REPORT OF THE VIRGINIA MARINE RESOURCES COMMISSION

Response to Senate Joint Resolution 309 (2019)

TO THE GOVERNOR AND THE GENERAL ASSEMBLY OF VIRGINIA

SENATE DOCUMENT NO. 3

COMMONWEALTH OF VIRGINIA
RICHMOND
2020

COMMONWEALTH of VIRGINIA

Marine Resources Commission
Building 96
380 Fenwick Road
Fort Monroe, VA 23651

Matthew J. Strickler
Secretary of Natural Resources

Steven G. Bowman
Commissioner

January 8, 2020

MEMORANDUM

TO: The Honorable Ralph S. Northam
Members of the Virginia General Assembly

FROM: Steven G. Bowman

RE: Senate Joint Resolution 309
Report of the Virginia Marine Resources Commission

We are pleased to provide you with this report of the Virginia Marine Resources Commission (Commission). This report was prepared in response to SJ309 of the 2019 General Assembly Session, requesting the Commission to study the feasibility of creating protection zones for submerged fiber optic cables located along Virginia's shores. Our agency prepared this report after extensive meetings with stakeholders and staff from the City of Virginia Beach and two public hearings held at the Commission headquarters.

Enclosed for your review and consideration is the report that was prepared in response to this resolution. Please do not hesitate to contact us if we may be of further assistance.

Cc: The Honorable Matthew J. Strickler, Secretary of Natural Resources

PREFACE

Senator William R. DeSteph, Jr., patron of Senate Joint Resolution 309, requested the Virginia Marine Resources Commission to study the feasibility of creating protection zones for submerged fiber optic cables located along Virginia's shores. For the purposes of this study, and in accordance with Section 28.2-100 of the Code of Virginia, Virginia's shores were considered to be the State's Territorial sea within the belt, three nautical miles wide, that is adjacent to Virginia's Coast and seaward of the mean low-water mark.

As noted by the International Cable Protection Committee (ICPC) in their 2009 report regarding recommended actions for effective cable protection: Cable Protection Areas are typically offshore sectors or corridors, covering part of the route of one or more submarine cables, where some fishing and anchoring restrictions apply. The ICPC report stressed that a Cable Protection Area exists only where a relevant Cable Maintenance Authority (CMA: Any entity that has been formally contracted by a submarine cable owner to have prime accountability for the maintenance of the marine portion of the cable system) has (i) taken the initiative of requesting it, and (ii) been successful in such application. This normally requires a long and complex negotiation process with the local Authorities and those seabed users who may be affected by its establishment. * *ICPC Recommendation No. 6, Issue: 8. November 16, 2009 (enclosed)*

Virginia Marine Resources Commission (Commission) – Habitat Management Division Staff conducted the study, held public meetings, and prepared the report findings.

Representatives from the private and public sector were invited to attend two information and discussion meetings, held at the Commission's headquarters, regarding the topic. Representatives from the following companies and agencies attended and participated:

Tony Watkinson, Justin Worrell - Virginia Marine Resources Commission
Lyle Varnell, Virginia Institute of Marine Science
Wilson Palmore, Sandra Ragan, Colonel Carlton Dunn - Virginia National Guard
Curtis Davey, Department of Environmental Quality
Jim Casey, Catherine Creese - Department of the Navy
Casey Reeves, Leighann Brandt - Bureau of Ocean Energy Management
Rob Mooney, Department of Homeland Security
Don Adams, Debra Bryan, Jamie Weaver, Darrell Riddick - City of Virginia Beach
George Janek, Nicole Woodward, Mike Anderson, Matt Donaldson,
Linda Doherty-Guenther - Army Corps of Engineers
Al Christopher, Department of Mines, Minerals and Energy
Scott Lawton, Dominion Energy
Kathryn Waters, SubCom
Alex Gibson, Tetra Tech
Neil Gascon, Telxius Cable USA

Accordingly, the Commission's Habitat Management Division concluded that the creation of such fiber optic cable protection zones was unnecessary, and would not benefit private applicants / permittees nor the governmental regulatory agencies processing such applications for permits. The current Joint Permit Application and submittal and review process was deemed adequate for both the applicants and regulators alike.

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EXECUTIVE SUMMARY

Virginia Marine Resources Commission (Commission) staff, in accordance with Sections 28.2-1203 and 28.2-1204 of the Code of Virginia, has processed multiple applications for submerged fiber optic telecommunication lines and one submerged energy cable project within the last five years – a copy of our most recent draft permit to encroach upon State-owned submerged lands, just approved by the Commission on December 17, 2019, and issued to GU Holdings Inc., is included in this report as an example. Given that the projects exceeded $500,000 in cost, they were unanimously approved by our full Commission at previous monthly public hearings.

Every proposal came to the Commission via the submittal of a standard Joint Permit Application (JPA), which is reviewed concurrently by the local government (City of Virginia Beach for these projects), and the U.S. Army Corps of Engineers. Each application must receive an exemption or approval from all three regulatory entities. Furthermore, the Commission will not consider permitting such a request without proof of the City's approval or exemption.

The Commission staff subjected all of the application requests to a standard public and agency interest review. This included developing a formal project description for a local newspaper advertisement and notifying all adjoining property owners. The goal of such a thorough public and agency interest review is to ensure that all concerns regarding the proposals are received and addressed. Commission staff also contacted various State and Federal agencies requesting comments or concerns on the proposals. Given the proximity of these projects to nearby military bases in Virginia Beach, notifications were also sent to the Virginia National Guard and the Department of the Navy. With these specific projects, we wanted to ensure that any perceived or direct impact to fisheries resources, commercial or federal navigation, military resources, sand mining resources, or utility conflicts would be immediately identified. The identification of any "user-conflicts" would have initiated an immediate review and discussion with the applicant and affected stakeholder.

Requests to impact State-owned submerged lands are never processed by the Commission staff in a vacuum – all proposed impacts are fully advertised and shared publically to aid in the formal Commission's ultimate decision of issuing a permit. Although there were questions with each application, including requests for clarification and additional information, Commission staff never received any objections or protests to the proposals. After exhausting the JPA review process for all of the referenced applications, Commission staff was fully comfortable in recommending that the full Commission approve each request for a permit to encroach upon State-owned submerged bottomlands. Every request was ultimately approved by the full Commission as consent agenda items during public hearings. To the Commission's staff knowledge, there were never any applicant complaints regarding the process or length of the application review / permitting process.

Throughout the various application reviews and the meetings and discussions held pursuant to Senate Joint Resolution No. 309, Commission staff never perceived that the current JPA review and permit process is too difficult, confusing, or overly complicated. We are not of the opinion that creating some type of fiber optic cable protection zone would benefit either commercial applicants or government regulators. To the contrary, an attempt to establish such a protection zone may generate additional concerns or problems regarding its identification, security, and potential cable loading. The Commission just approved a new trans-Atlantic fiber optic cable to land in Virginia Beach; recently a JPA was submitted for four new telecom cable portals to be installed along the coast of Virginia Beach; and this past summer a prospective wind-energy company contacted the Commission regarding a future submerged transmission connection into Virginia Beach. A formal fiber optic cable protection zone would be extremely difficult to legally manage and incorporate all of the existing cables and/or future proposals, especially given that existing lines and future proposals are located at different points along the City's Atlantic shoreline. Furthermore, from the local City of Virginia Beach perspective, such a formal cable protection zone may adversely affect the City's ability to attract future telecommunication partners and/or utilize existing upland infrastructure.

At least to this point in our Commonwealth's brief history of processing such submerged fiber optic cable requests, the standard JPA review process has efficiently served its purpose, and facilitated the appropriate permitting of submerged fiber optic cables to enter into the Commonwealth through the Atlantic Ocean and the City of Virginia Beach.

If the General Assembly feels that it is absolutely necessary to establish additional measures to safeguard existing or future submerged fiber optic cables, a modification to Section 28.2-106.2 of the Code of Virginia may be an option. Currently this Code Section allows the Commission authorization "to establish, by regulation, state water safety zones and restricted areas within the tidal waters of the Commonwealth wherein public access shall be restricted or prohibited in the interest of public safety." This could be amended to also identify protection zones for telecommunication cables in specific areas, and incorporate such patrols, restrictions, or enforcement as the Commonwealth or Commission deems necessary.

Public Meeting
Minutes

Discussion of Senate Joint Resolution No. 309 – requesting the Virginia Marine Resources Commission to study the feasibility of creating protection zones for submerged fiber optic cables located along Virginia's shores.

May 30, 2019
10:00AM
Virginia Marine Resources Commission
Fort Monroe Office
Commission Meeting Room

Commission Staff present: Tony Watkinson and Justin Worrell

The meeting was attended by 18 representatives from the Navy, Army Corps of Engineers, City of Virginia Beach, Department of Environmental Quality, Department of Minerals, Mines and Energy, and private industry.

Commission staff provided a PowerPoint presentation that provided a quick summary of previous Habitat Management permit actions related to three fiber optic projects and one energy project, all designed to tie into Virginia Beach by way of submerged connections through the Atlantic Ocean.

Commission staff explained that none of the recent applications for the installation of fiber optic lines required any formal designation of such protection zones, however we felt that the City, nearby military bases, and the nearby public at large were sufficiently made aware of the requests and given the opportunity to comment or protest. All of the applications were ultimately permitted by the Commission with the requirement for post-installation surveys.

An open forum discussion commenced – with the following points identified and brainstormed:

- What are protection zones for submerged fiber optic cables?
- Are protection zones necessary for regulatory permitting?
- If necessary, how should protection zones be designated?
- Should existing permitted cables be identified?
- Would an established protection zone expedite the regulatory permitting process?

Open discussion also centered around the selection process of the "preferred corridor" that most projects seem to be following. Questions were raised regarding a maximum limit of installations in a bundled area, and how close individual lines could be installed adjacent to one another. Discussion also included ideas that clustering lines in one preferred corridor may help de-conflict from other nearby uses. There were also concerns expressed about the safety of installed lines after publically identifying such a corridor or protection zone.

Commission staff advised that a second public meeting would be scheduled later in the summer to continue the discussion and ensure that additional parties could participate.

May 30, 2019

SENATE JOINT RESOLUTION NO. 309
Requesting the Virginia Marine Resources Commission to study the feasibility of creating protection zones for submerged fiber optic cables located along Virginia's shores.

I. Recent VMRC permit action

II. What are protection zones for submerged fiber optic cables?

III. Are protection zones necessary for regulatory permitting?

IV. How should protection zones be designated or identified?

V. How should existing cables be designated?

VI. Additional Local, State, and Federal government regulatory requirements

VII. Commercial applicant concerns

Public Meeting
Minutes

Discussion of Senate Joint Resolution No. 309 – requesting the Virginia Marine Resources Commission to study the feasibility of creating protection zones for submerged fiber optic cables located along Virginia's shores.

July 31, 2019
10:00AM
Virginia Marine Resources Commission
Fort Monroe Office
Commission Meeting Room

Commission Staff present: Tony Watkinson and Justin Worrell

The meeting was attended by nine representatives from the Virginia National Guard, Department of the Navy, Department of Environmental Quality, Department of Homeland Security, Virginia Institute of Marine Science, Bureau of Ocean Energy Management, and private industry (Tetra Tech).

Commission staff provided a PowerPoint presentation that provided a quick summary of previous Habitat Management permit actions related to three fiber optic projects and one energy project, all designed to tie into Virginia Beach by way of submerged connections through the Atlantic Ocean.

Commission staff explained that none of the previous applications for the installation of fiber optic lines required any formal designation of such protection zones, however we felt that the City, nearby military bases, and the nearby public at large were sufficiently made aware of the requests and given the opportunity to comment or protest. All of the applications were ultimately permitted by the Commission with the requirement for post-installation surveys.

An update was given regarding the recent receipt of a new trans-Atlantic fiber optic line application (proposed to connect France to Virginia Beach), and a recent geotechnical surveying permit issued to a company designing a wind energy project off the North Carolina coast (they are considering connecting into the Sandbridge area of Virginia Beach).

