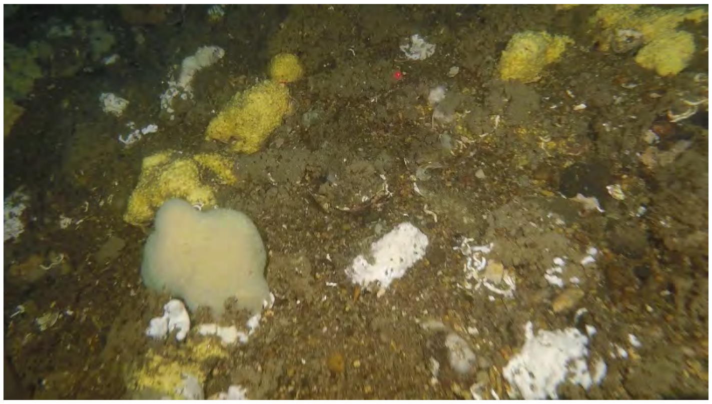

Q 18:17 R 18:43


S 19:43 T 20:46

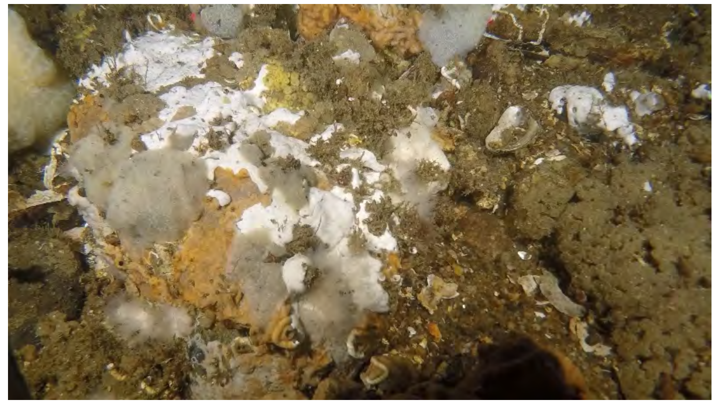

U 21:42 V 22:18


W 22:57 X 23:05

Plate 15c. Transect VS-15 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium*, *Cliona*, and *Halichondria*; sparse *Schizoporella*, *Astrangia*, *Anachis*, and *Arbacia*; trace *Didemnum* on gravel pavement of cobbles at 72 ft MLLW. Associated taxa: Fish - Dense Juvenile *Centropristes,* trace Adult *Centropristes*; Mobile Arthropods - trace *Pycnogonida*



A 3:22



B 3:33

C 4:20

D 5:18

E 6:53

F 7:14

G 8:48

H 9:20

Plate 16a. Transect VS-16 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium*, and *Cliona*; sparse *Schizoporella*, *Astrangia*, *Didemnum,* and *Anachis*; trace *Arbacia* on gravel pavement with boulders and cobbles at 86 ft MLLW. Associated taxa: Mobile Arthopods – trace *Pagurus* and *Pycnogonida*; Fish - Dense Juvenile *Centropristes*, Trace *Tautoga* and *Tautogolabru*s

I 10:30

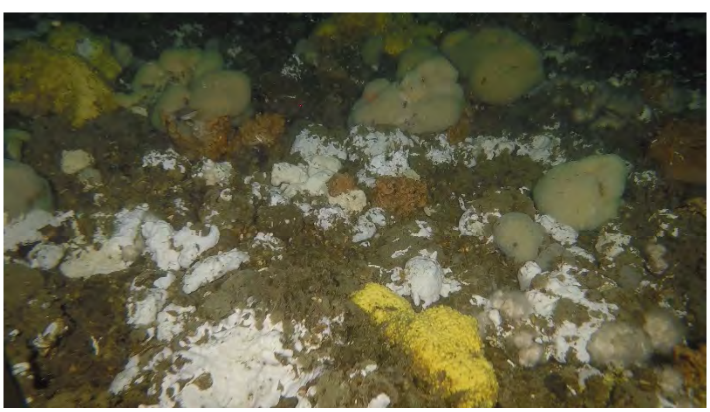
J 11:28

K 14:21

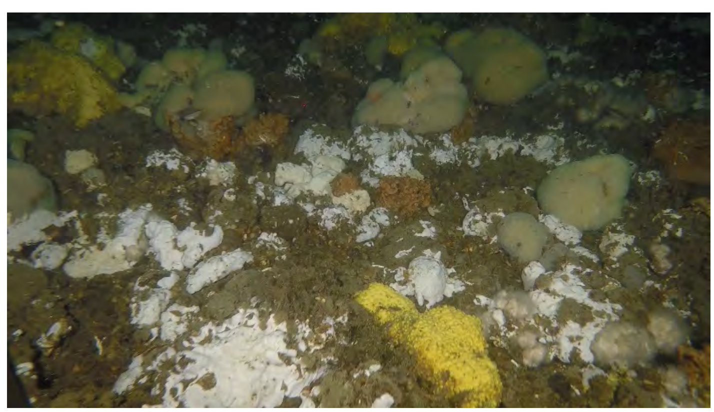
L 14:59

M 16:05

N 17:37



O 17:44



P 18:44

Plate 16b. Transect VS-16 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium*, and *Cliona*; sparse *Schizoporella*, *Astrangia*, *Didemnum,* and *Anachis*; trace *Arbacia* on gravel pavement with boulders and cobbles at 86 ft MLLW. Associated taxa: Mobile Arthopods – trace *Pagurus* and *Pycnogonida*; Fish - Dense Juvenile *Centropristes*, Trace *Tautoga* and *Tautogolabru*s

A 1:17

B 2:24

C 3:02

D 3:53

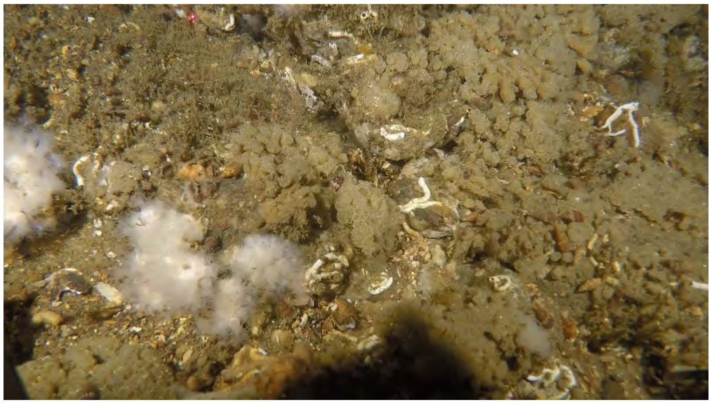
E 4:49

F 5:21

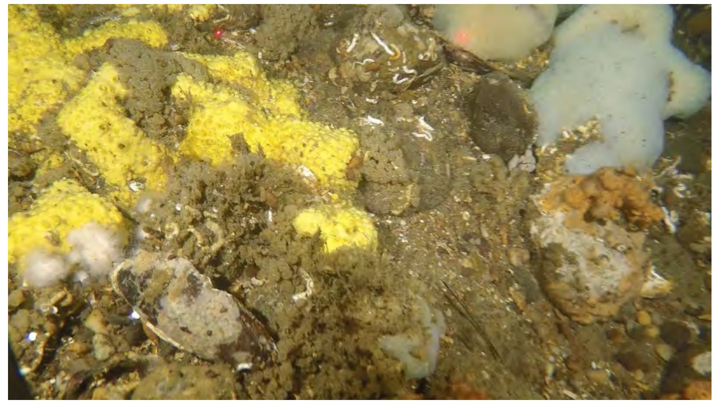
G 6:39

H 7:24

Plate 17a. Transect VS-17 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium*, *Cliona*, *Astrangia*; sparse *Schizoporella*, *Anachis* and *Arbacia* on gravel pavement with boulders at 76 ft MLLW. Associated taxa: Fish - Dense Juvenile *Centropristes*, trace *Tautoga;* Mobile Arthropods - *Pycnogonida*

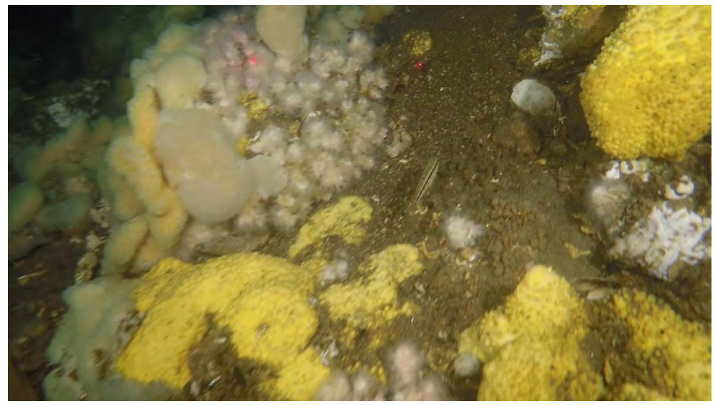


I 8:34



J 8:42

K 12:16



L 13:37

M 14:28

N 14:57

O 15:57

P 17:04

Plate 17b. Transect VS-17 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium*, *Cliona*, *Astrangia*; sparse *Schizoporella*, *Anachis* and *Arbacia* on gravel pavement with boulders at 76 ft MLLW. Associated taxa: Fish - Dense Juvenile *Centropristes*, trace *Tautoga;* Mobile Arthropods - *Pycnogonida*

A 2:22

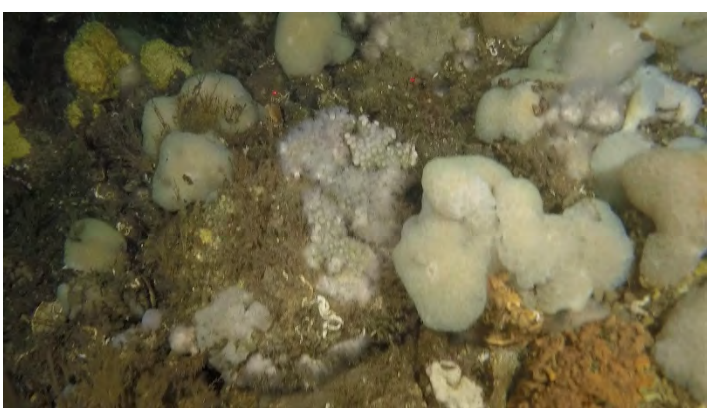
B 3:02

C 3:58

D 5:01

E 5:57

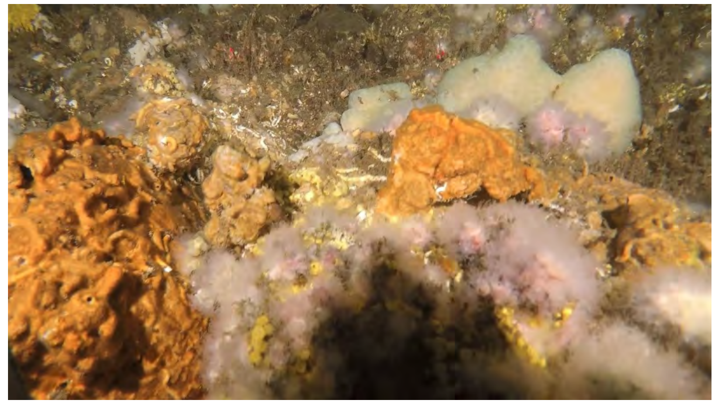
F 6:52



G 8:06

H 9:09

Plate 18a. Transect VS-18 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium* and *Cliona*; sparse *Halichondria*, *Schizoporella*, *Anachis* and *Astrangia*; trace *Didemnum* on gravel pavement with boulders and cobbles at 69 ft MLLW. Associated taxa Fish - dense Juvenile *Centropristes*; trace Adult *Centropristes*, *Sphaeroides,* and *Tautogolabrus*; Mobile Arthropods - trace *Pycnogonida*

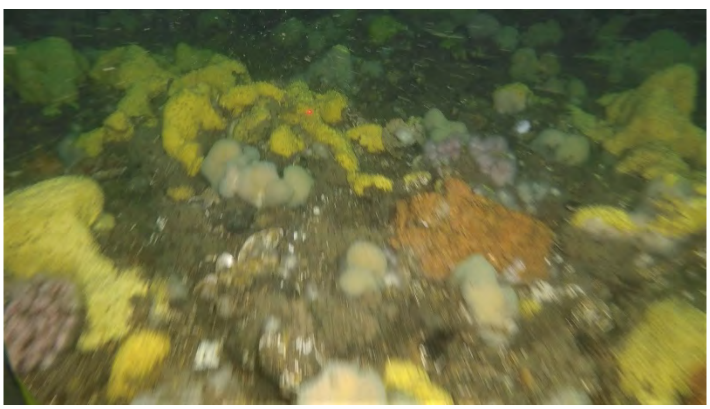


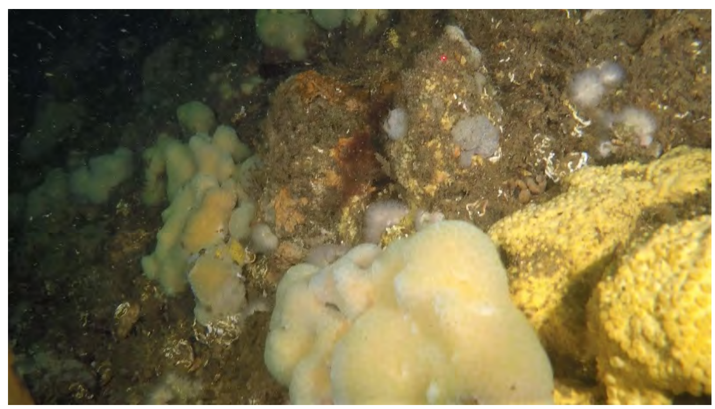
I 9:21

J 9:49

K 10:02

L 10:57





M 11:01

N 12:23

O 13:02

P 13:34

Plate 18b. Transect VS-18 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium* and *Cliona*; sparse *Halichondria*, *Schizoporella*, *Anachis* and *Astrangia*; trace *Didemnum* on gravel pavement with boulders and cobbles at 69 ft MLLW. Associated taxa Fish - dense Juvenile *Centropristes*; trace Adult *Centropristes*, *Sphaeroides,* and *Tautogolabrus*; Mobile Arthropods - trace *Pycnogonida*

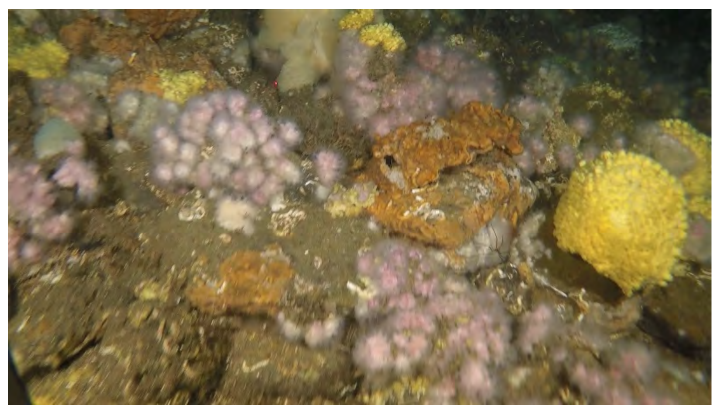
Q 13:57

R 14:31

S 15:07

T 16:04

U 17:04



V 17:32

W 17:49

X 17:55

Plate 18c. Transect VS-18 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium* and *Cliona*; sparse *Halichondria*, *Schizoporella*, *Anachis* and *Astrangia*; trace *Didemnum* on gravel pavement with boulders and cobbles at 69 ft MLLW. Associated taxa Fish - dense Juvenile *Centropristes*; trace Adult *Centropristes*, *Sphaeroides,* and *Tautogolabrus*; Mobile Arthropods - trace *Pycnogonida*

A 2:27

B 4:32

C 5:04

D 6:05

E 7:57

F 9:00

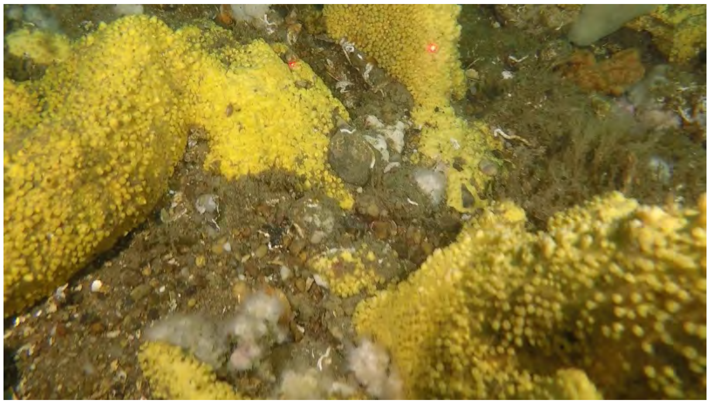
G 10:00

H 11:10

Plate 19a. Transect VS-19 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium* and *Halichondria*; sparse – *Schizoporella*, *Cliona*, *Astrangia*, *Anachis* and *Arbacia*; trace *Didemnum* on gravel pavement with boulders and cobbles at 63 ft MLLW. Associated taxa: Fish - moderate Juvenile *Centropristes*, trace *Tautoga*; Mobile Arthropods - trace *Pycnogonida*

I 12:37

J 13:52



K 15:31

L 16:05

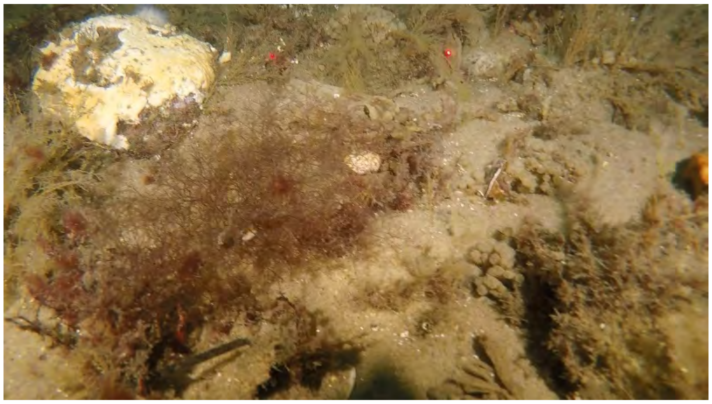
M 17:30

N 18:03

O 18:15

P 19:44

Plate 19b. Transect VS-19 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium* and *Halichondria*; sparse – *Schizoporella*, *Cliona*, *Astrangia*, *Anachis* and *Arbacia*; trace *Didemnum* on gravel pavement with boulders and cobbles at 63 ft MLLW. Associated taxa: Fish - moderate Juvenile *Centropristes*, trace *Tautoga*; Mobile Arthropods - trace *Pycnogonida*




A 4:01

B 5:01


C 5:55

D 6:36


E 7:21

F 8:05


G 8:59

H 9:29

Plate 20a. Transect VS-20- Biotic Community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium*, *Didemnum*, *Cliona*, *Astrangia*, *Anachis* and *Arbacia*; trace *Halichondria*, *Schizoporella* on gravel pavement with cobbles at 69 ft MLLW. Associated taxa: Mobile Arthopods trace *Limulus* and *Pycnogonida*; Fish - sparse Juvenile *Centropristes*, trace *Tautoga*

I 10:56

J 11:59

K 12:38

L 12:57

M 14:41

N 15:09

O 16:02

P 16:57

Plate 20b. Transect VS-20- Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium*, *Didemnum*, *Cliona*, *Astrangia*, *Anachis* and *Arbacia*; trace *Halichondria*, *Schizoporella* on gravel pavement with cobbles at 69 ft MLLW. Associated taxa: Mobile Arthopods trace *Limulus* and *Pycnogonida*; Fish - sparse Juvenile *Centropristes*, trace *Tautoga*

A 2:08 | B 2:59

C 3:22 | D 5:23

E 6:48 | F 7:56

G 8:31 | H 9:34

Plate 21a. Transect VS-21 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium,* and *Didemnum*; sparse *Schizoporella*, *Halichondri*a and *Anachis*; trace *Cliona*, and *Mytilis* on gravel pavement with cobbles at 72 ft MLLW. Associated taxa: Mobile Arthopods – Trace *Pagurus*; Fish - Moderate Juvenile *Centropristes*

I 10:45

J 11:26

K 12:30

L 14:29

M 15:37

N 16:48

O 17:10

P 18:15

Plate 21b. Transect VS-21 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium,* and *Didemnum*; sparse *Schizoporella*, *Halichondri*a and *Anachis*; trace *Cliona*, and *Mytilis* on gravel pavement with cobbles at 72 ft MLLW. Associated taxa: Mobile Arthopods – Trace *Pagurus*; Fish - Moderate Juvenile *Centropristes*

Q 19:45

R 20:42

S 21:55

T 25:22

U 28:48

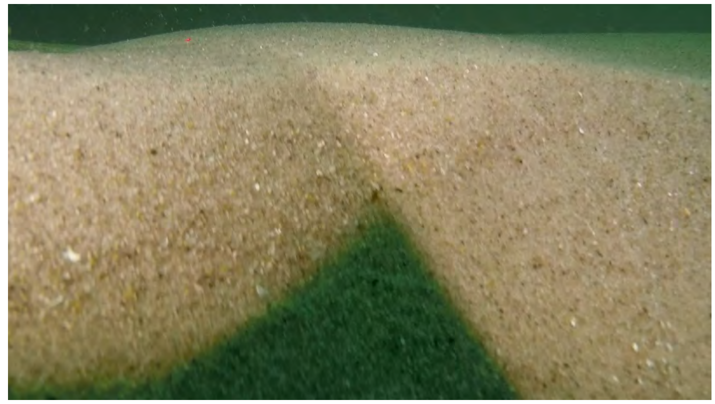
V 32:00

W 33:46

X 35:30

Plate 21c. Transect VS-21 – Biotic community: Mollusk/Sponge/Tunicate Colonizers (Large Megafauna) and co-occurring moderate *Amaroucium,* and *Didemnum*; sparse *Schizoporella*, *Halichondri*a and *Anachis*; trace *Cliona*, and *Mytilis* on gravel pavement with cobbles at 72 ft MLLW. Associated taxa: Mobile Arthopods – Trace *Pagurus*; Fish - Moderate Juvenile *Centropristes*

A 1:26



B 2:38

C 3:06

D 3:57

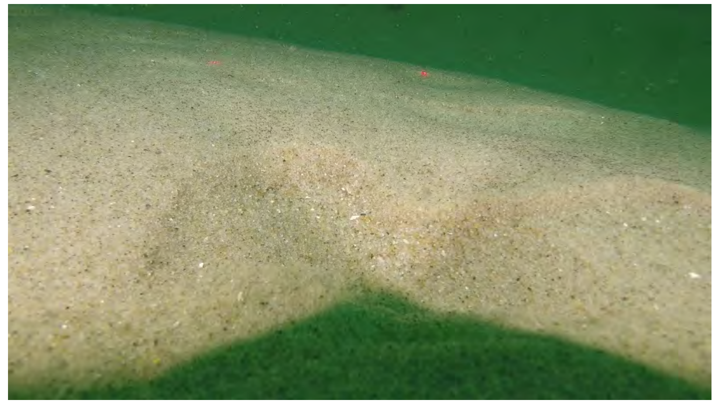
E 5:02

F 5:44

G 6:58

H 8:20

Plate 22a. Transect VS-22 – Biotic subclass: Soft sediment fauna associated with sand waves; with co-occurring trace *Hydrozoa* and *Didemnum* in troughs in the pebble/granule substrate of the sand wave troughs at 50 ft MLLW. Associated taxa: Fish – Trace Adult and Juvenile *Centropristes;* Mobile Arthopods – *Pagurus,* and *Ovalipes*



I 10:03

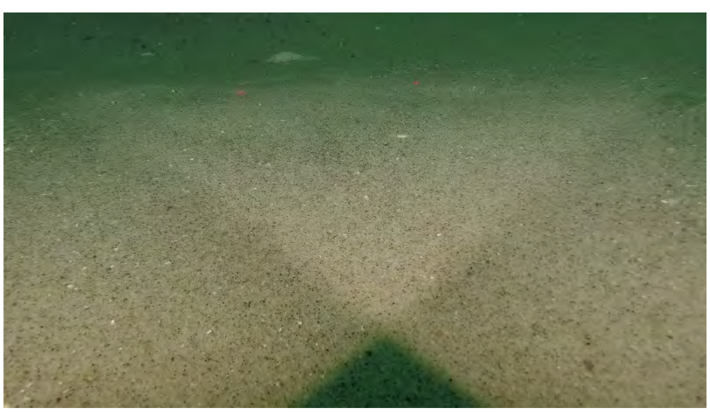
J 11:34

K 14:31

L 16:48

M 19:42

N 20:53



O 22:52

P 25:51

Plate 22b. Transect VS-22 – Biotic subclass: Soft sediment fauna associated with sand waves; with co-occurring trace *Hydrozoa* and *Didemnum* in troughs in the pebble/granule substrate of the sand wave troughs at 50 ft MLLW. Associated taxa: Fish – Trace Adult and Juvenile *Centropristes;* Mobile Arthopods – *Pagurus,* and *Ovalipes*

A 1:25

B 3:58

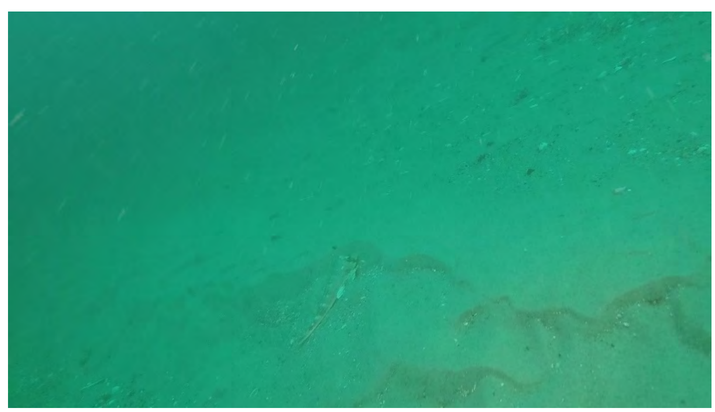
C 6:04

D 6:49

E 8:52

F 10:51

G 11:37



H 13:04

Plate 23a. Transect VS-23 – Biotic subclass: Soft sediment fauna associated with sand waves; with co-occurring sparse attached *Crepidul*a and trace *Hydrozoa Codium* and *Sargassum* in troughs of the pebble/granule substrate of the sand wave troughs at 38 ft MLLW. Associated taxa: Fish **-** Sparse *Prionotus*, and trace Juvenile *Centropristes*; Mobile Arthopods - *Limulus*, *Pagurus*, and *Loligo*

I 13:36

J 16:03

K 19:45

L 20:29

M 22:29

N 24:55

O 26:05

P 27:14

Plate 23b. Transect VS-23 – Biotic subclass: Soft sediment fauna associated with sand waves; with co-occurring sparse attached *Crepidul*a and trace *Hydrozoa Codium* and *Sargassum* in troughs of the pebble/granule substrate of the sand wave troughs at 38 ft MLLW. Associated taxa: Fish **-** Sparse *Prionotus*, and trace Juvenile *Centropristes*; Mobile Arthopods - *Limulus*, *Pagurus*, and *Loligo*

A 1:17

B 2:11

C 3:21

D 7:21

E 9:31

F 11:46

G 14:39

H 15:29

Plate 24a. Transect VS-24 – Biotic subclass: Soft sediment fauna associated with sand waves; with co-occurring sparse attached *Amoroucium*, Anachis and benthic Macroalage Tube Worms in the shell rubble troughs of the sand ripples at 45 ft MLLW. Associated taxa: Fish - trace *Prionotus* and Juvenile *Centropristes*; Mobile Arthopods - Pagurus

I 17:38

J 18:31

K 21:16

L 24:12

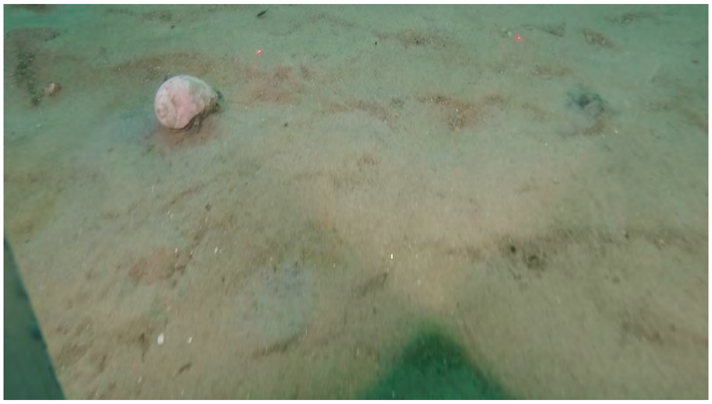
M 24:45

N 27:45

O 32:50

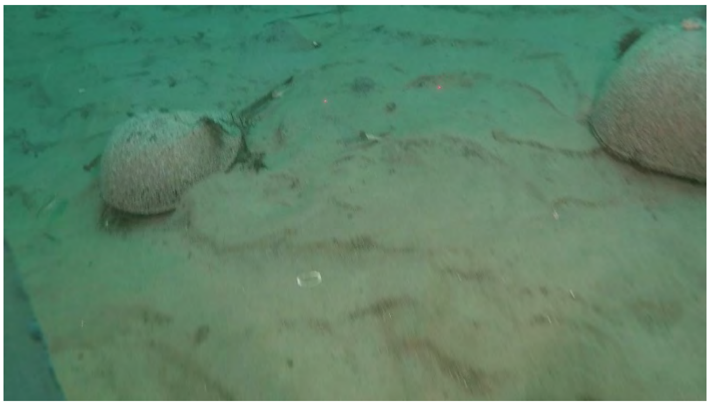
P 34:12

Plate 24b. Transect VS-24 – Biotic subclass: Soft sediment fauna associated with sand waves; with co-occurring sparse attached *Amoroucium*, Anachis and benthic Macroalage Tube Worms in the shell rubble troughs of the sand ripples at 45 ft MLLW. Associated taxa: Fish - trace *Prionotus* and Juvenile *Centropristes*; Mobile Arthopods - Pagurus



A 2:13

B 4:36



C 5:34

D 8:29

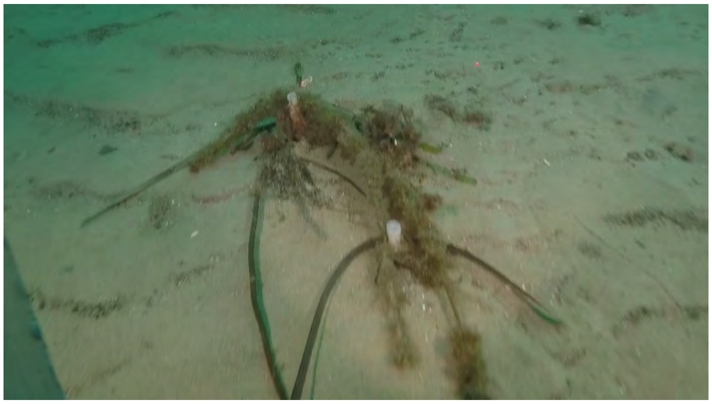
E 10:06

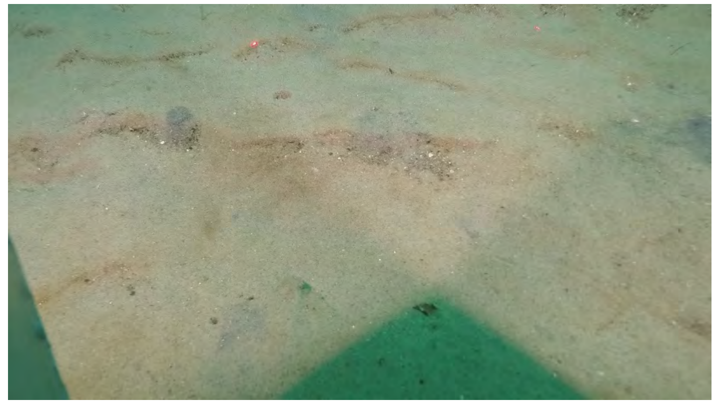
F 12:30

G 13:49

H 15:52

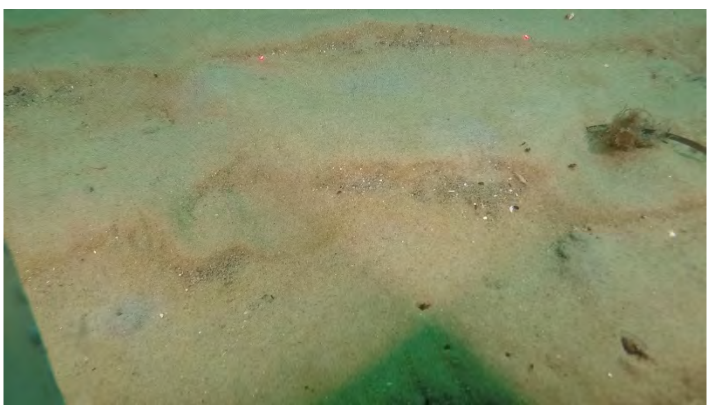
Plate 25a. Transect VS-25 – Biotic subclass: Inferred Fauna with co-occurring sparse Fecal Casts**,** and trace *Chaetopterus* in sand ripples at 34 ft MLLW. Associated taxa: Fish – Trace Juvenile *Centropristes*, and *Prionotus*; Mobile Arthopods - *Limulus*, and *Pagarus*





I 17:10 J 17:46

K 18:38 L 20:52



M 22:43 N 23:51

O 24:44 P 25:15

Plate 25b. Transect VS-25 – Biotic subclass: Inferred Fauna with co-occurring sparse Fecal Casts**,** and trace *Chaetopterus* in sand ripples at 34 ft MLLW. Associated taxa: Fish – Trace Juvenile *Centropristes*, and *Prionotus*; Mobile Arthopods - *Limulus*, and *Pagarus*

A 1:33

B 2:05

C 2:57

D 4:33

E 5:30

F 6:31

G 7:31

H 8:34

Plate 26a. Transect VS-26 – Biotic community: *Crepidula* Reef with co-occurring moderate *Bugula* and trace *Codium, Sargassum*, and *Porphyra* on a *Crepidula* Reef at 23 ft MLLW. Associated taxa: Fish – Sparse Juvenile *Centropristes*, trace *Sphaeroides*; Mobile Arthopods - trace *Limulus*

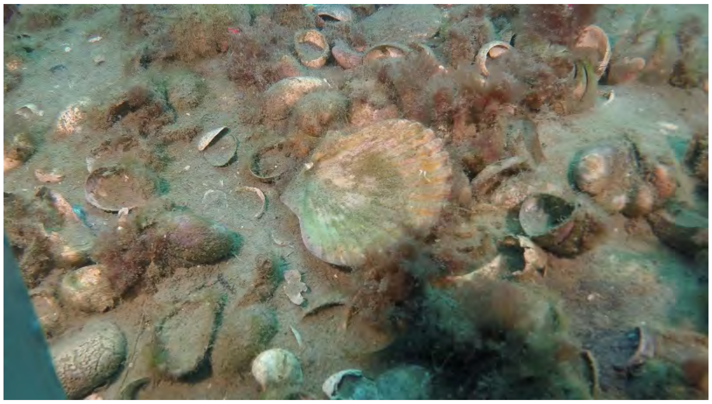

I 9:30 J 9:57


K 11:01 L 11:42


M 12:27 N 13:04


O 13:31 P 14:02

Plate 26b. Transect VS-26 – Biotic community: *Crepidula* Reef with co-occurring moderate *Bugula* and trace *Codium, Sargassum*, and *Porphyra* on a *Crepidula* Reef at 23 ft MLLW. Associated taxa: Fish – Sparse Juvenile *Centropristes*, trace *Sphaeroides*; Mobile Arthopods - trace *Limulus*



A 1:31

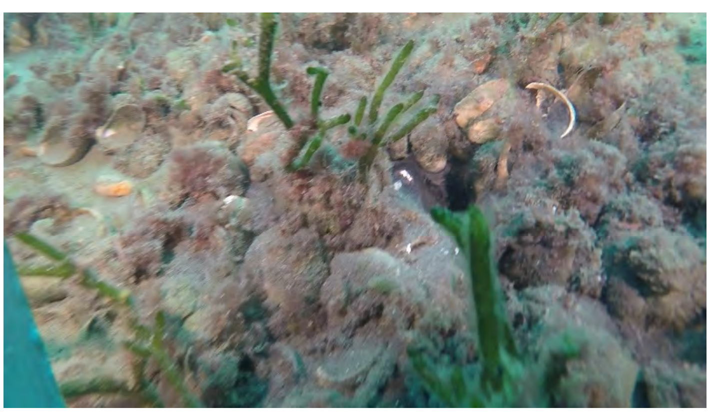
B 1:59

C 3:14

D 4:39

E 6:26

F 8:51



G 11:19

H 12:16

Plate 27a. Transect VS-27 – Biotic community: *Crepidula* Reef with Codium Communities and co-occurring moderate *Bugula* and *Porphyra* on a *Crepidula* Reef at 19 ft MLLW. Associated taxa: Mobile Arthopods - Trace *Limulus*; Fish – Trace Juvenile *Centropristes*

A 2:01

B 3:39

C 5:15

D 6:57

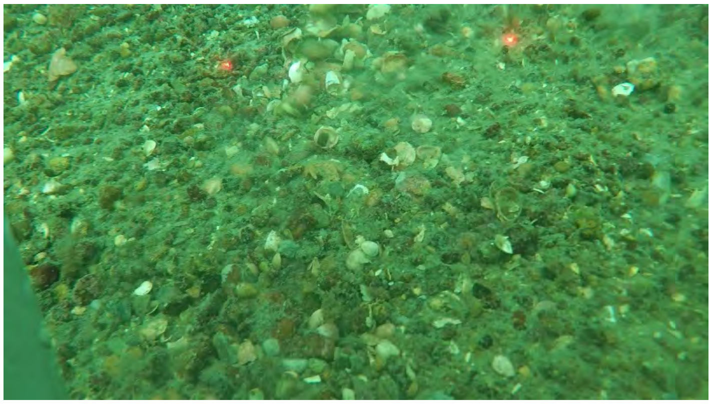
E 7:46

F 9:53

G 10:50

H 11:29

Plate 28a. Transect VS-28 – Biotic community: *Crepidula* Reef with Codium Communities and co-occurring moderate *Bugula*, *Porphyra* and Branching Red Algae on a *Crepidula* Reef at 19 ft MLLW. Associated taxa: Fish – Trace Juvenile *Centropristes*, and *Sphaeroides*



A 2:07

B 3:13

C 5:01

D 5:57

E 6:19

F 8:07

G 8:43

H 14:08

Plate 29a. Transect CS-1 – Biotic community: *Crepidula* Reef with co-occurring moderate *Bugula* and sparse *Porphyra* and Branching Red Algae on a *Crepidula* Reef at 18 ft MLLW. Associated taxa: Fish – Trace Juvenile *Centropristes*

A 0:56

B 1:23

C 2:41

D 3:18

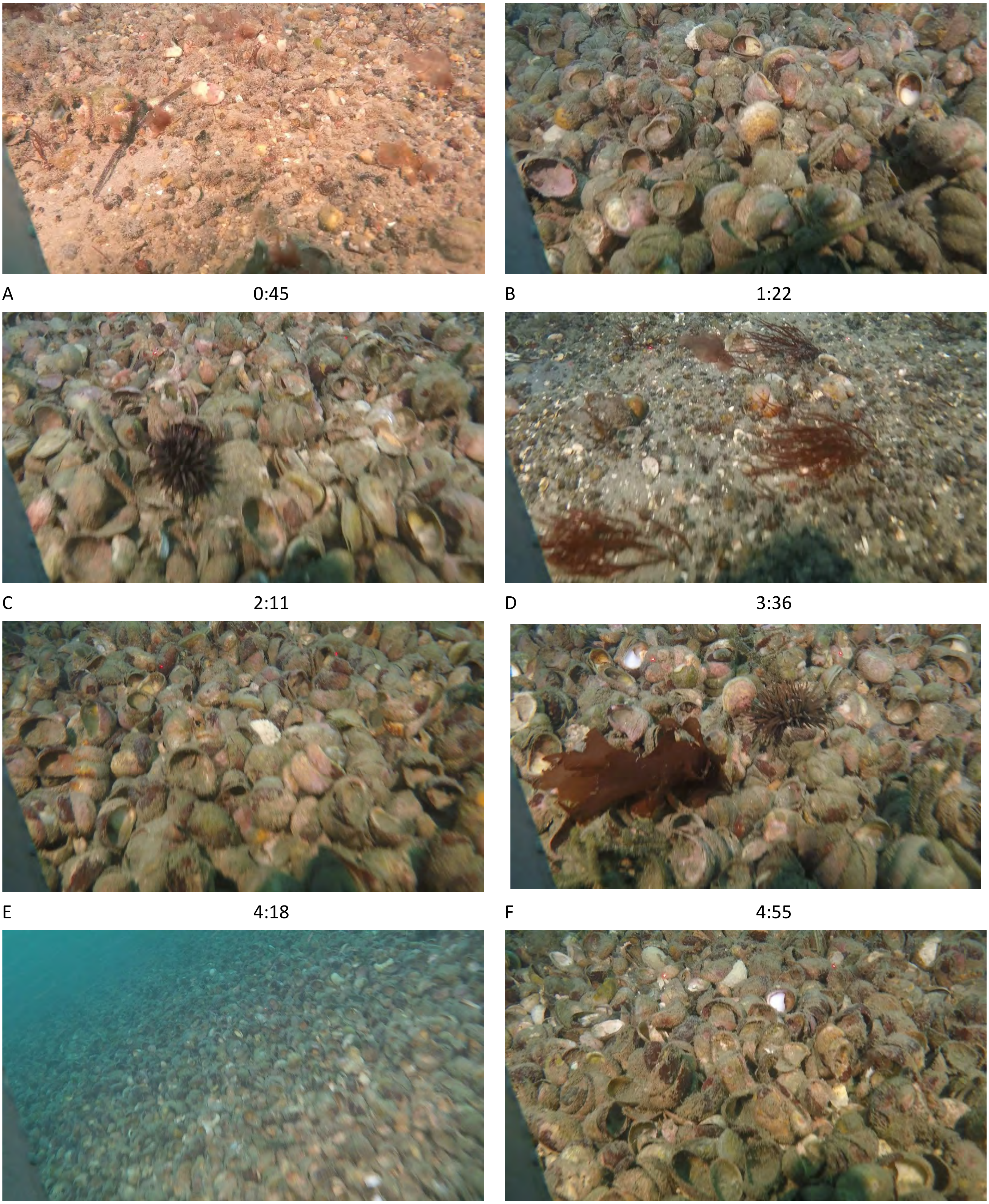
E 4:08

F 4:53

G 5:23

H 6:54

Plate 30a. Transect CS-2 – Biotic community: *Crepidula* Reef with co-occurring moderate *Bugula* and sparse *Porphyra* and Branching Red Algae on a *Crepidula* Reef at 20 ft MLLW. Associated taxa: Fish – Trace Juvenile *Centropristes*



A 0:45 | B 1:22 | C 2:11 | D 3:36 | E 4:18 | F 4:55 | G 5:58 | H 6:26

Plate 31a. Transect CS-3 – Biotic community: *Crepidula* Reef with co-occurring moderate *Bugula* and sparse *Porphyra* and Branching Red Algae on a *Crepidula* Reef at 18 ft MLLW. Associated taxa: Fish – Trace Juvenile *Centropristes*

A 3:01

B 4:44

C 5:20

D 5:39

E 6:40

F 7:49

G 8:07

H 9:36

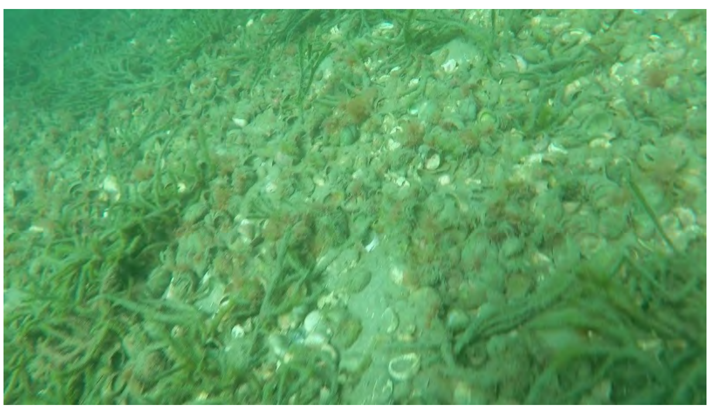
Plate 32a. Transect CS-4 – Biotic community: *Crepidula* Reef with Codium Communities and co-occurring moderate *Bugula*, and Benthic Macroalgae; Sparce *Porphyra*; Trace Branching Red Algae on a *Crepidula* Reef at 16 ft MLLW. Associated taxa: Fish – Trace Juvenile *Centropristis*

A 1:19

B 2:05

C 2:55

D 3:41



E 4:23

F 5:13

G 5:17

H 5:20

Plate 33a. Transect CS-5 – Biotic community: *Crepidula* Reef with Codium Communities and co-occurring moderate *Bugula*, and Benthic Macroalgae; Sparce *Porphyra*; Trace Branching Red Algae on a *Crepidula* Reef at 15 ft MLLW. Associated taxa: Fish – Trace Juvenile *Centropristes*

A 0:47 B 1:02

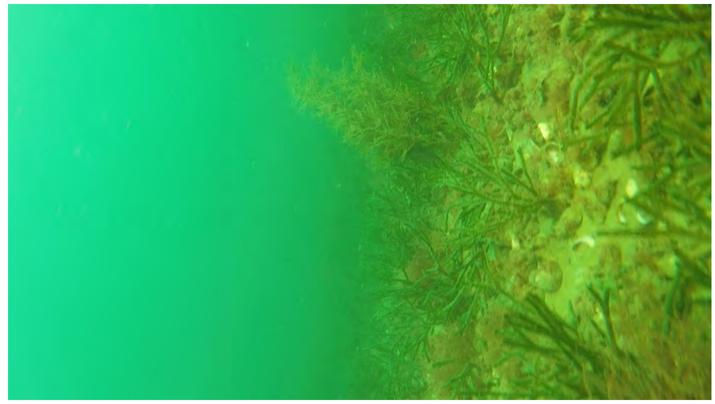
C 2:48 D 3:10

E 5:08 F 6:03

G 6:11 H 6:44

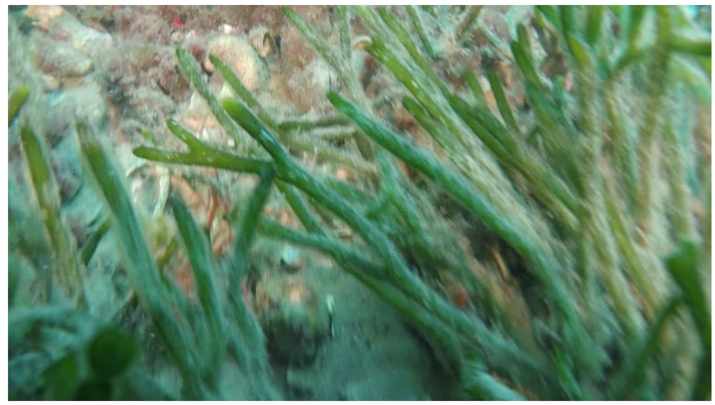
Plate 34a. Transect CS-6 – Biotic community: *Crepidula* Reef with Codium Communities and co-occurring moderate *Bugula*, and Benthic Macroalgae; Sparce *Porphyra*; Trace Branching Red Algae on a *Crepidula* Reef at 19 ft MLLW. Associated taxa: Mobile Arthopods – Trace *Pagurus*; Fish – Trace Juvenile *Centropristes*

A 1:01



B 1:04

C 1:17



D 3:49

E 4:58

F 7:12

G 7:34

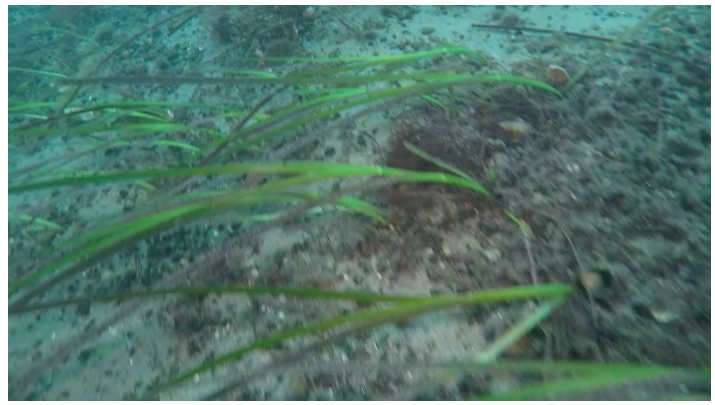
H 7:44

Plate 35a. Transect CS-7 – Biotic community: *Crepidula* Reef with Codium Communities and co-occurring moderate *Bugula*, and Benthic Macroalgae; Sparce *Porphyra*; Trace Branching Red Algae on a *Crepidula* Reef at 19 ft MLLW. Associated taxa: Mobile Arthopods – Fish – Trace Juvenile *Centropristes*

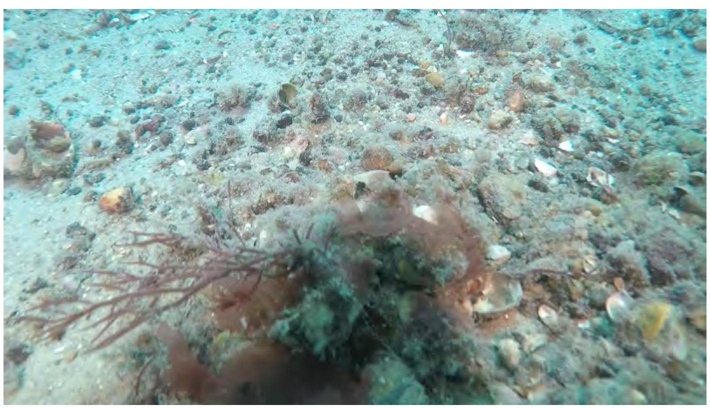
A 0:51

B 1:16

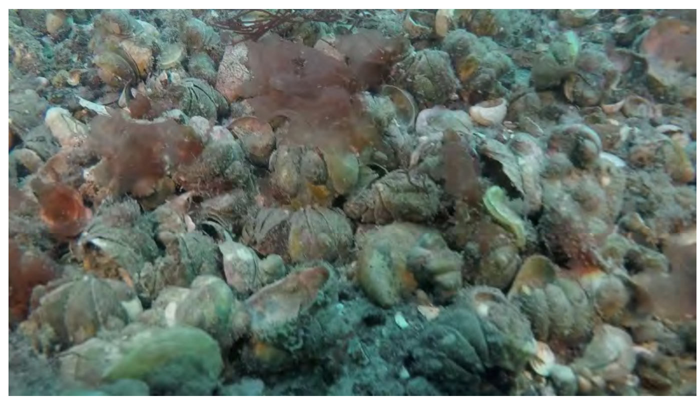
C 2:05



D 4:21



E 6:34



F 6:58

G 7:08

H 7:55

Plate 36a. Transect EG-1 – Biotic community: Nearshore *Zostera marina* Herbaceous Vegetation with co-occurring moderate *Bugula* and sparse *Porphyra, Sargassum* and Red Branching Algae on gravelly sand at 13 ft MLLW. As well as offshore *Crepidula* Reef with co-occurring trace Arbacia and sparse *Porphyra, Codium, and* Branching Red Algae on a *Crepidula* Reef in 17 ft MLLW. Associated taxa: Mobile Arthopods – Trace Limulus; Fish - Tautoga

