Revolution Wind Project

PREPARED FOR

Revolution Wind, LLC
56 Exchange Terrace
Suite 300
Providence, RI 02903

PREPARED BY

1 Cedar Street
Suite 400
Providence, RI 02903

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Introduction

This Report is a supplement to the Construction and Operations Plan (COP) prepared by VHB for the Revolution Wind Project (Revolution Wind, LLC or the Project). This Report presents the results of an onshore biological survey conducted by VHB for the Revolution Wind Farm (RWF) Onshore Facilities that will transmit power to the regional electric grid at Quonset Point in North Kingstown, Rhode Island. This Report also includes an assessment of the potential impacts from the Onshore Facilities on the onshore natural resources and describes avoidance, minimization, and mitigation measures that will be undertaken to reduce impacts. The Project includes the RWF located with Bureau of Ocean Energy Management (BOEM) Lease Area OCS-A 0486, the Revolution Wind Export Cable (RWEC) in federal waters on the Outer Continental Shelf (OCS), the RWEC in Rhode Island State Waters, and the Onshore Facilities.

1.1 Onshore Facilities Project Overview

As established in Sections 1 and 3 of the COP, the Onshore Facilities will include the Landfall Work Area, the Onshore Transmission Cable, an Onshore Substation (OnSS) and Interconnection Facility (ICF) adjacent to The Narragansett Electric Company d/b/a Rhode Island Energy's ("TNEC") existing Davisville Substation[1]. The ICF is an expansion of the TNEC Davisville Substation. There will also be new underground circuits connecting the OnSS to the ICF (Interconnection Right-of-Way [ROW]) and new overhead circuits connecting the ICF

[1] The Narragansett Electric Company was purchased from National Grid by Pennsylvania Power and Light in 2022. The Narragansett Electric Company is now doing business as Rhode Island Energy, a PPL Company.

to TNEC's Davisville Substation (TNEC ROW). A short segment of the existing Davisville Tap will be reconfigured to connect to the ICF.

Connection with the existing Davisville Substation is the proposed point of interconnection with the regional electrical transmission grid. A brief overview of each component of the Onshore Facilities is provided below, including the Landfall Envelope under consideration based on real estate, engineering, and environmental constraints. For the purposes of this Report, the Project Area discussed herein includes the components of the Onshore Facilities and the areas immediately adjacent that have the potential to be affected by the Project.

Horizontal directional drilling (HDD) will be employed to make the connection between the RWEC and Onshore Transmission Cable at transition joint bays (TJBs) located within the Landfall Work Area. Construction of the Onshore Transmission Cable, from the TJBs to the OnSS, will result in up to 3.1 ac (1.3 ha) of temporary ground disturbance; permanent disturbance is not anticipated. A full description of the HDD installation method is provided in Section 3 of the COP.

Currently, multiple landfall sites remain under consideration, all of which are located within the Landfall Envelope depicted on **Figure A-1**. The Landfall Envelope totals approximately 20 ac (8 ha) and is generally bounded by White Cap Drive on the west, the Electric Boat property on the east, and Circuit Drive on the north.

The Onshore Transmission Cable route is an approximate 1 mi (1.6 km) route, that will predominantly follow along paved roads or previously disturbed areas such as parking lots. Approximately 534 linear feet of the Onshore Transmission Cable will cross landscaped and wooded areas before entering the Onshore Substation properties. Construction of the Onshore Transmission Cable from the Landfall Work Area to the OnSS will result in temporary ground disturbance. Permanent disturbances are not anticipated. A full description of the construction methodology and dimensions of the Onshore Transmission Cable are provided in Section 3.0 of the COP.

The proposed OnSS will be constructed within two undeveloped parcels (the OnSS parcels) identified by the North Kingstown Tax Assessor as 179-030 and 179-001, north of Camp Avenue and adjacent to the TNEC Davisville Substation (Parcel 179-005). The OnSS will have an operational footprint measuring up to 4 ac (1.6 ha). Additionally, the OnSS will include a compacted gravel driveway, stormwater management features, and associated landscaped or managed vegetated areas totaling up to 7.1 acres (2.9 ha) inclusive of the up to 4-ac (1.6-ha) operational footprint of the facility. Contingency staging and laydown areas within previously disturbed areas owned by the Quonset Development Corporation (QDC) and other privately owned parcels will also be necessary to support construction of the OnSS.

The OnSS will connect to the existing Davisville Substation with two 115 kilovolt (kV) circuits. Each interconnection cable will be approximately 527-feet (160.6 m) and will be constructed underground within a 40-foot maintained ROW (Interconnection ROW). Refer to Section 3.0 of the COP for additional detail regarding the Davisville Interconnection ROW.

The ICF will be constructed within the Davisville Substation parcel (179-005) and will occupy an operational footprint measuring up to 1.6 ac (0.6 ha). The ICF will include an asphalt paved driveway, stormwater management features, and associated landscaped or managed

vegetated areas totaling up to 4.0 acres (1.6 ha) inclusive of the up to 1.6 ac (0.6 ha) operational footprint of the facility.

The ICF will connect to the Davisville Substation with two 115-kV overhead transmission circuits approximately 474 feet (144 m) in length. These overhead transmission facilities will be located within the TNEC ROW, which will require a up to 120-foot wide cleared ROW centered on each circuit to be maintained free of woody vegetation that exceeds 20 feet (6.1 m) in height.

1.2 Contents of this Technical Report

The purpose of this Technical Report is to provide supplemental information used to assess impact producing factors (IPFs) from the Construction, Operations and Maintenance (O&M) and Decommissioning Phases of the Onshore Facilities on onshore natural resources. Onshore natural resources include habitat and land cover types, wetlands and surface waters, wildlife, rare, threatened and endangered (RTE) plant and animal species, and invasive species. VHB biologists conducted desktop assessments and Project-specific field investigations of the existing onshore natural resources in portions of the Project Area that included the Landfall Work Area, Onshore Transmission Cable route, the OnSS, the ICF, and the TNEC ROW. An overview of the methodologies employed in the field investigations is provided in Section 3.0 of this Report.

This Report also includes information about the onshore natural resources present within the TNEC Davisville Substation parcel as prepared by LEC Environmental Consultants, Inc. (LEC), Inc. in a Site Evaluation Report (SER) dated December 18, 2019 as well as a follow-up site evaluation performed July 13, 2020 which is documented in a separate memo dated August 6, 2020. The SER provides an overview of the habitat conditions and wetland resources within the Davisville Substation parcel and has been used to assess the baseline conditions and impact analysis of the Davisville Interconnection Cable Route. Copies of the two SERs are included in **Appendix B** of this Report.

The following sections provide the natural resource definitions, descriptions of applicable regulations, baseline conditions, impact assessments from the Project's IPFs, and mitigative measures.

1.3 Regulatory Context and Resource Definition

The onshore natural resources of habitat, wetlands and waterways, wildlife and RTE species, and invasive species have been defined in the following sections in the context of the applicable regulations and regulatory agencies. A discussion of the applicable regulations and required permits for the Project is also provided.

1.3.1 Wildlife Habitat

The Rhode Island Wildlife Action Plan (WAP) (RIDEM et al. 2015) defines habitat as a place where an animal normally lives, often characterized by a dominant plant form or physical characteristic (e.g., a stream or a deciduous forest). In addition to the type of vegetative

cover, habitat also includes the resources, such as food and water, and conditions present in an area that produces occupancy – including survival and reproduction – by a given organism (Hall et al., 1997). A species may utilize one or several resource areas or vegetation cover types for its habitat. Rhode Island's varied bedrock and surficial geology, soils, topography, and hydrology support a range of plant communities that supports a complex ecological framework for Rhode Island's fish and wildlife diversity (RIDEM et al., 2015).

There are no federal, state, or local regulations relevant to habitat cover within Rhode Island. Any impacts to habitat type or habitat conversion will be evaluated as part of the National Environmental Policy Act (NEPA) document prepared by BOEM.

1.3.2 Wetlands and Waterways

Waters of the United States (WOTUS)[2] subject to federal jurisdiction under §404 of the federal Clean Water Act (CWA) include all waters which are used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; all interstate waters, including interstate wetlands; and all other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, natural ponds, or drainage ditches leading to regulated WOTUS, the degradation or destruction of which could affect interstate or foreign commerce (33 CFR Part 328). The United States Army Corps of Engineers (USACE) exercises the regulatory authority over WOTUS in accordance with §404.

Wetlands and waterways within the Project Area are addressed in accordance with the following federal requirements:

- In compliance with Executive Order (EO)11990 of 1977 (Protection of Wetlands), federal agencies are to avoid destruction and modification of, or construction within, existing wetlands where there is a practicable alternative.
- §401 of the CWA specifies additional requirements for permit review on the state level. Any applicant for a federal license or permit to conduct any activity that may result in a discharge into navigable waters must provide a certification from the state in which the discharge originates (401 Certification). Interstate water pollution control agencies having jurisdiction over navigable waters at the point where the discharge originates may issue a permit in lieu of the state. In Rhode Island, Water Quality Certification is obtained from the Rhode Island Department of Environmental Management (RIDEM) Office of Water Resources.
- §404 of the CWA regulates the discharge of dredged or fill material into WOTUS. The §404(b) (1) Guidelines state that no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge that would have less of an adverse impact on the aquatic ecosystem or a special aquatic site, and requires

2 Note that the new definition for WOTUS as published in Federal Register Vol. 88, No. 11 on January 18, 2023 will go into effect on March 23, 2023. The new definition of WOTUS will not change any of the regulatory implications within this tech report.

that appropriate and practicable steps be taken to minimize potential adverse impacts on the aquatic ecosystem.

- §10 of the Rivers and Harbors Act regulates the dredging or disposal of dredged materials, excavation, filling, or any other modification of a navigable WOTUS.

The State of Rhode Island has jurisdiction over wetland resources pursuant to the requirements and provisions of Rhode Island General Law (RIGL) 2-1-18 et seq. and RIGL § 46-23. RIGL 2-1-18 et seq., known as the Rhode Island Fresh Water Wetlands Act, and § 46-23-6, authorize the RIDEM and the Coastal Resources Management Council (CRMC) to regulate actions that may impact Freshwater Wetlands. Freshwater wetland jurisdiction of the two agencies follows pre-determined physical boundaries which are mapped on the Environmental Resource Map (ERM) hosted by RIDEM. The ERM indicates that the Project Area is entirely within the jurisdiction of the CRMC. CRMC regulates freshwater wetlands through the Coastal Resources Management Plan (CRMP; 650-RICR-20-00-1) and the Rules and Regulations Governing the Protection and Management of Freshwater Wetlands in the Vicinity of the Coast (Freshwater Wetland Rules; 650-RICR-20-00-2). RIDEM regulates freshwater wetlands through Rules and Regulations Governing the Administration and Enforcement of the Freshwater Wetlands Act (250-RICR-150-15-1).

The CRMP and Freshwater Wetland Rules require that the applicant demonstrate that measures have been taken to avoid, minimize, and mitigate impacts to wetland resources to the maximum extent possible. Section 1.14(D)(4) of the CRMP *Alterations and Activities that Require an Assent from the CRMC* states that filling, removing, or grading of freshwater wetlands is prohibited, however, relief from this prohibition may be granted in instances when no other feasible alternatives exist, and the following stipulations are met:

- The applicant shall be required to mitigate the area of wetland lost on a 2 to 1 (2:1) area basis;
- The wetland that is replaced shall be consistent with that which was filled;
- The mitigation, when feasible, shall take place on-site and in an area which is hydrologically connected to the impacted wetland. When not feasible the Council shall consider other viable alternatives, including increased mitigation ratios;
- Setback and buffer requirements shall be required for the wetland replacement area; and
- Enhancement of existing wetland shall not be an acceptable form of mitigation under this section.

Definitions of the wetlands and waterways under CRMC jurisdiction fall into two categories: regulated shoreline features as defined in § 1.2.2 (A) through 1.2.2 (G) in the CRMP and freshwater wetlands as defined in §2.4 of Freshwater Wetland Rules (650-RICR-20-00-2). According to the Freshwater Wetland Rules, freshwater wetlands are "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Regulated shoreline feature definitions are provided in **Table 1** and freshwater wetland definitions are provided in **Table 2**.

Table 1 CRMC Shoreline Feature Definitions

Shoreline Features	Characteristics	Comments
Coastal Beach	Unconsolidated usually unvegetated sediment subject to wave action	Begins at mean low water and extends to an upland rise or dune.
Barrier Islands and Spits	An island or spit comprised of sand and/or gravel extending parallel to the coast	Separated from mainland by a waterbody or coastal wetland.
Coastal Wetlands	Salt marshes and freshwater or brackish wetlands contiguous to salt marshes.	Areas of open water within coastal wetland are considered a part of the wetland.
Headlands, Bluffs, and Cliffs (Banks)	Elevated landforms on headlands directly abutting coastal waters, a beach, coastal wetland, a rocky shore	Inland edge of these features is located at the top of the bluff where the slope decreases significantly
Rocky Shorelines	Naturally occurring shorelines composed of bedrock ledge or boulder-strewn areas	Extends from below mean low water to above the mean high-water mark
Manmade Shorelines	Characterized by concentrations of shoreline protection structures and the existence of other permitted alterations	Natural shoreline features are no longer dominant.
Coastal Dunes	An elevated accumulation of sand formed by wind action.	Often vegetated with beach grass and shrubs.

Table 2 Freshwater Wetland Definitions in Rhode Island[3]

Freshwater Wetland Type	Characteristics	Comments
Swamp	Dominated by woody species	Three acres or larger
Marsh	Vegetation grows in standing or running water during the growing season and includes herbaceous vegetation such as grasses and sedges and/or shrubs	One acre or larger
Emergent Plant Community	Vegetation similar to marsh or wet meadow	No minimum size criteria
Forested or Shrub Wetlands	Vegetation similar to swamp	No minimum size, less than three acres
River	A body of water that is designated as a perennial stream by the USGS 7.5-minute series topographic maps	Does not include ponds
Stream (perennial or intermittent)	Any flowing body of water or watercourse other than a river that flows long enough each year to develop and maintain a defined channel.	Not a River

[3] Freshwater wetland definitions described herein were superseded in July 2022 following the promulgation of new wetland resource definitions by RIDEM and CRMC. Revolution Wind filed its applications with the CRMC and RIDEM in June and July 2021 prior to the effective date of the new regulations. For consistency with applicable state regulatory processes that are under way, Revolution Wind has retained the regulatory definitions applicable to the regulations that the Project is subject to.

Freshwater Wetland Type	Characteristics	Comments
Area Subject to Storm Flowage (ASSF)	Drainage swales and channels that lead into, out of, pass through or connect other freshwater wetlands or coastal wetlands	Carry flows resulting from storm events, but may remain relatively dry at other times
Pond	Natural or manmade; holds open standing or slowly moving water for at least six months a year	¼ acre or larger
Special Aquatic Site	Body of open standing water that does not meet the definition of a pond, but which is capable of supporting and providing habitat for aquatic life forms	Must include presence of standing water during most years; aquatic life forms must be obligate wildlife species
Floodplain	Land area adjacent to a river or stream or other flowing body of water that is, on average, likely to be covered with flood waters resulting from a 100-year frequency storm.	
Area of land within 50-ft	Area within 50-ft of a Swamp, Marsh, Pond or Bog	Not assigned to other Freshwater Wetlands
Riverbank Wetland	Area within 100-ft a river or stream that is less than 10-ft wide or area within 200-ft a river or stream that is greater than 10-ft wide	Not assigned to ASSFs

Under the CRMP, the CRMC has designated water use categories (Type 1 through Type 6) for tidal waters and coastal ponds. These water use designations indicate the priority use of a given tidal water or coastal pond and establish policies regarding activities proposed within a given water body or on land adjoining a water body. **Table 3** provides definitions of the Water Use Categories.

Table 3 CRMP Water Use Categories

Water Type	Definition	Waters included in this category
Type 1	Conservation Areas	Water areas that are within or adjacent to the boundaries of designated wildlife refuges and conservation areas; water areas that have retained natural habitat or maintain scenic values of unique or unusual significance; and water areas that are particularly unsuitable for structures due to their exposure to severe wave action, flooding, and erosion.
Type 2	Low-intensity Use	Waters in areas with high scenic value that support low intensity recreational and residential uses. These waters include seasonal mooring areas where good water quality and fish and wildlife habitat are maintained.
Type 3	High-intensity Boating	Intensely utilized water areas where recreational boating activities dominate and where the adjacent shorelines are developed as marinas, boatyards, and associated water enhanced and water dependent businesses.

Water Type	Definition	Waters included in this category
Type 4	Multi-purpose Waters	Large expanses of open water in Narragansett Bay and the Sounds which support a variety of commercial and recreational activities while maintaining good value as a fish and wildlife habitat; and open waters adjacent to shorelines that could support water dependent commercial, industrial, and/or high intensity recreational activities.
Type 5	Commercial and Recreational Harbors	These waters are adjacent to waterfront areas that support a variety of tourist, recreational, and commercial activities.
Type 6	Industrial Waterfronts and Commercial Navigation Channels	These water areas are extensively altered in order to accommodate commercial and industrial water dependent and water enhanced activities. They include all or portions of the following area: Port of Providence; Tiverton shipping area; Quonset Point and Davisville; Coddington Cove; Melville; Galilee and Jerusalem, and Westerly Waterfront.

The Project must also comply with the Shoreline Change Special Area Management Plan (SAMP) which was established by CRMC to address the threats of erosion and flooding caused by storm events and sea level rise.

In addition to CRMC approval at the State level, the Project will require approval from the QDC, and must follow their Development Regulations (QDC, November 2018). These regulations include an environmental review which was designed to protect the environment and ensure that development in the Quonset Business Park (Park) is consistent with the State Guide Plan. The environmental review accounts for impacts to wetlands as well as other environmental considerations such as air quality, dredging, and hazardous waste.

1.3.3 Wildlife and Rare, Threatened, and Endangered Species

The Rhode Island WAP (RIDEM et al., 2015) defines wildlife as all animal species. The United States Fish and Wildlife Service (USFWS [2016a]) elaborates that wildlife is considered "any member of the animal kingdom, including without limitation any mammal, fish, bird, amphibian, reptile, mollusk, crustacean, arthropod, or other invertebrate" (50 CFR 424.02). One of the focuses of the WAP is to identify the state's species of greatest conservation need (SGCN) with profiles that provide the status and distribution, threats and recommended actions for each of the SGCN species or groups. This Technical Report focuses on Rhode Island SGCN as defined by Appendix 1b of the Rhode Island WAP (RIDEM et al., 2015).

A subset of SGCN are RTE species that have been assigned federal and/or state protected designations. The USFWS and National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Services (NOAA Fisheries) maintains lists of RTE plant and wildlife species that are protected by the federal Endangered Species Act (ESA; 16 U.S.C. § 1531 et seq.). All migratory bird species are also afforded federal protection under the Migratory Bird Treaty Act (MBTA; 16 U.S.C. 703-712). The Bald and Golden Eagle Protection Act (Eagle Act; 16 U.S.C. 668-668c) prohibits the take of bald or golden eagles. Other federal regulations concerning aquatic or semi-aquatic species that are not addressed in this Report include the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act; 50 CFR 600) which is addressed under a separate COP technical report by Inspire Environmental

Inc. and the Marine Mammal Protection Act (MMPA; 50 CFR 216) which is addressed under a separate COP technical report by CSA Ocean Sciences, Inc.

Rare plants and animals are also protected under the Rhode Island Endangered Species Act (RIESA; RIGL §20-37). State-protected plant and animal lists are provided in Appendices 1b and 1d of the Rhode Island WAP.

1.3.3.1 Federal Regulations

Endangered Species Act

The federal ESA, passed by Congress in 1973, provides a program for the conservation of threatened and endangered plants and animals and the habitats in which they are found (USFWS, 2017a). Under Section 7 of the ESA, federal agencies must consult with the USFWS or NOAA when any action the agency carries out, funds, or authorizes may affect a listed endangered or threatened species (USFWS, 2017a; NOAA Endangered Species Conservation, 2020). USFWS is responsible for the protection, conservation, and recovery of listed terrestrial, avian, and freshwater aquatic species while NOAA Fisheries is responsible for endangered and threatened marine and anadromous species under the ESA. The ESA consultation process is initiated by a request for an Official Species List which indicates if there are species listed under the ESA that have the potential to occur within a designated Project Area and if there are Critical Habitats associated with a listed species within or adjacent to the Project Area. Critical Habitat is defined as specific geographic areas that contain features essential to the conservation of an endangered or threatened species and that may require special management and protection (USFWS, 2020a). The purpose of the ESA consultation process is to determine if a proposed action is likely or not likely to adversely affect the listed species or Critical Habitat within a Project Area and to resolve any anticipated impacts via minimization and avoidance efforts. Under Section 4(d) of the federal ESA, USFWS is tasked with developing protective regulations whenever a species is listed as threatened under the Act to provide for the conservation of such species (Levin et al., 2018). Such regulations are often referred to as 4(d) Rules.