Representatives from both the Navy and the National Guard questioned how many potential fiber optic cable lines could connect into the Virginia Beach oceanfront. Is there, or should there be, a maximum number of lines that could be installed in a given location, i.e. the Croatan Beach area adjacent to Camp Pendleton?

Another topic discussed by the group: "what would a protection zone look like – would it be just an area on charts, identifying where lines exist?" Moreover, how is this any different from the information typically required through regulatory permits and post-installation surveys. Questions were also raised regarding whether such protection zones should even be highlighted on navigational charts.

The Bureau of Ocean and Energy Management (BOEM) representative commented that designating specific corridors may have unintended consequences, and may draw specific and unnecessary attention. There were also questions and discussion about the BOEM review process of fiber optic proposals channelward of the three nautical mile limit of Virginia's territorial sea.

The Virginia Institute of Marine Science commented that if multiple 'bundled' lines are installed in one such protective zone, they might need to research the possibility of impacts from concentrated Electric and Magnetic Field influences.

There was also broad discussion related to the purpose and need (if any) of establishing fiber optic cable protection zones – is it intended primarily to improve the efficiency of the current regulatory process, or to avoid current marine user conflicts, or both.

Commission staff advised that if a third public meeting is necessary, all participants would be notified of the scheduled date and time.

July 31, 2019

SENATE JOINT RESOLUTION NO. 309
Requesting the Virginia Marine Resources Commission to study the feasibility of creating protection zones for submerged fiber optic cables located along Virginia's shores.

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II. What are protection zones for submerged fiber optic cables?

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V. How should existing cables be designated?

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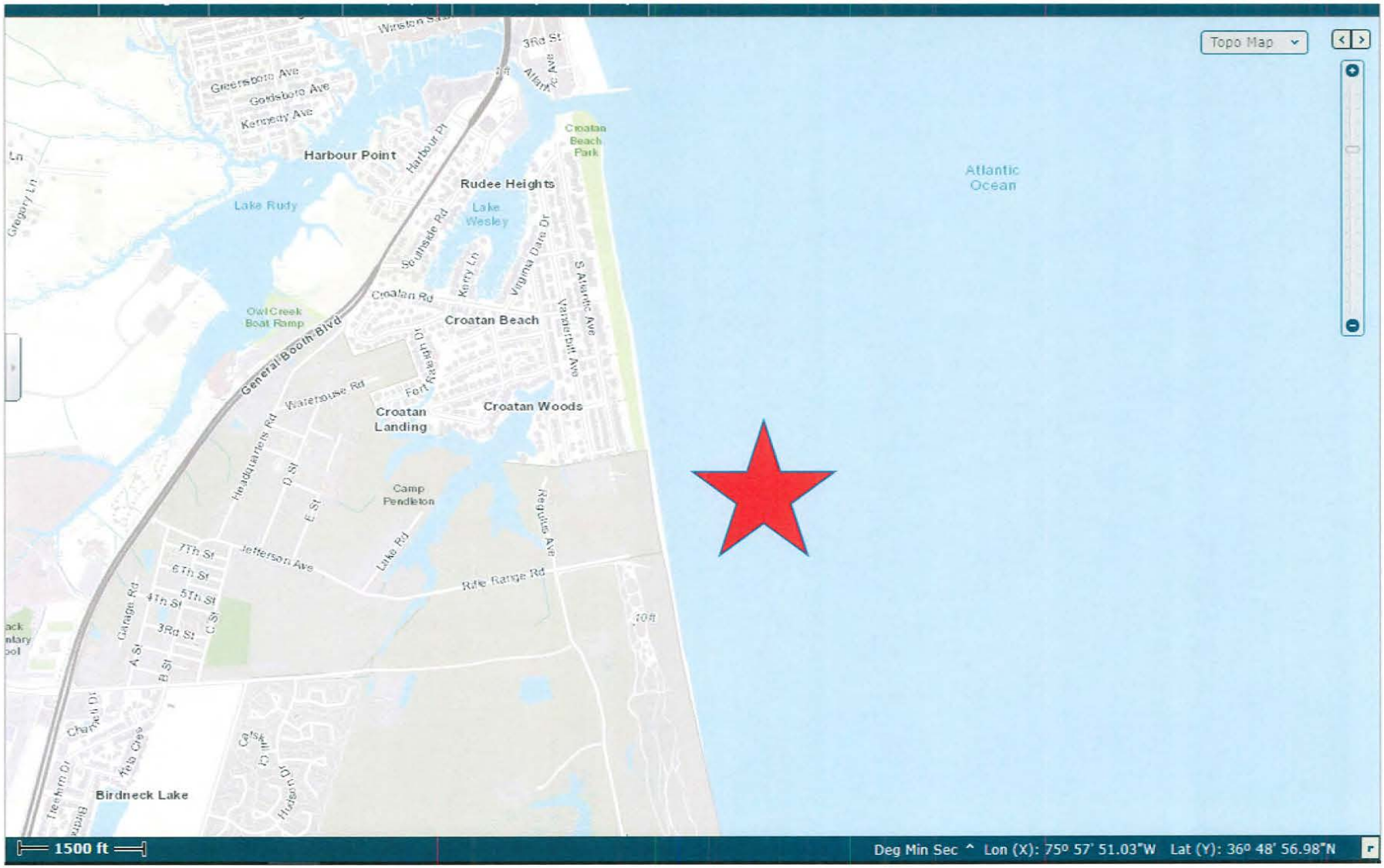
VII. Commercial applicant concerns

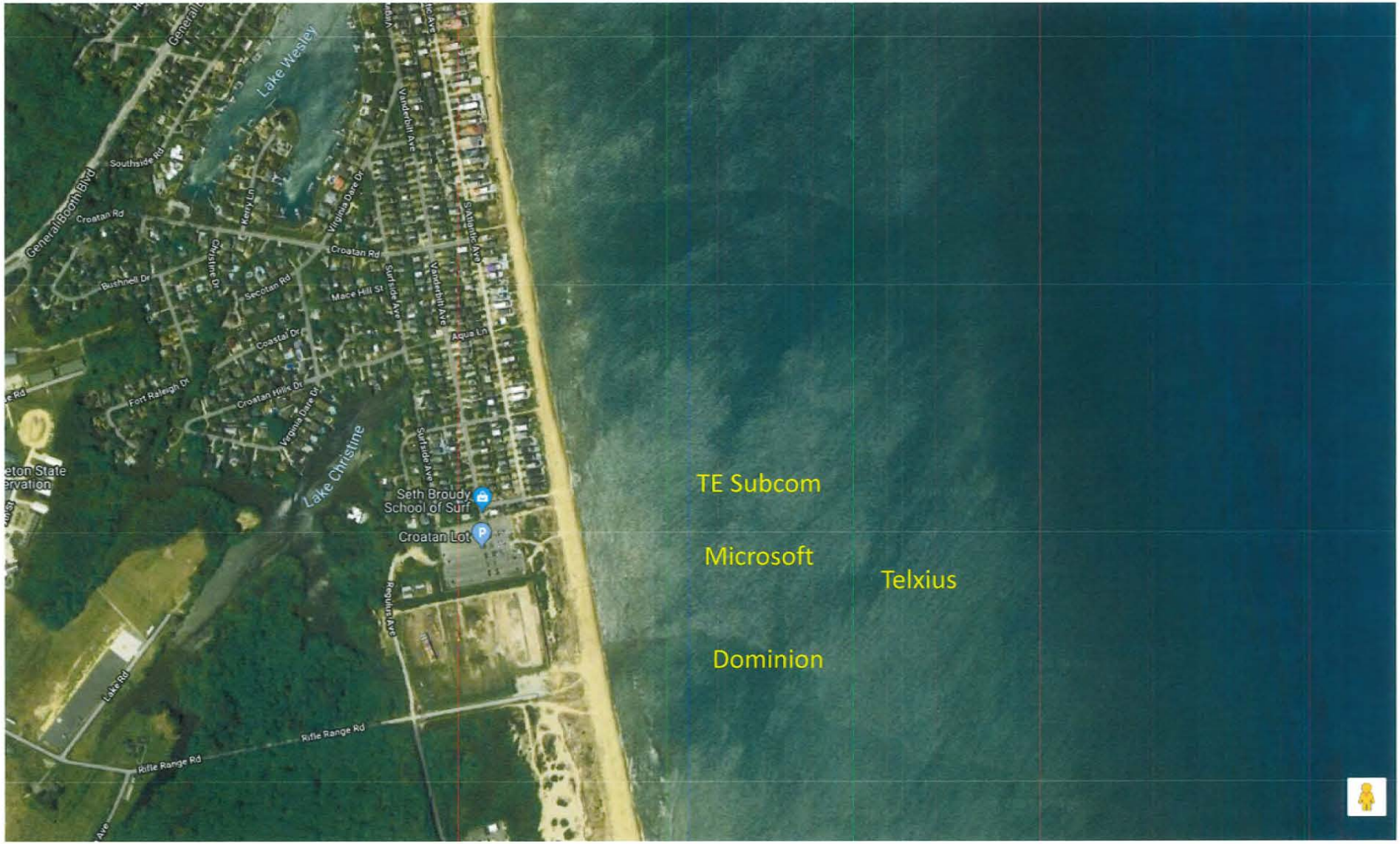
SENATE JOINT RESOLUTION NO. 309

Requesting the Virginia Marine Resources Commission to study the feasibility of creating protection zones for submerged fiber optic cables located along Virginia's shores.

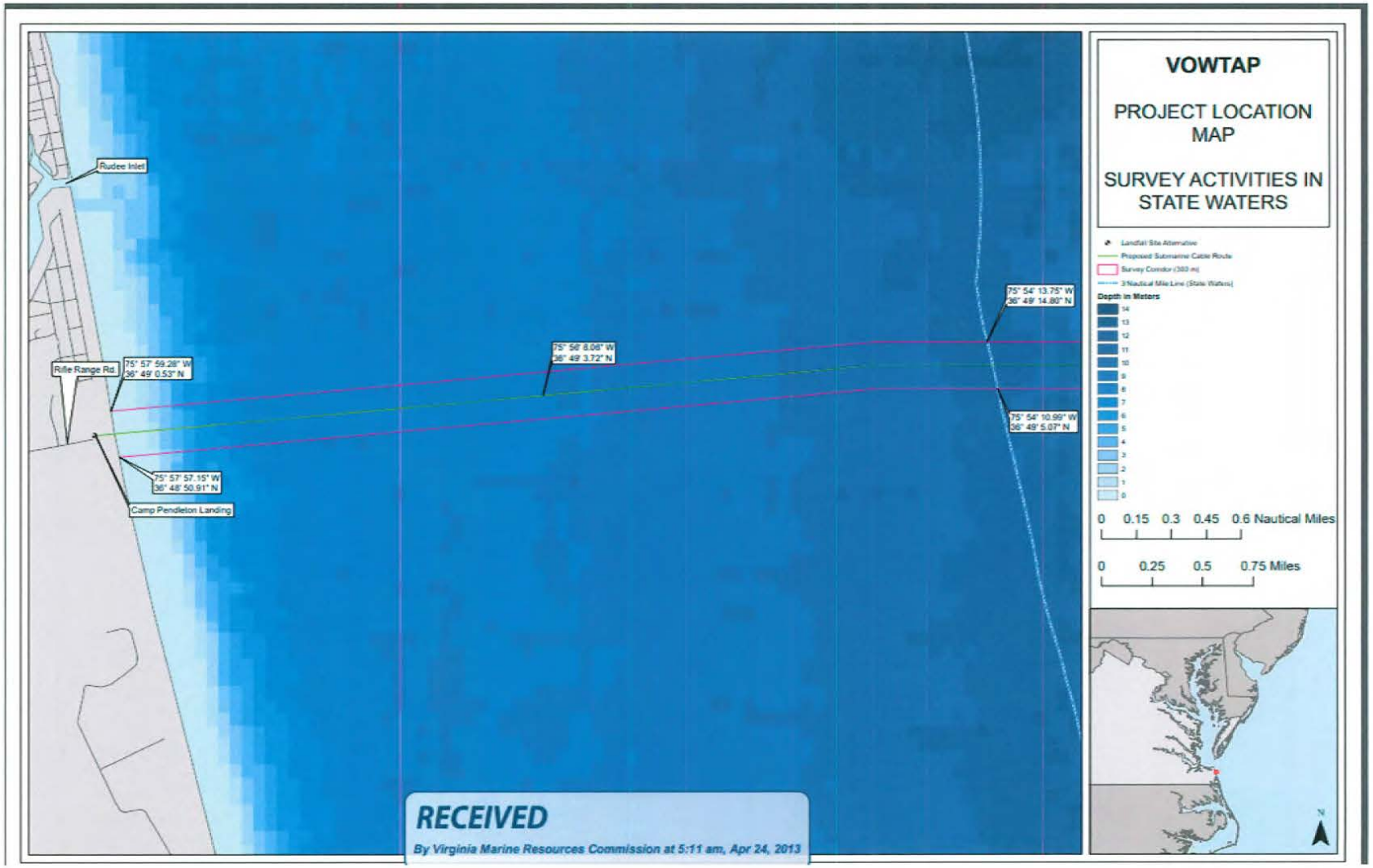
VMRC Permit Actions

VMRC #14-0968, Dominion Virginia Electric
VMRC #16-1205, Microsoft Infrastructure
VMRC #16-1304, TELXIUS
VMRC #16-1869, TE Subcom (draft permit status - not executed)