A 2:18

B 3:38

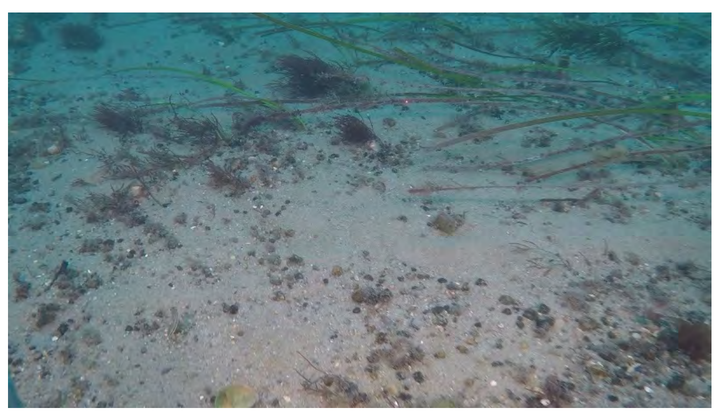
C 5:37

D 7:27

E 7:34

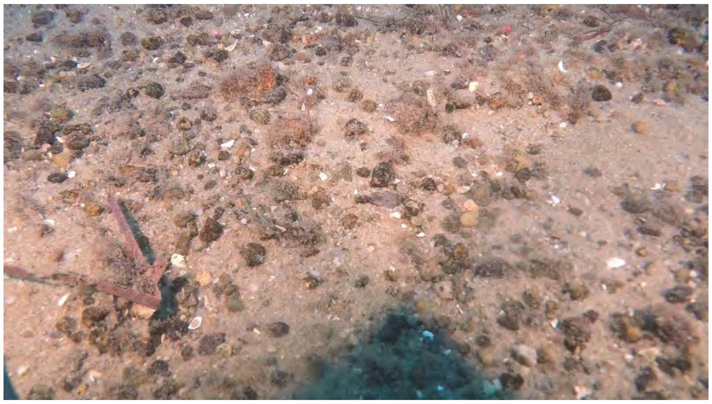
F 8:06

G 8:17



H 9:48

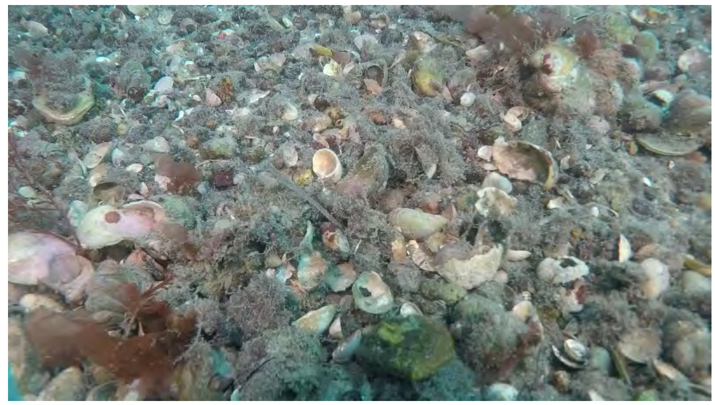
Plate 37a. Transect EG-2C – Biotic community: Nearshore *Zostera marina* Herbaceous Vegetation with co-occurring moderate *Bugula* and sparse *Bittium*, Branching Red Algae and trace *Sargassum* on gravelly sand at 13 ft MLLW. As well as offshore *Crepidula* Reef with co-occurring sparse *Porphyra,* Branching Red Algae and trace *Ulva* on a *Crepidula* Reef in 17 ft MLLW. Associated taxa: Fish – Sparse Juvenile *Centropristes*



I 10:42

J 11:54

K 13:18



L 15:02

M 17:38

N 18:50

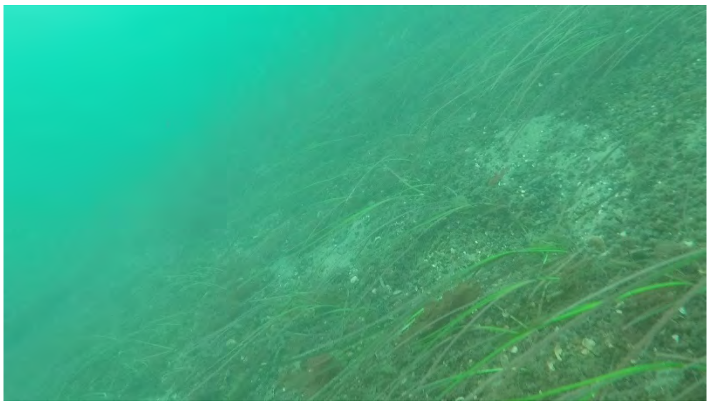
O 22:14

P 23:00

Plate 37b. Transect EG-2C – Biotic community: Nearshore *Zostera marina* Herbaceous Vegetation with co-occurring moderate *Bugula* and sparse *Bittium*, Branching Red Algae and trace *Sargassum* on gravelly sand at 13 ft MLLW. As well as offshore *Crepidula* Reef with co-occurring sparse *Porphyra,* Branching Red Algae and trace *Ulva* on a *Crepidula* Reef in 17 ft MLLW. Associated taxa: Fish – Sparse Juvenile *Centropristes*

A 0:50

B 1:35



C 3:49

D 4:11

E 4:48

F 5:01

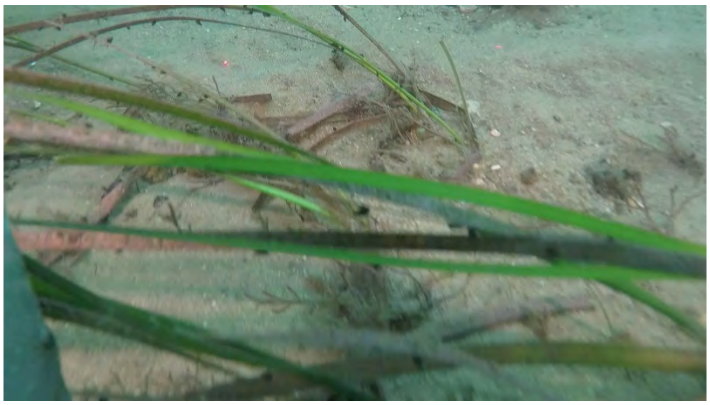
G 5:28

H 8:39

Plate 38a. Transect EG-3 – Biotic community: Nearshore *Zostera marina* Herbaceous Vegetation with co-occurring moderate *Bugula* and sparse *Porphyra*, Branching Red Algae and trace *Sargassum* on sandy gravel at 14 ft MLLW. As well as offshore *Crepidula* Reef with co-occurring moderate *Bugula*, sparse *Porphyra,* and Branching Red Algae on a *Crepidula* Reef in 17 ft MLLW. Associated taxa: Fish – Sparse Juvenile *Centropristes*

A 0:53

B 2:31

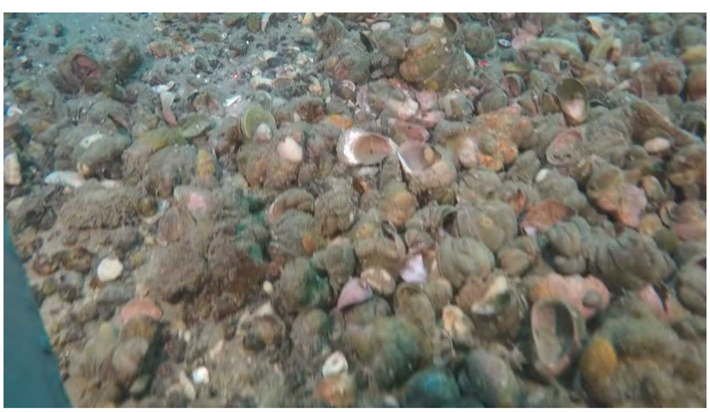


C 4:04

D 5:14

E 6:37

F 7:59



G 10:17

H 11:16

Plate 39a. Transect EG-4 – Biotic community: Nearshore *Zostera marina* Herbaceous Vegetation with co-occurring moderate *Bittium*, *Bugula* and sparse *Porphyra*, Branching Red Algae and trace *Sargassum* on sandy gravel at 14 ft MLLW. As well as offshore *Crepidula* Reef with co-occurring sparse *Bugula*, *Porphyra*, and Branching Red Algae in 17 ft MLLW. Associated taxa: Fish – Sparse Juvenile *Centropristes*

A 2:54

B 3:57

C 4:56

D 5:50

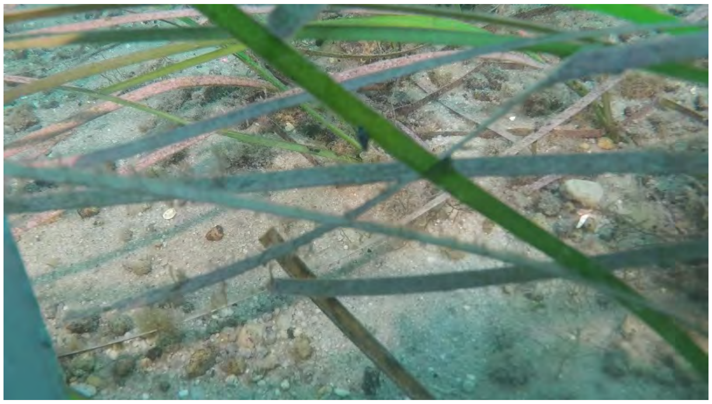
E 7:24

F 7:44

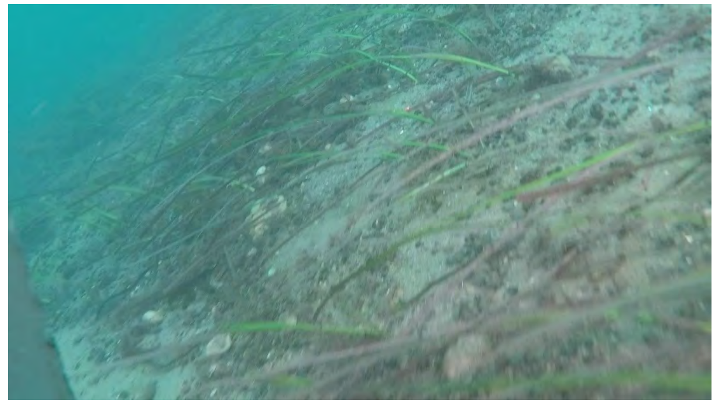
G 8:38

H 10:47

Plate 40a. Transect EG-5 – Biotic community: Nearshore *Zostera marina* Herbaceous Vegetation with co-occurring moderate *Bittium*, *Bugula;* sparse *Porphyr*a, *Ulva* and Branching Red Algae, and trace *Chaetopterus* on sandy gravel at 13 ft MLLW. As well as offshore *Crepidula* Reef with co-occurring moderate *Bugula*, and sparse *Porphyra*, and Branching Red Algae in 17 ft MLLW. Associated taxa: Fish – Sparse Juvenile *Centropristes*



A 1:37



B 3:41

C 4:41

D 7:04

E 9:17

F 9:31

G 10:14

H 11:08

Plate 41a. Transect EG-6 – Biotic community: Nearshore *Zostera marina* Herbaceous Vegetation with co-occurring moderate *Bittium*, *Bugula, and* sparse *Porphyr*a, and Branching Red Algae on sandy gravel at 13 ft MLLW. As well as offshore *Crepidula* Reef with co-occurring sparse *Bugula*, and *Porphyra*, and Branching Red Algae, and trace *Sargassum* in 17 ft MLLW. Associated taxa: Fish – Sparse Juvenile *Centropristes,* trace *Tautoga*

APPENDIX D

CMECS Representative Classification Units with Photographs

EG-2C-A. Seagrass Bed (*Zostera marina, Bittium*)

Biographic Setting:

Realm: Temperate North Atlantic

Province: Cold Temperate Northwest Atlantic

Ecoregion: Virginian

Aquatic Setting

System: Marine

Subsystem: Marine Nearshore

Tidal Zone: Marine Nearshore Subtidal

Biotic Component:

Biotic Setting: Benthic Biota

Biotic Class: Aquatic Vegetation Bed

Biotic Subclass: Aquatic Vascular Vegetation

Biotic Group: Seagrass Bed

Biotic Community: *Zostera marina*

Water Column Component:

Water Column Layer: Marine Nearshore Surface Layer

Salinity Regime: Euhaline

Temperature Regime: Moderate Water

Geoform Component:

Tectonic Setting: Passive Continental Margin

Physiographic Setting: Sound

Geoform Origin: Geologic

Level 1 Geoform: Megaripples

Level 1 & 2 Geoform: Sediment Wave Fields

Level 1 & 2 Geoform: Till Surface

Substrate Component:

Substrate Origin: Geologic Substrate

Substrate Class: Unconsolidated Mineral Substrate

Substrate Subclass: Fine Unconsolidated Substate

Substrate Group: Gravelly

Substrate Subgroup: Gravelly Sand

CS-3-F. Gastropod Reef (*Crepidula, Arabacia, Laminaria*)

Biographic Setting:

Realm: Temperate North Atlantic

Province: Cold Temperate Northwest Atlantic

Ecoregion: Virginian

Aquatic Setting

System: Marine

Subsystem: Marine Nearshore

Tidal Zone: Marine Nearshore Subtidal

Biotic Component:

Biotic Setting: Benthic Biota

Biotic Class: Reef Biota

Biotic Subclass: Mollusk Reef Biota

Biotic Group: Gastropod Reef

Biotic Community: *Crepidula* Reef

Water Column Component:

Water Column Layer: Marine Nearshore Surface Layer

Salinity Regime: Euhaline

Temperature Regime: Moderate Water

Geoform Component:

Tectonic Setting: Passive Continental Margin

Physiographic Setting: Sound

Geoform Origin: Geologic

Level 1 Geoform: Megaripples

Level 1 & 2 Geoform: Sediment Wave Fields

Level 1 & 2 Geoform: Till Surface

Substrate Component:

Substrate Origin: Biogenic Substrate

Substrate Class: Shell Substrate

Substrate Subclass: Shell Reef Substrate

Substrate Group: *Crepidula* Reef Substrate

Transect VS-2-Q. Attached Sea Urchins (*Didemnum, Mytilus, Anomia, Bugula*)

Biographic Setting:

Realm: Temperate North Atlantic

Province: Cold Temperate Northwest Atlantic

Ecoregion: Virginian

Aquatic Setting

System: Marine

Subsystem: Marine Nearshore

Tidal Zone: Marine Nearshore Subtidal

Biotic Component:

Biotic Setting: Benthic Biota

Biotic Class: Faunal Bed

Biotic Subclass: Attached Fauna

Biotic Group: Attached Sea Urchins

Biotic Community: Attached *Arbacia punculata*

Water Column Component:

Water Column Layer: Marine Nearshore Surface Layer

Salinity Regime: Euhaline

Temperature Regime: Moderate Water

Geoform Component:

Tectonic Setting: Passive Continental Margin

Physiographic Setting: Sound

Geoform Origin: Geologic

Level 1 Geoform: Megaripples

Level 1 & 2 Geoform Type: Sediment Wave Fields

Level 1 & 2 Geoform Type: Till Surface

Substrate Component:

Substrate Origin: Geologic Substrate

Substrate Class: Unconsolidated Mineral Substrate

Substrate Subclass: Course Unconsolidated Substate

Substrate Group: Gravels

Substrate Subgroup : Gravel Pavement (Pebble/Granule)

VS-5-F. Soft Sediment Fauna with associated taxa (*Loligo, Ovalipes, Prionotus*)

Biographic Setting:

Realm: Temperate North Atlantic

Province: Cold Temperate Northwest Atlantic

Ecoregion: Virginian

Aquatic Setting

System: Marine

Subsystem: Marine Nearshore

Tidal Zone: Marine Nearshore Subtidal

Biotic Component:

Biotic Setting: Benthic Biota

Biotic Class: Faunal Bed

Biotic Subclass: Soft Sediment Fauna

Water Column Component:

Water Column Layer: Marine Nearshore Surface Layer

Salinity Regime: Euhaline

Temperature Regime: Moderate Water

Geoform Component:

Tectonic Setting: Passive Continental Margin

Physiographic Setting: Sound

Geoform Origin: Geologic

Level 1 Geoform: Megaripples

Level 1 & 2 Geoform: Sediment Wave Fields

Level 1 & 2 Geoform: Till Surface

Substrate Component:

Substrate Origin: Geologic Substrate

Substrate Class: Unconsolidated Mineral Substrate

Substrate Subclass: Fine Unconsolidated Substate

Substrate Group: Sand (Waves)

Transect VS-6-G. **Attached Tunicates (*Didemnum*) on pebble/granules in sand wave troughs**

Biographic Setting:

Realm: Temperate North Atlantic

Province: Cold Temperate Northwest Atlantic

Ecoregion: Virginian

Aquatic Setting

System: Marine

Subsystem: Marine Nearshore

Tidal Zone: Marine Nearshore Subtidal

Biotic Component:

Biotic Setting: Benthic Biota

Biotic Class: Faunal Bed

Biotic Subclass: Attached Fauna

Biotic Group: Attached Tunicates (in troughs)

Biotic Community: Attached *Didemnum* and *Amoroucium*

Water Column Component:

Water Column Layer: Marine Nearshore Surface Layer

Salinity Regime: Euhaline

Temperature Regime: Moderate Water

Geoform Component:

Tectonic Setting: Passive Continental Margin

Physiographic Setting: Sound

Geoform Origin: Geologic

Level 1 Geoform: Megaripples

Level 1 & 2 Geoform: Sediment Wave Fields

Level 1 & 2 Geoform: Till Surface

Substrate Component:

Substrate Origin: Geologic Substrate

Substrate Class: Rock Substrate

Substrate Subclass: Coarse Unconsolidated Substrate

Substrate Group: Gravel

Substrate Subgroup: Pebble/Granule

Transect VS-10-E. Attached Sea Urchins (*Arbacia, Mytilus, Astrangia*)

Biographic Setting:

Realm: Temperate North Atlantic

Province: Cold Temperate Northwest Atlantic

Ecoregion: Virginian

Aquatic Setting

System: Marine

Subsystem: Marine Nearshore

Tidal Zone: Marine Nearshore Subtidal

Biotic Component:

Biotic Setting: Benthic Biota

Biotic Class: Faunal Bed

Biotic Subclass: Attached Fauna

Biotic Group: Attached Sea Urchins

Biotic Community: Attached *Arbacia punculata*

Water Column Component:

Water Column Layer: Marine Nearshore Surface Layer

Salinity Regime: Euhaline

Temperature Regime: Moderate Water

Geoform Component:

Tectonic Setting: Passive Continental Margin

Physiographic Setting: Sound

Geoform Origin: Geologic

Level 1 Geoform: Megaripples

Level 1 & 2 Geoform: Sediment Wave Fields

Level 1 & 2 Geoform: Till Surface

Substrate Component:

Substrate Origin: Geologic Substrate

Substrate Class: Unconsolidated Mineral Substrate

Substrate Subclass: Course Unconsolidated Substate

Substrate Group: Gravels

Substrate Subgroup: Gravel Pavement (Pebble/Granule)

VS-14-K. Diverse Colonizers (*Schizoporella, Amoroucium, Cliona, Astrangia, Mytilus, Arabacia, Hydroides*)

Biographic Setting:

Realm: Temperate North Atlantic

Province: Cold Temperate Northwest Atlantic

Ecoregion: Virginian

Aquatic Setting

System: Marine

Subsystem: Marine Nearshore

Tidal Zone: Marine Nearshore Subtidal

Biotic Component:

Biotic Setting: Benthic Biota

Biotic Class: Faunal Bed

Biotic Subclass: Attached Fauna

Biotic Group: Diverse Colonizers

Biotic Community: Mollusk/Sponge/Tunicate

(Large Megafauna)

Water Column Component:

Water Column Layer: Marine Nearshore Surface Layer

Salinity Regime: Euhaline

Temperature Regime: Moderate Water

Geoform Component:

Tectonic Setting: Passive Continental Margin

Physiographic Setting: Sound

Geoform Origin: Geologic

Level 1 Geoform: Megaripples

Level 1 & 2 Geoform: Sediment Wave Fields

Level 1 & 2 Geoform: Till Surface

Substrate Component:

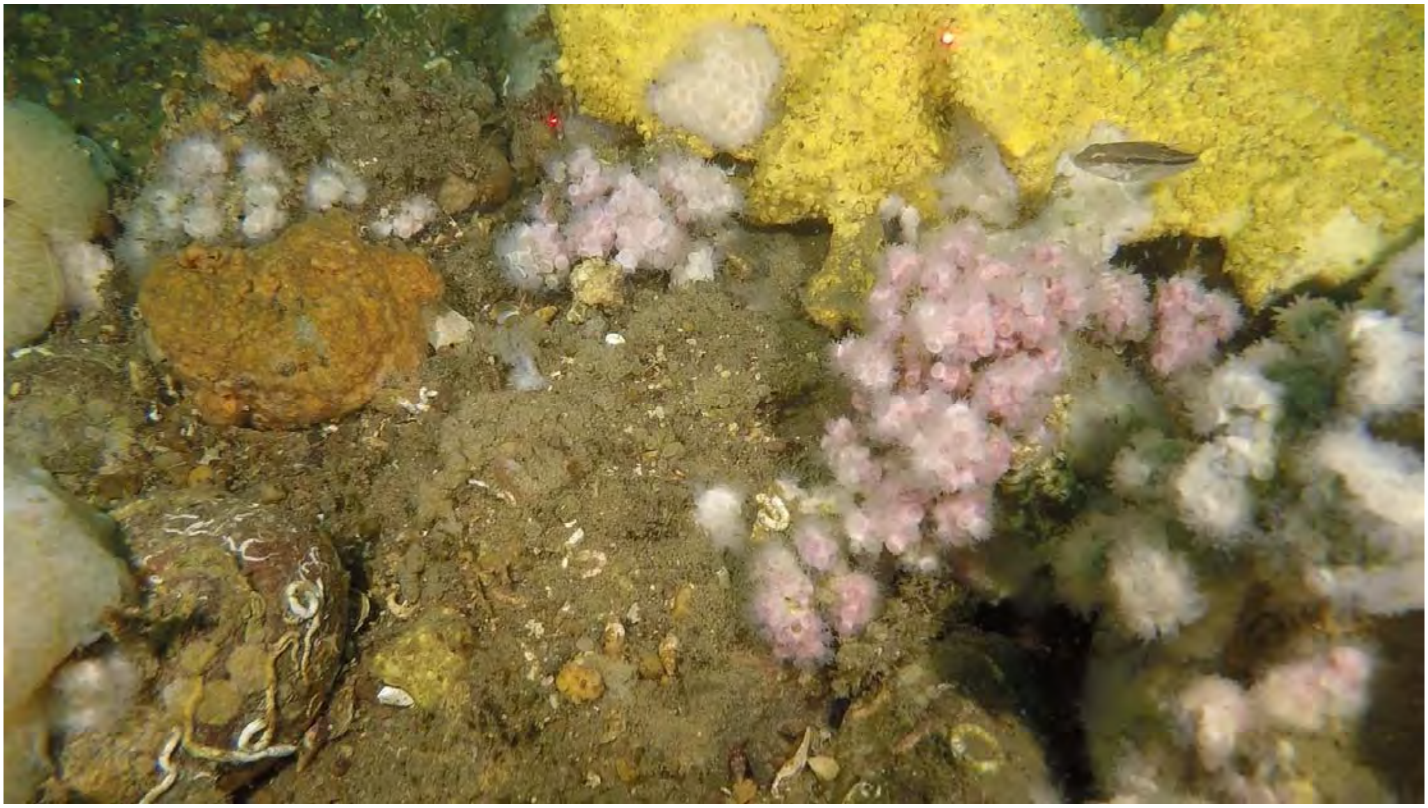
Substrate Origin: Geologic Substrate

Substrate Class: Unconsolidated Mineral Substrate

Substrate Subclass: Course Unconsolidated Substate

Substrate Group: Gravels

Substrate Subgroup: Gravel Pavement (Cobble)



VS-19-N. Diverse Colonizers (*Cliona, Amoroucium, Astrangia, Schizoporella, Hydroides*)

Biographic Setting:

Realm: Temperate North Atlantic

Province: Cold Temperate Northwest Atlantic

Ecoregion: Virginian

Aquatic Setting

System: Marine

Subsystem: Marine Nearshore

Tidal Zone: Marine Nearshore Subtidal

Biotic Component:

Biotic Setting: Benthic Biota

Biotic Class: Faunal Bed

Biotic Subclass: Attached Fauna

Biotic Group: Diverse Colonizers

Biotic Community: Mollusk/Sponge/Tunicate

(Large Megafauna)

Water Column Component:

Water Column Layer: Marine Nearshore Surface Layer

Salinity Regime: Euhaline

Temperature Regime: Moderate Water

Geoform Component:

Tectonic Setting: Passive Continental Margin

Physiographic Setting: Sound

Geoform Origin: Geologic

Level 1 Geoform: Megaripples

Levels 1 & 2 Geoform: Sediment Wave Fields

Levels 1 & 2 Geoform: Till Surface

Substrate Component:

Substrate Origin: Geologic Substrate

Substrate Class: Unconsolidated Mineral Substrate

Substrate Subclass: Course Unconsolidated Substate

Substrate Group: Gravels

Substrate Subgroup: Gravel Pavement (Boulder)

VS-23-O. Attached Fauna in Sand Wave Troughs (*Crepidula, Balanus, Branching Red Algae*)

Biographic Setting:

Realm: Temperate North Atlantic

Province: Cold Temperate Northwest Atlantic

Ecoregion: Virginian

Aquatic Setting

System: Marine

Subsystem: Marine Nearshore

Tidal Zone: Marine Nearshore Subtidal

Biotic Component:

Biotic Setting: Benthic Biota

Biotic Class: Faunal Bed

Biotic Subclass: Attached Fauna

Water Column Component:

Water Column Layer: Marine Nearshore Surafce Layer

Salinity Regime: Euhaline

Temperature Regime: Moderate Water

Geoform Component:

Tectonic Setting: Passive Continental Margin

Physiographic Setting: Sound

Geoform Origin: Geologic

Level 1 Geoform: Megaripples

Level 1 & 2 Geoform Type: Sediment Wave Fields

Level 1 & 2 Geoform Type: Till Surface

Substrate Component:

Substrate Origin: Geologic Substrate

Substrate Subclass: Coarse Unconsolidated Substrate

Substrate Group: Gravel

Substrate Subgroup: Pebble/Granule in a matrix of Fine Unconsolidated Substrate: Sand

VS-25-F. Inferred Fauna (Polychaete worm holes, fecal castings)

Biographic Setting:

Realm: Temperate North Atlantic

Province: Cold Temperate Northwest Atlantic

Ecoregion: Virginian

Aquatic Setting

System: Marine

Subsystem: Marine Nearshore

Tidal Zone: Marine Nearshore Subtidal

Biotic Component:

Biotic Setting: Benthic Biota

Biotic Class: Faunal Bed

Biotic Subclass: Inferred Fauna

Water Column Component:

Water Column Layer: Marine Nearshore Surface Layer

Salinity Regime: Euhaline

Temperature Regime: Moderate Water

Geoform Component:

Tectonic Setting: Passive Continental Margin

Physiographic Setting: Sound

Geoform Origin: Geologic

Level 1 Geoform: Megaripples

Level 1 & 2 Geoform Type: Sediment Wave Fields

Level 1 & 2 Geoform Type: Till Surface

Substrate Component:

Substrate Origin: Geologic Substrate

Substrate Class: Unconsolidated Mineral Substrate

Substrate Subclass: Fine Unconsolidated Substate

Substrate Group: Sand/Sand Ripples

CS-4-D. Gastropod Reef/Leathery Leafy Algal Bed (*Crepidula, Codium*, Juvenile *Centropritus*)

Biographic Setting:

Realm: Temperate North Atlantic

Province: Cold Temperate Northwest Atlantic

Ecoregion: Virginian

Aquatic Setting

System: Marine

Subsystem: Marine Nearshore

Tidal Zone: Marine Nearshore Subtidal

Biotic Component:

Biotic Setting: Benthic Biota

Biotic Class: Reef Biota

Biotic Subclass: Mollusk Reef Biota

Biotic Group: Gastropod Reef/Leathery Leafy Algal Bed

Biotic Community: *Crepidula* Reef with co-occurring Codium Community

Water Column Component:

Water Column Layer: Marine Nearshore Surface Layer

Salinity Regime: Euhaline

Temperature Regime: Moderate Water

Geoform Component:

Tectonic Setting: Passive Continental Margin

Physiographic Setting: Sound

Geoform Origin: Geologic

Level 1 Geoform: Megaripples

Level 1 & 2 Geoform Type: Sediment Wave Fields

Level 1 & 2 Geoform Type: Till Surface

Substrate Component:

Substrate Origin: Biogenic Substrate

Substrate Class: Shell Substrate

Substrate Subclass: Shell Reef Substate

Substrate Group: *Crepidula* Reef Substrate

Attachment I

Essential Fish Habitat Report

EVERSOURCE MARTHA'S VINEYARD RELIABILITY PROJECT

Essential Fish Habitat Assessment

Prepared by:

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Epsilon Associates, LLC

21-P-215667
Eversource Martha's Vineyard Reliability Project
May 10, 2022

CONTENTS

Figures

Tables

1 INTRODUCTION

RPS was contracted by Epsilon Associates, Inc. to conduct an Essential Fish Habitat (EFH) Assessment in support of the Martha's Vineyard Reliability Project between Oak Bluffs and Falmouth, Massachusetts to determine impacts of cable installation (Figure 1-1).

The primary goals/objectives of the proposed project are the following:

- Install a 5th submarine cable to meet the energy demands of Martha's Vineyard, especially in summer months with increased residency and tourism;
- Improve the reliability and capacity of power to the island, eliminating the need for Eversource to run peaking diesel generators; and
- Use horizontal directional drilling to avoid sensitive intertidal and shallow subtidal habitat types.

This EFH Assessment is a required document as construction and installation activities have the potential to impact EFHs in Vineyard Sound, in and near Falmouth Harbor, and in and near Vineyard Haven Harbor. To fulfil the requirements of an EFH Assessment, Section 2 and 3 include the proposed project plan and a site habitat description. Section 4 discusses species of fish with EFH designations within the project area, as well as NOAA trust resources in the area. Section 5 provides an analysis of potential impacts to EFH from project activities such as hydroplowing and Horizontal Directional Drilling (HDD). Section 6 provides EFH determinations for the described impacts to habitat associated with the project.

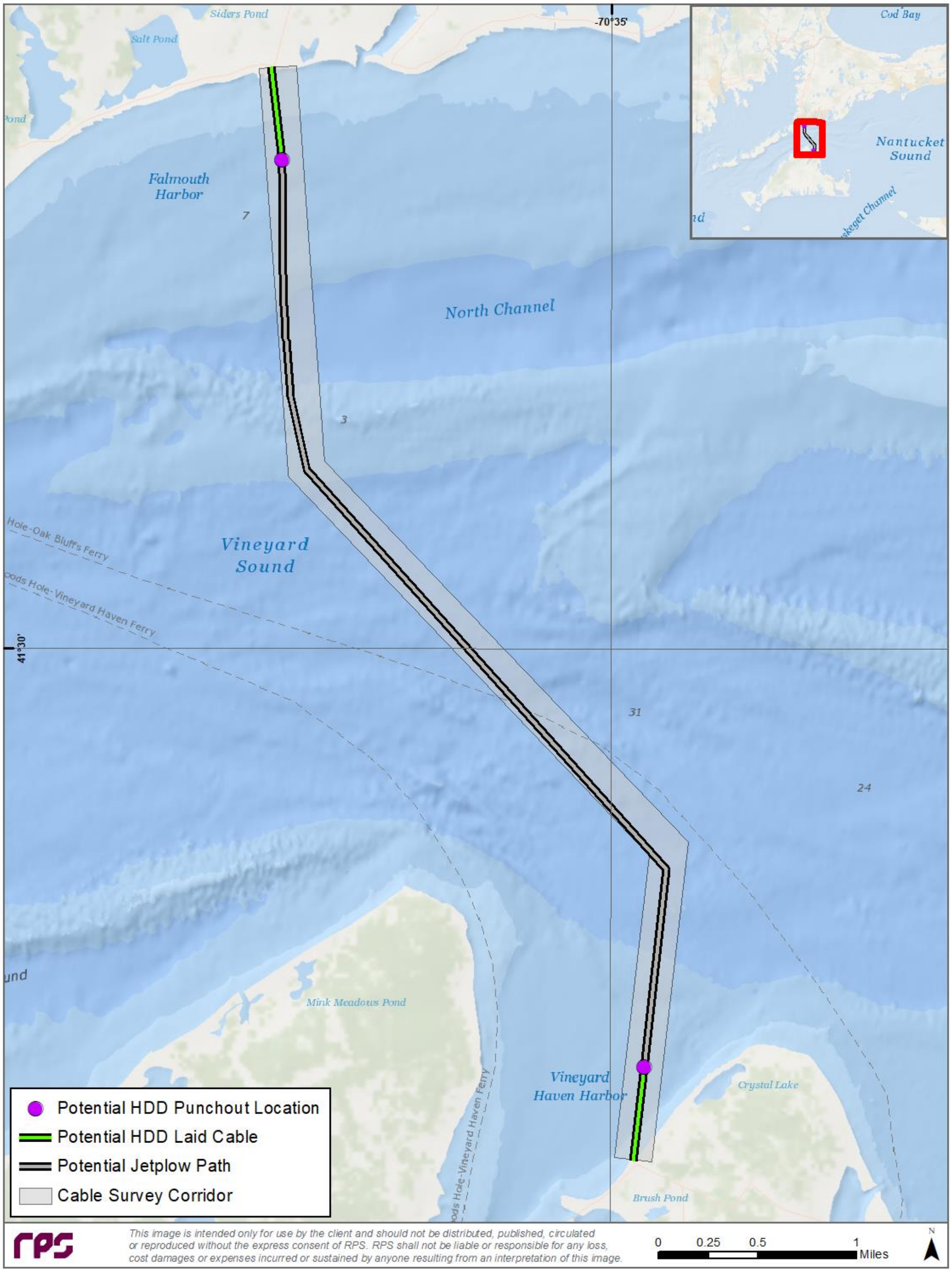

Figure 1-1. Aerial image of proposed Project Area**.**

The Magnuson-Stevens Act mandates that federal agencies conduct an EFH assessment for any activity that may adversely affect EFH of federally managed fish species. The Magnuson-Stevens Act was amended in 1996 by the U.S. Congress under the Sustainable Fisheries Act (SFA). The SFA recognized that many fisheries depend on marine, nearshore, and estuarine habitats for at least part of their lifecycles and introduced requirements to protect estuarine and marine ecosystems through identification and conservation of EFH for those species regulated under a federal fisheries management plan. EFH is defined as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” Included in the Magnuson-Stevens Act in 1996, 16 U.S.C. ch. 38 § 1801 et seq., the primary goal of EFH designation is to identify and protect important fish habitat from certain fishing activities or coastal and marine development. EFH is designated by National Oceanic and Atmospheric Administration’s (NOAA) Fisheries and Regional Fishery Management Councils (P.L. 104-297). EFH is typically assigned by egg, larvae, juvenile and adult life stages and designated as waters or as substrates. NOAA Fisheries defines waters and substrate as (50 C.F.R. § 600.10):

- Waters—Aquatic areas and their associated physical, chemical, and biological properties that are used by fish and, where appropriate, may include aquatic areas historically used by fish.
- Substrate—Sediments, hard bottoms, structures underlying the waters, and associated biological communities.

Additionally, the Regional Fishery Management Councils identify Habitat Areas of Particular Concern (HAPCs) within their Fishery Management Plans (FMPs). HAPCs are discrete subsets of EFH that serve extremely important ecological functions or are especially vulnerable to degradation.

2 PROJECT PLAN

The proposed submarine cable connects Oak Bluffs, Martha’s Vineyard to Falmouth, MA, traversing Vineyard Haven Harbor, Vineyard Sound, and Falmouth Harbor. Installation would primarily be conducted through hydroplowing, with Horizontal Directional Drilling (HDD) used to avoid sensitive habitats near landing sites, including eelgrass beds near the Falmouth and boulder fields near Oak Bluffs. A gravity cell will be used at the HDD punchout site and an HDD inadvertent release plan has been prepared. It is estimated that marine project installation will last 20 working days and involve one tug boat and possibly a barge, two support boats, and two 550 HP diesel pumps to run the hydroplow in addition to other minor support equipment.

3 SITE HABITAT DESCRIPTION

The proposed project is to install a 5th submarine cable from Falmouth, MA to Oak Bluffs on East Chop, Martha's Vineyard, MA. The proposed cable route runs approximately 6.1 miles following nearly the same route as the #99 submarine cable (Figure 1-1). The landfall of this cable on Martha's Vineyard is at the end of Eastville Avenue within Vineyard Haven Harbor, and at the Town of Falmouth Beach Department parking lot along Surf Drive.

A benthic survey, "Geophysical and Underwater Video Surveys Sediment Sampling Eversource 5th Cable Vineyard Sound, Falmouth and Vineyard Haven, MA", was conducted by CR Environmental between August and November 2021 (CR Environmental Inc. 2022). CR Environmental conducted sonar surveys, physical sediment collection, and towed underwater camera surveys to characterize benthic habitats occurring in the proposed cable corridor. Mean Lower Low Water (MLLW) within the cable corridor ranged from approximately -2.2 m to -31.0 m MLLW (-7.2 ft to -102 ft MLLW; Figure 3-1). According to bathymetry data, sand ripples, sand waves, sandy gravel waves, boulder fields, and portions of utility crossings occur within the corridor (Figure 3-1). In general, depth increases with distance from shore, except for a shallow, sandy shoal that rises to 6 m MLLW directly after the turn in the cable route approaching Falmouth.

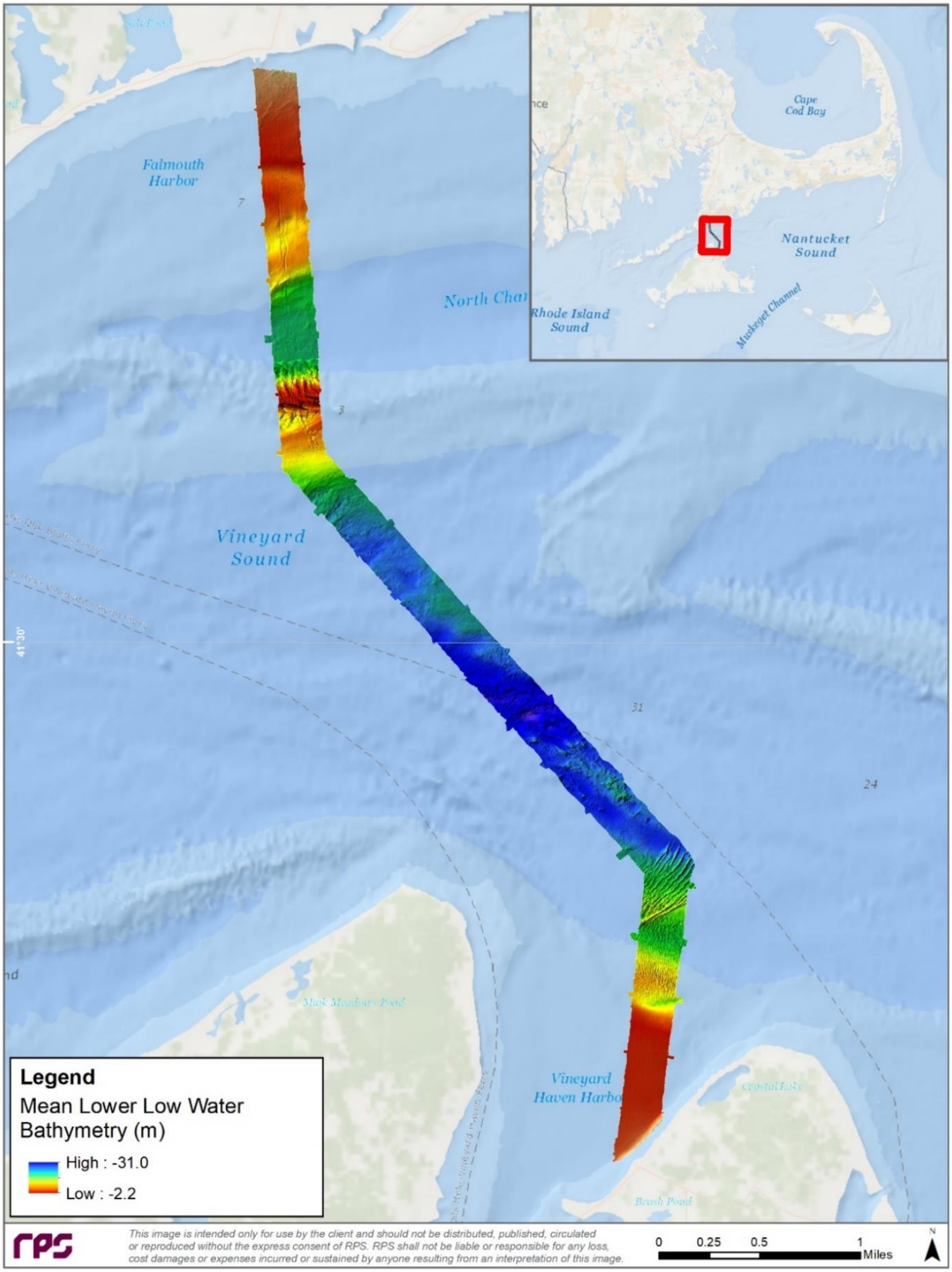

Figure 3-1. Mean lower low water bathymetry (m) collected by CR Environmental during the 2021 bathymetric and geophysical surveys (CR Environmental Inc. 2022).

3.1 Substrate

The results of sonar and backscatter data collected during the 2021 survey indicate a broad extent of hard bottom complex habitat in the cable corridor. Primary transects, running with the corridor, were spaced 15 m apart, lines running perpendicular to the corridor were spaced 470 m apart. Results show sand ripples and wave, sandy gravel waves, boulder fields, portions of surveyed area comprised of coarse sand and gravel, and cobble and boulder areas covered with epibionts.

Physical sediment samples were taken at thirty-one stations with either a vibracore or a Van Veen grab. Coastal and Marine Ecological Classifications Standards (CMECS; FGDC 2012) were used to characterize the benthic environment. Results from the cores and grab samples show a coarse substrate; nineteen of the twenty-four successfully recovered grabs had over 5% gravel and average percent gravel was 33% (Figure 3-2; CR Environmental Inc. 2022). Sites VS-9 through 23 occurred in a ~5 km stretch of cable corridor, in which stations were either failed due to insufficient sediment recovery (few pieces of cobble with biotic components), due to habitats dominated by grain-sizes of cobble or larger, or were classified as sandy gravel (30% to <80% gravel composition), demonstrating the coarse unconsolidated composition of the cable corridor in this area.

Forty-one transects were surveyed with a towed underwater video camera to further characterize benthic habitats for CMECS classification. The majority of transects were 1000 ft in length and spaced approximately 1,000 ft apart along the length of the 5th submarine cable survey corridor. Additional video transects were also surveyed in a grid pattern around Falmouth Harbor and Vineyard Haven Harbor in order to capture sensitive habitats near proposed landing sites. Nineteen of the forty-one transects were classified as coarse unconsolidated substrate, dominated by gravel substrates with particle sizes ranging from pebble/granule to boulder (Figure 3-2). Gravel pavement, which includes substrates containing ≥ 80% gravel of various grain sizes (boulder/cobble/pebble/granule), was the dominant habitat type within Vineyard Sound. Twelve transects were classified as fine unconsolidated substrate composed of sand waves and ripples interspersed with sandy gravel and gravelly sand substrates, often collecting in troughs. Ten transects were classified with a substrate of biogenic origin, *Crepidula* reefs, and were observed in both Falmouth and Vineyard Haven Harbors.

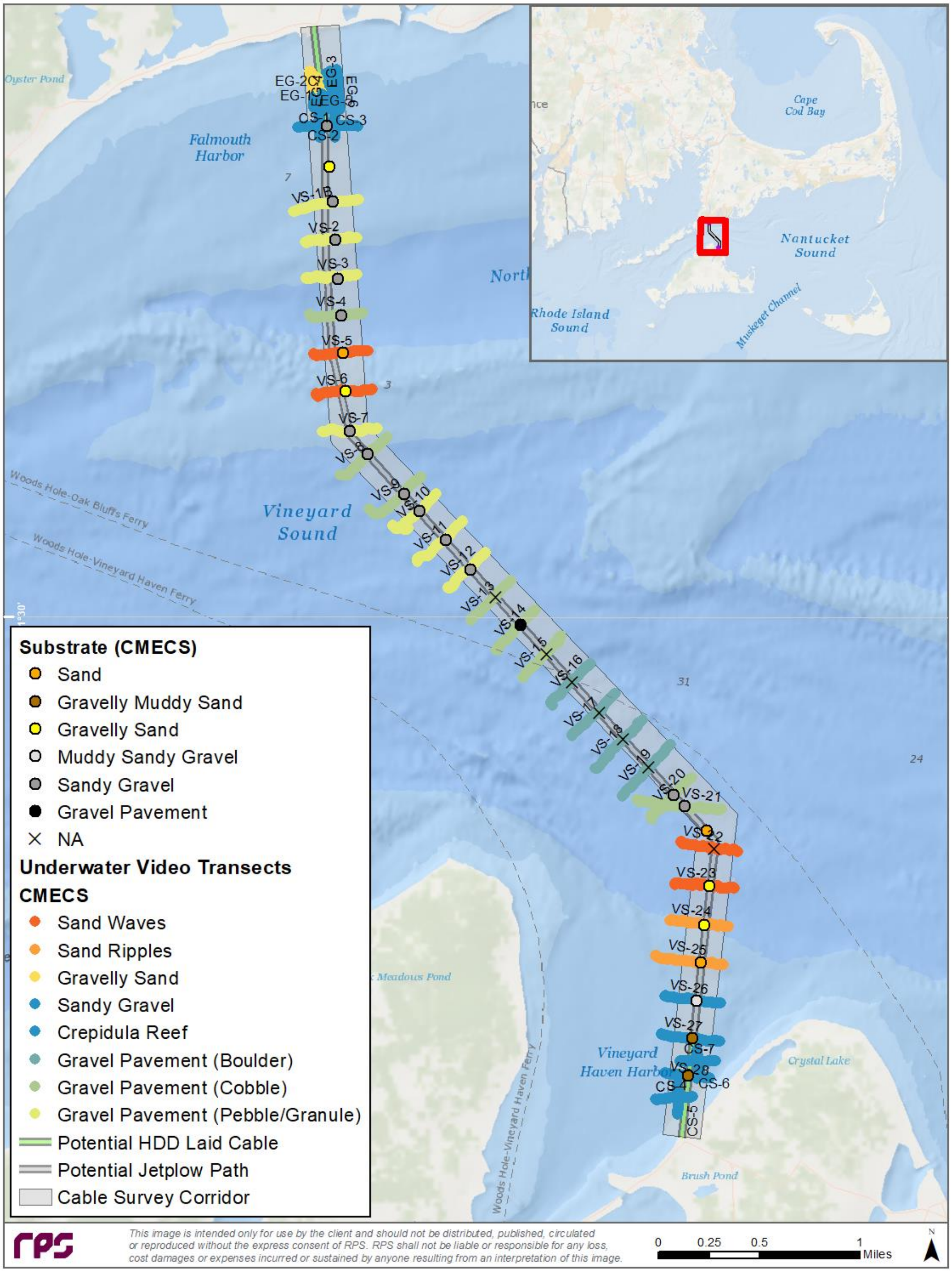

Figure 3-2. Underwater video transects, benthic grab, and vibracore sample locations within the 5th submarine cable survey corridor. Samples are color-coded by CMECS substrate classification.

The Nature Conservancy (TNC) modelled soft sediments by grain size according to the Wentworth (1922) scale at a resolution of 500 meters (m), which can be helpful in assessing substrate types that occur on a regional scale. Point-based data were interpolated using kriging tools from the USGS usSEABED: Atlantic Coast Offshore Surficial Sediment Data Series 118 and the USGS East Coast Sediment Texture Database (2005). Although there is some disagreement in surveyed (CR Environmental Inc. 2022) versus modeled (TNC; Anderson et al. 2010) substrate type, results from both datasets indicate complex habitats (>5% gravel) are widespread and common along the proposed cable and larger Vineyard Sound region (Figure 3-3). Complex habitat is particularly important for many EFH species and is considered HAPC for juvenile Atlantic cod. Specifically, these areas include all habitats that contain structurally complex areas, including eelgrass, macroalgae, mixed sand and gravel, and rocky habitats (NEFMC 2017).

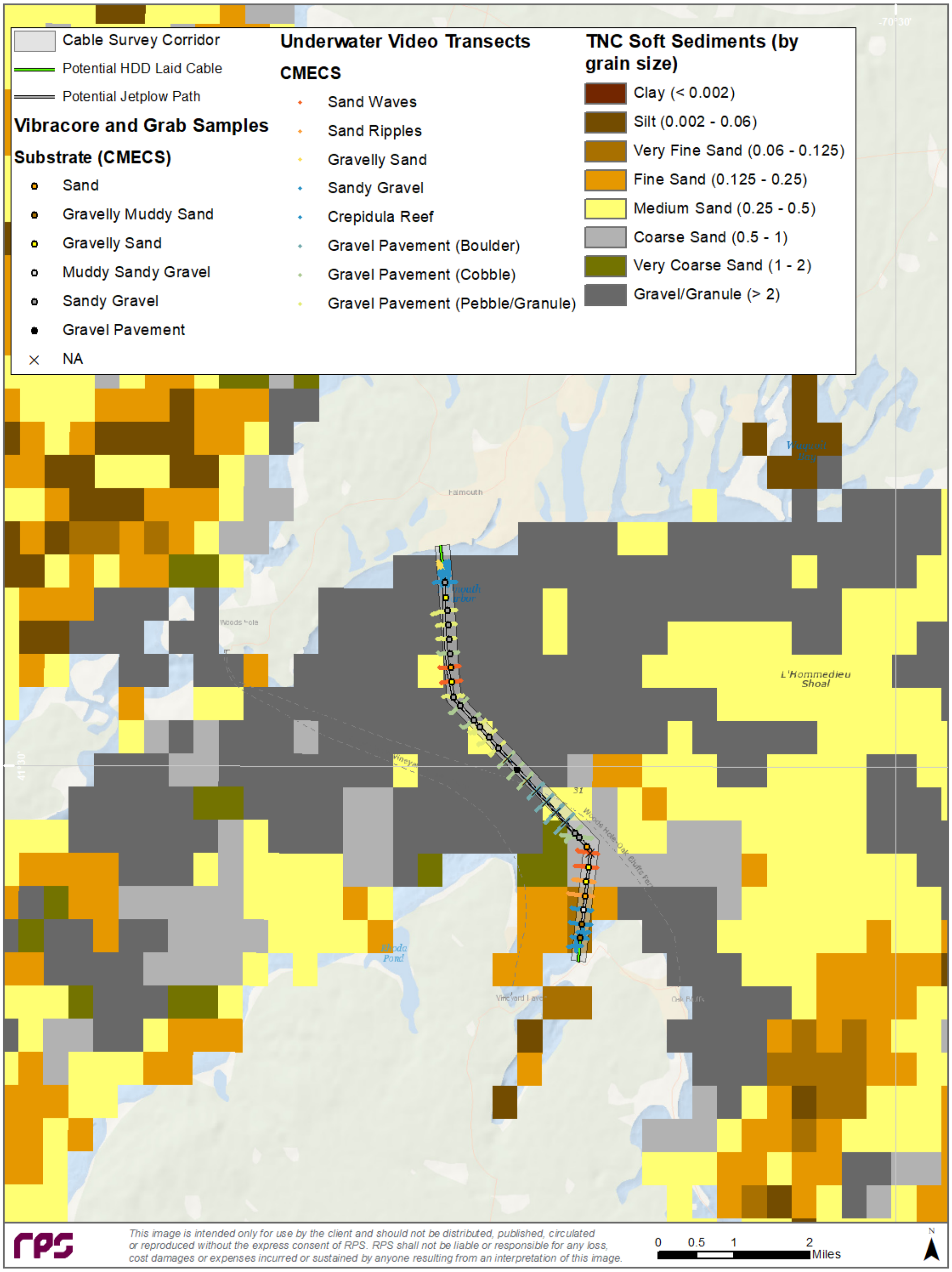

Figure 3-3. Modeled soft sediments by grain size in the Project area (mm, TNC; Anderson et al. 2010) and benthic survey results within the 5th submarine cable survey corridor (CR Environmental Inc. 2022).