Migratory Bird Treaty Act

The federal MBTA (16 U.S.C. 703-712), passed in 1918 and amended in 1972 to include birds of prey, makes it illegal for anyone to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, or purchase, any migratory bird, or the parts, nests, or eggs of such a bird, except under the terms of a valid permit issued pursuant to federal regulations (USFWS, 2017b). The MBTA applies to all bird species native to the United States or its territories, which are those that occur as a result of natural biological or ecological processes. Non-native species such as house sparrows and European starlings are not protected and many species of hunted or game birds, including ducks, geese, doves and many shorebirds are subject to only limited projections under the MBTA (Cornell Lab of Ornithology, 2009; USFWS, 2017b).

The USFWS, which administers the MBTA, defines "take" as an affirmative action directed against wildlife that would "pursue, hunt, shoot, wound, trap, kill, capture, or collect" (50

C.F.R. § 10.12). Currently, the interpretation of the MBTA is being revised from the previous administration which had issued a legal opinion on December 22, 2017 stating that the MBTA should not apply to "incidental take" and passed a new rule enacting that interpretation on January 7, 2021. The new administration has rescinded the 2017 legal opinion and is expected to replace the new rule with the intention of re-applying the MBTA to the incidental take of birds and thereby restoring broader protections to birds (Rott, March 9, 2021).

The USFWS has the regulatory authority to issue permits concerning specific exceptions to the MBTA, such as scientific collection and depredation (USFWS, 2016b), however such permits would not apply to the Project.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (Eagle Act; 16 U.S.C. 668-668c), enacted in 1940 and amended several times since, prohibits anyone from taking bald or golden eagles. The Act defines "take" as pursue, shoot at, poison, wound, kill, capture, trap, molest, or disturb. "Disturb" means: "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior" (USFWS, 2018). The Eagle Act is administered by the USFWS.

1.3.3.2 State Regulations

Rhode Island Endangered Species Act

The RIESA states that no person shall buy, sell, offer for sale, store, transport, export, or otherwise traffic in any animal or plant or any part of any animal or plant whether living or dead, processed, manufactured, preserved or raw (if) such animal or plant has been declared to be an endangered species by either the United States Secretaries of the Interior or Commerce or the Director of RIDEM.

The Rhode Island Natural Heritage Program (RINHP) was established in 1979 to catalogue the State's rare flora and fauna (RIDEM et al., 2015). The RINHP has since been re-configured as a joint project between RIDEM's Division of Fish and Wildlife (RIDEM DFW), the University of Rhode Island (URI), The Nature Conservancy (TNC), and The Rhode Island Natural History Survey (RINHS). The most up to date list of state endangered (SE), state threatened (ST), state concern (SC), and state historical (SH) species is included in the Rhode Island WAP (RI WAP; RIDEM, 2015). Records of the State-listed species and their approximate locations are tracked via the Natural Heritage Areas data layer (that is available within the RIDEM ERM) and via the Rhode Island Geographic Information System (RIGIS) database.

If any State-listed species occur within a project area and the related proposed action is subject to other environmental regulations enforced by the RIDEM and/or the CRMC, then coordination between the RINHP and the regulating agency will be necessary to seek an

effects determination on the State-listed species based on the project's description or if survey efforts and mitigation are required.

1.3.4 Invasive Species

According to the CRMC, invasive species are non-indigenous species of plants or animals that adversely affect the habitat they invade economically, environmentally, or ecologically. Non-native species are those that occur outside of their natural range but are considered benign and do not hinder or prevent the survival of other species within their inhabited ecosystem (National Park Service, 2019). Invasive terrestrial and aquatic plants have been documented by the Rhode Island Invasive Species Council (RIISC) in both the *2001 and 2013 RIISC Invasive Plant List* and the *Rhode Island Aquatic Invasive Species Management Plan* (RINHS et al., 2007). These documents are referenced for determinations of invasive species within the Project Area. This report concerns only those species that are considered invasive as defined within the aforementioned reports.

1.3.4.1 Federal Regulations

EO 13112 of 1999 requires that federal agencies prevent the introduction of invasive species and provide for their control and minimize the economic, ecological, and human health impacts that invasive species cause. This EO was issued as a complement to existing statutes addressing the issue of invasive species, including the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990, as amended (16 U.S.C. 4701 *et seq*.), Lacey Act, as amended (18 U.S.C. 42), Federal Plant Pest Act (7 U.S.C. 150aa *et seq*.), and Federal Noxious Weed Act of 1974, as amended (7 U.S.C. 2801 *et seq*.). Under this EO, federal agencies must address the following:

- Identify actions that may affect the status of invasive species.
- Within the Administration budgetary limits, use the relevant program and authorities to:
  - Prevent the introduction of invasive species;
  - Control invasive species populations in a cost-effective and environmentally sound manner;
  - Monitor invasive species populations;
  - Provide for the restoration of native species and habitat conditions in ecosystems that have been invaded;
  - Prevent the introduction of invasive species; and
  - Promote public education on invasive species and management.

1.3.4.2 State Regulations

A number of Rhode Island State Laws provide authority or create programs that are supportive of invasive species management, however, the State lacks a coordinated regulatory and/or enforcement program. Relevant statutes are identified in the 2007 Rhode Island Aquatic Invasive Species (RIAIS) Plan and include RIGL §2-1 and 2-16, Agriculture and Forestry; RIGL §4-18 Animals and Animal Husbandry; RIGL §20-1, 20-2, 20-8, 20-10 and 20-

11 Fish and Wildlife; RIGL §42-17 State Affairs and Government; and RIGL §46-12, 46-15, 46-17, 46-23,46-28 and 46-31 Waters and Navigation. The Aquatic Invasive Species (AIS) Working Group, co-chaired by the RIDEM and CRMC, is responsible for the implementation of the RIAIS Plan. The plan is constructed around several strategies meant to identify, control, and prevent invasive species in Rhode Island and includes specific tasks meant to target a comprehensive approach to these goals.

CRMC has developed Coastal Buffer Zone Management Guidance (CRMC, 2016) to assist applicants seeking a CRMC Assent for invasive plant management projects. Similarly, CRMC and URI have developed an invasive species manager certification program and a Rhode Island Coastal Plant Guide (URI, 2007) for use by invasive management practitioners and laypeople conducting projects in the Rhode Island coastal environment.

2

Significance Threshold

As described in Section 4.1 of the COP, Project activities and infrastructure that could impact onshore resources were identified as IPFs. IPFs associated with the Onshore Facilities are addressed in Section 3 of this report. Potential impacts are characterized as direct or indirect and whether they result from construction, O&M, and/or decommissioning phases of the Project. The following impact definitions are used to provide consistency in the assessment of potential impacts:

- **Direct effects** are those occurring at the same place and time as the initial cause or action. For example, direct effects may include actions such as filling, grading, or clearing that may eliminate an existing habitat or other biological resources.
- **Indirect effects** are those that occur later in time or are spatially removed from the activity. Indirect effects may include encroachment-alteration effects which produce physical, chemical, or biological changes in the environment that occur as a result of the project. For example, opening the tree canopy to facilitate construction may alter light levels that allow an invasive species to establish.
- **Short-term impacts** are those that occur only for a limited period or only during the time required for construction activities, such as the stationing and operation of construction equipment. Impacts that are short-lived, such as noise from routine maintenance work during operations, may also be short-term if the activity is short in duration and the impact is restricted to a short, defined period.
- **Long-term impacts** are those that are likely to occur on a recurring or permanent basis or impacts from which a resource does not recover quickly.

In general, direct impacts associated with construction and decommissioning are considered short-term because they will occur within the approximate one-year construction phase. Indirect impacts are determined to be either short-term or long-term depending on if resource recovery may take several years. Impacts associated with O&M are largely considered long-term because they occur over the life of the Project; however, some O&M activities, such as cable repairs, may have short-term impacts.

3

Affected Environment

3.1 Methodology

The environmental field investigations performed by VHB for the Project were conducted by individuals with academic backgrounds in related disciplines, including botany, soil science and wildlife biology, and prior professional experience in conducting natural resource surveys in New England. Prior to conducting field investigations, desktop research included a review of agency data, maps, records, publications, guidance manuals, and regulations enforced by the USFWS, USACE, RIDEM, CRMC, the Town of North Kingstown, and QDC. VHB and LEC conducted numerous field investigations of onshore natural resources between July 2019 and December 2021. The field investigations included descriptions of habitats, delineations of freshwater and coastal wetlands, identification of plant and wildlife species, records of rare species observations, and observations of invasive species. Field data were recorded in logbooks, photographs, and through geospatial location with global positioning system (GPS) instruments. Field observations reported by LEC on behalf of National Grid are reported herein. LEC's report of findings is attached at **Appendix B** of this Report.

3.1.1 Habitat cover types

Habitat types within Landfall Envelope, Onshore Transmission Cable Route, and OnSS were assessed during field visits on July 30, August 14, and September 3, 2019, December 10, 2019[4], March 27, 2020, July 13, 2020[1], May 6, 2021, May 20, 2021, November 18, 2021 and

4 These field dates correspond to site investigations performed by LLC.

December 1, 2021. Plant communities within each unique habitat type were documented and compared to the Key Habitat Profiles provided within the RI WAP (RIDEM et al. 2015) to assign the appropriate Key Habitats within the Project Area. Habitat descriptions of the Davisville Substation parcel provided in the SER were used to assign Key Habitats within that parcel. The Key Habitats present within the Project Area are provided in Section 3.2 (Baseline Conditions) and are shown in **Figure A-2** in **Appendix A**.

3.1.2 Wetland and Waterways

3.1.2.1 Delineation and Mapping

Wetland and waterway resources within the Project Area were delineated, photographed, characterized, and mapped to identify baseline conditions using a combination of field investigation and published GIS mapping. Wetlands within the Landfall Envelope, the associated Onshore Transmission Cable route, and the OnSS parcels were investigated and field delineated by VHB in August and September 2019 following the Corps of Engineers wetlands delineation manual (USACE Waterways Experiment Station, 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (version 2) (USACE, 2012). Wetland flag locations were recorded in the field using a Trimble® Geo 7 hand-held GPS unit capable of sub-meter accuracy, post processed, and transferred and incorporated onto Project mapping. CRMC-regulated shoreline features were visually identified, and GPS coordinates were recorded. Where delineated wetlands extended onto private property, the wetland boundary was estimated using a combination of aerial photo interpretation and data available from the RIGIS, including wetlands mapped from the National Wetlands Inventory, hydric soil, topography, and floodplain. Freshwater wetlands and shoreline features are mapped in **Figure A-3** in **Appendix A**.

Wetlands delineated by LEC during their field visit to the Davisville Substation parcel on December 10, 2019 have been incorporated into **Figures A-3** and **A-5** and descriptions of the freshwater wetlands are included in the Baseline Conditions in Section 3.2. Additionally, the one-percent annual chance flood hazard areas as identified by Flood Insurance Rate Maps (FIRMs) produced by the Federal Emergency Management Agency (FEMA) have been mapped in **Figures A-3** and **A-5** because floodplain is a regulated wetland resource according to the CRMC Freshwater Wetland Rules.

Vernal pools regulated under the Freshwater Wetland Rules as Special Aquatic Sites are seasonal water bodies that pond water continuously for a minimum period beginning in the winter and extending at least into the early summer. They may be situated within larger wetland systems or occur as hydrologically isolated features situated in uplands. In the northeastern United States, they are characterized by vernal-pool-specific fauna, certain amphibian and invertebrate species (indicator species) that require the pools to complete a portion of their life cycles (Colburn, 2004). Vernal pool surveys were conducted by VHB biologists on March 27, 2020 by traversing the wetlands to find potentially suitable pools. One vernal pool was identified by VHB within the Project Area. The vernal pool was contained entirely within Wetland 4 which is classified as a Marsh under the RIDEM Freshwater Wetland Rules. Wetland 4 has a forested perimeter along the northern boundary

of the OnSS parcels. Obligate species identified within the pool included adult wood frogs, wood frog egg masses, salamander egg masses, and fairy shrimp (see Vernal Pool Survey Memorandum in **Appendix E** for additional information).

VHB conducted vernal pool surveys in Wetland 5 within the TNEC parcel in the spring of 2021 and identified two obligate vernal pool species: wood frog and fairy shrimp. Based on field investigations and documentation from LEC, the pool floods seasonally and dries up during late summer and fall. As with Wetland 4, solid waste and debris is present within Wetland 5, including several monitoring wells and an abandoned storage tank, which indicate previous anthropogenic disturbance. Although Wetland 5 exhibits indicators of anthropogenic disturbance it provides vernal pool habitat. The depth of the pool indicates that its hydroperiod during an average rainfall year is likely sufficient to allow obligate species such as wood frog to complete their metamorphosis. A memo documenting the findings of this vernal pool survey is included in **Appendix E.**

3.1.2.2 Wetland Function and Values Assessment

Section 650-RICR-20-002-2.10(B)(5) of the Freshwater Wetland Rules mandates that applicants submitting an application to alter freshwater wetlands must describe the functions and values provided and maintained by the subject freshwater wetland. There are six functions and values of the wetland that must be considered: (1) Wildlife and wildlife habitat, (2) Recreation and aesthetics, (3) Flood protection, (4) Groundwater and surface water supplies, (5) Water quality, and (6) Soil erosion and sediment control. These same functions and values are addressed by other regionally applied systems of wetland evaluation including the USACE Highway Methodology Workbook Supplement (USACE, 1999).

The Highway Methodology Workbook Supplement recognizes 13 Wetland Functions and Values. These eight functions and five values can be grouped into four general categories as provided below.

› **Biological Functions**
These functions would fall under the grouping of Wildlife and Wildlife Habitat under the Freshwater Wetland Rules and are separated into:

- **Fish and Shellfish Habitat** – Evaluates the effectiveness of seasonal and permanent water bodies and streams for providing fish and shellfish habitat. Water quality and physical characteristics of the stream, pond or lake are assessed.
- **Wildlife Habitat** – Evaluates the suitability of the wetland to provide habitat for wetland-dependent species. Wetland size, diversity of cover types, interspersion, and connectivity with other wildlife habitats are important factors contributing to wildlife cover, foraging, reproduction, and nursery habitat. Both resident and migrating species must be considered.
- **Production Export (Nutrient)** – This function evaluates the effectiveness of the wetland to produce food for ecosystem support.

› **Hydrologic Functions**
This grouping would include the Surface Water and Groundwater and Flood Protection functions provided in the Freshwater Wetland Rules.

- **Groundwater Recharge/Discharge** – This function considers the potential for a wetland to serve as groundwater recharge and/or discharge area. Recharge evaluates the wetlands contribution to an aquifer. Discharge relates to the potential of the wetland to provide hydrologic support to downstream wetlands and water bodies by discharging groundwater to the surface.
- **Flood Alteration** – Evaluates the wetland's ability to reduce downstream flooding. The wetland size, form (large level storage area with a restricted outlet), position in the watershed, and presence of a potential downstream damage area are evaluated.

› **Water Quality Functions**
This grouping would include the Water Quality and Soil erosion and sediment control functions provided in the Freshwater Wetland Rules.

- **Sediment/Toxicant/Pathogen Retention** – Evaluates the wetland's ability to remove pollutants (sediment, toxins, pathogens) from runoff entering surface waters. Potential upstream pollutant sources, the ability of the wetland to impound water to enhance sedimentation, and the wetland size are factors that are evaluated.
- **Nutrient Removal/Retention/Transformation** – This function relates to the wetland's ability to attenuate nutrients in influent waters to minimize adverse effects on water bodies and aquifers.
- **Sediment/Shoreline Stabilization** – Evaluates the wetland's ability to protect shorelines from wave erosion (especially streams, lakes and large ponds).

› **Societal Values**
These values are addressed under Recreation and Aesthetics by the Freshwater Wetland Rules.

- **Recreation** – Evaluates wetland's suitability for swimming, boating, fishing, etc.
- **Educational/Scientific Value** – Evaluates the wetland's value as an educational resource. Combines ecological integrity, proximity of schools and ease of access to assess educational opportunity. Also considered are the suitability of the wetlands for scientific study or research.
- **Uniqueness/Heritage** – This value evaluates the potential for former use of the wetland by Native Americans and historic industry and habitations, unique plants, animals, or geologic features.
- **Visual Quality /Aesthetics** – Evaluates visual and/or aural quality of the wetland. High values are associated with wetlands with multiple cover types and landforms in settings that are accessible to the public, yet removed from development.
- **Threatened or Endangered Species Habitat** – Evaluates the wetland for special heritage values such as critical habitat or the presence of protected species or other intrinsic qualities.

Freshwater wetlands are ecological systems performing functions that directly benefit the health, welfare and general wellbeing of people and the environment (CRMC, 2018). The

evaluation of wetland functions and values provided in this Section follows the "Descriptive Approach" provided in the USACE Highway Methodology Workbook Supplement. The functions and values of the Project Area wetlands were identified and evaluated by one or more of the following factors: landscape position, substrate, hydrology, vegetation, history of disturbance, and size. Each wetland may provide one or more of the listed functions or values at a significant level. Functions and values have been provided in the description of each wetland in the following Baseline Conditions Section (3.2) and are summarized in **Tables 5** through **7**.

The determining factors that affect the level of function provided by a wetland can often be broken into one of two categories. The effectiveness of a wetland to provide a specified function is generally dependent on factors within the wetland, whereas the opportunity to provide a function is often influenced by the wetland's position in the landscape and adjacent land uses. For example, a large wetland depression with a restricted outlet may be considered highly effective in trapping sediment due to the long residence time of runoff passing through the system. If this wetland is located in gently sloping woodland, however, there is no significant source of sediment in the runoff. Therefore, the wetland is considered to have a small opportunity for providing this function.

A principal function or value is an important physical component of a wetland ecosystem, and/or considered of special value or significant to society, from a local, regional, and/or national perspective.

3.1.3 Wildlife and RTE Species

To assess if any federal or State-listed RTE or SGCN species were present within the Project Area, VHB evaluated information from the USFWS Information for Planning and Consultation (IPaC) tool and the RIDEM ERM. Additionally, special attention was made during the biological reconnaissance and wetland delineation field visits to identify occurrences of rare plants. General wildlife records are based on observations made during site investigations in July, August, and September 2019, March and July 2020, April and May 2021, November 18, 2021 and December 1, 2021, the review of the RI WAP for species tied to specific Key Habitats within the Project Area, and other pertinent literature, including New England Wildlife (DeGraaf and Yamasaki 2001). **Tables C-1 – C-3** within **Appendix C** provide a list of observed species and species with the potential to occur based on habitat preferences and availability within the Project Area.

VHB generated an Official Species List from the USFWS using the IPaC tool on September 28, 2019, December 28, 2020, and February 17, 2023 regarding the Landfall Envelope, the Onshore Transmission Cable routes, the OnSS, and the Interconnection Cable Route. The Official Species Lists are provided in **Appendix D** and described in the Baseline Conditions in Section 3.2.

VHB reviewed the Natural Heritage Area overlays within the RIDEM ERM and determined that there are no records of State-listed species within the Project Area. However, one Natural Heritage Area is mapped west of the OnSS parcels. VHB contacted RIDEM on August 16, 2019 to inquire about the species listing for this area and again on February 15, 2023 to determine if there were updates to the species occurrence records. VHB also contacted the

RINHS on January 15, 2021 to inquire about the possibility of different or updated records of rare species within the vicinity of the Project Area and the RINHS indicated that they have the same information as the database maintained by RIDEM via the ERM. The results of these consultations are included in the Baseline Conditions Section (3.2.3).

The IPaC database was also used to generate lists of bird species protected under the Migratory Bird Treaty Act (MBTA) that have been designated Birds of Conservation Concern (BCC) within the proposed limits of the Onshore Facilities. BCC are those species that without additional conservation actions are likely to become candidates for listing under the ESA (USFWS 2019). Migratory bird species with potential to occur within proximity to the proposed Onshore Facilities, as identified by USFWS IPaC Resource are included in **Table 4** (below). Further detail on avian species within the Project Area and occurrence is included in **Appendix C.**

Table 4 Avian Species Potentially Occurring Within or Proximate to Proposed Onshore Facilities

Common Name	Scientific Name	Level of Concern	Time of year most likely to be present within the Project Area	Observed during field investigations?
American Oystercatcher	*Haematopus palliatus*	BCC[1]	Early May	No
Bald Eagle	*Haliaeetus leucocephalus*	Non-BCC[2]	Late April	No
Black-billed Cuckoo	*Coccyzus erythropthalmus*	BCC[1]	May through mid-June	No
Blue-winged warbler	*Vermivora pinus*	BCC[1]	Late April through Mid-July	No
Bobolink	*Dolichonyx oryzivorus*	BCC[1]	May through July	No
Canada Warbler	*Cardellina canadensis*	BCC[1]	Mid-Late May	No
Chimney Swift	*Chaetura pelagica*	BCC[1]	March through Mid-September	No
Common Eider	*Somateria mollissima*	Non-BCC[2]	Mid-January and Mid-May	No
Common Loon	*Gavia immer*	Non-BCC[2]	Year-round	No
Kentucky warbler	*Oporornis formosus*	BCC[1]	Mid-April through August	Yes
Lesser Yellowlegs	*Tringa flavipes*	BCC[1]	April - May	No
Prairie Warbler	*Dendroica discolor*	BCC[1]	May through early July	No

Common Name	Scientific Name	Level of Concern	Time of year most likely to be present within the Project Area	Observed during field investigations?
Red-breasted Merganser	*Mergus serrator*	Non-BCC[2]	November through June	No
Red-headed woodpecker	*Melanerpes erythrocephalus*	BCC[1]	May through September	No
Red-throated Loon	*Gavia stellata*	Non-BCC[2]	April – May	No
Ring-billed Gull	*Larus delawarensis*	Non-BCC[2]	Year-round	Yes
Roseate tern	*Sterna dougallii*	Non-BCC[2]	May through early September	No
Ruddy turnstone	*Arenaria interpres morinella*	BCC[1]	September	No
Rusty blackbird	*Euphagus carolinus*	BCC[1]	January through April; November	No
Short-billed Dowitcher	*Limnodromus griseus*	BCC[1]	Early July	No
Surf Scoter	*Melanitta perspicillata*	Non-BCC[2]	Early July	No
White-winged Scoter	*Melanitta fusca*	Non-BCC[2]	Early January, Late December	No
Willet	*Tringa semipalmata*	BCC[1]	Mid-April through Early August	No
Wood Thrush	*Hylocichla mustelina*	BCC[1]	May through early July	No

1 Bird of Conservation Concern
2 Although not a BCC, it warrants attention due to the Eagle Act or potential susceptibilities in offshore areas from certain types of development activities
3 A bird of conservation concern only in particular Bird Conservation Regions in the continental US.

