

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
OFFICE OF CONSERVATION AND COASTAL LANDS
HONOLULU, HAWAII

November 10, 2016

**BOARD OF LAND AND
NATURAL RESOURCES
STATE OF HAWAII
HONOLULU, HAWAII**

REGARDING: Conservation District Use Application (CDUA) OA-3773 for the *Southeast Asia-United States (SEA-US) Cable System Beach Landing*

APPLICANT: NEC Corporation of America (NEC)

AGENT: Brain Takeda, *R. M. Towill Corporation*

LOCATION: Waianae District, Island of Oahu

TMKs: *Submerged lands seaward of (1) 8-4-002:012 (Mākaha Beach Park)*

AREA OF PARCELS: N/A - Submerged lands of the state

AREA OF USE: 3,071 sq. ft.

SUBZONE: Resource

DESCRIPTION OF AREA:

The project site is located on the west side of the Island of O'ahu in the Wai'anae district, from the submerged lands seaward of the Mākaha Beach park "shoreline" out to the limits of the State of Hawaii's Territorial Waters (approximately 3 miles) (**Exhibit 1**). The general vicinity of the project site includes the Mākaha Beach Park, the Wai'anae Mountains, single and multifamily housing, agricultural lands, and the Mākaha Resort Golf Course. Mākaha Beach is a popular beach for water-related recreation, such as swimming, diving, boogie boarding, body surfing, sunbathing, fishing, boating, canoe racing and surfing (**Exhibit 2**). Several surf and canoe club events are held annually at Mākaha Beach Park; it is also a popular tourist destination. A small picnic area is located at the north end of the parcel as well as a lifeguard station and parking area.

For reference, the area that is landward (*mauka*) of the shoreline and Farrington Highway along the Mākaha Beach Park (TMK (1) 8-4-002:012) is under the jurisdiction of the City and County of Honolulu, *Department of Parks and Recreation*, while submerged lands and water beyond the state "certified shoreline" (**Exhibit 3**) is owned by the State of Hawaii and under the jurisdiction of the

Department of Land and Natural Resources (DLNR) out to the territorial limit of State's Jurisdiction.

The proposed submerged "daylighting" site (i.e., location where the cable will be exposed from the sea floor) is approximately 14 meters (~45 feet) below mean sea level (msl) and is located within a sand channel directly seaward (*makai*) of Mākaha Beach Park (**Exhibit 4**). The shoreline at Mākaha Beach Park is composed of carbonate sand and limestone and basalt rock outcrops. The area is exposed to southerly swells in summer months and northerly swells in winter months; large waves may break on or near the shoreline causing temporary erosion as the deep nearshore reef provides little protection. Seabed sediments in the sand channel are predominately composed of well-sorted fine to medium-grained calcium carbonate sand. Extensive coralline limestone fringing reef platforms border both the north and south sides of the sand channel; along this hard substratum are well-developed coral communities (**Exhibit 5**).

The regional geology of the project area was identified as generally older alluvium formed during the Pleistocene and Pliocene epochs, in close proximity to surface outcrops of calcareous reef rocks and marine sediments and lava flows. A survey of the sand channel makai of the Mākaha Beach Park indicates that the proposed project area is composed of sand deposits greater than 1 meter (~3 feet) thick. Due to the past complex geologic history and depositional environments in the area, variations in stratigraphy of the local geologic units were observed in both the vertical and horizontal directions.

It should be noted that this application does not include any terrestrial project components. All work to be conducted landward (*mauka*) of the certified shoreline is under the regulatory authority of the City and County of Honolulu *Department of Planning and Permitting*. Discussions on project components or site conditions for the terrestrial portions of the proposed project will be used only to provide context to the CDUA review, and will be noted throughout this staff report.

Marine and nearshore Biological Resources

A biological survey to assess possible project effect on marine resources was conducted by the applicant's agent, with the findings presented in a report titled: *Marine Biological and Water Quality Surveys off Mākaha Beach, Wai'anae, O'ahu*.

The seafloor at the proposed daylighting site (~45 ft. below msl) is sand, with scattered small rocks that host algal growth (**Exhibit 6**). Miniature sea urchins (*Echinocyamus sp.*) are common on the sand. One type of conical shell, the marlinspike auger (*Terebra maculate*) was observed in the project area. The sand is pocketed by small burrows, which host spearing mantis shrimp (*Oratosquilla fabricii*) and snake eel (*Callechelys taxifolia*). An existing undersea cable was observed on the northern edge of the proposed new cable landing site (**Exhibit 7**); a green algae and cyanobacteria were observed to be growing on the exposed sections of cable. Fish are rare at this depth and location; only two species were observed, the Bluefin trevally (*Caranax melampygus*) and blackside razor wrasse (*Iniistius umbrilatus*), although pods of spinner dolphin were seen in the offshore areas near the project site.

Seaward of the proposed daylighting site, at depths of up to 60 ft. below msl, the ocean bottom is composed of sand. Consolidated limestone bottom begins approximately 525 feet landward from

Mākaha Beach where, at a depth of approximately 45 ft. below msl, the reef slopes upward from the sand bottom. Bottom relief is high, with numerous ledges, caves and overhangs and sand filled channels. A moderate amount of coralline algae and algal turf grows on the limestone; here urchins are abundant, as well as Blue Soft Coral (*Sarcothelia edmondsoni*). Coral cover at depths of 25 to 45 ft. below msl is estimated at 50% where at least seven taxa of coral occur. *Pocillopora meandrina* (cauliflower coral), *Poc. Damicornis* (lace coral), and *Porites lobata* (lobe coral) are the dominant species with other less common corals such as *Leptastrea bewickensis*, *Montipora capitata* (rice coral), *M. patula*, and *Pavona varians* (corrugated coral) also observed in this area.

Closer to the shoreline the bottom limestone complexity and topographical relief decreases with expanses of flat limestone and low-growing or turf-like algae dominating.

A total of 60 fish taxa were observed during the marine biological survey. Of the 60 taxa observed, 13 were considered to be endemic to Hawaii; the most well-represented genera across the entire survey area are sturgeon fishes, followed by damselfishes, wrasses, butterfly fishes, and triggerfishes. Observed high in the water column feeding on plankton are various damselfishes, including *bright-eye damselfish*, *Hawaiian gregory*, *oval chromis*, and *blackfin chromis* as well as other fish species such as the *Pacific trumpetfish*, although these tend to be rare in the project area.

Of the sea turtles found in the Hawaiian Islands, only green seas turtle is would likely visit the project area; several green sea turtles were observed around the deeper limestone bottom landward of the proposed daylighting site.

Existing Cultural, Architectural, and Archeological Resources

An *Archeological Assessment* (AA), originally termed an Archeological Inventory Survey (AIS), of the terrestrial portion of the project site was undertaken by CSH, in consultation with the State Historic Preservation Division (SHPD) Archeology and Architecture Branch. No historic properties were identified within the project area during the initial AIS investigation; therefore, the report is termed an archeological assessment. The AA was supports project-related historic preservation consultation among stake holding federal and state agencies, interested Native Hawaiian organizations, groups and individuals, and community associations. It should be noted that the project's Area of Potential Effect (APE) with regard to possible cultural resources is approximately 3 acres of land located *mauka* of the Mākaha Beach Park, and does not include submerged lands that are the subject of the report and potential permit.

A *Cultural Impact Assessment* (CIA) for the terrestrial portion of the proposed project (including Mākaha Beach Park) was completed, and is currently in review as a draft document. Background research for the CIA focused on land transformation, current uses, existing development, and population changes beginning with the early post-Contact era to the present day.

Relevant comments from the CIA include:

- According to Māhele Documentation, Land Commission Awards (LCAs) were awarded in the *mauka* sections and along Mākaha Stream. No LCAs were found in the vicinity of the project area; and
- In 1880, the Waianae Sugar Company cultivated cane in three (3) valleys, including Mākaha. During this time, they also altered the Wai'anae coastline by constructing a

railroad. The railroad impacted the natural features of the area such as sand dunes and man-made features such as fishponds and salt ponds.

Community consultation was undertaken by the applicant's agent to seek out individuals with cultural expertise and or knowledge of the project area. A number of individuals were contacted and interviewed. The relevant issues raised with regards to the submarine cable landing include the potential impact to undetected *iwi kūpuna* (ancestral bones) in the *terrestrial* portion of the proposed project. Previous archeology conducted in the vicinity of the project site has yielded *iwi kūpuna*, such that there is a community concern regarding impact to a possible cultural layer, which may include burials. Based on these findings, there is a possibility *iwi kūpuna* may be present within the *terrestrial* and *beach park* portions of the proposed project area, and that land disturbing activities during construction may uncover presently undetected burials or other cultural finds.

PROPOSED LAND USES:

NEC Corporation of America (NEC) is proposing to construct the SEA-US transpacific submarine fiber-optic (FO) telecommunications cable system connecting Indonesia, the Philippines, Guam, and U.S. States, Hawaii and California (**Exhibit 8**). The Hawaii portion of this system will provide for a cable landing at Mākaha Beach (**Exhibit 9, 9a**), with the cable extending beyond the territorial limit of State of Hawaii waters.

The proposed land use covered under this Conservation District Use Application (CDUA) is limited to the placement of a submarine FO telecommunications cable in submerged waters from the territorial limit of the State to the Mākaha Beach Park "certified shoreline". At the nearshore area, the installation of the FO cable will involve the use of a Horizontal Directional Drilling (HDD) machine positioned on the mauka side of Farrington Highway adjacent to the beach park. The HDD will be used to create an underground borehole which will run beneath Farrington Highway and Mākaha Beach Park to a predetermined "daylighting" location (the opening to the seafloor) in the offshore sandy ocean bottom at a depth of approximately 45 ft. below msl (**Exhibit 10**). The daylighting area will be approximately **2,000 feet makai of the certified shoreline** of Mākaha Beach Park.

As the cable system approaches Oahu, the project will include the following activities:

1. A submarine FO cable (2-3 inches in diameter) positioned along a predetermined route extending from beyond the territorial limit of State of Hawaii waters to the project site at Mākaha Beach; **the submerged segment of FO cable will be approximately 18,225 linear feet;**
2. An approximately +/- 12-inch diameter borehole starting from the HDD drill pit (located mauka of Farrington Highway) and guided underground, beneath Farrington Highway and Mākaha Beach Pak to the target "daylighting" location approximately 45 feet below msl;
3. An approximately +/- 5-inch diameter steel drill pipe installed following the progression of the boring from the mauka HDD machine to the submerged "daylighting" site for approximately 2,500 linear feet, to serve as the conduit for the new FO cable; and
4. A pilot line placed inside the borehole and connected to the submerged cable, allowing the cable to be pulled underground approximately 2,500 linear feet, beneath the Mākaha Beach Park and Farrington Highway to connect to the upland telecommunications facility.