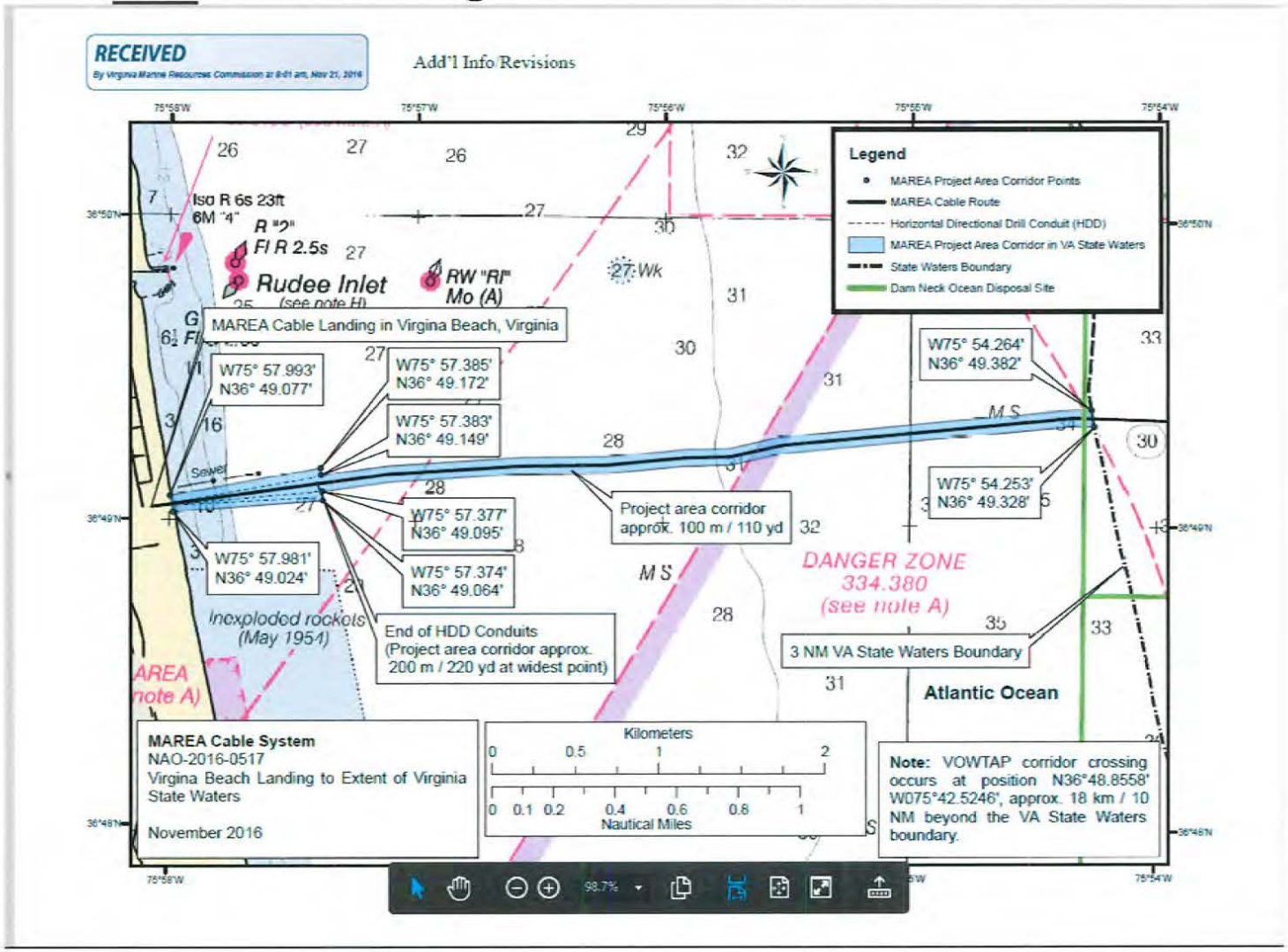

Topo Map
Harbour Point
Rudee Heights
Lake Rudy
Lake Wesley
Croatan Beach
Croatan Woods
Croatan Landing
Croatan Beach Park
Atlantic Ocean
Owl Creek Boat Ramp
Camp Pendleton
Birdneck Lake
Greensboro Ave
Goldsboro Ave
Kennedy Ave
Harbour Pl
Scottsdale Rd
Croatan Rd
Kerry Ln
Virginia Dare Dr
S Atlantic Ave
Vanderbilt Ave
Fort Raleigh Dr
Waterhouse Rd
General Booth Blvd
Headquarters Rd
D St
E St
Lake Rd
Jefferson Ave
Rifle Range Rd
Regulus Ave
77th St
67th St
57th St
47th St
3Rd St
A St
B St
C St
Garage Rd
Church Dr
Heatherm Dr
Catskill Ct
Hudson Dr
1500 ft
Deg Min Sec ^ Lon (X): 75° 57' 51.03"W Lat (Y): 36° 48' 56.98"N


Lake Wesley
Lake Christine
General Booth Blvd
Southside Rd
Croatan Rd
Bushnell Dr
Secotan Rd
Coastal Dr
Fort Raleigh Dr
Croatan Hills Dr
Virginia Dare Dr
Kerry Ln
Christine Dr
Mace Hill St
Surfside Ave
Vanderbilt Ave
S Atlantic Ave
Aqua Ln
Regulus Ave
Lake Rd
Rifle Range Rd
Seth Broudy School of Surf
Croatan Lot
TE Subcom
Microsoft
Telxius
Dominion

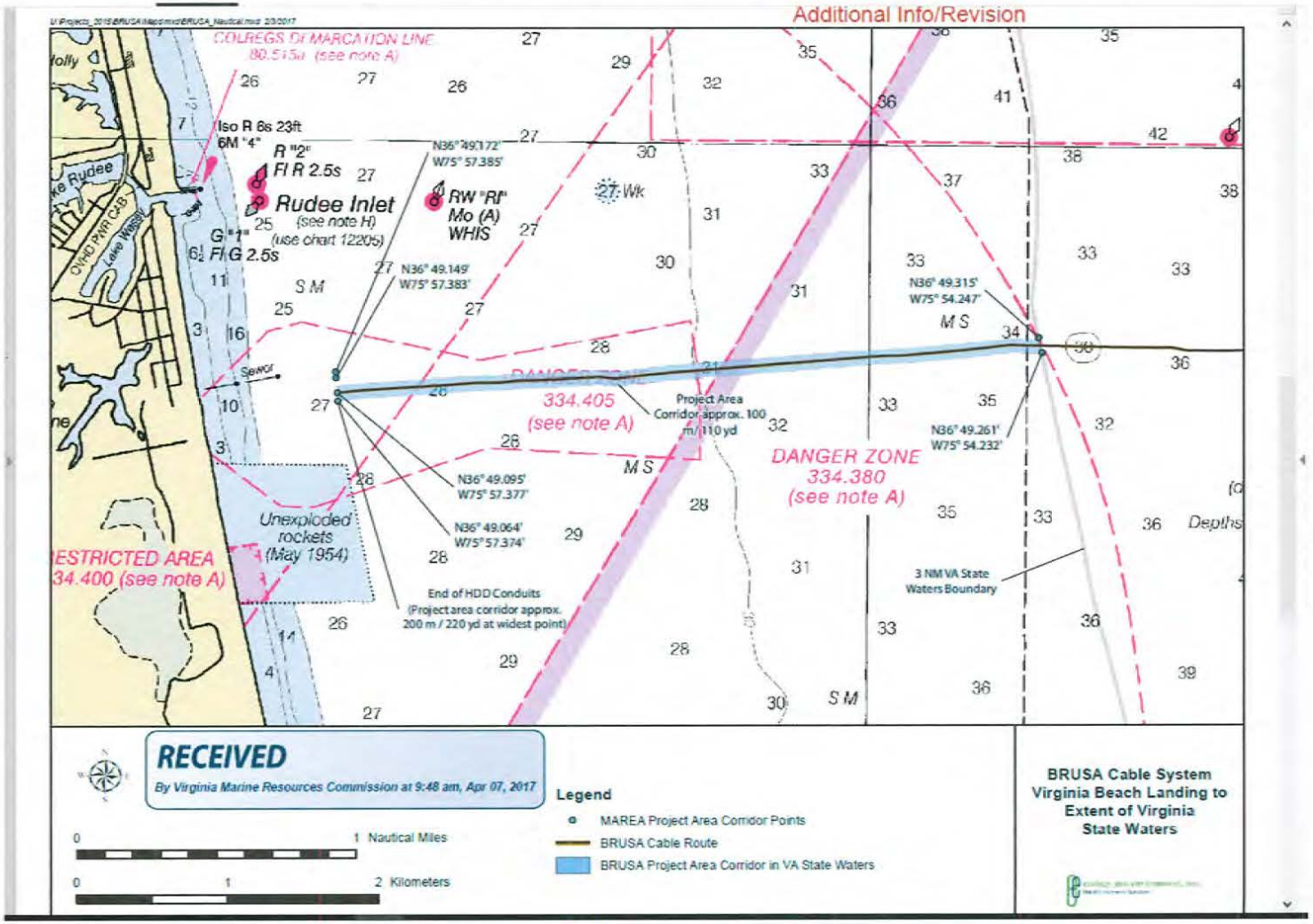
Permit drawing for Dominion, VMRC #14-0968