3.2 Eelgrass

The dominant marine Submerged Aquatic Vegetation (SAV) along the northeastern U.S. coast is eelgrass (*Zostera marina*). Eelgrass beds are an important coastal habitat that provides valuable ecosystem services as a nursery for the larvae and juveniles of many commercially important fishes. Habitats with weaker resilience are in turn more sensitive, and with eelgrass growing in light limited conditions and having a slow growth rate, they are often considered one of the more sensitive marine habitats (Taormina et al. 2018). This slow growth rate and dense woody rhizome system means that recovery of eelgrass beds may take several years. Increasing coastal development occurs primarily in nearshore waters, and this directly overlaps with the optimal habitat of eelgrass. In 1996, the federal government designated eelgrass as EFH for numerous species and HAPC for summer flounder under the Magnuson-Stevens Fishery Conservation and Management Act.

For this project, a desktop study and an initial site investigation survey were conducted to determine the presence or absence and extent of eelgrass within the project footprint. Eelgrass beds have been mapped locally by the Massachusetts Department of Environmental Protection (MA DEP) and documented since 1995 (Figure 3-4, MassGIS 2022). An eelgrass bed has been established along the shore of Falmouth from the earliest sampling in 1995 to present and has been steadily declining over time according to each sampling event. The most recent mapping, conducted in 2019-2022, shows that this eelgrass bed stretches to the west from Nobska Point to the entrance of Great Pond, to the east. This eelgrass bed is almost exclusively in waters shallower than the 10-m depth contour, extending from nearshore waters out about 600 m. Near the Martha's Vineyard landing location, small patches of eelgrass have been observed throughout Vineyard Sound Harbor. However, none of these patches appear to overlap with the proposed cable footprint, with the closest bed occurring near the entrance to Lagoon Pond, protected by a rock jetty along Eastville Point Beach. The 2021 benthic survey confirmed that no eelgrass was present in the survey corridor near Martha's Vineyard.

Additional underwater video sampling was conducted during the 2021 benthic survey to confirm the extent of the eelgrass bed near Falmouth Harbor. Backscatter data suggests the eelgrass bed may extend as much as 1,312 ft from shore, originating in Falmouth Harbor. The MA DEP eelgrass map data indicates that the eelgrass extended up to 200-300 feet further than 1,312 ft offshore historically. Surveying consisted of six, 1,000 ft transects (EC-1 through EC-6) positioned from north to south within the survey corridor. Sparse to moderate eelgrass was observed across these six transects, growing in gravelly sand and sandy gravel, in depths less than 17 feet (Figure 3-5; Figure 3-6). Survey results confirmed that this eelgrass bed occurs inshore of the expected punch-out area of HDD, approximately 2,000 feet from shore, and would not be directly disturbed during cable installation activities.

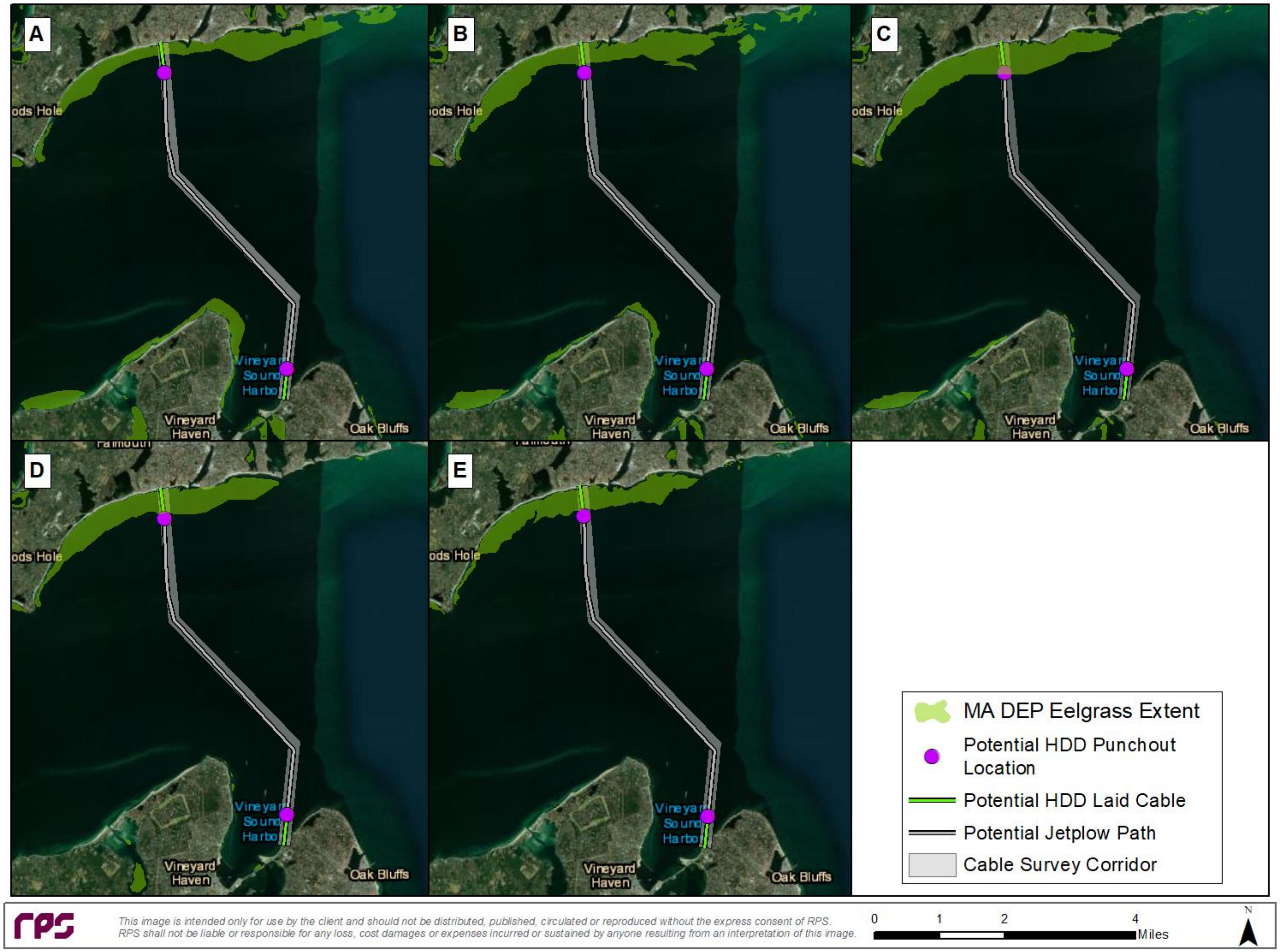

Figure 3-4. MA DEP seagrass maps from (a) 1995 (b) 2001 (c) 2010-2013 (d) 2015-2017 and (e) 2019-2022. All seagrass in green shaded areas is eelgrass (*Zostera marina*).

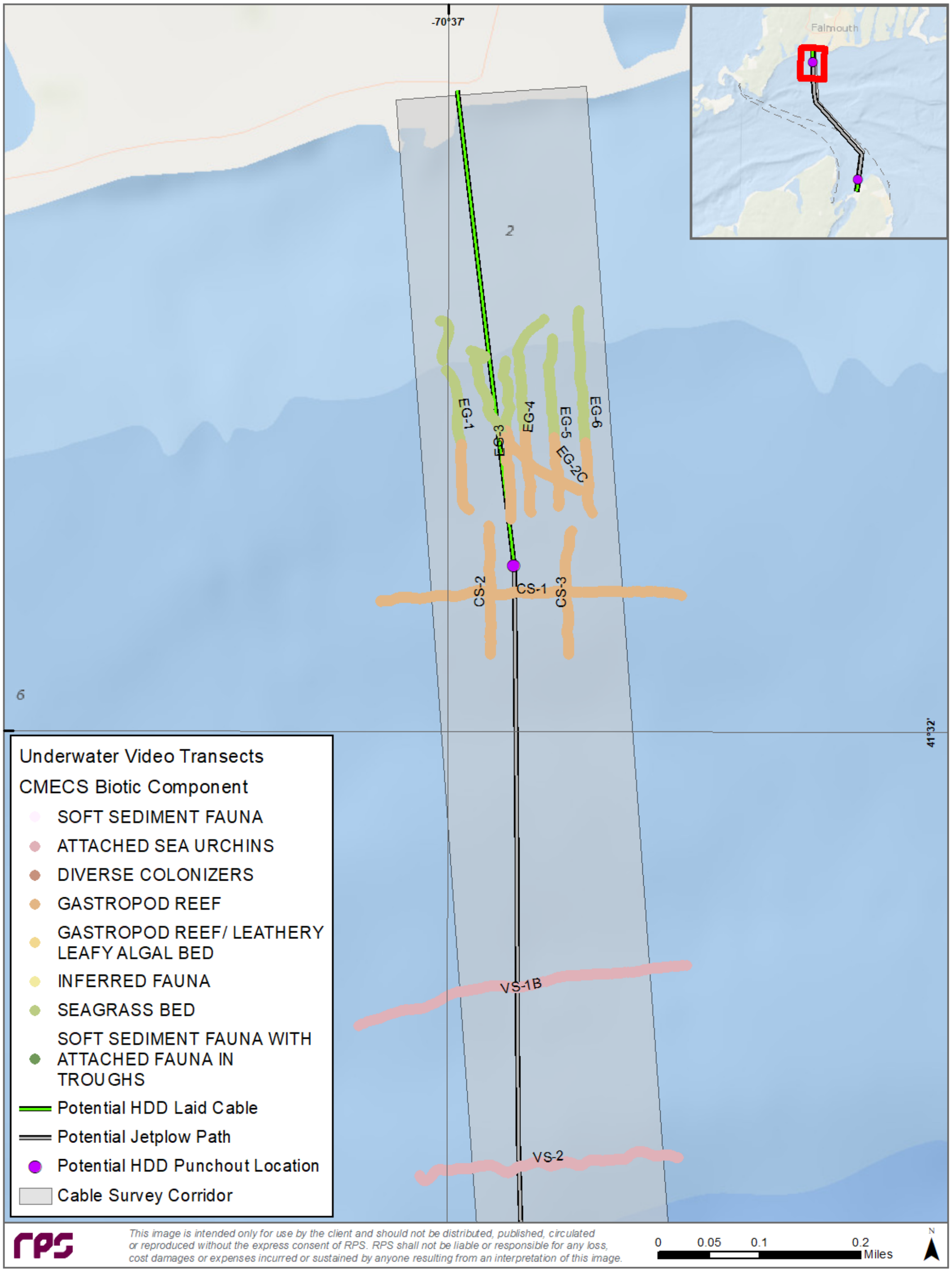

Figure 3-5. Eelgrass transects in the Project Area conducted by CR Environmental Inc. during the 2021 benthic survey.

Figure 3-6. Image of typical eelgrass bed captured in 2021 benthic survey (CR Environmental Inc. 2022).

3.3 Biotic Components

In addition to CMECS substrate classifications, CMECS biotic component classifications were also determined (CR Environmental Inc. 2022). Eight primary biotic groups were observed during the survey. These biotic groups are comprised of various sessile organisms, algae, and submerged aquatic vegetation that form the living habitat that larger mobile megafauna (defined by CMECS as associated taxa) use. The eight biotic groups include attached sea urchins, diverse colonizers, gastropod reef, seagrass bed, inferred fauna, and soft-sediment fauna (Figure 3-8, Table 3-1). Representative images for each biotic group are shown in Figure 3-8 through Figure 3-15.

The sea urchins and diverse colonizers, which includes mollusks, sponges, and tunicates primarily occurred in habitats dominated by gravel substrate types (Figure 3-8 and Figure 3-9). This layered complexity primarily attracted black sea bass (as shown in CR Environmental Inc. 2022, Appendix D for transect VS-19-N) but also other structured oriented species such as Cunner and Tautog. Similar habitat types were seen in over 50% of the transects, in which bryozoans (*Bugula* spp., *Schizoporella unicornis*) northern star corals (*Astrangia poculata*), bread crumb sponge (*Halichondria panicea*), sulfur sponge (*cliona celata*), blue mussels (*Mytilus edulis*), and the tunicates sand sponge (*Amaroucium pellucidum*) and sea pork (*Amarocium stellatum*) formed habitat types on top of gravel substrates, creating sufficient vertical relief to attract juvenile and adult black sea bass in over 85% of transects (Table 3-1). These areas had the greatest species richness, ranging from 15 to 18 species of fish and invertebrates and occurred in the central portion of the survey corridor through Vineyard Sound.

Overall, 29 invertebrates, six fish species, 15 algal species, and eelgrass were observed in the video transects. Of the 29 invertebrates observed, eight were of commercial importance and are all reflected further in Section 4. Of the six fish species observed five are of principal recreational or commercial importance.

Table 3-1. Summary CMECS substrate and biotic classifications of underwater video transects collected during the 2021 benthic survey (CR Environmental Inc. 2022).

Video Transect ID	CMECS Substrate Component	CMECS Biotic Group	CMECS Biotic Community	Co-occurring Elements	Associated Taxa
VS-1B	Pebble/Granule in matrix Sandy Gravel	Attached Sea Urchins	Attached Sparse *Arbacia punctulata*	Sparse - Tunicates (*Didemnum*); Benthic Macroalgae Crustose Algae (Lithothamion)	Mobile Arthopods - Trace (*Pagurus*)
VS-2	Gravel Pavement (Pebble/Granule)	Attached Sea Urchins	Attached Sparse *Arbacia punctulata*	Trace - Tunicates (*Didemnum*), (*Amaroucium*); Moderate Benthic Macroalgae Crustose Algae (Lithothamion)	Mobile Arthopods Trace (*Limulus*) Fish - Trace (*Prionotus*)
VS-3	Gravel Pavement (Pebble/Granule)	Attached Sea Urchins	Attached Sparse *Arbacia punctulata*	Sparse - Bryozoans (*Schizoporella*) (*Bugula*); Tunicates (*Didemnum*); Coral (*Astrangia*); Mollusks (*Mytilus*) (*Anachis*);and Trace Benthic Macroalgae Crustose Algae (Lithothamion)	Mobile Arthopods - Trace (Pagurus) Fish - Trace (Juvenile *Centropritis*)
VS-4	Gravel Pavement (Cobble)	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	Moderate - Sponges (*Cliona*) and Tunicates (*Amaroucium*); Trace - Bryozoan (*Schizoporella*) and Mollusks (*Mytilus*)	Fish - Moderate (Juvenile *Centropritis*), Trace (Adult *Centropritis*)
VS-5	Sand (Waves)	Soft Sediment Fauna			Fish - Trace (*Prionotus*) and Mollusks (*Loligo*), Mobile Crustacea (*Ovalipes*)
VS-6	Sand (Waves) Pebble/Granule in troughs	Soft Sediment Fauna / Attached Fauna (in troughs)	Attached Sparse (Didemnum), Trace (Amaroucium) in troughs	Trace - Mollusks (*Mytilus*) in troughs; Hydroid (Hydrozoa)	Mobile Arthopods - Trace (*Pagurus*)
VS-7	Gravel Pavement (Pebble/Granule)	Attached Sea Urchins	Attached Sparse *Arbacia punctulata*	Sparse - Tunicate (*Amaroucium*); Benthic Macroalgae Crustose Algae (Lithothamion)	Fish - Trace (Juvenile *Centropritis*)
VS-8	Gravel Pavement (Cobble)	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	Sparse - Tunicates (*Amaroucium*/*Didendum*), Sponges (Cliona), Bryozoan (*Schizoparella*), Echinoderms (*Arbacia*), and Mollusks (*Mytilis*) (*Anachis*)	Fish - Trace (Juvenile *Centropritis*)
VS-9	Gravel Pavement (Cobble; Pebble/Granule)	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	Moderate - Sponges (Cliona) and Mollusks (*Mytilis*); Sparse-Tunicates (*Amaroucium*/*Didemnum*) and Echinoderms (*Arbacia*); Trace - Coral (*Astrangia*)	Fish - Trace (Adult *Centropritis*)
VS-10	Gravel Pavement (Pebble/Granule; Cobble)	Attached Sea Urchins	Attached Sparse *Arbacia punctulata*	Sparse - Mollusks (*Mytilis*) (*Anachis*) Trace - Coral (*Astrangia*)	Fish - Trace (Juvenile *Centropritis*)
VS-11	Gravel Pavement (Pebble/Granule)	Attached Sea Urchins	Attached Moderate *Arbacia punctulata*	Moderate - Tunicates (*Didemnum*); Sparse - Mollusks (*Mytilis*), and Trace - Bryozoan (*Schizoporella*)	Mobile Arthopods - Trace (Pagurus) Fish - Sparse (Juvenile *Centropritis*)
VS-12	Gravel Pavement (Pebble/Granule)	Attached Sea Urchins	Attached Moderate *Arbacia punctulata*	Sparse - Bryozoan (*Schizoporella*); Sponge (*Halichondria*); Mollusks (*Mytilus*) (*Anachis*) and Trace Coral (*Astrangia*); Sponge (*Cliona*),	Fish - Trace (Juvenile *Centropritis*)
VS-13	Gravel Pavement (Cobble)	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	Moderate - Tunicates (*Amaroucium*), Echinoderms (*Arbacia*); Sparse - Sponges (*Cliona*), (*Halichondria*), Bryozoan (*Schizoporella*) Mollusks (*Ananchis*); Trace - Coral (*Astrangia*) and Tunicate (*Didemnum*)	Mobile Arthopods - Trace (Pagurus); Fish - Sparse (Juvenile *Centropritis*) Trace (Spaeroides)
VS-14	Gravel Pavement (Cobble)	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	Moderate - Tunicates (*Amaroucium*), Sponge (*Halichondria*) and Mollusks (*Mytilis*); Sparse - Sponge (*Cliona*), Bryozoan (*Schizoporella*) and Echinoderms (Arbacia); Trace - Coral (*Astrangia*)	Mobile Arthopods - Trace (Pagurus) (Pycnogonida) Fish - Moderate (Juvenile *Centropritis*) Trace (Spaeroides) (Stenotomus)

Video Transect ID	CMECS Substrate Component	CMECS Biotic Group	CMECS Biotic Community	Co-occurring Elements	Associated Taxa
VS-15	Gravel Pavement (Cobble)	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	Moderate - Tunicates (*Amaroucium*), (*Cliona*), and (*Halichondria*); Sparse - Bryozoan (*Schizoporella*), Coral (*Astrangia*), Mollusks (*Anachis*) and Echinoderms (*Arbacia*); Trace -Tunicates (*Didemnum*)	Fish - Dense (Juvenile *Centropritis*) Trace (Adult *Centropritis*); Mobile Arthropods - Trace (Pycnogonida)
VS-16	Gravel Pavement (Boulder; Cobble)	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	Moderate - Tunicates (*Amaroucium*), Sponge (*Cliona*); Sparse - Bryozoan (*Schizoporella*), Coral (*Astrangia*), Tunicates (*Didemnum*), Mollusks (*Anachis*); Trace - Echinoderms (*Arbacia*)	Mobile Arthopods - Trace (*Pagurus*) (Pycnogonida); Fish - Dense (Juvenile *Centropritis*), Trace (Tautoga) (*Tautogolabrus*)
VS-17	Gravel Pavement (Boulder)	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	Moderate - Tunicates (*Amaroucium*), Sponge (*Cliona*), and Coral (*Astrangia*) ; Sparse - Bryozoan (*Schizoporella*), Mollusks (*Anachis*) and Echinoderms (*Arbacia*)	Fish - Dense (Juvenile *Centropritis*), Trace (Tautoga); Mobile Arthropods - (Pycnogonida)
VS-18	Gravel Pavement (Boulder; Cobble)	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	Moderate - Tunicates (*Amaroucium*) and Sponge (*Cliona*); Sparse- Sponge (*Halichondria*), Bryozoan (*Schizoporella*), Mollusks (*Anachis*) and Coral (*Astrangia*); Trace Tunicates (*Didemnum*)	Fish - Dense (Juvenile *Centropritis*); Trace (Adult *Centropritis*), (Spaeroides), (*Tautogolabrus*); Mobile Arthropods - Trace (Pycnogonida)
VS-19	Gravel Pavement (Boulder; Cobble)	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	Moderate - Tunicates (*Amaroucium*) and Sponge (*Halichondria*) ; Sparse - Bryozoan (*Schizoporella*), Sponge (Cliona), Coral (*Astrangia*), Mollusks (*Anachis*) and Echinoderms (*Arbacia*); Trace - Tunicates (*Didemnum*)	Fish - Moderate (Juvenile *Centropritis*), Trace (*Tautoga*); Mobile Arthropods - Trace (Pycnogonida)
VS-20	Gravel Pavement (Cobble)	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	Moderate - Tunicates (*Amaroucium*) and (*Didemnum*); Sponge (*Cliona*), Coral (*Astrangia*), Mollusks (*Anachis*) and Echinoderms (*Arbacia*); Trace - Sponge (*Halichondria*), Bryozoan (*Schizoporella*)	Mobile Arthopods Trace (*Limulus*) (Pycnogonida); Fish - Sparse (Juvenile *Centropritis*), Trace (*Tautoga*)
VS-21	Gravel Pavement (Cobble)	Diverse Colonizers	Mollusk/Sponge/Tunicate Colonizers (Large Megafauna)	Moderate -Tunicates (*Amaroucium/Didendum*); Sparse - Bryozoan (*Schizoporella*), Sponge (*Halichondria*) and Mollusks (*Anachis*); Trace - Sponges (*Cliona*), and Mollusks (*Mytilis*)	Mobile Arthopods - Trace (*Pagurus*) Fish - Moderate (Juvenile *Centropritis*)
VS-22	Sand (Waves); Pebble/Granule in troughs	Soft Sediment Fauna; Attached Fauna (in troughs)*		Trace- Hydroid (Hydrozoa); Tunicate (*Didemnum*) in Sand Wave troughs	Fish - Trace (Juvenile *Centropritis*) (Adult *Centropritis*); Mobile Arthopods - (*Pagurus*) (Ovalipes)
VS-23	Sand (Waves); Pebble/Granule in troughs	Soft Sediment Fauna; Attached Fauna (in troughs)*		Sparse Attached (*Crepidula*); Trace - Hydroid (Hydrozoa); Benthic Macroalgae Branching Red Algae (*Codium*) (*Sargassum*) in Sand Wave troughs	Fish - Sparse (*Prionotus*), Trace (Juvenile *Centropritis*); Mobile Arthopods - (*Limulus*), (*Pagurus*) (*Loligo*)
VS-24	Sand (Ripples); Shell Rubble in troughs	Soft Sediment Fauna; Attached Fauna in troughs*		Sparse -Attached Tunicate (*Amoroucium*); Mollusks (*Anachis*); Benthic Macroalage Tube Worms in Sand Wave troughs	Fish - Trace (*Prionotus*) and (Juvenile *Centropristis*); Mobile Arthopods - (*Pagurus*)
VS-25	Sand (Ripples)	Inferred Fauna*		Sparse fecal casts, Trace Polychaete (*Chaetopterus*)	Fish - Trace (Juvenile *Centropritis*) (Prionotus); Mobile Arthopods (Limulus) (Pagarus)
VS-26	*CrepidulaCrepidula* Reef	Gastropod Reef	*Crepidula* Reef	Moderate - Bryozoan (*Bugula*); Trace - Leathery leafy algal bed (*Codium*)(*Sargassum*) (*Porphyra*)	Fish - Sparse (Juvenile Centropritis), Trace *Spaeroides*); Mobile Arthopods - Trace (*Limulus*)

Video Transect ID	CMECS Substrate Component	CMECS Biotic Group	CMECS Biotic Community	Co-occurring Elements	Associated Taxa
VS-27	*Crepidula* Reef	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/Codium Communities	Moderate - Bryozoan (*Bugula*) and Benthic Macroalgae (*Porphyra*)	Mobile Arthopods - Trace (*Limulus*); Fish - Trace (Juvenile *Centropritis*)
VS-28	*Crepidula* Reef	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/Codium Communities	Moderate - Bryozoan (*Bugula*) and Benthic Macroalgae (*Porphyra*) and Branching Red Algae	Fish - Trace (Juvenile *Centropritis*) (Spaeroides)
CS-1	*Crepidula* Reef	Gastropod Reef	*Crepidula* Reef	Moderate - Bryozoan (*Bugula*); Sparse Benthic Macroalgae (*Porphyra*) and Branching Red Algae	Fish - Trace (Juvenile *Centropritis*)
CS-2	*Crepidula* Reef	Gastropod Reef	*Crepidula* Reef	Moderate Bryozoan (*Bugula*); Sparse Benthic Macroalgae (*Porphyra*) and Branching Red Algae	Fish - Trace (Juvenile *Centropritis*)
CS-3	*Crepidula* Reef	Gastropod Reef	*Crepidula* Reef	Moderate Bryozoan (*Bugula*); Sparse Benthic Macroalgae (*Porphyra*) and Branching Red Algae	Fish - Trace (Juvenile *Centropritis*)
CS-4	*Crepidula* Reef	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/Codium Communities	Moderate Bryozoan (*Bugula*); Benthic Macroalage Sparse (*Porphyra*) and Trace Branching Red Algae	Fish - Trace (Juvenile *Centropritis*)
CS-5	*Crepidula* Reef	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/Codium Communities	Moderate Bryozoan (*Bugula*); Benthic Macroalage Sparse (*Porphyra*) and Trace Branching Red Algae	Fish - Trace (Juvenile *Centropritis*)
CS-6	*Crepidula* Reef	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/Codium Communities	Moderate Bryozoan (*Bugula*); Benthic Macroalage Sparse (*Porphyra*) and Trace Branching Red Algae	Mobile Arthopods - Trace (Pagurus); Fish - (Juvenile *Centropritis*)
CS-7	*Crepidula* Reef	Gastropod Reef/Leathery Leafy Algal Bed	*Crepidula* Reef/Codium Communities	Moderate Bryozoan (*Bugula*); Benthic Macroalage Sparse (*Porphyra*) and Trace Branching Red Algae	Fish - Trace (Juvenile *Centropritis*)
EG-1	Gravelly Sand	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	Moderate (*Zostera marina*) Bryozoan (*Bugula*) and Sparse Benthic Macroalgae (*Porphyra*) (*Sargassum*) and Red Branching Algae	Mobile Arthopods - Trace (*Limulus*); Fish - (*Tautoga*)
	Crepidula Reef	Gastropod Reef	*Crepidula* Reef	Trace - Echinoderms (*Arbacia*); Sparse Benthic Macroalgae (*Porphyra*) (*Codium*) and Branching Red Algae	
EG-2C	Gravelly Sand	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	Sparse (*Zostera marina*) with Gastropod (Bittium); Moderate Bryozoan (Bugula) and Sparse Benthic Macroalgae (Branching Red Algae) and Trace (*Sargassum*)	Fish - Sparse (Juvenile *Centropritis*)
	Crepidula Reef	Gastropod Reef	*Crepidula* Reef	Sparse Benthic Macroalgae (*Porphyra*) and (Branching Red Algae); Trace (*Ulva*)	
EG-3	Sandy Gravel	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	Moderate (*Zostera marina*) and Bryozoan (*Bugula*), Sparse Benthic Macroalgae (*Porphyra*) and (Branching Red Algae) Trace (*Sargassum*)	Fish - Trace (Juvenile *Centropritis*)
	Crepidula Reef	Gastropod Reef	*Crepidula* Reef	Moderate Bryozoan (*Bugula*), and Sparse Benthic Macroalgae (*Porphyra*) and (Branching Red Algae)	
EG-4	Sandy Gravel	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	Moderate (*Zostera marina*) with Gastropd (*Bittium*) and Bryozoan (*Bugula*); Sparse Benthic Macroalgae (*Porphyra*) and (Branching Red Algae) Trace (*Sargassum*)	Fish - Trace (Juvenile *Centropritis*)

Video Transect ID	CMECS Substrate Component	CMECS Biotic Group	CMECS Biotic Community	Co-occurring Elements	Associated Taxa
	Crepidula Reef	Gastropod Reef	*Crepidula* Reef	Sparse Bryozoan (*Bugula*); Benthic Macroalgae (*Porphyra*) and (Branching Red Algae)	
EG-5	Sandy Gravel	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	Moderate (*Zostera marina*) with Gastropod (*Bittium*); Bryozoan (*Bugula*); Trace (*Chaetopterus*); Sparse Benthic Macroalgae (*Porphyra*), (*Ulva*) and (Branching Red Algae)	
	Crepidula Reef	Gastropod Reef	*Crepidula* Reef	Moderate Bryozoan (*Bugula*); Sparse Benthic Macroalgae (Porphyra) and (Branching Red Algae)	Fish - Trace (Juvenile *Centropritis*)
EG-6	Sandy Gravel	Seagrass Bed	*Zostera marina* Herbaceous Vegetation	Moderate (*Zostera marina*) with Gastropod (*Bittium*); Bryozoan (*Bugula*) and Sparse Benthic Macroalgae (Porphyra) and (Branching Red Algae)	Fish - Trace (Juvenile *Centropritis*)
	Crepidula Reef	Gastropod Reef	*Crepidula* Reef	Sparse Bryozoan (*Bugula*); Benthic Macroalgae (*Porphyra*), (Branching Red Algae) and Trace (*Sargassum*)	Fish - Trace (*Tautoga*)

*Classified only to CMECS biotic sub-class

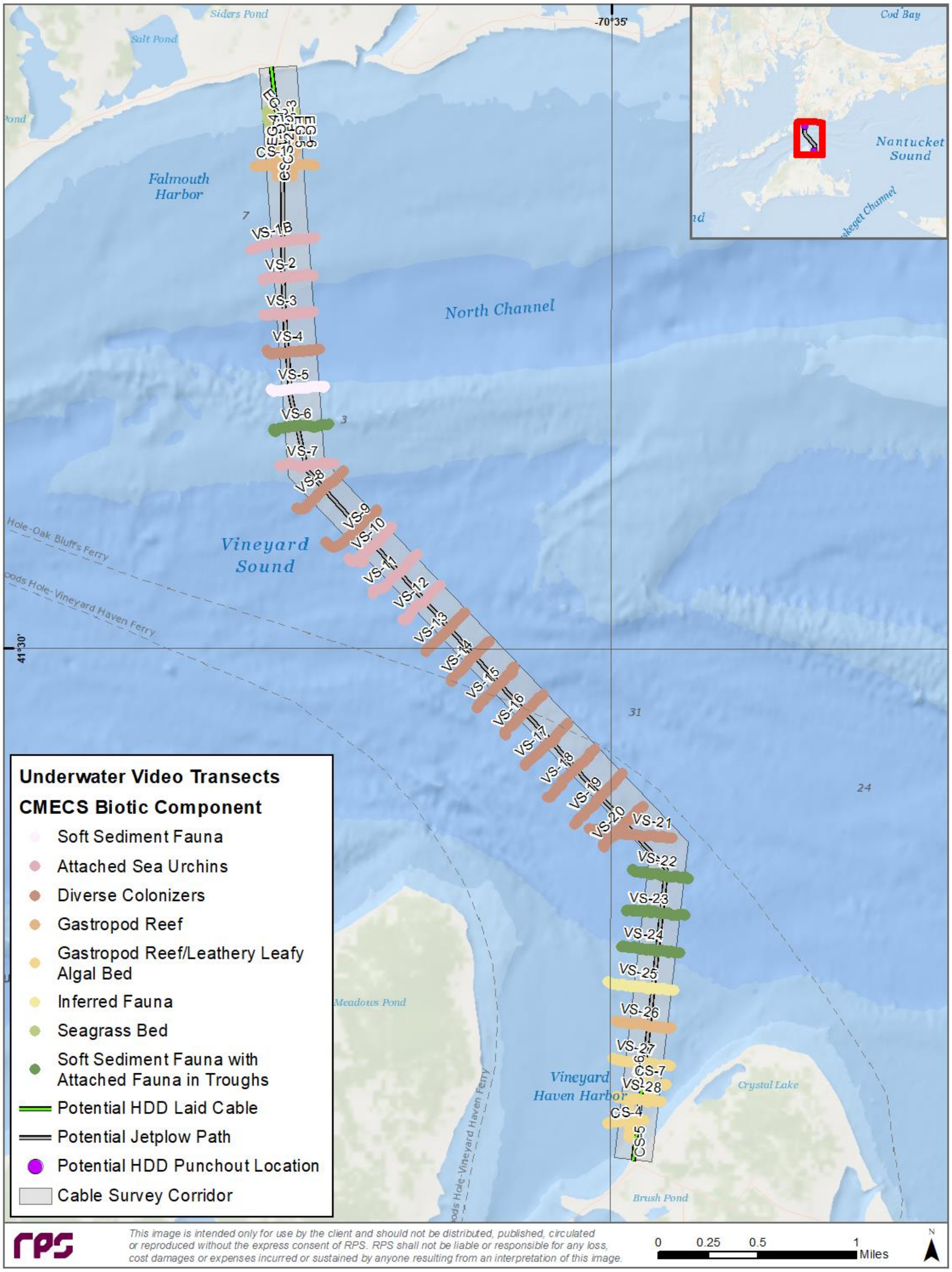

Figure 3-7. Underwater video transects collected during the 2021 benthic survey color coded by CMECS biotic group.

Figure 3-8. Attached sea urchins (*Arbacia punctulate;* CMECS biotic group) on gravel pavement of pebble/granule to cobble (CR Environmental Inc. 2022). Present in seven video transects.

Figure 3-9. Mollusk/sponge/tunicate colonizers (CMECS biotic community) on gravel pavement of pebble/granule, cobbles, and boulders (CR Environmental Inc. 2022). Present in twelve video transects.

Figure 3-10. *Crepidula* reef (CMECS biotic community). Present in ten transects, classified as the single main biotic community (four transects) or as the co-occurring main community with seagrass beds (six transects).

Figure 3-11. *Crepidula* reef (CMECS biotic community) with co-occurring *Codium* (CMECS biotic community; leathery leafy algal bed). Present in six transects, with some areas dominated by *Codium*.

Figure 3-12. Seagrass bed (CMECS biotic group) on gravelly sand and sandy gravel. *Zostera marina* (eelgrass) herbaceous vegetation. Present in six transects (EC-1 through EC-6), which all transition to eelgrass beds from areas dominated by *Crepidula* reef.

Figure 3-13. Inferred fauna (CMECS biotic subclass) on sand ripples with fecal casts. Present in one transect.

Figure 3-14. Soft sediment fauna (CMECS biotic subclass) on sand waves with *Pagarus spp*. (hermit crab). Present in one transect.

Figure 3-15. Soft sediment fauna (CMECS biotic subclass) on sand waves with attached fauna in pebble/granule substrate in wave troughs. Present in four transects.

3.4 Shellfish Habitat Suitability

Habitat suitability data layers have been created by the Massachusetts Division of Marine Fisheries (MA DMF) to estimate which areas shellfish species could potentially inhabit based on known environmental parameters of the habitat use of these species. It is important to note that these classifications only indicate potentially suitable habitat, not absolute presence in an area. According to these data, two shellfish species have habitat suitability areas modeled in the proposed cable footprint (Figure 3-16; MA DMF 2011). The proposed cable route crosses through quahog (*Mercenaria mercenaria*) and bay scallop (*Argopecten irradians*) habitat near the southern landing area on Martha's Vineyard and through bay scallop habitat to the north, near the landfall area in Falmouth, MA. The use of HDD will avoid 2,000 feet of hydroplow installation within bay scallop and quahog delineated suitable habitat near Martha's Vineyard. However, 4,980 ft of hydroplow installation (1.4 acres based on 12-foot-wide footprint) will traverse quahog suitable habitat and 10,740 ft (3.0 acres based on 12-foot-wide footprint) will traverse bay scallop suitable habitat.

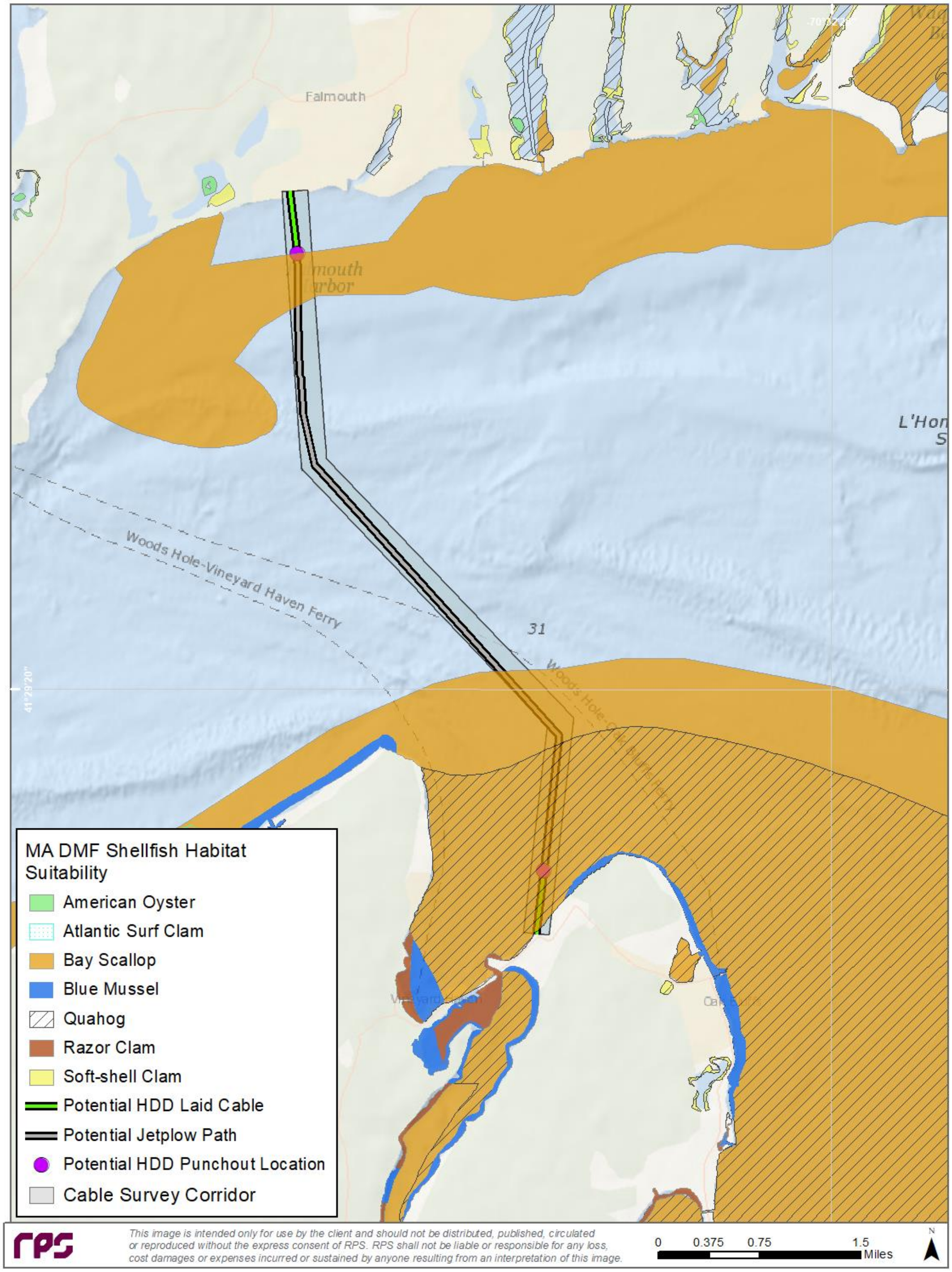

Figure 3-16. Map of MA DMF defined shellfish habitat suitability areas in the Project Area (MA DMF 2011).

4 ESSENTIAL FISH HABITAT DESIGNATIONS AND NOAA TRUST RESOURCES

4.1 Essential Fish Habitat Designations

The EFH designations in this section correspond to the currently accepted designations by the New England Fishery Management Council (NEFMC; NEFMC and NMFS 2017), Mid-Atlantic Fishery Management Council (MAFMC), and NOAA Highly Migratory Species Division (NMFS 2017; Table 4-1). Many EFH designations are determined for each cell in a 10' x 10' longitude square grid in state and federal waters.

Table 4-1. Summary of the twenty-eight species with EFH designations in the Project Area by life stage.

Species	Eggs	Larval/Neonate*	Juveniles	Adults	HAPC
Atlantic albacore tuna (*Thunnus alalunga*)			*		
Atlantic bluefin tuna (*Thunnus thynnus*)				*	
Atlantic butterfish (*Peprilus triacanthus*)			*	*	
Atlantic cod (*Gadus morhua*)	*	*	*		*
Atlantic mackerel (*Scomber scombrus*)			*		
Atlantic skipjack tuna (*Katsuwonus pelami*)				*	
Atlantic sea herring (*Clupea harengus*)			*		
Atlantic surfclam (*Spisula solidissima*)			*	*	
Atlantic wolffish (*Anarhichas lupus*)[1,2]	*	*	*	*	
Atlantic yellowfin tuna (*Thunnus albacares*)			*		
Black sea bass (*Centropristis striata*)			*	*	
Common thresher shark (*Alopias vulpinus*)[1]	*	*	*	*	
Little skate (*Leucoraia erinacea*)			*	*	
Longfin inshore squid (*Loligo pealeii*)	*		*	*	
Northern shortfin squid (*Illex illecebrosus*)				*	
Red hake (*Urophycis chuss*)	*	*	*		
Sand Tiger Shark (*Carcharias taurus*)		*	*		
Sandbar shark (Carcharhinus plumbeus)			*		
Scup (*Merluccius bilinearis*)			*	*	

Species	Eggs	Larval/Neonate*	Juveniles	Adults	HAPC
Silver hake (*Stenotomus chrysops*)	*	*			
Smoothhound Shark Complex (Atlantic Stock)	*	*	*	*	
Summer flounder (*Paralichthys dentatus*)	*	*	*	*	*
White hake (*Urophycis tenuis*)		*	*		
White shark (*Carcharodon carcharias*)[1]		*	*	*	
Windowpane flounder (*Scophthalmus aguosus*)			*	*	
Winter flounder (*Pseudopleuronectes americanus*)	*	*	*	*	
Winter skate (*Leucoraja ocellate*)			*	*	
Yellowtail flounder (Limanda ferruginea)			*		

* Shark species emerge from egg cases fully developed and are referred to as neonates.
[1] Indicates EFH designations are the same for all life stages or designations are not specified by life stage.
[2] Indicates Species of Concern.

Atlantic albacore tuna (*Thunnus alalunga*)

Albacore tuna EFH is designated in the Project Area for the juvenile life stage. EFH for juvenile albacore tuna is designated as offshore the US east coast from Cape Cod to Cape Hatteras. Juveniles migrate to northeastern Atlantic waters in the summer for feeding. Albacore tuna are top pelagic predators and opportunistic foragers (NMFS 2009a).

Atlantic bluefin tuna (*Thunnus thynnus*) *Species of Concern

Bluefin tuna EFH is designated in the Project Area for the adult life stage. EFH for adult bluefin tuna is pelagic waters from the mid-coast of Maine to southern New England. Bluefin tuna inhabit northeastern waters to feed and move south to spawning grounds in the spring. Adults exhibit opportunistic foraging behaviors and diets typically consist of fish, jellyfish, and crustaceans (Atlantic Bluefin Tuna Status Review Team 2011). Bluefin tuna is considered a Species of Concern because they support important recreational and commercial fisheries and population size is unknown (NMFS 2011a, Agnew 2011).

Atlantic butterfish (*Peprilus triacanthus*)

Atlantic butterfish EFH is designated in the Project Area for juvenile and adult life stages. Juvenile EFH is defined as pelagic habitats in inshore estuaries and bays from Massachusetts Bay to North Carolina, and on the inner and outer continental shelf (MAFMC and NOAA 2011). Adults occupy the same range of estuaries and bays, but only the outer continental shelf from southern New England to South Carolina. They primarily feed on planktonic prey as juveniles (≤ 11 cm) and then incorporate squids and fishes into their diet as adults (MAMFC and NOAA 2011).

Atlantic cod (*Gadus morhua*)

Atlantic cod EFH is designated in the Project Area for egg, larvae, and juvenile life stages. EFH for Atlantic cod eggs is designated as surface waters from the Gulf of Maine to southern New England. Cod eggs are found in the fall, winter, and spring in water depths less than 110 m. EFH for larval cod is in waters less than 75 m from the Gulf of Maine to southern New England, with larval cod primarily observed in the spring. EFH for juvenile cod is defined as bottom habitats with substrates composed of cobble or gravel from the Gulf of Maine to southern New England. Inshore juvenile Atlantic cod HAPC is designated in coastal areas (from the shore to 20 m depth contour) from Maine to Rhode Island, and inshore waters around Cape Cod to Martha's Vineyard and Nantucket (Figure 4-1; NEFMC and NMFS 2017). These areas include all habitats that contain structurally complex areas, including eelgrass, macroalgae, mixed sand and gravel, and rocky habitats (NEFMC and NMFS 2017). These habitats are particularly important for juvenile Atlantic cod as their structure provides protection from predation and readily available prey sources. Juvenile cod are opportunistic foragers and consume a wide variety of items including small crustaceans, benthic invertebrates, and fish (Lough 2004). Cod spawn primarily in bottom habitats composed of sand, rocks, pebbles, or gravel during fall, winter, and early spring (NOAA 2007).

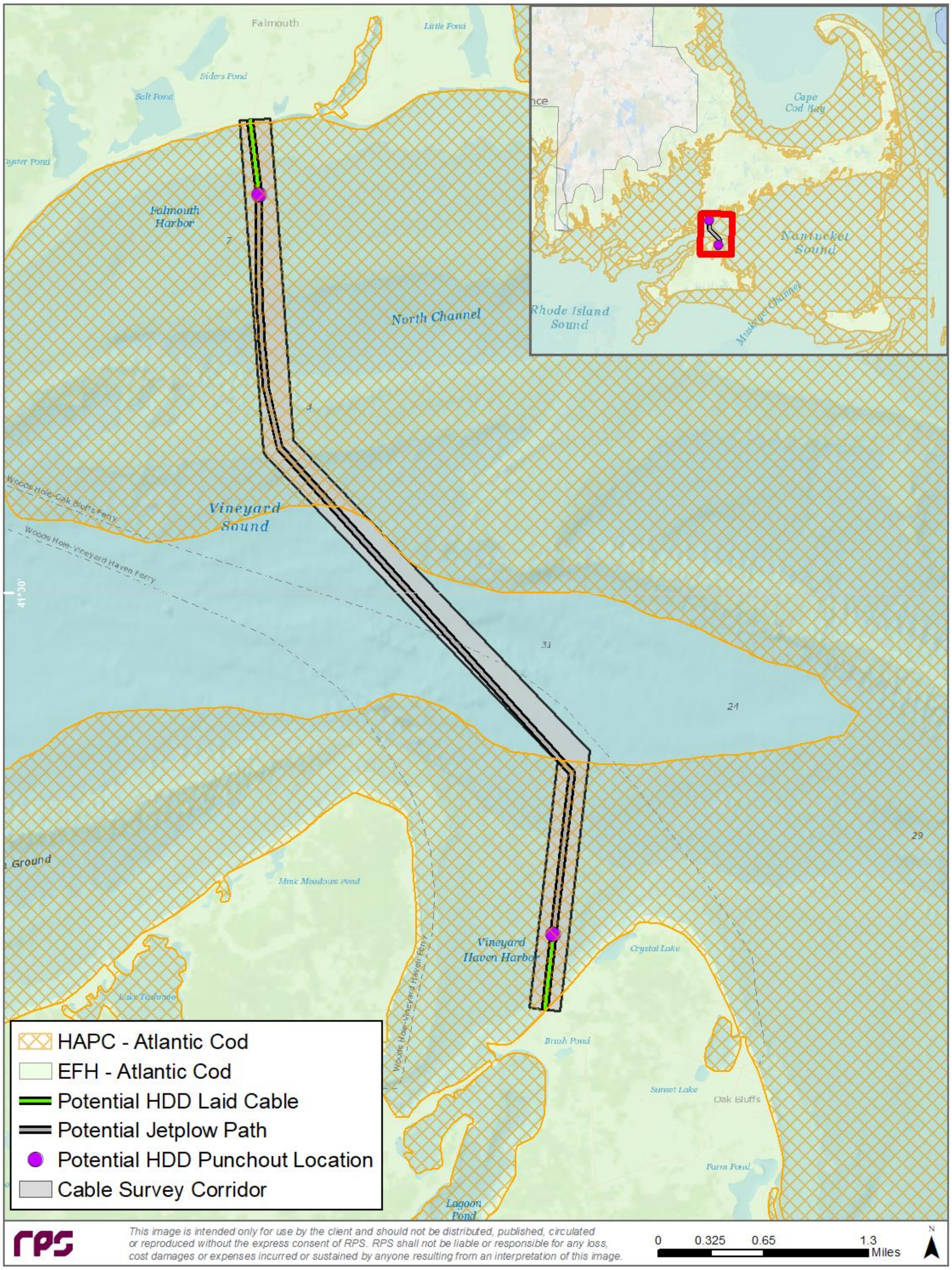

Figure 4-1. Atlantic cod juvenile EFH and HAPC (NEFMC and NMFS 2017).

Atlantic mackerel (*Scomber scombrus*)

Atlantic mackerel EFH is designated in the Project Area for the juvenile stage. Juveniles (≤ 25 cm) range from Cape Hatteras to Georges Bank and the Gulf of Maine. Juveniles tend to inhabit waters closer to shore than adults, with some juveniles collected in nearshore coastal waters in the fall (Studholme et al. 1999).