HDD operations

The submerged Hawai'i segment of the SEA-US cable system will be installed by a cable laying ship following a prescribed survey route in the Pacific Ocean offshore of Mākaha Beach. Upon reaching Mākaha Beach, the HDD machine will facilitate the landing of the cable to the upland connection mauka of Farrington Highway. HDD activities will include drilling a borehole approximately 2,500 linear feet from the upland facility site mauka of Farrington Highway to the "daylighting" location offshore. The borehole will be lined with an approximately ± 5 -inch diameter steel drill pipe which will allow the cable to be pulled from the submerged daylighting location, through the borehole to the upland connection site. Appurtenances related to the upland connection (i.e. Beach Manhole) will be built to facilitate this landing and accept the cable telemetry.

The HDD operation will require the use of a lubricant such as bentonite, a naturally occurring clay, to facilitate passage of the drill bit through the substratum. During drilling operations, the drill pipe will be advanced through the bored hole along with the drill bit. Once the drill bit and attached drill pipe clear the submerged hole, the drill bit will be removed and the drill apparatus and pilot line will be pulled back through the drill pipe. The remaining drill pipe will be capped at the ocean end until the day of the cable pull.

Main Cable Lay and Installation

The Hawai'i segment of the SEA-US cable system will be laid by cablesip from the Hawai'i branching unit, where it will join the Guam, and California cable segments, to Mākaha Beach through Hawai'i territorial waters. The cablesip will range from approximately 95 to 124 m (312 to 407 feet) in length. During the main cable lay, the cablesip will operate at relatively low speeds of up to approximately 4 knots as it approaches Mākaha Beach. The main cable lay will be conducted 24 hours per day until the ship reaches shallow water where the nearshore landing operation will be carried out.

The cablesip will approach the landing site (i.e., daylighting location) using satellite based GPS, with up to two (2) support boats assisting the cablesip during nearshore landing operations. The support boats will be smaller vessels typically ranging from 5 to 9 m (18-30 feet) in length. On-station positioning at the landing site will be accomplished using tugboats or side thrusters. Other methods to maintain position, including the temporary use of anchors, may also be used provided no damage to corals is anticipated.

Once the cablesip is positioned it will begin laying out cable while personnel attach suspension floats at regular intervals, as required, to allow the cable to be guided toward the "daylighting" site using divers, a remotely operated vehicle (ROV), a small motor boat, or other means. The duration of the main cable lay operation once the ship is positioned fronting Mākaha Beach will be from one (1) to three (3) days depending on weather, drilling activities or other factors that may affect HDD operations.

SUMMARY OF COMMENTS:

The Office of Conservation and Coastal Lands (OCCL) referred the application to the following state agencies for review and comment: DLNR – Oahu District Land Office (ODLO), Division of Aquatic Resources (DAR), State Historic Preservation Division (SHPD), Division of Boating and Ocean Recreation (DOBOR), and the Engineering Division (ENG). Additional State Agencies

include the Department of Transportation (DOT) – Highways Division; office of Environmental Quality Control (OEQC), the State Department of Health (DOH), and the Office of Hawaiian Affairs (OHA). The application was also provided to the City and County of Honolulu (CCH) – Department of Planning and Permitting (DPP), the CCH – Department of Environmental Services (ENV), the US Fish and Wildlife Service (USFWS), the US Army Corps of Engineers (USACOE) – Honolulu Branch, the National Oceanic and Atmospheric Administration (NOAA), as well as the Waianae Public Library and Neighborhood Board (#24) for review and comment.

Comments received from the following agencies have been summarized by staff as follows:

DLNR – Engineering (ENG)

The agency had no comments on the proposed project after review.

DLNR – DAR

The agency had no comments on the proposed project after review.

DLNR – DOBOR

The agency had no comments on the proposed project after review.

DLNR – Oahu District Land Office (ODLO)

The installation of a submarine fiber optic telecommunications cable and landing facility is proposed for Mākaha Beach Park, from the shoreline extending seaward to Hawaii submerged lands. Any improvements built on the State land requires approval from the Board. The disposition could be in the form of an easement.

Applicant Response: *The applicant acknowledges the requirement for a grant of easement for the use of submerged lands under the jurisdiction of the State of Hawai'i by the Department of Land and Natural Resources. The applicant is presently working with the Office of Conservation and Coastal Lands and will contact the Land Division to complete this requirement.*

DLNR – State Historic Preservation Division (SHPD)

No comments received from agency.

State Department of Transportation (DOT)

No comments received from agency.

State Department of Health (DOH)

No comments received from agency.

Office of Hawaiian Affairs (OHA)

No comments received from agency.

City and County of Honolulu (DPP)

Subject: Shoreline Setback Variance No. 2016/SV-1

The Director of the Department of Planning and Permitting (DPP) has granted APPROVAL of the above Shoreline Setback Variance (SV) application to allow a transpacific submarine fiber optic

telecommunications cable from Southeast Asia to cross through the 40-foot shoreline setback area of Mākaha Beach Park and connect to a cable landing station.

This SV is limited to those sections of Chapter 23, Revised Ordinances of Honolulu (ROH), stated in the Decision and Order; and shall not be construed as approval of any other permit or review by the Department of Planning and Permitting, or any other agency.

City and County of Honolulu (ENV)

No comments received from agency.

US Fish and Wildlife Service (USFWS)

No comments received from agency.

US Army Corps of Engineers (USACOE)

No comments received from agency.

National Oceanic and Atmospheric Administration (NOAA)

No comments received from agency.

ANALYSIS:

Following review and acceptance for processing, the Applicant's Agent was notified, by letter dated June 28, 2016 that:

1. The proposed Southeast Asia-United State (SEA-US) Cable System, Mākaha Beach Landing project work proposed in the Conservation District appears to be an identified land use in the Conservation District Resource Subzone pursuant to Hawaii Administrative Rules (HAR) §13-5-22, P-6 **PUBLIC PURPOSE USES, (D-1)** *Not for profit land uses undertaken in support of a public service by an agency of the county, state, or federal government, or by an independent non-governmental entity, except that an independent non-governmental regulated public utility may be considered to be engaged in a public purpose use. Examples of public purpose uses may include but are not limited to public roads, marinas, harbors, airports, trails, water systems and other utilities, energy generation form renewable resources, communications systems, flood or erosion control projects, recreational facilities, community centers, and other public purpose uses, intended to benefit the public in accordance with public policy and the purpose of the conservation district;*
2. Pursuant to HAR §13-5-40, *Hearings*, this project will require a public hearing;
3. In conformance with §343, Hawaii Revised Statutes (HRS), as amended, and HAR, §11-200-8, this proposed project will require the filing of an Environmental Assessment (EA). *Staff notes that the Draft EA for the project was published in the Office of Environmental Quality Control (OEQC) bulletin on March 23, 2016. The Final EA was prepared to respond to comments; the City and County of Honolulu filed a Finding of No Significant Impact (FONSI) statement for the Final EA on May 26, 2016 to be published in the OEQC Bulletin on June 8, 2016.*

The OCCL published notification of this Conservation District Use Application (CDUA) in the *August 23, 2016* issue of the Office of Environmental Quality Control (OEQC) publication the Environmental Notice.

On *August 29, 2016* the OCCL held a Public Hearing (PH) on the proposed project to solicit comments from the public and other interested parties.

PUBLIC HEARING:

On *August 29, 2016* a Public Hearing was held at the Mākaha Elementary School to accept any public testimony related to this project. Approximately 30 people attended the meeting; this included the Hearings Officer, hearings staff, the applicant's agent, interested public and other community members. Based on the testimony provided during the Public Hearing, the OCCL recommended that the applicant address the following public concerns raised during the public hearing:

What are the benefits of this project to the local population of Wai'anae?

Applicant Response: *The proposed project is for a public utility installation similar to other public utility projects involving water, sewer, electrical, etc. The cable will be installed in a responsible manner using horizontal direction drilling (HDD) to significantly reduce the potential to be exposed. Once installed, the project will benefit the entire state of Hawai'i, including the local population of Wai'anae with access to advanced broadband capacity.*

The project will directly assist schools in the Wai'anae area and the State by providing high-speed worldwide internet connectivity to facilitate expanded access to services. School library media centers will be able to effectively manage and provide access to information and knowledge through communications.

While fiber optic network connectivity is currently not available for all private residences within the Wai'anae area, this project will enable Hawaiian Telecom to move toward the goal of expanded services for private and public uses. As a result of the construction of the SEA-US cable system, Hawaiian Telecom will have the infrastructure required to enhance service now provided through cable systems that have limited bandwidths. The SEA-US cable system will have a significantly higher operating bandwidth that benefits the local population of Wai'anae and the State by providing redundancy and security to existing and aging fiber optic cable systems.

The SEA-US cable system would also serve the present and future populations of Wai'anae and the State by providing high-speed worldwide internet connections. This will be facilitated by enhancing and promoting Hawaii's role as a center for international relations, trade, finance, service, research, technology, education, culture, and the arts.

The SEA-US project will install a state-of-the-art, 100 gigabytes per second ultra-long haul system that will improve the long-distance transmission of domestic and international FO signals and reinforce Hawaii's position as a hub in trans-Pacific submarine telecommunications networks which will facilitate the future economic growth of the State. The anticipated entry of new capacity

by the SEA-US cable system will promote telecommunications services and increase accessibility for use by the community, government, and private sector. This will primarily be from Southeast Asian nations including Indonesia and the Philippines, the U.S. territory of Guam, and the Western U.S.

Will the proposed submarine cable have any effect on wave processes in the nearshore area?

Applicant Response: *The approximately 2-inch diameter cable will be installed within and underground borehole which will extend under Mākaha Beach Park, nearshore waters, and a popular surf site near Kepuhi Point. The “daylighting” location of the cable would be along the sea floor beyond the popular surf site. The underground presence of the cable would not affect the surf and the location would be beneath the ocean bottom. Because of the below ground location of the SEA-US cable, it will not be allowed to be exposed along the beach or interfere with surfers, swimmers, divers, or other using the nearshore waters.*

NEC and Hawaiian Telecom are aware that the seasonal migration of sand at Mākaha Beach Park causes the potential for direct laid cables in the area to become exposed between the beach and the ocean. The SEA-US project will not add to this problem because the method of installation (i.e., HDD) will keep the cable buried well below the land and into deeper ocean water, up to about 45 ft. below msl where the cable will be laid on the ocean floor.