3.1.4 Invasive Species

Due to the disturbed nature of the Project Area from its previous uses as landfill and storage areas by the Department of Defense (DoD), all parcels within the Project Area, including the Davisville Substation parcel, have a high occurrence of invasive vegetation. The spread of invasive plant species within highly disturbed habitats is common because when disturbed areas re-vegetate the invasive species frequently out-compete native species. Specific invasive species were recorded during field investigations and wetland delineation. Locations of invasive species were not GPS-recorded due to the pervasive nature of these species throughout the Project Area.

3.2 Baseline Conditions

The following sections describe the occurrence of Key Habitats, wetland resources, wildlife, RTE species, and invasive species within the Project Area.

3.2.1 RWEC Onshore Segment and Landfall Envelope

3.2.1.1 Tidal waters adjoining the proposed Landfall Work Area

Proposed RWEC routes through Narragansett Bay to the Landfall Envelope pass through tidal waters with a Type 4 Water Use Designation. As described in Section 1.2.2, Type 4 Waters are designated as Multipurpose. This designation covers large expanses of open water in Narragansett Bay which supports a variety of commercial and recreational activities while maintaining good value as fish and wildlife habitat.

Type 6 Waters (Industrial and Commercial) are designated within the tidal waters around the Landfall Envelope (see **Figure A-3** in **Appendix A**). Type 6 Waters include industrial waterfronts and commercial navigation channels which have been extensively altered to accommodate these activities.

3.2.1.2 Landfall Envelope Habitat Descriptions

Coastal Beach and Dune

Early evaluations of the Landfall Envelope included a wider range of habitat areas that included Coastal Beach and Dune communities within Blue Beach. Although the revised Landfall Envelope no longer includes such habitat types the original descriptions have been included in this report to illustrate the different habitat types that are near the Project Area which are being avoided to minimize impacts to coastal wetland resources. Coastal beach and dune communities (see **Photo 1** and **Figure A-2 in Appendix A**) are developed by persistent winds, salt spray, and storm surge that are characteristic conditions at shorelines exposed to wave buildup over expanses of tidal waters. The open beach habitat consists of sand and the dune vegetation consists of American beach grass (*Ammophila breviligulata*)**,** seaside goldenrod (*Solidago sempervirens*), rough cocklebur (*Xanthium strumarium*), prickly lettuce (*Lactuca serriola*), switch grass (*Panicum virgatum*), spotted knapweed (*Centaurea stoebe*), orangegrass (*Hypericum gentianoides*), common evening-primrose (*Oenothera biennis*), and spearscale orache (*Atriplex patula*). According to the RI WAP, coastal beaches and dunes are ranked as "high" in importance to biodiversity and provide habitat for several species of shorebirds and tiger beetles.

Coastal beach and coastal dunes are regulated as coastal features by CRMC and depicted in **Figure A-2** in **Appendix A**. As noted in Section 2.1.2, the policies and prohibitions regarding these coastal features will be addressed in the Assent Application to CRMC.

FIRM No.44009C0108J (effective date October 16, 2013) produced by FEMA indicates that the Landfall Envelope is within the one-percent annual flood hazard which is further designated as coastal high hazard area (VE Zone) that is subject to wave action. The one-

percent annual flood hazard area is regulated by the Freshwater Wetland Rules as a wetland resource (see **Figure A-3** in **Appendix A**).

Non-native plant species occur within the coastal beach and coastal dune area, however, none of these species are documented as invasive by the documents referenced in Section 1.1.4.

Examples of wildlife observed include herring gull (*Larus argentatus*), ring-billed gull (*Larus delawarensis*), and killdeer (*Charadrius vociferus*). **Tables C-1** through **C-3** in **Appendix C** provide a list of birds, reptiles and amphibians, and mammals that were observed during field investigations or that have the potential to occur based on habitat preferences. Note that these species tables are not exhaustive. Species that are listed under the 2015 RI WAP as SGCN have been indicated in the tables in **bold**.

The updated Official Species List generated from IPaC on February 17, 2023 indicates that the federally endangered roseate tern (*Sterna dougallii dougallii*) has the potential to occur within the Project Area. There are no critical habitats designated for this species. The roseate tern is a medium-sized coastal marine tern that nests on coastal islands and barrier beaches and forages offshore (Cornell Lab of Ornithology, 2019; USFWS, 2001). The northeastern population of roseate tern was listed as endangered by the USFWS in 1987 (USFWS, 2011). The northeastern population of roseate tern declined in the late 19th century from commercial hunting linked to the millinery (women's hats) trade and although the population rebounded after protections were put in place it again declined beginning in the mid-20th century due to encroachment and nest depredation by gulls and habitat loss (USFWS, 1998). The coastal islands and barrier beaches used for nesting by roseate terns in the Northeast are subject to dynamic coastal geomorphic change along with changes in vegetative cover. Coastal developments that change patterns of near shore transport of sediments can affect sand deposition that may have previously naturally restored some of these habitats. More recently accelerated sea level rise and climate change pose newer threats to these low lying, near shore nesting sites.

According to the most recent Five-Year Review for the Northern North American Population of Roseate Tern, only three colonies have consistently supported 200 or more roseate tern nesting pairs since 1998: Great Gull Island in New York and Bird and Ram Islands in Buzzards Bay, Massachusetts. Currently, 90 percent of the Northeastern roseate tern population breeds on these three islands. According to the Five-Year Review, there are no known breeding colonies in Rhode Island (USFWS, 2020b).

The coastal perimeter of the Project Area is composed of is fortified with riprap or hardened seawalls. Blue Beach, an open sandy beach, is present east of the modified coastline; however, these combined habitat types do not provide suitable breeding habitat for roseate tern which prefer secluded coastal islands and barrier beaches.

Photo 1: View of typical coastal beach and dune habitat at Blue Beach.

Tidal Salt Marsh

As noted above, the Landfall Envelope has been reduced and this habitat type is no longer within the Project Area but has been included due to its proximity to the Project. The landward side of the coastal dune at Blue Beach transitions to tidal salt marsh (see **Photo 2** and **Figure A-2** in **Appendix A**). Tidal salt marsh typically includes several distinct community profiles: regularly-flooded low marsh, irregularly flooded high marsh, salt pannes that form in depressions, and a salt scrub-shrub margin between the marsh edge and adjacent upland. Tidal salt marshes protect shorelines from erosion by buffering wave action and trapping sediments. The central area of the marsh within the Landfall Envelope is dominated by saltmeadow cordgrass (*Spartina patens*) and the perimeter is mostly composed of common reed (*Phragmites australis*), maritime marsh-elder (*Iva frutescens*) and groundseltree (*Bacharis halimifolia*). The common reed that occurs along the perimeter of the tidal salt marsh is considered invasive according to the publications described in Section 1.1.4.

A tidal channel (potentially manmade) flows through the length of the saltmarsh and connects to the inland freshwater forested swamp at this location. The salt scrub-shrub margin is composed of eastern red cedar (*Juniperus virginiana*), northern bayberry and groundseltree.

The tidal salt marsh and portions of the adjacent ruderal freshwater forested wetland (described below) have been mapped as "High Value/High Vulnerability Habitat" by the Rhode Island Conservation Opportunity Areas (COA) Map which was produced as part of the

RI WAP. COAs have been identified in the RI WAP as areas that are critical to the conservation of Rhode Island wildlife and habitat. "High Ecological Value/High Vulnerability Habitats" are COAs that contain unique, threatened habitat. In the case of tidal salt marsh, some of the threats under consideration are sea-level rise, the spread of invasive species such as common reed, and pollutants from household sewage and urban wastewater. The COA map was developed for general planning purposes to facilitate the identification of parcels that may be targeted for conservation or related management activities. The COA designation does not have regulatory implications.

Tidal salt marsh is regulated as a coastal feature according to CRMC and is depicted in **Figure A-2** in **Appendix A**. Although the Freshwater Wetland Rules indicate that the wetlands functions and values assessment are intended for freshwater wetlands as described in Section 2.1.2, the functions and values of the tidal salt marsh have been assessed in **Table 5** because it is contiguous with the ruderal freshwater forested swamp discussed below.

Table 5 Functions & Values of Tidal Salt Marsh Proximate to the Landfall Envelope

	Biological			Hydrologic		Water Quality			Societal Values	
Wetland Type	Fish/Shellfish Habitat	Wildlife Habitat	Production Export	Groundwater Discharge/ Recharge	Flood Alteration	Sediment Toxicant Removal	Nutrient Removal/ Transformation	Sediment Stabilization	Recreation & Aesthetics	RTE Species Habitat
Tidal Salt Marsh	P	P	P	-	X	X	X	P	-	-

Notes: P=Primary Function; X = Secondary Function; - = Not provided

Salt marshes provide nursery grounds and foraging habitat for many species of fish, shellfish, birds, mammals and some reptiles. Species observed within the salt marsh include snowy egret (*Egretta thula*), mummichog (*Fundulus heteroclitus*), and Atlantic silverside (*Menidia menidia*). The tidal salt marsh was surveyed for evidence of the diamondback terrapin (*Malaclemys terrapin*), a state-endangered turtle species which inhabit estuaries, coves, barrier beaches, tidal flats, and coastal marshes. On February 16, 2023, RIDEM responded to an updated records request regarding the Natural Heritage Area polygon mapped approximately 400 ft (120 m) west of the OnSS parcel boundary and indicated that the polygon now represents an occurrence of diamond back terrapin that was observed in 2021 (refer to **Appendix D** for documentation). There are known populations of diamondback terrapin throughout Rhode Island, including in Hundred Acre Cove in Barrington, Napatree Point in Westerly, and in Hunt River in Warwick (McLeish, September 7, 2016). Local observations made by biologists independent of this Project in summer 2019 include sightings at the mouth of the Potowomut River in Warwick, approximately 4.5 mi (7.72 km) north of the Project Area. This species was not observed during field investigations, though the tidal salt marsh and tidal waters proximate to the Landfall Work Area provide suitable habitat for this species. However, the Landfall Work Area itself does not include tidal salt marsh that is suitable habitat for diamondback terrapin and no other components of the Project Area include suitable habitat either.

Photo 2: View of typical tidal salt marsh proximate to the Landfall Envelope.

Ruderal Forested Wetland

The Landfall Envelope no longer encompasses the portion of ruderal forested wetland contiguous with the tidal salt marsh at Blue Beach, however the description of this habitat type has been included due to the proximity to the Project Area and to demonstrate that this habitat type is being avoided (see **Photo 3** and **Figure A-2** in **Appendix A**). This wetland resource is defined as Freshwater Wetland 1 and regulated as a freshwater wetland within the vicinity of the coast by CRMC. During wetter times of the year this wetland discharges freshwater into the northeastern part of the salt marsh. Forested parts of this wetland are dominated by red maple *(Acer rubrum)* with an understory of highbush blueberry (*Vaccinium corymbosum*), arrowwood *(Viburnum dentatum),* with skunk cabbage *(Symplocarpus foetidus),* cinnamon fern *(Osmundastrum cinnamomeum)* and jewelweed *(Impatiens capensis)* common in the herbaceous stratum. Cutover areas near Circuit Drive are dominated by shrubs including alder *(Alnus incana)* and willow *(Salix sp.)*. The closed drainage in Circuit Drive discharges into this wetland forming an Area Subject to Storm Flowage ("ASSF") interior to the wetland.

Ruderal forests result from significant modification of natural forest vegetation. Properties adjacent to this wetland were formerly used as a salvage yard for the storage and disposal of vehicle parts, machinery, construction debris, drummed materials, practice bombs (ordnances) and miscellaneous wastes during its previous operation under the DoD. Evidence of manmade disturbance within this wetland is apparent based on topography, the abundance of invasive plants, exposed fill artifacts, and the presence of monitoring wells.

Under the Freshwater Wetland Rules, this wetland is defined as a forested wetland and because it is contiguous with tidal salt marsh that exceeds 1-ac, it receives a buffer known as the Area of Land within 50 ft from the delineated edge of the wetland. The Area of Land within 50 ft from Wetlands is regulated as a separate wetland resource. According to the Freshwater Wetland Rules, the Areas of Land within 50 ft of Wetland are integral components of the Swamp, Marsh, Bog or Pond with which they are associated. **Table 6** presents the functions and values provided by Freshwater Wetland 1.

Table 6 Functions and Values of Freshwater Wetland 1

Biological			Hydrologic		Water Quality			Societal Values	
Fish/Shellfish Habitat	Wildlife Habitat	Production Export	Groundwater Discharge/ Recharge	Flood Alteration	Sediment Toxicant Removal	Nutrient Removal/ Transformation	Sediment Stabilization	Recreation & Aesthetics	RTE Species Habitat
-	X	X	P	-	X	X	X	-	-

Notes: P=Primary Function; X = Secondary Function; - = Not provided

Invasive species within Freshwater Wetland 1 are pervasive and include Asiatic bittersweet (*Celastrus orbiculatus*), glossy buckthorn (*Frangula alnus*), Japanese knotweed (*Fallopia japonica*), Morrow's honeysuckle (*Lonicera morrowii*), autumn olive (*Elaeagnus umbellata*), multiflora rose (*Rosa multiflora*), mugwort (*Artemisia vulgaris*), and garlic mustard (*Alliaria petiolate*). The high occurrence of invasive species within Freshwater Wetland 1 is likely the result of the anthropogenically disturbed environment.

Wildlife habitat values of forested swamps tend to increase with overall size, especially when surrounding uplands are also forested. Freshwater Wetland 1 may provide moderate habitat value because it is contiguous with tidal salt marsh and a small tract of upland oak forest, discussed below. Examples of wildlife observed within Freshwater Wetland 1 include eastern gray squirrels (*Sciurus carolinensis*), eastern chipmunk (*Tamias striatus*) and red-shouldered hawk (*Buteo lineatus*). Other observed species and species with the potential to occur are provided in **Appendix C**.

Photo 3: Wetland 1 is a ruderal forested wetland.

Oak Forest

This small segment of Oak Forest adjacent to the Ruderal Forested Wetland is also no longer part of the Landfall Envelope but the description has been retained to provide context of the habitat cover types adjacent to the Project Area. Red and black oak are the dominant canopy species within the upland that borders on the ruderal forested swamp known as Wetland 1 (see **Photo 4** and **Figure A-2** in **Appendix A**). According to the RI WAP, deciduous forest dominated by oaks is the most widely distributed habitat type in Rhode Island. While this type of habitat is capable of supporting a wide range of species, its benefit is tied largely to the size of the forested tract and its connectivity to similarly supportive habitat covers. Although the oak forest borders on ruderal forested wetland and therefore likely provides some habitat utility for wildlife, in the wider landscape it is an example of forest fragmentation due to the large-scale industrial development to the east and north and residential development to the west.

The composition of invasive species and wildlife observations within this segment of oak forest was similar to those within the adjacent ruderal forested swamp.

Photo 4: View of oak forest perimeter along a walking path proximate to the Landfall Envelope.

Modified Coastal Beach

This habitat type describes areas within the Landfall Envelope that have been altered by implementation of seawalls and riprap revetments (see **Photo 5** and **Figure A-2** in **Appendix A**). Due to the placement of seawalls and riprap, exemplified in the referenced photograph, the sandy beach is exposed only during low tides. Vegetation that occurs at the base of the seawall and along the top of the seawall includes spotted knapweed, common milkweed (*Asclepias syriaca*), prickly lettuce, and American pokeweed (*Phytolacca americana*).

As previously described, the CRMC regulates coastal beach as a coastal feature. The CRMC classifies seawall and riprap as "manmade shoreline" which is also regulated as a coastal feature (see **Figure A-2** and **A-3** in **Appendix A**).

Spotted knapweed is a weedy invasive species that occurs along the top of the seawall. Canada geese (*Branta canadensis*) and mallards (*Anas platyrhynchos*) were observed foraging in the water along the beach during field investigations.

Photo 5: View of manmade shoreline within the Landfall Envelope.

Ruderal Grassland/Shrubland

Adjacent to areas of modified coastal beach, the Landfall Envelope contains ruderal grassland/shrubland (see **Photo 6** and **Figure A-2** in **Appendix A**). Ruderal grasslands and shrublands constitute early successional habitats, defined by Anderson, et. al. (1976) as uplands where the potential natural vegetation is predominantly grasses, grass-like plants, forbs or shrubs. Such habitats are typically anthropogenically created or maintained due to management strategies. The vegetation within the ruderal shrubland area is similar to the species composition along the seawall described above and also includes northern bayberry (*Myrica pensylvanica*) and eastern red cedar. Wildlife observed in this habitat during field investigations included passerines such as song sparrow (*Melospiza melodia*) and yellow warbler (*Setophaga petechia*).

Photo 6: View of a ruderal grassland/shrubland along the seawall.

3.2.2 Onshore Transmission Cable Routes

Ruderal Grassland/Shrubland

Onshore Transmission Cable Routing for the landfall location passes a vacant lot (Plat 179 Lot 025) that does not appear to be managed regularly and supports a dry ruderal grassland/shrubland field that gently slopes downward towards an access path (see **Photo 7** and **Figure A-2** in **Appendix A**). This habitat supports a mix of shrubs and herbaceous forbs and grasses, including eastern red cedar, pitch pine, *Yucca* sp., Virginia creeper (*Parthenocissus quinquefolia*), and common milkweed. Several invasive species are present including autumn olive, Morrow's honeysuckle, Asiatic bittersweet and mugwort.

The ruderal grassland/shrubland also supports sporadic occurrences of butterfly milkweed (*Asclepias tuberosa*), a state species of concern within Rhode Island (see **Figure A-4** in **Appendix A**). Butterfly milkweed has showy orange flowers in umbels and occurs within disturbed habitats, grassland, meadows and fields. As with other milkweed species, this plant provides important food sources for the larval form of butterfly species, including the monarch butterfly. On December 17, 2020, the USFWS announced their 12-month finding on a petition to list the monarch butterfly (*Danaus plexippus*), as a threatened species under the ESA and determined that listing the monarch as an endangered or threatened species is warranted but precluded by higher-priority listing actions (Federal Register, Vol. 85, No. 243; USFWS, 2020c; Monarch Joint Venture, 2019). The monarch butterfly is considered a candidate for listing under the ESA and its status will be renewed on an annual basis until a

proposal or withdrawal for listing is published. The updated Official Species List generated by IPaC on February 17, 2023 lists the monarch butterfly as a candidate species under the ESA with the potential to occur within the Project Area. However, candidate status does not afford the monarch butterfly protections under the ESA, therefore consultation with the USFWS under Section 7 of the ESA is not required for this species. In accordance with RINHP policy, the occurrence of butterfly milkweed within this habitat cover type will be reported to the RINHP during the State permitting process.

Photo 7: View of ruderal grassland/shrubland within a vacant lot south of Circuit Drive. The Onshore Cable Transmission Cable routes pass this habitat type.

Managed Lawn

The Onshore Cable Transmission Routes within the Landfall Envelope pass by several lots within the Quonset Business Park (QBP) that contain managed lawn (see **Photo 8** and **Figure A-2** in **Appendix A**). Although managed lawn is not considered a Key Habitat by the RI WAP, it provides limited utility to some species of wildlife, such as passerines and rodents, in an otherwise heavily developed industrial and commercial area. It should be noted that some lots containing only managed lawn may be designated for future development.