Atlantic skipjack tuna (*Katsuwonus pelami*)

Skipjack tuna EFH is designated in the Project Area for the adult life stage. EFH for adult skipjack tuna includes coastal and offshore habitats between Massachusetts and South Carolina. Skipjack tuna are opportunistic foragers that feed primarily in surface waters but have also been caught in longline fisheries at greater depths (NMFS 2017).

Atlantic sea herring (*Clupea harengus*)

Atlantic sea herring EFH is designated in the Project Area for the juvenile life stage. EFH for juvenile and adult herring is defined as pelagic and bottom habitats in the Gulf of Maine, Georges Bank, and southern New England. Juvenile herring are found in areas with water depths from 0-300 m. Herring opportunistically feed on zooplankton, with forage species changing as herring size increases (Reid et al. 1999).

Atlantic surfclam (*Spisula solidissima*)

Atlantic surfclam EFH is designated in the Project Area for juvenile and adult life stages. EFH for surfclams occurs throughout the substrate, to a depth of three feet below the water/sediment interface, from the eastern edge of Georges Bank and the Gulf of Maine throughout the Atlantic EEZ. Surfclams are generally located from the tidal zone to a depth of about 38 m (125 ft) (NOAA 2007).

Atlantic wolffish (*Anarhichas lupus*) *Species of Concern

Atlantic wolffish EFH is designated in the Project Area for egg, larvae, juvenile, and adult life stages. EFH for wolffish eggs is defined as bottom habitats over the continental shelf and slope within the Gulf of Maine south to Cape Cod. Wolffish eggs are deposited in rocky substrates in brood nests and are present throughout the year. EFH for wolffish larvae is water from the surface to the seafloor within the Gulf of Maine south to Cape Cod. EFH for juvenile and adult wolffish is bottom habitats of the continental shelf and slop within the Gulf of Maine south to Cape Cod. The depth range for all life stages ranges from 40–240 m. Spawning is thought to occur in September and October. Wolffish utilize rocky habitats for shelter and nesting and softer substrate habitats for feeding (NOAA 2007). Although the diets of wolffish can vary, generally they feed on mollusks, crustaceans, and echinoderms (NMFS 2009b). Atlantic wolffish is considered a Species of Concern because the stock is overexploited and severely depleted. Wolffish biomass has shown a consistent downward trend since the 1980's and continues to decline because of capture as bycatch in the otter trawl fishery (NMFS 2009b).

Atlantic yellowfin tuna (*Thunnus albacares*)

Yellowfin tuna EFH is designated in the Project Area for the juvenile life stage. EFH for juveniles is defined as offshore waters from Cape Cod to the mid-east coast of Florida. Yellowfin tuna diets primarily consist of Sargassum or Sargassum-associated fauna (NMFS 2009a).

Black sea bass (*Centropristis striata*)

Black sea bass EFH is designated in the Project Area for juvenile and adult life stages. EFH for juvenile and adult black sea bass is defined as demersal waters over the continental shelf from the Gulf of Maine to Cape Hatteras (NOAA 2007). Juveniles prey on benthic and epibenthic crustaceans and small fish while adults tend to forage more generally for crustaceans, fish, and squids. Adults are generally associated with structurally complex habitats. Juveniles and adults are most commonly observed in the spring and fall (Drohan et al. 2007; NEFSC n.d.; NEODP 2022).

Common thresher shark (*Alopias vulpinus*)

Common thresher shark EFH is designated in the Project Area for all life stages. EFH for all life stages is defined as coastal and pelagic waters from Cape Cod to North Carolina and in other localized areas off the Atlantic coast. Common thresher sharks occur in coastal and oceanic waters but are more common within 64–80 kilometers (km) of the shoreline. Small pelagic fishes and pelagic crustaceans make up much of common thresher shark diet (NMFS 2017).

Little skate (*Leucoraja erinacea*)

Little skate EFH is designated in the Project Area for juvenile and adult life stages. EFH is similar for both life stages and includes intertidal and sub-tidal benthic habitats in coastal waters of the Gulf of Maine and in the mid-Atlantic region. EFH primarily occurs on sand and gravel substrates, but also is found on mud (NEFMC 2017).

Longfin inshore squid (*Loligo pealeii*)

Longfin inshore squid EFH is designated in the Project Area for egg, juvenile (pre-recruit), and adult (recruit) life stages. EFH for longfin inshore squid eggs is inshore and offshore bottom habitats from Georges Bank to Cape Hatteras. Longfin inshore squids lay eggs in masses referred to as "mops" that are demersal and anchored to various substrates and hard bottom types, including shells, lobster pots, fish traps, boulders, submerged aquatic vegetation, sand, and mud (NOAA 2007). Female longfin squid lay these egg mops during three-week periods which can occur throughout the year (reviewed in Hendrickson 2017). EFH for juveniles and adults, also referred to as pre-recruits and recruits, is pelagic habitats inshore and offshore continental shelf waters from Georges Bank to South Carolina. Pre-recruits and recruits inhabit inshore areas in the spring and summer and migrate to deeper, offshore areas in the fall to overwinter (NOAA 2007). Forage base for longfin inshore squid varies with individual size, where small squids feed on planktonic organisms and large squids feed on crustaceans and small fishes (Jacobson 2005).

Northern shortfin squid (*Illex illecebrosus*)

Northern shortfin squid EFH is designated in the Project Area for the adult life stage. EFH for adult northern shortfin squid is defined as pelagic habitat on the continental shelf and slope from Georges Bank to South Carolina and in inshore waters of the Gulf of Maine and southern New England. Adult northern shortfin squid primarily forage for fish, euphausiids, and smaller squids (MAFMC and NOAA 2011).

Red hake (*Urophycis chuss*)

Red hake EFH is designated in the Project Area for egg, larvae, and juvenile stages based on data from NMFS trawl surveys. Eggs/larvae EFH is designated in pelagic habitats in the Gulf of Maine, on Georges Bank, the Mid-Atlantic and in bays and estuaries. Juvenile red hake EFH is designated in the intertidal and subtidal benthic habitats throughout the region on mud and sand substrates to max depths of 80 meters, and in bays and estuaries. Habitats that provide shelter in the form of biogenic activity, i.e., burrows, eel grass, macroalgae, etc., and scallop beds, are important for juvenile red hake (NEFMC 1998).

Sand tiger shark (*Carcharias taurus*)

Sand tiger shark EFH is designated in the Project Area for neonates and juveniles. Neonate and juvenile EFH range from Massachusetts to Florida. They occur in sand and mud areas that contain benthic structure (NOAA 2010).

Sandbar shark (Carcharhinus plumbeus)

Sandbar shark EFH is designated in the Project Area for the juvenile life stage. EFH for juvenile sandbar shark includes coastal areas of the US Atlantic between southern New England and Georgia (NMFS 2017). Sandbar sharks are a bottom-dwelling shark species that primarily forages for small bony fishes and crustaceans (NMFS 2009a).

Scup (*Stenotomus chrysops*)

Scup EFH is designated in the Project Area for juvenile and adult life stages. EFH for juvenile and adult scup is defined as the inshore and offshore demersal waters over the continental shelf from the Gulf of Maine to Cape Hatteras (NOAA 2007). Juvenile scup feed mainly on polychaetes, epibenthic amphipods, and small crustaceans, mollusks, and fish eggs while adults have a similar diet, they also feed on small squid, vegetable detritus, insect larvae, sand dollars, and small fish (Steimle et al. 1999). Scup occupy inshore areas in the spring, summer, and fall and migrate offshore to overwinter in warmer waters on the outer continental shelf (Steimle et al. 1999).

Silver hake (*Merluccius bilinearis*)

Silver hake, also known as whiting, EFH is designated in the Project Area for egg and larval life stages. EFH for the egg and larval stages is defined as surface waters of the Gulf of Maine, Georges Bank, the continental shelf off southern New England, and the middle Atlantic south to Cape Hatteras. Whiting eggs and larvae are observed all year with peaks in egg observations from June through October and peaks in larvae observations from July through September (NEFMC and NMFS 2017).

Smoothhound shark complex (Atlantic stock)

The smoothhound shark complex was split into two regional stocks in 2015 after a stock assessment led NMFS to manage each stock complex separately. Due to insufficient information on the individual life stages (neonate, juvenile, and adult), EFH for smooth dogfish is designated for all life stages combined and occurs in the Project Area. EFH for smooth dogfish includes coastal areas and inshore bays and estuaries from Cape Cod Bay, Massachusetts to South Carolina (NMFS 2017). Smooth dogfish are primarily demersal and undergo temperature stimulated migrations between inshore and offshore waters. Their diets are dominated by invertebrates, especially American lobsters, throughout their region; however, they also feed on small bony fishes throughout New England (NMFS 2017).

Summer flounder (*Paralichthys dentatus*)

Summer flounder EFH is designated in the Project Area for eggs, larval, juvenile, and adult life stages. Egg and larval EFH is pelagic waters over the Continental Shelf from the Gulf of Maine to Cape Hatteras, North Carolina (NMFS 2009c). EFH for juvenile and adult summer flounder is demersal waters over the continental shelf from the Gulf of Maine to Cape Hatteras. In addition to EFH designations, there are also HAPC designations throughout the region. HAPC is designated as areas of all native species of macroalgae, seagrasses, and freshwater and tidal macrophytes in any size bed, as well as loose aggregations, within adult and juvenile summer flounder EFH (NOAA 2007). Juvenile summer flounder inhabit inshore areas such as salt marsh creeks, seagrass beds, and mudflats in the spring, summer, and fall and move to deeper waters offshore in the winter. Consequently, seagrass beds off Falmouth Harbor may serve as refuge for juvenile summer flounder. Adults inhabit shallow coastal and estuarine areas during the warmer seasons and migrate offshore during the winter (Packer et al. 1999). Summer flounder are opportunistic feeders and diets generally correspond to prey availability in relation to flounder size, with smaller individuals primarily consuming crustaceans and polychaetes and larger individuals focusing more on fish prey (Packer et al. 1999).

White hake (*Urophycis tenuis*)

White hake EFH is designated in the Project Area for larval and juvenile life stages. Larvae EFH occurs in the Gulf of Maine, in southern New England, and on George's Bank. Early-stage larvae have been collected on the continental slope and cross the shelf-slope front to access juvenile nearshore habitat nurseries (NEFMC 2017). Juveniles are pelagic until they reach a certain length and become demersal (Chang et al. 1999a). EFH for the juvenile stage is designated as intertidal and sub-tidal estuarine and marine habitats in the Gulf of Maine, on Georges Bank, and in southern New England, including mixed and high salinity zones in a number of bays and estuaries north of Cape Cod, to a maximum depth of 300 m (NEFMC 2017). For the demersal phase, EFH occurs on fine-grained, sandy substrates in eelgrass, macroalgae, and un-vegetated habitats.

White shark (*Carcharodon carcharias*)

White shark EFH is designated in the Project Area for neonate, juvenile, and adult life stages. EFH for neonates is inshore waters out to 105 km (57 NM) from Cape Cod to New Jersey. EFH for juvenile and adult white shark is combined and includes inshore waters out to 105 km (65.2 mi) from Cape Ann, Massachusetts to Cape Canaveral (NMFS 2017). As neonates and juveniles below 300 centimeters (cm) (120 inches) total length, white shark primarily consume fish. Upon reaching lengths greater than 300 cm (120 inches), white sharks begin consuming primarily marine mammals (Estrada et al. 2006).

Windowpane flounder (*Scophthalmus aquosus*)

Windowpane flounder EFH is designated in the Project Area for juvenile and adult life stages. EFH for juvenile and adult life stages is defined as bottom habitats that consist of mud or fine-grained sand substrate around the perimeter of the Gulf of Maine, Georges Bank, southern New England, and the middle Atlantic south to Cape Hatteras (NOAA 2007). Juvenile and adult windowpane flounder feed on small crustaceans, especially mysid and decapod shrimp, and fish larvae (Chang et al. 1999b).

Winter flounder (*Pseudopleuronectes americanus*)

Winter flounder EFH is designated in the Project Area for eggs, larvae, juvenile and adult life stages. EFH for eggs is defined as bottom habitats with sandy, muddy, mixed sand/mud, gravel, and submerged aquatic vegetation on Georges Bank, the inshore areas of the Gulf of Maine, southern New England, and the middle Atlantic south to the Delaware Bay. Eggs are primarily observed from February through June and EFH for winter flounder spawning adults and eggs generally includes coastal benthic habitats from Mean Low Water (MLW) to the 5 m bathymetric contour due to typical spawning depths (Pereira 1999). The 5 m contour is roughly 2,000-2,500 ft from shore at both ends of the project cable route. EFH for larvae is defined as pelagic and bottom waters in Georges Bank, the inshore areas of the Gulf of Maine, southern New England, and the middle Atlantic south to Delaware Bay. Larvae are generally observed from March through July. EFH for juvenile and adult Winter Flounder is defined as bottom habitats with muddy or sandy substrate in Georges Bank, the inshore areas of the Gulf of Maine, southern New England, and the middle Atlantic south to Delaware Bay. Sandy substrates are found throughout the project area, in particular VS-5, VS-6, VS-22, VS-23, VS-24, and VS-25 (Figure 3-2). Winter flounder spawning occurs in the winter with peaks in February and March (NOAA 2007). Winter flounder are considered opportunistic feeders throughout each life stage and consume a wide range of prey. Adults feed on bivalves, eggs, and fish, but shift diets based on prey availability (Pereira et al. 1999).

Winter skate (*Leucoraja ocellate*)

Winter skate EFH is designated in the Project Area for juvenile and adult life stages (NEFMC 2017). EFH for juvenile and adult winter skate includes sand and gravel substrates in sub-tidal benthic habitats in depths from the shore to 80–90 m (262–295 ft) from eastern Maine to Delaware Bay and on the continental shelf in southern New England and the mid-Atlantic region, and on Georges Bank. As a demersal species, winter skate consume a large variety of demersal prey including polychaetes, amphipods, and crustaceans (Packer et al. 2003a).

Yellowtail flounder (*Limanda ferruginea*)

Yellowtail flounder EFH is designated in the Project Area for the juvenile stage. EFH for juvenile yellowtail flounder is sub-tidal bottom habitats with sandy or mixed sand and mud substrates on Georges Bank, the Gulf of Maine, and the southern New England shelf south to Delaware Bay (NOAA 2007). Yellowtail flounder forage primarily for benthic macrofaunal and diets largely consist of amphipods, polychaetes, and crustaceans (Johnson et al. 1999).

4.2 NOAA Trust Resources

In addition to fish and invertebrate species with designated EFH, NOAA-trust resources, such as anadromous fish, shellfish, crustaceans, or their habitats as designated by the Fish and Wildlife Coordination Act, may also use or overlap the Project Area. NOAA-trust resources that may use the project area are described and listed below (Table 4-2).

Alewife (*Alosa pseudoharengus*)

Alewife, along with blueback herring, are referred to as river herring. In 2006, river herring were listed as a species of concern by NOAA due to declines in population from dams, habitat degradation, fishing and predation. Alewife range from Newfoundland to the Carolinas. Alewife are anadromous and migrate up coastal rivers in the spring to spawn with water temperatures ranging from 41°F to 50°F. Alewife spawn over hard and soft bottom habitats in ponds, lakes, streams and rivers. Alewife reach sexually maturity by age 4 and females produced up to 300,000 eggs annually. Their diet consists of zooplankton, small fish, larvae and eggs (NOAA 2009).

American Eel (*Anguilla rostrata*)

American eel are a diadromous fish species ranging from Greenland to Brazil. Unlike herring they are catadromous, or born at sea as drifting eggs and larvae that arrive in estuaries in the spring and spend most of their lives (8-15 years) in freshwater before returning to the sea to spawn during fall migrations that span thousands of miles. They are also semelparous, spawning up to three to ten million eggs only one time and dying shortly after. American eels are subject to poaching in Massachusetts. Regulations require a 9-inch minimum size to harvest; however, glass (American eels <4 inches) and elvers (American eels between 4 to 8 inches in length) have been known to sell for as much as $2,600 a pound (Sneed 2014). American eel stocks were declared depleted in 2012 and recovery efforts involve dam removal, fish passages, and the start of quota-based management in 2014 by the Atlantic States Marine Fishery Council (Chase 2018).

American Shad (*Alosa sapidissima*)

American shad are an anadromous fish species that occur from Canada to Florida. Shad return to their natal rivers to spawn and consequently each major river along the East coast supports a discrete stock. In Massachusetts, shad spawn from late April to July usually by the time they reach 3 to 5 years old and in northern latitudes shad can spawn multiple times in their life. Fertilized eggs float in river currents, where they hatch into larvae that remain in freshwater for several months before moving downstream and eventually out to sea in the fall. Recreational fisheries for American shad in Massachusetts occur in the

Merrimack, Pembroke, Marshfield, Palmer, and Connecticut Rivers (all greater than 30 miles from the project) with smaller populations in smaller coastal rivers. Shad are in decline in Massachusetts largely a result of the effects of elevated turbidity on migrating, spawning, and larval development. (Evans et al. 2011)

Atlantic Menhaden (*Brevoortia tyrannus*)

Menhaden are found in estuarine and coastal waters from Nova Scotia to Florida and generally stay within 20 miles of shore, spawning occurs in the in winter with females laying up to 300,000 eggs. Menhaden spawn in coastal waters. Larvae drift into estuaries and develop into juveniles. Juveniles will stay in estuaries for approximately a year before migrating to coastal waters. Menhaden feed on plankton and are an important prey species for a highly migratory species of fish, marine mammals, and birds (NOAA 2021).

Bay Scallop (*Agropecten irradians*)

Bay scallops live for approximately 18 to 30 months and spawn in the summer with a secondary spawning event possible in the fall, bay scallops spawn once in their lifetime. Bay scallop habitat occurs off southern Cape Cod and northern Martha's Vineyard and are usually found in depths of 5 to 30 feet where spat settle on eelgrass, pebbles, and shell debris with robust sets of scallops found in sand/mud substrates with eelgrass. Bay scallops are harvested both recreationally and commercially, the harvest season runs from October to April. Commercial abundances occur only in waters south of Boston with highest catches in Buzzards Bay, Cape Cod, and around Martha's Vineyard and Nantucket. (Evans et al. 2011). The shellfish classification areas along the cable route are all classified as approved for shellfishing.

Blue crab (*Callinectes sapidus*)

While commonly associated with the Chesapeake Bay, blue crabs are also found in New England. The waters of Massachusetts, represent the northern extreme of the species reproductive range. Thus, blue crabs can be found in the waters off the south coast of Massachusetts and Rhode Island, and are found in Buzzards Bay, Narragansett Bay, Cape Cod and the Islands. Generally, mating occurs in brackish waters, and spawning occurs in higher salinity habitats, larvae are carried offshore by ocean currents, and will eventually settle back in estuaries, after going through several series of developments. Blue crabs will settle in complex habitats with submerged aquatic vegetation. While the abundance of blue crabs does not support a commercial fishery, blue crabs can be harvested from May 1st through to the end of year (Estrella and Meserve 2011).

Bluefish (*Pomatomus saltatrix*)

Bluefish are common throughout the continental shelf of the Atlantic Ocean and are a near-shore pelagic schooling fish staying mainly in the water column. Schools of bluefish on the East Coast move north with warmer weather, preferring water temperatures of 60°F and often enter estuaries to feed. Bluefish spawn offshore from Massachusetts to Florida. Eggs are pelagic and buoyant; larvae and juveniles are found in estuarine and nearshore shelf habitats. Bluefish are likely in the project area in July and August (ASMFC 2018).

Blueback herring (*Alosa aestivalis*)

Difficult to distinguish from alewife, the two species are often harvested and subsequently managed together under river herring. Blueback herring range from Nova Scotia to Florida. In the late spring, blueback herring travel upstream to spawn, often following alewife spawning events. Blueback herring are thought to spawn in a greater variety of habitat types than alewife, and will use swamps, submerged aquatic vegetation, and small tributaries, maturity is usually reached by age 5 and females can produce up to 100,000 eggs. Blueback herring feed on similar species to alewife (NOAA 2009).

Blue mussel (*Mytilus edulis*)

Blue mussels historically occurred in vast numbers in Vineyard and Nantucket Sounds, although greatly reduced, blue mussels still occur in the sounds. Mussels can have one or two spawning periods, depending on latitude; from Maine to Delaware mussel spawning peaks occur generally from May to June. Blue mussels are fast growing and have high reproductive rates, each female capable of producing 50 to 200 million eggs per spawning event. Blue mussels spend their early life in a pelagic stage eventually attaching to filamentous substrates, such as algae or hydroids. Mussels will detach from filamentous substrates and drift until finding adult blue mussel beds, and either attaching in the vicinity or directly onto attached blue mussels (NOAA 2016a).

Channeled Whelk (*Busycotypus canaliculatus*)

Channeled whelk are found in coastal environments from Massachusetts to Florida. Channeled whelk are internal fertilizers and form spawning aggregations, fertilized eggs are laid in strings in intertidal and shallow mudflats during the fall. Eggs hatch in the spring, and juvenile whelk stay close to shore, migrating to deeper coastal waters as they age. Whelk are harvested commercially in Massachusetts from Mid-April to Mid-December (NOAA 2016b).

Eastern Oyster (*Crassostrea virginica*)

Eastern oysters generally spawn in the area from June through August, at approximately 2 years of age. While natural sets of Eastern oysters can occur anywhere along the Massachusetts coast, sets are most likely rare in the project area. Dramatic declines in the Eastern oyster in the last century are due to habitat degradation, overfishing, predation pressure, and disease (Evans et al. 2011). Despite these declines, oyster aquaculture is a valuable industry in Massachusetts, and there is a permitted (granted in 2014), two-acre multi-trophic aquaculture operation southwest of the project area landing site in Vineyard Haven Harbor, growing oysters, quahogs, and sugar kelp (NEODP 20202).

Horseshoe crab (*Limulus polyphemus*)

Horseshoe crabs range from Maine to the Gulf of Mexico, during different life-stages horseshoe crabs will go from intertidal zones to depths up to 75 feet. Females deposit their eggs in the upper intertidal zone and have stringent requirements for the physicochemical properties of the sand and water in which they lay. The eggs hatch into larvae and remain as nearshore plankton through late summer. After molting, crabs settle to the bottom and live for several years in intertidal and shallow subtidal areas. Horseshoe crabs are harvested for biomedical reasons because of their blood and also as bait for eel and whelk fisheries. Declines in horseshoe crab populations are due to overfishing and changes in nest physicochemical conditions from dredging and beach nourishment projects (Evans et al. 2011). Spawning beaches and nursery areas for horseshoe crabs have been identified in beaches along Falmouth, MA, in Vineyard Sound along Gosnold, and in Vineyard haven and Lagoon Pond (Glenn 2009). Adult horseshoe crabs were observed during the 2021 benthic survey in transects VS-2, VS-20, VS-25, VS-26, and VS-27 and EG-1,

Knobbed (*Busycon carica*) whelk

Knobbed whelk occur in estuaries and offshore environments from Massachusetts to Florida. Spawning occurs in the spring and fall, knobbed whelk are internal fertilizers and form spawning aggregations. Females then lay fertilized eggs in a long string with one end buried in the mud. Eggs generally hatch in the spring and typically inhabit sand and mud habitats (NOAA 2016c).

Northern quahog (*Mercenaria mercenaria*)

Quahogs can be found year-around in Vineyard Haven Harbor and the Project Area overlaps with suitable quahog habitat in this area as mapped by MA DMF. Quahogs typically spawn once in the summer in the northern Atlantic (MacKenzie et al. 2002). Larval settlement can take up to a month depending on temperature and larvae usually settle in sand to mud habitats in subtidal waters of estuaries and coasts (Evans et al. 2011).

Soft-shell clams (*Mya arenaria*)

Soft-shell clams are ubiquitous along the entire Massachusetts coasts. They are found in the shallow waters of bays and estuaries in rocky gravel to soft mud although most abundant in silty mud and sand environments. Soft-shell clams occurs both tidally and sub-tidally with increased production associated with shallow subtidal habitats. Soft-shell clams reach sexually maturity by age 2 and spawn in the spring and in the summer (Evans et al. 2011).

Striped Bass (*Morone saxatalis*)

Striped bass can be found from Florida to Canada and spend most of their adult life in coastal estuaries or the ocean. Striped bass are commonly caught in Vineyard and Nantucket Sounds, beginning in early May following migrations of squid. Migratory striped bass spawn in freshwater in the spring and can be found far inland in some major tributaries. Migratory striped bass have principal spawning areas in the Chesapeake Bay, and rivers such as the Delaware, Hudson, and Roanoke (ASMFC 2016).

Tautog (*Tautoga onitis*)

Generally a coastal species, Tautog can be found in waters from the outer coast of Nova Scotia to South Carolina; however, they are most abundant from Cape Cod to Chesapeake Bay. Tautog are associated with complex structured habitat including submerged vegetation, shellfish beds, and underwater structures. Additionally, tautog feed on the epibenthic and encrusting invertebrates that grow on hard substrates. Tautog spawn in or near estuaries from May to August throughout their range. Eggs and larvae have been documented in waters off Southern New England. Tautog eggs are buoyant and settle on submerged vegetation three weeks post-fertilization, larval and juvenile tautog inhabit shallow water habitats with eelgrass, macroalgae, and mussels. Tautog are highly reliant on underwater structures and will shelter overwinter in rocks, jetties, and natural and manmade reefs (ASMFC 2015).

Table 4-2. Summary NOAA Trust Species possibly located within the Project Area.

Species	Eggs	Larval/Neonate*	Juveniles	Adults	HAPC
Alewife			*	*	
American eel				*	
American shad				*	
Atlantic menhaden	*	*		*	
Bay Scallop	*	*	*	*	
Blue crab	*	*		*	
Bluefish				*	
Blueback herring			*	*	

Species	Eggs	Larval/Neonate*	Juveniles	Adults	HAPC
Blue mussel	*	*	*	*	
Channeled whelk	*	*	*	*	
Eastern oyster	*	*	*	*	
Knobbed whelk	*	*	*	*	
Horseshoe crab	*	*	*	*	
Northern quahog	*	*	*	*	
Soft-shell clams	*	*	*	*	
Striped bass				*	
Tautog	*	*	*	*	

5 ANALYSIS OF POTENTIAL IMPACTS TO EFH

Proposed work to install the 5th submarine cable includes hydroplowing and horizontal directional drilling (HDD). HDD will be used to avoid eelgrass beds near the Falmouth, MA landing site and *Crepidula* reefs near the Martha's Vineyard, MA landing site. The exit holes for HDD will be occur approximately 2,000 feet from shore. In late April 2014, Comcast and Eversource (formerly NSTAR) completed hybrid submarine fiber optic cable installation just west of the current Project Area and contracted CR Environmental and Epsilon Associates, Inc to conduct a post-construction survey within six weeks of installation (Epsilon Associates, Inc. & CR Environmental, Inc. 2015a; Epsilon Associates, Inc. & CR Environmental, Inc. 2015b). This previous project also used HDD at cable landing locations and hydroplowing for seaward cable laying. Generally, results from the post-construction survey showed minimal habitat disturbance (Epsilon Associates, Inc. & CR Environmental, Inc. 2015a). HDD begins on land and is capable of installing cable 60 to 80 feet below the benthic sediment surface. The potential for HDD disturbance to essential fish habitats exists at cable exit sites where the transition from HDD to hydroplowing occurs by divers jetting surficial sediment layers out of the way of cable installation. Additionally, drill mud can be released into the environment (accidentally or through planned releases), smothering nearby benthic habitats. Hydroplowing directly impacts the benthic surface in a relatively narrow, twelve foot wide, and shallow, one to two foot deep, furrow. Impact producing factors to EFH and species and NOAA Trust Resources related to installation of the 5th submarine cable include increased noise, habitat disturbance, habitat alteration, and increased vessel traffic (Table 5-1).

Table 5-1. Impact-producing factors for finfish and invertebrates with EFH within the Project Area.

Impact-producing Factors	Construction and Installation	Operations and Maintenance
Increased noise: vessel traffic	X	X
Habitat disturbance	X	
Habitat alteration	X	X
Increased vessel traffic	X	X

5.1 Hydroplow

The installation of the submarine cable into the sediment via hydroplow will be the source of the largest benthic habitat disturbance associated with this project. Hydroplowing is typically used in shallow (<150 ft depth), high vessel traffic areas, where recreational and commercial boating and fishing activities occur (Eversource Energy 2018). Cable burial is required in these areas for human safety and to protect the cable from anchors and fishing gear. The hydroplow is towed on the seafloor by a barge and consists of two skids that allow it to slide across the bottom and an articulated blade that injects water into the sediment, greatly reducing the force needed to pull the plow forward. The sediment is fluidized as the plow is towed forward, cable unspools from the barge, down through the blade of the plow; the cable's weight causes it to sink through the fluidized sediment and is buried as the sediment returns to its pre-jetted condition (Eversource Energy 2018; Swanson et al. 2006). For this project, a pre-pass survey of the hydroplow will be done to detect any sub-surface obstructions throughout the corridor as patches of hard bottom or boulders could limit burial in some areas.

The points of bottom contact during hydroplow installation are the skids and blade of the hydroplow, and anchoring of the barge, contingent on whether an ROV hydroplow is used. If anchoring is required, it's estimated that 14 anchor sets with an impact of 2,500 square feet per set will occur. The most direct and deleterious effects to habitat types come from the hydraulic action of the blade, that blasts a portion of surface and subsurface sediment, epifaunal and infaunal organisms, and flora immediately in front of the plow into the water column. The greatest indirect disturbances come from the effects of suspended sediments, which can affect water and sediment quality, and mobile and sessile organisms as suspended sediments settle over nearby undisturbed habitat types. Highly mobile species will likely be able to avoid most direct impacts.

5.1.1 Water Quality

The project may contribute to temporary water quality impacts during construction activities through increase suspended sediments. Increases in suspended sediments can impact foraging, navigation, and sheltering behaviors of fish and invertebrates through visual impairment. Sublethal effects have been observed in adult fish when 650 milligrams per liter (mg/L) of suspended sediments persisted for five days, while lethal effects have been observed at concentrations greater than 1,000 mg/L that persisted for at least 24 hours (Sherk et al. 1974; Wilber and Clarke 2001). In addition, reduced oxygen consumption, filter feeding abilities, and growth has been observed in mollusks exposed to suspended sediment concentrations of 100 mg/L for two days (Wilber and Clarke 2001). The egg and larval life stages of many fish and invertebrate organisms are assumed to be the most sensitive, with some research finding delayed hatching of eggs at a sediment concentration of 100 mg/L for one day (fish) or 200 mg/L for 12 hours (mollusks; Sherk et al. 1974; Wilber and Clarke 2001).

The sediment in the Project footprint is patchy, with some areas dominated by sand, but many areas consist of coarser substrates, such as sandy gravel and gravelly sand, with cobble and boulder. Due to the heavier grain sizes, it is expected that little material will be suspended and transported from the direct work area. Using the SSFATE model, Swanson et al. (2006) modeled total suspended solids (TSS) from the installation of notional cables during hydroplow activities in the waters of Horseshoe Shoal, near Barnstable Harbor, MA. The model showed that deposition occurs close to the cable installation route at concentrations of 100 mg/L for 2-to-3-hour durations. Approximately 30% of the fluidized sediment, commensurate with previous studies, was assumed to be vertically distributed into the water column, with the remainder staying in the limits of the plowed trench. Sediment types observed in Horseshoe Shoal are similar to those in the Project Area, indicating that suspended solids will likely be short-lived and localized during installation of the 5th submarine cable. In addition, TSS levels will be below the threshold for adverse effects on fish (1,000 mg/l for most fish, and 200 mg/l for sensitive fish/invertebrate life stages) and benthic communities (390 mg/l; EPA 1986). TSS plumes during cable installation are expected to be small and temporary; fish in the project area will be able to swim through the plume or avoid it by swimming away. Although slow moving or sessile invertebrates will be unable to leave the area during installation, the short duration and limited concentration of suspended sediments are not expected to seriously harm organisms. Therefore, elevated TSS levels during cable installation is not likely to result in reductions in the quality or quantity of EFH or have substantial negative effects on species with designated EFH or considered NOAA Trust Resources in the area.

5.1.2 Habitat Disturbance and Alteration

During the installation phase, immobile life stages of fish and invertebrate species in or on benthic sediment in the direct path of the hydroplow will be the most at risk of direct injury or mortality. The 12-foot-wide direct disturbance swath is expected to impact a total of 7.7 acres. Only a minimal amount of sediment is expected to be displaced during cable installation and this amount is not expected to cause substantial injury or mortality to nearby stationary flora or fauna. Mobile benthic fish and invertebrates may be displaced temporarily by noise, sedimentation, and installation activities but will likely be able to escape harm by avoiding the Project Area during construction.

The habitat types encountered in the Project Area range from homogenous flat sand to complex hard-bottom habitat types that supported diverse communities and consisted of gravel and cobble with shell hash, brown and red algae, bryozoans, tunicates, sponges, corals, and hydrozoans. Many of these hard-bottom habitats are designated as HAPC for juvenile Atlantic cod (HAPC for cod specifically includes mixed sand and gravel and rocky habitats). More complex bottom habitat types also support many other fish and invertebrate species, as the structural complexity of larger grain sizes provides shelter and refuge habitat for small fish and invertebrates and hard substrates for epibenthos attachment (Auster 1998). Benthic habitats in the direct path of the hydroplow will be disturbed as sediments are fluidized and cable is laid in the trench. A post-construction survey conducted six weeks after installation of a submarine cable close to the Project Area showed rapid recovery of habitats and community, with the only disturbance observed including the presence of a narrow sand furrow from cable plowing, that created slightly higher bathymetric relief and attracted black sea bass. Either side of and crossing the cable showed signs of biogenic activity, pebbles, and cobbles; indicating that sediment deposition did not smother the area. The post-installation survey also observed sand waves, indicative of routine surficial sediment movement throughout the area. Research on benthic recovery has found that shallow, sandy environments exposed to strong natural disturbances typically recover quickly as strong bottom currents and storms infill anthropogenically disturbed patches of sediment (Meyer et al. 1981; Dernie, Kaiser, & Warwick 2003). Additionally, benthic communities in high energy, shallow areas with surficial sediment movement are thought to be disturbance-adapted and quicker to recover from anthropogenic disturbances (Collie et al. 2000). Although habitat in the direct path of the hydroplow will be disturbed during cable installation, recolonization and recovery of these habitats is expected based on results from similar projects in the region and given the similarity of nearby habitat and species. In addition, micro-siting implemented during the pre-pass phase of construction will be used to attempt to avoid impassable complex substrates, such as those containing large boulders or dense gravel pavement.

5.2 Horizontal Directional Drilling

To avoid sensitive coastal habitats with eelgrass, boulder fields, and nursery areas for fish, HDD will be used from onshore locations to approximately 2,000 feet seaward. According to regional bathymetric data, and confirmed by survey data the hydroplow paths terminate at the punchout locations in about 18 feet (5.5 m) of water (NEODP 2022, CR Environmental Inc. 2022. HDD is a trenchless method of installing underground utilities within a pipe along a pre-designed bore path using a surface-launched drilling rig (Eversource Energy 2018). An initial small diameter pilot hole is drilled to establish a bore path, and the hole is gradually enlarged through a series of reaming passes. Typically, HDD is used for pipes with a diameter less than 36” with typical length of HDD operations between 500 to 3,500 ft. (Eversource Energy 2018).

HDD activities require a shoreside drill site and a staging vessel for reaming the bore hole, and divers for the transition from HDD to hydroplowing during cable laying operations. Bore holes are selected through exploratory investigation of the planned area. Previous cable installation projects near the Project Area indicate that the Falmouth, MA and Martha’s Vineyard landing zones contain sandy to sandy/gravelly soils from 20 to 40 ft down, which are soil types conducive to HDD operations. This will likely decrease the number of exploratory boreholes needed, reducing potential impacts to the environment. Additionally, a drill mud, consisting of bentonite clay, chemical polymers, and water is used to lubricate the drill head and maintain the integrity of the bore hole. The bentonite and chemical polymers are non-toxic (Dillis & Roy Civil Design Group, Inc 2021 & Epsilon Associate Inc., and CR Environmental 2015b) and the main concern with excess bentonite clay is smothering of nearby sessile organisms (Howitt et al. 2021). During HDD operations, both planned and unplanned releases of drill mud may occur. Unplanned releases involve drill mud escaping through geologic fractures in the bore hole (Dillis and Roy Civil Design Group, Inc; Howitt et al. 2021). Planned releases involve the amount of mud that is released during HDD pilot hole punch-out. The amount of planned release is calculated pre-punch out, and a gravity cell (steel box) will be used to mitigate the release and cleanup of drill mud (Epsilon Associates Inc & CR Environmental Inc 2015b). During the 2014 Martha’s Vineyard hybrid submarine cable installation activities near the Project Area, the drill mud was removed at the bore hole exit, where divers excavated a pit with venturi pumps (submersible, handheld pump) and a barge-mounted hydraulic pump removed the mud to holding tanks on the barge (Eversource Energy 2018, Epsilon Associates Inc. & CR Environmental Inc. 2015b).

5.2.1 Water Quality

The potential effects to water quality during routine operations, are predominantly located at the bore hole exit; where suspended sediments from boring, excavation, and jetting will occur. Water quality could also be impacted from an inadvertent release of drill mud, which contains bentonite clay that can be slow to settle out of the water column. A 2010 HDD project in Western Australia, that occurred in variable geological strata, with an exit bore hole surrounded by benthic habitats consisting of corals, seagrass, and macroalgae in a marine conservation reserve was successfully completed with minimum deleterious effects to the environment (Howitt et al. 2012). The HDD length was 1.85 km and the exit bore hole occurred in 6 m water depth. A sediment plume approximately 850 m long and 60 m wide observed via aerial survey during the punch out of the bore hole dissipated within 7 hours (Howitt et al. 2012). Impacts to water quality affecting EFH and associated fish and invertebrate species and NOAA trust species are expected to be similar to those associated with hydroplow operations. No substantial adverse impacts are expected due to the distance from sensitive eelgrass habitat and the limited duration and concentration of suspended sediments related to HDD activities.

5.2.2 Habitat Disturbance and Alteration

Essential fish habitat in the Project Area would be disturbed at and around the bore hole exits near Falmouth, MA and Oak Bluffs, MA. Bore sites will be positioned outside of known eelgrass beds near Falmouth, MA and *Crepidula reef* near Oak Bluffs, MA, likely occurring in areas of *Crepidula* reef habitat. Mobile fish and invertebrate species will likely be able to escape any potential harm through avoidance of the area near the bore hole exit. Slow or sessile benthic organisms in the direct path of the bore hole exit will likely experience injury or direct mortality as the drill punches out. Results from a post-installation survey conducted six weeks after the installation of a nearby submarine cable in Vineyard Sound, which also used HDD with venturi pumps to mitigate the spread of planned releases of drill mud, showed that habitats immediately around the exit bore hole had recovered and consisted of coarse sediments with branching brown and red algae and common slipper shells (Epsilon Associates, Inc. & CR Environmental, Inc. 2015a). The survey did not find any evidence of drill mud covering the area, suggesting the hydraulic pump system was effective in removing drill cuttings and mud and/or natural processes (currents, storms) washed away excess mud and cuttings. In an inadvertent release of drill mud associated with a 2010 HDD project in Western Australia, the released mud covered 422 m^2 of seafloor habitat to an average depth of 15 cm (Howitt et al. 2012). This mud escaped through geologic fractures in the sediment, smothering sensitive habitat that was supposed to be avoided through HDD activities. Surveyors found that directly after impact, drill mud completely covered 75% of macroalgae in the area; however, within a month, the covered area reduced to 76 m^2 and average depth decreased to 3.5 cm. Four months after the inadvertent release there was no longer any presence of drill mud and macroalgae started to recolonize the area (Howitt et al. 2012). Long-term, substantial alteration of EFH due to sedimentation, from bentonite clay, associated with HDD is not expected as previous projects and research in nearby waters indicate limited deposition and rapid recovery to biotic communities near exit bore holes.

5.3 Vessel Traffic

Vessel noise and construction activities can impact fish species that have advanced hearing or communicate with low-frequency sound signals (Ladich and Myrberg 2006). Construction vessels for the project include a barge to pull the hydroplow and a staging vessel for divers to connect the cable from the hydroplow to the HDD punchout location. Potential impacts from construction vessels include barge grounding, vessel noise, and barge-mounted equipment noise. A maximum sound pressure level of 192 dB re 1 μPa for numerous vessels with varying propulsion power under dynamic positioning is estimated to be under the physiological injury threshold for fishes with a peak sound pressure of 206 dB re 1 μPa (FHWG 2008; Stadler and Woodbury 2009; McPherson et al. 2017). Behavioral avoidance of fishes occurs at sound pressure levels of 150 dB re 1 µPa (Andersson et al. 2007; Mueller-Blenkle et al. 2010). Continuous noise above 170 dB root-mean-square (rms) for 48 hours can lead to injury, while exposure to noise of 158 dB rms or above for 12 hours can lead to behavioral disturbance (Hawkins and Popper 2017; Popper et al. 2014). Unless construction operations occur for more than 12 hours without break, vessel noise is not expected to cause behavioral impacts to fish or invertebrates in the Project Area during construction.

In addition, in a laboratory experiment exposing a seagrass species, *Posidonia oceanica,* to sound pressure levels observed in marine construction (157 dB re 1 µPa with peak levels up to 175 dB re 1 µPa), a decrease in the number of starch grains used for energy storage was observed (Solé et al. 2021). Although this was an observational experiment with electron microscopy and more studies are needed, it shows that there is potential for anthropogenic noise to impact seagrass growth.

At this time, it is assumed there will only be a slight increase in risk from the minimal number of additional vessels added to baseline activity in the Project Area and that any associated increase in risk of injury or mortality due to noise related to vessels would be too small to be detected or measured and effects to EFH are therefore insignificant. Regarding vessel noise, this will not be more than existing background vessel noise from existing vessels and ferries in the area, and species in the Project Area are acclimated to these levels.

5.4 Electromagnetic Fields

Many marine organisms have specialized structures to detect electromagnetic fields for navigation, communication, or feeding. The impacts of anthropogenic electromagnetic fields (EMF) on marine species and the strength of their ability to detect them is still largely speculative, and more studies are needed to understand if estimated potential impacts are of ecological significance (Normandeau et al. 2011). Cable EMFs are likely less intense than the geomagnetic field of Earth and it is generally assumed that marine animals will not be able to detect these EMFs unless directly over the center of a cable (Copping et al. 2016; Gradient 2017). Electrosensitive invertebrate species, such as sea slugs and sea urchins, have sensitivity thresholds above the modeled level of induced electric fields from undersea cables (Normandeau et al. 2011). Elasmobranchs and fishes that sense EMF for feeding or movement are mostly highly mobile. Due to EMF weakening with distance and the cable being buried by sediment, the magnetic field emitted by these cables is likely only detectable by demersal species (Normandeau et al. 2011). Changes in behavior were observed in little skates and American lobsters in the presence of energized cables, but did not inhibit movement of these species (Hutchison et al. 2018). A study investigating habitat use around energized cables found no evidence that fish or invertebrates were either attracted to or repelled by EMF in the vicinity of the cables (Love et al. 2017). Commercially important cancer crabs (similar to two species present in the region) exposed to EMF were found to disrupt the L-Lactate and D-Glucose circadian rhythm and altered total hemocyte count. The crabs showed a clear attraction to EMF exposed shelters with a significant reduction in time spent roaming (Scott et al. 2021). However, the submarine cable to be installed will be encased in a protective sheathing and buried approximately 2 meters below the sediment with the hydroplow and have significantly lower detection levels, limiting comparability with the current project. With no known studies to date of negative effects of EMF on marine organisms and the protection of the cable with sheathing and sediment, no EMF impacts are expected from this project.

6 MITIGATION AND MINIMIZATION

Potential adverse effects to eggs and larvae of species with EFH in the Project Area may be reduced through adherence to Time of Year (TOY) restrictions recommended for five of the EFH species (Atlantic cod, winter flounder, longfin inshore squid, northern shortfin squid, and Atlantic surfclam) that may occur in the Project Area (Evans et al. 2015; Table 6-1).

In addition to adhering to TOY restrictions, impacts to eelgrass, considered HAPC for summer flounder, and complex boulder habitat will be avoided by using HDD at the landfall locations where eelgrass is known to be present, which installs submarine cables horizontally through sediment. During HDD activities, a gravity cell will also be used to mitigate the spread of planned releases of drill mud and sedimentation of nearby habitats. The gravity cell is a 20-foot by 20-foot steel box, used to retain drilling fluid when the pilot drill "punches out" and will be applied in the case of an inadvertent release as described in the HDD Inadvertent Release Plan.

Table 6-1. Time of year restrictions for Massachusetts Coastal Alteration Projects.

EFH	Time of Year Restriction
Winter Flounder	January 15 – May 31
Atlantic Cod	April 1 – June 30
Longfin Inshore Squid	April 15 – June 15
Northern Shortfin Squid	June 15 – October 15
Atlantic Surfclam	June 15 – October 15

Source: Massachusetts Division of Marine Fisheries, 2011.

7 EFH DETERMINATION

Determinations for potential impacts to EFH/HAPC and designated species and NOAA Trust Resources from the 5th cable installation are summarized in Table 7-1. Overall, project impacts are primarily expected to be temporary and cause no substantial adverse effect on habitat or associated species. Installation of the 5th submarine cable is not expected to have substantial adverse effects on EFH/HAPC and associated species or NOAA Trust Resources given observed recovery of nearby habitat after similar installation activities and limited spatial impact area.

Table 7-1. Determination of potential impacts to EFH and associated species from 5th submarine cable installation.

Project Activity	Impact	Adverse Effect on EFH is not Substantial	Adverse Effect on EFH is Substantial	Minimization	Mitigation
Hydroplow	Underwater Noise (behavioral avoidance)	Temporary: Juvenile cod HAPC, Adult summer flounder HAPC, all EFH species	None expected	Adherence to TOY restrictions	No mitigation required.
	Water Quality (TSS)	Minimal and Temporary: all EFH species	None expected	Adherence to TOY restrictions	No mitigation required.
	Habitat disturbance in path of hydroplow (7.7 acres); potential alteration of sand/granule/small pebble habitat	Temporary, minimal area (recovery expected): Adult summer flounder and juvenile Atlantic cod HAPC, all EFH species	None expected	Adherence to TOY restrictions	Mitigation to be negotiated with regulatory agencies.
HDD	Water Quality (TSS)	Minimal and Temporary: all EFH species	None expected	Adherence to TOY restrictions	No mitigation required.
	Habitat disturbance in path of hydroplow; potential alteration of sand/granule/small pebble habitat	Temporary, minimal area (recovery expected): Adult summer flounder and juvenile Atlantic cod HAPC, all EFH species	None expected	- Adherence to TOY restrictions - Use of HDD to avoid eelgrass beds - Use of gravity cell	Mitigation to be negotiated with regulatory agencies.
Vessel Traffic	Noise and Barge Grounding	Minimal: all EFH species	None expected	Adherence to TOY restrictions	No mitigation required.
Electromagnetic Fields	None expected	Negligible impacts expected	None expected	No minimization required	No mitigation required.

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Attachment J

Marine Archaeology Report

(Not Included for General Distribution, Submitted to MHC Only)

Attachment K

Historic Resources Summary

The following tables list the historic resources bordered by the 4 Route Options in Falmouth. See Figure 1 Below for a map depicting these resources.

Table K.1 Falmouth Landside Route Option 1 Historic Properties

Name and Address	Designation	Adjacent to Route	Intersected by Route
Massachusetts National Guard Armory 161 Jones Road FAL.2146	Inventory	X	
Miskell house 28 Lakeview Avenue FAL.2148		X	
Falmouth Village Historic District FAL.AG	LHD		X
Palmer Avenue Streetscape FAL.AB	Inventory	X	
Conant and Nutley House 9 Katherine Lee Bates Road FAL.2177	Inventory	X	
Falmouth Village FAL.AM	Inventory	X	
Falmouth Village Green District FAL.AQ	NRDIS	X	
19-BN-495	Inventory		X
Memorial Library 300 Main Street FAL.711	Inventory	X	
Woodbury House 169 Walker Street FAL.726	Inventory	X	
Stone Dock Marker Surf Drive FAL.908	Inventory	X	

Table K.2 Falmouth Landside Route Option 2 Historic Properties

Name and Address	Designation	Adjacent to Route	Intersected by Route
Massachusetts National Guard Armory 161 Jones Road FAL.2146	Inventory	X	
Oak Grove Cemetery FAL.BF	NRIND	X	
Colonial Lounge Palmer Avenue FAL.49	Inventory	X	
Falmouth Village Historic District FAL.AG	LHD		X
Palmer Avenue Streetscape FAL.AB	Inventory		X
19-BN-495	Inventory		X
Falmouth Village Green District FAL.AQ	NRDIS		X
Falmouth Village FAL.AM	Inventory		X
Woodbury House 169 Walker Street FAL.726	Inventory	X	
Stone Dock Marker Surf Drive FAL.908	Inventory	X	

Table K.3 Falmouth Landside Route Option 3 Historic Properties

Name and Address	Designation	Adjacent to Route	Intersected by Route
Massachusetts National Guard Armory 161 Jones Road FAL.2146	Inventory	X	
Oak Grove Cemetery FAL.BF	NRIND	X	
Colonial Lounge FAL.49 Palmer Avenue	Inventory	X	
Falmouth Village Historic District FAL.AG	LHD	X	
New York, New Haven and Hartford Railroad Company FAL.2137 59 Depot Avenue		X	
Falmouth Village Green District FAL.AQ	NRDIS	X	
Locust Street-Mill Road Streetscape FAL.AN		X	
Lane House 77 Mill Road FAL.2156	Inventory	X	
Leland House 178 Mill Road FAL.660	Inventory	X	
Dwight Carriage House 333 Mill Road FAL.661	Inventory	X	
First Settlement Marker FAL.909 Surf Dr.	Inventory	X	
Stone Dock Marker Surf Drive FAL.908	Inventory	X	

Table K.4 Falmouth Landside Route Option 4 Historic Properties

Name and Address	Designation	Adjacent to Route	Intersected by Route
Massachusetts National Guard Armory 161 Jones Road FAL.2146	Inventory	X	
Oak Grove Cemetery FAL.BF	NRIND	X	
Colonial Lounge Palmer Avenue FAL.49	Inventory	X	
Falmouth Village Historic District FAL.AG	LHD	X	
New York, New Haven and Hartford Railroad Company FAL.2137	Inventory	X	
Falmouth Village Green District FAL.AQ	NRDIS	X	
Weld Quarters 14 Elm Road FAL.750	Inventory	X	
Weld Servant Quarters 18 Elm Road FAL.749	Inventory	X	
19-BN-508	Inventory		X
19-BN-507	Inventory		X
Hatch House 122 Elm Road FAL.114	Inventory	X	
White House 322 Surf Road FAL.2165	Inventory	X	
First Settlement Marker Surf Drive FAL.909	Inventory	X	
Stone Dock Marker Surf Drive FAL.908	Inventory	X	

The following tables list the historic resources bordered by the 4 Route Options in Falmouth. See Figure 2 Below for a map depicting these resources.