From the “daylighting” location and seaward along the ocean bottom, the cable would be mostly covered with sand within a sand channel, similar to other submarine cable in the area. A similar cable was observed by agents for the applicant during the various surveys. The existing cable that was observed has had no impact on the surf at Mākaha Beach. The majority of the existing cable is covered with sand, with only section of the cable exposed, which were visible to the divers surveying the site.

What, if any, are the alternatives to the proposed project?

Applicant Response: *An evaluation of all prudent and feasible alternatives was conducted to avoid or minimize impacts to the environment for the SEA-US cable system project. The proposed project was determined to be the most practical and feasible alternative. Other alternatives considered included: (1) No Action, (2) Delayed Action, and (3) multiple Build Action Alternatives. The Build Action Alternatives included the use of alternative sites, use of alternative technologies, and development of potential alignments for the cable installation and HDD activities to address the purpose and need for the project. A summary of the Build Action Alternatives analysis is provided below:*

- The proposed project requires the landing of the SEA-US cable offshore of the Mākaha Beach park, at the terrestrial landing site designated as TMK (1) 8-4-002:059, owned by Hawaiian Telecom. An alternative site for the installation of the FO cable is not considered feasible as it would not address the project requirement for the use of the joint Hawaiian Telecom/NEC project site.*
- In comparison with satellite technology, fiber optic technology is the only means of providing the capacity needed for digital communication without transmission delays and*

major visual and aesthetic problems. The use of telecommunication satellites are not a viable alternative based on the level of demand projected for the proposed SEA-US cable system and satellite limitations including: transmission delays due to technical and atmospheric limitation that significantly degrade the quality of the signal; visual and aesthetic intrusion caused by the need for construction of ground stations and radio antennas; and signal delay problems associated with “double hops” which occur when data must be retransmitted to establish a secure voice or data circuit.

- *Alternative HDD alignments and daylighting locations for the landing operations of the SEA-US cable at Mākaha Beach were considered with an exit point at depths of between 14 to 17 meters below msl. Four (4) HDD alternatives were considered in order to optimize the approach to infrastructure and to avoid interference with existing cables, potential hazards, disruption to marine resources, and to secure long-term protection of the cable through use of the seafloor features as a natural corridor. The HDD alternatives considered included: 1) HDD Straight Alignment – daylighting at approximately 17 m below msl, 2) HDD Curved Alignment – daylighting at approximately 17 m below msl, 3) HDD Straight Alignment – daylighting at approximately 14 m below msl, and 4) HDD Curved Alignment – daylighting at approximately 14 m below msl*
- *An existing cable is located near the approximately 17 m below msl alternative HDD daylighting location. Because the existing cable may interfere with the installation of the proposed SEA-US cable at 17 m below msl, it is not considered a viable alternative and is eliminated from further consideration.*

As a result of the evaluation of the Multiple Build Action Alternatives, the preferred alternative selected was daylighting the HDD borehole and land the SEA-US cable at approximately 14 m below msl. All other alternatives either did not meet the goal of minimal potential for impacts to the surrounding environment, or did not provide access to telecommunication markets and users.

How many existing undersea cables are located in this area, and what are their uses?

Applicant Response: *The applicant does not know the specific number of existing undersea cables present with the Mākaha Beach project area. However, the applicant is aware that most, if not all of the cables present are principally used for telecommunications purposes and were installed over a span of several decades (Exhibit 11). The principal companies that the applicant is aware of that landed these cables include: AT&T, Sandwich Isles Communications Company, Alcatel-Lucent, Hawai’i Island Cable System (then Hawaiian Tel), Hawai’i Island Fiber Network (then GST Telecom Hawai’i), and others. For reference to cables located in the area, and throughout the State of Hawaii, the following links are provided:*

<http://www.submarinecablemap.com/>

<http://www.cablemap.info>

§13-5-30 CRITERIA:

The following discussion evaluates the merits of the proposed land use by applying the criteria established in HAR §13-5-30.

- 1) *The proposed use is consistent with the purpose of the Conservation District.*
The objective of the Conservation District is to *conserve, protect, and preserve the important natural resources of the state through appropriate management and use to promote their long-term sustainability and the public health, safety and welfare.*

The applicant has stated that the proposed project will provide a communications system that will fulfill a mandated governmental function, activity, or service for public and private benefit, and will be conducted in accordance with public policy and the purpose of the Conservation District. Additionally, the applicant states:

- The SEA-US Cable System is a state of the art, 100 Gbps ultra-long haul submarine fiber system that will serve a public utility (Hawaiian telecom) in the State of Hawai'i; and
- The proposed project is a shoreline dependent facility that should not adversely affect the natural environment, cultural resources, or shoreline, and is a permitted use within the current CCH zoning and State Land Use district with the approval of the CDUP.

In 2008, *Hawaii's Broadband Task Force* submitted a final report which included findings and major recommendations necessary for Hawai'i to achieve broadband comparable to the world's leaders:

- Broadband is critical infrastructure for Hawai'i's 21st century advancement in education, health, public safety, research & innovation, economic diversification, and public services; and
- Hawai'i's lifeline for broadband to the rest of the world is expensive submarine fiber. While Hawai'i was once the crossroads for transpacific telecommunications, all of the new fiber systems built across the Pacific since 2001 have bypassed Hawai'i. The task force recommends that Hawai'i aggressively promote the landing of new transpacific submarine fiber in Hawai'i.

The applicant also states that based on the number of directives, legislation, and recommendations from a variety of agencies throughout the State that the proposed project will facilitate expanded access to telecommunications services necessary to enhance and promote Hawai'i's role as a center of international relations, trade, finance, services, technology, education, culture, and the arts. The project is intended to improve the long-distance transmission of domestic and international FO signals and reinforce Hawai'i's position as a hub in transpacific submarine telecommunications networks, which will facilitate the future economic growth of the State.

- 2) *The proposed land use is consistent with the objectives of the Subzone of the land on which the use will occur.*

The objective of the Resource Subzone *"is to develop, with proper management, areas to ensure sustained use of the natural resources of those areas"*. The applicant believes the

proposed use is consistent with the objectives of the Resource Subzone and will ensure the sustainable use of the natural resources of the area. The applicant states that the proposed project is not anticipated to involve a substantial degradation of environmental quality at the Mākaha Beach Park. The planned construction is designed to not alter or modify the existing environmental conditions of the Beach or nearshore resources. The project is designed to have only temporary and localized impacts with the area returning to the existing conditions after construction is completed.

Staff believes that the placement of a small cable along the seafloor, the proposed HDD borehole, and the daylighting area do not constitute a major impact to the resources of the site, and therefore should have minimal effects as long as Best Management Practices (BMPs) are followed as outlined.

- 3) *The proposed land use complies with the provisions and guidelines contained in Chapter 205A, HRS entitled "Coastal Zone Management", where applicable.*

Recreational Resources: The applicant has stated that the proposed action is not anticipated to adversely affect existing coastal recreational resources or restrict the use of the nearshore lateral access along the shoreline for ocean recreation. During HDD operations when the drill bit daylights at the ocean end and during installation of the FO cable by the cable ship, the contractors will control access to the work area near the vessels to maintain safe distances between the public and the active area of work. Closure of nearshore waters will be accomplished by publishing a notice advising mariners to temporarily avoid the area on days when the ship will be laying cable.

The project activity will not preclude the use of the Mākaha Beach Park and the beach will remain open during the entire cable laying activity since the HDD will permit the installation of the cable underground of the beach park with no proposed disturbance to the fast land or portions of the park.

Staff notes that there will be some minor disruption to a small area surrounding the daylighting area during the cable laying activities, approximately three (3) days. While the ship is laying cable, the applicant will keep the public away for safety purposes. This area will be offshore, open water, and is not near the surfing or snorkeling areas.

Historic Resources: An Archeological Assessment (AA), originally termed an Archeological Inventory Survey (AIS), of the *terrestrial* portions of the project site was undertaken by an agent for the applicant, in consultation with the *State Historic Preservation Division* (SHPD) Archeology and Architecture Branch. No historic properties were identified within the *terrestrial* project area during the initial AIS investigation; therefore, the report as termed an AA. Based on the lack of findings, no further mitigation the form of archeological historic preservation work is recommended. In accordance with Hawai'i State historic preservation review legislation, HAR 13-284-7, the project's effect recommendation is "*no historic properties affected*".

Scenic and Open Space Resources: During construction involving the installation of support infrastructure and the FO cable, there will be a temporary impact on coastal views due to

the presence of construction equipment, a cable ship, and support vessels in the water. Staff believes that the project design (i.e., use of the HDD process) encourages the protection and preservation of the quality of scenic and open space resources for the Beach Park.

Coastal Ecosystems/Marine Resources: Potential short-term and temporary impacts on marine biological resources from the proposed project could occur during the cable laying and nearshore landing operations. The marine survey undertaken for the proposed project was used to identify a route that minimizes the potential for impact to coral reefs and/or disruption or degradation of coastal water resources. Farther offshore, the cable will be placed along a predetermined route on the ocean bottom where sand and un-colonized habitat dominates thus further minimizing potential impact to ocean resources.

To minimize turbidity in submerged waters during daylighting operations, the drill bit will be slowed or stopped completely. The HDD operator will be directed to avoid lubricant discharges at the ocean end; the use of lubricant (i.e., drilling mud – bentonite clay) will cease approximately 100 linear feet prior to the daylighting end of the HDD to avoid any discharge into State Waters. The location where the drill bit will daylight generally consists of hard bottom substrate covered by a sand channel approximately 1-3 m in thickness. As the drill bit emerges from the sand covered substrate, the blanketing effect of the sand, shutoff of drilling fluid, and shutdown of the rotating drill head, should help to prevent (or minimize) the release of any sediments or turbidity.

At the request of OCCL staff, the applicant was tasked with creating a *Frac-out Contingency Plan*; A “frac-out” is the inadvertent release of drilling fluid into the water column during drilling operations. The purpose of the *Frac-out Contingency Plan* is to:

- Minimize the potential for a frac-out associated with HDD activities;
- Provide for the timely detection of frac-outs;
- Protect areas that are considered environmentally sensitive;
- Ensure and organized, timely, and minimum impact response in the event of a frac-out; and
- Ensure that all appropriate notifications are made to regulatory agencies within 24 hours and that documentation is completed.