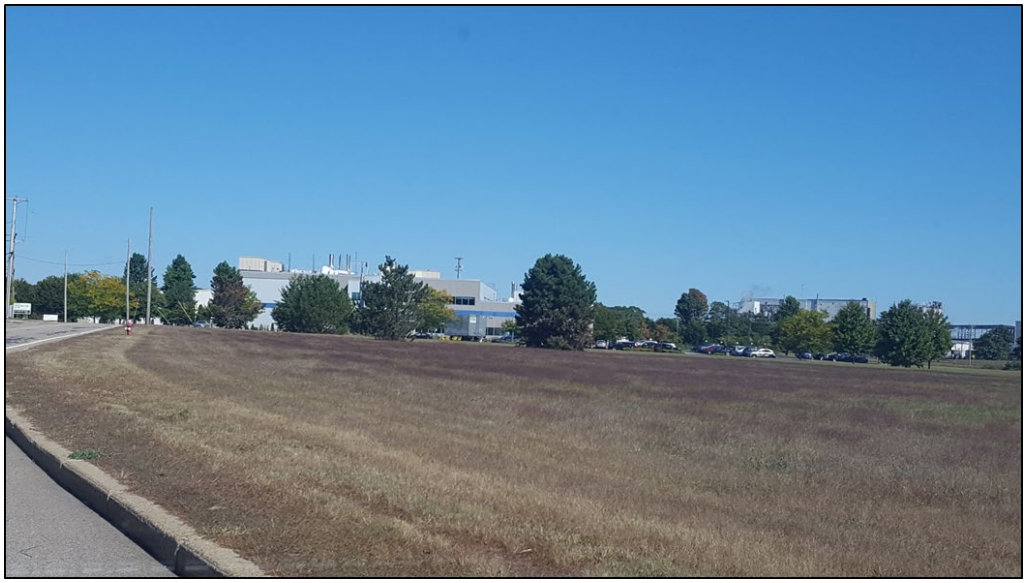

Photo 8: An example of a parcel with managed lawn within the QBP. The Onshore Transmission Cable Route will pass lots with managed lawn.

3.2.3 OnSS, ICF, Davisville Interconnection Cable Route, and TNEC ROW

Ruderal Forested Swamp and Ruderal Shrub Marsh

Ruderal forested swamp is present within OnSS parcels and the Davisville Substation parcel (see **Photo 9** and **Figure A-2** in **Appendix A**). The dominant canopy species within the forested swamp is red maple with scattered patches of black gum (*Nyssa sylvatica*), swamp white oak (*Quercus bicolor*), red oak and eastern white pine. The understory contains scattered sapling recruitment from the canopy layer, and shrub thickets of sweet pepperbush (*Clethra alnifolia*), highbush blueberry (*Vaccinium corymbosum*), winterberry (*Ilex verticillata*), and alder (*Alnus* sp.). Poison ivy (*Toxicodendron radicans*), green briar (*Smilax rotundifolia*), sensitive fern (*Onoclea sensibilis*), and skunk cabbage (*Symplocarpus foetidus*) are common in the herbaceous stratum.

A ruderal shrub marsh is present in the northern part of the OnSS parcels. The southern boundary of the marsh is highly altered with demolition debris stacked along slopes above the marsh. The northern limit of the marsh extends beyond the OnSS parcels as interpolated based on available topographic mapping and aerial photographs. The ruderal shrub marsh has a forested perimeter and open water seasonally inundates the shrubland cover type.

The wetland types within the OnSS and Davisville Substation parcels are considered ruderal because of the alterations associated with the former Camp Avenue Dump which is listed on the Superfund Enterprise Management System (SEMS) database as a State Hazardous Waste Site. According to documents provided by the RIDEM, from approximately 1949 to 1953, and as late as 1970, the Camp Avenue Dump was used as a general landfill by the United States Navy before the Quonset Point Naval Air Station was deactivated in 1974. Previous studies conducted at the dump as well as field observations during Project surveys reported that wastes that included construction debris, roofing tar, ship parts and unspecified industrial

waste. See the Phase 1 Environmental Site Assessment (VHB, 2020a) for additional information regarding the history of the Camp Avenue Dump. Evidence of the site's past use as a landfill is present throughout with fill artifacts, disturbed topography that indicates previous cutting and filling, and pervasive invasive vegetation which includes glossy buckthorn, Asiatic bittersweet, Morrow's honeysuckle, black locust (*Robinia pseudoacacia*), multiflora rose, privet (*Lingustrum sp*.), tree of heaven (*Ailanthus altissima*), black swallow-wort (*Cynanchum louiseae*), mugwort, and garlic mustard.

The COA Map produced as part of the RI WAP identifies the OnSS parcels, most of the Davisville Substation parcel, and the surrounding area as an "Ecological Land Unit" (ELU). According to the RI WAP, ELUs are areas on the landscape with unique physical properties based on soil characteristics, topography, and plant communities. The ELU designation within this portion of the Project Area indicates that the RI WAP considers this area as a potential conservation opportunity.

The wetland resources within the OnSS parcels identified by VHB include Freshwater Wetland 2, a small isolated forested wetland at the southern base of the capped landfill, Freshwater Wetland 3, a forested Swamp[5] that occurs along the western boundary of the OnSS parcels, and Freshwater Wetland 4, a shrub Marsh[6]/Special Aquatic Site with a forested perimeter that occurs along the northern boundary of the OnSS parcels (see **Figure A-3** and **A-5** in **Appendix A**). According to the SER prepared by LEC, the boundary for Freshwater Wetland 4 continues into the northwest corner of the Davisville Substation parcel, identified as the "B-series" forested wetland in the SER. The SER also identifies a separate A-series forested Swamp in the northeast corner of the Davisville Substation parcel which is a continuation of Freshwater Wetland 3 based on the published soil survey and National Wetlands Inventory wetlands mapping (see **Figure A-3** and **A-5** in **Appendix A**). Based on the wetland classification detailed within the Freshwater Wetland Rules, Freshwater Wetlands 3 and 4 are each assigned an Area of Land within 50 Ft extending from the delineated wetland boundaries.

Tributaries to Mill Creek flow through Freshwater Wetland 3 north and west of the OnSS parcel boundary. Based on their linear form and deep channel incision, these streams were likely excavated as a means to drain Freshwater Wetland 3. The streams are all less than 10-ft (3 m) wide and receive a 100-ft Riverbank Wetland in accordance with the Freshwater Wetland Rules.

A small, isolated scrub-shrub wetland was delineated by LEC as the "C-series" wetland which will hereinafter be referred to as Freshwater Wetland 5 (see **Figures A-3** and **A-5** in **Appendix A**). Wetland 5 is a Special Aquatic Site hydrologically connected to Freshwater Wetland 4 via a manmade ditch that is regulated as an Area Subject to Stormwater Flowage (ASSF). The ditch was unvegetated and dry during the site investigation conducted by LEC and VHB.

5 The Freshwater Wetland Rules define a Swamp as a wetland that is dominated by woody species and at least 3 ac (1.2 ha) in size.

6 The Freshwater Wetland Rules define a Marsh as a wetland feature not less than 1 ac (0.40 ha) in size that has standing or running water during the growing season and is made up of herbaceous vegetation such as grasses and sedges and/or shrubs.

VHB identified one vernal pool within Freshwater Wetland 4 based on field surveys conducted in March of 2020. A vernal pool survey conducted by VHB in April 2021 verified that Wetland 5 is also a vernal pool. Memoranda documenting these vernal pool resources are provided in **Appendix E**.

The Official Species Lists generated by IPaC on September 28, 2019 and December 28, 2020 for the footprint of the Onshore Facilities indicated that the federally threatened northern long-eared bat (*Myotis septentrionalis*; NLEB) has the potential to occur within the Project Area. The updated Official Species List generated by IPaC on February 17, 2023 still lists the NLEB as federally threatened, however, the status will soon change to endangered. The final rule to reclassify NLEB from federally threatened to endangered was published in the Federal Register on November 30, 2022 and is scheduled to take effect March 31, 2023 (Federal Register, Vol. 87 No. 229). There are no critical habitats associated with this species.

The USFWS is preparing new tools, guidance documents, and training that should become available before the endangered rule goes into effect. The anticipated documents include a new range-wide determination key which will replace the existing 4(d) Rule Key and an interim consultation framework for projects that are not eligible for review under the new determination key. While these updates are pending, the existing Final 4(d) Rule remains active until the new endangered ruling goes into effect on March 31, 2023. Once the endangered ruling goes into effect, incidental take allowed under the 4(d) Rule will no longer be permitted without an incidental take permit unless there is a direct hazard to human life or property. Take is defined by the ESA as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any species listed under the ESA. Additional guidance and conservation measures are anticipated.

The NLEB is a medium-sized bat that was listed under ESA on April 2, 2015, due to drastic population declines of up to 99 percent in the northeast related to white-nose syndrome (WNS) (USFWS, 2015a). The sharp population decline of the NLEB within the northeast is due to WNS, which is caused by the fungus, *Pseudogymnoascus destructans*. WNS creates a white fuzz on the wings and muzzle of bats and disrupts their hibernation by causing them to become more active during their hibernation period (USFWS, 2020d). This increased activity expends their energy supply that is needed to support their hibernation and often results in death (USFWS, 2020d). Due to the NLEBs' vulnerability to WNS, other sources of mortality have become potentially important factors in the viability of this species. Other sources of mortality for this species include impacts to hibernacula (winter habitat), the loss or degradation of summer habitat, and wind farm operation (USFWS, 2015a).

According to the most recent (2022) USFWS Summer Survey Guidelines (*Guidelines*) for NLEB and Indiana bat (*Myotis sodalis*), suitable summer habitat for NLEB consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures (USFWS, 2022). The NLEB also favors linear features such as fence rows, riparian forests, and other wooded corridors. Individual trees may be considered suitable habitat when they exhibit characteristics of suitable roost trees and are within 1,000 ft of other forested/wooded habitat (USFWS, 2022). Summer

roosting habitat is typically occupied from mid-May through mid-August each year, with the pupping season occurring typically from early June through the end of July (USFWS, 2022).

During their active summer period, NLEB roost singly or in colonies underneath bark, in cavities or in crevices of both live trees and snags (dead trees). They have also been observed roosting in man-made structures, such as buildings, barns, sheds, cabins, under eaves of buildings, and in bat houses (USFWS, 2022). Female northern long-eared bats live in fission–fusion societies where females form preferred associations within groups of their own species that vary daily in size and composition as individuals switch roosts (Kunz and Lumsden 2003; Lewis 1995). One study that tracked female northern long-eared bats in Nova Scotia, Canada verified this fission-fusion relationship by radio-tracking 19 females to 53 roost trees in 2006 and 21 females to 46 roost trees in 2007 (Patriquin et al. 2010). The bats switched roosts almost daily and roosted in groups that ranged from one individual to up to 67 individuals (Patriquin et al. 2010). Another study that documented colony roosting characteristics found that one roost stayed within an approximately five-acre forested area (Perry and Thill, 2007). These studies help to underscore that NLEB require a moderately sized forested area to support the colony roosting dynamics.

There are several fragmented forested areas within the Project Area, including the ruderal forested swamp and mixed oak/white pine forest within the OnSS and Davisville Substation parcels that provide potentially suitable summer habitat for NLEB. While habitat preference for the NLEB is broad, their occurrence in Rhode Island has not been studied extensively enough to indicate occurrences of summer roosting locations. According to the RIDEM's records on NLEB, hibernating NLEB have been identified on Jamestown, but no surveys have been conducted to identify maternity roosting trees. Occurrences of NLEB within Rhode Island are tracked by the RIDEM and no new occurrences were recorded in 2020 (pers. comm. Charlie Brown, 2021). RIDEM responded to an updated records request regarding occurrences of the northern long-eared bat on February 16, 2023 and indicated the following:

- At this time, there are no known northern long-eared bat maternity roosts in or near 150 ft of the described work area.
- At this time, there are no known northern long-eared bat hibernacula in or within 0.25 mi of the described work area.

In July 2020, VHB performed bat-acoustic presence/absence surveys targeting the northern long-eared bat according to the most up to date *Guidelines* (published 2020) at the time. Four survey sites were located along Onshore Transmission Cable Route and within the proposed OnSS parcels based on the presence of potentially suitable habitat. Automated and qualitative analysis of acoustic surveys did not identify the federally threatened[7] northern long-eared bat or the tricolored bat (*Perimyotis subflavus*) which is being considered for endangered species status protection under the federal ESA based on a

7 At the time the surveys were conducted the northern long-eared bat was federally threatened, now the ruling issuing its federally endangered status is expected to take effect March 31, 2023.

proposal published by the USFWS on September 14, 2022 (Federal Register, Vol. 87, No. 177).

Call data were auto classified with Bat Call Identification East, Version 2.8b (BCID), which resulted the detection of the following species: big brown bat (*Eptesicus fuscus;* n=540 calls), eastern red bat (*Lasiurus borealis;* n=891 calls), hoary bat (*Lasiurus cinereus*; n=23 calls) and silver-haired bat (*Lasionycteris noctivagans*; n=130 calls). Qualitative analysis of unknown and species of concern[8] calls confirmed 11 big brown bat calls and 135 eastern red bat calls.

According to FEMA FIRM Nos. 44009C0104J, 44009C0108J, 44009C0102J, and 44009C0106J (effective dates October 16, 2013) portions of the OnSS parcels occur within the one-percent annual flood hazard area (Zone AE) with a base flood elevation of 13 ft above North American Vertical Datum of 1988 (NAVD88). This floodplain extends into the northeast and northwest corners of the Davisville Substation parcel (see **Figure 3-2** in **Appendix A**). As described above, the one-percent annual flood hazard area is regulated by the Freshwater Wetland Rules as a wetland resource.

During field visits, evidence of white-tailed deer (*Odocoileus virginianus*) was observed, in addition to passerines suited to forest habitat such as black-capped chickadees (*Poecile atricapillus*) and tufted titmice (*Baeolophus bicolor*).

A summary of the functions and values of the regulated wetlands within the OnSS parcels and the Davisville Substation parcels is provided in **Table 7** below.

Table 7 Functions and Values of Freshwater Wetlands in the OnSS and Davisville Substation Parcels

	Biological			Hydrologic		Water Quality			Societal Values	
	Fish/Shellfish Habitat	Wildlife Habitat	Production Export	Groundwater Discharge/ Recharge	Flood Alteration	Sediment Toxicant Removal	Nutrient Removal/ Transformation	Sediment Stabilization	Recreation & Aesthetics	RTE Species Habitat
Freshwater Wetland 2	-	-	-	X	-	P	-	X	-	-
Freshwater Wetland 3	-	P	X	P	P	P	X	X	-	-
Freshwater Wetland 4	-	P	X	P	-	P	-	-	-	-
Freshwater Wetland 5	-	P	X	X	X	X	X	X	-	-
Tributaries to Mill Creek	-	X	X	X	-	X	-	X	-	-
ASSF	-	-	-	-	-	-	X	-	-	-
Floodplain	-	X	-	-	P	X	-	-	-	-

8 Any calls that were auto-classified by the software as northern long-eared bat or tricolored bat were considered "species of concern" and were qualitatively analyzed for species-specific call characteristics by an experienced bat biologist to manually assign species identification.

Notes: P=Primary Function; X = Secondary Function; - = Not provided

Photo 9: A photo of the Freshwater Wetland 3, a ruderal forested swamp within the OnSS parcel.

Mixed Oak/White Pine Forest

The upland area on Camp Avenue where the OnSS and ICF are proposed is a mixed oak/white pine forest (see **Photo 10** and **Figure A-2** in **Appendix A**). Dominant species within the canopy include red oak, black oak (*Quercus velutina*), scarlet oak (*Quercus coccinea*) and eastern white pine (*Pinus strobus*) and other canopy species include red maple, black cherry, and black birch (*Betula lenta*). Understory vegetation includes Morrow's honeysuckle, common greenbrier, Virginia creeper, and spotted wintergreen (*Chimaphila maculata*), As with the adjoining ruderal forested swamp that occurs within the OnSS parcels, the oak/white pine forest shows signs of human disturbance from its previous use as a landfill. Wildlife and invasive species composition are also similar.

Photo 10: A view of the mixed oak/white pine forest within the Camp Avenue parcels designated for development of the OnSS.

Ruderal Pitch Pine Barren

The southeast corner of Parcel 179-001 (nearest Camp Avenue) is an apparent former gravel excavation pit that sits at a lower elevation than the surrounding grade and has transitioned to a sand barren over time (see **Photo 11** and **Figure A-2** in **Appendix A**). This habitat classification of pitch pine barren includes the modifier of "ruderal" because it was likely created by anthropogenic activities. Pitch pine is scattered throughout open patches of bare sand. A stunted shrub layer is composed of autumn olive, scrub oak, eastern white pine, and gray birch (*Betula populifolia*) and the herbaceous layer is composed of orangegrass, narrow-leaved goldenrod (*Euthamia caroliniana*), lady's thumbprint (*Persicaria maculosa*), boneset (*Eupatorium perfoliatum*), partridge pea (*Chamaecrista fasciculata*), redshank (*Persicaria maculosa*), perforate St. John's-wort (*Hypericum perforatum*), and sickle-leaved golden aster (*Pityopsis falcata*), which is state species of concern within Rhode Island. Human disturbance in this area is apparent due to the presence of ATV and bicycle tire tracks and miscellaneous trash and debris. Despite the disturbance, this area provides a unique habitat type that may be capable of supporting flora and fauna not suited to the surrounding forested landscape.

Clusters of sickle-leaved golden aster, a plant species of state concern within Rhode Island, were observed by VHB within the pitch pine barren within the OnSS Parcels during summer surveys in 2019 and 2020 (see **Figure A-4** in **Appendix A**). Another survey conducted by POWER Engineers Consulting in December 2020 within the TNEC parcel concluded that there may be additional suitable habitat for this plant species along the boundary with the OnSS parcels. This potential habitat is shown in **Figure A-4** in **Appendix A**. Sickle-leaved

golden aster is a highly restricted endemic plant that is found only on sandy glacial deposits (Native Plant Trust, 2020). This plant is identifiable by its yellow tubular disk flowers in the center and yellow ray flowers around the center. The RIDEM/RINHP has records of this species occurring within a mapped Natural Heritage Area polygon approximately 400 ft (120 m) west of the OnSS parcel boundary. In accordance with RINHP policy, the new species occurrences within the pitch pine barren will be reported to the RINHP during the State permitting process.

Photo 11: A view of the pitch pine barren within the southeastern corner of the Camp Avenue parcels designated for OnSS development.

Landfill

Although not a designated Key Habitat within the RI WAP, it is worth noting that there is an approximately 2.5-ac portion of the former Camp Avenue Dump within the OnSS parcels that is mounded with an herbaceous covering that appears to be mowed periodically (see **Photo 12** and **Figure A-2** in **Appendix A**). Vegetation within the mounded landfill area includes bird's foot trefoil (*Lotus corniculatus*), Virginia creeper, poison ivy, sensitive fern (*Onoclea sensibilis*), fox grape (*Vitis labrusca*), multiflora rose, black swallowwort (*Cynanchum louiseae*) and common greenbrier.

Photo 12: A view of the landfill cover within the Camp Avenue parcels designated for the OnSS development.

3.2.4 Summary

Most of the Project Area is disturbed from previous anthropogenic uses. However, the Project Area hosts several different Key Habitats that are suitable to a range of wildlife and plant species. Key habitats present within the Project Area include modified coastline, ruderal forested swamp, oak forest, mixed oak/pine forest, ruderal grassland/shrubland, and pitch pine barren. Regulated wetland resources within the Project Area include manmade shoreline, four freshwater wetlands, two vernal pools, perennial streams, ASSF, and floodplain. Invasive plant species are prevalent throughout the Project Area due to the prior anthropogenic disturbance. One plant species of state concern was identified within the OnSS parcels and a second plant species of state concern was recorded proximate to the Onshore Transmission Cable route.

4

Environmental Consequences and Mitigation

4.1 Methodology

This section provides an overview of the assessment of potential impacts to the onshore biological resources resulting from construction, O&M, and decommissioning of the different components of the Onshore Facilities. The IPFs addressed in this section are those that concern the Landfall Work Area, Onshore Transmission Cable, and OnSS as summarized within Table 4.1-1 in Section 4 of the COP. **Table 8** below provides a summary of the IPFs that are addressed in this section organized by Project component and the phase.

Table 8 IPFs Under Consideration for Onshore Facilities

Project Activities	IPFs	Impacted Onshore Biological Resources
Construction		
Landfall Work Area	Land Disturbance, Habitat Alteration, Sediment Suspension/Deposition, Noise, Discharges/Releases, Trash and Debris, Traffic, Air Emissions, Lighting	Habitat, Wetlands, Wildlife & RTE, Invasive species
Onshore Transmission Cable	Land Disturbance, Habitat Alteration, Sediment Suspension/Deposition, Noise, Discharge/Releases, Trash and Debris, Traffic, Air Emissions, Lighting	Habitat, Wetlands, Wildlife & RTE, Invasive species

Project Activities	IPFs	Impacted Onshore Biological Resources
OnSS, ICF, Interconnection ROW, and TNEC ROW	Land Disturbance, Habitat Alteration, Sediment Suspension/Deposition, Noise, Discharge/Releases, Trash and Debris, Traffic, Air Emissions, Visible Structures, Lighting	Habitat, Wetlands, Wildlife & RTE, Invasive species
Operations & Maintenance		
OnSS and ICF Operation	Land Disturbance, Electric and Magnetic Field, Discharges/Releases, Visible Structures, Lighting	Wildlife & RTE
Decommissioning		
Onshore Transmission Cable	Land Disturbance, Habitat Alteration	Habitat, Wetlands, Wildlife & RTE, Invasive species
OnSS and ICF	Land Disturbance, Habitat Alteration, Sediment Suspension/Deposition, Visible Structures, Lighting	Habitat, Wetlands, Wildlife & RTE, Invasive species

4.2 Impact Assessment

4.2.1 Landfall Work Area: Construction and Decommissioning

The IPFs with the potential to affect onshore biological resources during construction within the Landfall Envelope is summarized in **Table 9**. Additional details on potential impacts from the various IPFs are described in the following sections.