Table K.5 Oak Bluffs Landside Route Historic Properties

Name and Address	Designation	Adjacent to Route	Intersected by Route
Martha's Vineyard American Revolution Battlefield TIS.F	Inventory		X
OAK.HA.23	Inventory		X
Eastville OAK.A	Inventory	X	

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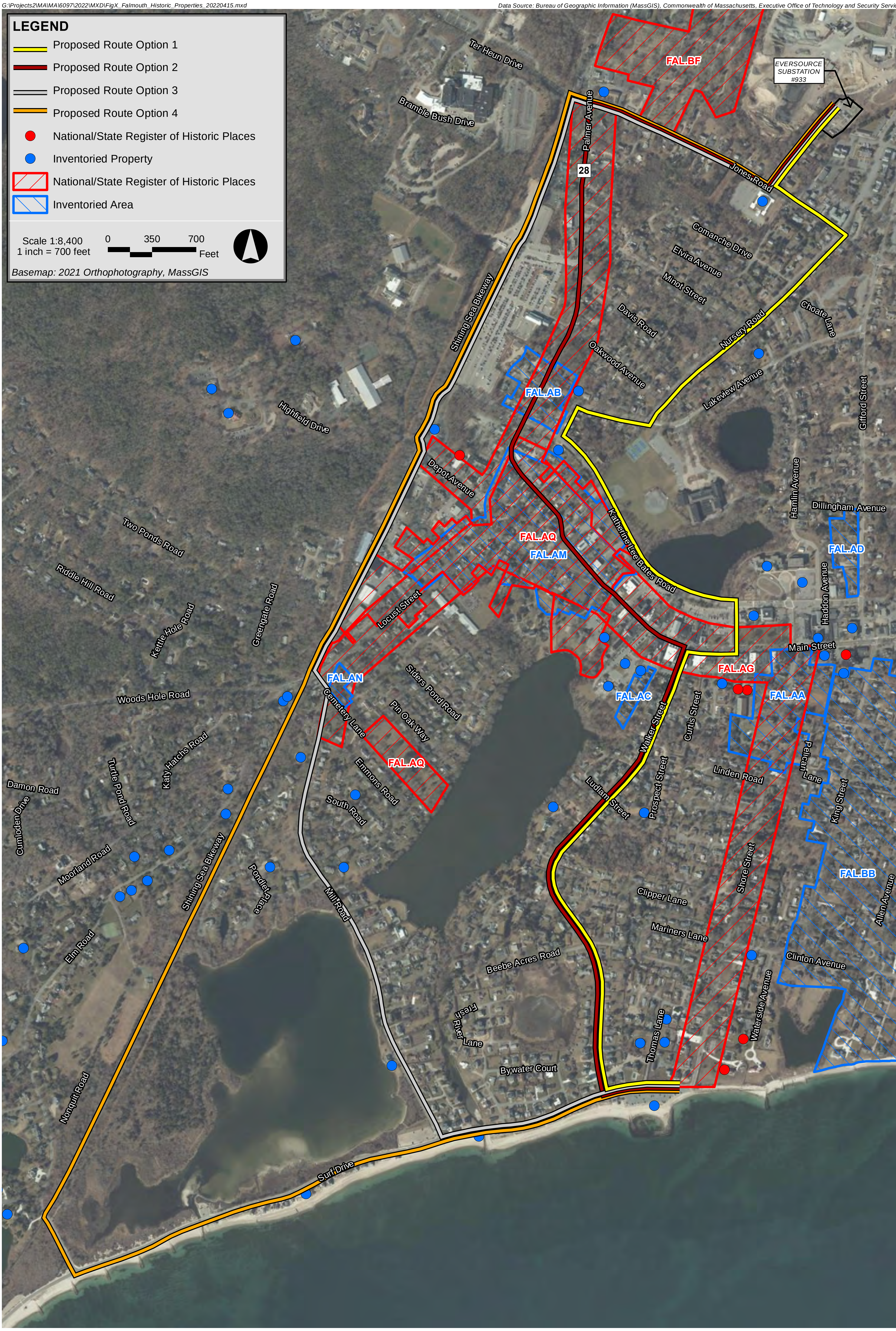
Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



Martha’s Vineyard Reliability Project

EVERSOURCE

Figure 1

Historic Properties - Falmouth Project Area

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Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

Martha's Vineyard Reliability Project

EVERSOURCE

Figure 2

Historic Properties - Oak Bluffs Landing Site

Attachment L

RMAT Tool Output

RMAT Climate Resilience Design Standards Tool Project Report

Eversource 70 Cable
Date Created: 11/23/2021 1:12:37 PM   Created By: nperlot   Download

Project Summary

Link to Project

Estimated Construction Cost: $60000000.00
End of Life Year: 2072
Project within mapped Environmental Justice population: Yes

Ecosystem Benefits	Scores
Project Score	Low
Exposure	**Scores**
Sea Level Rise/Storm Surge	High Exposure
Extreme Precipitation - Urban Flooding	Moderate Exposure
Extreme Precipitation - Riverine Flooding	Moderate Exposure
Extreme Heat	High Exposure

Asset Summary

Number of Assets: 1

Asset Risk	Sea Level Rise/Storm Surge	Extreme Precipitation - Urban Flooding	Extreme Precipitation - Riverine Flooding	Extreme Heat
70 Cable	High Risk	Moderate Risk	Moderate Risk	High Risk

Project Outputs

	Target Planning Horizon	Intermediate Planning Horizon	Percentile	Return Period	Tier
Sea Level Rise/Storm Surge					
70 Cable	2070	2050		100-yr (1%)	Tier 3
Extreme Precipitation					
70 Cable	2070			25-yr (4%)	Tier 3
Extreme Heat					
70 Cable	2070		90th		Tier 3

Scoring Rationale - Exposure

Sea Level Rise/Storm Surge

This project received a "High Exposure" because of the following:

- Located within the predicted mean high water shoreline by 2030
- Exposed to the 1% annual coastal flood event as early as 2030
- Historic coastal flooding at project site

Extreme Precipitation - Urban Flooding

This project received a "Moderate Exposure" because of the following:

- Maximum annual daily rainfall exceeds 10 inches within the overall project's useful life
- No historic flooding at project site
- No increase to impervious area

- Existing impervious area of the project site is less than 10%

Extreme Precipitation - Riverine Flooding

This project received a "Moderate Exposure" because of the following:

- Part of the project is within 500ft of a waterbody and less than 20ft above the waterbody
- No historic riverine flooding at project site
- The project is not within a mapped FEMA floodplain [outside of the Massachusetts Coast Flood Risk Model (MC-FRM)]
- Project is not likely susceptible to riverine erosion

Extreme Heat

This project received a "High Exposure" because of the following:

- Less than 10% of the existing project site has canopy cover
- 10 to 30 day increase in days over 90 deg. F within project's useful life
- Located within 100 ft of existing water body
- No increase to the impervious area of the project site
- No tree removal

Scoring Rationale - Asset Risk Scoring

Asset - 70 Cable
Primary asset criticality factors influencing risk ratings for this asset:

- Asset may inaccessible/inoperable for more than a day but less than a week after natural hazard event
- Greater than 100,000 people would be directly affected by the loss/inoperability of the asset
- The infrastructure is located in an environmental justice community, and/or does provide services to vulnerable populations
- Inoperability of the asset would result in moderate or severe injuries or moderate or severe impacts to chronic illnesses
- Inoperability is likely to significantly impact other facilities, assets, or buildings and will likely affect their ability to operate
- There are no hazardous materials in the asset

Project Design Standards Output

Asset: 70 Cable — Infrastructure

Sea Level Rise/Storm Surge — High Risk

Target Planning Horizon: 2070
Intermediate Planning Horizon: 2050
Return Period: 100-yr (1%)

Applicable Design Criteria

Tiered Methodology: Tier 3 (Link)

Tidal Benchmarks: Yes
Stillwater Elevation: Yes
Design Flood Elevation (DFE): Yes
Wave Heights: Yes
Duration of Flooding: Yes
Design Flood Velocity: Yes
Wave Forces: Yes
Scour or Erosion: Yes

Extreme Precipitation — Moderate Risk

Target Planning Horizon: 2070
Return Period: 25-yr (4%)

Applicable Design Criteria

Tiered Methodology: Tier 3 (Link)

Total Precipitation Depth for 24-hour Design Storms: Yes
Peak Intensity for 24-hour Design Storms: Yes
Riverine Peak Discharge: Yes

Riverine Peak Flood Elevation: Yes
Duration of Flooding for Design Storm: Yes
Flood Pathways: Yes

Extreme Heat High Risk

Target Planning Horizon: 2070
Percentile: 90th Percentile

Applicable Design Criteria

Tiered Methodology: Tier 3 (Link)

Annual/Summer/Winter Average Temperature: Yes
Heat Index: Yes
Days Per Year With Max Temperature > 95°F: Yes
Days Per Year With Max Temperature > 90°F: Yes
Days Per Year With Max Temperature < 32°F: Yes
Number of Heat Waves Per Year: Yes
Average Heat Wave Duration (Days): Yes
Cooling Degree Days (Base = 65°F): No
Heating Degree Days (Base = 65°F): No
Growing Degree Days: No

Project Inputs

Core Project Information

Name:	Eversource 70 Cable
Given the expected useful life of the project, through what year do you estimate the project to last (i.e. before a major reconstruction/renovation)?	2072
Location of Project:	Falmouth
Estimated Capital Cost:	$60,000,000
Who is the Submitting Entity?	Private Other NSTAR Electric Company d/b/a Eversource Energy Nicole Perlot (nperlot@epsilonassociates.com)
Is this project being submitted as part of a state grant application?	No
Which grant program?	
What stage are you in your project lifecycle?	Permitting
Is climate resiliency a core objective of this project?	No
Is this project being submitted as part of the state capital planning process?	No
Is this project being submitted as part of a regulatory review process or permitting?	Yes
Brief Project Description:	Eversource proposes to construct a new submarine cable across Vineyard Sound from the Town of Falmouth on Cape Cod to the Town of Oak Bluffs on Martha's Vineyard to provide additional electric service that will meet the growing demand for electricity on the island. The preferred method of cable installation will be via HDD at each landing to avoid potential impacts to coastal wetland resource areas. The rest of the proposed cable route will be installed via hydroplow or jet plow.
Project Submission Comments:	

Project Ecosystem Benefits

No Ecosystem Service Benefits are provided by this project

Factors to Improve Output

✓ Incorporate nature-based solutions that may provide flood protection
✓ Incorporate nature-based solutions that may reduce storm damage
✓ Protect public water supply by reducing the risk of contamination, pollution, and/or runoff of surface and groundwater sources used for human consumption
✓ Incorporate strategies that reduce carbon emissions
✓ Incorporate green infrastructure or nature-based solutions that recharge groundwater
✓ Incorporate green infrastructure to filter stormwater
✓ Incorporate nature-based solutions that improve water quality
✓ Incorporate nature-based solutions that sequester carbon carbon
✓ Increase biodiversity, protect critical habitat for species, manage invasive populations, and/or provide connectivity to other habitats
✓ Preserve, enhance, and/or restore coastal shellfish habitats
✓ Incorporate vegetation that provides pollinator habitat
✓ Identify opportunities to remediate existing sources of pollution
✓ Provide opportunities for passive and/or active recreation through open space
✓ Increase plants, trees, and/or other vegetation to provide oxygen production
✓ Mitigate atmospheric greenhouse gas concentrations and other toxic air pollutants through nature-based solutions
✓ Identify opportunities to prevent pollutants from impacting ecosystems

✓ Incorporate education and/or protect cultural resources as part of your project

Is the primary purpose of this project ecological restoration?

No

Project Benefits

Provides flood protection through nature-based solutions	No
Reduces storm damage	No
Recharges groundwater	No
Protects public water supply	No
Filters stormwater using green infrastructure	No
Improves water quality	No
Promotes decarbonization	No
Enables carbon sequestration	No
Provides oxygen production	No
Improves air quality	No
Prevents pollution	No
Remediates existing sources of pollution	No
Protects fisheries, wildlife, and plant habitat	No
Protects land containing shellfish	No
Provides pollinator habitat	No
Provides recreation	No
Provides cultural resources/education	No

Project Climate Exposure

Is the primary purpose of this project ecological restoration?	No
Does the project site have a history of coastal flooding?	Yes
Does the project site have a history of flooding during extreme precipitation events (unrelated to water/sewer damages)?	No
Does the project site have a history of riverine flooding?	No
Does the project result in a net increase in impervious area of the site?	No
Are existing trees being removed as part of the proposed project?	No

Project Assets

Asset: 70 Cable
Asset Type: Utility Infrastructure
Asset Sub-Type: Energy (electric, gas, petroleum, renewable)
Construction Type: New Construction
Construction Year: 2022
Useful Life: 50

Identify the length of time the asset can be inaccessible/inoperable without significant consequences.
Infrastructure may be inaccessible/inoperable for more than a day, but less than a week after natural hazard without consequences.
Identify the geographic area directly affected by permanent loss or significant inoperability of the infrastructure.
Impacts would be regional (more than one municipality and/or surrounding region)
Identify the population directly served that would be affected by the permanent loss or significant inoperability of the infrastructure.
Greater than 100,000 people
Identify if the infrastructure is located within an environmental justice community or provides services to vulnerable populations.
The infrastructure is located in an environmental justice community, and/or provides some services to vulnerable populations (services are not available elsewhere to same population)
Will the infrastructure reduce the risk of flooding?
No
If the infrastructure became inoperable for longer than acceptable in Question 1, how, if at all, would it be expected to impact people's health and safety?
Inoperability of the infrastructure would result in moderate or severe injuries or moderate or severe impacts to chronic illnesses
If there are hazardous materials in your infrastructure, what are the extents of impacts related to spills/releases of these materials?
There are no hazardous materials in the infrastructure
If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts on other facilities, assets, and/or infrastructure?
Significant – Inoperability is likely to impact other facilities, assets, or buildings and result in cascading impacts that will likely affect their ability to operate
If the infrastructure was damaged beyond repair, how much would it approximately cost to replace?
Less than $10 million
Does the infrastructure function as an evacuation route during emergencies? This question only applies to roadway projects.
No
If the infrastructure became inoperable for longer than acceptable in Question 1, what are the environmental impacts related to natural resources?
No impact on surrounding natural resources is expected
If the infrastructure became inoperable for longer than acceptable in Question 1, what are the impacts to government services (i.e. the infrastructure is not able to serve or operate its intended users or function)?
Loss of infrastructure may reduce the ability to maintain some government services, while a majority of services will still exist
What are the impacts to loss of confidence in government resulting from loss of infrastructure functionality (i.e. the infrastructure asset is not able to serve or operate its intended users or function)?
Reduced morale and public support

Report Comments

N/A

Attachment M

Public Outreach Materials

- EJ Screening Form Distribution Email
- EJ Screening Form
- Fact Sheet
- Outreach Summaries
- Feedback Tracker

From: Burton, Andrea R <andrea.burton@eversource.com>
Sent: Thursday, March 31, 2022 4:24 PM
To: ben@environmentmassachusetts.org <ben@environmentmassachusetts.org>; cluppi@cleanwater.org <cluppi@cleanwater.org>; deb.pasternak@sierraclub.org <deb.pasternak@sierraclub.org>; elvis@n2nma.org <elvis@n2nma.org>; hclish@outdoors.org <hclish@outdoors.org>; hricci@massaudubon.org <hricci@massaudubon.org>; juliablatt@massriversalliance.org <juliablatt@massriversalliance.org>; kelly.boling@tpl.org <kelly.boling@tpl.org>; kerry@msaadapartners.com <kerry@msaadapartners.com>; ngoodman@environmentalleague.org <ngoodman@environmentalleague.org>; pstanton@e4thefuture.org <pstanton@e4thefuture.org>; rob@oceanriver.org <rob@oceanriver.org>; robb@massland.org <robb@massland.org>; sarah@massclimateaction.net <sarah@massclimateaction.net>; srubin@clf.org <srubin@clf.org>; sylvia@communityactionworks.org <sylvia@communityactionworks.org>; tsmookler@uumassaction.org <tsmookler@uumassaction.org>; wvaughan@hcwh.org <wvaughan@hcwh.org>; tribalcouncil@chappaquiddick-wampanoag.org <tribalcouncil@chappaquiddick-wampanoag.org>; thpo@wampanoagtribe-nsn.gov <thpo@wampanoagtribe-nsn.gov>; crwritings@aol.com <crwritings@aol.com>; john.peters@mass.gov <john.peters@mass.gov>; acw1213@verizon.net <acw1213@verizon.net>; melissa@herringpondtribe.org <melissa@herringpondtribe.org>; rockerpatriciad@verizon.net <rockerpatriciad@verizon.net>; rhalsey@naicob.org <rhalsey@naicob.org>; thpo@wampanoagtribe-nsn.gov <thpo@wampanoagtribe-nsn.gov>; bonney.hartley@mohican-nsn.gov <bonney.hartley@mohican-nsn.gov>; Brian.Weeden@mwtribe-nsn.gov <Brian.Weeden@mwtribe-nsn.gov>; info@capecodclimate.org <info@capecodclimate.org>; info@cacci.cc <info@cacci.cc>; engagefalmouth@gmail.com <engagefalmouth@gmail.com>; MDiGiano@falmouthedic.org <MDiGiano@falmouthedic.org>; murphydalzell@aol.com <murphydalzell@aol.com>; admin@uuffm.org <admin@uuffm.org>; hauke@whoi.edu <hauke@whoi.edu>
Subject: Eversource's Martha's Vineyard Reliability Project and 91 Replacement Cable Project

Dear Stakeholders,

Please see the attached cover letter and Environmental Justice Screening Form regarding Eversource's Martha's Vineyard Reliability Project and 91 Replacement Cable Project.

The documents are provided in the following languages: English and Portuguese.

We look forward to any input, questions, or concerns you may have.

Sincerely,

Andrea Burton

Andrea Burton, Project Manager
Project Services, Eversource Energy
O: 781-441-8515
C: 617-922-3721
Email: Andrea.Burton@eversource.com

EVERSOURCE

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247 Station Drive
Mail Stop NE 390
Westwood, MA 02090

April 1, 2022

Dear Stakeholder,

As part of our everyday effort to deliver reliable energy to our customers and communities, we are planning improvements to the electric system. This project will improve the reliability of the electric grid on Martha's Vineyard so that all of our customers have access to dependable power that meet their current and growing energy needs.

We're Always Working to Serve You Better

We are planning the **Martha's Vineyard Reliability Project**, a new distribution underground manhole (precast concrete vault) and duct bank (a series of conduits that house electric cables) system between Eversource's Falmouth Substation and Oak Bluffs. This project will bolster the system capacity on Martha's Vineyard to meet growing energy needs. It will also help facilitate Eversource's efforts to decrease its carbon footprint by decommissioning the five existing diesel generators on the Island. The new line will travel approximately 2.7 miles from the existing Falmouth Substation on Stephens Lane to Jones Road, onto the Shining Sea Bikeway, down Mill Road to Surf Drive before transitioning in the Surf Drive parking lot to a submarine cable to cross Vineyard Sound. The line will then travel approximately 6.1 miles buried in the sea floor of Vineyard Sound before landing at East Chop, on Eastville Avenue where it will transition to onshore cables. Once onshore, the line follows a new duct bank and manhole system along Eastville Avenue to an Eversource parcel. The project will also include upgrades to the Falmouth Substation to support the new line and the installation of six pad-mounted transformers at the Eastville parcel to facilitate distribution of the new electric line feeding the Island.

For More Information

Keeping the lines of communication open is important to us. The attached form includes additional information on the project, or you may contact Andrea Burton at Andrea.Burton@Eversource.com or 617-922-3721. You can also contact our Project Hotline at 1-800-793-2202 or send an email to ProjectInfo@eversource.com and mention the proposed project **Martha's Vineyard Reliability Project** in the subject line.

We welcome your feedback and look forward to discussing this project in more detail.

Sincerely,

Andrea Burton

Andrea Burton

Environmental Justice Screening Form

Project Name	**Martha's Vineyard Reliability Project**
Anticipated Date of MEPA Filing	**April 29, 2022**
Proponent Name	**NSTAR Electric Company d/b/a Eversource Energy**
Contact Information (e.g., consultant)	**Andrea Burton** **Project Manager – Project Services** **Andrea.burton@eversource.com ; 617-922-3721** **Project Hotline –ProjectInfo@Eversource.com; 800-793-2202**
Public website for project or other physical location where project materials can be obtained (if available)	**The Project website is: www.eversource.com/content/MV-Reliability-91-Cable-Projects** **It will be live on April 4, 2022.**
Municipality and Zip Code for Project (if known)	**Falmouth, MA 02540 and** **Oak Bluffs, MA 02557**
Project Type* (list all that apply)	**Coastal Infrastructure and Dredging (repositioning of sediments)**
Is the project site within a mapped 100-year FEMA flood plain? Y/N/ unknown	**Y**
Estimated GHG emissions of conditioned spaces (click **here** for GHG Estimation tool)	**0**

Project Description

1. Provide a brief project description, including overall size of the project site and square footage of proposed buildings and structures if known.

The Project involves installing a new submarine cable across Vineyard Sound from the Town of Falmouth on Cape Cod to the Town of Oak Bluffs on Martha's Vineyard. The purpose is to improve reliability with increased grid-based electric service to meet current and future electricity demand. It will also improve the ability to integrate dispersed renewable generation into the system.

The Project is comprised of: (1) an approximately 6.1-mile submarine cable, (2) an approximately 2.7-mile duct bank and manhole system for the onshore cable in Falmouth, (3) an approximately 0.25-mile duct bank and manhole system in Oak Bluffs, (4) new equipment installed in the existing Eversource Stephens Lane Substation in Falmouth, and (5) installing new equipment at the Eversource-owned parcel off Eastville Avenue in Oak Bluffs. This Project will allow Eversource to decommission of five diesel generators located in Oak Bluffs and Vineyard Haven on Martha's Vineyard.

Submarine cable installation includes Horizontal Directional Drilling at the sea to shore transition points in Falmouth and Oak Bluffs to avoid shoreline and intertidal habitats. The cable will be installed by jet plow construction across Vineyard Sound. The Landside duct bank will be constructed using open trenching and backfill construction techniques.

2. List anticipated MEPA review thresholds (301 CMR 11.03) (if known)

Wetlands, Waterways, and Tidelands (301 CMR 11.03(3)(b)):
1.f. Provided a Permit is required, alteration of ½ or more acres of any other wetlands (Land Under the Ocean and Coastal Beach), and 3. dredging 10,000 or more cy of material.

3. List all anticipated state, local and federal permits needed for the project (if known)

Agency	Permit/Approval
Federal	
U.S. Army Corps of Engineers ("USACE")	**Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899: Individual Permit pursuant to the Massachusetts General Permit. .**
	USFWS & NMFS Consultation under Section 7 of the Endangered Species Act ("ESA")
	SHPO, MBUAR and THPO Consultation pursuant to Section 106 of the National Historic Preservation Act ("NHPA")
U.S. Coast Guard ("USCG")	**Notice to Mariners**
State	
Massachusetts Office of Coastal Zone Management ("CZM")	**Federal Consistency Determination**
Massachusetts Department of Environmental Protection ("MassDEP")	**Water Quality Certification ("WQC") pursuant to Section 401 of the Clean Water Act** **Chapter 91 Waterways License**
Massachusetts Environmental Policy Act Office ("MEPA")	**MEPA Certificate**
Natural Heritage and Endangered Species Program ("NHESP")	**Massachusetts Endangered Species Act ("MESA") Review**[1]
Local and Regional	
Falmouth Conservation Commission	**Notice of Intent/Order of Conditions**
Tisbury Conservation Commission	**Notice of Intent/Order of Conditions**
Oak Bluffs Conservation Commission	**Notice of Intent/Order of Conditions**
Cape Cod Commission	**Development of Regional Impact Determination**
Martha's Vineyard Commission	**Development of Regional Impact Determination**

4. Identify EJ populations and characteristics (Minority, Income, English Isolation) within 5 miles of project site (can attach map identifying 5-mile radius from EJ Maps Viewer in lieu of narrative)

The project is located within 1 mile of the following census block groups on the EJ Maps Viewer:
Block Group 3, Census Tract 149 in Falmouth with the EJ criteria "Income"
Block Group 1, Census Tract 148 in Falmouth with the EJ criteria "Income"

[1] Proposed to be filed a Joint WPA / MESA application

Block Group 3, Census Tract 148 in Falmouth with the EJ criteria "Income"
Block Group 4, Census Tract 2002 in Oak Bluffs with the EJ criteria "Income"
Block Group 2, Census Tract 2002 in Oak Bluffs with the EJ criteria "Minority"
Block Group 1, Census Tract 2001 in Tisbury with the EJ criteria "Income"

The following languages are spoken by 5 percent or more of the EJ population who also identifies as not speaking English "very well."
Census Tract 2001 in Tisbury: Portuguese or Portuguese Creole: 8.4%

In addition to the groups listed above, the project is located within 5 miles of the following census block groups on the EJ Maps Viewer:
Block Group 3, Census Tract 145 in Falmouth with the EJ criteria "Income"
Block Group 2, Census Tract 146 in Falmouth with the EJ criteria "Income" and "Minority"
Block Group 2, Census Tract 144.02 in Falmouth with the EJ criteria "Minority"
Block Group 4, Census Tract 2001 in Tisbury with the EJ criteria "Income"
Block Group 2, Census Tract 2002 in Oak Bluffs with the EJ criteria "Minority"
Block Group 2, Census Tract 2003 in Edgartown with the EJ criteria "Minority"

5. Identify any municipality or census tract meeting the definition of "vulnerable health EJ criteria" in the DPH EJ Tool located in whole or in part within a 1 mile radius of the project site

The DPH EJ Tool identifies the following municipalities or census tracts within a 1 mile radius of the project as having the following Vulnerable Health EJ Criteria.

Falmouth:

- **Heart Attack 34.4 per 10,000 (110% statewide rate 29.065 per 10,000)**

Oak Bluffs Municipality

- **Elevated Blood Lead Prevalence 35.4 per 1,000 (110% statewide rate 17.7 per 1,000)**[2]

Tisbury Municipality:

- **Pediatric Asthma ED Visits 168.3 per 10,000. (110% statewide rate 91.4 per 10,000)**
- **Heart Attack 46.1 per 10,000 (110% statewide rate 29.065 per 10,000)**
- **Low Birth Weight 379.7 per 1,000 (110% statewide rate 238.5 per 1,000)**
- **Elevated Blood Lead Prevalence 28.6 per 1,000 (110% statewide rate 17.7 per 1,000)**[3]

Tisbury Census Tract (25007200100):

- **Low Birth Weight 411 per 1,000 (110% statewide rate 238.5 per 1,000)**

Vulnerable Heath EJ Criteria is not available by census tract on Martha's Vineyard and none of the census tracts within 1 mile of the project in Falmouth exceed the 110%.

[2] This vulnerable health EJ criteria is evaluated at the census tract level. The DPH EJ tool indicates that census tract 25007200200 in Oak Bluffs does not meet the vulnerable health EJ criteria for Elevated Blood Lead Prevalence. This census tract comprises the entire Oak Bluffs municipality.

[3] This vulnerable health EJ criteria is evaluated at the census tract level. The DPH EJ tool indicates that census tract 25007200100 in Tisbury does not meet the vulnerable health EJ criteria for Elevated Blood Lead Prevalence. This census tract comprises the entire Tisbury municipality.

6. Identify potential short-term and long-term environmental and public health impacts that may affect EJ Populations and any anticipated mitigation

During project construction, there will be short-term air emissions from construction vehicles (construction and personnel vehicles), construction equipment, and vessels, and possibly the generation of fugitive dust. The following best management practices ("BMPs") and mitigation measures will be implemented during construction of the onshore cable routes:

- **Mechanical sweeping of construction areas and surrounding streets and sidewalks, as necessary;**
- **Using covered trucks or enclosed trailers;**
- **Removal of all dirt/mud from the wheels and undercarriage of all trucks prior leaving the site;**
- **Wetting and / or covering of exposed soils and stockpiles to prevent dust generation, as necessary;**
- **Minimizing stockpiling of material and debris on-site;**
- **Turning off construction equipment when not in use and minimizing vehicle idling in accordance with Massachusetts' anti-idling law, and**
- **Minimizing the duration that soils are left exposed.**

Construction equipment engines will comply with requirements for the use of ultra-low sulfur diesel (ULSD) in off-road engines. The construction contractor will be encouraged to use diesel construction equipment with installed exhaust emission controls such as oxidation catalysts or particulate filters on their diesel engines.

No long-term environmental or public health impacts are anticipated as a result of the project.

7. Identify project benefits, including "Environmental Benefits" as defined in 301 CMR 11.02, that may improve environmental conditions or public health of the EJ population

Once the electric transmission cable is operational, the five (5) diesel generators located in Oak Bluffs and Vineyard Haven on Martha's Vineyard will be decommissioned. The diesel generators are operated during summer peak load conditions. Decommissioning of the five diesel generators will result in a long-term reduction in air emissions. Impacted populations are located within 5 miles of the two diesel generator sites.

8. Describe how the community can request a meeting to discuss the project, and how the community can request oral language interpretation services at the meeting. Specify how to request other accommodations, including meetings after business hours and at locations near public transportation.

The Community can reach out to the Project Team via a hotline number 800-793-2202 or email ProjectInfo@eversource.com to request a meeting to discuss the project and to request accommodations that may be needed for that meeting e.g. timing, locations, need for interpreter.

247 Station Drive
Mail Stop NE 390
Westwood, MA 02090

1º de abril de 2022

Prezados interessados,

Como parte de nossos esforços diários para fornecer energia confiável a nossos clientes e comunidades, programamos a realização de melhorias no sistema de transmissão elétrica. O projeto irá aperfeiçoar a confiabilidade da rede elétrica em Martha's Vineyard, de modo que todos os nossos clientes tenham acesso à energia segura que atenda às demandas de energia atuais e futuras.

Estamos sempre trabalhando para atendê-lo melhor

Estamos planejando o **Projeto de Confiabilidade de Martha's Vineyard**, um novo sistema subterrâneo de distribuição com bueiro (câmara de concreto pré-moldado) e banco de dutos (uma série de conduítes que abrigam cabos elétricos) entre a subestação de Falmouth da Eversource e Oak Bluffs. O projeto reforçará a capacidade do sistema em Martha's Vineyard para atender às crescentes necessidades de energia. Também ajudará a facilitar os esforços da Eversource para diminuir sua pegada de carbono, desativando os cinco geradores a diesel existentes na ilha. A nova linha percorrerá aproximadamente 2,7 milhas (4,3 km) da subestação de Falmouth existente na Stephens Lane até a Jones Road, seguindo na Shining Sea Bikeway, descendo a Mill Road até a Surf Drive antes da transição no estacionamento da Surf Drive para um cabo submarino que atravessa a Vineyard Sound. Em seguida, a linha percorrerá aproximadamente 6,1 milhas (9,8 km), enterrada no fundo do mar de Vineyard Sound, antes de chegar em East Chop, na Eastville Avenue, onde haverá a transição para cabos terrestres. Uma vez em terra, a linha seguirá um novo banco de dutos e sistema de bueiros ao longo da Eastville Avenue até um lote da Eversource. O projeto também incluirá atualizações na Subestação de Falmouth para apoiar a instalação da nova linha e a instalação de seis transformadores montados em blocos na parcela de Eastville para facilitar a distribuição da nova linha elétrica que alimenta a ilha.

Para obter mais informações

Manter as linhas de comunicação abertas é importante para nós. Consulte o formulário anexo para obter informações adicionais sobre o projeto ou entre em contato com Andrea Burton através do e-mail Andrea.Burton@Eversource.com ou pelo telefone 617-922-3721. Também é possível ligar para a Linha Direta do projeto: 1-800-793-2202 ou enviar um e-mail para ProjectInfo@eversource.com; mencione o projeto proposto **«Martha's Vineyard Reliability Project»** na linha de assunto.

Agradecemos seus comentários e não vemos a hora de poder discutir este projeto com mais detalhes.

Atenciosamente,

Andrea Burton

Andrea Burton

Formulário de Triagem da Justiça Ambiental

Nome do projeto	**Projeto de Confiabilidade de Martha's Vineyard**
Data antecipada de apresentação à MEPA	**29 de abril de 2022**
Nome do proponente	**NSTAR Electric Company (nome fantasia: Eversource Energy)**
Informações para contato (por ex., consultor)	**Andrea Burton** **Gerente de Projeto - Serviços de Projeto** **Andrea.burton@eversource.com ; 617-922-3721** **Linha Direta –ProjectInfo@Eversource.com; 800-793-2202**
Site público do projeto ou outro local físico onde os materiais do projeto possam ser obtidos (caso estejam disponíveis)	**O site do projeto é: www.eversource.com/content/MV-Reliability-91-Cable-Projects** **Estará no ar no dia 4 de abril de 2022.**
Município e CEP do Projeto (se conhecidos)	**Falmouth, MA 02540 e** **Oak Bluffs, MA 02557**
Tipo de projeto* (listar todos os que se aplicam)	**Infraestrutura costeira e dragagem (reposicionamento de sedimentos)**
O local do projeto está dentro de uma planície de inundação de 100 anos mapeada pelo FEMA? S/N/Não sei	**S**
Estimativa de emissões de GEE de espaços condicionados (clique **aqui**para acessar uma ferramenta de estimativa de GEE)	**0**

Descrição do projeto

1. Faça uma breve descrição do projeto, incluindo o tamanho geral do local do projeto e a metragem quadrada dos prédios e estruturas propostos, se souber.

O Projeto envolve a instalação de um novo cabo submarino em toda a **Vineyard Sound, da vila de Falmouth em Cape Cod até a vila de Oak Bluffs em Martha's Vineyard. O objetivo é melhorar a confiabilidade com o aumento da rede de transmissão de energia elétrica para atender à demanda de eletricidade atual e futura. Também irá melhorar a capacidade de integrar a geração renovável dispersa ao sistema.**

O Projeto é composto por: (1) um cabo submarino de aproximadamente 6,1 milhas (9,8 km), (2) um banco de dutos de aproximadamente 2,7 milhas (4,3 km) e sistema de bueiros para o cabo terrestre em Falmouth, (3) um banco de dutos de aproximadamente 0,25 milhas e sistema de bueiros em Oak Bluffs, (4) novos equipamentos instalados na subestação da Eversource na Stephens Lane em Falmouth e (5) instalação de novos equipamentos no lote de propriedade da Eversource na Eastville Avenue em Oak Bluffs. Com o projeto, a Eversource poderá desativar cinco geradores a diesel localizados em Oak Bluffs e Vineyard Haven, em Martha's Vineyard.

A instalação de cabos submarinos inclui a perfuração direcional horizontal nos pontos de transição do mar para a costa em Falmouth e Oak Bluffs para evitar habitats costeiros e zonas entremarés. O cabo será instalado por construção com tecnologia de arado a jato em toda a Vineyard Sound. O banco de dutos (Landside) será construído usando técnicas de abertura e fechamento de valas.

2. Liste os limites previstos de revisão do MEPA (301 CMR 11.03) (se souber).

Áreas úmidas, hidrovias e áreas de maré (301 CMR 11.03(3)(b)):
1.f. Desde que seja necessária uma Permissão, alteração de ½ ou mais acres de quaisquer outras áreas úmidas (terra submarina e praia costeira) e 3. dragagem de 10.000 ou mais jardas cúbicas (cerca de 9.000 metros cúbicos) de material.

3. Liste todas as autorizações estaduais, locais e federais previstas que são necessárias para o projeto (se souber).

Agência	Permissão/Aprovação
Federal	
Corpo de Engenheiros do Exército dos EUA ("USACE")	**Capítulo 404 da Lei da Água Potável e Capítulo 10 da Lei de Rios e Portos de 1899: Permissão Individual de acordo com a Permissão Geral de Massachusetts.**
	Consulta à USFWS e NMFS nos termos do Capítulo 7 da Lei de Espécies Ameaçadas ("ESA")
	Consulta à SHPO, MBUAR e THPO nos termos do Capítulo 106 da Lei Nacional de Preservação Histórica ("NHPA")
Guarda Costeira dos EUA ("USCG")	**Aviso aos Marinheiros**
Estadual	
Agência de Gestão da Zona Costeira de Massachusetts ("CZM")	**Determinação de Consistência Federal**
Departamento de Proteção Ambiental de Massachusetts ("MassDEP")	**Certificação de Qualidade da Água ("WQC") nos termos do Capítulo 401 da Lei da Água Potável** **Licença de Hidrovias de acordo com o Capítulo 91**
Agência da Lei de Política Ambiental de Massachusetts ("MEPA")	**Certificado da MEPA**
Programa do Patrimônio Natural e de Espécies Ameaçadas ("NHESP")	**Avaliação de acordo com a Lei de Espécies Ameaçadas de Massachusetts ("MESA")[1]**
Locais e regionais	
Comitê de Conservação de Falmouth	**Aviso de Intenção/Ordem de Condições**
Comitê de Conservação de Tisbury	**Aviso de Intenção/Ordem de Condições**
Comitê de Conservação de Oak Bluffs	**Aviso de Intenção/Ordem de Condições**
Comitê de Cape Cod	**Desenvolvimento de Determinação de Impacto Regional**
Comitê de Martha's Vineyard	**Desenvolvimento de Determinação de Impacto Regional**

[1] Proposta de apresentação de um pedido conjunto à WPA / MESA

4. Identifique as populações e características de Justiça Ambiental (minoria, renda, falta de conhecimento de inglês) dentro de 5 milhas (8 km) do local do projeto (é possível anexar um mapa que mostre o raio de 5 milhas usando o Visualizador de mapas da Justiça Ambiental em vez de descrever por escrito).

O projeto está localizado a 1,6 km dos seguintes grupos de blocos censitários, conforme o Visualizador de Mapas da Justiça Ambiental:

- **Grupo do Bloco 3, Setor Censitário 149 em Falmouth com os critérios de "Renda" da Justiça Ambiental**
- **Grupo do Bloco 1, Setor Censitário 148 em Falmouth com os critérios de "Renda" da Justiça Ambiental**
- **Grupo do Bloco 3, Setor Censitário 148 em Falmouth com os critérios de "Renda" da Justiça Ambiental**
- **Grupo do Bloco 4, Setor Censitário 2002 em Oak Bluffs com os critérios de "Renda" da Justiça Ambiental**
- **Grupo do Bloco 2, Setor Censitário 2002 em Oak Bluffs com os critérios de "Minoria" da Justiça Ambiental**
- **Grupo do Bloco 1, Setor Censitário 2001 em Tisbury com os critérios de "Renda" da Justiça Ambiental**

Os seguintes idiomas são falados por 5% ou mais da população da Justiça Ambiental que também se identifica como não falando inglês "muito bem".
Setor Censitário 2001 em Tisbury: Português ou crioulo português: 8,4%

Além dos grupos listados acima, o projeto está localizado a 5,6 km dos seguintes grupos de blocos censitários, conforme o Visualizador de Mapas da Justiça Ambiental:

- **Grupo do Bloco 3, Setor Censitário 145 em Falmouth com os critérios de "Renda" da Justiça Ambiental**
- **Grupo do Bloco 2, Setor Censitário 146 em Falmouth com os critérios de "Renda" e "Minoria" da Justiça Ambiental**
- **Grupo do Bloco 2, Setor Censitário 144.02 em Falmouth com os critérios de "Minoria" da Justiça Ambiental**
- **Grupo do Bloco 4, Setor Censitário 2001 em Tisbury com os critérios de "Renda" da Justiça Ambiental**
- **Grupo do Bloco 2, Setor Censitário 2002 em Oak Bluffs com os critérios de "Minoria" da Justiça Ambiental**
- **Grupo do Bloco 2, Setor Censitário 2003 em Edgartown com os critérios de "Minoria" da Justiça Ambiental**

5. Identifique qualquer município ou setor censitário que atenda à definição de "critérios de saúde de vulneráveis da Justiça Ambiental", de acordo com aFerramenta de Justiça ambiental da Secretaria de Saúde Pública , localizado totalmente ou parcialmente dentro do raio de 1 milha (1,6 km) do local do projeto.

A ferramenta da Justiça Ambiental da Secretaria de Saúde Pública identifica os seguintes municípios ou setores censitários dentro de um raio de 1 milha (1,6 km) do projeto como tendo os seguintes Critérios de Saúde Vulnerável da Justiça Ambiental.

Falmouth:

- **Ataque cardíaco 34,4 por 10.000 (taxa estadual de 110% 29,065 por 10.000)**

Município de Oak Bluffs

- **Prevalência elevada de chumbo no sangue 35,4 por 1.000 (taxa estadual de 110% 17,7 por 1.000)**[2]

Município de Tisbury:

- **Asma Pediátrica - visitas de emergência 168,3 por 10.000. (taxa estadual de 110% 91,4 por 10.000)**
- **Ataque cardíaco 46,1 por 10.000 (taxa estadual de 110% 29,065 por 10.000)**
- **Baixo peso ao nascer 379,7 por 1.000 (taxa estadual de 110% 238,5 por 1.000)**
- **Prevalência elevada de chumbo no sangue 28,6 por 1.000 (taxa estadual de 110% 17,7 por 1.000)**[3]

Setor Censitário de Tisbury (25007200100):

- **Baixo peso ao nascer 411 por 1.000 (taxa estadual de 110% 238,5 por 1.000)**

Os critérios de saúde vulnerável da Justiça Ambiental não estão disponíveis por setor censitário em Martha's Vineyard e nenhum dos setores censitários dentro de 1 milha (1,6 km) do projeto em Falmouth excede os 110%.

[2] Este critério de saúde vulnerável da Justiça Ambiental é avaliado no nível do setor censitário. A ferramenta da Justiça Ambiental da Secretaria de Saúde Pública indica que o setor censitário 25007200200 em Oak Bluffs não atende aos critérios EJ de saúde vulnerável para prevalência elevada de chumbo no sangue. Este setor censitário compreende todo o município de Oak Bluffs.

[3] Este critério de saúde vulnerável da Justiça Ambiental é avaliado no nível do setor censitário. A ferramenta da Justiça Ambiental do Departamento de Saúde Pública indica que o setor censitário 25007200100 em Tisbury não atende aos critérios de saúde vulnerável da Justiça Ambiental para prevalência elevada de chumbo no sangue. Este setor censitário compreende todo o município de Tisbury.

6. Identifique potenciais impactos ambientais e de saúde pública de curto e longo prazo que podem afetar as Populações de Justiça Ambiental e qualquer mitigação prevista. **Durante a construção do projeto, haverá emissões atmosféricas de curto prazo de veículos de construção (veículos de construção e de pessoal), equipamentos de construção e embarcações, e possivelmente a geração de poeira fugitiva. As seguintes boas práticas de gestão ("BMPs") e medidas de mitigação serão implementadas durante a construção das rotas de cabos terrestres:** ♦ **Varredura mecânica das áreas de construção e ruas e calçadas do entorno, quando necessário;** ♦ **Uso de caminhões cobertos ou reboques fechados;** ♦ **Remoção de toda sujeira/lama das rodas e chassi de todos os caminhões antes que deixem o local;** ♦ **Umedecimento e/ou cobertura de solos expostos e pilhas de estocagem para evitar a geração de poeira, conforme necessário;** ♦ **Redução da estocagem de material e detritos no local;** ♦ **Desligamento do equipamento de construção quando não estiver em uso e minimização da marcha lenta do veículo de acordo com a lei anti-marcha lenta de Massachusetts e** ♦ **Minimização do tempo de duração da exposição dos solos.** **Os motores de equipamentos de construção cumprirão os requisitos para o uso de diesel com baixo teor de enxofre (ULSD) em motores *off-road*. O empreiteiro de construção será incentivado a usar equipamentos de construção a diesel com controles de emissão de gases de escape instalados, como catalisadores de oxidação ou filtros de partículas em seus motores a diesel.** **Não estão previstos impactos ambientais ou de saúde pública de longo prazo como resultado do projeto.**
7. Identifique os benefícios do projeto, incluindo os "Benefícios ambientais", conforme definido na norma 301 CMR 11.02, que podem melhorar as condições ambientais ou a saúde pública da População de Justiça ambiental. **Assim que o cabo de transmissão elétrica estiver em operação, serão desativados os 5 (cinco) geradores a diesel localizados em Oak Bluffs e Vineyard Haven em Martha's Vineyard. Os geradores a diesel são operados durante as condições de pico de carga do verão. A desativação dos cinco geradores a diesel resultará em uma redução de longo prazo nas emissões atmosféricas. As populações afetadas estão localizadas a 5 milhas (8 km) dos dois locais com geradores a diesel.**
8. Descreva como a comunidade pode organizar uma reunião para discutir o projeto e como a comunidade pode solicitar serviços de interpretação para a reunião. Especifique como solicitar outras acomodações, incluindo reuniões fora do horário comercial e em locais próximos a transportes públicos. **A comunidade pode entrar em contato com a equipe do projeto por meio de um número de linha direta 800-793-2202 ou pelo e-mail ProjectInfo@eversource.com para solicitar uma reunião para discutir o projeto, bem como arranjos que sejam necessários para essa reunião,**

por exemplo. horário, locais, necessidade de intérprete.

EVERSOURCE

Martha's Vineyard Reliability Project
&
91 Replacement Cable Project

Ensuring an Enhanced Network and Enabling a Clean Energy Future

Project Need

As a part of our ongoing commitment to deliver reliable energy to our customers, Eversource is proposing to construct a new 23kV underground and submarine line between Falmouth and Oak Bluffs, Massachusetts and to replace an existing underground and submarine cable between Falmouth and Tisbury, Massachusetts. Both of these new lines will interconnect to existing substations in the area and will bolster system capacity and reliability on Martha's Vineyard to meet growing energy needs. These projects will also help facilitate Eversource's efforts to decrease its Carbon footprint by decommissioning the five existing diesel generators on the Island.

Projects' Description

Martha's Vineyard Reliability Project

The proposed project will include the installation of a new approximately 2.7-mile underground manhole (precast concrete vault) and duct bank system (a series of conduits that house electric cables). Eversource's proposed route runs from the existing Falmouth Station on Stephens Lane to Jones Road, onto the Shining Sea Bikeway, down Mill Road to Surf Drive before transitioning in the Surf Drive parking lot to a submarine cable to cross Vineyard Sound. The line will then travel approximately 6.1 miles buried in the sea the floor of Vineyard Sound before landing at East Chop, on Eastville Avenue where it will transition to onshore cables. Once onshore, the line follows a new duct bank and manhole system along Eastville Avenue to an Eversource parcel. The project will include upgrades to the Falmouth Substation to support the installation of the new line and the installation of six pad-mounted transformers at the Eastville parcel to facilitate distribution of the new electric line feeding the Island.

91 Cable Replacement Project

The proposed project will follow the same duct bank and manhole system as the Martha's Vineyard Reliability Project but will terminate at the Mill Road Parking Lot before transitioning to an approximately 5.5-mile submarine cable to cross the Vineyard Sound and land at Eversource facilities in West Chop.

As a result of an extensive review that considered system reliability, technical feasibility, cost, environmental and community impacts and stakeholder feedback, the distribution line routes (*shown on the next page(s))* were ultimately developed for the Falmouth, Oak Bluffs, and Tisbury landings.

Estimated Timetable*

- **Public Open Houses:** Spring 2022
- **File Environmental Notification Form for Review under the Massachusetts Environmental Policy (MEPA):** Projected May 2022
- **Pre-Construction Open Houses:** Summer 2022
- **Start of construction:** Fall 2022
- **Estimated in-service date:** December 2024

**Dates subject to change*

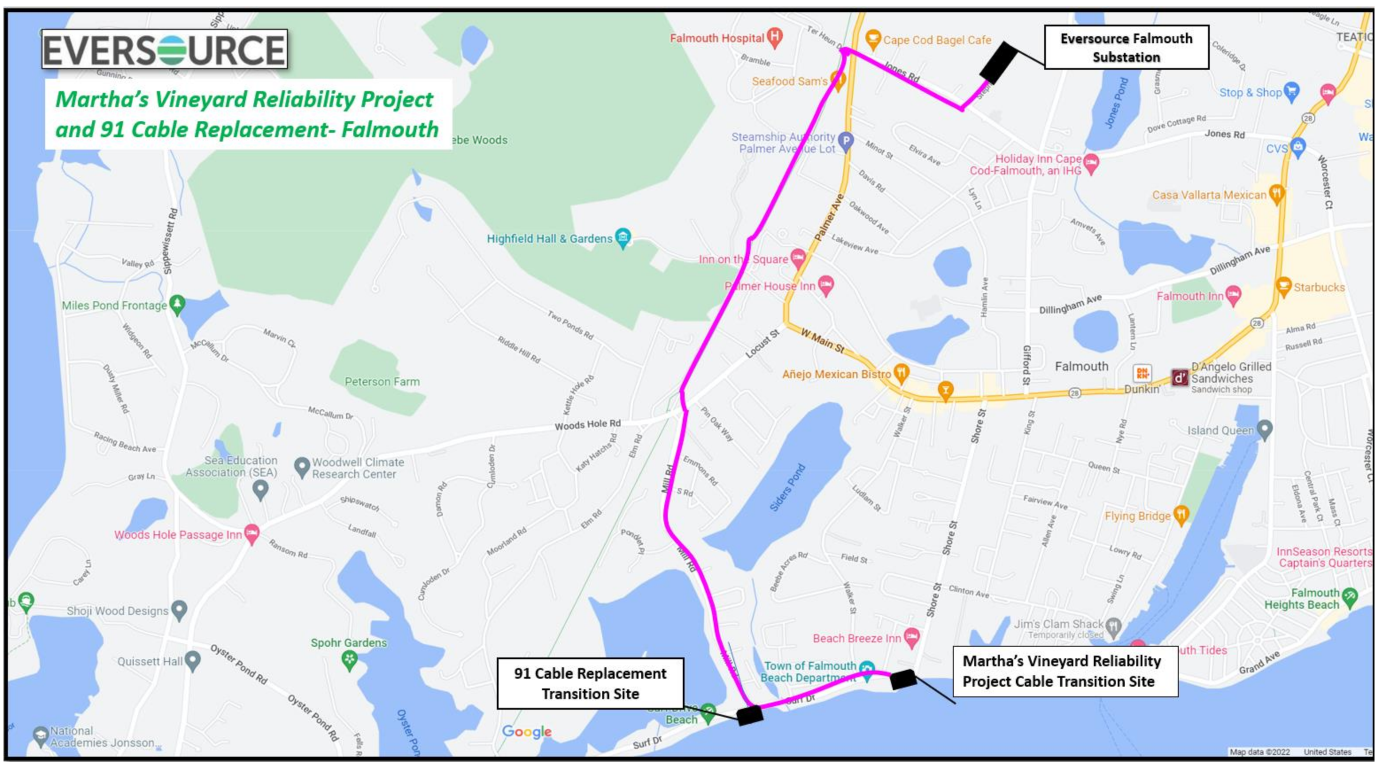
Community Outreach

Eversource is committed to continuing its collaborative working partnership with each local community, municipal leaders, and other interested stakeholders to provide information on the project, gather feedback and answer any questions or concerns. Public Open Houses will be held both virtually and in-person in each host community during the Spring of 2022 and Eversource will hold informational in-community pop-up events in an effort to solicit feedback from a diverse cross-section of the neighborhoods the project will traverse.