In the event of a frac-out, the contractor will be directed to immediately alleviate or halt the release of drilling fluids; this can be accomplished by modulating pressure. Further release of drilling fluid from fractured substratum can be reduced or halted by utilizing one of the following methods:

- Sealing the fracture in the underlying rock substrate by “pipe jacking” the drill pipe past the frac-out location (*Pipe Jacking: A tunneling construction method for the creation of pipelines consisting of individual product or casing pipes. The tunnel boring machine and the pipe string behind it are advanced up to the target shaft with the help of a hydraulic jacking frame in the launch shaft*);
- Utilizing non-toxic additives to seal the fracture (*non-toxic additives can assist in the hardening of the bentonite clay, effectively sealing the frac-out location*);

- Pulling back and altering the bore path to avoid the location where the frac-out has occurred. If a frac-out persists for more than 48 hours after attempting to correct the discharge, the boring contractor shall remove the drill pipe as necessary and a new bore path shall be attempted.

Any suspected or actual frac-out will be monitored and cleanup measure employed, as necessary:

- In the event of a frac-out, clean-up would be required and the time needed for clean-up would vary depending on the size of the potential release;
- If a marine frac-out occurs, cleanup activities shall be conducted consistent with safe working practices. Congealed drilling fluid shall be removed from the water column by divers using mesh bags, buckets, or similar devices. The contractor shall employ mitigation measures to isolate/contain the drilling fluid from further dispersal into the water column, as is practicable.

At the end of construction activities, the contractor shall prepare a concise summary report detailing all frac-out related activities, including incidents, response, and cleanup activities.

Economic Uses/Managing Development: Ultimately, the final build out of the SEA-US project will result in improved telecommunications connectivity between Southeast Asia, Hawai'i, Guam and the U.S. West Coast. The project will further benefit Hawai'i with increased telecommunications speed and reliability due to the advanced capacity of the FO system and the backup which will also be installed.

The number of personnel associated with the operation of the Hawai'i segment of the SEA-US cable system is expected to be small, as is the construction and maintenance staff. As the system is designed to improve telecommunication infrastructure, and the construction activities are short-term, staff believes the proposed project will not have any adverse economic effects.

Coastal Hazards: The project is not expected to exacerbate flooding or affect and flood zone area. Erosion control measure will be employed during construction. Following project completion, permanent soil stabilization will be achieved through the use of the planting of stabilizing ground cover vegetation.

Public Participation: The HDD will be utilized in order to avoid surface disturbance to roads and beaches. The process of HDD allows for the cable to be installed by drilling under the beach area to the offshore landing site in a sandy ocean bottom. It was stated by the applicant that this process will limit impacts at the bore exit point (daylighting area) while avoiding potential disturbance to the beach and nearshore coastal resources. BMPs will be utilized throughout the construction of the project, and any excavated, unusable material, will be transported off site to prevent discharges of sediments to State waters.

- 4) *The proposed land use will not cause substantial adverse impact to existing natural resources within the surrounding area, community or region.*

The results of a marine survey, conducted in October 2015, conclude that “*due to the project design location of the [daylighting area] in a large sand channel, direct impacts to sensitive marine biota have been avoided. Little, if any, adverse indirect impacts may occur as a result of the [proposed project]. Best Management Practices (BMP), including environmental protection specifications and endangered species protection may be applicable*”

The applicant has stated that the proposed project would not result in significant or substantial degradation of environmental quality. The project would only have temporary and localized effects due to the short time frame of the cable laying and HDD process. A *Geotechnical Field Exploration* was performed in support of the HDD shoreline crossing segment of the proposed project. A geological sample was obtained from the proposed HDD corridor showing that the regional geology of the project area is generally older alluvium in close proximity to surface outcrops of calcareous reef rocks, marine sediments, and lava flows.

The submerged landing site was selected to make use of an extensive deep sand-filled channel fronting Mākaha Beach that bisects the nearshore bottom and extends seaward. Extensive coralline limestone fringing reef platforms border both the north and south sides of the sand channel. Previous survey work indicates that the sand channel widens seaward of the proposed daylighting location; at approximately 17 m below msl the sand channel spans a width of 300 m. Further offshore it connects to a broad sand deposit that parallels the Wai’anae Coast.

Based on the extensive marine surveys conducted of the entire cable pathway, the proposed daylighting location within the sand channel has been sited away from any coral resources, and the observation of existing cables in this area, staff believes this proposed use should not cause substantial adverse impact to existing natural resources of the area.

- 5) *The proposed land use, including buildings, structures and facilities, shall be compatible with the locality and surrounding areas, appropriate to the physical conditions and capabilities of the specific parcel or parcels.*

The selection of the proposed landing site is designed to meet the need for connectivity to existing telecommunications infrastructure while minimizing potential interference with other undersea cables. Additionally, the proposed project makes use of a sand channel along the seafloor as a natural corridor for the cable placement. The cable route has been sited to avoid potential undersea hazards, disruption to marine resources and wildlife, and should secure the long-term protection of the cable by allowing it to become naturally buried (as other cables have in this area). Since the entire cable segment located in the Conservation District will be entirely out of view, while sited to minimize impacts to nearshore and sea floor habitats, staff believes this proposed project is compatible with the surrounding area and physical conditions of the site.

- 6) *The existing physical and environmental aspects of the land, such as natural beauty and open space characteristics, will be preserved or improved upon, whichever is applicable.*

During construction involving installation of support infrastructure and the FO cable, there will be a temporary impact on coastal views due to the presence of construction equipment, and a cable ship and smaller support vessels in the water. Once construction is completed all equipment will be removed from the site with no further disturbance to any scenic resources of the site.

The FO cable will be buried or submerged such that it is not expected to result in potential for adverse visual impacts. Most visitors will never even know the cable and HDD borehole are present.

- 7) *Subdivision of land will not be utilized to increase the intensity of land uses in the Conservation District.*

The proposed project does not involve the subdivision of Conservation District land however easements associated with the proposed project will be required. A right of Entry and grant of submarine easement within State waters will also be required from the Board of Land and Natural Resources (BLNR) for the placement of SEA-US FO cable in state waters.

- 8) *The proposed land use will not be materially detrimental to the public health, safety and welfare.*

BMPs prescribed in the application and the Environmental Assessment (EA) will be employed as necessary, these measures will include practices designed to:

- Prevent the release of pollutants to land and water resources;
- Provide for preventative measures in-place prior to, during, and following the termination of construction activities when BMPs can be safely removed;
- Utilize a proven construction method (i.e., HDD) that has been shown to be environmentally safe, and consistent with the protection of the environment; and
- Provide for monitoring of environmental resources during all construction activities as well as monitoring to minimize or eliminate impacts to threatened or endangered species.

CULTURAL AND HISTORICAL IMPACT REVIEW:

An Archeological Assessment (AA), originally termed an Archeological Inventory Survey (AIS), of the entire *terrestrial* project area was conducted by the applicant's agent, in consultation with the SHPD. No historic properties were identified during the initial AIS investigation; therefore, the report is termed an AA; *"Results of the survey shall be reported through an archeological assessment, if no sites were found, or an archeological survey report which meets the minimum standards"*.

In accordance with Hawai'i State historic preservation review legislation, the applicant's agent project specific effect recommendation is *"no historic property affected"*. No evidence of traditional

Hawaiian cultural materials was observed and no significant historical properties were present throughout the *terrestrial* portion of the project area. It was stated by the applicant that, based on the archeological reports and surveys, the proposed project should not have any adverse effects on traditional Hawaiian cultural materials or deposits and historic properties found in the *terrestrial* project sites. No cultural surveys of the *marine* project segments were conducted as that is not typical, and was not required by the State Historic Preservation Division.

In 2015 a Cultural Impact Assessment (CIA) was completed for the *terrestrial* and *marine* portions of the proposed project; the CIA provides information pertinent to the assessment of the proposed projects impacts to cultural practices and resources and supports the projects historic preservation review. Based on information gathered from the background research and community consultation, the proposed project may potentially impact undetected *iwi kūpuna* (ancestral bones) in *terrestrial* sites. Should burials (or other cultural finds) be encountered during ground disturbance or construction activities, all work shall cease immediately and the appropriate agencies will be notified as required by law.

The applicant has stated that due to the location of the proposed cable line, and HDD borehole, customary and traditional rights conducted both on land or in the ocean would not be adversely affected by the proposed project. The project, if approved, would have no impact on recreational facilities and would facilitate continued access and use of the beach and nearshore waters during all phases of construction. Only a minor disruption in offshore marine activities (boating and fishing) will occur; this disruption will be temporary and only be located well offshore of Mākaha Beach Park. *Nearshore marine* resource gathering by native Hawaiians will not be affected or disrupted during any phase of the proposed project.

DISCUSSION:

The proposed land uses that are covered under this Conservation District Use Application (CDUA) represent a portion of the overall Fiber Optic (FO) cable landing and facility project. The majority of the structural and development activities will occur *mauka* of the shoreline, and therefore were not part of this review. This CDUA covers a majority of the Horizontal Directional Drilling (HDD) borehole, the “daylight” or location where the FO line will go underground, and the laying of the FO cable from the HDD borehole out to the 3-mile boundary of the States jurisdictional waters.

Staff note: An Environmental Assessment (EA) was completed and finalized for this project, and included reviews and discussion on both the *marine* and *terrestrial* project elements. *Terrestrial* project components (i.e., new telecom facility) the CDUA did not review or discuss will be addressed by the City and County of Honolulu, and other relevant agencies through their respective regulatory programs. The State Historic Preservation Division (SHPD) has also reviewed the projects *terrestrial* archeologic and cultural features, and has made recommendations regarding protection strategies.

The main concerns regarding the proposed land uses within the Conservation District (i.e., *makai* of the “shoreline”) that could impact or effect the natural resources of the area are as follows:

The location of the submerged segment of FO cable from the States territorial limit to Mākaha Beach Park – The myriad of undersea surveys of the ocean floor have provided a comprehensive

image of the approximately 18,000-foot-long path the FO cable will follow. The applicant has actively positioned the cable line to minimize impacts to ocean bottom and nearshore resources such as coral or other potential habitats. Similarly, the lay of the FO cable near the beach follows a large sand channel which should have no physical impact on any resources found in the area.