Decommissioning of the infrastructure within the Landfall Work Area will have similar impacts on the onshore biological resources to those described below for the construction phase if the underground infrastructure is to be removed. If the infrastructure is abandoned in place it will not have any impacts on the onshore biological resources.

Table 9 IPFs and Potential Levels of Impact on Onshore Biological Resources during Construction of the Landfall Work Area

IPF	Project Activity	Maximum Level of Impact
Land Disturbance and Habitat Alteration	Vegetation clearing and grading, Wetland fill, General construction activities	Direct/indirect, short-term to long-term
Sediment Suspension and Deposition	Interconnection between RWEC-RI and Landfall Work Area, General construction activities	Direct, short-term
Discharges and Releases	General construction activities	Indirect, short-term
Trash and Debris	General construction activities	Indirect, Short-term
Noise and Traffic	Construction-related traffic	Short-term
Air Emissions	General construction activities	Short-term
Lighting	General construction activities	Indirect, short-term

4.2.1.1 Land Disturbance and Habitat Alteration

Land disturbance and habitat alteration are discussed together because they are interrelated from a habitat perspective (i.e. land disturbance has the potential to result in habitat alteration). Land disturbance occurs from the preparation and installation of proposed infrastructure. Habitat alteration is any physical change to areas necessary for breeding and survival of plant and animal species whether terrestrial, aquatic or airborne. Land Disturbance and Habitat Alteration will result from the RWEC connection to the Landfall Work Area.

Under the maximum Project Design Envelope (PDE), potential direct impacts include habitat conversion, and direct injury or mortality of wildlife such as avian and bat species. Potential indirect impacts include the spread of invasive species, reduction in habitat quality, and displacement of wildlife and resources based on changes to habitat conditions. Because the Landfall Envelope is limited to anthropogenically made or disturbed features of manmade shoreline and ruderal grassland/shrubland, the potential for land disturbance and habitat alteration to significantly affect these resources is limited but discussed in greater detail below. Habitat conversion is not a factor for developed areas of the Landfall Envelope, such as buildings, mowed lawn, parking lots and roads.

The construction period for the Onshore Facilities will occur over approximately 18 months and when completed the infrastructure at the Landfall Work Area will be placed underground. HDD will be employed to make the connection between the RWEC and the Landfall Work Area which will limit or completely avoid impacts to manmade shoreline and the ruderal grassland/shrubland because the RWEC will be installed under these resources. The temporary onshore construction work area for the HDD operations will likely be situated within a previously developed area such as an existing parking lot and will not impact the manmade shoreline and/or the ruderal grassland/shrubland. However, if these habitat types are disturbed, they will re-establish to existing conditions relatively quickly since the area would be re-planted in similar condition to the existing cover type. The manmade shoreline does not support any vegetative growth. Habitat conversion resulting from land disturbance and habitat alteration on the existing coastal and terrestrial habitat from the construction of the Landfall Work Area is considered a *direct* and *short-term* impact.

Construction of the Landfall Work Area will have an impact on floodplain since much of the Landfall Envelope occurs within the one-percent annual chance flood hazard area which is further designated as coastal high hazard area (VE Zone) that is subject to wave action as designated in FIRM No. 44009C0108J (effective date October 16, 2013) produced by the FEMA. The one-percent annual chance flood hazard area is regulated as a wetland resource by RI CRMC under the Freshwater Wetland Rules. Impacts to floodplain related to land disturbance and habitat alteration are expected to be temporary since infrastructure will be placed underground and will not create permanent fill within floodplain. The impacts to floodplain during construction are therefore considered *direct* and *short-term*.

A potential indirect impact to coastal and terrestrial habitat generated from land disturbance and habitat alteration linked to construction of the Landfall Work Area is habitat degradation via the spread of invasive species. If vegetative clearing will be required within the ruderal grassland/shrubland for construction of the Landfall Work Area then this may provide

invasive plant species competitive growth advantage over native plants because they are able to leaf out earlier than native plants (Hancock, 2018). The baseline conditions of the ruderal grassland/shrubland habitat already support a high occurrence of invasive plant species. Habitats with high levels of invasive species can degrade habitat quality for wildlife by reducing the amount of native plant material available for foraging, however, this area of habitat is so small it is unlikely to provide a significant habitat resource to wildlife. The spread of invasive species will be managed in compliance with state and federal regulations. Habitat degradation resulting from land disturbance and habitat alteration during construction of the Landfall Work Area is considered an *indirect* and *long-term* impact.

Land disturbance and habitat alteration resulting from construction within the Landfall Work Area may result in the direct injury or mortality of avian species. Mobile individuals are able to temporarily vacate an area of disturbance and, therefore, are less susceptible to mortality or injury compared to less mobile species such as insects and life-stages of certain species such as eggs and pre-volant bat and avian species. Direct mortality and injury would only occur during the construction phase. Impacts on mortality and injury from the construction operations will be mitigated by observing time of year restrictions on vegetation removal that will avoid the breeding season of bats and avian species. The impacts resulting from land disturbance and habitat alteration on mortality and injury of individuals are considered *direct* and *short-term*.

Another potential indirect impact to wildlife species resulting from land disturbance and habitat alteration generated from construction of the Onshore Facilities includes displacement or avoidance behavior of individuals. Impacts from construction, such as vegetation removal and noise generated by construction equipment can create avoidance behavior in individuals. Vegetation removal can affect habitat conditions, as previously discussed, and noise generated by construction has the potential to mask signals used by certain species, such as birds for (1) communication and mating, and (2) hunting, which can lead to a decrease in bird density of the affected area (Bottalico et al. 2015). Displacement and avoidance behavior are expected to only occur during construction and are therefore considered an *indirect* and *short-term* impact.

4.2.1.2 Sediment Suspension and Deposition

Sediment suspension and deposition in the intertidal area may result from the interconnection between the RWEC and the Landfall Work Area. Excavation activities will suspend sediments into the water column causing short-term localized increases to naturally-occurring turbidity. When the activity stops, the sediment suspension will abate, and sediment is expected to settle out onto the seafloor. Impacts resulting from sediment suspension and deposition within coastal waters are considered *direct* and *short-term*.

If turbid conditions are anticipated within the intertidal area as a result of the proposed interconnection between the RWEC-RI and the Landfall Work Area, the water use classification of the tidal water that will be impacted will be a consideration of RI CRMC in reviewing and permitting the Project. The RWEC-RI will pass through Type 4 “Multipurpose”, Type 6 “Industrial Water” and may extend into the Type 2 “Low-Intensity Use” classifications.

RI CRMC may make recommendations regarding construction methodology and/or time-of-year restrictions to minimize impacts to tidal waters.

Sediment suspension and deposition caused by the interconnection between the RWEC and Landfall Work Area may temporarily impact birds that forage in the nearshore area by disrupting and/or obscuring their prey base (e.g. invertebrate foraged by shore birds and ducks). For foraging birds, this could cause direct effects in reduced visibility and inhibiting pre-detection in the immediate vicinity of construction activities. In addition, sediment suspension could locally displace prey. Potential effects on prey species are expected to be temporary in nature (i.e., limited to a small area around the cable installation), and the birds will likely only need to fly a short distance to find available prey. In either case, potential impacts on avian species resulting from increased sediment suspension and deposition are considered *direct* and *short-term*.

Construction of the Landfall Work Area, as well as the other Onshore facilities, will be governed by several environmental permits including the RIPDES General Permit for Stormwater Discharges associated with Construction Activities (RIPDES General Permit). This General Permit requires the development of a site-specific Soil Erosion and Sediment Control (SESC) Plan that the operator must implement, inspect, and maintain during the entire construction process until the entire worksite is permanently stabilized by vegetation or other means. The measures employed in the SESC Plan use best management practices (BMPs) to minimize the opportunity for turbid discharges leaving a construction work area. Further detail about avoidance, minimization and mitigation measures is provided in Section 4.3 *Direct* impacts resulting from sediment suspension and deposition outside of the construction area are expected to be *short-term*.

4.2.1.3 Discharges and Releases

During construction of the Landfall Work Area and the rest of the Onshore Facilities, sanitary waste will be generated and other fluids such as gasoline and oil will be required for the refueling of construction equipment. However, all wastes will be properly managed in accordance with applicable federal and state laws. Accidental discharges, releases, and disposal could cause habitat degradation that would negatively impact the use of habitat by wildlife (e.g. ingestion of toxins which could reduce fitness), but risks will be avoided through compliance with the RIPDES General Permit which requires the implementation of spill prevention and control measures. With these preventative and mitigation measures in place, potential impacts associated with discharges and releases are considered *indirect* and *short-term*.

4.2.1.4 Trash and Debris

Trash and debris will be generated by construction of the Landfall Work Area and the rest of the Onshore Facilities. Solid and liquid trash and debris will be stored in designated receptacles and will be disposed of at an appropriate facility per 30 CFR 585.626(b)(9). Accidental disposal of trash into the habitat surrounding the construction area has the potential to degrade habitat quality and become a risk factor to wildlife as they could potentially ingest or become entangled in debris. With proper waste management

procedures (see Section 4.3), trash or debris discarded into habitats surrounding the construction areas of the Onshore Facilities would be unlikely. Therefore, potential impacts associated with trash and debris are considered *indirect* and *short-term*.

4.2.1.5 Noise and Traffic

Noise and traffic will result from construction of the Landfall Work Area and other components of the Onshore Facilities. The overall installation schedule for onshore facilities including landfall, onshore transmission cables, the OnSS, Interconnection ROW, ICF and TNEC ROW is expected to be approximately one year (see COP Section 3.2, Project Schedule). Construction will typically result in temporary increases in sound. As described within VHB's Onshore Acoustic Assessment, sound has been evaluated based generally on the noisiest condition when the loudest construction equipment would be in operation. Traffic volumes will increase during periods of this one-year construction window to support delivery trucks carrying construction equipment and supplies, and automobiles used for daily commuting to various work sites.

The HDD methodology that will be used to interconnect the RWEC with the Landfall Work Area will involve drilling boreholes underneath the seabed using a rig that would be located in the Landfall Work Area. The primary sound-generating construction equipment associated with HDD operations includes the drill rig, a generator, and mud pumps. Unlike most other construction activities that can be limited to daytime hours, it is typically necessary for HDD operations to occur continuously to minimize the risk of the soil settlement and equipment failures. Other sound-generating equipment that will be required to support the HDD methodology includes an excavator, crane, and either an impact or vibratory sheet pile driver for the site preparation. The Onshore Acoustic Assessment indicates that construction equipment used to support construction of the Landfall Work Area may create sound levels that range from 56 to 101 dBA at 50 feet from the noise source (see Table 3.2-1 in the Sound Assessment). For context, ambient sound measurements conducted within the Project Area under existing conditions ranged from 44 to 45 dBA (Leq) at night (10:00 PM to 7:00 AM) and 49 to 50 dBA during the day (7:00 AM to 10:00 PM).

Receptors of construction- and traffic-generated noise within the Project Area include wildlife, such as avian and bat species, and how they behave within their affected habitats. Potential *direct* impacts on avian species and other wildlife from traffic generated during construction include collisions with construction equipment. However, this occurrence is expected to be rare and is therefore considered *direct* and *short-term*. Indirect impacts on avian species from traffic and traffic-generated noise during construction may include temporary avoidance of construction areas or disruption of normal behavior in the vicinity of the construction. A study that evaluated chronic anthropogenic noise generated from natural gas fields in New Mexico on adults and nestlings of three bird species demonstrated that multiple signs of chronic stress caused by noise pollution caused skewed stress hormone levels and reduced hatching success in one species (Kleist et al., 2018). Since the construction period is temporary, impacts on avian species associated with noise and traffic during the construction period of the Landfall Work Area and other components of the Onshore Facilities are expected to be *indirect* and *short-term*.

Noise and traffic resulting from construction of the Onshore Facilities may create indirect impacts on bat behavior. Most construction activities for the Landfall Work Area will take place during the day[9] while bats are in torpor, during which their metabolism and body temperature drop over a short time period to allow them to conserve energy (Speakman and Thomas 2003; Geiser, 2004). To determine bat response to anthropogenic sound, a study evaluated the effect of noise on torpid bats by subjecting them to a series of playback sound files that included the following stimuli: bird noise, bat colony noise, vegetation noise, traffic noise at different distances from the edge of a highway, and silence (control). Response to these stimuli was measured by skin temperature as an indicator of their arousal from torpor (Luo et al. 2014). The results showed that bats responded most strongly to colony and vegetation noise, and most weakly to traffic noise (Luo et al. 2014). The study also documented evidence that torpid bats can rapidly habituate to repeated and prolonged noise disturbance, suggesting that traffic noise is less disturbing to torpid bats than colony or vegetation noise (Luo et al. 2014). Another study that assessed the impact of anthropogenic noise on bat foraging behavior found that bats avoided foraging areas subjected to strong noise impact (Schaub et al. 2008). This study suggests that foraging areas close to highways and other sources of intense, broadband noises, are degraded in their suitability as foraging areas for "passive listening" bats (Schaub et al. 2008).

Since most construction activities will generally not be conducted during the active bat foraging period between twilight and sunrise, most noise generated from the construction activities is not expected to impact bat foraging behavior. The study by Luo et al. 2014 demonstrated that bat response to traffic noise was low relative to other stimuli (colony noise, vegetation) and that bats rapidly habituate to prolonged noise disturbance. Based on this available information, noise and traffic resulting from construction of the Onshore Facilities are considered *indirect* and *short-term*.

4.2.1.6 Air Emissions

In general, most criteria pollutant emissions will be from internal combustion engines burning diesel fuel (see Section 4.1.9 of the COP for a description of criteria pollutants) from construction vehicles and equipment used to support construction operations of the Landfall Work Area and the rest of the Onshore Facilities. With the exception of on-road vehicles using gasoline, it is expected that all of the non-road construction equipment will utilize diesel engines burning low-sulfur fuel. According to the Technical Report prepared by Tech Environmental on Air Emissions Calculation and Methodology, potential *direct* impacts on the onshore biological resources resulting from air emissions related to construction traffic and equipment usage will occur over relatively short spans of time (approximately one-year construction window) and the impacts to air quality will be minor. Estimated conformity air emissions from the proposed construction activities for the Onshore Facilities are summarized in Section 3.2.4 of the Technical Report on Air Emissions. Air emissions during construction are not expected to exceed applicable EPA or equivalent emission standards.

9 If the HDD methodology is selected, then the HDD operations will occur continuously to minimize the risk of soil settlement and equipment failures and therefore will create noise during nighttime hours as well.

Air pollutants have the potential to harm onshore biological resources such as water quality, soils, plants and animals. Atmospheric deposition of sulfur and nitrogen compounds can cause significant ecosystem effects such as acidification, eutrophication, and changes in soil and water chemistry (USFWS, 2015b). Acidification of soils, lakes and streams can result in changes in community structure, biodiversity, reproduction, and decomposition (USFWS, 2015b). However, since air emissions generated during the construction period of the Landfall Work Area are not expected to exceed applicable air emission standards, the impacts to onshore biological resources are considered *indirect* and *short-term*.

4.2.1.7 Lighting

The impacts of lighting depend on the lighting source and factors that can affect light transmission. In air, the transmission of light can be affected by atmospheric moisture levels, cloud cover, and type and orientation of lights. Noise and artificial lighting related to construction operations will occur during the approximately one-year construction period for Onshore Facilities. While most onshore construction will occur during daylight hours, some overnight lighting may be necessary for safety or to complete necessary work once initiated.

Receptors of light within the onshore biological resources include wildlife and how they behave within their affected habitats. Lighting is not expected to result in injury or mortality or result in the alteration of habitat. Potential indirect impacts on wildlife resulting from lighting generated by construction at the Landfall Work Area include temporary displacement of wildlife individuals or disruption of normal wildlife behavior (e.g. foraging, breeding). For example, illumination of bat foraging areas can potentially prevent or reduce foraging activity, causing bats to pass quickly through the lit area or avoid it completely (Polak et al., 2011). Additionally, lighting can disrupt the composition and abundance of insect prey (Davies et al., 2012) which may in turn reduce foraging opportunities for bats. Since most construction activities will occur during the day over the approximately one-year construction period for the Onshore Facilities, the impacts from lighting on wildlife are considered *indirect* and *short-term*.

4.2.2 Landfall Envelope: Operations and Maintenance

During routine O&M of the Onshore Facilities the infrastructure of the Landfall Work Area will be underground and will have no impact on the onshore biological resources. Non-routine maintenance may cause limited land disturbance to create access to the infrastructure, but such occurrences are expected to be infrequent and are considered *indirect*, *short-term* impacts.

4.2.3 Onshore Transmission Cable Route: Construction and Decommissioning

Table 10 summarizes the IPFs, including the potential level of impact, expected to occur to the onshore biological resources during the construction of the Onshore Transmission Cable. Additional details on potential impacts from the various IPFs are described in the following sections.

Decommissioning of the Onshore Transmission Cable will have similar impacts on coastal and terrestrial habitats to those described below for the construction phase if the underground infrastructure is to be removed. If the infrastructure is abandoned in place it will not have any impacts on coastal and terrestrial habitats.

Table 10 IPFs and Potential Levels of Impact on Onshore Biological Resources during Construction and Decommissioning of the Onshore Transmission Cable Route

IPF	Project Activity	Maximum Level of Impact
Land Disturbance and Habitat Alteration	Vegetation clearing and grading, General construction activities	Direct/indirect, Short-term to long-term
Sediment Suspension and Deposition	Interconnection between RWEC-RI and Landfall Work Area, General construction activities	Direct, short-term
Discharges and Releases	General construction activities	Indirect, short-term
Trash and Debris	General construction activities	Indirect, short-term
Noise and Traffic	Construction-related traffic	Indirect, short-term
Air Emissions	General construction activities	Indirect, short-term
Lighting	General construction activities	Indirect, short-term

4.2.3.1 Land Disturbance and Habitat Alteration

Land disturbance and habitat alteration will result from the installation of the Onshore Transmission Cable from the TJBs to the OnSS. As described within Section 3.0 of the COP, the Onshore Transmission Cable installation will result in up to 3.1 ac (1.3 ha) of temporary ground disturbance; permanent disturbances are not anticipated. Most of this ground disturbance will be from an approximate 8-ft (2.4-m)-wide trench within a 25-ft (7.6-m)-wide temporary disturbance corridor predominantly along paved roads or previously disturbed areas such as parking lots. An approximately 534 ft segment of the Onshore Transmission Cable will cross private properties that are managed in lawn and/or ruderal forest before entering the Onshore Substation properties. At approximately the halfway point between the JTBs and the OnSS (i.e. near the intersection with Camp Avenue and Circuit Drive) the disturbance area will be widened to a 30-ft (9.1-m)-wide by 75-ft (22.8-m)-long area for the installation of two splice vaults which will extend outside of the paved road ROW into managed lawn habitat.

The Onshore Transmission Cable will pass through previously developed areas including paved roads and parking lots. The portions of the Onshore Transmission Cable Route within these previously developed areas are expected to have *indirect* and *short-term* impacts in terms of habitat alteration and land disturbance. Where the Onshore Transmission Cable will connect to the OnSS it will be installed below the proposed access driveway within Plat 179 Lots 001 and 030. Since this segment of the Onshore Transmission Cable route will be installed within a previously forested area the impacts resulting from habitat alteration and land disturbance are considered *direct* and *long-term* in terms of habitat loss.

4.2.3.2 Sediment Suspension and Deposition

Project activities related to the generation of sediment suspension and deposition during construction of the Onshore Transmission Cable are expected to be the same as those described within the onshore components of the Landfall Work Area. Construction activities onshore will comply with the site-specific SESC Plan to minimize the opportunity for turbid discharges leaving the construction work area and affecting habitat quality. Impacts resulting from sediment suspension and deposition outside of the construction area are considered *direct* and *short-term*.

4.2.3.3 Discharges and Releases

Potential impacts from discharges and releases during construction of the Onshore Transmission Cable route are expected to be similar to impacts described in the construction of the Landfall Work Area. Wastes generated during construction will be managed in accordance with applicable federal and state laws. Accidental discharges that could negatively impact the use of habitat by wildlife will be avoided and mitigated via established spill prevention and control measures developed under the RIPDES General Permit. With these preventative and mitigation measures in place, potential impacts associated with discharges and releases are considered *indirect* and *short-term*.

4.2.3.4 Trash and Debris

The description of the potential impacts from trash and debris described in the construction of the Landfall Work Area also applies to the construction of the Onshore Transmission Cable route. Accidental disposal of trash into the habitat surrounding the construction area has the potential to degrade habitat quality and become a risk factor to wildlife as they could potentially ingest or become entangled in debris. However, with proper waste management procedures in place, debris discarded into habitats surrounding the construction area would be unlikely. Therefore, potential impacts associated with trash and debris are considered *indirect* and *short-term*.