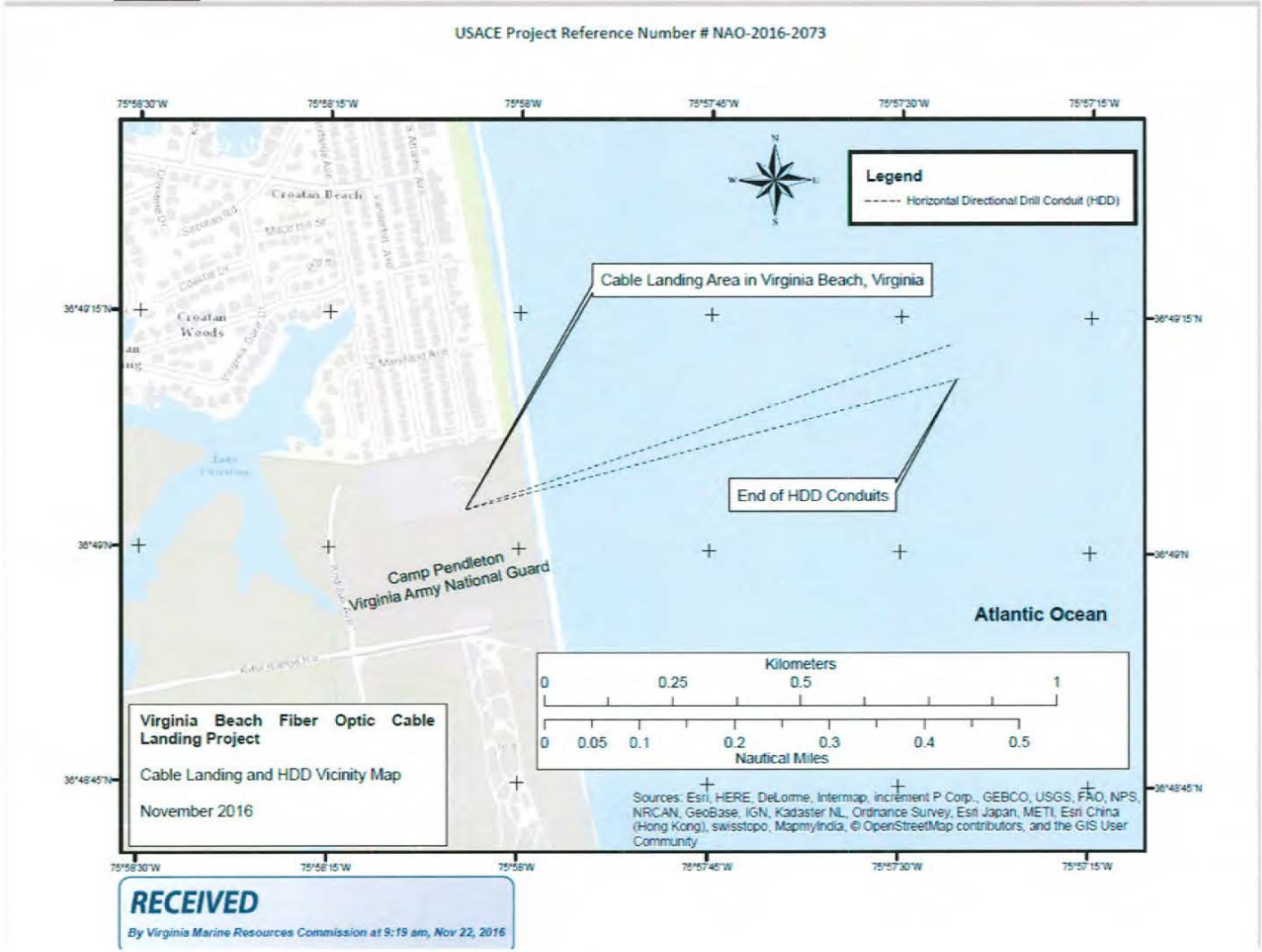
Permit drawing for Microsoft, VMRC #16-1205

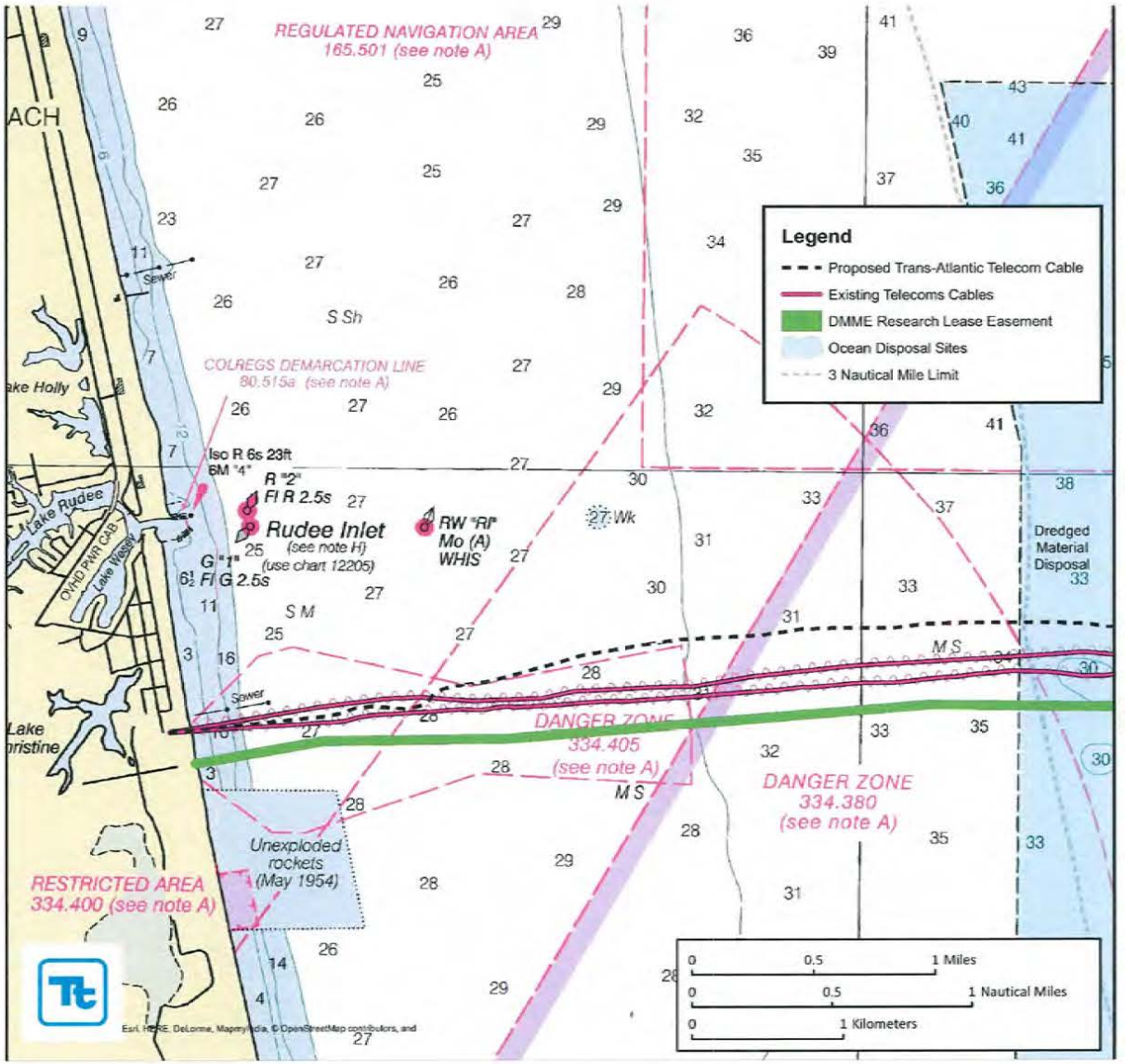


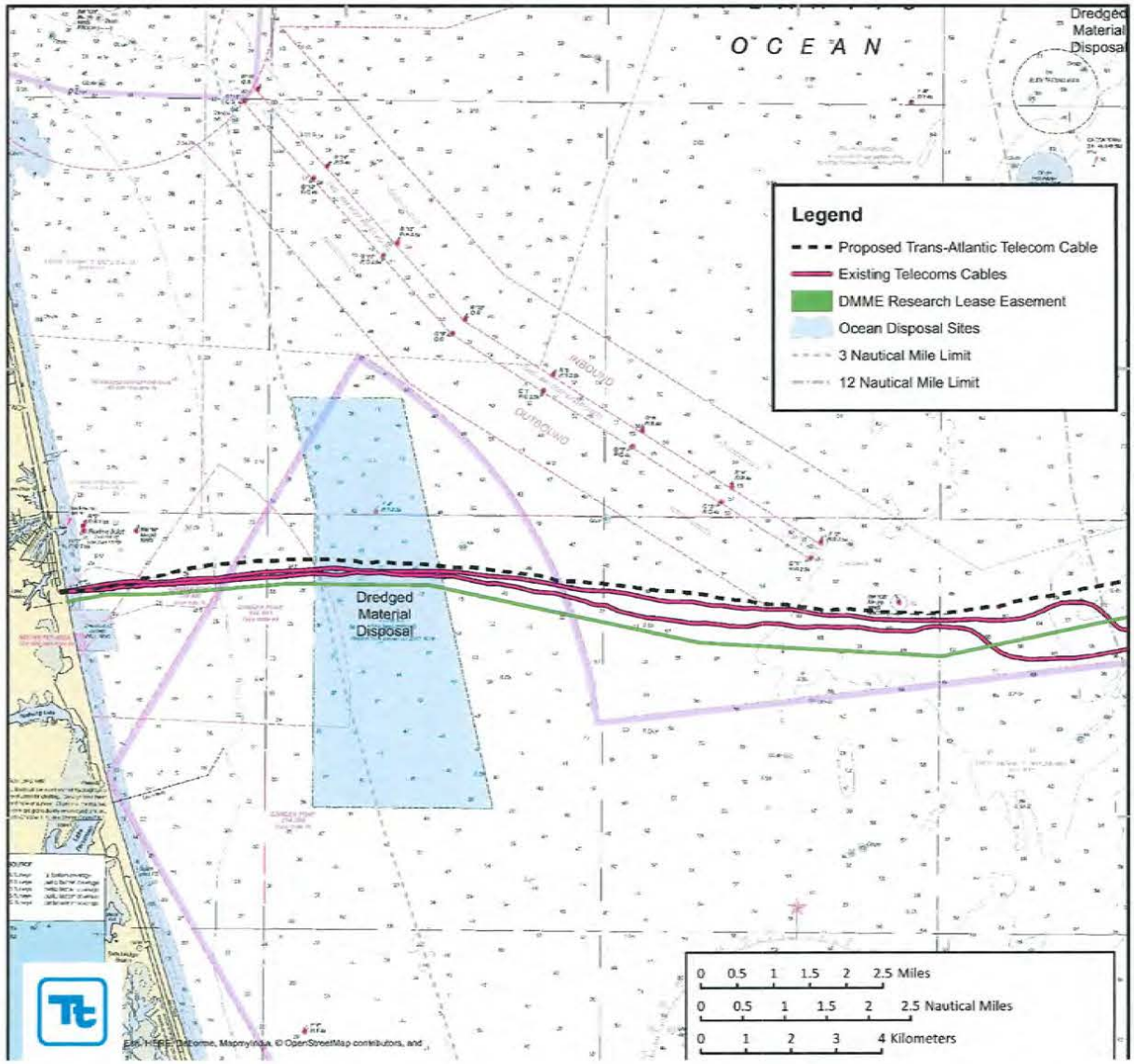
Permit drawing for TELXIUS, VMRC #16-1304



Permit drawing for TE Subcom, VMRC #16-1869




REGULATED NAVIGATION AREA
165.501 (see note A)
COLREGS DEMARCATION LINE
80.515a (see note A)
Iso R 6s 23ft
6M "4"
R "2"
Fl R 2.5s
Rudee Inlet
(see note H)
(use chart 12205)
G "1"
Fl G 2.5s
RW "RI"
Mo (A)
WHIS
Lake Rudee
OVHD PWR CAB
Lake Wasp
Lake Holly
Lake Christine
Sewer
S Sh
S M
M S
Wk
DANGER ZONE
334.405
(see note A)
DANGER ZONE
334.380
(see note A)
Unexploded
rockets
(May 1954)
RESTRICTED AREA
334.400 (see note A)
Dredged
Material
Disposal
Legend
Proposed Trans-Atlantic Telecom Cable
Existing Telecoms Cables
DMME Research Lease Easement
Ocean Disposal Sites
3 Nautical Mile Limit
0 0.5 1 Miles
0 0.5 1 Nautical Miles
0 1 Kilometers


O C E A N
Dredged Material Disposal
Legend
Proposed Trans-Atlantic Telecom Cable
Existing Telecoms Cables
DMME Research Lease Easement
Ocean Disposal Sites
3 Nautical Mile Limit
12 Nautical Mile Limit
Dredged Material Disposal
0 0.5 1 1.5 2 2.5 Miles
0 0.5 1 1.5 2 2.5 Nautical Miles
0 1 2 3 4 Kilometers

COMMONWEALTH OF VIRGINIA
MARINE RESOURCES COMMISSION
PERMIT

The Commonwealth of Virginia, Marine Resources Commission, hereinafter referred to as the Commission, on this 17th day of December 2019 hereby grants unto:

GU Holdings Inc.
1600 Amphitheatre Parkway
Mountain View, CA 94043

hereinafter referred to as the Permittee, permission to:

X Encroach in, on, or over State-owned subaqueous bottoms pursuant to Chapter 12, Subtitle III, of Title 28.2 of the Code of Virginia.