Frac-out occurs during HDD operations; drilling mud (i.e., bentonite) released into water column thus impacting nearshore habitats and resources – At the request of the Office of Conservation and Coastal Lands (OCCL) the applicant has completed a comprehensive *Frac-out Contingency Plan* to address the potential for frac-out during HDD operation. The plan covers before, during, and after construction activities and provides methodology to deal with a frac-out during any one of the construction phases. It should be noted that other projects involving HDD for the installation of submarine FO cables on O’ahu report that no known frac-out events have occurred, and the geological study reveals that the soils through which the drill bit will pass are not expected to require excessive fluid pressure which could cause a frac-out scenario.

Restriction of recreational uses at Mākaha Beach Park and/or nearshore area – The proposed cable laying will only require the cable ship to be in place for approximately one (1) to three (3) days depending on weather, drilling activities or other factors that may affect HDD operations. Since the cable ship will be offshore of Mākaha Beach Park approximately 2000 feet, the lack of any need to occupy the beach or nearshore area means that beach recreational activities will remain open and unhindered to all visitors. While nearshore waters may need to be closed to ocean activities, (i.e., surfing, diving, boating, and swimming) the total area anticipated to be closed is approximately 100 feet by 100 feet and therefore staff believes this represents a temporary minor inconvenience to beach goers for only a few days.

The OCCL staff has the onerous duty of evaluating the appropriateness of a project based on a complete and comprehensive assessment that has been assembled from acceptance of the application, to the writing of this staff report. This report outlines the effects the proposed land uses represent to natural resources, recreation, and the environment within the project area; based on the information provided staff believes project impacts will not be significant or cumulative. Additionally, this projects public benefit appears to be necessary for fulfilling County and State plans with regards to the future of Hawaii’s telecommunication services and international connectivity.

In conclusion, staff believes that this project, as proposed, is consistent with Conservation District objectives, and based on the above discussion and information received, Staff recommends as follows:

RECOMMENDATION:

Based on the preceding analysis, Staff recommends that the Board of Land and Natural Resources **APPROVE** this application for the *SEA-US Cable System, Mākaha Beach Landing* project located in Mākaha, Wai’anae District, Island of O’ahu, on submerged lands seaward of Tax Map Key: (1) 8-4-002:059, subject to the following conditions:

1. The permittee shall comply with all applicable statutes, ordinances, rules, and regulations of the federal, state, and county governments, and applicable parts of this chapter;

2. The permittee, its successors and assigns, shall indemnify and hold the State of Hawaii harmless from and against any loss, liability, claim, or demand for property damage, personal injury, and death arising out of any act or omission of the applicant, its successors, assigns, officers, employees, contractors, and agents under this permit or relating to or connected with the granting of this permit;
3. The permittee shall obtain appropriate authorization from the department for the occupancy of state lands, if applicable;
4. The permittee shall comply with all applicable department of health administrative rules, and the applicable parts of HAR §13-5-42;
5. Before proceeding with any work authorized by the department or the board, the permittee shall submit four copies of the construction plans and specifications for the various farm facility buildings to the chairperson or an authorized representative for approval for consistency with the conditions of the permit and the declarations set forth in the permit application. Three of the copies will be returned to the permittee. Plan approval by the chairperson does not constitute approval required from other agencies;
6. Unless otherwise authorized, any work or construction to be done on the land shall be initiated within one (1) year of the approval of such use, in accordance with construction plans that have been signed by the chairperson, and shall be completed within three (3) years of the approval of such use. The permittee shall notify the department in writing when construction activity is initiated and when it is completed;
7. All representations relative to mitigation set forth in the accepted environmental assessment and management plan for the proposed use are incorporated as conditions of the permit;
8. The permittee understands and agrees that the permit does not convey any vested right(s) or exclusive privilege;
9. In issuing the permit, the department and board have relied on the information and data that the permittee has provided in connection with the permit application. If, subsequent to the issuance of the permit such information and data prove to be false, incomplete, or inaccurate, this permit may be modified, suspended, or revoked, in whole or in part, and the department may, in addition, institute appropriate legal proceedings;
10. When provided or required, potable water supply and sanitation facilities shall have the approval of the department of health and the county department of water supply;
11. Provisions for access, parking, drainage, fire protection, safety, signs, lighting, and changes on the landscape shall be provided;
12. Where any interference, nuisance, or harm may be caused, or hazard established by the use, the permittee shall be required to take measures to minimize or eliminate the interference, nuisance, harm, or hazard;


13. Obstruction of public roads, trails, lateral shoreline access, and pathways shall be avoided or minimized. If obstruction is unavoidable, the permittee shall provide alternative roads, trails, lateral beach access, or pathways acceptable to the department;
14. Except in case of public highways, access roads shall be limited to a maximum of two lanes;
15. During construction, appropriate mitigation measures shall be implemented to minimize impacts to off-site roadways, utilities, and public facilities;
16. Cleared areas shall be revegetated, in accordance with landscaping guidelines provided in this chapter, within thirty days unless otherwise provided for in a plan on file with and approved by the department;
17. Use of the area shall conform to the program of an appropriate soil and water conservation district or plan approved by and on file with the department, where applicable;
18. Specific Best Management Practices (BMP) outlined in the Final Environmental Assessment (FEA) and throughout this staff report shall be utilized during all phases of the proposed project;
19. The permittee shall obtain a county building or grading permit or both for the use prior to final construction plan approval by the department;
20. For all landscaped areas, landscaping and irrigation shall be contained and maintained within the property, and shall under no circumstances extend seaward of the shoreline as defined in section 205A-1, HRS;
21. Artificial light from exterior lighting fixtures, including but not limited to floodlights, uplights, or spotlights used for decorative or aesthetic purposes, shall be prohibited if the light directly illuminates or is directed to project across property boundaries toward the shoreline and ocean waters, except as may be permitted pursuant to section 205A-71, HRS. All exterior lighting shall be shielded to protect the night sky;
22. The permittee acknowledges that the approved work shall not hamper, impede, or otherwise limit the exercise of traditional, customary, or religious practices of native Hawaiians in the immediate area, to the extent the practices are provided for by the Constitution of the State of Hawaii, and by Hawaii statutory and case law;
23. Other terms and conditions as prescribed by the chairperson; and
24. Failure to comply with any of these conditions shall render a permit void under the chapter, as determined by the chairperson or board.

Respectfully submitted,



Alex J. Roy, M.Sc., Staff Planner
Office of Conservation and Coastal Lands

Approved for submittal:



Suzanne D. Case, Chairperson
Board of Land and Natural Resources

EXHIBIT 1

CDMA: OA-3773

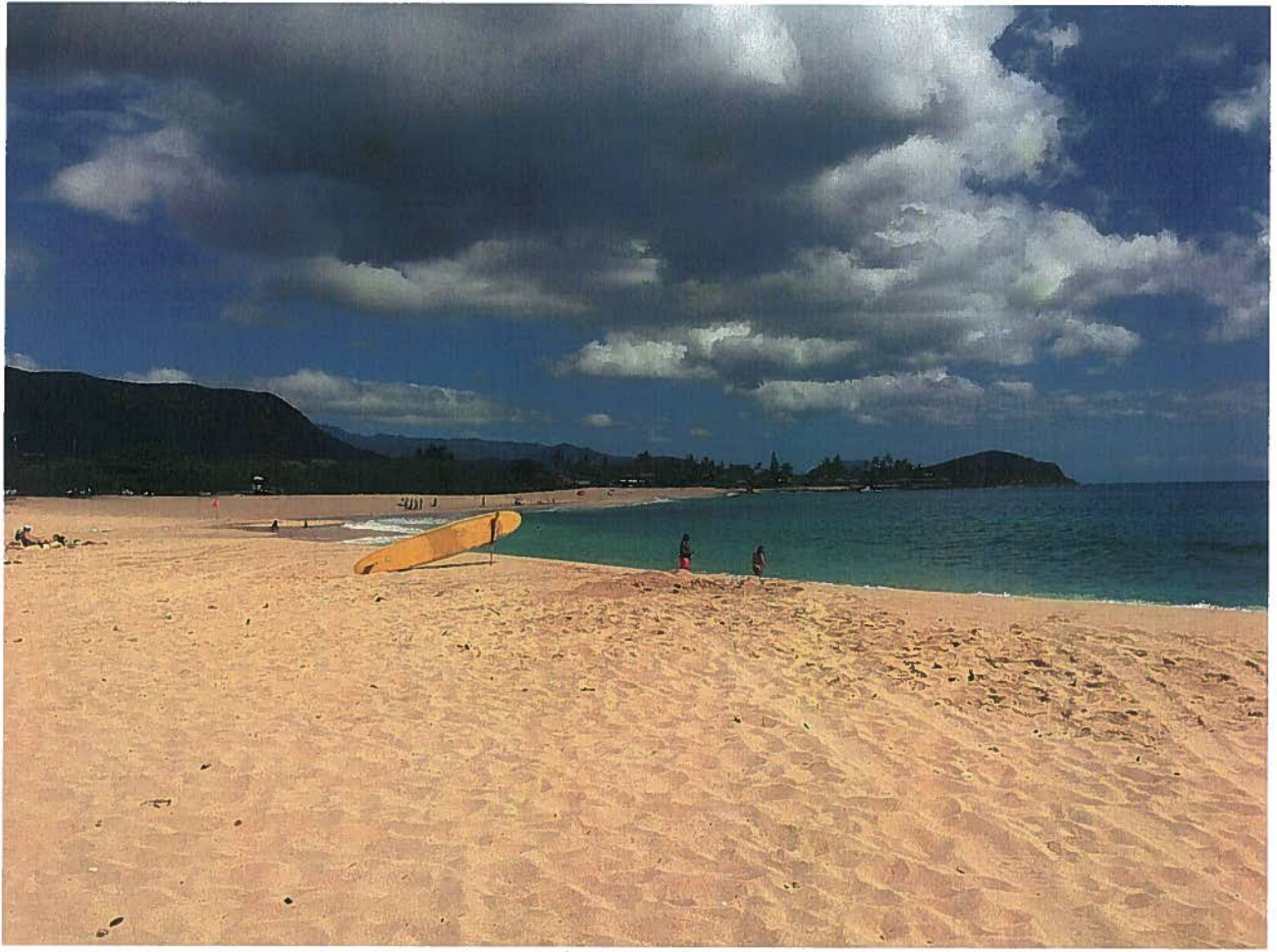
Project Location



SEA-US Cable System
Makaha Beach Landing
Waianae, O'ahu, Hawaii



R.M. LOWELL CORPORATION



CDMA: 0A-3973

EXHIBIT 2



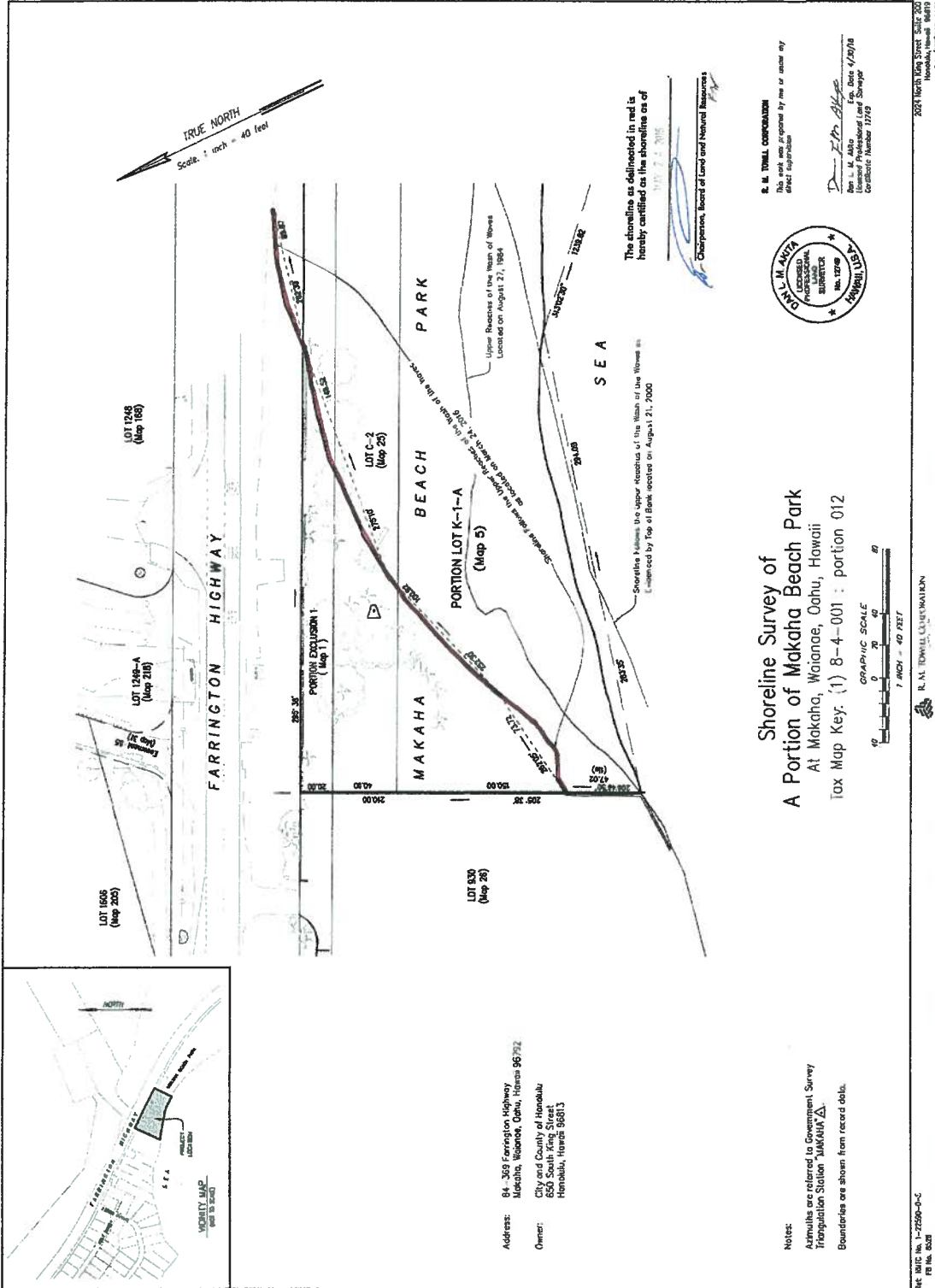


EXHIBIT 3
CDMA: OA-3773

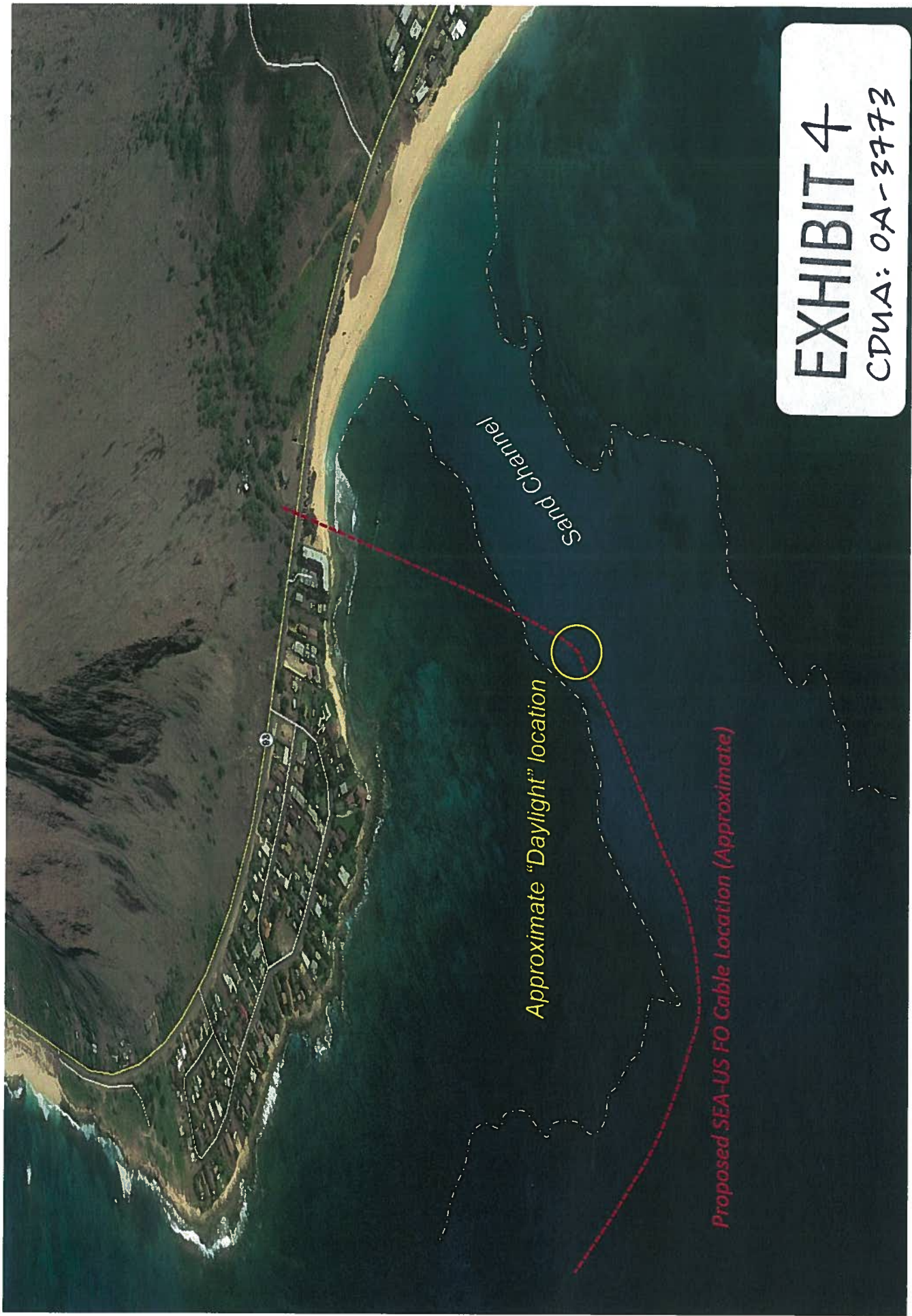
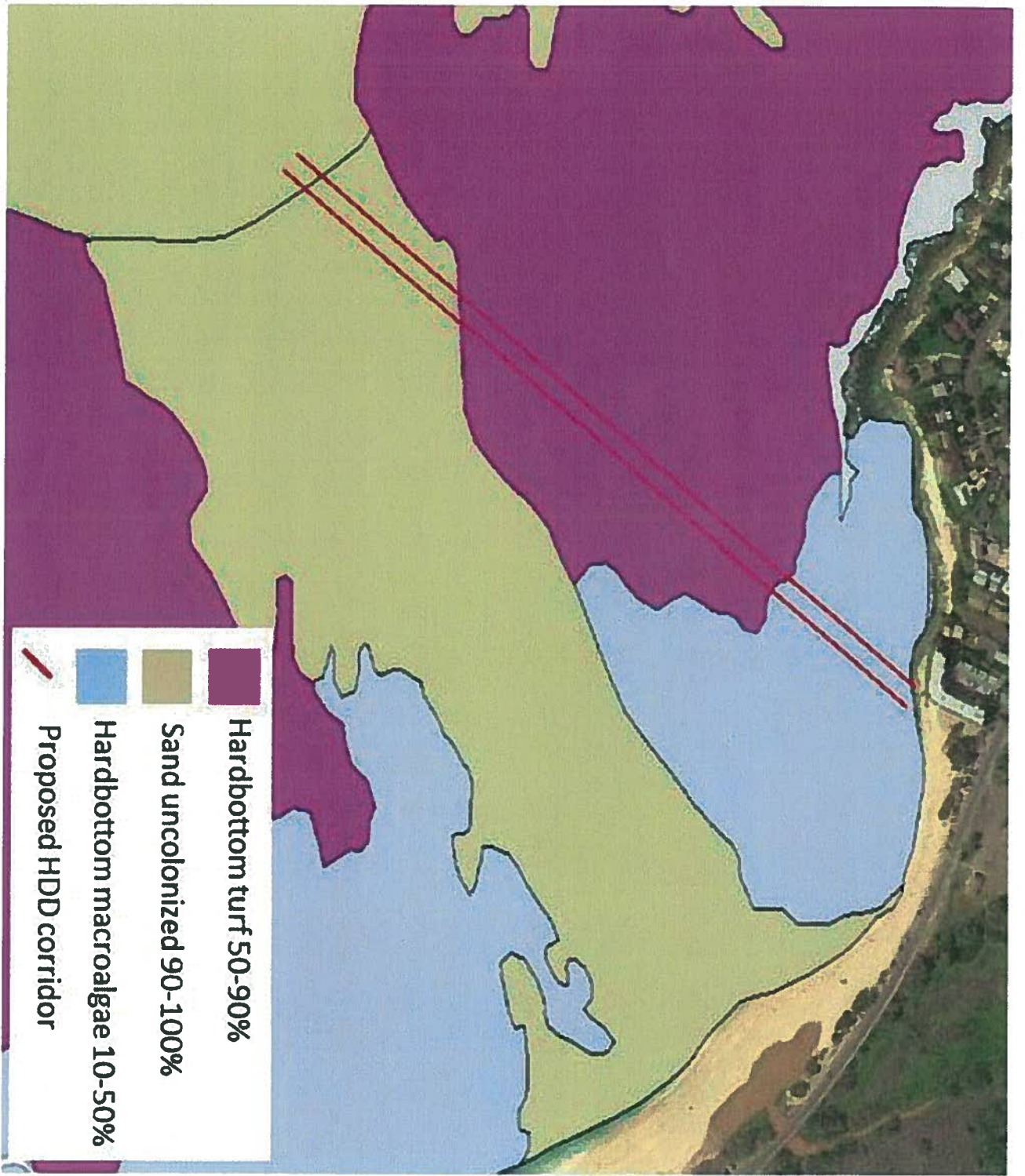