4.2.3.5 Noise and Traffic

As described within the Onshore Acoustic Assessment (VHB, 2020b), construction of the Onshore Transmission Cable involves different phases such as clearing the transmission cable route, excavation of the route, support of excavation with shoring, installing the duct, and then backfilling and final restorative activities. The types of construction equipment used during Onshore Transmission Cable installation generally include bulldozers, backhoes, front end loaders, aerial lifts, trenchers, compactors, concrete saws, graders, pumps, compressors, and trucks. Since the Onshore Transmission Cable installation process progresses along the cable route during this period, the exposure to construction noise is of a substantially shorter duration at any particular location along the route. The Onshore Acoustic Assessment indicates that construction equipment used to support construction of the Onshore Transmission Cable may create sound levels that range from 73 to 90 dBA at 50 ft from the noise source depending on the installation methodology (see Table 3.2-2 in the Onshore Acoustic Assessment).

Receptors of the noise generated from traffic and construction equipment operation will be the same as those described within the Landfall Work Area although construction of the Onshore Transmission Cable will not involve HDD or other methods that would need to occur continuously until completed and will generally occur during daytime work hours. Potential indirect impacts to wildlife from the temporary increase in traffic and construction-generated noise may include avoidance behavior during the construction period. Since the construction period is temporary, impacts on avian species associated with noise and traffic during the construction period of the Onshore Transmission Cable and other components of the Onshore Facilities are considered *indirect* and *short-term*. Since research indicates that torpid bats may habituate more readily to prolonged sound disturbance, the impact of noise and traffic on bats resulting from construction of the Onshore Facilities are considered *indirect* and *short-term*.

Potential direct impacts on wildlife species from traffic generated during construction of the Onshore Transmission Cable Route include collisions with construction equipment. However, this occurrence is expected to be rare and is therefore considered a *direct* and *short-term* impact.

4.2.3.6 Air Emissions

The description of the potential impacts from air emissions associated with construction of the Onshore Transmission Cable is expected to be similar those described for the construction of the Landfall Work Area. Air pollutants have the potential to harm onshore biological resources such as water quality, soils, plants and animals. However, since air emissions generated during the construction period of the Onshore Transmission Cable are not expected to exceed applicable air emission standards, the impacts to onshore biological resources are expected to be *indirect* and *short-term*.

4.2.3.7 Lighting

The description of the potential impacts from lighting described within the construction of the Landfall Work Area is expected to be similar during the construction of the Onshore Transmission Cable. Most of the onshore construction will occur during the daylight hours, though some overnight lighting may occasionally be necessary. Receptors of light within the onshore biological resources include wildlife and how they behave within their affected habitats. Wildlife that typically are not exposed to light, such as bats and some insects, may behave differently if exposed to light at nighttime. Since most construction activities will occur during the day over the 18-month construction period for the Onshore Facilities, the impacts from lighting on wildlife will be *indirect* and *short-term*.

4.2.4 Onshore Transmission Cable Routes: Operations and Maintenance

During routine O&M of the Onshore Facilities the infrastructure of the Onshore Transmission Cable will be underground and will have no impact on onshore biological resources. Non-routine maintenance may cause limited land disturbance to create access to the infrastructure, but such occurrences are expected to be infrequent and are considered *indirect* and *short-term*.

4.2.5 OnSS, ICF, Interconnection Cable Route & TNEC ROW: Construction

The IPFs with the potential to affect onshore biological resources during construction of the OnSS, ICF, the Interconnection Cable Route, and TNEC ROW have been summarized in **Table 11**. Additional details on potential impacts from the various IPFs are described in the following sections. The potential impacts associated with these IPFs are addressed separately in greater detail in the following sections.

The phases of O&M and decommissioning are discussed separately under Sections 4.2.7 and 4.2.8, respectively.

Table 11 IPFs and Potential Levels of Impact on Onshore Biological Resources during Construction of the OnSS, ICF, Interconnection Cable Route, and TNEC ROW

IPF	Project Activity	Maximum Level of Impact
Seafloor/ Land Disturbance and Habitat Alteration	Vegetation clearing and grading, General construction activities	Direct/indirect, long-term/short-term
Sediment Suspension and Deposition	Interconnection between RWEC-RI and Landfall Work Area, General construction activities	Direct, short-term
Discharges and Releases	General construction activities	Indirect, short-term
Trash and Debris	General construction activities	Indirect, short-term
Noise and Traffic	Construction-related traffic	Indirect, short-term
Air Emissions	General construction activities	Indirect, short-term
Lighting and Visible Structures	General construction activities	Indirect, short-term

Land Disturbance and Habitat Alteration

Impacts from habitat alteration and land disturbance on coastal and terrestrial habitats generated from the construction of the OnSS, Interconnection ROW, ICF, and TNEC ROW will create habitat loss and conversion, affect habitat utilization by wildlife, and has the potential to create habitat degradation. These impacts are addressed in greater detail below.

The OnSS will occupy an operational footprint measuring up to 3.8 ac (1.6 ha) and will connect to the ICF with two 115-kV underground transmission cables up to 527-feet (160.6 m) long within the Interconnection ROW. Additionally, the OnSS will include a compacted gravel driveway, stormwater management features, and associated landscaped or managed vegetated areas totaling up to 7.1 acres (2.9 ha) inclusive of the up to 4-ac (1.6-ha) operational footprint of the facility. The adjacent ICF will consist of a 115kV ring-bus with an operational footprint of 1.6 ac (0.6 ha). The ICF will also include a paved access road, stormwater management features, and associated landscaped or managed vegetated areas within the approximate 4.0 ac (1.6 ha) construction footprint. This construction footprint includes the TNEC ROW. The ICF will connect to the existing substation with two 115-kV overhead transmission circuits located within the TNEC ROW. The transmission line from the ICF to the Davisville Transmission Tap will be up to 712 ft (217 m) long.

Temporary contingency staging and laydown areas that may be required to facilitate construction of the OnSS, Interconnection ROW, ICF, and TNEC ROW and will be sited at previously disturbed areas owned by the QDC. Staging/laydown in these areas will not

In their existing state the OnSS and ICF parcels include ruderal forested swamp, shrub marsh, ruderal mixed oak/white pine forest, and in the case of the OnSS parcel ruderal pitch pine barren and a landfill. The vegetation clearing and on-going vegetation management will convert some of these cover types to developed land in the cases of the hard structures associated with the OnSS and ICF and to shrubland within the areas that will undergo vegetation maintenance. Vegetation within the ROWs and the perimeters of OnSS and ICF will be managed to promote a low-growing plant community dominated by grasses, flowers, ferns, and small shrubs under 3 ft in height at maturity. The shrubland habitat will be maintained with on-going maintenance to prevent vegetation from interfering with the safe operation of electrical equipment.

Assessing the benefit of converting existing forest to shrubland is complicated when the change may be detrimental to species reliant on forest habitat but beneficial to other species that are more suited to the newly converted habitat (e.g. passerines adapted to grassland and shrubland such as Gray Catbird (*Dumetella carolinensis*) and Common Yellowthroat (*Geothlypis trichas*)). Historically, the occurrence and distribution of shrublands and other early successional cover types in the Northeast were largely influenced by humans. While there is some debate about the extent of Native American influence (Lorimer 2001, Foster and Motzkin 2003), there is widespread agreement that European settlers created a spike in grassland and other early successional cover types between the late 1600s and early 1900s by converting millions of acres of northeastern forests to farmland and pastures and by cutting forests for timber and fuel (Askins 2000, Foster and Motzkin 2003). The widespread abandonment of these farms in the early half of the 20th Century (Litvaitis 1993, Askins 2000), coupled with an increase in suburban development and human control of stochastic events such as fire, caused the amount of early successional cover types in the Northeast to consistently decline through most of the 20th Century (Litvaitis 1993, Litvaitis 2003, Brooks 2003). The decline of shrublands and other early successional cover types in the Northeast has contributed to the significant decline of shrubland-dependent bird species that require such cover types for breeding (Witham and Hunter 1992). Today, forest is the dominant cover type in New England, accounting for 81 percent of the total land area (Trani et al. 2001, Schlossberg and King 2007), while all early successional cover types together are estimated to comprise just 12 percent of the land area (Schlossberg and King 2007). With this understanding, the portion of forested habitat removal that will occur during construction will be small relative to the available forested habitat in the surrounding area. In addition, the conversion to early successional habitat may be beneficial to bird species and other wildlife that are specialized to this type of habitat. Impacts resulting from habitat alteration and land disturbance are considered *direct* and *long-term* in terms of habitat conversion.

The construction of these facilities will not only result in habitat conversion in the areas surrounding the OnSS, ICF, Interconnection Cable Route, and TNEC ROW, but it will also result in habitat loss. Habitat loss occurs when an area supporting wildlife is converted to non-habitat that lacks the natural resources to support occupancy for any species, such as

paved areas. The operational footprints of the OnSS and ICF will create habitat loss when forested upland is cleared and replaced with hard structures and crushed gravel yards that are not capable of supporting plants or wildlife. The ICF will create a loss of approximately 1.6 ac (0.6 ha) loss of mixed oak white pine forest, which is reflective of the operational footprint of the ICF. The OnSS will create a loss of 3.8 ac (1.5 ha) mixed oak white pine forest. Together, these losses represent a relatively small fraction of the contiguous mapped 52 ac (21 ha) COA habitat unit. In addition to impacts on the mixed oak/white pine forest, the LOW for the OnSS will develop 0.6 ac (0.2 ha) of ruderal pitch pine barren. However, the OnSS and the ICF have been designed to avoid occurrences of sickle-leaved golden aster, a plant species of state concern, within the pitch pine barren. In accordance with the state environmental permitting needed for this Project, the occurrence of this State-listed species must be reported to RIDEM which will advise if a mitigation plan will be needed. The habitat loss that will be created due to the construction of the OnSS, Interconnection ROW, ICF, and TNEC ROW is considered *direct* and *long-term*. However, the amount of habitat loss is small relative to the similar habitat that will remain unimpacted in the general region.

Wetland fill is not proposed within the OnSS or ICF parcels, though portions of some wetlands and the associated wetland buffers (Area of Land within 50-ft of the wetland boundary) will be subject to vegetative clearing and on-going vegetation maintenance to be maintained as shrubland. The OnSS will require the clearing of approximately 0.5 ac (0.2 ha) of wetland buffer (Area of Land within 50-ft) to maintain safe clearances around the OnSS. The ICF and TNEC ROW will require the clearing of 0.1 ac (0.04 ha) of Ruderal Forested Swamp, 0.02 ac of Ruderal Shrub Marsh, 0.3 ac (0.1 ha) of buffer zone, and 145 linear feet of ASSF. All of these impacts are limited to vegetative clearing that will convert these resources to shrubland cover, there will not be any structures built within wetland resources or the associated buffer zones. All wetland impacts will require coordination with the regulating agencies, including USACE, RI CRMC, RIDEM, and QDC.

As previously described, land disturbance and habitat alteration from the construction of the OnSS, Interconnection ROW, ICF, and TNEC ROW has the potential to create the indirect impact of habitat degradation through the spread of invasive species. As noted previously, invasive plant growth within the OnSS parcels is pervasive. The SER for the TNEC Davisville Substation/ICF parcel noted that invasive plant species were observed throughout the forested portion of the TNEC Davisville Substation/ICF parcel though the highest density occurred in the areas immediately abutting the TNEC Davisville Substation and the access road to the substation. This observation indicates that invasive species are likely to become further established in disturbed areas if proper management techniques are not followed. Section 4.3 describes environmental protection measures that will be used to manage invasive species within the OnSS and Davisville Substation parcels. The impacts of habitat degradation and wildlife displacement resulting from land disturbance and habitat alteration during construction of the OnSS, ICF, Interconnection Cable Route, and TNEC ROW are considered *indirect* and *long-term*.

As noted within the Landfall Work Area impact assessment, wildlife subject to direct mortality during construction of the OnSS are those with limited or no mobility. Impacts on mortality and injury from the OnSS construction operations will be mitigated by observing time of year restrictions on vegetation removal that will avoid the breeding season of bats

and avian species. Impacts on wildlife mortality and injury resulting from land disturbance and habitat alteration during construction of the OnSS and Interconnection Cable Route will be *direct* and *short-term*.

4.2.5.1 Sediment Suspension and Deposition

Project activities related to the generation of sediment suspension and deposition during construction of the OnSS, ICF, Interconnection Cable Route, and TNEC ROW are expected to be the same as those described within the construction of the Landfall Work Areas and the Onshore Transmission Cable. Construction activities will comply with the site-specific SESC Plan to minimize the opportunity for turbid discharges leaving the construction work area and affecting habitat quality. Impacts resulting from sediment suspension and deposition outside of the construction area are expected to be *direct* and *short-term*.

4.2.5.2 Discharges and Releases

The description of the impacts from discharges and releases described within the Landfall Work Area and Onshore Transmission Cable Route Construction Sections also applies to the construction of the OnSS, ICF, Interconnection Cable Route, and TNEC ROW. Potential impacts associated with Discharges and Releases are considered *indirect* and *short-term*.

4.2.5.3 Trash and Debris

The description of the potential impacts from trash and debris described in the Landfall Work Area and Onshore Transmission Construction Sections also applies to the construction of the OnSS, ICF, Interconnection Cable Route, and TNEC ROW. Accidental disposal of trash into the habitat surrounding the construction area has the potential to degrade habitat quality and become a risk factor to wildlife as they could potentially ingest or become entangled in debris. However, with proper waste management procedures in place, debris discarded into habitats surrounding the construction area would be unlikely. Therefore, potential impacts associated with trash and debris are considered *indirect* and *short-term*.

4.2.5.4 Noise and Traffic

The sequence for construction the OnSS and ICF typically includes clearing the site of vegetation, grading the site, installing environmental erosion controls, installing the foundations and erecting buildings for housing equipment, and restoring any disturbed areas on the site and removing environmental controls. The types of construction equipment used for the OnSS, ICF, Interconnection Cable Route, and TNEC construction generally include backhoes, cranes, refrigerator units, front end loaders, and generators. The Onshore Acoustic Assessment indicates that construction equipment used to support construction of the OnSS and Interconnection Cable Route may create sound levels that range from 80 to 85 dBA at 50 feet from the noise source (see Table 3.2-3 in the Onshore Acoustic Assessment).

Receptors of the noise generated from traffic and construction equipment operation during construction of the OnSS and ICF will be the same as those described within the Landfall Work Areas and Onshore Transmission Cable Construction Sections. Potential direct impacts on wildlife species from traffic generated during construction of the Onshore Facilities

include collisions with construction equipment. However, this occurrence is expected to be rare and is therefore considered a *direct* and *short-term* impact. Potential indirect impacts to wildlife from the temporary increase in traffic and construction-generated noise may include avoidance behavior during the construction period. Since the construction period is temporary, impacts on avian species associated with noise and traffic during the construction period of the Landfall Work Area and other components of the Onshore Facilities are expected to be *indirect* and *short-term*. Since research indicates that torpid bats may habituate more readily to prolonged sound disturbance, the impact of noise and traffic on bats resulting from construction of the Onshore Facilities are considered *indirect* and *short-term*.

4.2.5.5 Air Emissions

Potential impacts from air emissions during the construction of the OnSS. ICF, Interconnection Cable Route, and TNEC ROW are expected to be similar to those described within the construction sections of the Landfall Work Areas and Onshore Transmission Cable. Air pollutants have the potential to harm onshore biological resources such as water quality, soils, plants and animals. However, since air emissions generated during the construction period of the Landfall Work Area are not expected to exceed applicable air emission standards, the impacts to onshore biological resources are considered *indirect* and *short-term*.

4.2.5.6 Visible Structures and Lighting

Visible structures and some overnight lighting will occur during construction of the OnSS, ICF, Interconnection Cable Route, and TNEC ROW. As described within the land disturbance and habitat alteration impact analysis, construction of these facilities will result in visible site disturbance, such as tree clearing, earth moving, and facility installation, all of which will temporarily and permanently alter the visual character of the landscape within the OnSS parcels and Davisville Substation parcel. After these facilities have been constructed the visual structure changes related to construction equipment operation and site alteration will cease. These changes in the visual landscape are an extension of the impacts from land disturbance and habitat alteration as they relate to habitat degradation. Potential impacts related to habitat degradation from the change in visual landscape and required lighting during construction of the OnSS, ICF, Interconnection Cable Route, and TNEC ROW are expected to be *indirect* and *short-term*.

The description of the potential impacts from lighting described in the Landfall Work Areas and Onshore Transmission Cable Route construction sections also applies to the construction of the OnSS, ICF, Interconnection Cable Route, and TNEC ROW. Most of the onshore construction will occur during the daylight hours, though some overnight lighting may be necessary. Receptors of light within the onshore biological resources include wildlife and how they behave within their affected habitats. Wildlife that typically are not exposed to light, such as bats and some insects, may behave differently if exposed to light at nighttime. Since most construction activities will occur during the day over the approximately one-year construction period for the Onshore Facilities, impacts from lighting on wildlife are not anticipated.

4.2.6 OnSS, ICF, Interconnection Cable Route, and TNEC ROW: Operations and Maintenance

Table 12 summarizes the IPFs, including the potential level of impact, expected to occur to onshore biological resources during the O&M of the OnSS, ICF, Interconnection Cable Route, and TNEC ROW. Additional details on potential impacts from the various IPFs are described in the following sections.

Table 12 IPFs and Potential Levels of Impact on Onshore Biological Resources during O&M of the OnSS, ICF, Interconnection Cable Route, and TNEC ROW

IPF	Project Activity	Maximum Level of Impact
Land Disturbance	Operations and routine and non-routine maintenance	Direct/indirect, short-term
Discharges and Releases	Operations and routine and non-routine maintenance	Indirect, short-term
Noise and Traffic	Operations and routine and non-routine maintenance	Indirect, short-term
Visible Structures and Lighting	Operations and routine and non-routine maintenance	Indirect, long-term

4.2.6.1 Land Disturbance

Land disturbance in the form of vegetation management will occur on a periodic basis to maintain vegetation within the perimeters of the OnSS and ICF and within the Interconnection Cable Route and TNEC ROW at shrub-height. Vegetation control methods employ Integrated Vegetation Management (IVM) practices including manual cutting, mowing and the prescriptive use of herbicides plus the use of environmental and cultural controls (Eversource, 2018). The method of control is determined following inspections of the site scheduled for maintenance. The current maintenance cycle for vegetation control utilizing IVM practices is three or four years depending on the vegetation composition, facilities and site conditions. The cycle is based on the average growth rates of targeted species following maintenance (Eversource, 2018).

Vegetation control also includes ROW side trimming and clearing which involves the cyclical management of vegetation along the active transmission line ROW edge to remove encroaching vegetation (Eversource, 2018). Annual trimming ensures that vegetation does not encroach within minimum vegetation clearance distances of the energized conductors. Each year approximately 10 percent of the system ROW mileage is managed to trim back encroaching branches along the edge to obtain vegetation clearance distances listed in the specification and to ensure that vegetation does not encroach into those distances under all operating conditions of the system (Eversource, 2018).

Hazard tree removal will be performed on a cyclical basis to inspect and remove trees that may fail that are outside the edge of the maintained ROW. ROWs that are scheduled for vegetation control maintenance also will be inspected for the presence of hazard trees and if any are identified they will be removed. Methods for tree removal involve the use of manual climbing crews, skidder bucket equipment, aerial saws and tree harvesting machines

(Eversource, 2018). The location of the work, type of work and the degree or amount of work will dictate the type of crew and equipment to be employed.

As described within the land disturbance impact analysis during the construction period, land disturbance as it relates to vegetation clearing may result in the direct injury or mortality of wildlife. However, impacts on mortality and injury from the construction operations will be mitigated by observing time of year restrictions on vegetation removal that will avoid the breeding season of bats and avian species. The impacts resulting from land disturbance on mortality and injury of individuals are expected to be *direct* and *short-term*.

Indirect impacts from vegetation management may include reduction in habitat quality via the spread of invasive species and temporary displacement of individuals as described within the land disturbance impact analysis under the construction phase. However, the spread of invasive species will be controlled with periodic vegetation management and wildlife displacement may occur only during the vegetation removal activities. The *indirect* impact of habitat degradation and wildlife displacement resulting from land disturbance during vegetation management of the OnSS, ICF, Interconnection Cable Route, and TNEC ROW is expected to be *short-term*.

4.2.6.2 Discharges and Releases

The OnSS will require various oils, fuels, and lubricants to support its operation; sulfur hexafluoride (SF_6) gas will be used for electrical insulation purposes. Equipment will be mounted on concrete foundations with concrete secondary insulating fluid containment designed for 110percent containment and in accordance with industry and local utility standards. As described above in the construction section, accidental discharges, releases, and disposal could indirectly cause habitat degradation, but risks will be avoided through spill prevention and control measures and associated BMPs. Therefore, potential impacts associated with discharges and releases are considered *indirect* and *long-term*.

4.2.6.3 Noise and Traffic

According to VHB's Onshore Acoustic Assessment , during O&M the proposed OnSS and ICF would introduce new sources of sound including transformers, shunt reactors, harmonic filters, cooling and ventilation associated with the outdoor substation equipment, as well as condensers, pumps, skids and auxiliary transformers associated with the synchronous condenser building. Operational sound from the OnSS and ICF is modeled to be 45.5 dBA (Leq) or less when measured at the nearest anthropogenic NSRs, which will fall within the ambient sound range measured at baseline conditions.