___ Use or develop tidal wetlands pursuant to Chapter 13, Subtitle III, of Title 28.2 of the Code of Virginia.

Permittee is hereby authorized to install a trans-Atlantic fiber optic telecommunications cable extending from a previously permitted and existing submerged conduit within the Atlantic Ocean adjacent to 920 Vanderbilt Avenue (Croatan Beach Municipal Parking Lot) in Virginia Beach, and extending to the Commonwealth's three (3) nautical mile boundary of State-owned submerged lands. The submerged cable will be installed by a cable sea plow to a depth of approximately 1.0 meter below the seabed. All activities authorized herein shall be accomplished in conformance with the plans and drawings dated received September 17, and October 22, 2019, which are attached and made a part of this permit.

This permit is granted subject to the following conditions:

(1) The work authorized by this permit is to be completed by **December 17th, 2022.** The Permittee shall notify the Commission when the project is completed. The completion date may be extended by the Commission in its discretion. Any such application for extension of time shall be in writing prior to the above completion date and shall specify the reason for such extension and the expected date of completion of construction. All other conditions remain in effect until revoked by the Commission or the General Assembly.

(2) This permit grants no authority to the Permittee to encroach upon the property rights, including riparian rights, of others.

(3) The duly authorized agents of the Commission shall have the right to enter upon the premises at reasonable times, for the purpose of inspecting the work being done pursuant to this permit.

(4) The Permittee shall comply with the water quality standards as established by the Department of Environmental Quality, Water Division, and all other applicable laws, ordinances, rules and regulations affecting the conduct of the project. The granting of this permit shall not relieve the Permittee of the responsibility of obtaining any and all other permits or authority for the projects.

(5) This permit shall not be transferred without written consent of the Commissioner.

(6) This permit shall not affect or interfere with the right vouchsafed to the people of Virginia concerning fishing, fowling and the catching of and taking of oysters and other shellfish in and from the bottom of acres and waters not included within the terms of this permit.

(7) The Permittee shall, to the greatest extent practicable, minimize the adverse effects of the project upon adjacent properties and wetlands and upon the natural resources of the Commonwealth.

(8) This permit may be revoked at any time by the Commission upon the failure of the Permittee to comply with any of the terms and conditions hereof or at the will of the General Assembly of Virginia.

(9) There is expressly excluded from the permit any portion of the waters within the boundaries of the Baylor Survey.

(10) This permit is subject to any lease of oyster planting ground in effect on the date of this permit. Nothing in this permit shall be construed as allowing the Permittee to encroach on any lease without the consent of the leaseholder. The Permittee shall be liable for any damages to such lease.

(11) The issuance of this permit does not confer upon the Permittee any interest or title to the beds of the waters.

(12) All structures authorized by this permit, which are not maintained in good repair, shall be completely removed from State-owned bottom within three (3) months after notification by the Commission.

(13) The Permittee agrees to comply with all of the terms and conditions as set forth in this permit and that the project will be accomplished within the boundaries as outlined in the plans attached hereto. Any encroachment beyond the limits of this permit shall constitute a Class 1 misdemeanor.

(14) This permit authorizes no claim to archaeological artifacts that may be encountered during the course of construction. If, however, archaeological remains are encountered, the Permittee agrees to notify the Commission, who will, in turn notify the Department of Historic Resources. The Permittee further agrees to cooperate with agencies of the Commonwealth in the recovery of archaeological remains if deemed necessary.

(15) The Permittee agrees to indemnify and save harmless the Commonwealth of Virginia from any liability arising from the establishment, operation or maintenance of said project.

The following special conditions are imposed on this permit:

(16) The yellow placard accompanying this permit document must be conspicuously displayed at the work site.

(17) Permittee agrees to notify the Commission a minimum of 15 days prior to the start of the activities authorized by this permit.

Description of Fees	Amount	Unit of Measure	Rate	Total	Frequency	After-The-Fact
Encroachment Royalty	15488.00	Linear Feet	$3.000	$46464.00	One-Time	
Permit Fee				$100.00	One-Time	
Total Permit Fees				**$46,564.00**		

This permit consists of 8 Pages

PERMITTEE

Permittee's signature is affixed hereto as evidence of acceptance of all of the terms and conditions herein.

In cases where the Permittee is a corporation, agency or political jurisdiction, please assure that the individual who signs for the Permittee has proper authorization to bind the organization to the financial and performance obligations which result from activity authorized by this permit.

PERMITTEE
Accepted for

day of , 20 By_____
(Name) (Title)

State of _____
City (or County) of _____, to-wit:

I, _____ a Notary Public in and for said City (or County) and State hereby certify that_____, Permittee, whose name is signed to the foregoing, has acknowledged the same before me in my City (or County) and State aforesaid.

Given under my hand this day of , 20
My Commission Expires:

Notary Public _____

COMMISSION

IN WITNESS WHEREOF, the Commonwealth of Virginia, Marine Resources Commission has caused these presents to be executed in its behalf by _____
(Name) (Title) Marine Resources Commission

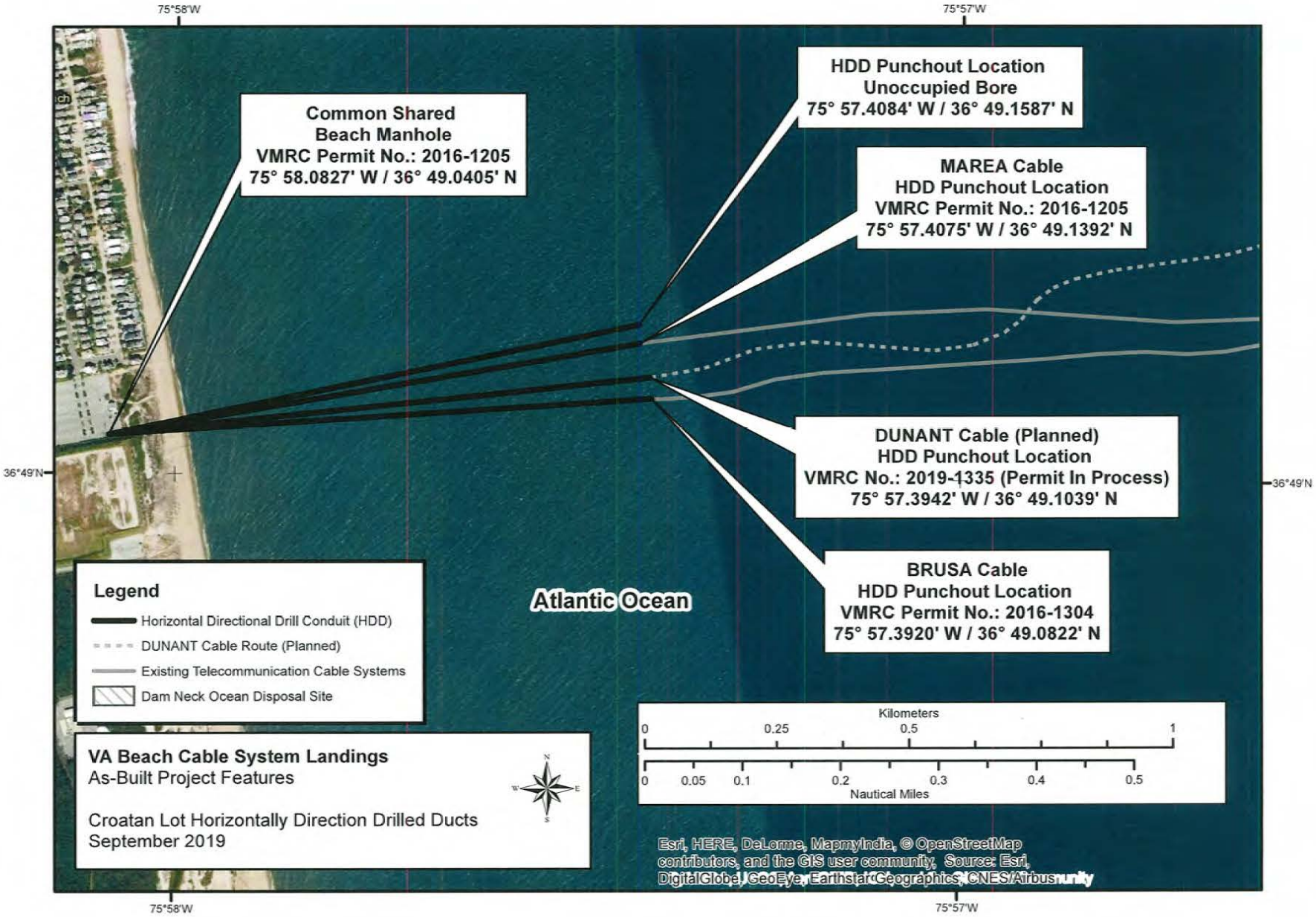
day of , 20 By_____

State of Virginia
City of Hampton, to-wit:

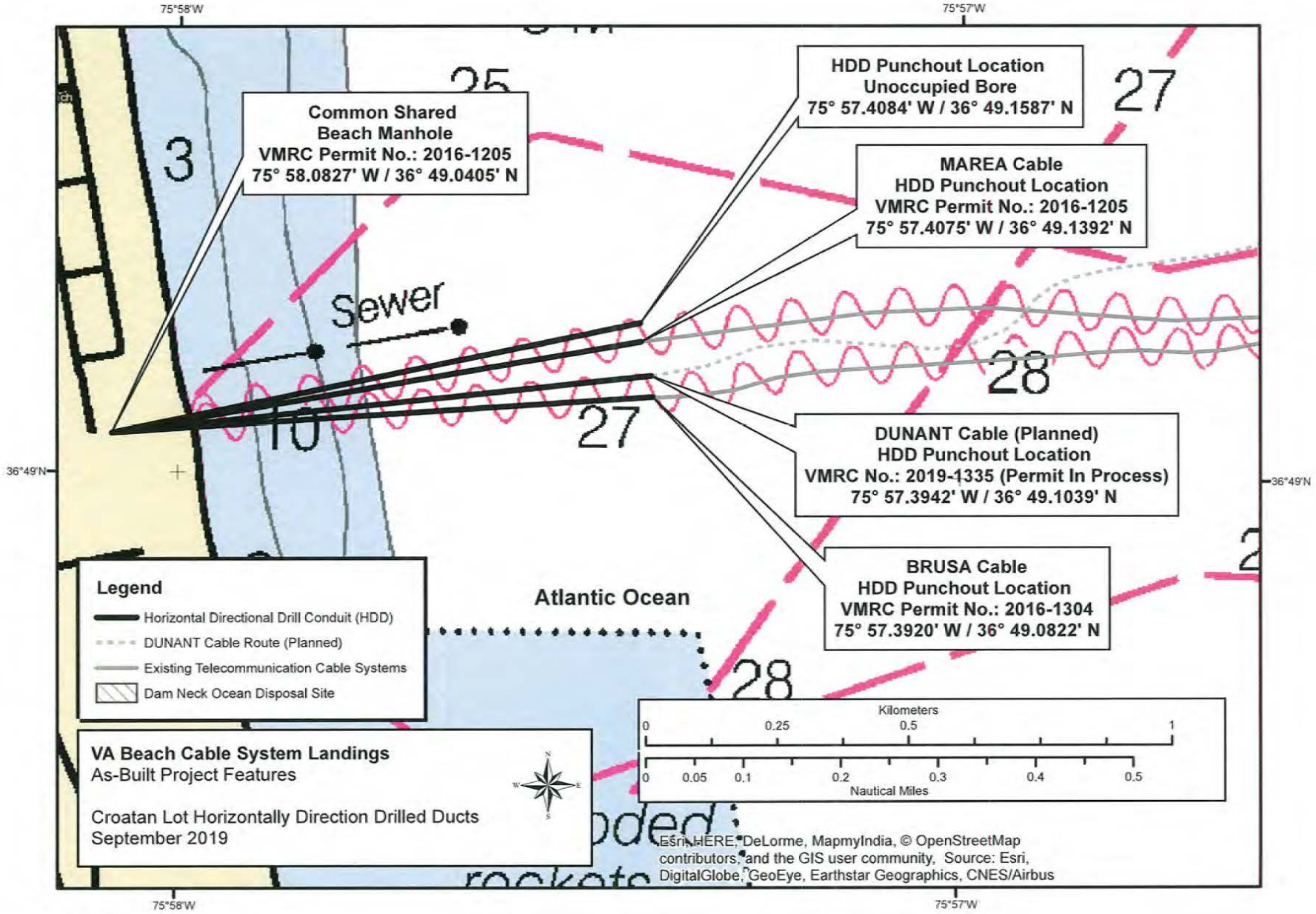
I, _____, a Notary Public within and for said City, State of Virginia, hereby certify that _____, whose name is signed to the foregoing, bearing the 17th day of December 2019, has acknowledged the same before me in City aforesaid.