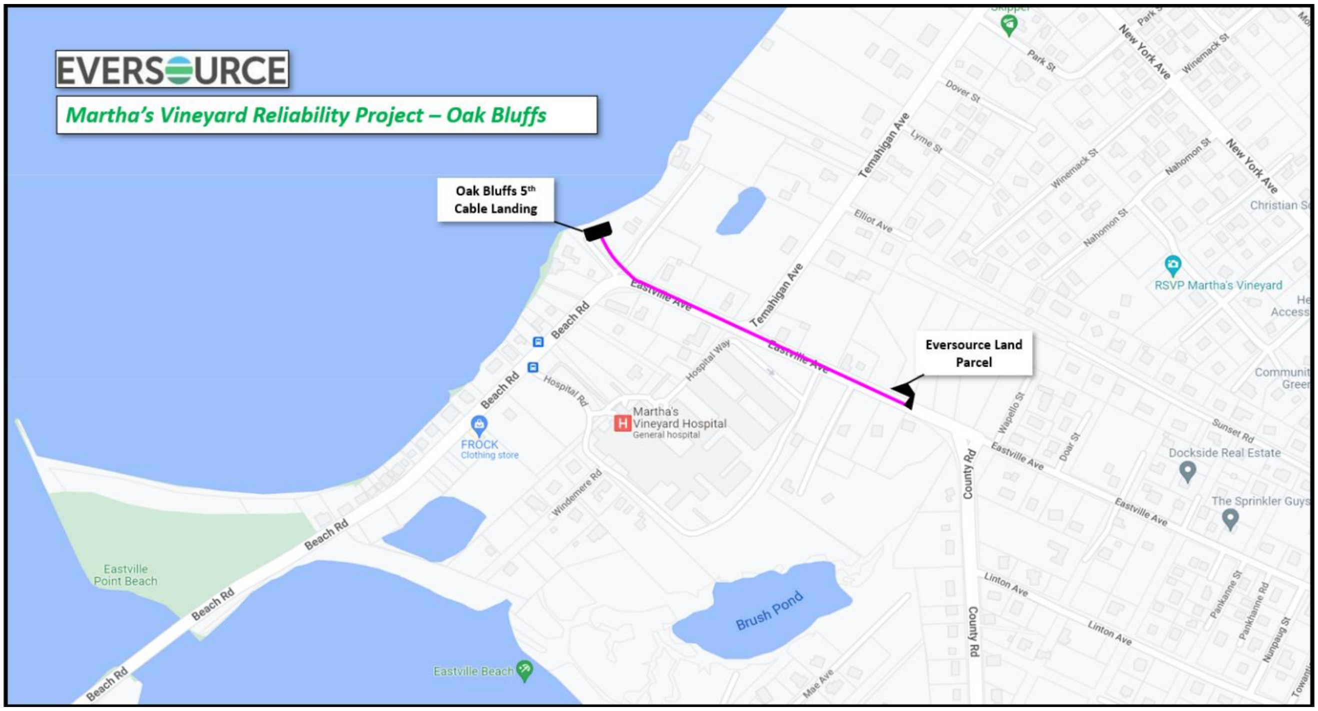
For More Information

Contact Eversource at ProjectInfo@eversource.com or call 800-793-2202. You can also keep up with happenings in your community by providing your contact information and we will share new project information as it is available.

Falmouth



Oak Bluffs



Tisbury

Martha’s Vineyard Reliability Project
&
91 Replacement Cable Project

Por que estamos desenvolvendo esses projetos?
Ambas as novas linhas serão interligadas às subestações existentes na área e aumentarão a capacidade e a confiabilidade do sistema em Martha’s Vineyard para atender às crescentes demandas de energia. Os projetos também ajudarão a facilitar os esforços da Eversource para diminuir sua pegada de carbono, desativando os cinco geradores a diesel existentes na ilha.

Sobre o Projeto

Projeto de Confiabilidade de Martha’s Vineyard

- O projeto proposto incluirá a instalação de um novo sistema subterrâneo de bueiro (caixa de concreto pré-moldado) de 2,7 milhas (4,3 km) e banco de dutos (uma série de conduítes que abrigam cabos elétricos). A rota proposta pela Eversource se estende da Estação de Falmouth existente na Stephens Lane até a Jones Road, seguindo na Shining Sea Bikeway, descendo a Mill Road até a Surf Drive antes da transição no estacionamento da Surf Drive para um cabo submarino que atravessa a Vineyard Sound.
- Em seguida, a linha percorrerá aproximadamente 6,1 milhas (9,8 km), enterrada no fundo do mar de Vineyard Sound, antes de chegar em East Chop, na Eastville Avenue, onde haverá a transição para cabos terrestres. Uma vez em terra, a linha seguirá um novo banco de dutos e sistema de bueiros ao longo da Eastville Avenue até um lote da Eversource.

Projeto de Substituição do Cabo 91

- O projeto proposto seguirá o mesmo banco de dutos e sistema de bueiros usados no Projeto de Confiabilidade de Martha’s Vineyard, mas terminará no Mill Road Parking Lot antes que ocorra a transição para um cabo submarino de 5,5 milhas (8,8 km) para cruzar o Vineyard Sound e chegar até as instalações da Eversource em West Chop.

Comprimento da rota – Projeto de Confiabilidade de Martha's Vineyard

- Falmouth: aprox. 2,7 milhas (4,3 km)
- Vineyard Sound: aprox. 6,1 milhas (9,8 km)
- Oak Bluffs: aprox. 0,3 milhas (0,48 km)

Tensão da rede: 23kV

Comprimento da rota – Projeto de Substituição do Cabo 91

- Falmouth: aprox. 2,7 milhas (4,3 km)
- Vineyard Sound: aprox. 5,5 milhas (8,8 km)

Tensão da rede: 23kV

Cronograma do Projeto*

- **Reuniões Open House públicas:** Primavera de 2022
- **Protocolar Formulário de Notificação Ambiental para revisão nos termos da Lei de Política Ambiental de Massachusetts (MEPA):** Data estimada: maio de 2022
- **Início da construção:** Data estimada: outono de 2022
- **Data prevista para conclusão:** Final de 2024

**Datas estimadas*

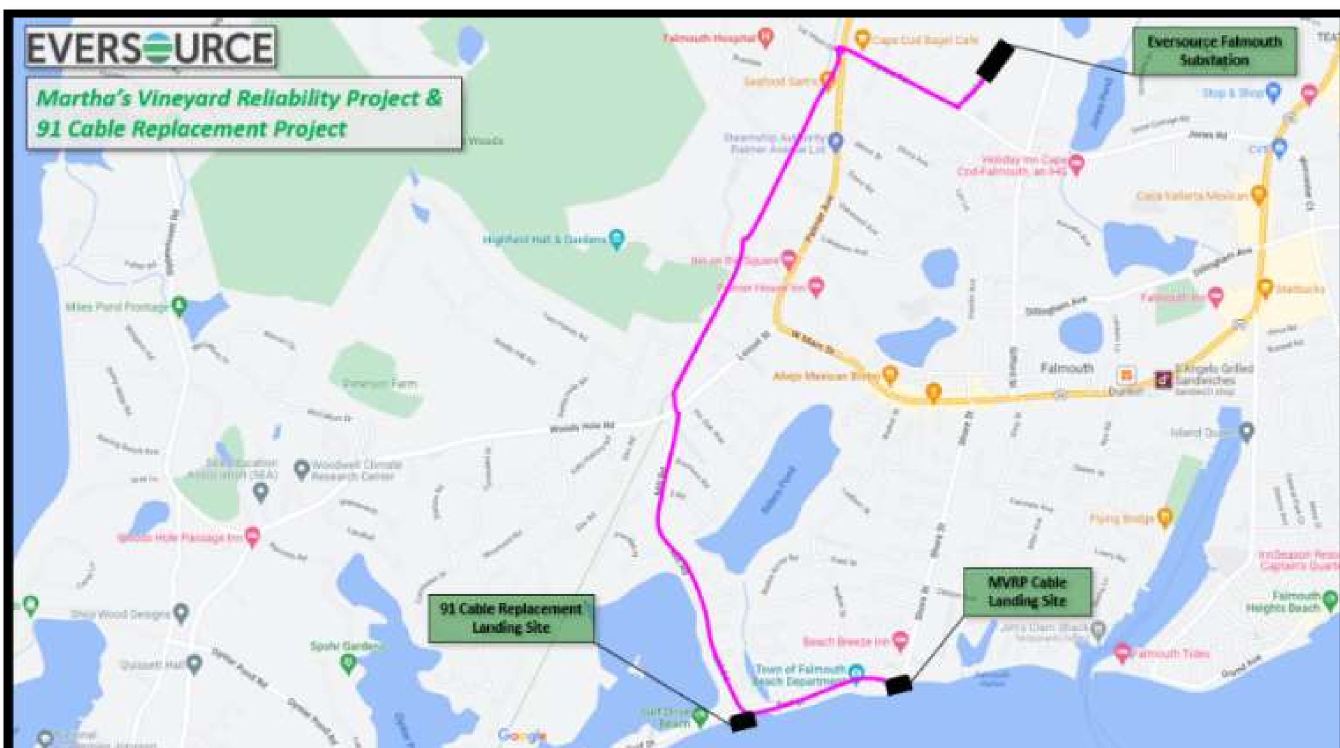
Extensão comunitária

A Eversource está comprometida em formar parcerias com todos os membros da comunidade, líderes municipais e outras partes interessadas para fornecer informações sobre os projetos, obter feedback e responder a quaisquer dúvidas. As reuniões Open House serão realizadas tanto presencial quanto virtualmente em cada comunidade anfitriã na primavera de 2022 (no hemisfério norte). Continuamos aderindo ao distanciamento social da COVID-19 e outras diretrizes de saúde e segurança relacionadas.

Informações para contato

Manter abertos os canais de comunicação é parte importante do nosso trabalho em sua comunidade. Em caso de dúvida ou para obter mais informações sobre o projeto, entre em contato pelo telefone 1-800-793-2202 ou através do e-mail ProjectInfo@eversource.com.

Falmouth



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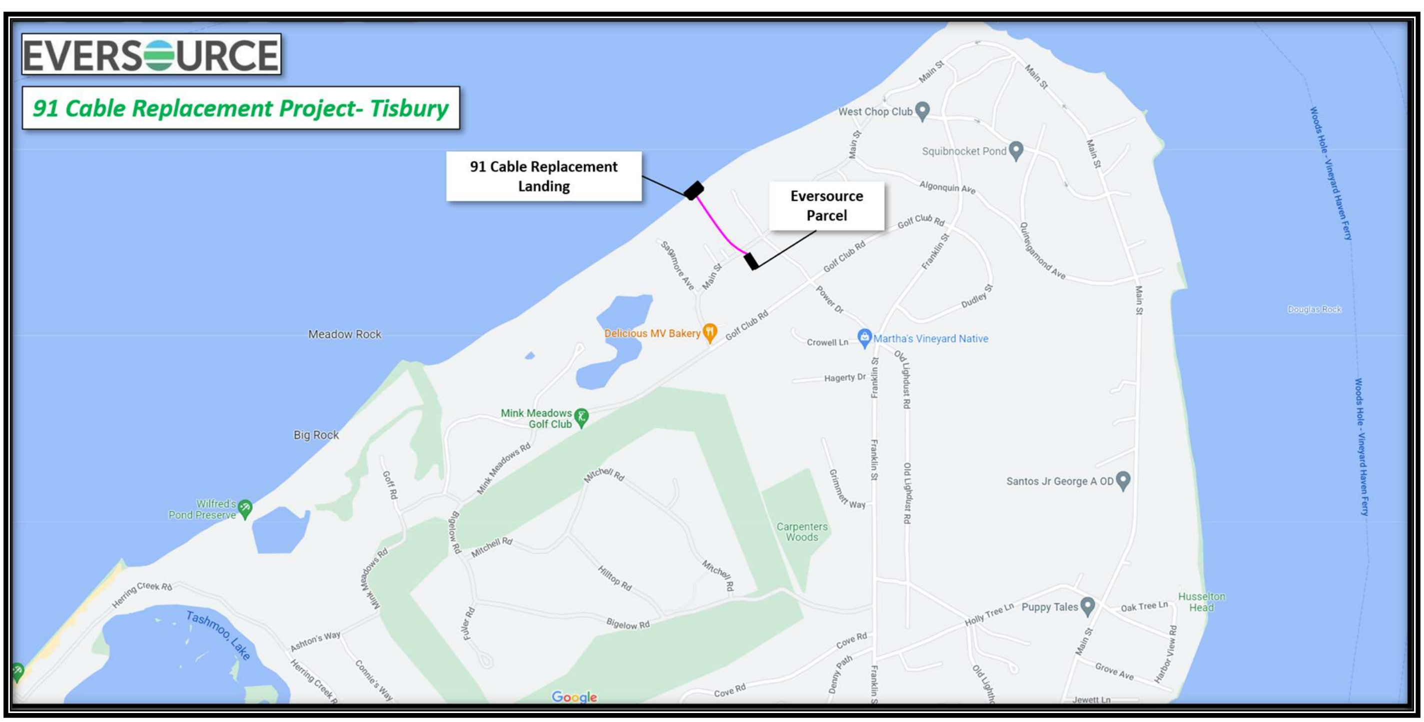
Tisbury



Martha's Vineyard Reliability Project & 91 Cable Replacement Project

Tabling and Open House Summaries

Session 1: March 16 | Falmouth Library

Between the hours of 11 a.m. and 1 p.m., a discussion was had with three librarians about the proposed project and collateral that would be at the table. They took some material for themselves to aid in discussions with visitors. Interactions were had with roughly 7-8 people, with half of them being library staff.

There were a few lengthier conversations with 3 residents from Falmouth, two of which lived along the route. All conversations were constructive and neutral. Many folks walked by the table, but only a handful approached.

The library requested for materials to be left so they can point people in that direction for info.

Session 2: March 17 | Gus Canty Community Center

Tabling occurred at Gus Canty Community Center and on-site from 12:30-3 p.m. About 15 people walked by and took a look at the table. Four people approached to discuss the project, most of the conversations were neutral.

When one woman was leaving the center when she expressed distaste for the project while passing by but did not engage and walked off saying something negative about offshore wind. Other than that, all interactions were neutral. Overall, there were 4 separate conversations with folks and two people took collateral. No one provided contact or personal info.

Session 3: March 19 | Falmouth Library

Today tabling occurred at the Falmouth Public Library and were on-site from 11:00 A.M. to 1:00 P.M. Roughly 25 people walked by and looked at the table. 9 people came over to discuss the project. Most of the conversations were neutral, as most people were just curious. The project team clarified to multiple people that this project was separate from Mayflower Wind.

There were some concerns about the future of the bike path, but the project team explained that the bike path would be restored and widened in some areas once the project was completed. Both residents who asked about the future of the path responded positively when we mentioned the restoration efforts.

Session 4: March 20 | Mahoney's Garden Center

Tabling occurred from 1 pm to 3 pm and there were around 35 people in and out. Discussions were had with about 12 people about the project, 3 of which took collateral, and we got 3 new email addresses from people who had questions or wanted to receive updates.

Overall folks seemed happy the Project is out discussing the project and three people, one who is an abutter, thanked the team for spreading the news. One couple also stopped and talked to us about their time in Falmouth and in Martha's Vineyard and gave us their email to receive progress updates.

The same as in previous events, some folks confused this project with the Mayflower Wind project, but the team was able to clear up the misunderstanding with the people they engaged with. There was a lot of foot traffic and many people who were willing to talk with the team, most of whom seemed to live close to the proposed project area or know it very well.

Session 5: March 22 | Oak Bluffs Public Library

Tabling occurred today at the Oak Bluff's Public Library from 12pm to 2pm. About 17 people went by and 3 of them approached to talk about the project, 1 of which took collateral.

One man asked about the age of the cable being replaced and ultimately agreed that this project is necessary. One woman who lives in the Eastville area was glad to hear about the increased reliability but believed the route was inconvenient because she uses it a lot.

The longest conversation was with a retired librarian, who lives on Columbian Ave. She was happy to hear we were out there, but she mainly had questions about the recent spike in her energy bill. Her information was taken down and will be passed along to the appropriate people.

On our way back we spoke to the driver and she believed that although we will probably get pushback, she agreed that the project was necessary and suggested we don't get discouraged.

Session 6: March 24 | Gus Canty Community Center

Last night tabling occurred inside the front foyer of the Gus Canty Community Center in Falmouth from 4:30 P.M. to 7:00 P.M. About 20 people walked by and looked at the table. 2 people total approached and discussed the project.

The two conversations were fairly neutral, with neither resident expressing negative feelings towards the project. The first conversation was with a member of the Falmouth Finance Committee and Captain of the Precinct who knew of the project and its progression. The second conversation was with a resident who responded well to the idea of the bike path being restored and improved after work is completed. He also liked that the work on the bike path would be done during the off-season.

Session 7: April 2 | Chicken Alley Thrift Store

A table was set up outside the front of the Chicken Alley Thrift Store in Vineyard Haven from 11:00 A.M. to 1:00 P.M. About 40-plus people walked by and looked at the table. 21 people approached the table to discuss the project.

A majority of the conversations were fairly neutral. However, there were some highlights to note from these conversations. One younger man questioned the removal of diesel generators as he was concerned about what would happen if power went down on the mainland. The project team explained that when storms occur there are response teams activated. One woman inquired environmental sustainability of the project. The Project Team explained that one of the benefits of the project is retiring the diesel generators.

Session 8: April 6 | Cronig's Market

An informational table was set up inside of Cronig's Market in Vineyard Haven between 11:00 AM and 1:30 PM. Over 80 folks walked by and 31 engaged directly with the project team. The main conversation apart from the project details was the current rates on the Island and how they are struggling with them while on a fixed income.

One individual noted how happy she was the diesel generators would be removed because she lives near them.

The store invited the project team to return and factsheets on the projects as well as payment assistance plan factsheets were left for the store.

Session 9: April 23| Mahoney Gardening Center

A table was set up at the Mahoney Gardening Center in East Falmouth from 10:00 A.M. to 2:00 P.M. Roughly 80 people walked by and looked at the table with 8 people approaching to discuss the project.

The conversations were fairly neutral, with residents not expressing negativity for the project. Most conversations were just people being curious about the project and inquiring if anything was being sold. Some people took outreach collateral, but most didn't.

Falmouth Open House: April 27 | Gus Canty Community Center

The project team was in a room at the Gus Canty Community Center from 4:00 PM to 7:00 PM with poster boards to discuss the project with the community. There was collateral including a project fact sheet, underground construction fact sheet, electric magnetic field fact sheet and payment assistance fact sheet to provide to residents.

Throughout the evening about 13 people popped in to learn about the project. Overall, most people were curious members of the community. A few residents asked what to expect at the Mill Road and Surf Drive parking lots and residents were happy to hear it would just me some additional manholes and work would be during the off-peak season. Residents also inquired about the impacts to the bike path and what Falmouth would be getting since the project was to bring power to Martha's Vineyard and were generally satisfied with the mitigation Eversource was giving to Falmouth and that only a portion of the bike path would be impacted and then would be restored after construction.

Oak Bluffs Open House: May 3 | Chef Deon's Kitchen

The project team set up poster boards and a table of project collateral and payment assistance fact sheets inside the restaurant. We also had children's activities and giveaway items. The restaurant provided appetizers and soft drinks to serve the stakeholders

Approximately 27 people attended the event including abutters of the project, representatives from Island Energy, Martha's Vineyard Commission, Conservation Commissions, Energy Commissions and Martha's Vineyard Community Services. Attendees moved through posters to talk to the project team and were curious about the landing location for the cables, the underground construction process, the retirement of the diesel generators and other general project questions.

After everyone settled in with some food, there was a 20-minute open forum discussion discussing generation initiatives on the island and Eversource's long term plans. The overall tone of the event was very positive, with general support for the project from attendees. The project team is consulting with the appropriate departments to respond to questions about solar generation and other non-project related topics.

In terms of our Enhanced Outreach to Environmental Justice communities, the Project Team engaged members of the Wampanoag Tribe and the African American community to help spread the word using their networks. The Open House information was shared on Chef Deon's public Facebook page and the Inkwell Facebook page, which has 17k members. The social worker for Dukes County brought information about local fuel assistance programs and other resources to help low-income customers. 33% of the attendees at our Open House identified as Afro-American or Afro-Caribbean.

Martha's Vineyard Reliability Project

Outreach Feedback Tracker

Date Received	Method of Contact	Stakeholder*	Feedback	Project Response	Contact Info*
3.19.22	Tabling at Falmouth Library		Questions about bike path restoration.	Explained that bike path would be restored and widened in some areas when project completed	
3.19.22	Tabling at Falmouth Library		Inquired about payment plan for electric bill	Provided a payment assistant fact sheet and will provide appropriate contact at Eversource	
3.19.22	Tabling at Falmouth Library		Would like traffic updates	Added to distribution list for project updates	
3.22.22	Tabling at Oak Bluffs Library		Inquired about payment assurance plan.	Provided payment assistance fact sheet	
3.22.22	Tabling at Oak Bluffs Library		Eastville Avenue resident has concerns if there will be a detour during construction	TMPs are not developed yet, but this will be taken into consideration during the development	
3.22.22	Tabling at Oak Bluffs Library		Signed up for updates	Added to distribution list for project updates	
3.22.22	Tabling at Oak Bluffs Library		Signed up for updates	Added to distribution list for project updates	
3.22.22	Tabling at Oak Bluffs Library		Signed up for updates	Added to distribution list for project updates	
3.22.22	Tabling at Oak Bluffs Library		Signed up for updates	Added to distribution list for project updates	
3.22.22	Tabling at Oak Bluffs Library		Signed up for updates	Added to distribution list for project updates	
3.22.22	Tabling at Oak Bluffs Library		Signed up for updates	Added to distribution list for project updates	
3.22.22	Tabling at Oak Bluffs Library		Signed up for updates	Added to distribution list for project updates	
3.22.22	Tabling at Oak Bluffs Library		Signed up for updates	Added to distribution list for project updates	
4.13.22	Door to Door Outreach		Stated concern about loss of vegetaton buffer	Will follow-up as additional door to door outreach occurs, since the project does not intend to remove the vegetation buffer. No contact information provided.	
4.13.22	Door to Door Outreach		Uses bike path frequently so was not a fan of the project	No contact information provided	
4.13.22	Door to Door Outreach		Works from home, abutter to bike path, would like updates	Added to distribution list for project updates	
4.14.22	Door to Door Outreach		Concerns about run-off being exacerbated by Project. Curious if there is any drainage mitigation	Will follow up week of the May 9th after consulting with Project Team	
4.20.22	Door to Door Outreach		She is neutral regarding the project; however, she wants to see new sidewalks put in place that are wider and more accommodating for strollers and wheelchairs.	Will follow-up as additional door to door outreach occurs since the project will be removing some poles along Palmer Avenue to accomodate ADA requirements	
4.20.22	Door to Door Outreach		Longtime Falmouth resident who is very environmentally concious. Noted that she among other residents want to see all utilities along Mill Road undergrounded.	Can pass information along, but no contact information provided	
4.20.22	Door to Door Outreach		Envrionmentally concious and want Eversource to move all their services on the distribution poles underground.	Can pass information along, but no contact information provided	
4.20.22	Door to Door Outreach		Does not want any disruption to the bike path access during project	No contact information provided	
4.20.22	Door to Door Outreach		Does not want any disruption to the bike path access during project. Wants email updates and information on bike path construction/impacts.	Added to distribution list for project updates	
4.20.22	Door to Door Outreach		Envrionmentally concisou and want Eversource to move all their services on the distribution poles underground.	Can pass information along, but no contact information provided	
4.20.22	Door to Door Outreach		Not supportive of the Project and noted that Falmouth has reliability needs.	Mr. Foster attended the Falmouth Open House and was pleased when the full scope of the project was explained as well as the mitigation being provided to Falmouth.	
4.22.22	Door to Door Outreach		Wants project updates	Added to distribution list for project updates	
4.27.22	Falmouth Open House		General curiousity abou the project and took project fact sheet with him	None required	
4.27.22	Falmouth Open House		General curiousity about the project and timeline	None required	
4.27.22	Falmouth Open House		Inquired if project was related to Mayflower Wind and asked specifics about the scope of work and equipment used. Supportive of project.	Explained project was separate from Mayflower Wind and answered general project questions.	
4.27.22	Falmouth Open House		General project questions. Concerned that a new substation was being built and her view would be impacted.	Explained that she is likely confusing this project with Mayflower Wind and that no new substation was being built as a part of this project and that all station work would be in the existing fence line.	
4.27.22	Falmouth Open House		General curiousity	Took collateral	
4.27.22	Falmouth Open House		Some concerns about loss of current bike path aesthetic	Explained that the project would be helping to remove diseased trees along the bike path and restoring it after construction, but no major vegetation work would occur	
4.29.22	Door to Door Outreach		Concerns about traffic and when work would take place	It was explained that work would be during the off-peak season and there was some general discussion about typical traffic patterns. The Project Rep said there would be an Open House on May 3 on the Island with subject matter experts if they had further questions.	
5.3.2022	Oak Bluffs Open House		Curious about possibility of undergrounding existing utility poles Supportive of Project	Explained that Eversource isn't the only utility on the poles, so it would be complicated to orchestrated the undergrounding of all wires	
5.3.2022	Oak Bluffs Open House		Inquired about landing site and sea bed disruption Supportive of project	Explained that manhole location is not finalized yet and the method used to install the submarine cable was explained	
5.3.2022	Oak Bluffs Open House		Inquired about retirement of diesel generators and if the island would be able to sustain itself	Explained that the project was being developed to support the retirement of those generators, and the replacement cable will have a higher capacity than the existing to add with additional need for the island	
5.3.2022	Oak Bluffs Open House		How does the proposed solar farm in Edgartown connect to the grid?	The Project Team will reach out internally to the appropriate subject matter expert to provide an answer	
5.3.2022	Oak Bluffs Open House		What is the status on the proposed solar farm in Oak Bluffs?	The Project Team will reach out internally to the appropriate subject matter expert to provide an answer	
5.4.2022	Project Email		What are the plans to control voltage if the five diesels on the island are removed?	An email was sent acknowledging receipt of the inquiry and that after consulting with the Subject Matter Expert, the Project Team would get back to him.	

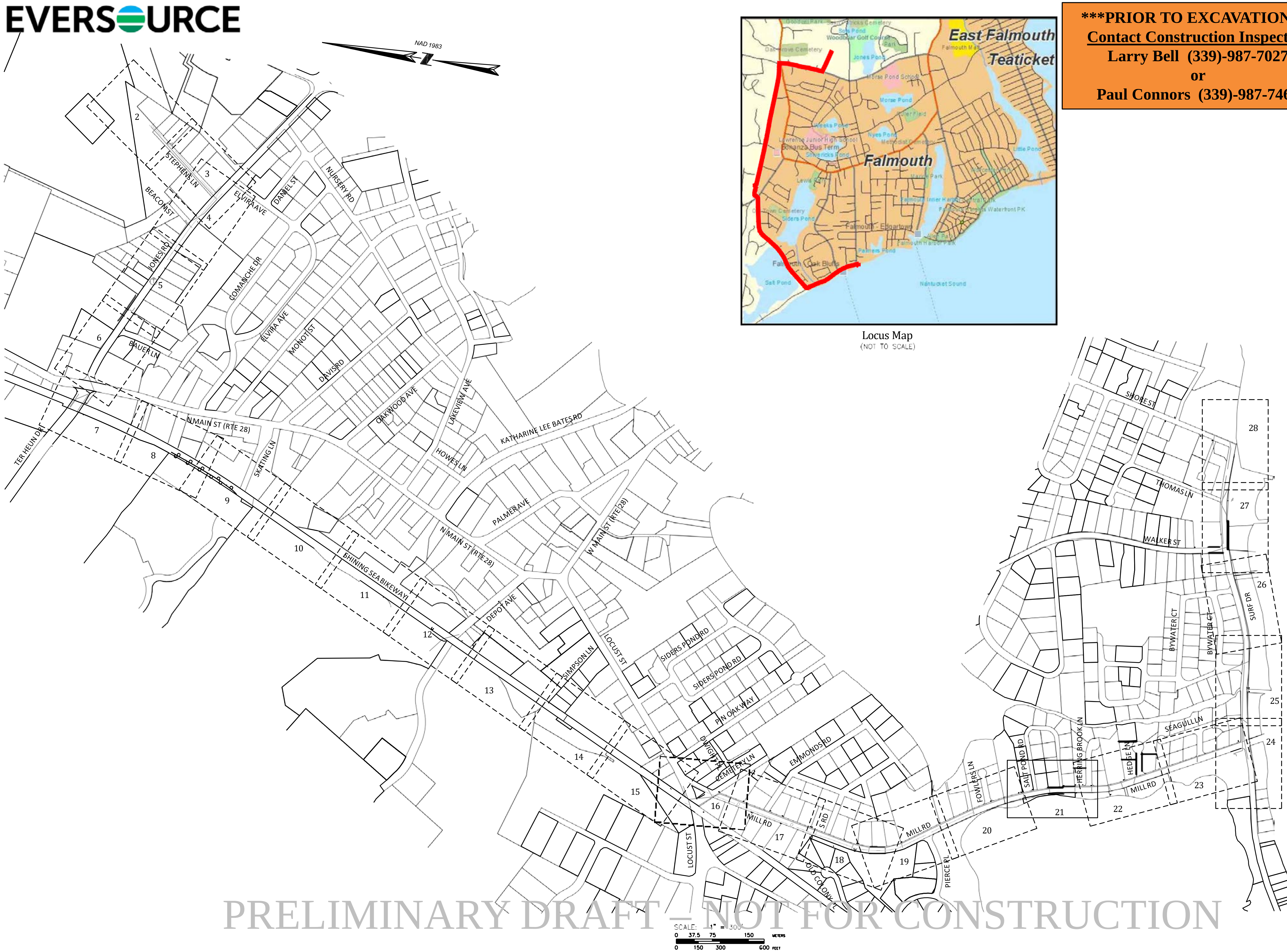
**Stakeholder Names and Contact Information are not shown in this document to protect the privacy of these individuals*

Attachment N

Project Plans

EVERSOURCE

*****PRIOR TO EXCAVATION*****
Contact Construction Inspector:
Larry Bell (339)-987-7027
or
Paul Connors (339)-987-7464



Locus Map
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PROFESSIONAL LAND SURVEYOR
FOR BSC GROUP, INC.

DATE

WO# 8622532
Engineering Details
Conduit Layout
New Lines
4-70-70
4-91B-91B
22.8/13.2kV

SUPPLY LINE FROM STA 933 TO MARTHA'S VINEYARD

IN

FALMOUTH

MASSACHUSETTS
(BARNSTABLE COUNTY)

EXISTING CONDITIONS

FEBRUARY 10, 2022

Falmouth, MA
Dan Frois, Engineer
Rev. 03, 04-21-2022
Page 1 of 28

PREPARED FOR:
EVERSOURCE ENERGY
247 STATION DRIVE
WESTWOOD, MA 02090

BSC GROUP
803 Summer Street
Boston, Massachusetts
02127
617 896 4300

SCALE: 1" = 20'

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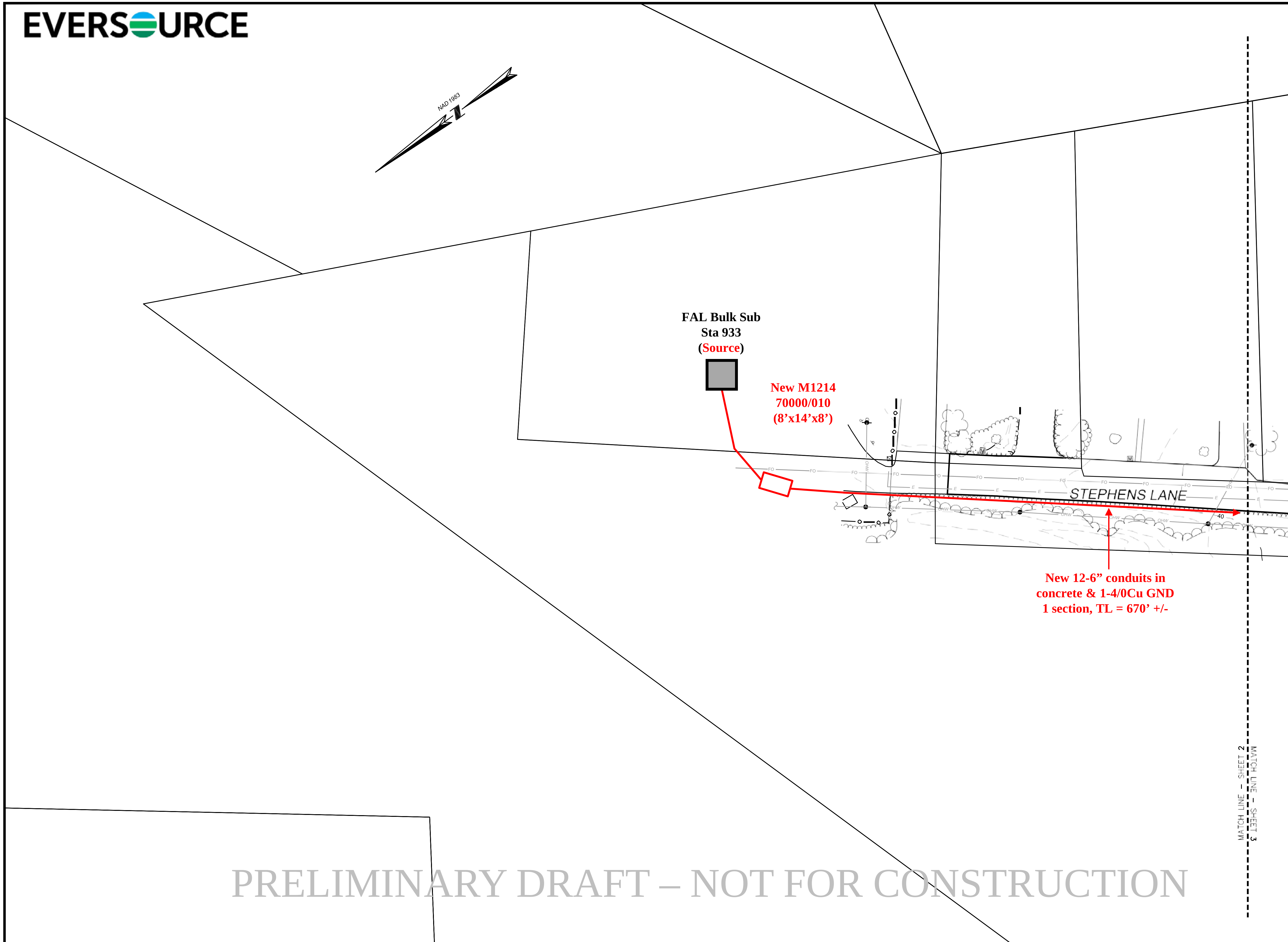

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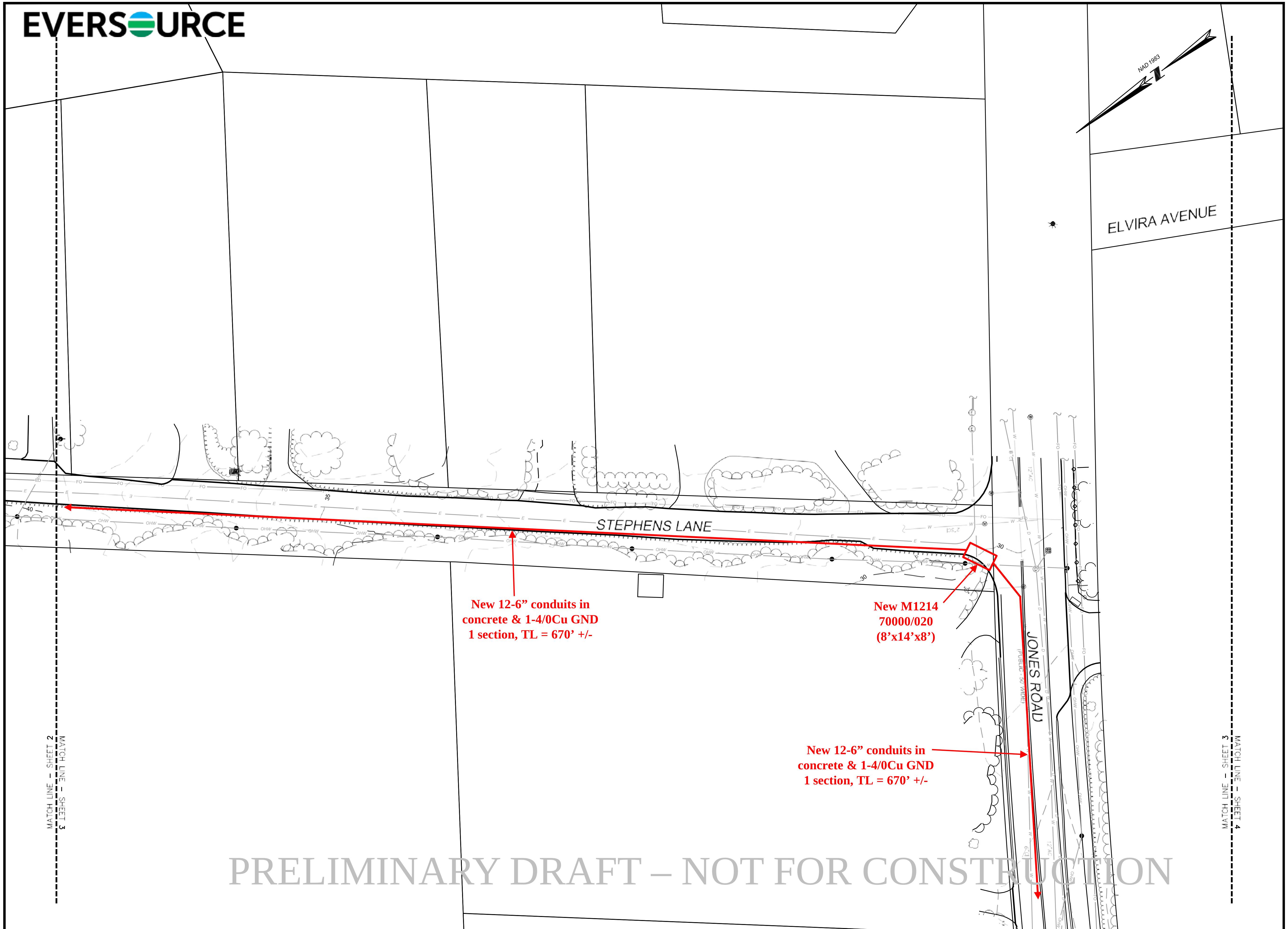

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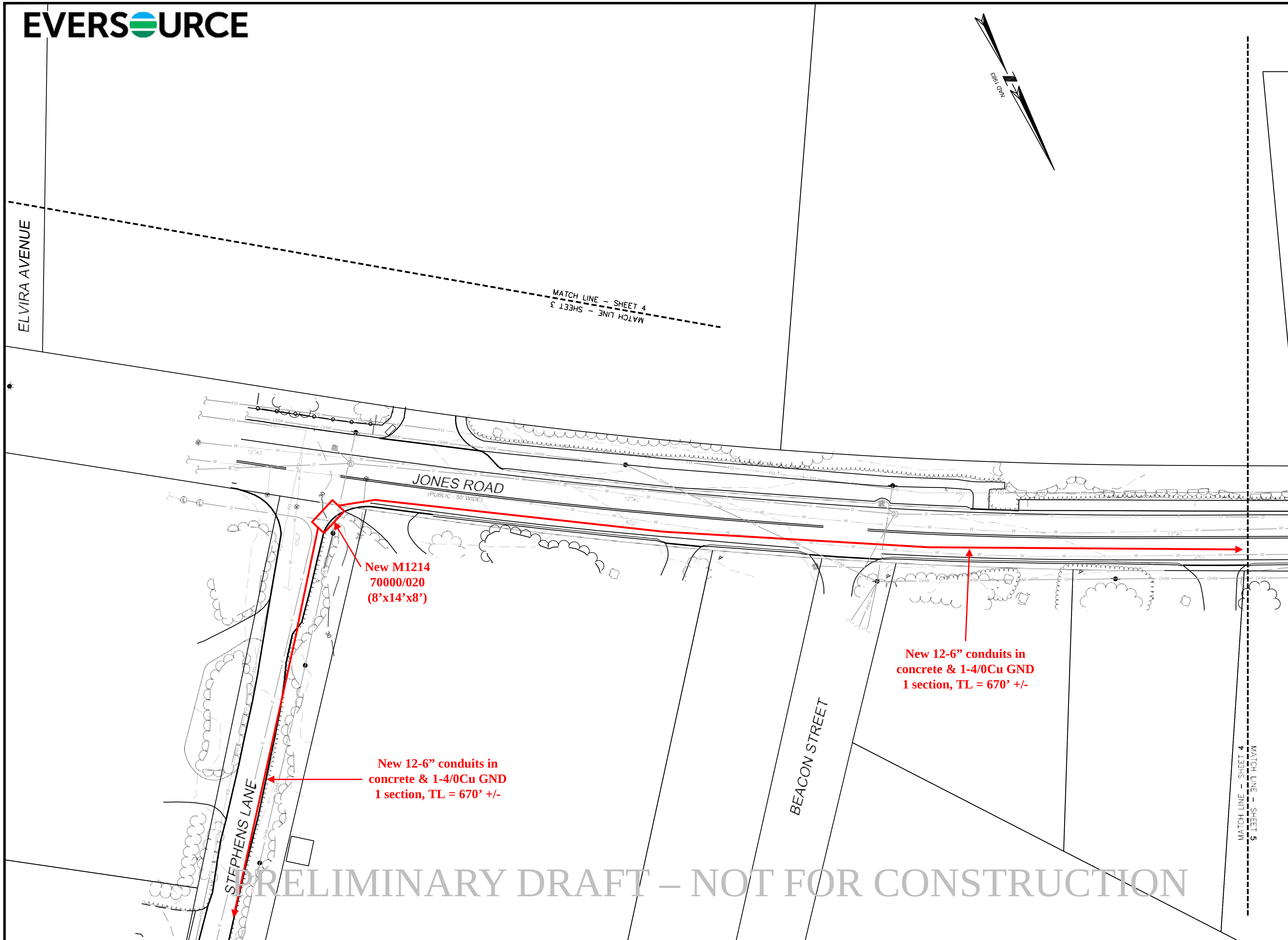

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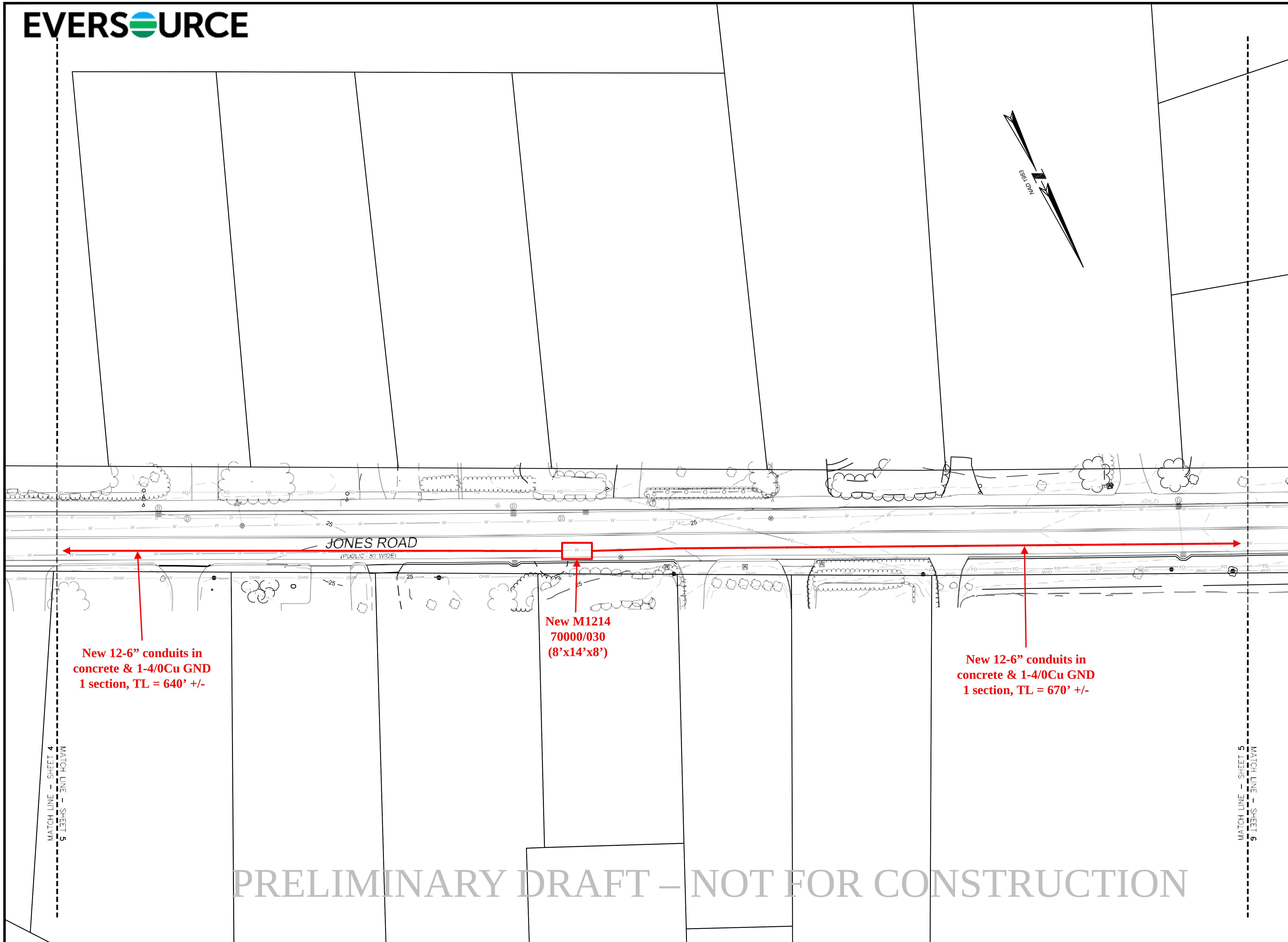

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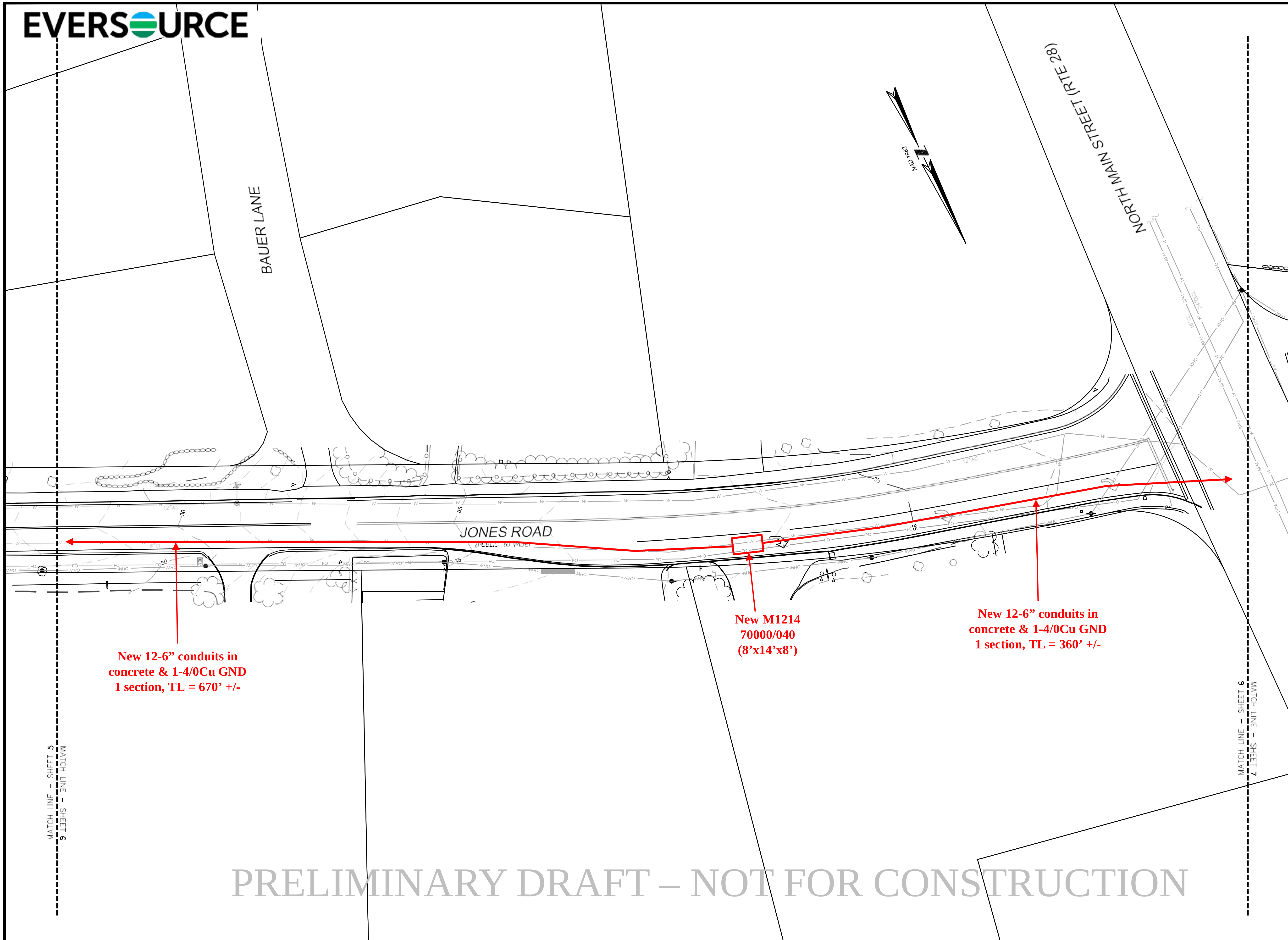