Temporary noise and construction-related traffic may occasionally be generated due to non-routine maintenance. Pickup trucks may be used to make routine visits to the OnSS and ICF during O&M. Occasional maintenance and operational emergency visits may necessitate bucket trucks, cranes and similar vehicles to facilitate these activities. These limited additional trips are not expected to contribute to local traffic in a significant way. Infrequent vehicle usage within the OnSS and ICF may create temporary disturbance to wildlife adjacent to the OnSS but such disturbance would be short-term and normal wildlife activity would

likely resume after the traffic ceases. Potential impacts associated with traffic during the O&M of the OnSS, ICF, the Interconnection Cable Route, and TNEC ROW are expected to be *indirect* and *short-term*.

4.2.6.4 Visible Structures and Lighting

The OnSS and ICF will be visible structures that will result in habitat conversion and loss. The perimeter of the OnSS ICF, Interconnection Cable Route, and TNEC ROW will be converted from forest to shrub cover type. The OnSS access road and fenced in yard will become non-habitat for wildlife. The conversion of forested cover type outside of the OnSS and ICF fences and within the Interconnection Cable Route and TNEC ROW will increase structural diversity within a forested area adding more edge habitat. The access road and OnSS compound will fragment habitat. Taken in context with the adjacent landscape consisting of residential and commercial developments, the impacts from the OnSS, ICF, Interconnection Cable Route, and TNEC ROW on forested habitat fragmentation are considered *indirect* and *long-term*.

During the operation and maintenance of the OnSS and ICF, general yard lighting will be used for assessment of equipment. In general, the lighting will be off at night unless there is work in progress or lights are left on for safety and security purposes. As during construction of the Onshore Facilities, lighting at night has the potential to temporarily displace bats and/or disrupt normal behavior. Since the use of lighting at night is expected to be infrequent, the impacts it has on temporary bat displacement and/or behavior are considered *indirect* and *long-term*.

This change in the visible landscape presents a very minor risk of mortality or injury of wildlife due to collision with the OnSS or ICF and generally, the changes to the habitat conditions will cause wildlife to avoid the OnSS and ICF and may influence their habitat selection within the vicinity of these structures (e.g. breeding habitat for some forest-dependent species may be less suitable). These impact risks will exist throughout the O&M phase of the Project. The potential for avian mortality or injury due to the low risk of collision with the OnSS and related structures is a *direct* and *long-term* impact. The potential for avian or other wildlife avoidance behavior related to habitat conversion and loss from the OnSS installation is an *indirect* and *long-term* impact.

4.2.7 OnSS, ICF, Interconnection Cable Route, and TNEC ROW: Decommissioning

Table 13 summarizes the IPFs, including the potential level of impact, expected to occur to onshore biological resources during the decommissioning of the OnSS and Interconnection Cable Route. Additional details on potential impacts from the various IPFs are described in the following sections.

Table 13 IPFs and Potential Levels of Impact on Onshore Biological Resources during Decommissioning of the OnSS, ICF, Interconnection Cable Route, and TNEC ROW

IPF	Project Activity	Maximum Level of Impact
Land Disturbance and Habitat Alteration	General construction activities related to decommissioning	Direct/indirect, short-term
Sediment Suspension and Deposition	General construction activities related to decommissioning	Direct, short-term
Visible Structures and Lighting	General construction activities related to decommissioning	Indirect, long-term

4.2.7.1 Land Disturbance and Habitat Alteration

At the end of the Project's operational life, the OnSS and ICF will be decommissioned in accordance with a detailed Project decommissioning plan that will be developed in compliance with applicable laws, regulations, and BMPs at that time. It is possible that OnSS and ICF equipment may be removed while keeping the substation yard and fencing intact. Under such a scenario, land disturbance and habitat alteration activities may be similar to those described within the construction impact analysis, though the impacts will likely be less since new vegetation clearing and grading will not be necessary. The impact of habitat degradation and wildlife displacement resulting from land disturbance and habitat alteration during decommissioning of the OnSS, ICF, Interconnection Cable Route, and TNEC ROW are considered *indirect* and *short-term*. The impacts of mortality or injury to wildlife related to land disturbance and habitat alteration during decommissioning are considered *direct* and *short-term*.

4.2.7.2 Sediment Suspension and Deposition

Project activities related to the generation of sediment suspension and deposition during decommissioning of the OnSS, ICF, Interconnection Cable Route, and TNEC ROW are expected to be the same as those described within the construction impact analysis. Construction activities will comply with the site-specific SESC Plan to minimize the opportunity for turbid discharges leaving the construction work area and affecting habitat quality. Impacts resulting from sediment suspension and deposition outside of the construction area are expected to be *direct* and *short-term*.

4.2.7.3 Visible Structures and Lighting

It is expected that the majority of decommissioning actives would occur during the day and that overnight lighting would only be necessary if there is work in progress on site or lights are left on for safety and security purposes. If the footprint of the OnSS and ICF yards are left in place after they have been decommissioned and equipment has been removed, the remaining development will still be considered a visible structure because it will remain a hard structure within a forested area. Impacts from habitat fragmentation related to visible change in the landscape during decommissioning are be considered *indirect* and *long-term*.

4.3 Avoidance, Minimization and Mitigation

The following avoidance, minimization and mitigation measures will be employed during different phases of the Project (construction, O&M, decommissioning) to reduce impacts to onshore biological resources.

4.3.1 Construction and Decommissioning

4.3.1.1 RIPDES General Permit for Stormwater Discharges associated with Construction Activities

Under the RIPDES General Permit for Stormwater Discharges associated with Construction Activities, an approved SESC Plan will be required for all work related to earth disturbance from construction activities. An SESC Plan will detail the placement of soil erosion and sediment control BMPs adjacent to sensitive onshore biological resources, such as wetlands. Construction monitoring will be performed by a qualified individual at least once every seven (7) calendar days and within twenty-four (24) hours after any storm event which generates at least 0.25 inches of rainfall per twenty-four (24) hour period and/or after a significant amount of runoff to ensure that the BMP are functioning properly. The construction operator will be notified by the inspector if any BMPs need to be modified or replaced.

4.3.1.2 Wetland Avoidance, Minimization, and Mitigation

In accordance with Section 2.9(B)(1)(d) of the Freshwater Wetland Rules, the Onshore Facilities will be designed to avoid and minimize impacts to freshwater wetlands to the maximum extent practicable. Any wetlands that will be impacted as a result of the Project will be mitigated via the federal and state permitting process in accordance with §404 of the CWA and the Freshwater Wetland Rules.

4.3.1.3 Wildlife and RTE species

The following mitigative strategies have been proposed for specific flora and fauna categories:

Birds and Bats

To avoid the potential disturbance of birds and bats during the breeding season, the following environmental protection measures to avoid and minimize impacts to listed species:

› To the extent feasible, tree and shrub removal for Onshore Facilities will occur outside the avian nesting and bat roosting period between May 1 and August 15. If tree and shrub removal cannot avoid this season, Revolution Wind will coordinate with appropriate agencies to determine appropriate course of action. Revolution Wind will continue to coordinate with RIDEM and USFWS regarding TOY restrictions through the permitting process and will adhere to requirements imposed by these agencies.

› Comply with the Northern Long-Eared Bat 4(d) rule (81 FR 1900-1922) to avoid and minimize long-term impacts on the species and sensitive upland habitats.

Note that protections under the 4(d) Rule will expire March 31, 2023 when the endangered status ruling goes into effect. New guidelines and protections to be issued by USFWS are pending. Revolution Wind will continue to coordinate with RIDEM and USFWS regarding time of year restrictions through the permitting process and will adhere to requirements imposed by these agencies.

State-listed Plants

Two State-listed plant species of concern occur within the upland portions of the Project Area. In accordance with the environmental permitting needed for this Project (i.e. RIPDES), the occurrence of this State-listed species must be reported to RIDEM. RIDEM will advise if a mitigation plan for this species occurrence will be needed. Potential mitigation options may include:

› Flagging occurrences of the listed plant species so that they may be avoided during construction activities. This is the proposed and preferred method as the proposed design avoids occurrences on the identified State-listed plant species.
› Excavating and relocating the listed species to another suitable habitat area. There may be a time-of-year restriction imposed for this type of action (e.g. do not relocate during the flowering period) that will be determined by RIDEM and/or RINHP.
› If relocation is not an option, inventory the number of plants that will be taken (destroyed) and develop a planting program to plant the impacted species in another area outside the LOW with suitable habitat.

4.3.2 Operations and Maintenance

4.3.2.1 Invasive Species

Prior to the start of construction an invasive plant survey shall be completed to identify areas of existing infection within the Project Area. In accordance with state and federal permitting requirements and industry standards, Revolution Wind will develop an invasive species management plan for implementation within the Onshore Facilities. The plan will provide details on means and methods for the control of invasive species and will include a monitoring and implementation schedule that will be followed during the O&M of the Onshore Facilities.

The plan will also monitor the establishment of native species that will be planted surrounding the perimeter of the Onshore Transmission Cable, OnSS, ICF, within the Interconnection Cable Route and the TNEC ROW. These areas will be planted with native grasses, ferns, and low growing shrubs.

4.4 Summary of Impacts

In most cases, the magnitude of the Project impacts on onshore biological resources are expected to be negligible. The Project does not propose to fill or grade any wetland habitat, though vegetative clearing within some wetland area and associated buffer will be necessary to maintain safe clearances for the electrical equipment. The Project will avoid the two plant species of state concern. No significant impacts on the biological resources in the Project Area are anticipated to occur from the proposed Project activities. As the Project design details are refined, Revolution Wind will continue to evaluate measures to avoid, minimize and mitigate potential impacts on the onshore biological resources.

5

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Appendix A: Figures

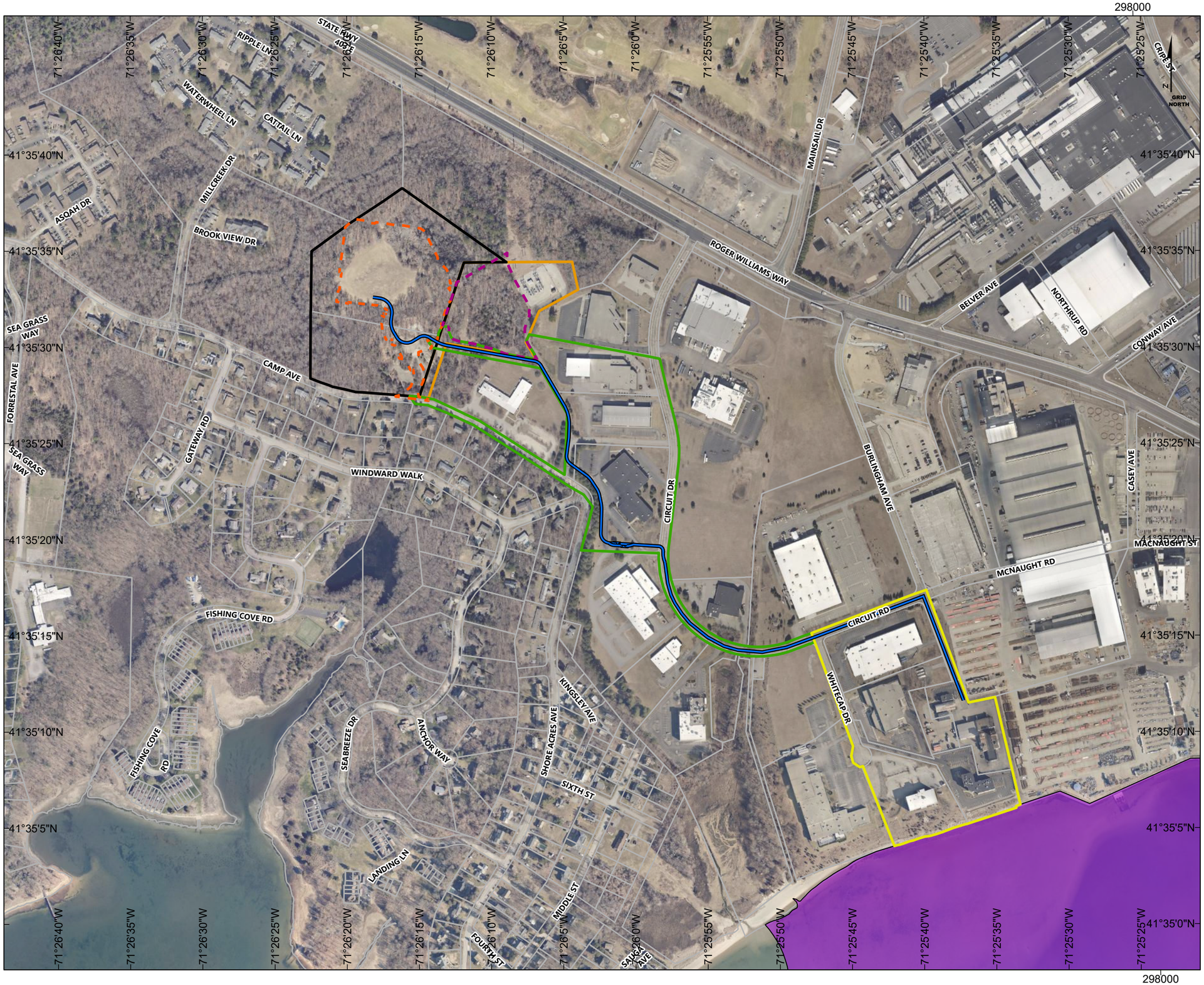

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Figure A-1
Onshore Facilities Overview
NORTH KINGSTOWN, RI

Legend

- Preferred Onshore Cable Transmission Route
- Onshore Transmission Cable Envelope
- Landfall Envelope
- ICF Limit of Work
- OnSS Limit fof Work
- Parcel ID 179-030 & 179-001
- Parcel ID 179-005
- RWEC-RI State Waters Envelope
- Parcel Boundary

Service Layer Credits: National Geographic World Map: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.
IMG\RI_202103_RGB_3in_web:

Reference system: NAD83 (2011)
Projection: UTM Zone 19N

0 60 120 180 Meters

0 200 400 600 Feet

Date: 2/2/2023
Document no:

Created by: S. PELLETIER
Checked by: S. MOBERG
Approved by: MEGEA

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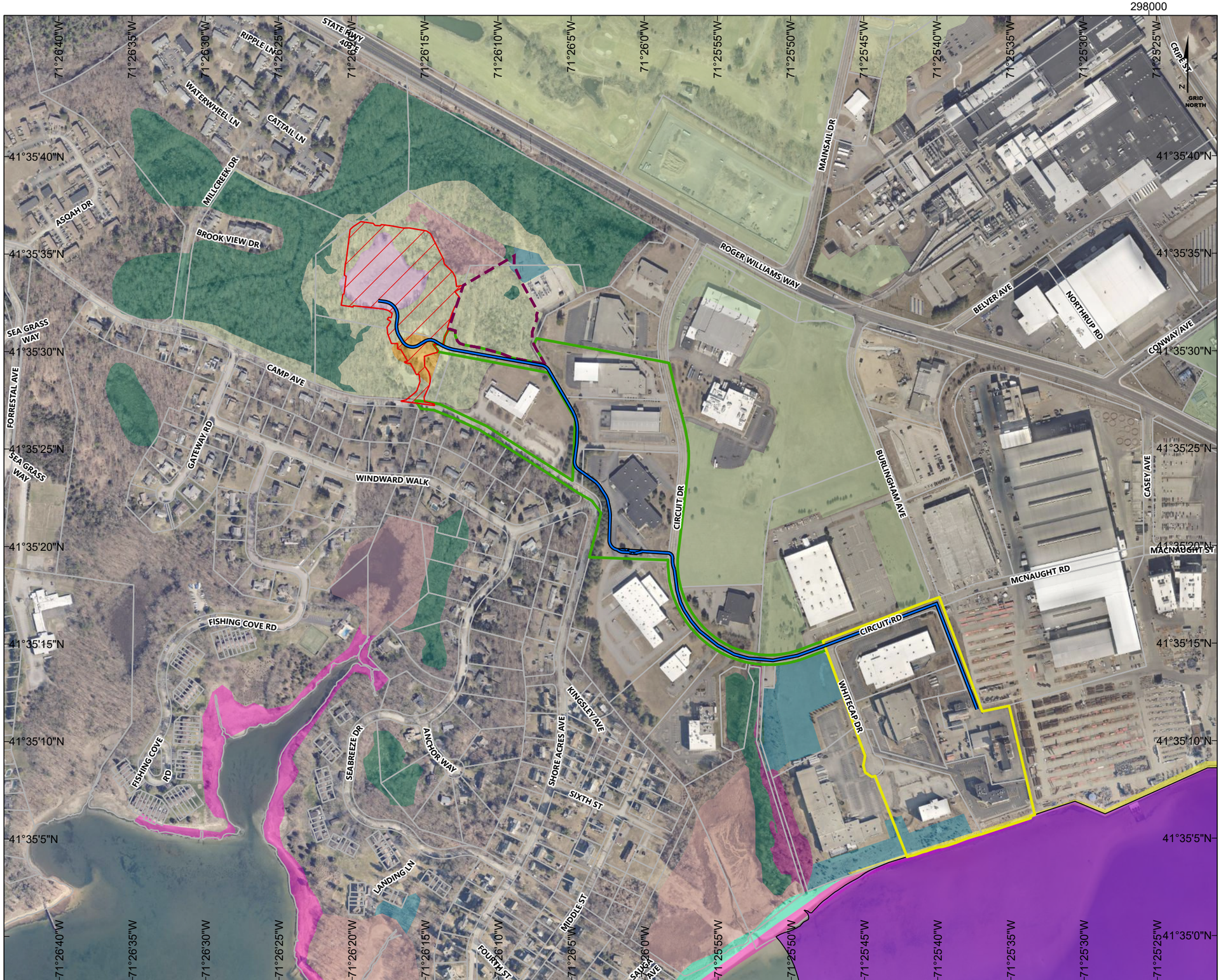
Figure A-2
Habitat Cover Type
NORTH KINGSTOWN, RI



Legend

- Preferred Onshore Cable Transmission Route
- ICF Limit of Work
- OnSS Limit fof Work
- Landfall Envelope
- RWEC-RI State Waters Envelope
- Onshore Transmission Cable Envelope
- Parcel Boundary
- Ruderal Mixed Oak/White Pine Forest
- Ruderal Oak Forest
- Ruderal Forested Swamp
- Ruderal Shrub Marsh
- Ruderal Grassland/Shrub Land
- Landfill
- Ruderal Pitch Pine Barren
- Coastal Beach
- Coastal Dune
- Tidal Salt Marsh
- Manmade Shoreline
- Managed Lawn

Service Layer Credits: National Geographic World Map: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.
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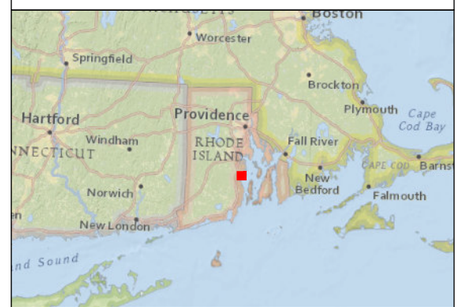

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Date: 2/2/2023
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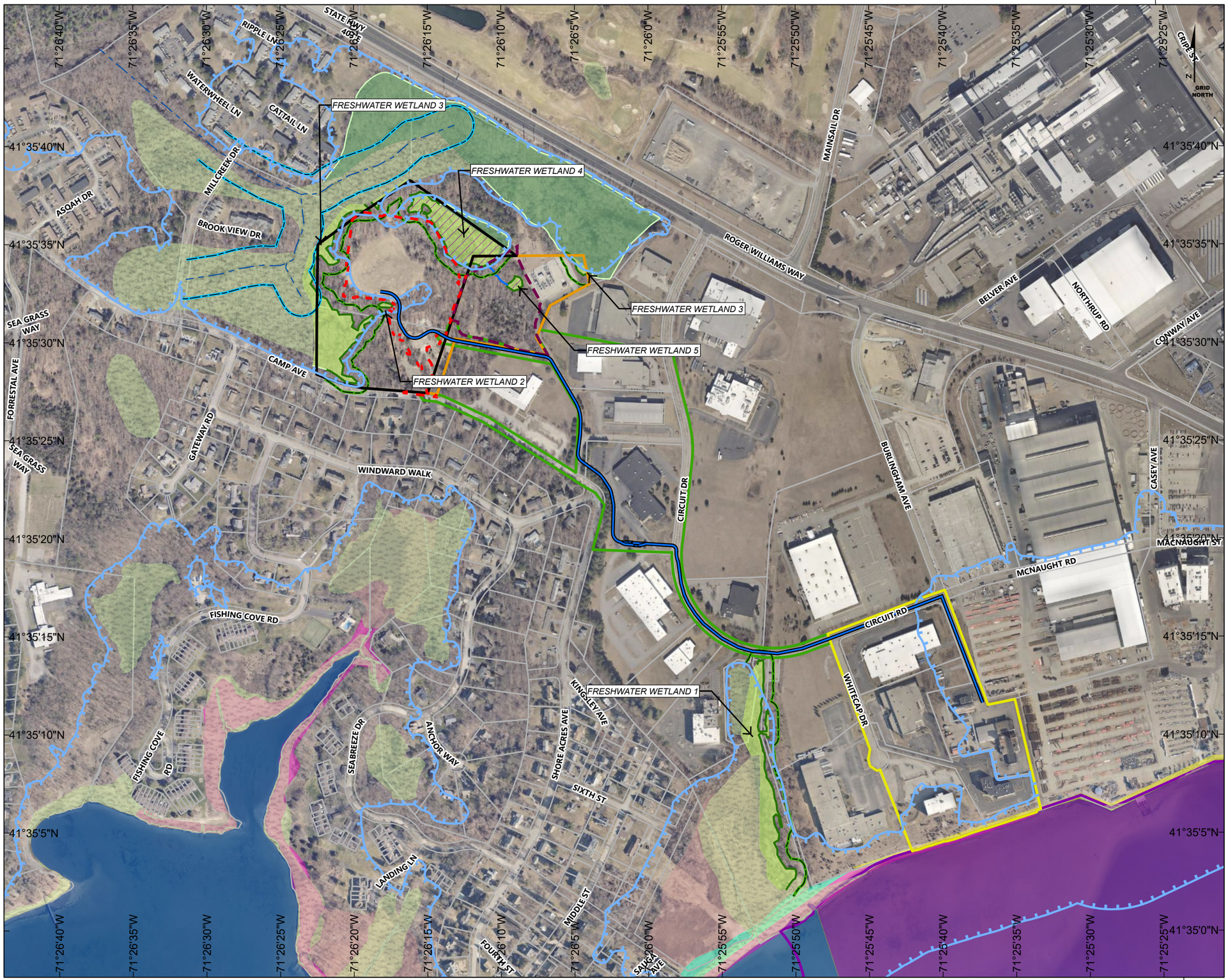