Given under my hand this day of , 20
My Commission Expires:

Notary Public _____



ADDITIONAL INFORMATION/REVISIONS Received by VMRC on September 17, 2019 /blh



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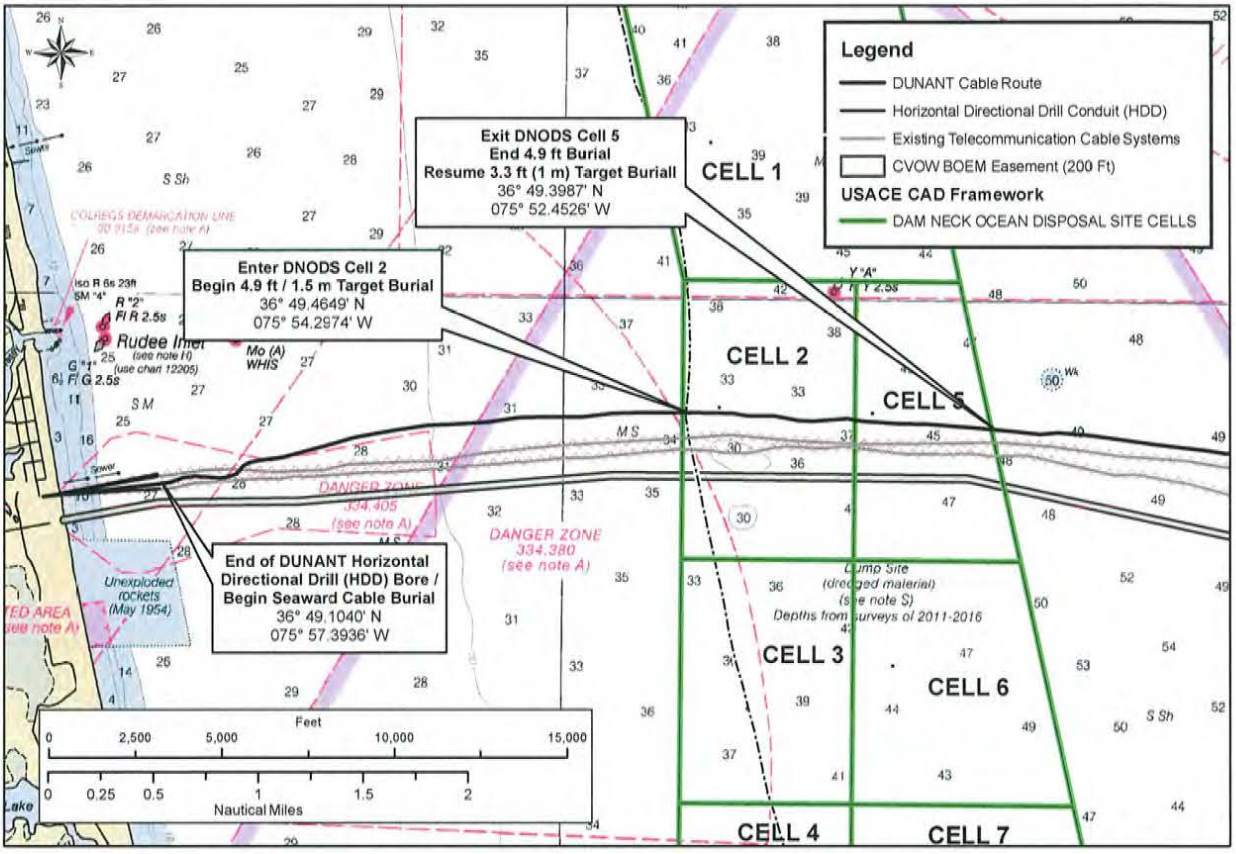
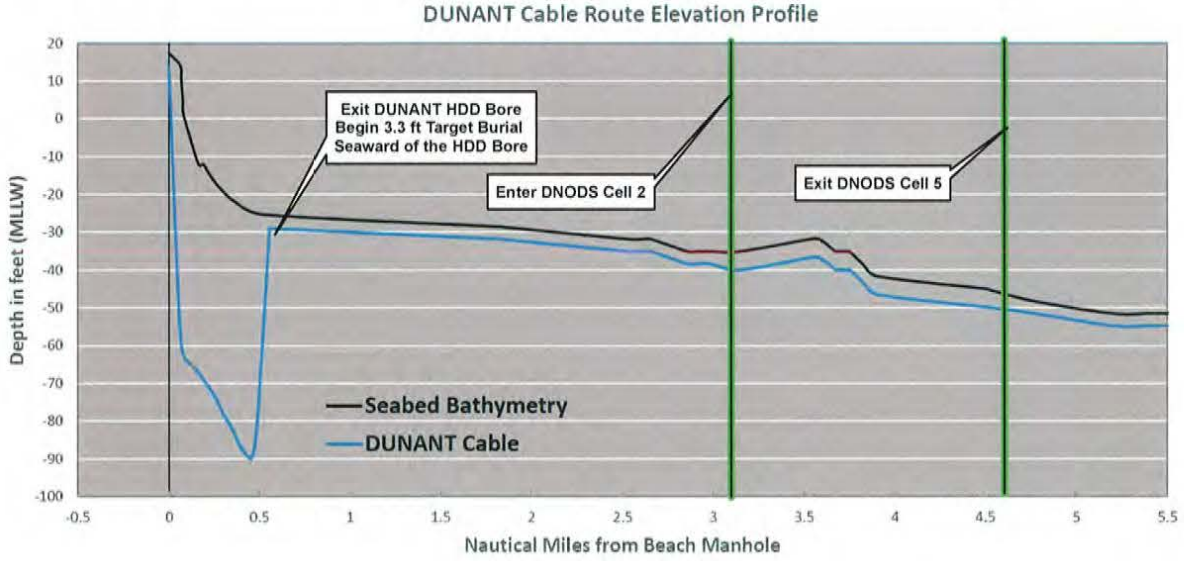




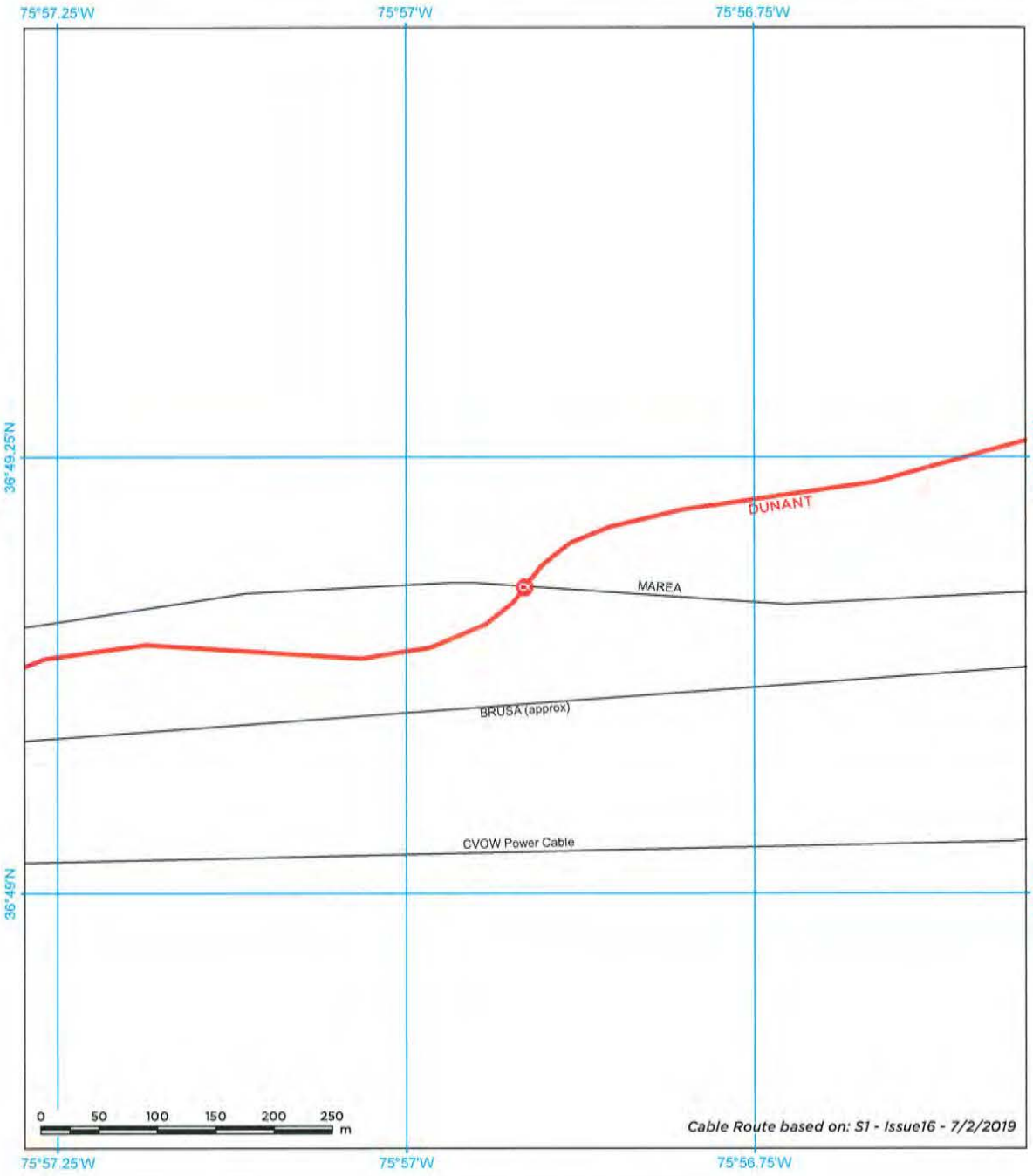
	Tidal Datum	Elevation
MLW	Mean Low Water	+0.12 ft
MLLW	Mean Lower Low Water	0.00 ft
LAT	Lowest Astronomical Tide	-0.99

Source: NOAA Rudee Inlet Tide Station Datums
https://tidesandcurrents.noaa.gov/datums.html?id=8639207

Chart source: NOAA Raster Nautical Chart 12208. Soundings in feet MLLW.