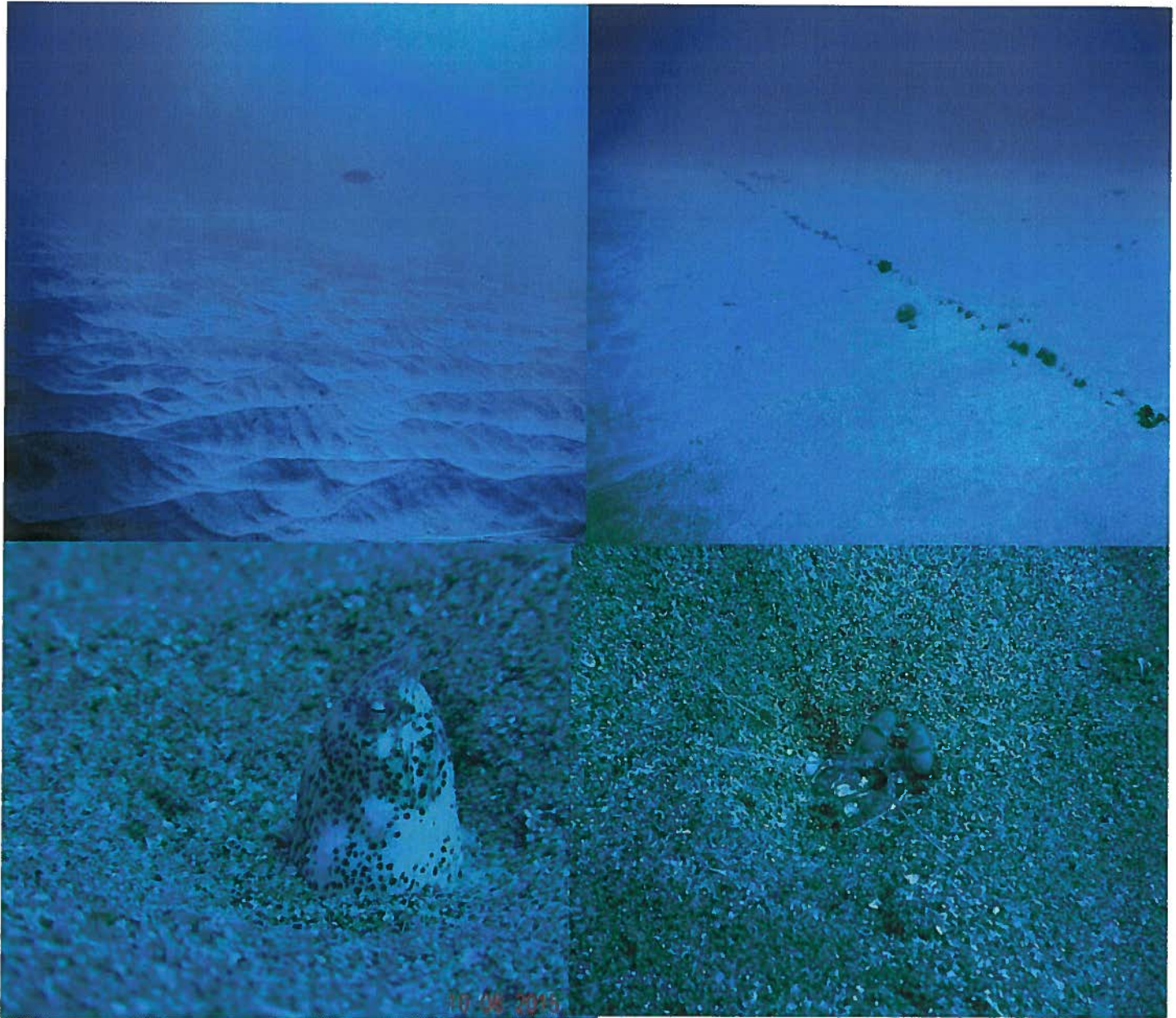
EXHIBIT 4

CDMA: OA-3773



Benthic habitat characterization off Makaha Beach
 (from Battista et al, 2007).

EXHIBIT 5
 CDUA: 0A-3773



. HDD daylight location occurs in a sand channel. A bluefin trevally was observed in this area (top left). An existing cable hosting algae occurs on the northern boundary of the HDD daylight location (top right). The sand bottom contains small burrows, hosting and snake eel (*Callechelys lutea*; bottom left) and spearing mantis shrimp (*Oratosquilla fabricii*; bottom right).