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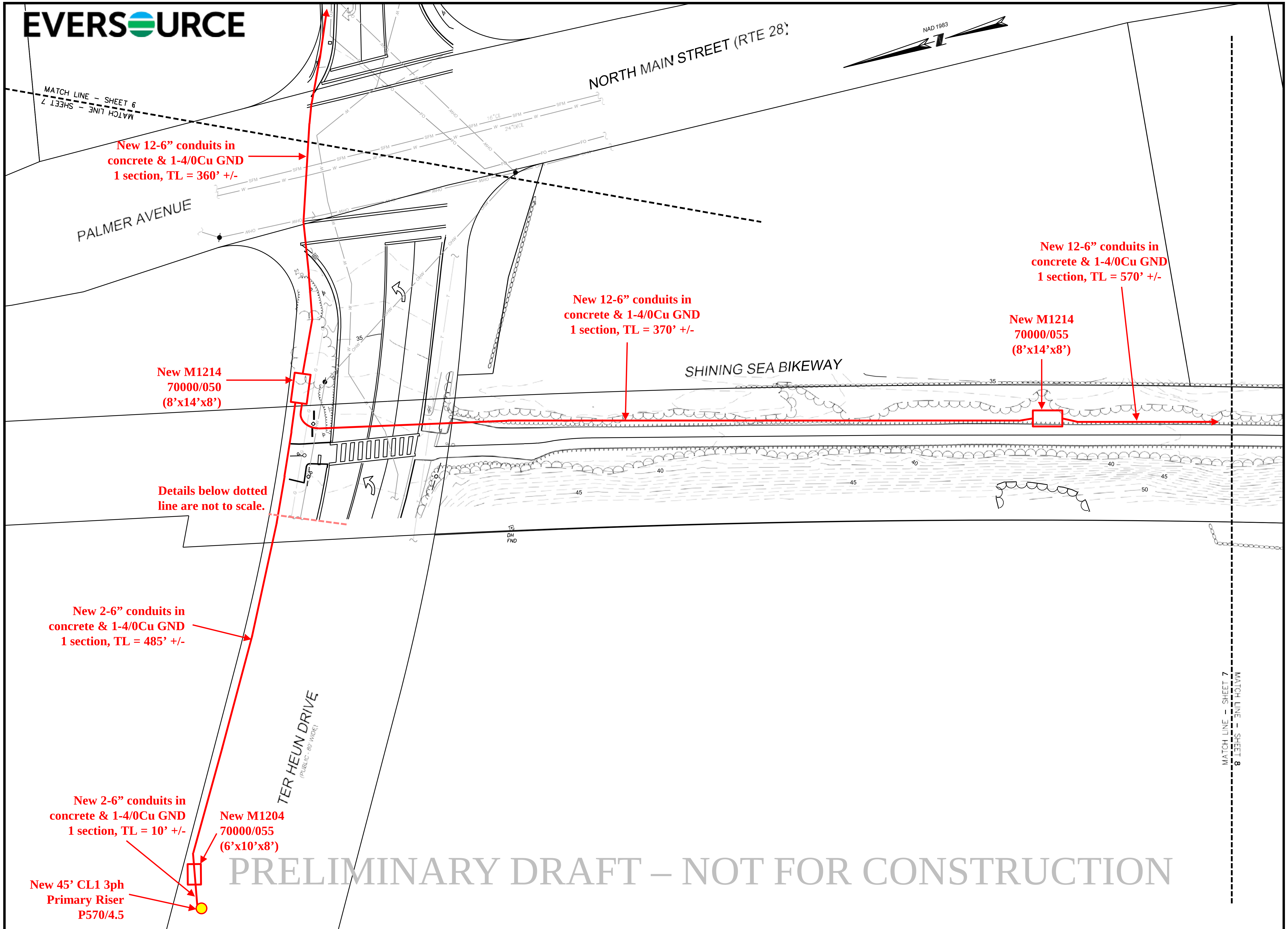

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SUPPLY LINE FROM STA 933 TO MARTHA'S VINEYARD

IN

FALMOUTH

MASSACHUSETTS
(BARNSTABLE COUNTY)

EXISTING CONDITIONS
FEBRUARY 10, 2022

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PREPARED FOR:
EVERSOURCE ENERGY
247 STATION DRIVE
WESTWOOD, MA 02090

BSC GROUP
803 Summer Street
Boston, Massachusetts
02127
617 896 4300

SCALE: 1" = 20'

PROJ. MGR.: S.EWALD
FIELD: F.MCIVER
CALC./DESIGN: S. COHEN
DRAWN: S. COHEN
CHECK: S.EWALD
FILE: P:\1360300\S\Dr\1360300EC.dwg
DWG.: 1360300EC
JOB. NO: 1-3603.00

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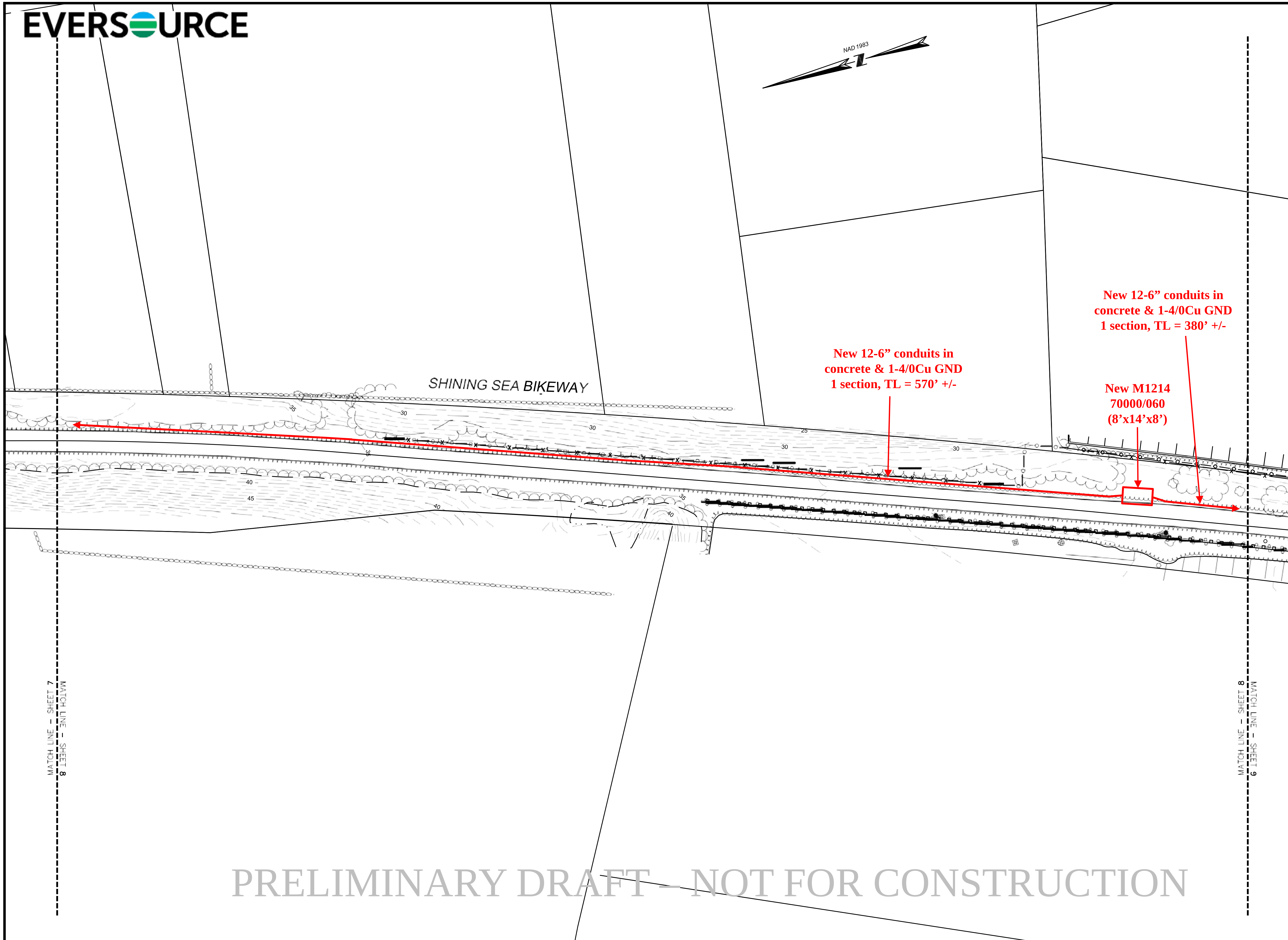
EVERSOURCE



WO# 8622532
Engineering Details
Conduit Layout
New Lines
4-70-70
4-91B-91B
22.8/13.2kV

SUPPLY LINE FROM STA 933 TO MARTHA'S VINEYARD

IN

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BSC GROUP
803 Summer Street
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02127
617 896 4300

SCALE: 1" = 20'
0 2.5 5 10 METERS
0 10 20 40 FEET

PROJ. MGR.: S.EWALD	
FIELD: P.MCIVER	
CALC./DESIGN: S COHEN	
DRAWN: S COHEN	
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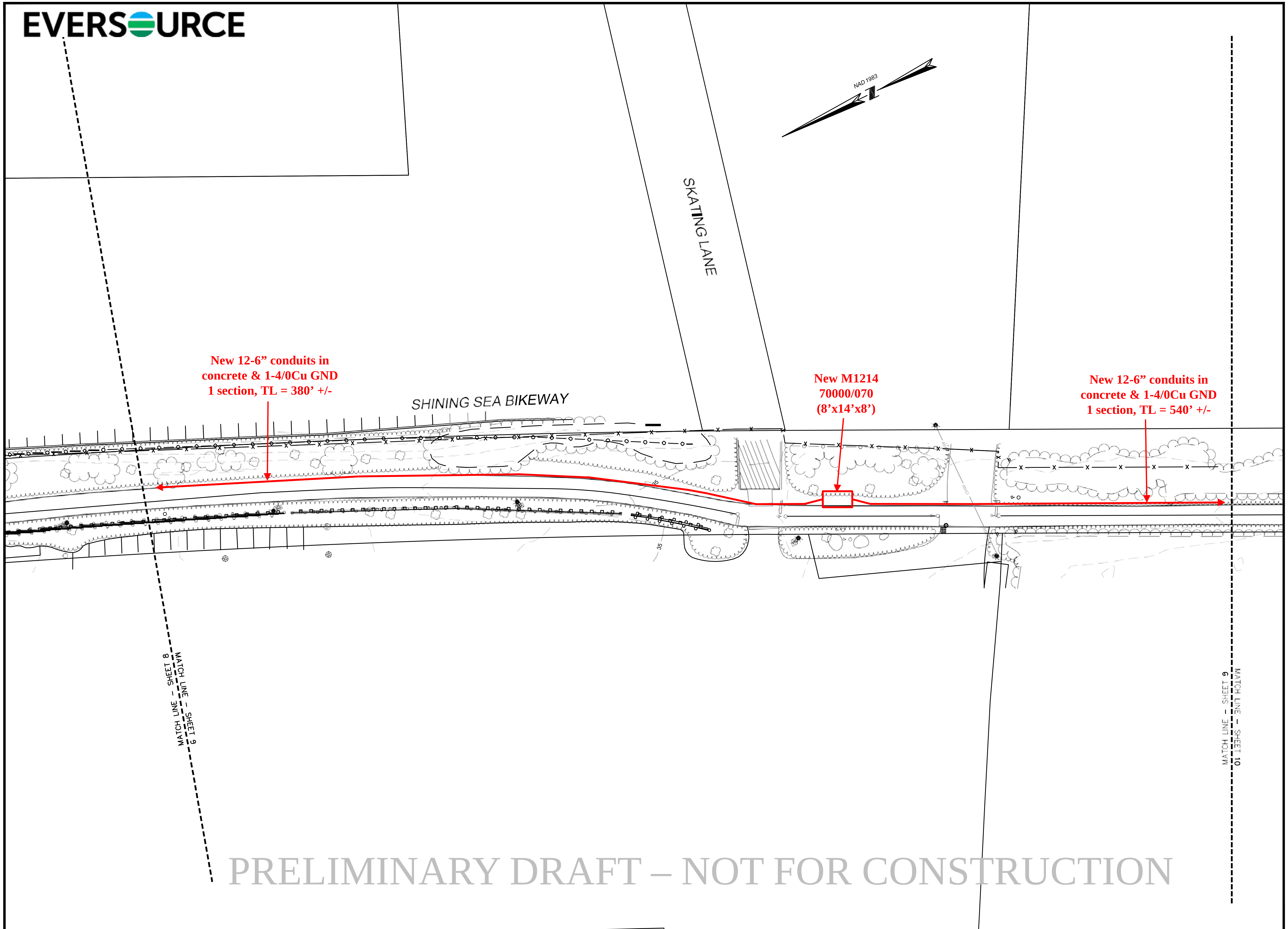
JOB. NO: 1-3603.00	8 OF 28



WO# 8622532
Engineering Details
Conduit Layout
New Lines
4-70-70
4-91B-91B
22.8/13.2kV

SUPPLY LINE FROM STA 933 TO MARTHA'S VINEYARD

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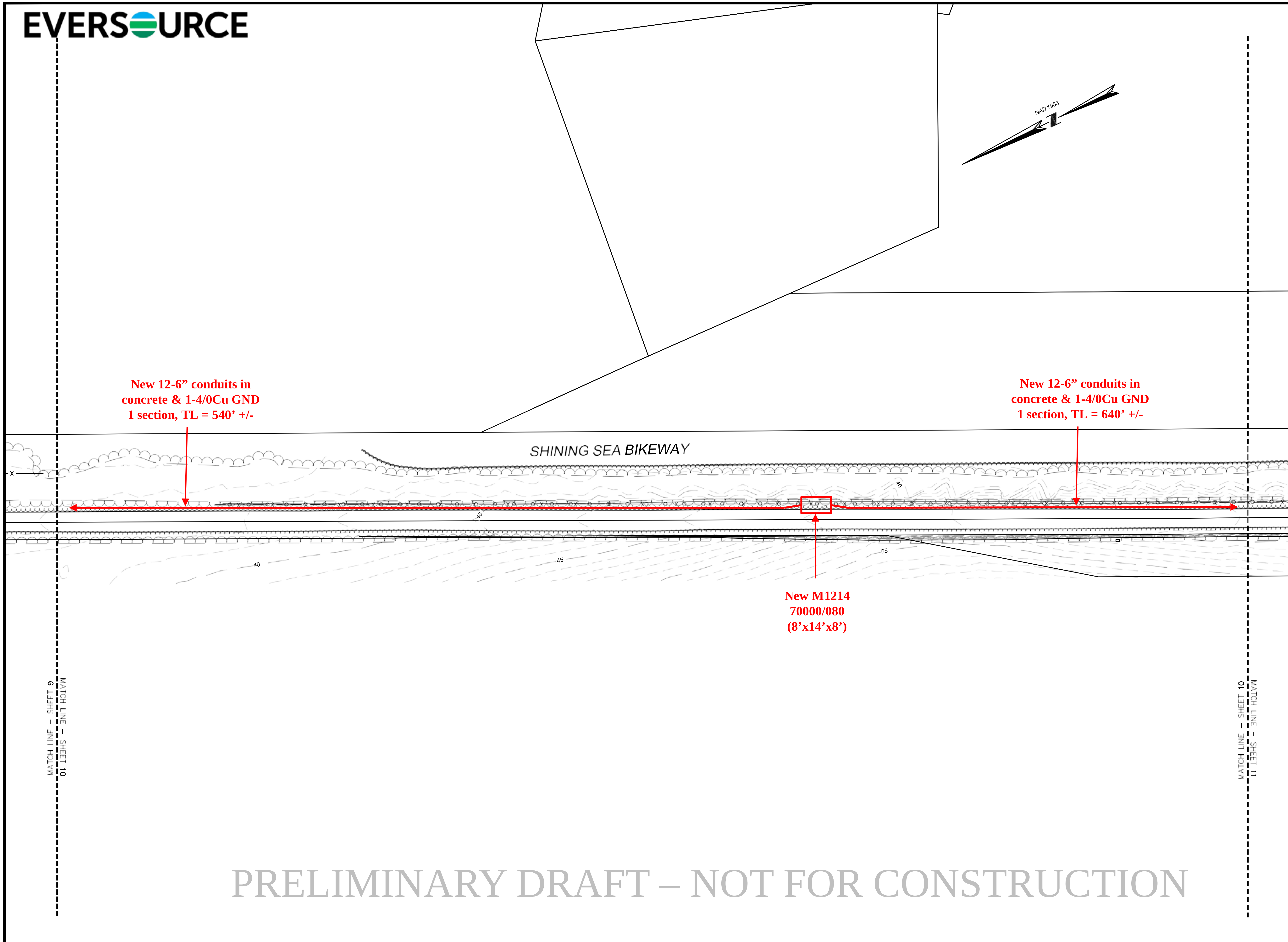
JOB. NO: 1-3603.00		9 OF 28



WO# 8622532
Engineering Details
Conduit Layout
New Lines
4-70-70
4-91B-91B
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SUPPLY LINE FROM STA 933 TO MARTHA'S VINEYARD

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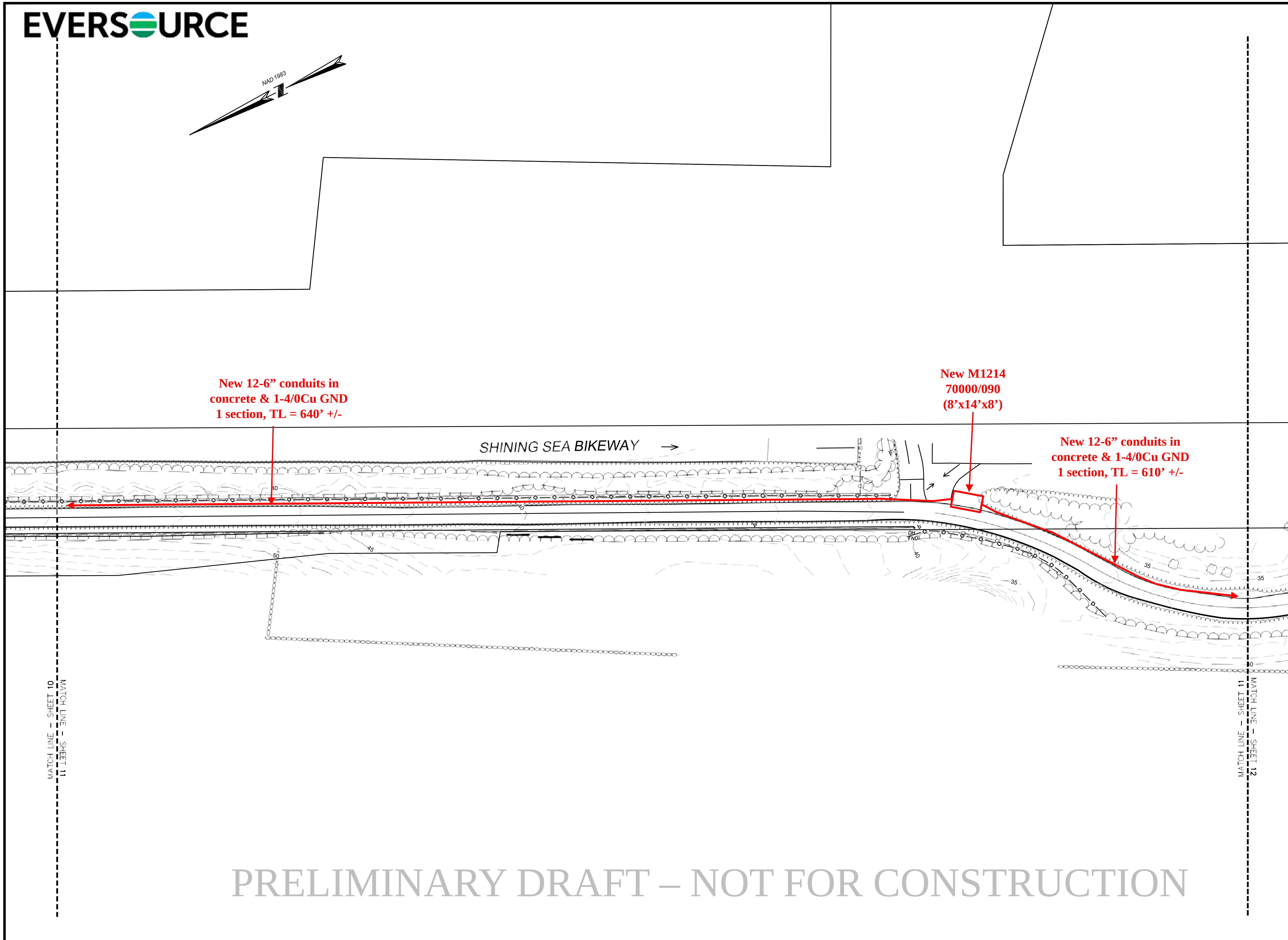
JOB. NO: 1-3603.00		10 OF 28



WO# 8622532
Engineering Details
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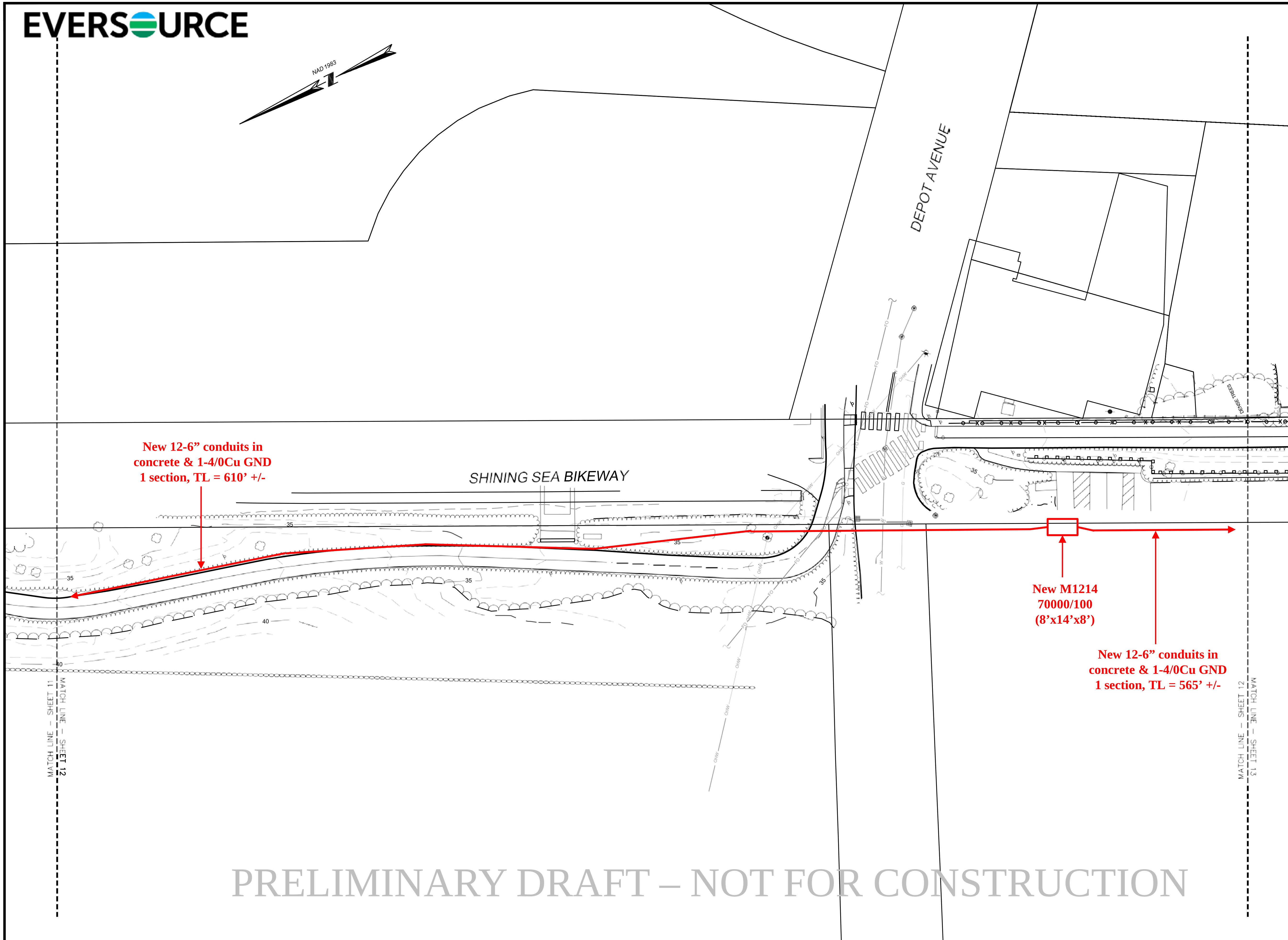
SHEET 11 OF 28



WO# 8622532
Engineering Details
Conduit Layout
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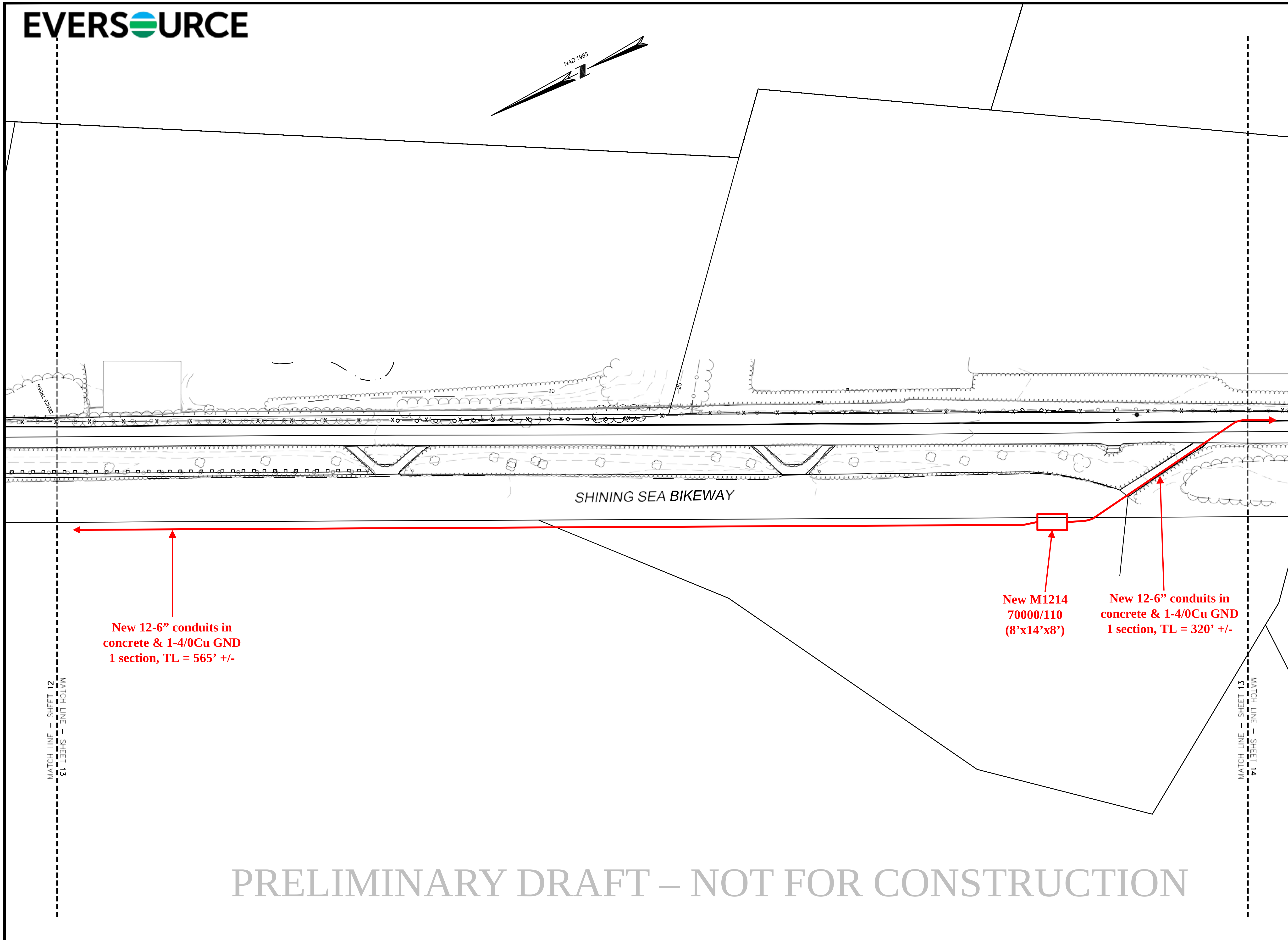
SHEET 12 OF 28



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Engineering Details
Conduit Layout
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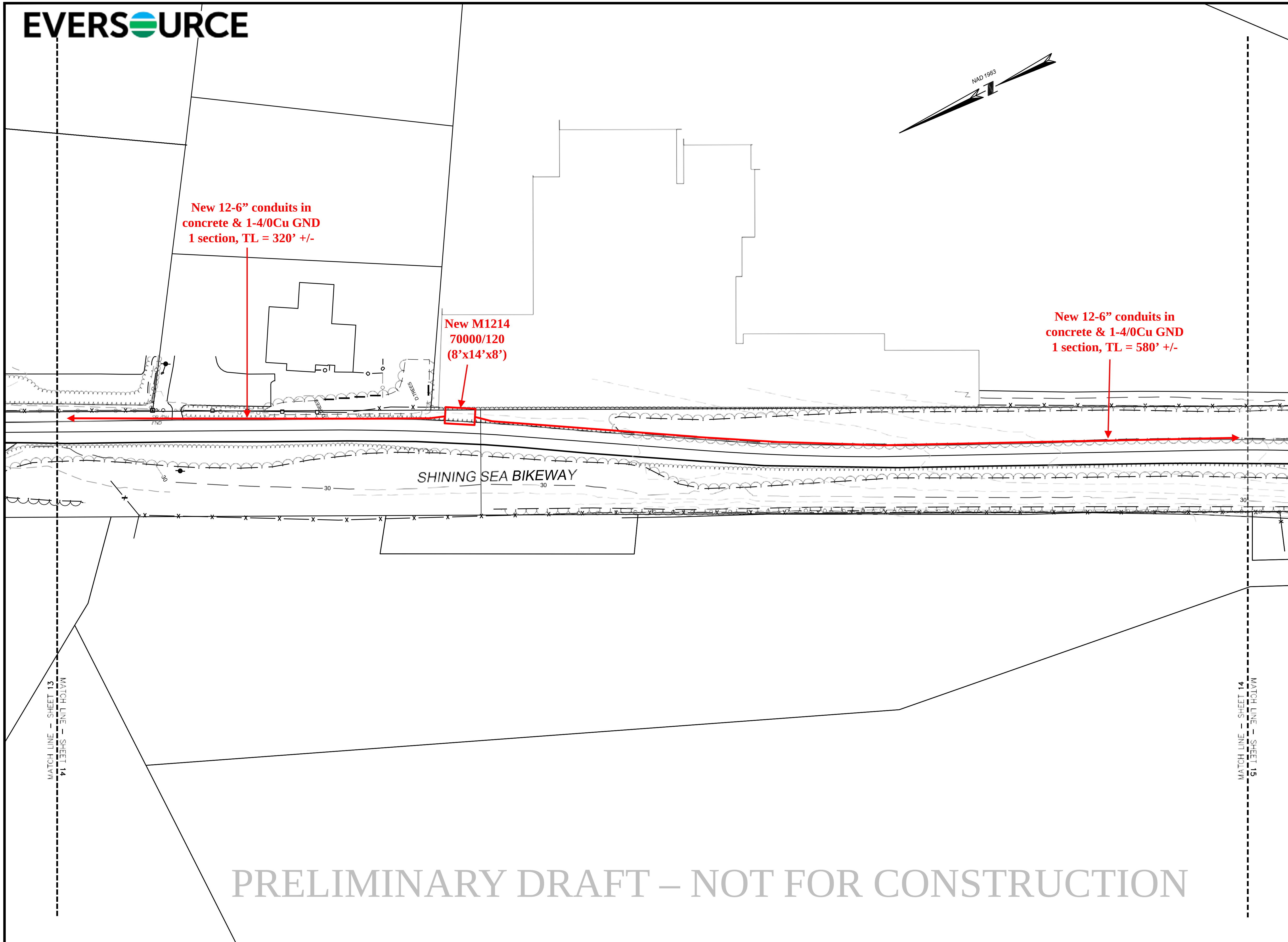

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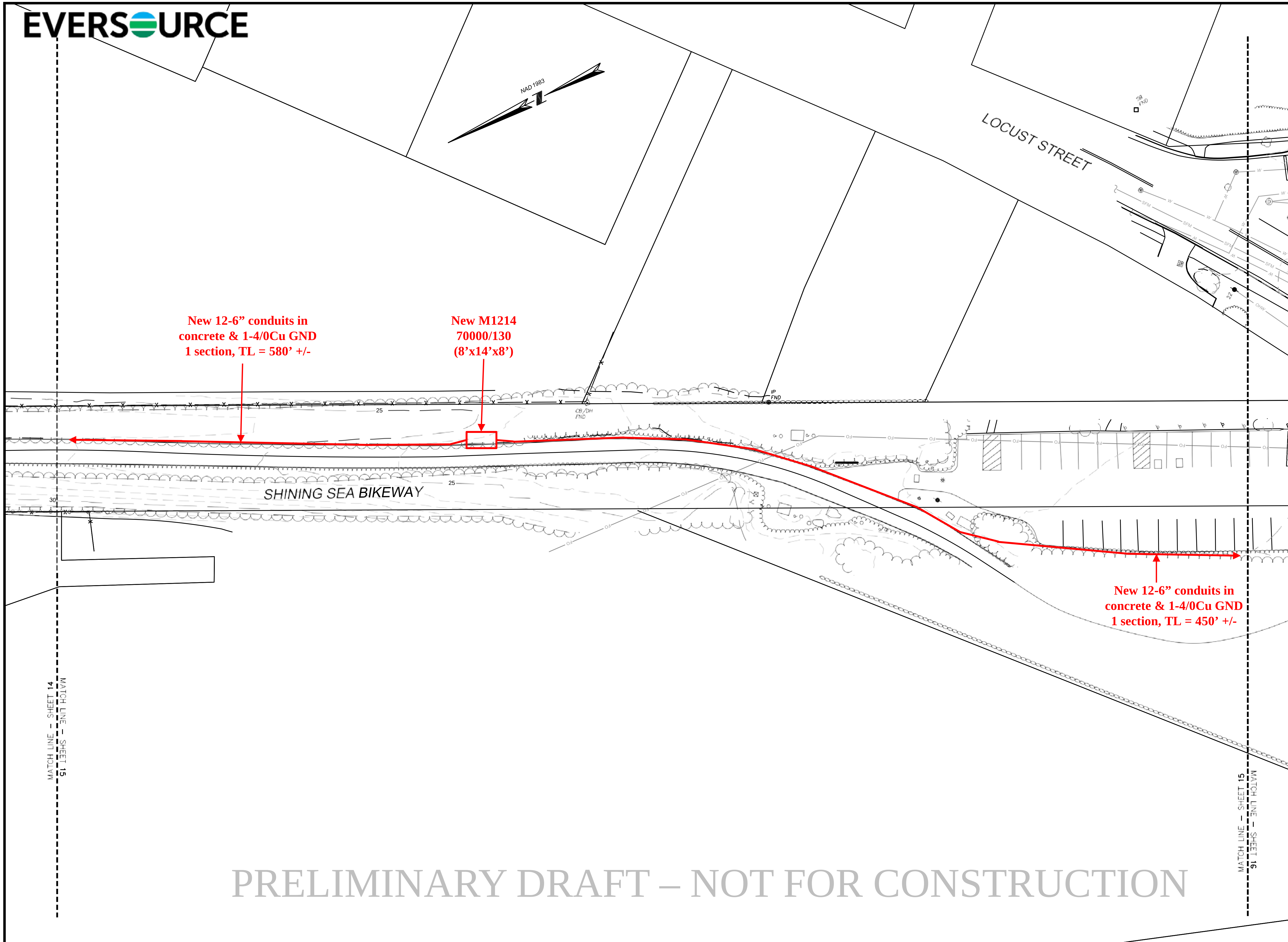

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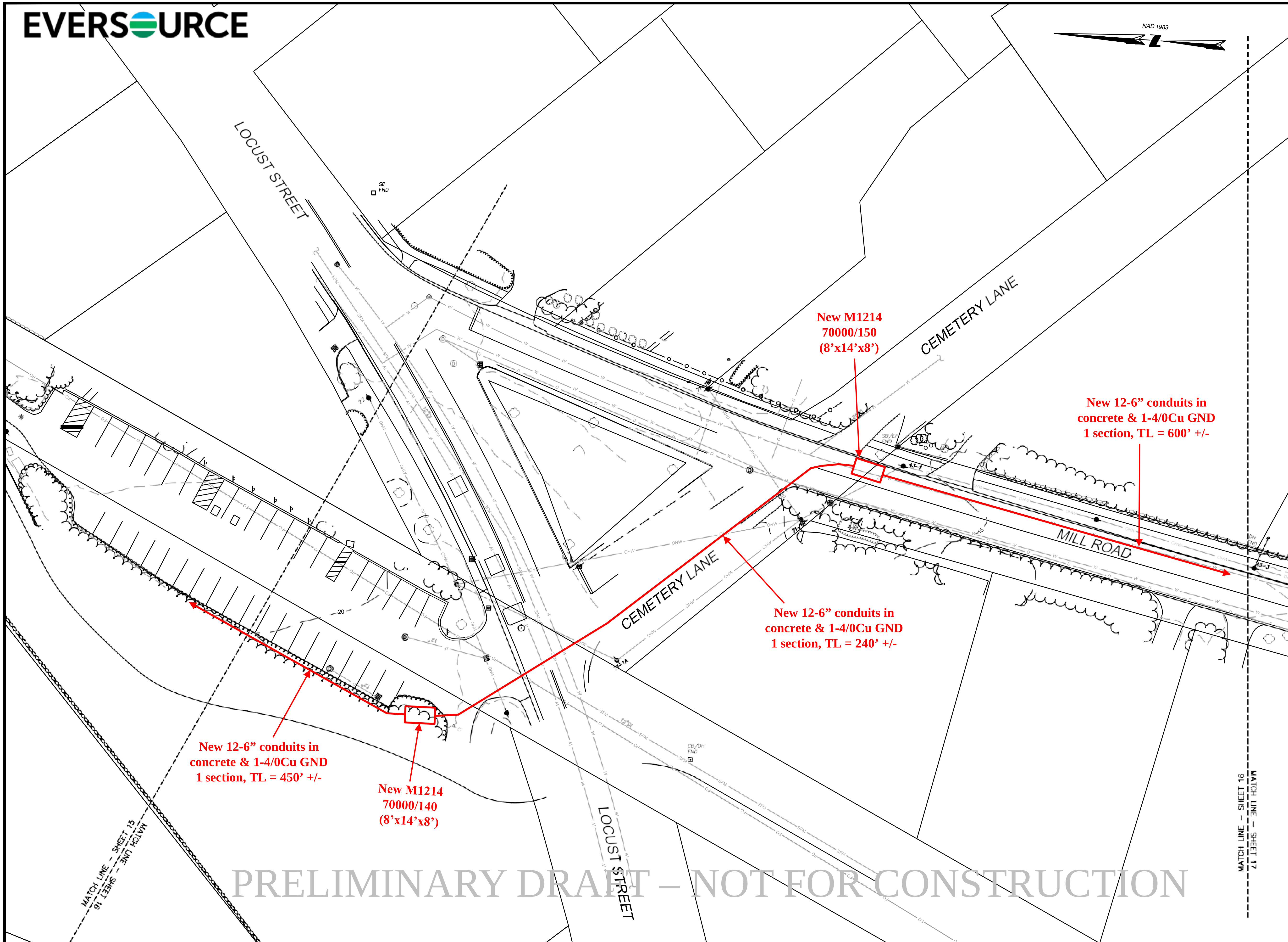

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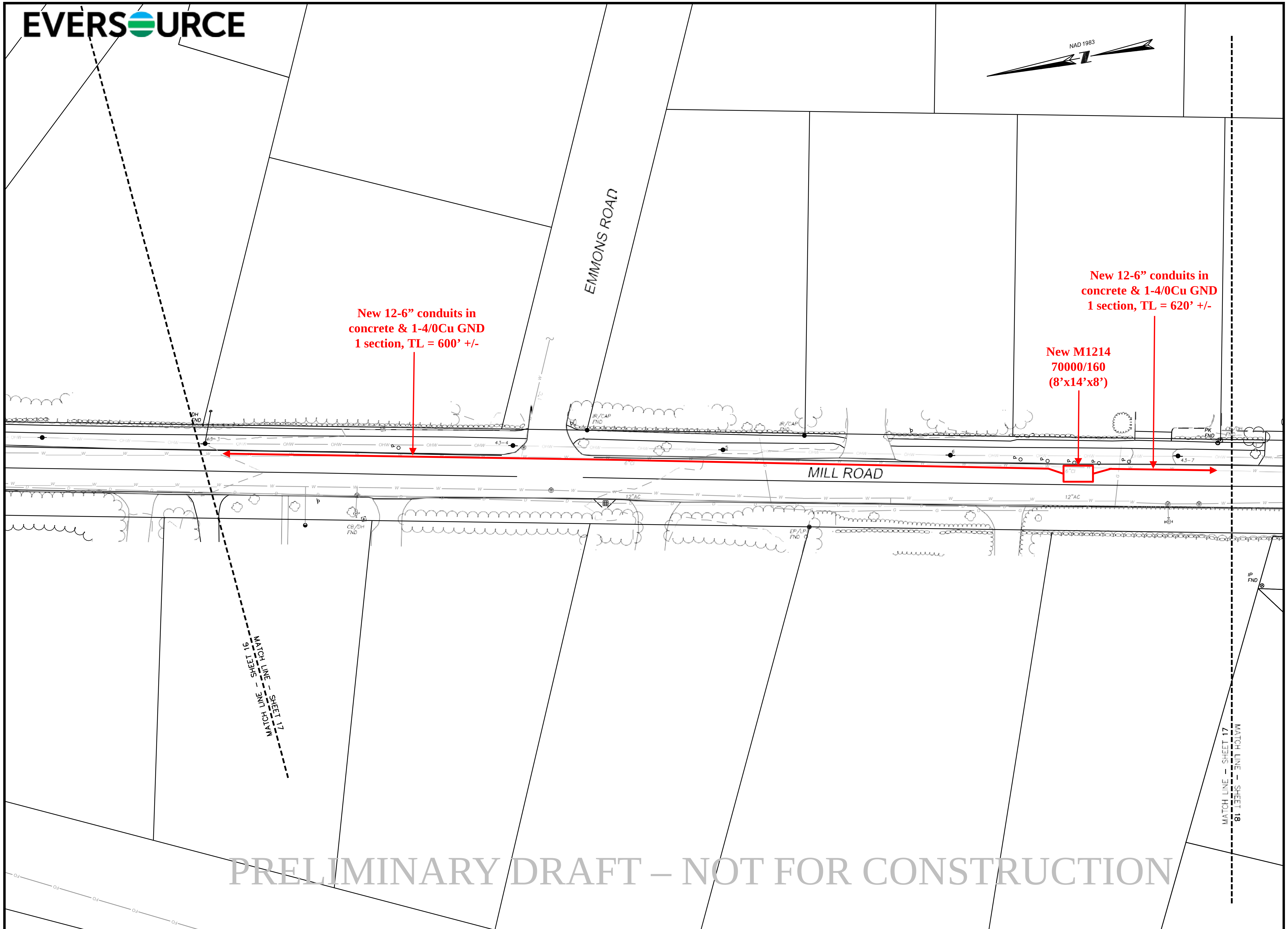
SHEET 16 OF 28



WO# 8622532
Engineering Details
Conduit Layout
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4-70-70
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SUPPLY LINE FROM STA 933 TO MARTHA'S VINEYARD

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MASSACHUSETTS

(BARNSTABLE COUNTY)

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247 STATION DRIVE
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BSC GROUP
803 Summer Street
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SCALE: 1" = 20'
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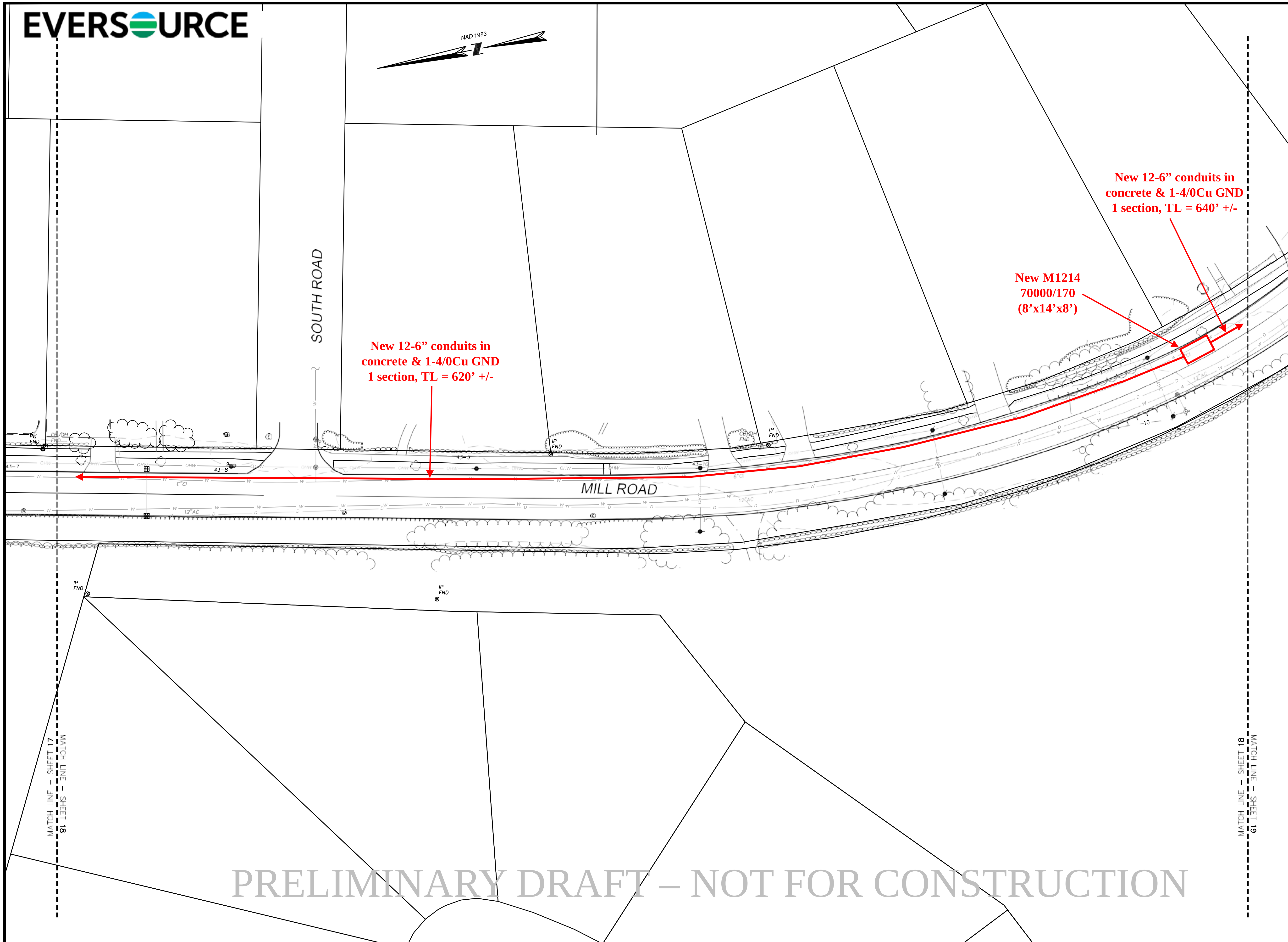
JOB. NO: 1-3603.00		17 OF 28

EVERSOURCE



PRELIMINARY DRAFT – NOT FOR CONSTRUCTION

WO# 8622532
Engineering Details
Conduit Layout
New Lines
4-70-70
4-91B-91B
22.8/13.2kV

SUPPLY LINE FROM STA 933 TO MARTHA'S VINEYARD

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FALMOUTH

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EXISTING CONDITIONS
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PREPARED FOR:
EVERSOURCE ENERGY
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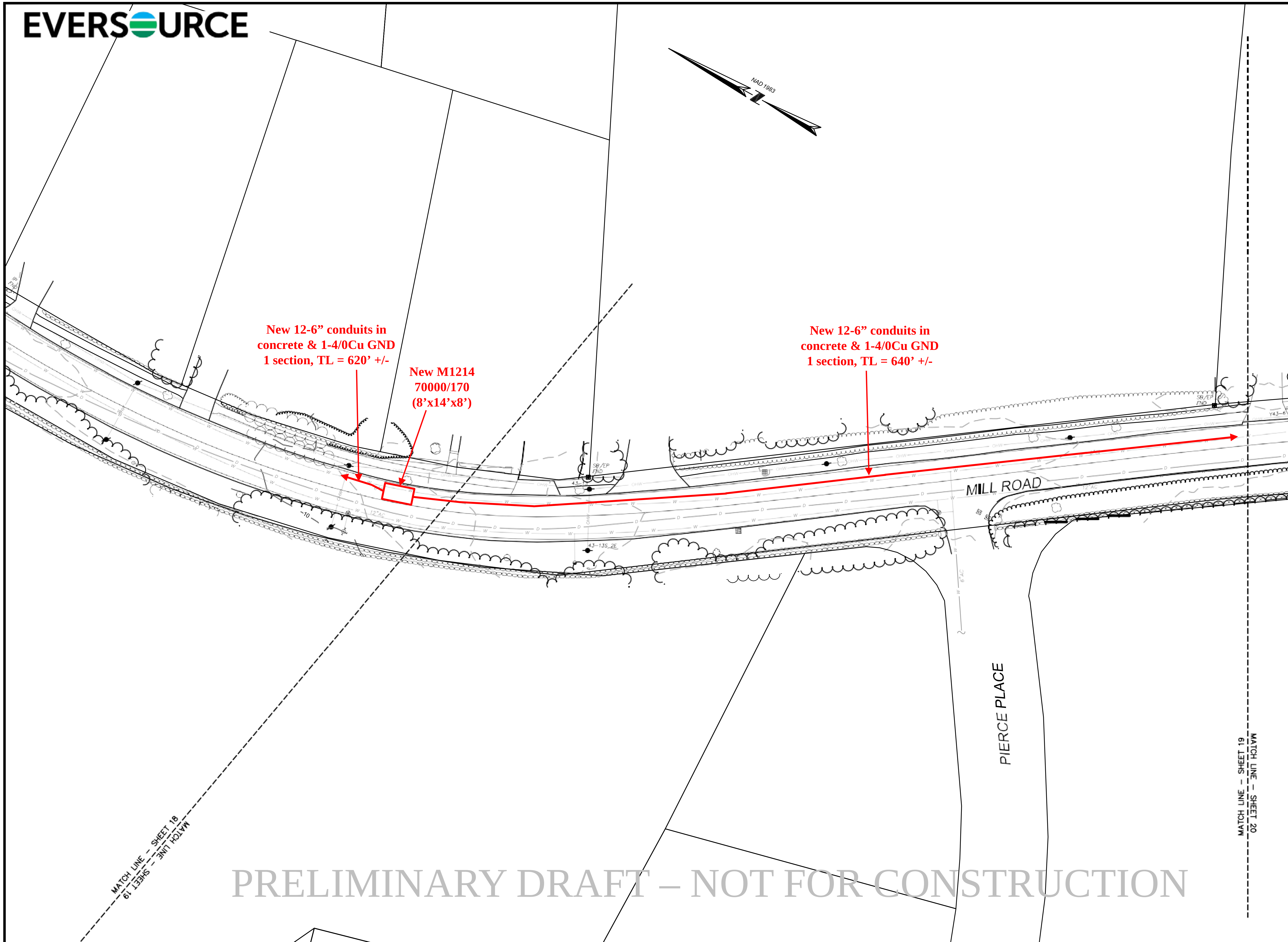
JOB. NO: 1-3603.00
SHEET 18 OF 28



PRELIMINARY DRAFT – NOT FOR CONSTRUCTION

WO# 8622532
Engineering Details
Conduit Layout
New Lines
4-70-70
4-91B-91B
22.8/13.2kV