Received by VMRC
October 22, 2019 /lra

Crossed Cable Segment	Crossing Position		Crossing Angle	DUNANT Cable Segment	Cable Type		Depth (m)	Distance to Repeaters (km)
	WGS 1984				DUNANT	Crossed Cable		
	Latitude	Longitude						
INS MAREA	N36 49.1753	W075 56.9144	56°	S1	DA	DA	8	UNK



Legend:

- INS/PL/UNK Cable
- OOS Cable
- INS/PL/UNK Pipeline
- OOS Pipeline

* As found in magenta

DUNANT Cable System

CABLE CROSSING CHARTLET

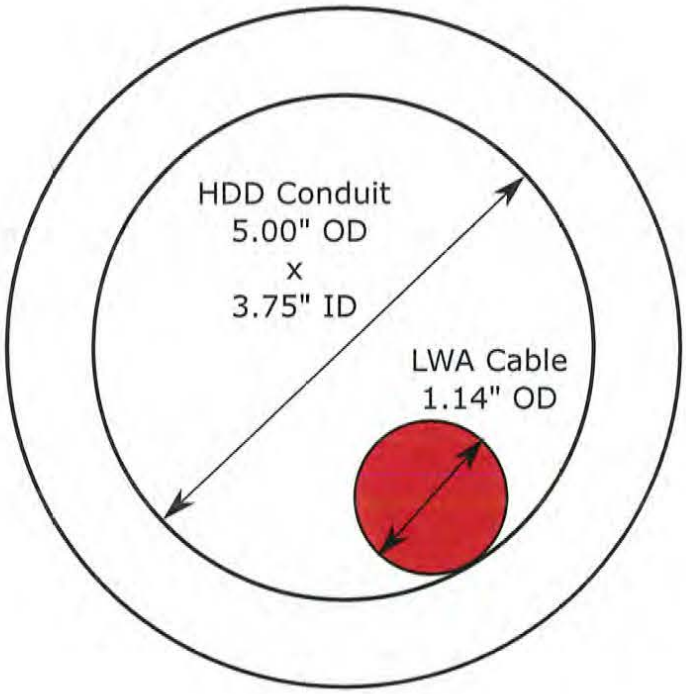
INS MAREA

DUNANT_C_S1_098

Revision No.: 4	Date: 2019-07-12	Drawn by: GAC	Checked by: IL

Contractor: SUBCOM

ADDITIONAL INFORMATION/REVISIONS Received by VMRC on September 17, 2019 /blh



DUNANT Cable System

Horizontally Directionally Drilled (HDD)
Conduit and Cable Cross Section Drawing

September 2019

ENROLLED

SENATE JOINT RESOLUTION NO. 309

Requesting the Virginia Marine Resources Commission to study the feasibility of creating protection zones for submerged fiber optic cables located along Virginia's shores. Report.

Agreed to by the Senate, February 21, 2019
Agreed to by the House of Delegates, February 20, 2019

WHEREAS, submerged cables are any kind of fiber optic and electrical cables that are laid under and on the seabed; and

WHEREAS, submerged fiber optic cables are an important component of the national communications infrastructure of the Commonwealth and the United States, carrying the vast majority of the country's international voice and data traffic, and provide a vital link between the United States and the rest of the world; and

WHEREAS, due to their nature and location under and on the seabed, submerged fiber optic cables are susceptible to damage from certain activities, such as the anchoring of large vessels, some types of fishing, the dumping of materials, dredging, and minerals exploration; and

WHEREAS, submerged fiber optic cables off of Virginia's shores are particularly susceptible to unintended damage from the variety of activities that occur in these areas, ranging from recreational to commercial; and

WHEREAS, the Virginia Marine Resources Commission is charged with the responsibility of permitting specified uses in or over state-owned submerged lands; and

WHEREAS, there is a need to develop a strategy for concentrating the efforts and resources of state and federal agencies to assess the feasibility of establishing a submerged fiber optic cable protection zone to restrict activities that have the potential to damage submerged fiber optic cables and to assist with the planning of cable placement and protection; now, therefore, be it

RESOLVED by the Senate, the House of Delegates concurring, That the Virginia Marine Resources Commission be requested to study the feasibility of creating protection zones for submerged fiber optic cables located along or being developed on Virginia's shores.

In conducting its study, the Virginia Marine Resources Commission shall bring together interested parties at the state level as well as request the participation of relevant federal agencies to assess the feasibility of establishing a cable protection zone for submerged fiber optic cables located along Virginia's shores.

Technical assistance shall be provided to the Virginia Marine Resources Commission by the State Corporation Commission and the Department of Game and Inland Fisheries. All agencies of the Commonwealth shall provide assistance to the Virginia Marine Resources Commission for this study, upon request.

The Virginia Marine Resources Commission shall complete its meetings by November 30, 2019, and shall submit to the Governor and the General Assembly an executive summary and a report of its findings and recommendations for publication as a House or Senate document. The executive summary and report shall be submitted as provided in the procedures of the Division of Legislative Automated Systems for the processing of legislative documents and reports no later than the first day of the 2020 Regular Session of the General Assembly and shall be posted on the General Assembly's website.

ENROLLED

ICPC Recommendation

Recommendation No. 6

Recommended Actions for Effective Cable Protection (Post Installation)

Contact for Enquiries and Proposed Changes

If you have any questions regarding this document or suggestions for improving it, please contact:

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DISCLAIMER

An International Cable Protection Committee Ltd ("ICPC") Recommendation ("Recommendation") implies a consensus of those substantially concerned with its scope and provisions. A Recommendation is intended as a guide to aid cable owners and other seabed users in promoting the highest goals of reliability and safety in the submarine cable environment. The existence of a Recommendation does not in any respect preclude anyone, whether he has approved the Recommendation or not, from laying or repairing undersea cables or employing procedures to these ends which may be required by the ordinary practice of seamanship or by the special circumstances of each case, but which may not be conforming to the Recommendation.

The ICPC does not develop standards and will in no circumstances give an interpretation of a Recommendation in the name of the ICPC. The ICPC and its members do not accept any liability for any errors in the Recommendation or for any consequences resulting from its use as a planning guide. Nothing in this Recommendation should be viewed as relieving anyone from the rights and obligations of seabed users under international law, including but not limited to the United Nations Convention of the Law of the Sea ("UNCLOS").

NB: ICPC Recommendations are subject to periodic review and users are cautioned to obtain the latest issues. This Recommendation may be revised or withdrawn at any time without further notice to the recipient.

TABLE OF CONTENTS

1. INTRODUCTION

This recommendation concerns post-installation measures to mitigate the risk of cable faults caused by human activities such as fishing and vessel anchoring. Such measures are often referred to as marine liaison, offshore liaison, or cable awareness. This document is not intended to cover physical protection such as burial and other measures that may be taken during installation or remediation.

The activities and risks that affect cables vary a great deal from one area to another. For example, in some areas the greatest risks are caused by trawlers on the continental shelf. In other areas, static fishing gear carrying anchors or weights may cause major risks, or the greatest risks may be from the anchors of merchant ships, offshore dredging or mining. In some areas, the risks are spread over a broad continental shelf used by many different vessels, and in others only a short length of cable may be at risk on a narrow shelf or slope. Consequently, very different measures may be appropriate in different areas, even when a single cable system is involved.

One of the first steps in any marine liaison program should be a study to identify the particular risks likely to affect a cable in the different areas it traverses. Specific measures may then be developed that are appropriate for a particular cable and local conditions. Such measures must also take into account the characteristics of the different mariners active in each area, such as fishermen, merchant mariners, pilots, port authorities, military officers, marine traffic control officials, operators of resource extraction vessels, etc. These conditions and risks may change over time.

The measures described below have been used as components of effective cable risk mitigation programs. It is up to each Cable Maintenance Authority to determine the risks to its cables and determine the nature and extent of information dissemination to be done. Based on the studies mentioned above, a combination of measures may be developed for each area to provide appropriate and cost effective mitigation for risks caused by human activities.

2. DISSEMINATION OF CABLE ROUTE INFORMATION

2.1. Hydrographic Offices

It is essential that the location of International cables be notified to the major charting organisations such as United Kingdom Hydrographic Office (Admiralty charts), National Oceanic and Atmospheric Administration (NOAA) and Service Hydrographique et Océanographique de la Marine (SHOM). In addition local or national Hydrographic Offices should also be informed of new cable installations and the status of existing cables for the purpose of updating navigation charts.

2.2. Military Authorities

Relevant Military Authorities must be kept informed about submarine cable areas for various reasons:

a) To ensure that their vessels do not damage the cables by anchoring.

b) To ensure that potentially dangerous submarine activities, such as submarine explosions / firing etc. are not undertaken in the vicinity of submarine cable.

c) To ensure those authorities responsible for Maritime Domain Awareness and Coastal Surveillance are aware of the presence of cables and the role of cable repair ships that may have to operate in a territorial sea.

d) To request, whenever appropriate, their immediate intervention to clear from the cable area any ship violating the local restrictions (e.g. trawling in a prohibited area or causing difficulties to a repair operation), and to enforce any applicable International/Domestic cable laws.

e) To ensure that new telecommunications cable systems do not impact on existing or planned military cables.

2.3. Commercial & Scientific Organisations

Commercial & Scientific organisations, such as Offshore Operators, Oil and Gas Pipeline Owners, Marine Construction, Wind/Wave farms, Sand/Aggregate Dredging, Underwater Observatory Operators etc, must be informed about submarine cables so that appropriate ICPC recommendations can be followed when planning their seabed activities or structures.

This is an issue of mutual interest because Cable Maintenance Authorities must also take into account any existing or planned seabed structures when planning new cable routes.

2.4. Port Authorities

Liaison with Port Authorities is essential in the light of a growing increase in cable faults as a result of damage from ship anchors.

Port Authorities regulate anchoring areas, maritime traffic corridors and ship standby areas, which must not coincide with cable corridors. The same applies to harbour development projects, either industrial or recreational (marinas). They must therefore be kept informed about the location of submarine cables and where possible overlay cable routes on Port radars.

2.5. Cable Maintenance Authorities

It is essential to ensure regular exchange of information among all Cable Maintenance Authorities within each area. This is required to ensure that installation and repair operations do not constitute a threat to existing cables and that the guidance provided in ICPC Recommendation No. 2 is observed.

2.6. Local Authorities

Relevant local governmental / administrative Authorities shall be kept informed on the routes of land cables and on the location of beach infrastructures in order to protect such cables and infrastructure against potential damage caused by future road / housing / industrial construction works.

It is very important to obtain a formal assurance from those Authorities that no works will be authorised in the vicinity of land cable routes without confirmation of their position by the Cable Maintenance Authority and that, whenever necessary, the procedures for the execution of the works be co-ordinated and agreed with the Cable Maintenance Authority.

The implementation of cable easements (wayleaves) may be necessary to achieve this level of protection.

2.7. Environmental Authorities

Relevant Environmental Authorities must be notified prior to cable repair activity if required by law or permit. They may also be informed regularly on the land cable infrastructures, as they will necessarily be involved in approving any construction project in the area and may thus help to avoid additional risks to the existing cables.

3. STAKEHOLDER LIAISON & EDUCATION

3.1. Fishing Industry

3.1.1. Free distribution of cable warning charts

Cable Warning Charts show very clearly the position of submarine cables and the boundaries of Cable Protection Areas (where existing). They should also provide some information on how to contact the Cable Maintenance Authorities for any clarification or additional information, for example a 24 x 7 phone number should be displayed on the chart.

It is essential that updated copies of Cable Warning Charts are provided to the Fishing Authorities and to the Owners / Captains of the most powerful fishing vessels (in particular trawlers) operating in the area, in order to ensure that they are aware of the cables' positions and of any Cable Protection Areas or fishing / anchoring restricted areas. This awareness reduces the likelihood of a cable being fouled by a fishing vessel and, in case that still occurs, may be a decisive factor when subsequently trying to obtain compensation for any damage to the cable.

A prerequisite to this objective is the availability of updated Cable Warning Charts. These charts may be produced by the local Hydrographic or Oceanographic Institutes or by commercial organisations. The first tasks of the Cable Maintenance Authorities are to:

a) Provide such organisations with detailed, updated Route Position Lists (RPLs) of each cable.

b) Request (and, if necessary, fund) the publication of updated charts whenever new cables are installed or existing cables are re-laid with a significantly different route due to maintenance / repair operations.