EXHIBIT 6
CDUA: OA-3773

EXHIBIT 7

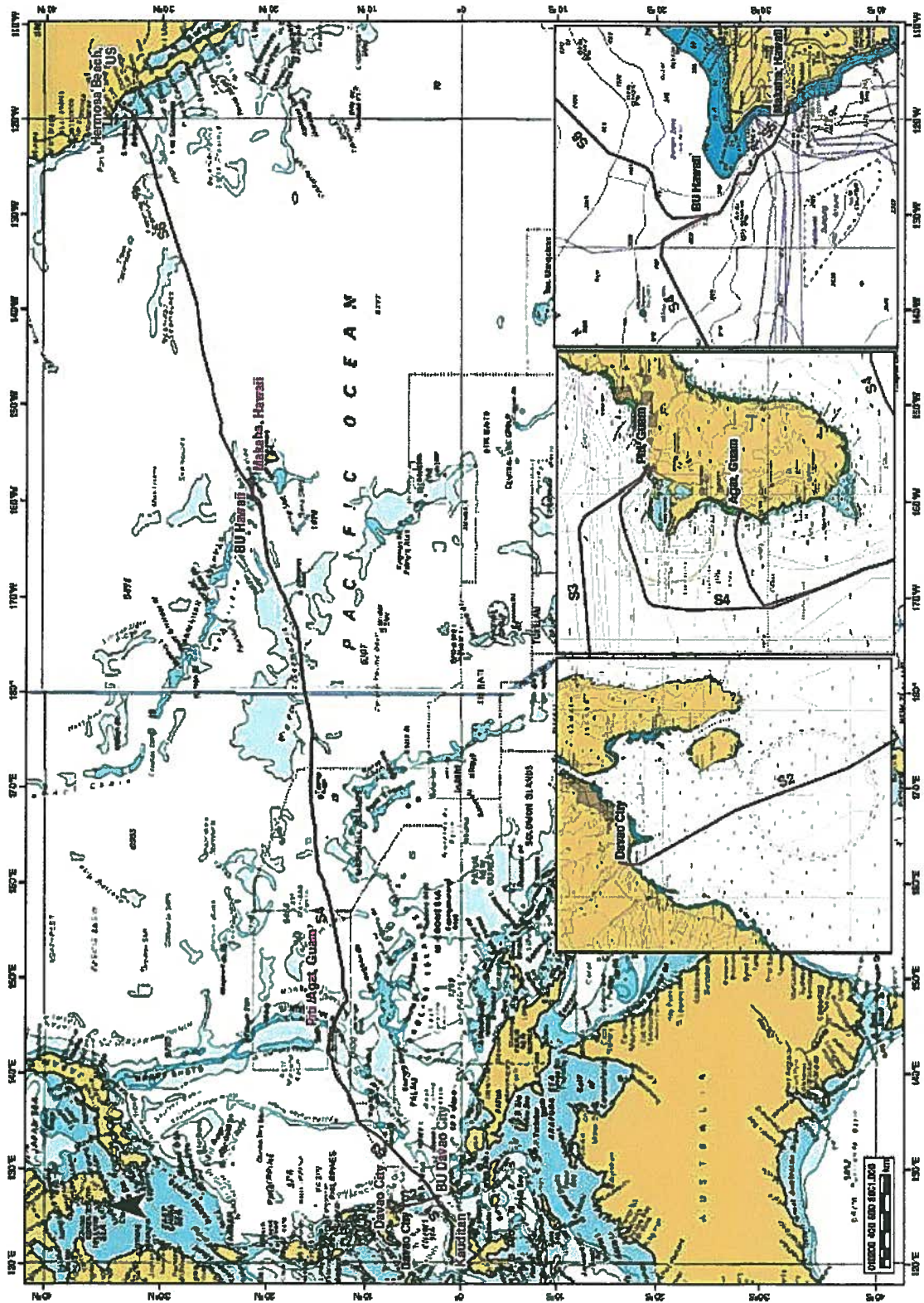
CDUA: 0A-3773

Exposed existing cable



EXHIBIT 8 CDUA: OA-3773

Overview of SEA-US Cable System

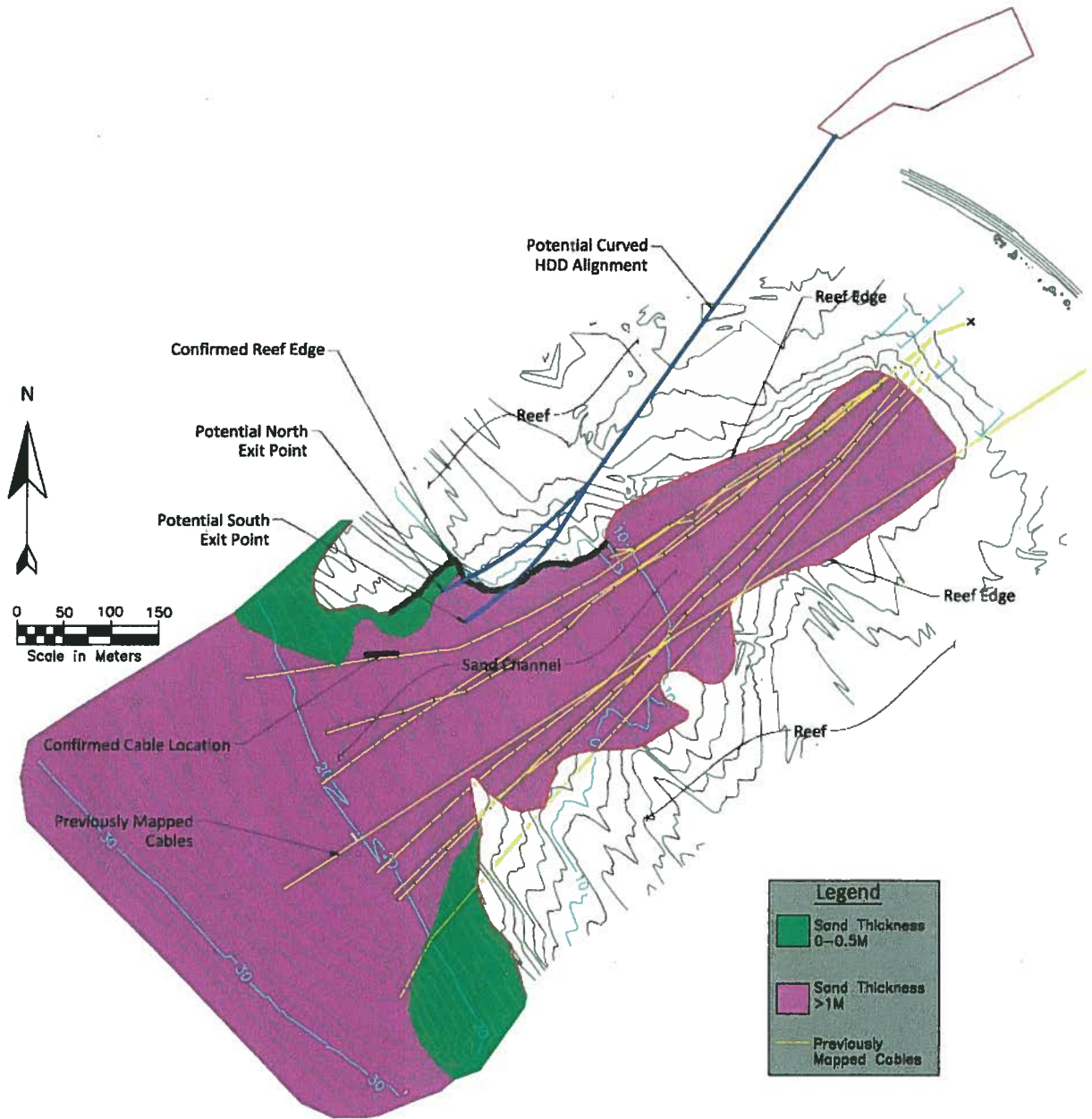


Near Shore and Terrestrial Project Location



Southeast Asia-United States (SEA-US) Cable System.
 Mākaha Beach Landing
 Waiānae, Island of O'ahu, Hawaii

EXHIBIT 9
 CDMA: OA-3773



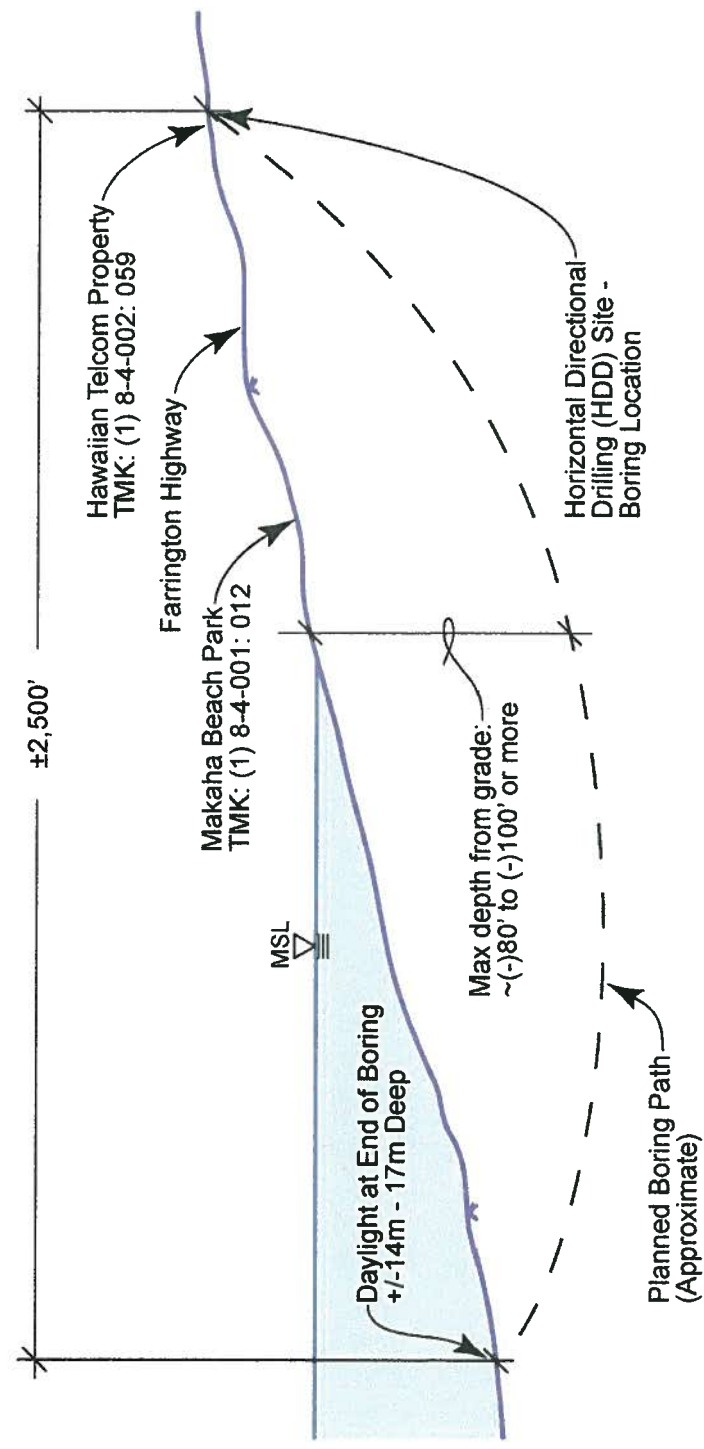
. Makaha Site Map

EXHIBIT 9A
CDUA: OA-3773

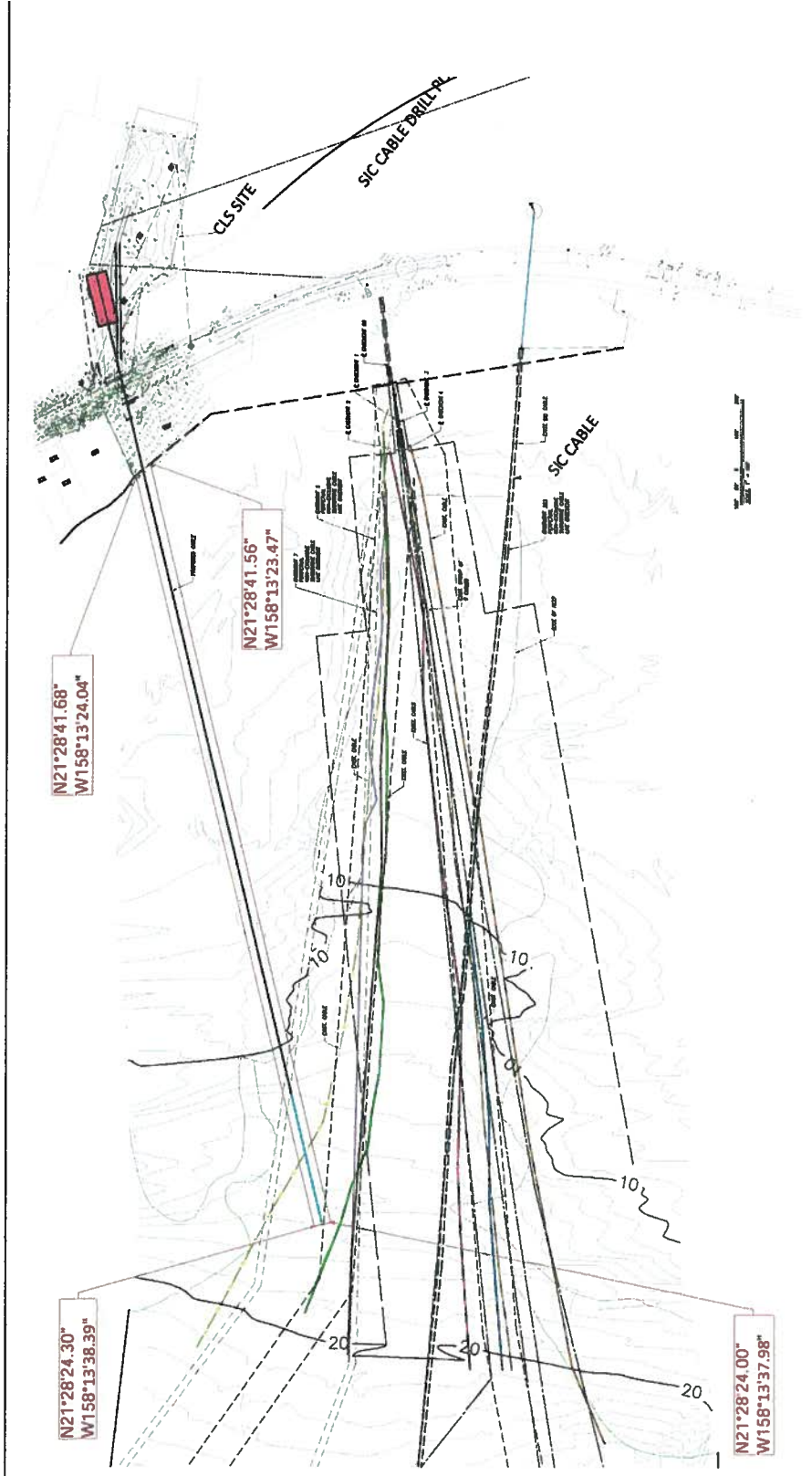
EXHIBIT 10

CDUA: 0A-3773

Horizontal Directional Drilling (HDD) Cross Section



Not to Scale.



Locations of survey areas (corridor outlined in red lines and coordinates located offshore). Existing cables and easements included as colored lines. Depth contours in meters.

EXHIBIT II

CDUA: OA-3773