SUPPLY LINE FROM STA 933 TO MARTHA'S VINEYARD

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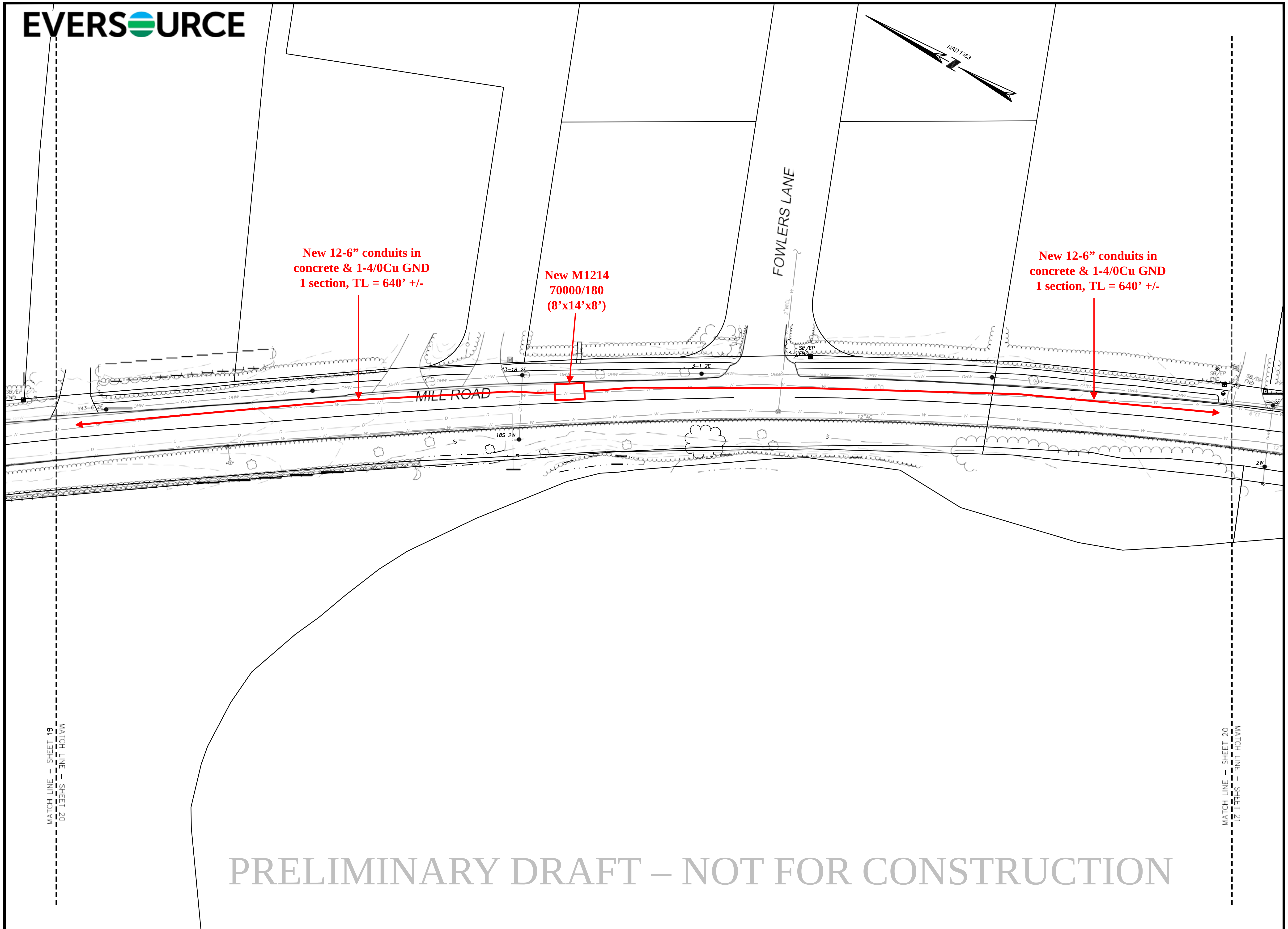
SHEET 19 OF 28
JOB. NO: 1-3603.00



PRELIMINARY DRAFT – NOT FOR CONSTRUCTION

WO# 8622532
Engineering Details
Conduit Layout
New Lines
4-70-70
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FALMOUTH

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(BARNSTABLE COUNTY)

EXISTING CONDITIONS

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EVERSOURCE ENERGY
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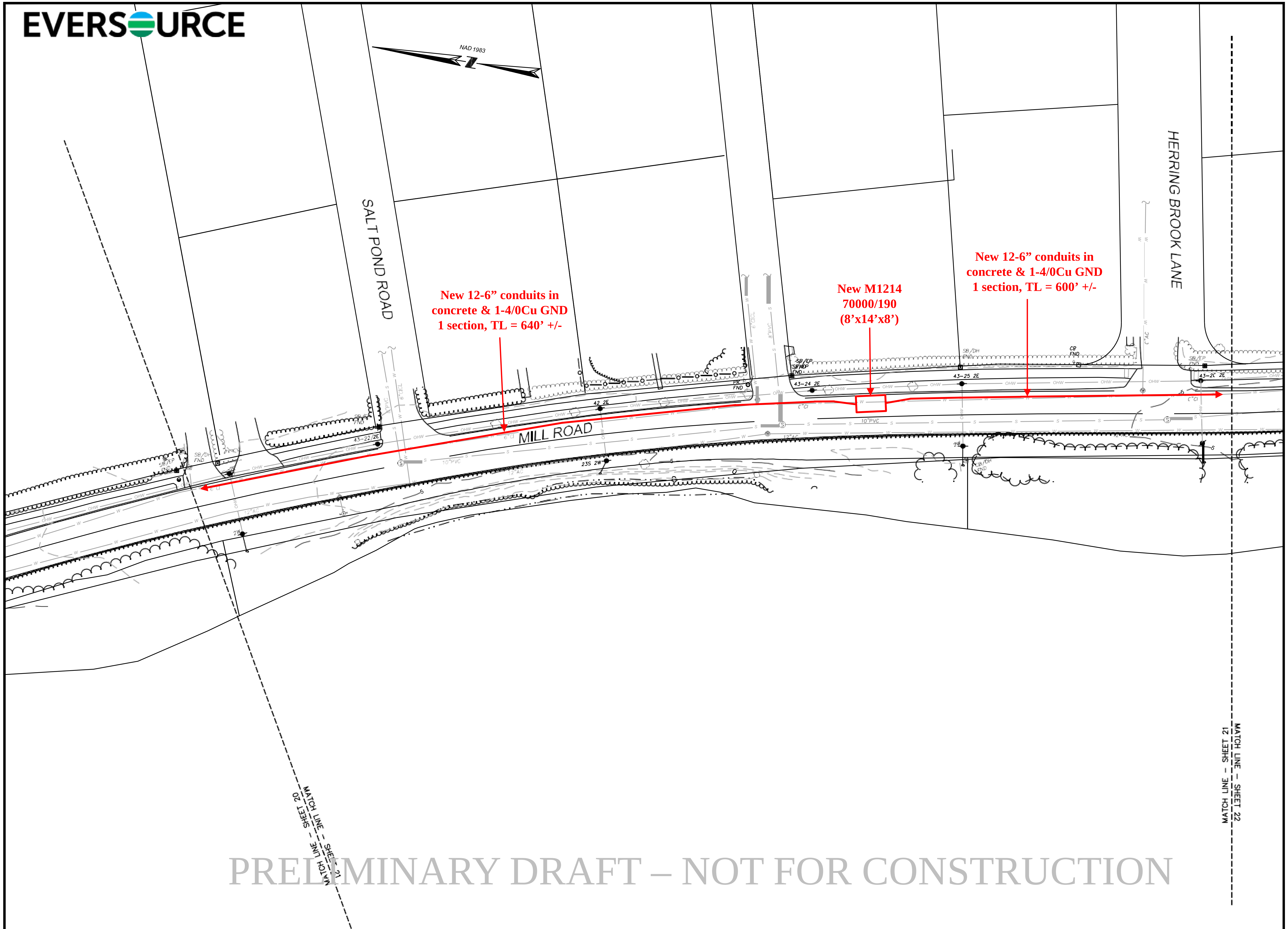

WO# 8622532
Engineering Details
Conduit Layout
New Lines
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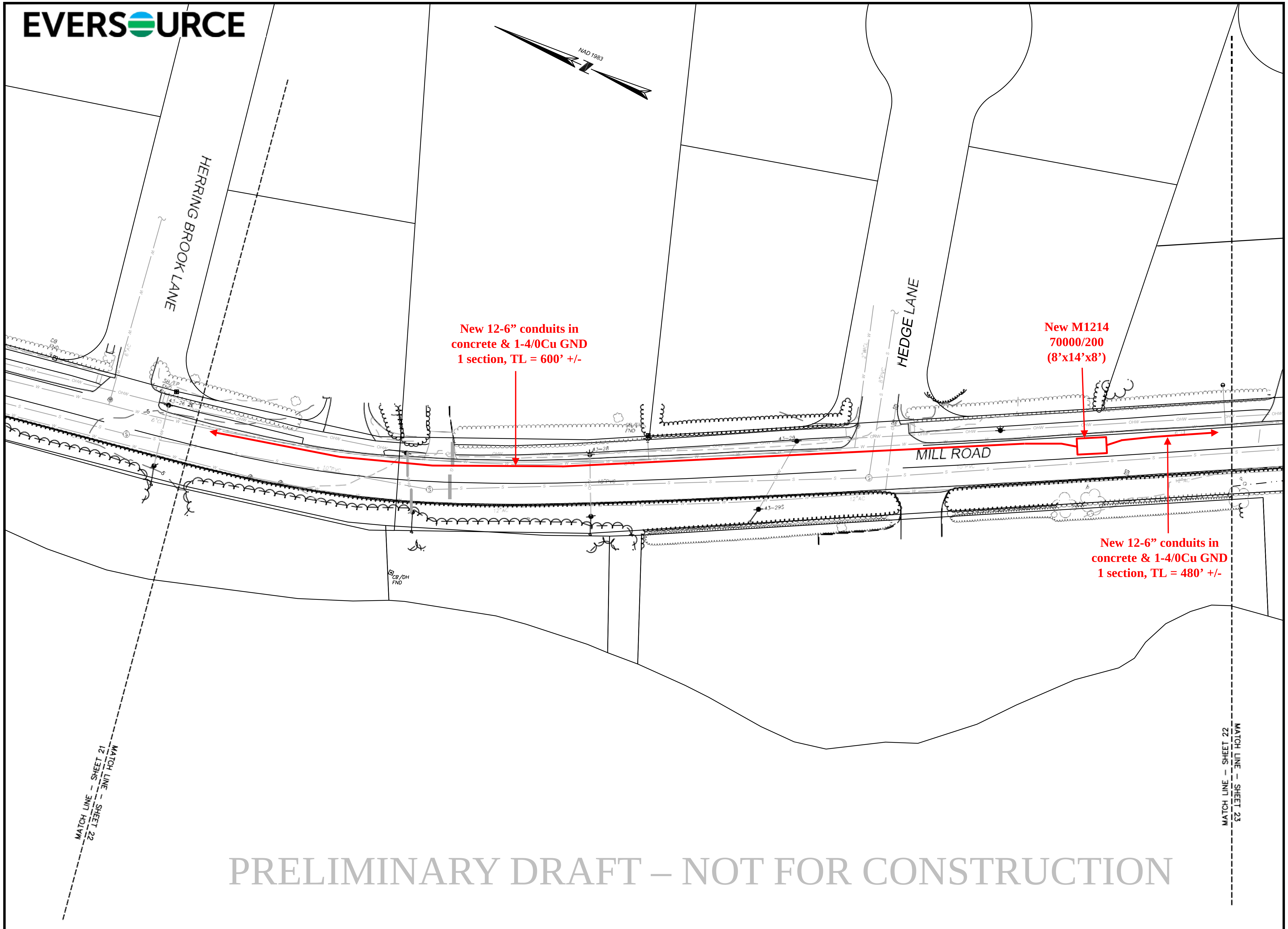

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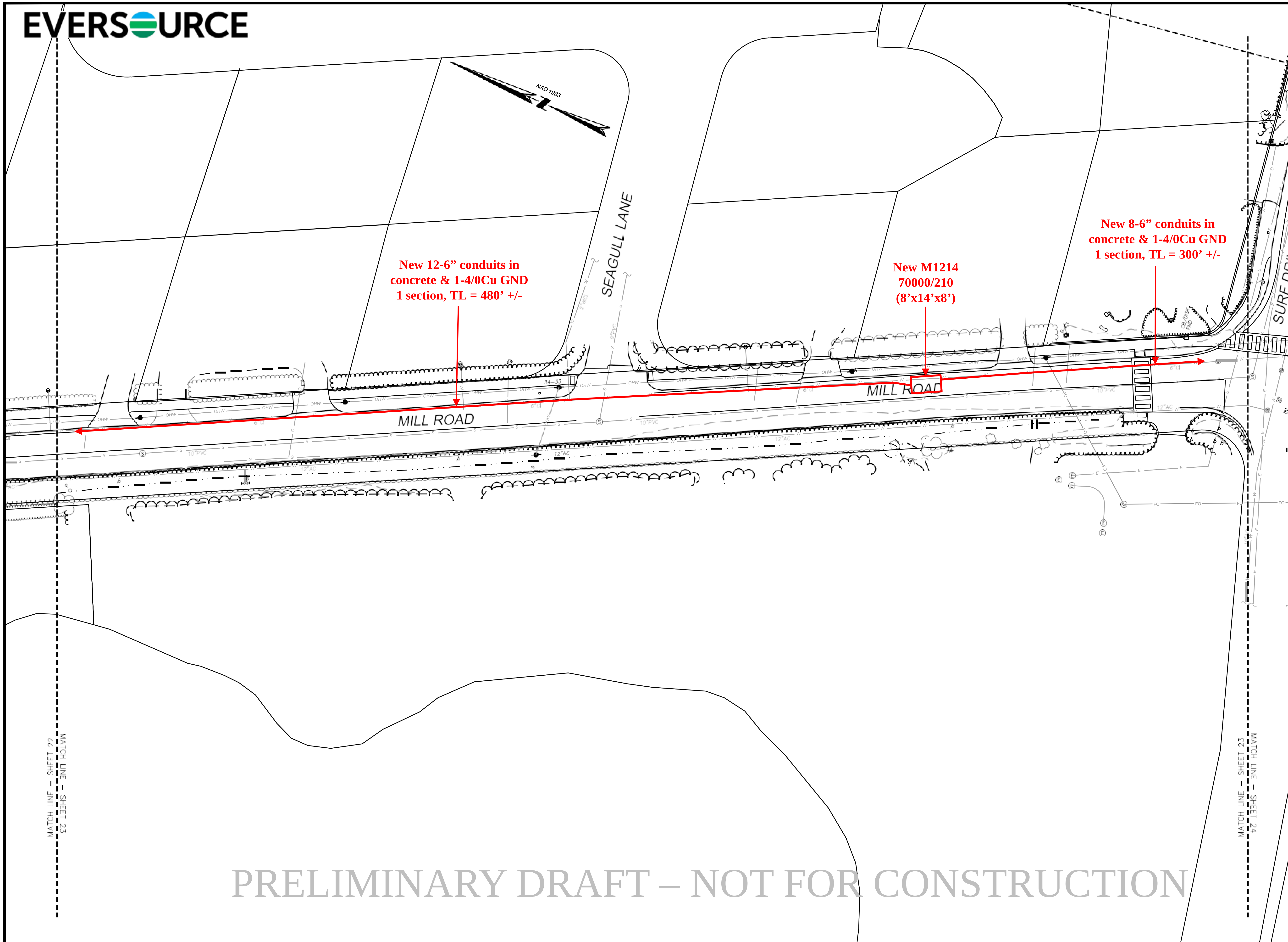

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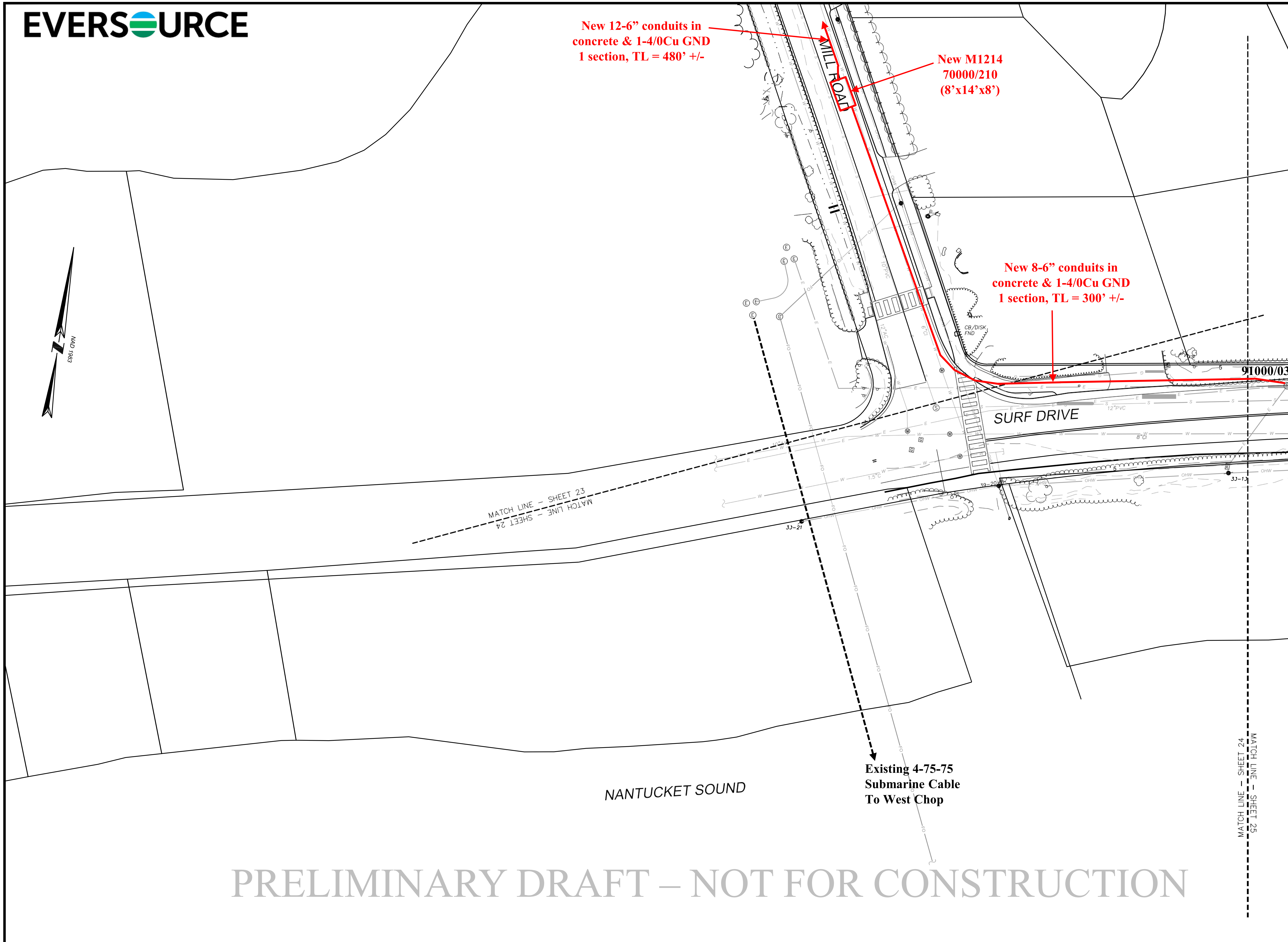

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New Line
4-70-70
22.8/13.2kV

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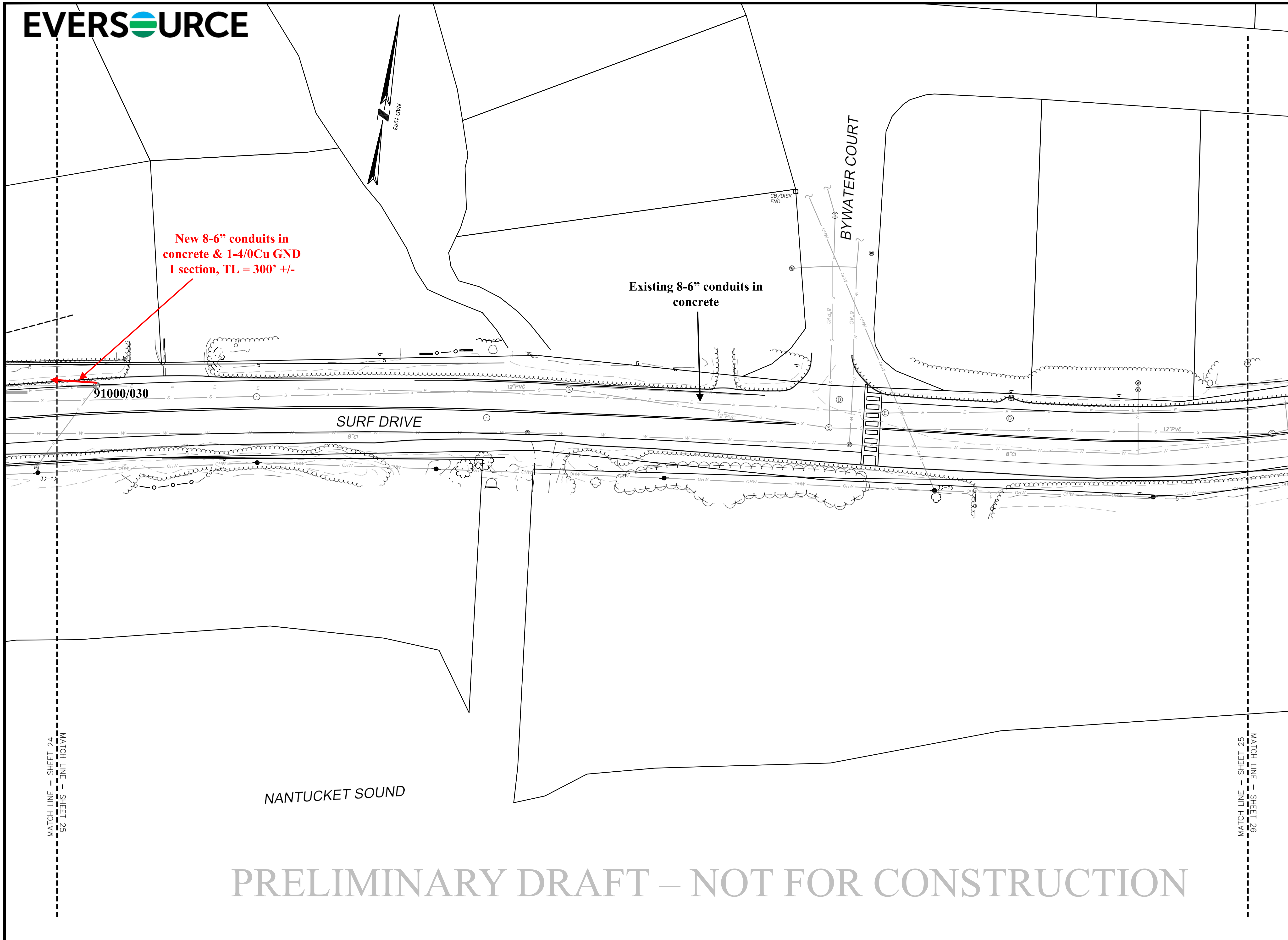

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WO# 8622532
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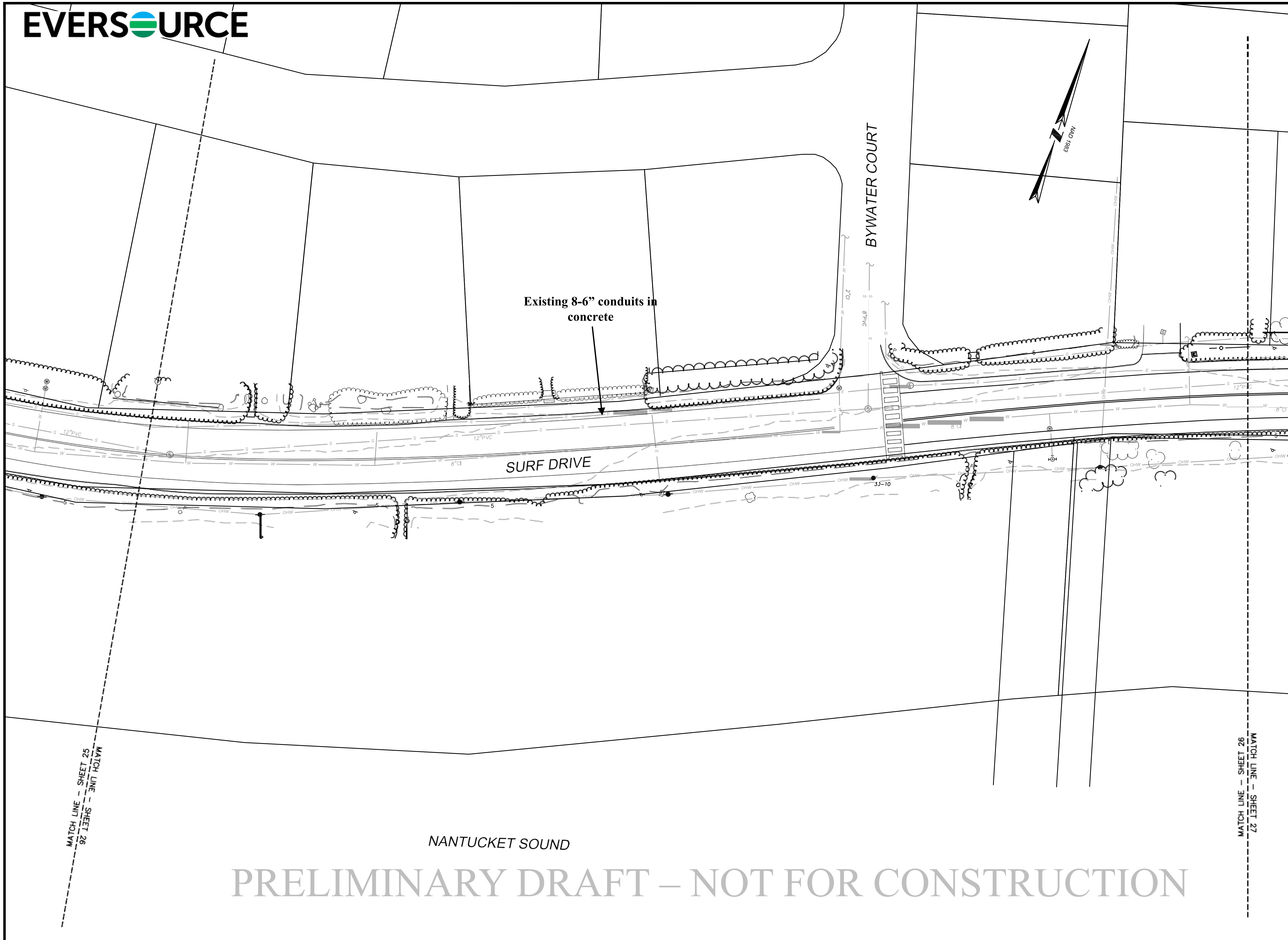
JOB. NO: 1-3603.00
SHEET 25 OF 28



PRELIMINARY DRAFT – NOT FOR CONSTRUCTION

WO# 8622532
Engineering Details
Conduit Layout
New Line
4-70-70
22.8/13.2kV

SUPPLY LINE FROM STA 933 TO MARTHA'S VINEYARD

IN

FALMOUTH

MASSACHUSETTS
(BARNSTABLE COUNTY)

EXISTING CONDITIONS

FEBRUARY 10, 2022

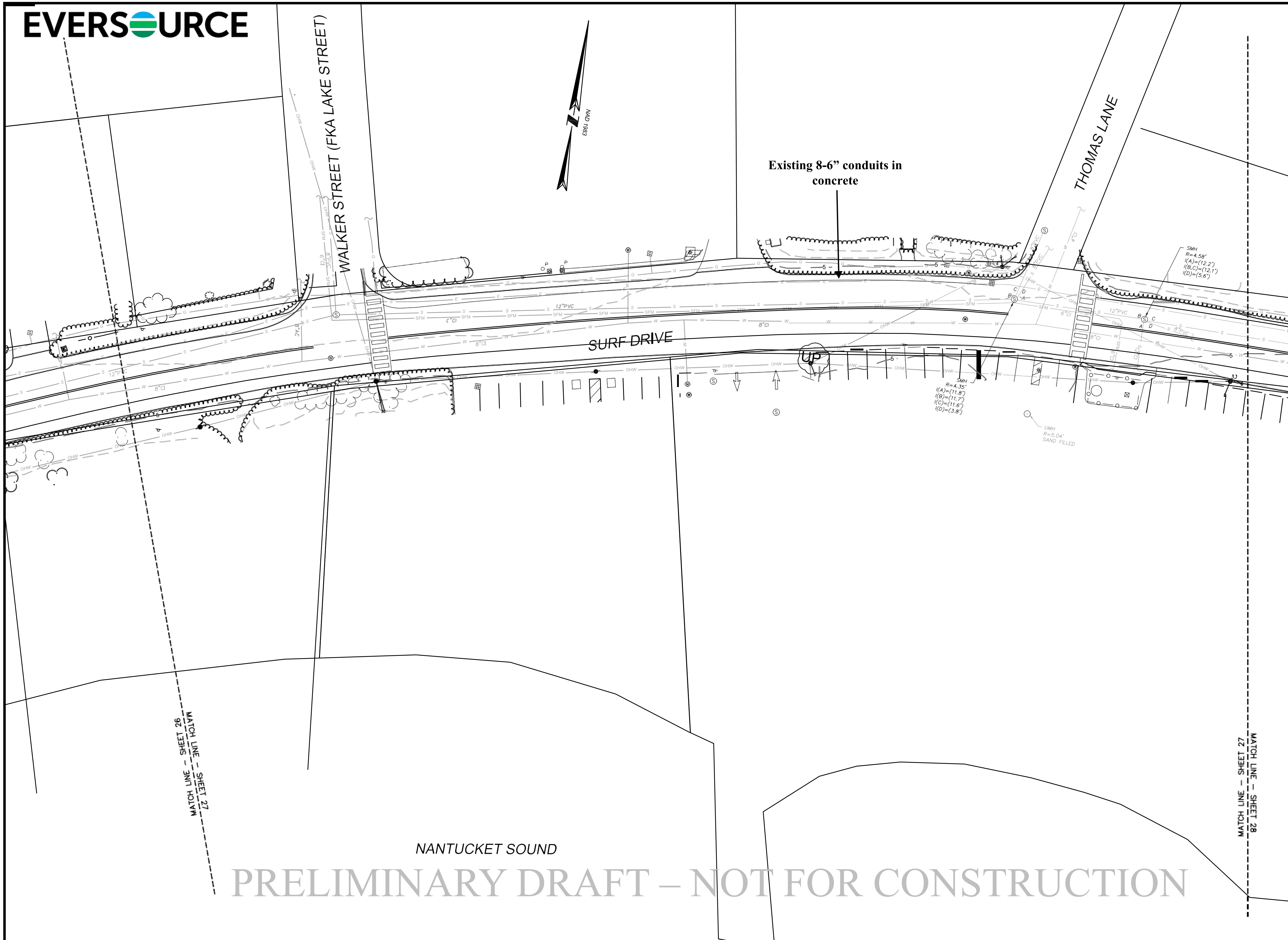
Falmouth, MA
Dan Frois, Engineer
Rev. 00, 05-03-2022
Page 3 of 5

PREPARED FOR:
EVERSOURCE ENERGY
247 STATION DRIVE
WESTWOOD, MA 02090

BSC GROUP
803 Summer Street
Boston, Massachusetts
02127
617 896 4300

SCALE: 1" = 20'

PROJ. MGR.: S.EWALD
FIELD: P.MCIVER
CALC./DESIGN: S COHEN
DRAWN: S COHEN
CHECK: S.EWALD
FILE: P:\1360300\S\Dr\1360300EC.dwg
DWG.: 1360300EC
JOB. NO: 1-3603.00
SHEET 26 OF 28



WO# 8622532
Engineering Details
Conduit Layout
New Line
4-70-70
22.8/13.2kV

SUPPLY LINE FROM STA 933 TO MARTHA'S VINEYARD

IN

FALMOUTH

MASSACHUSETTS
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EXISTING CONDITIONS
FEBRUARY 10, 2022

Falmouth, MA
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Page 4 of 5

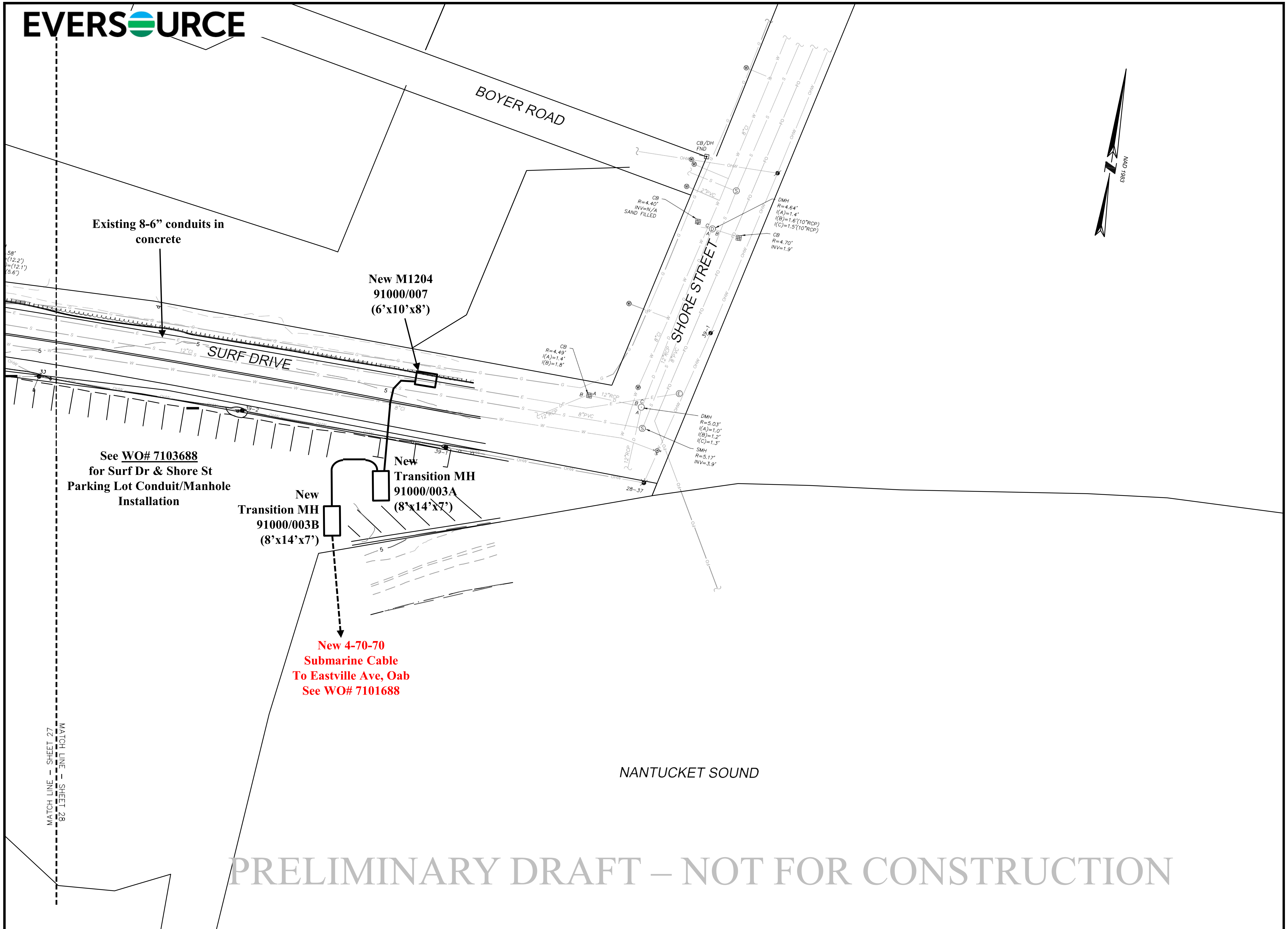
PREPARED FOR:
EVERSOURCE ENERGY
247 STATION DRIVE
WESTWOOD, MA 02090

BSC GROUP
803 Summer Street
Boston, Massachusetts
02127
617 896 4300

SCALE: 1" = 20'
0 2.5 5 10 METERS
0 10 20 40 FEET

PROJ. MGR.: S.EWALD		
FIELD: P.MCIVER		
CALC./DESIGN: S COHEN		
DRAWN: S COHEN		
CHECK: S.EWALD		
FILE: P:\1360300\S\Dr\1360300EC.dwg		
DWG.: 1360300EC		SHEET
JOB. NO: 1–3603.00		27 OF 28

EVERSOURCE



WO# 8622532
Engineering Details
Conduit Layout
New Line
4-70-70
22.8/13.2kV

SUPPLY LINE FROM STA 933 TO MARTHA'S VINEYARD

IN

FALMOUTH

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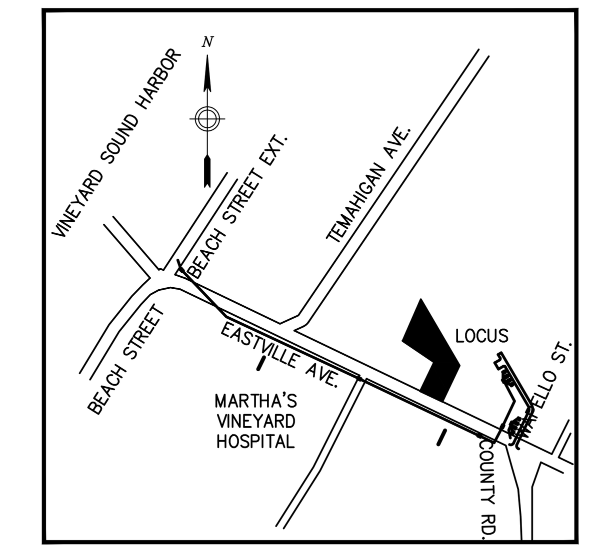
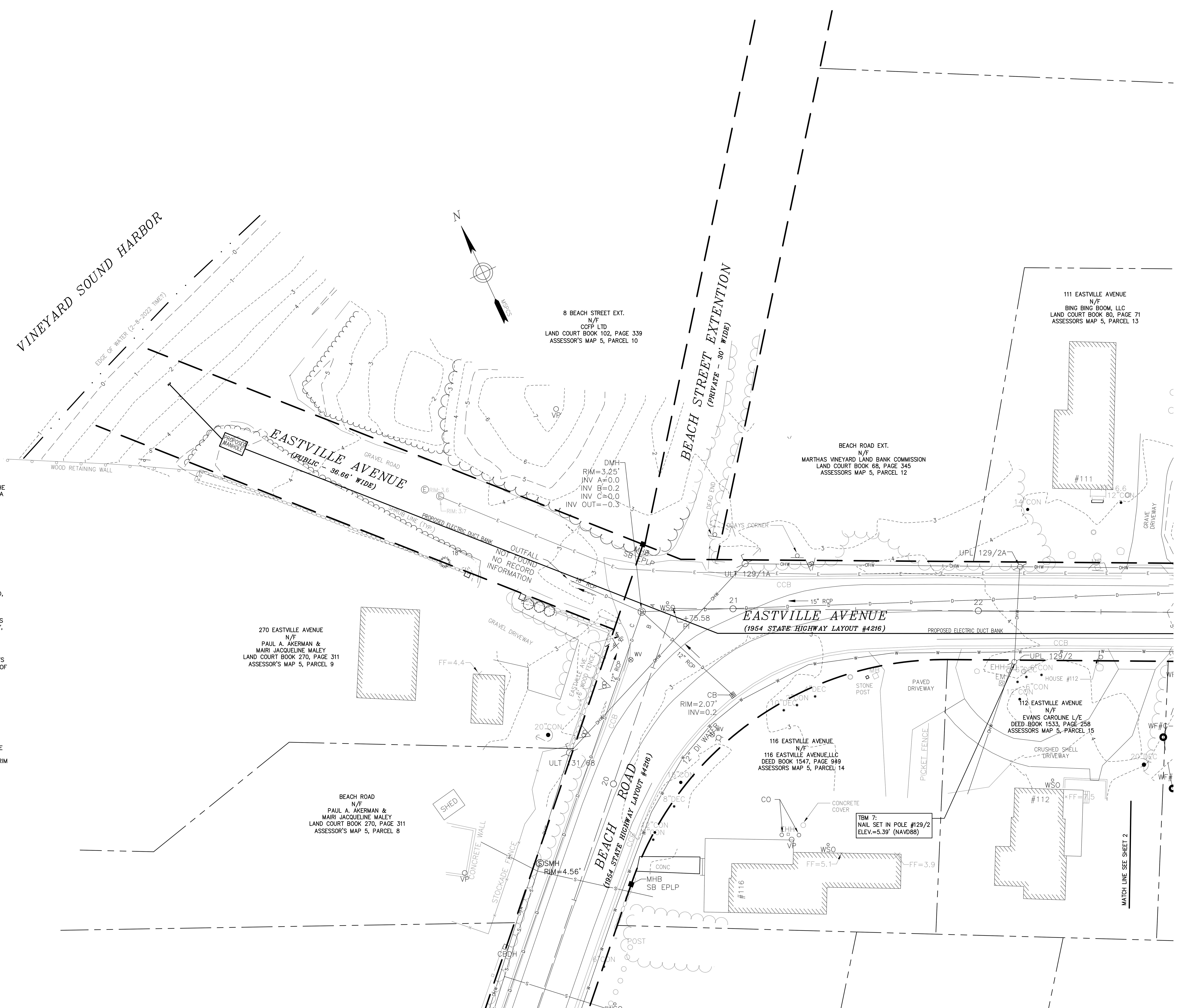
SHEET 28 OF 28



LOCUS MAP:
SCALE: 1" = 500'



LEGEND:

- PARCEL BOUNDARY LINE
- EASEMENT LINE
- ADJOINING PARCEL LINE
- STREET/HIGHWAY LINE
- ELECTRIC LINE
- SEWER LINE
- DRAINAGE LINE
- WATER LINE
- OVERHEAD UTILITY LINE
- TREE LINE
- MHB — MASS. HIGHWAY BOUND
- CBDH — CONCRETE BOUND WITH DRILL HOLE
- RB — REBAR
- X 100.0 — SPOT GRADE
- SIGN
- SIGN – DOUBLE POST
- WG — WATER GATE
- WSO — WATER SHUTOFF
- WF# — WETLAND FLAG
- CB — CATCH BASIN
- SEWER MANHOLE
- DRAINAGE MANHOLE
- EHH — ELECTRIC HAND HOLE
- ELECTRIC MANHOLE
- PINE TREE
- DECIDUOUS TREE
- 22"M — TREE
- ULT# — UTILITY POLE W/ LIGHT
- GUY WIRE
- VP — VENT PIPE
- MB — MAIL BOX

GENERAL NOTES:

1. THE EXISTING CONDITIONS INFORMATION SHOWN HEREON IS THE RESULT OF AN ON-THE-GROUND SURVEY PERFORMED BY CHA CONSULTING, INC. IN SEPTEMBER OF 2021 AND FEBRUARY OF 2022.
2. ALL DEED REFERENCES ARE TO DUKES COUNTY REGISTRY OF DEEDS UNLESS OTHERWISE NOTED.
3. TOPOGRAPHY, CONTOURS AND BENCHMARKS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). TEMPORARY BENCHMARKS, REFERENCED TO THE DATUM ARE INDICATED ON THE SURVEY.
4. IN THE EVENT THAT BENCHMARKS (TBM'S), ESTABLISHED FOR THIS PROJECT AND PUBLISHED ON THIS SURVEY ARE DESTROYED, NOT RECOVERABLE OR A DISCREPANCY IS FOUND, THE USER SHOULD NOTIFY THIS FIRM IN WRITING PRIOR TO COMMENCING OR CONTINUING ANY WORK.
5. THE PROJECT AREA IS LOCATED IN FLOOD ZONE "X & AE" AS SHOWN ON FLOOD INSURANCE RATE MAP FOR DUKES COUNTY, COMMUNITY PANEL NUMBER 25007C0104J, EFFECTIVE DATE JULY 20, 2016.
6. THE LOCUS PARCEL IS LOCATED IN THE TOWN OF OAK BLUFFS RESIDENTIAL R-1 DISTRICT (R-1) AS DEFINED BY THE TOWN OF OAK BLUFFS ZONING MAP.
7. MINIMUM SETBACK REQUIREMENTS ARE:

   FRONT SETBACK:...............20'
   SIDE SETBACK:..................20'
   REAR SETBACK:.................20'

8. LOCATION OF SUBSURFACE UTILITIES SHOWN HEREON ARE APPROXIMATE AND ADDITIONAL UTILITIES MAY EXIST THAT ARE NOT SHOWN ON THIS PLAN. LOCATIONS ARE COMPILED FROM UTILITY PLANS OF RECORD AND DIG-SAFE FIELD MARKINGS. RIM AND INVERT INFORMATION HAS BEEN COMPILED AND FIELD VERIFIED WHERE POSSIBLE. THIS INFORMATION IS NOT TO BE USED FOR CONSTRUCTION. PRIOR TO ANY CONSTRUCTION, CONTACT DIG-SAFE (1-800-344-7233) TO FIELD VERIFY LOCATION OF ALL UTILITIES.
9. PLAN REFERENCES:

   PLAN CASE FILE No. 365
   PLAN CASE FILE No. 224
   PLAN CASE FILE No. 113
   PLAN BOOK 17 PAGE 117

10 COASTAL DCPC INLAND ZONE LINES WERE COMPILED FROM DUKES COUNTY GIS MAPS.

11. RECORD OWNER

   ASSESSORS MAP 4 LOT 147-1
   EASTVILLE AVENUE
   NSTAR ELECTRIC COMPANY
   DEED BOOK 537 PAGE 213
   LOT 1 – PLAN CASE FILE NO. 224

CHA
141 Longwater Drive - Suite 104
Norwell, MA 02061
781.982.5400 • www.chacompanies.com

20 10 0 20 40

SCALE: 1" = 20'

PROGRESS PRINT

FEBRUARY 10, 2022

EVERSOURCE ENERGY
247 Station Drive, SE270 Westwood, MA 02090

EXISTING CONDITIONS PLAN

EASTVILLE AVENUE
OAK BLUFFS, MASSACHUSETTS

DRAWN BY: MWC	CHKD: CDE	APP: WJD	APP:
DATE: 02/10/2022	DATE:	DATE:	DATE:
H-SCALE: 1"=20'	SIZE: ARCH D	SURVEY JOB No.: S22627	
V-SCALE: N.T.S.	V.S.:	R.E.DWG.:	
R.E. PROJ. NUMBER:	SHEET 1 OF 3	CHA PROJECT #073038	

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SCALE: 1" = 20'

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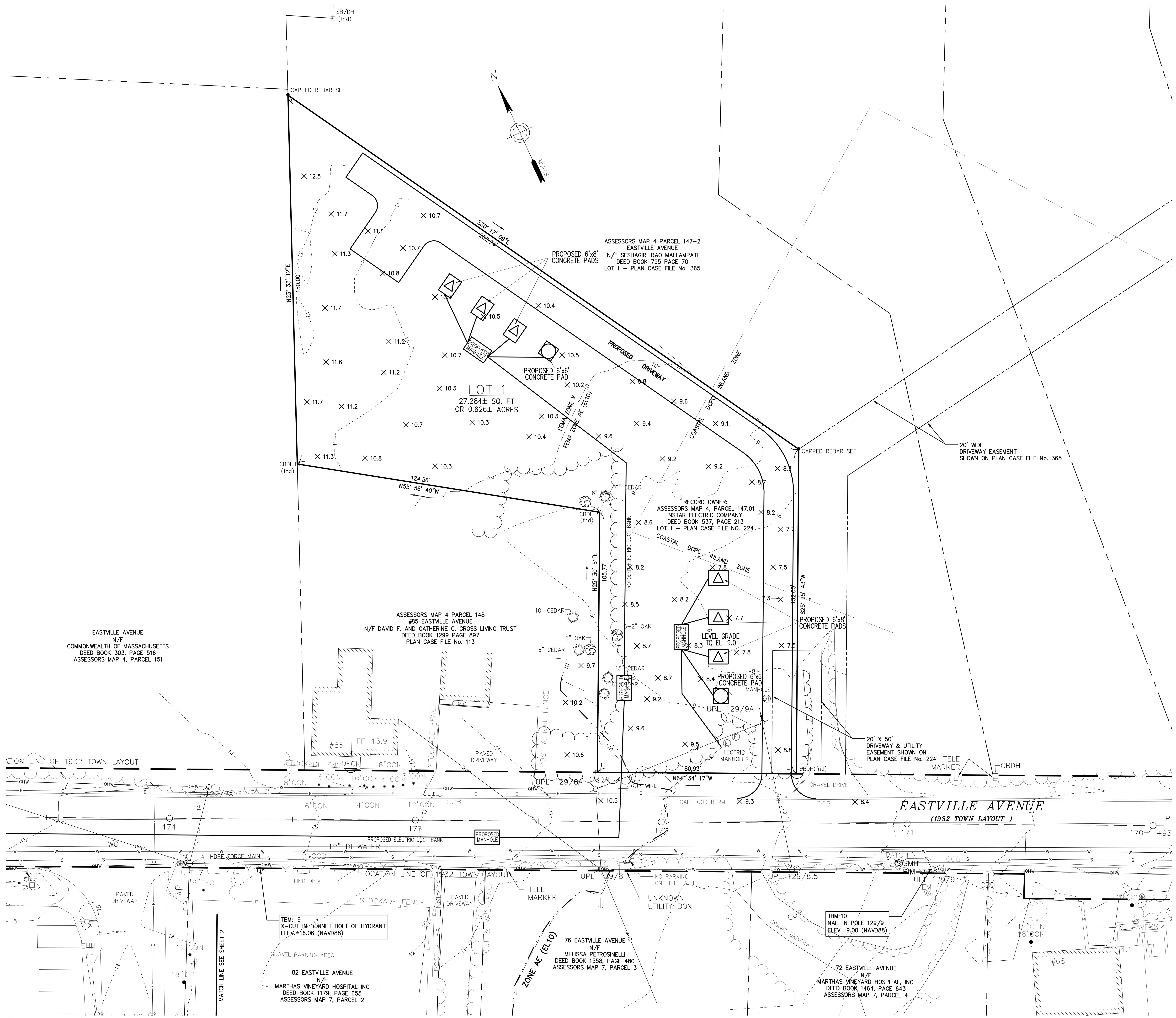
DRAWN BY: MWC	CHKD: CDE	APP: WJD	APP:
DATE: 02/10/2022	DATE:	DATE:	DATE:
H-SCALE: 1"=20'	SIZE: ARCH D	SURVEY JOB No.: S22627	
V-SCALE: N.T.S.	V.S.:	R.E.DWG.:	
R.E. PROJ. NUMBER:	SHEET 2 OF 3	CHA PROJECT #073038	



20 10 0 20 40

SCALE: 1" = 20'

PROGRESS PRINT

FEBRUARY 10, 2022

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OAK BLUFFS, MASSACHUSETTS

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R.E. PROJ. NUMBER:	SHEET 3 OF 3	CHA PROJECT #073038	