3.1.2. Electronic information for navigation/plotting instruments

In many areas fishermen rely more on electronic plotters and computers (instead of paper charts) for navigation, planning and conduct of fishing operations. Cable route information may be provided in electronic formats compatible with the equipment and software used locally. A Cable Maintenance Authority may choose to have its cable routes in electronic format distributed on disc to fishermen, programmed into fishing vessel electronics (with the captain's permission) by a contractor, or available for download on the internet.

3.1.3. Free distribution of ICPC fishing booklet

The fishing booklet produced by the ICPC, called *"Fishing and Submarine Cables - Working Together"*, is intended to explain to the fishing community the importance of submarine cables and the hazards which may be caused by the fishing gear used.

It is therefore equally important to provide copies of this booklet to the Fishing Authorities, and to the Owners / Captains of at least the major fishing vessels.

This booklet is available for download from the ICPC Website at www.iscpc.org

3.1.4. Free distribution of ICPC educational material

The ICPC has produced a video called *"Fishing and Submarine Cables - Sharing the Seabed"* which highlights the problems and dangers caused by the presence of submarine cables in fishing grounds and the importance of working together to minimise the risks and hazards to both parties. Copies of this video should be provided to fishing authorities, fishing schools, and to the owners/captains of at least the major fishing vessels.

Other videos with a similar theme may be available from individual submarine cable operators.

A slideshow called *"About Submarine Telecommunications Cables"* has also been produced to explain the role of submarine cables in the modern world.

Both the video and slideshow are available for download on the ICPC's website at www.iscpc.org together with other useful information.

3.1.5. Participation in fishing exhibitions

Fishing exhibitions usually attract representatives of all official and commercial fishing entities, as well as many fishing captains, vessel owners and mariners. These exhibitions present an excellent opportunity to:

a) Advise them of any new cables being installed

b) Reinforce the importance of submarine cables and the need to protect them.

c) Distribute the material referred to above.

d) Establish and develop personal contacts with fishing entities and answer to any questions they may have.

It is therefore recommended that Cable Maintenance Authorities be represented, if possible with attractive stands, in the main fishing exhibitions.

3.1.6. Teaching future fishermen about submarine cables

Many fishermen probably start their careers with little understanding of the role of submarine cables in the modern world and the serious consequences of damaging them.

A practical way to create awareness is to introduce a tutorial module about submarine cables into the programme of the fishing schools and other relevant training establishments.

Such a module should address both the importance of submarine cables and the hazards that may be caused by fishing or other marine activity and how to avoid them. As a very minimum, this would require one full day or preferably two or more sessions.

It is therefore recommended that Cable Maintenance Authorities contact the relevant training establishments in their country in order to establish such a module in their programmes. This may require that, at least in the first years, the instructor and the teaching material are provided directly by the Cable Maintenance Authorities.

The ICPC's promotional materials and relevant Hydrographic charts that identify the location of submarine cables should be made freely available to the training establishments.

3.1.7. Direct contact with fishermen and fishing authorities

In addition to maintaining a presence at relevant events such as fishing exhibitions, personal contacts should be developed with fishermen and fishing authorities to keep them informed about submarine cables.

This task could for example be delegated to Cable Station Managers, who are usually located close to the local fishing communities and should therefore have the best possible relationship with them.

3.2. Other Stakeholders

Education of other stakeholders that have contact or relationships with vessels that traverse cable areas should also be considered. These stakeholders could include Port Agents, Maritime schools/academies, Port Pilots etc. Educational programmes would need to be agreed with the stakeholder and customised for the target audience, but the key goal is to raise awareness of submarine cables as infrastructure that is critically important to the economic success and social wellbeing of all nations.

4. MONITORING SECURITY OF CABLE ROUTES & CORRIDORS

4.1. Electronic Monitoring

4.1.1. Radar

In areas where a cable station has a clear view of the landing and is in close proximity to the submerged portion of the cable, electronic monitoring of fishing vessels is an effective method of cable protection.

In this case a radar mast may be erected at the cable station. Through co-ordination with the radar manufacturer and the installer of the submarine cable, the location of the submarine cable can be plotted on the display of the radar. When a vessel ventures to within a buffer zone around the plotted position of the cable, the radar may be programmed to sound an audible alarm. Cable station personnel who are familiar with identifying the various types of fishing vessels should investigate via binoculars or spotting scope to determine if the vessel in question is a threat to the submarine cable. The vessel may be hailed on VHF radio and informed of the location of the cable and its proximity to it. Any suggested or required actions or warnings (dependent upon local laws) may be relayed to the vessel as well. In the event that the vessel does not heed

warnings, a log shall be kept in the event that the cable is broken so that proof of notification can be provided.

A Port Authority may also have radar that covers a portion of the cable route and so a Cable Maintenance Authority should arrange to have cable route locations overlaid on the Port Authority's Radar.

4.1.2. Vessel Monitoring Systems (VMS)

Local laws may specify the minimum vessel size for the fitting of a VMS, which may therefore not cover all fishing vessels. However, an increasing number of governments are requiring fishing vessels to be fitted with a VMS to ensure that fishing quotas are observed. Such VMS systems interface with the fishing vessel's onboard GPS system and regularly relay its position to the fishing authority's central monitoring computer. Cable Maintenance Authorities may be able to obtain this information, via a court order, if a particular fishing vessel is suspected of damaging a submarine cable system.

4.1.3. Automatic Identification System (AIS)

The installation of an AIS receiver can be used to provide proactive protection against ships that are dragging at anchor. AIS can also be used as a reactive tool, in the event of a ship is dragging its anchor whilst underway.

At cable landing points where a cable station has a clear view of the landing and of the route of the cable to approximately 50 kilometres (28 nautical miles) offshore it is possible to install an AIS receiver in a suitable place with an aerial on the roof. When connected to the internet, the system will allow the interrogation of ships' details (course, speed, call sign etc.) if over 300 gross registered tonnes.

By use of additional software the exact cable route can be plotted and guard zones can be overlaid on the cable route with alarms that activate at predetermined levels. When a zone is intersected, emails or SMS text messages can be sent automatically to Marine Liaison Officers and/or Cable Owners. The offending ship can then be contacted via the local Coast Guard to advise them of the proximity of cables.

4.2. Air Patrol

Air patrol may be a cost effective means of cable protection in certain areas and seasons because it highlights the existence of submarine cable(s) in an area where there may be a lot of marine activity. In addition, emergency callout of an air patrol in the event of a cable break can catch the responsible parties, thus sending a strong signal to the seafaring community that cable breaks will not be tolerated.

Air patrols may be flown throughout the year. However, in areas where fishing vessels are concentrated over cable grounds during a certain season, the flights may be concentrated within that season. Randomising the day of the week and time of the day of the flights is recommended. In this manner fishermen are unable to predict when an air patrol may fly overhead. Potentially offending vessels spotted by the air patrol are called on VHF radio and informed that they are in the vicinity of a submarine cable. Additionally, leaflets indicating the location of the cable can be dropped. Identifying numbers and names can be cross referenced later to determine if the fishing vessels have been contacted during port visits or sent cable protection charts or if additional notification might be required.

Contracts can be established to ensure that air patrols will be available on a 24-hour call-out basis in the event of a cable break and modern night vision and image-stabilising devices can enable identification of vessels at any time of day or night. Success in collecting damages from a vessel sends a very strong message throughout the seafaring community.

4.3. Sea Patrol

Sea patrol is an effective means of cable protection as it allows the direct notification to potentially offending vessels of the location of the submarine cable. In addition, emergency callout of a sea patrol vessel in the event of a cable break can catch the responsible parties, thus sending a strong signal to the seafaring community that cable breaks will not be tolerated.

Sea patrols may be undertaken throughout the year. However, in areas where fishing vessels are concentrated over cable grounds during a certain season, the patrols may be concentrated into that season. Randomising the day of the week and time of the day of the sea patrols is recommended. In this manner the fishermen are unable to predict when the sea patrol will occur. Potentially offending vessels identified by the sea patrol are called on VHF radio and informed of that they are in the vicinity of a submarine cable. Additionally, cable warning charts may be passed to the fishing vessel to give a clear indication of the location of the cable. Identifying numbers and names can be cross-referenced later to determine if the fishing vessels have been contacted during port visits or sent cable protection charts or if additional notification might be required.

Sea patrols may be available on a 24-hour call out basis in the event of a cable break and modern night vision and image stabilising devices can enable identification of vessels at any time of day or night. Success in collecting damages from a vessel sends a very strong message throughout the seafaring community.

4.4. Terrestrial Patrol

All actions for the protection of the submerged plant referred to above need be complemented with an effective monitoring of the land cable route in order to ensure that the land cable suffers no aggression.

For this purpose, Cable Station Managers should establish a routine, preferably daily, consisting of a visual observation of the entire land cable route to confirm that no construction work is being undertaken in the vicinity of the cable. Sometimes, this can be accomplished simply by delegating a member of the Cable Station staff to follow the land cable route when driving to/from the Station. This will enable the land cable route to be carefully monitored and any potentially dangerous activity reported.

Whenever any work is authorised in the vicinity of the cable, the only way to minimise an accidental aggression to the cable is for the responsible Cable Maintenance Authority to have a representative familiar with the cable location permanently present on the work site to advise / remind workers on the cable position. If possible, the representative should have power to order stopping the works, however this obviously requires previous agreement with the local Authorities who authorised the works.

Additionally a "dial-before-you-dig" service should be established with the local authorities. If an existing service is already in place covering other underground assets,

then Cable Maintenance Authorities should provide location information and a 24/7 contact phone number to ensure that cable location information is available to the general public.

5. LEGAL

5.1. Compensation For Lost Gear

National and international legislation may require Cable Maintenance Authorities to compensate fishermen for fishing gear sacrificed in order to avoid damaging a submarine cable and thereby guaranteeing its integrity.

5.2. Development of National Legislation on Cable Protection

Legislation could help to reduce the risk of cable damage by:

a) Establishing a corridor in which other marine activities may be restricted.

b) Setting a legal framework that entitles the Cable Maintenance Authorities to claim compensation in the case of cable damage.

c) Establishing fines or penalties for damage to cables arising from wilful misconduct and/or culpable negligence.

Individual ICPC members can assist by providing examples of any National regulations which have been introduced to enhance the level of cable protection. It is important to ensure that all National laws are consistent with the United Nations Law of the Sea Convention (UNCLOS).

5.3. Establishment of Cable Protection Areas

Cable Protection Areas are typically offshore sectors or corridors, covering part of the route of one or more submarine cables, where some fishing and anchoring restrictions apply. This protects the cables by minimising the variety and intensity of human activities that are potentially aggressive to the cable.

However, it must be stressed that a Cable Protection Area exists only where the relevant Cable Maintenance Authority has (i) taken the initiative of requesting it, and (ii) been successful in such application. This normally requires a long and complex negotiation process with the local Authorities and those seabed users who may be affected by its establishment.

Cable Protection Areas should be marked on Cable Warning Charts and in all navigation charts. It is sometimes required by the Authorities to deploy visual markers to identify Cable Protection Area boundaries.

5.4. Recovery of Damages

In the event a vessel is suspected of damaging a cable, the Cable Maintenance Authority should carefully consider civil litigation to recover damages. In addition to civil actions and depending on national law, the cable owner should consider approaching the relevant government authority to pursue a criminal prosecution. Such actions serve as a deterrent to discourage future misconduct.

6. REFERENCES

Document Number	Title
ICPC Recommendation #2	Recommended Routing and Reporting Criteria for Cables in Proximity to Others

7. DEFINITIONS

The following words, acronyms and abbreviations are referred to in this document.

Term	Definition
Cable Maintenance Authority (CMA):	Any entity that has been formally contracted by a submarine cable owner to have prime accountability for the maintenance of the marine portion of the cable system.
Route Position List (RPL):	A standard format for providing information on the planned and then as laid positions of the cable system. Details on the cable type, sectional and cumulative cable length, positions of alter courses, joint housings, repeaters, and cable slack values are recorded.

8. ACKNOWLEDGEMENTS

The Executive Committee wish to place on record their appreciation of Mr. José Herdade of PT Comunicações for identifying the need for this Recommendation and providing the first draft.