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Figure A-3
Wetland Resources
NORTH KINGSTOWN, RI

Legend

- Preferred Onshore Cable Transmission Route
- Onshore Transmission Cable Envelope
- Parcel ID 179-030 & 179-001
- Parcel ID 179-005*
- Landfall Envelope
- ICF Limit of Work
- OnSS Limit fof Work
- RWEC-RI Project Area
- Parcel Boundary
- One-Percent Annual Chance Flood Hazard Area
- Area of Land within 50' of Wetland
- 100' Riverbank Wetland
- LEC Delineated ASSF
- Approximate Stream
- VHB Delineated Wetland Edge
- LEC Delineated Wetland Edge
- Approximate Wetland Edge
- Delineated Wetland Resources
- Interpolated Wetland
- Coastal Beach
- Coastal Dune
- Manmade Shoreline
- Tidal Salt Marsh
- Coastal Bank
- NWI Wetlands
- Vernal Pool Area

CRMC Water Use Types

- Type 2: Low Intensity Use
- Type 6: Industrial Waterfronts and Commercial Navigation Channels

Service Layer Credits: National Geographic World Map: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.
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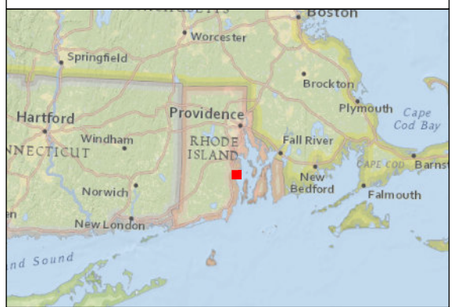

Reference system: NAD83 (2011)
Projection: UTM Zone 19N

0 60 120 180 Meters

0 200 400 600 Feet

Date: 2/2/2023
Document no:

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Figure A-4
Wetland Resources: Large Scale view near OnSS and Davisville Substation Parcels
NORTH KINGSTOWN, RI

Legend

- Preferred Onshore Cable Transmission Route
- Onshore Transmission Cable Envelope
- OnSS Limit fof Work
- ICF Limit of Work
- Parcel ID 179-030 & 179-001
- Parcel ID 179-005*
- One-Percent Annual Chance Flood Hazard Area
- Area of Land within 50' of Wetland
- 100' Riverbank Wetland
- Approximate Stream
- LEC Delineated ASSF
- VHB Delineated Wetland Edge
- LEC Delineated Wetland Edge
- Approximate Wetland Edge
- Vernal Pool Area
- Delineated Wetland Resources
- Interpolated Wetland
- NWI Wetlands
- Parcel Boundary

Service Layer Credits: National Geographic World Map: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.
IMG\RI_202103_RGB_3in_web:

Reference system: NAD83 (2011)
Projection: UTM Zone 19N

0 25 50 75 Meters

0 80 160 240 Feet

Date: 2/2/2023
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Approved by: MEGEA

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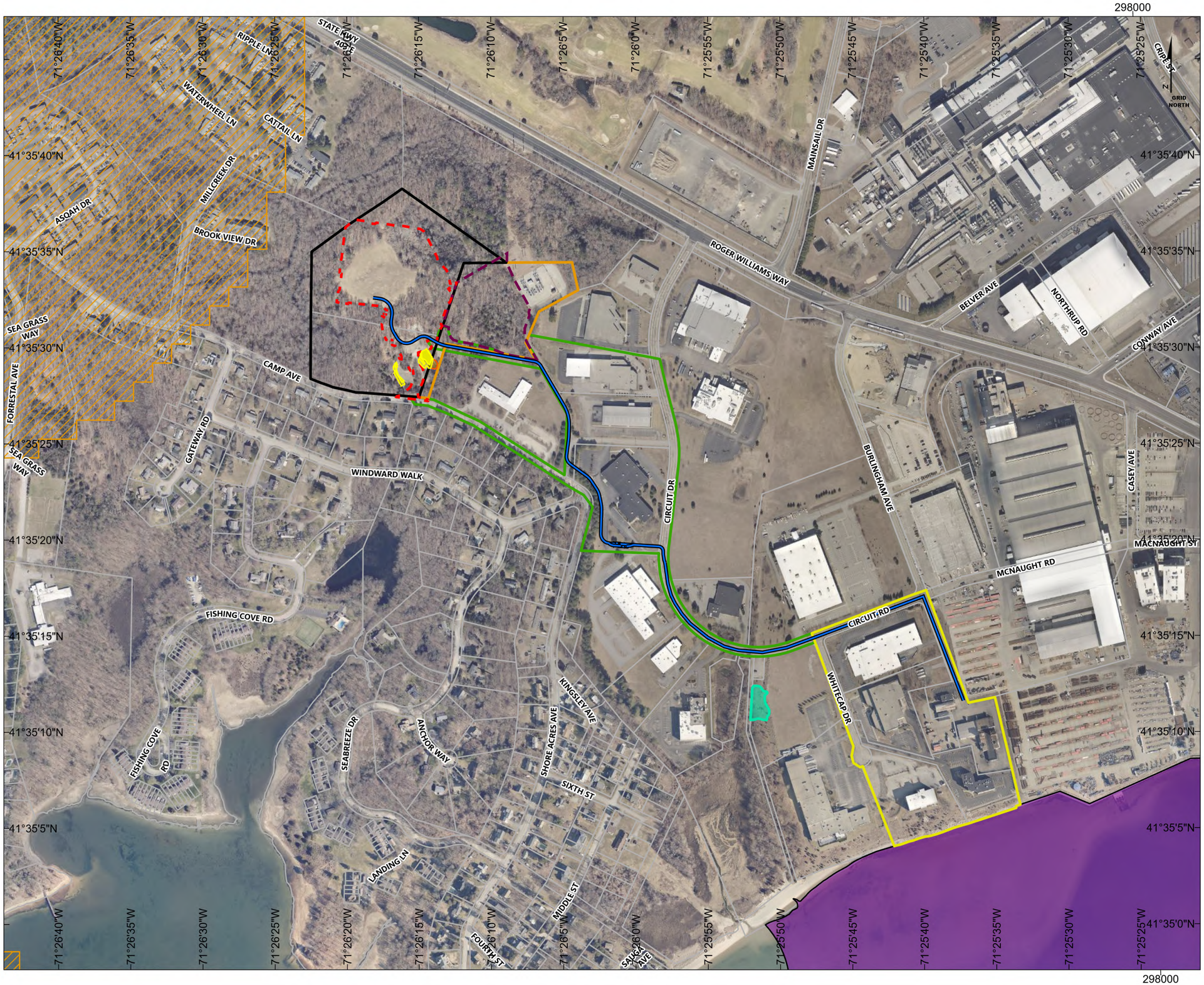
Figure A-5
Rare and Protected Species
NORTH KINGSTOWN, RI



Legend

- Preferred Onshore Cable Transmission Route
- OnSS Limit of Work
- ICF Limit of Work
- Onshore Transmission Cable Envelope
- Parcel ID 179-030 & 179-001
- Parcel ID 179-005*
- Landfall Envelope
- RWEC-RI Project Area
- State Species of Concern: Sickle-leaved golden aster
- Potential Habitat for Sickle-leaved golden aster
- State Species of Concern: Butterfly milkweed
- Natural Heritage Areas
- Parcel Boundary

Service Layer Credits: National Geographic World Map: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.
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Reference system: NAD83 (2011)
Projection: UTM Zone 19N

0 60 120 180 Meters

0 200 400 600 Feet

Date: 2/2/2023
Document no:

Created by: S. PELLETIER
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Appendix B: Site Evaluation Reports produced by LEC Environmental Consultants Inc. for National Grid dated December 18, 2019 and August 6, 2020

WETLANDS WILDLIFE WATERWAYS

December 18, 2019

Email [laura.ernst@nationalgrid.com]

Ms. Laura Ernst
Lead Environmental Scientist
National Grid
40 Sylvan Road
Waltham, MA 02451

Re: Site Evaluation Report [LEC File #: NG\19-414.01]
109 Circuit Drive (Davisville Substation)
(Assessor's Plat 179, Lot 5)
National Grid Work Order #90000198459
North Kingstown, Rhode Island

Dear Ms. Ernst:

As requested, LEC Environmental Consultants, Inc., (LEC) conducted a site evaluation and Wetland Resource Area Analysis at the above-referenced site in North Kingstown, Rhode Island. The purpose of the evaluation was to determine Freshwater Wetland boundaries located on the property. The evaluation was conducted in accordance with the federal *Clean Water Act* ("*CWA*"; 33 U.S.C. 1344, s.404) and its *Regulations* ("*CWA Regulations*"; 33 CFR and 40 CFR), the Rhode Island *Fresh Water Wetlands Act* ("*Act*"; Sections 2-1-18 through 2-1-15 of the R.I.G.L.) and its implementing *Rules and Regulations Governing the Administration and Enforcement of the Fresh Water Wetlands Act* ("*Act Regulations*"; revised July 16, 2014), and the *Rules and Regulations Governing the Protection and Management of Freshwater Wetlands in the Vicinity of the Coast* ("*CRMC Regulations*"; CRMC 2008). The following report provides a general site description, wetland delineation methodology, a description of the Freshwater Wetlands, and potential regulatory implications.

General Site Description

The 6.10-acre site, herein referred to as the Davisville Substation, is located south of Roger Williams Way and north of Camp Avenue, in proximity to Quonset Point Naval Air Base in eastern North Kingstown, RI (Attachment A, Figures 1 & 2). The site is bordered by commercial buildings to the east, residential lots to the south and forested uplands and wetlands to the north and west.

The substation and associated mechanical equipment are encompassed by a 10-foot chain-linked fence, and located on a topographic high-point within the northeastern portion of the site. The substation is

situated atop a flat gravel/stone base, and topography slopes steeply downgradient towards the forested uplands and wetlands in an east and west direction. The site is accessible via an asphalt driveway extending within an easement located on adjacent parcels to the east of the site originating from Camp Avenue and Circuit Drive. A transmission line right-of-way extends in a northerly direction from the substation towards Roger Williams Way.

As further described below, three on-site Freshwater Wetlands were delineated by LEC. The Freshwater Wetland Resource Areas are present immediately east and west of the substation. The remaining portion of the site is generally characterized as previously-disturbed forested areas. Evidence of recreational all-terrain vehicle use was observed within the southern portion of the site.

According to available land records and as indicated by on-site signage, the site is the subject of an Environmental Land Use Restrictions (ELUR) which is recorded at the North Kingstown Land Evidence Records in Book 2024, Page 1. According to the ELUR, the property was previously utilized by the Quonset Point Naval Air Station (NAS) for mining operations, and was subsequently filled with waste material and topped with sand. Additionally, waste materials, including construction debris, roofing tar, ship parts, and other industrial wastes were reportedly disposed of on and adjacent to the site. Contaminants of concern have been confirmed on-site within the top four feet of the soil profile and within the groundwater.

Vegetation observed within the upland portions of the site includes a moderately dense canopy layer of northern red oak (*Quercus rubra*), white oak (*Quercus alba*), Norway maple (*Acer platanoides*), red maple (*Acer rubrum*), eastern cottonwood (*Populus deltoides*), eastern red cedar (*Juniperus virginiana*), eastern white pine (*Pinus strobus*), black cherry (*Prunus serotina*), and sassafras (*Sassafras albidum*). The moderately dense understory is comprised of saplings from the canopy layer, and a shrub layer of sweet pepperbush (*Clethra alnifolia*) and the invasive species listed below. The sparse groundcover layer includes garlic mustard (*Alliaria petiolata*), raspberry (*Rubus* sp.), poison ivy (*Toxicodendron radicans*), and seedlings from the overstory. Entanglements are common throughout. Dense patches of poison ivy, common greenbrier (*Smilax rotundifolia*), and invasive species listed below are common throughout portions of the forested upland.

Generally speaking, invasive plant species were observed throughout the forested portion of the site in varying densities. However, the forested areas immediately abutting the access road and substation appeared to have the highest density of invasive plant establishment. LEC determined that is was not practical to delineate and GPS locate invasive plant species establishment on-site due to the extent of invasive growth. In addition to the native upland vegetation listed above the following invasive vegetation was observed in various quantities interspersed with native vegetation throughout the site:

- Glossy buckthorn (*Rhamnus frangula*)
- Autumn olive (*Elaeagnus umbellata*)
- Bush honeysuckle (*Lonicera* spp.)
- Japanese honeysuckle (*Lonicera japonica*)

- Staghorn sumac (*Rhus typhina*)
- Japanese barberry (*Berberis thunbergii*)
- Multiflora rose (*Rosa multiflora*)
- Asiatic bittersweet (*Celastrus orbiculatus*)

According to the Natural Resource Conservation Service (NRCS) Soil Survey (Web Soil Survey and State of Rhode Island: Bristol, Kent, Newport, Providence, and Washington Counties, Version 18, December 6, 2018), the site consists of Merrimac-Urban land complex, 0 to 8 percent slopes. NRCS describes Merrimac-Urban land complex soils as somewhat excessively drained fine sandy loam soils. LEC inspected soil conditions within the upland portions of the site using a Dutch-style soil auger and generally observed a 12-inch or greater layer of fill/human transported material (HTM) with a soil matrix color of 10YR 3/1. Due to soil conditions observed within the topsoil and the potential for contaminants in the soil, the soil underlying the HTM was not evaluated. No redoximorphic features or evidence of hydrology (i.e. groundwater, oxidizes rhizospheres, etc.) were observed within the top 12 inches of the mineral soil profile. This soil profile is not considered 'hydric' in accordance with the *Field Indicators Guide.*

Natural Heritage Program Designation

According to the *Natural Heritage Area* layer provided on the Rhode Island Department of Environmental Management (RIDEM) Environmental Resource Map, the site is not located in a *Natural Heritage Area* (Attachment A, Figure 3).

Flood Plain Designation

According to the October 16, 2013 FEMA Flood Insurance Rate Map (FEMA FIRM) for the Town of North Kingstown, Rhode Island (*Community Panel 44009 C 0108J*), the site is located within a Zone X (shaded) – *Areas subject to the 0.2% annual chance flood* and a portion of the paved driveway entrance is mapped within Zone X (unshaded) – *Areas outside the 1% annual chance flood.* A Zone AE (el. 13) – *Areas subject to inundation by the 1% annual chance flood* extends into the northwestern and eastern portions of the site (Attachment A, Figure 4).

Wetland Boundary Determination Methodology

On December 10, 2019, LEC conducted a site evaluation to identify and characterize existing protectable Freshwater Wetlands located on or adjacent to the site. The Freshwater Wetland boundaries were delineated through observations of the existing plant communities, using the "fifty percent criteria" to determine dominance of wetland/upland vegetation, the interpretation of soil characteristics, and other indicators of wetland hydrology in accordance with the Appendix 2 of the *Rules and Regulations Governing the Administration and Enforcement of the Freshwater Wetlands Act* (July 16, 2014), the *Field Indicators for Identifying Hydric Soils in New England* (2018), and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region* (January, 2012).

LEC utilized a Trimble Handheld GEO XH-7000 Global Positioning System (GPS) unit to locate the established Freshwater Wetland flags, as shown on Attachment A and provided the raw and shapefile data to National Grid on December 18, 2019.

The boundaries of the Freshwater Wetlands were demarcated in the field with orange surveyors tape embossed with the text "LEC Wetland Resource Area" in bold, black print. The wetland flags are numbered A1 – A8, B1 – B9, and C1 – C11 (Attachment B). LEC completed U.S. Army Corps of Engineers (U.S. ACOE) Wetland Determination Field Data Forms at one representative transect for each Freshwater Wetland to support the wetland boundary delineation (Attachment C). Representative photographs of the site and each Freshwater Wetlands were also taken on December 10, 2019 (Attachment D).

Freshwater Wetland and Other Jurisdictional Areas

Freshwater Wetland Areas and additional jurisdictional areas associated with the site include Freshwater Wetland, Perimeter Wetland, Area Subject to Storm Flowage (ASSF), and Flood Plain. A brief description of the Freshwater Wetland Areas is provided below.

Freshwater Wetland

Wetland is defined at 33 CFR Part 328.3(b) as *those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.*

Freshwater Wetland is defined at Rule 4.00 of the *Act Regulations* and Section 2.4(A)(35) of the *CRMC Regulations* as *those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances, do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.*

Furthermore, Appendix 2 (A) provides specific criteria for identifying Vegetated Wetland edges as *the landward edge of vegetated wetlands (i.e., bogs; marshes; swamps; emergent, shrub or forested wetlands; or similar types, including wetland complexes of these types), shall, under normal conditions, be identified as the place where the plant community associated with the vegetated wetland is no longer dominated by hydrophytes/hydrophytic vegetation (i.e., the plant community is composed of less than or equal to fifty percent (50%) hydrophytes/hydrophytic vegetation).*

Three Freshwater Wetlands (FW) are located on the subject parcel. Two FWs are contiguous with an expansive wetland system located off-site to the northwest (wetland flags A1 – A8 and B1 – B9) and the remaining FW is an isolated wetland (wetland flags C1 – C11). The FW characteristics are further detailed below.

Forested Freshwater Wetlands (A-series and B-series)

The A and B series FWs are a part of an expansive wetland system associated with the perennial stream, Mill Creek, located off-site to the northwest approximately 840 linear feet from the northwestern parcel

boundary (Attachment A, Figure 1). Additionally, the FWs appear to be hydrologically influenced by a high groundwater table and surface runoff from the upgradient substation. Topography slopes steeply downgradient from the upland portions of the site towards the FW boundaries, which are well defined along the abrupt toe of slope. Topography within the B-series FW slopes gently downgradient towards the north and topography within the A-series FW slopes gently towards the northeast. The two FWs exhibit gentle pit and mound microtopograhy and contained at least six inches of standing water within 20-30 feet of the FW boundary at the time of LEC's site evaluation.

The A and B-series FWs can be characterized as forested wetlands, dominated by both deciduous and coniferous trees greater than 20 feet tall with scattered patches of saplings and shrubs. Wetland vegetation within the two FWs is similar, consisting of a moderately dense canopy layer dominated by red maple (*Acer rubrum*) with scattered patches and individuals of tupelo (*Nyssa sylvatica*), swamp white oak (*Quercus bicolor*), red oak (*Quercus rubra*), and eastern white pine (*Pinus strobus*). The understory contains scattered individuals of saplings from the canopy layer, and scattered patches of sweet pepperbush (*Clethra alnifolia*), highbush blueberry (*Vaccinium corymbosum*), winterberry (*Ilex verticillata*), and alder (*Alnus* sp.). The groundcover layer is generally sparse, as the site evaluation took place outside the growing season, however; vegetation observed in the groundcover layer includes cinnamon fern (*Osmunda cinnamomea*), poison ivy (*Toxicodendron radicans*), tree clubmoss (*Lycopodium obscurum*), and seedlings from the overstory. Small patches of common greenbrier (*Smilax rotundifolia*) and poison ivy entanglements are common throughout.

Scrub-Shrub/Special Aquatic Site Freshwater Wetland (C-series)

The C-series FW is situated within a small topographic depression measuring approximately 25 feet by 60 feet wide and appears to be hydrologically influenced by a high groundwater table and surficial stormwater runoff from the substation. At the time of LEC's site evaluation, approximately one to two feet of standing water was observed within the FW and the edge of the surface water was approximately one to three linear feet downgradient of the FW boundary. A slightly meandering, manmade ditch measuring approximately five feet wide by five feet deep extends from wetland flag C1 in a northwest direction and connects with the B-series FW at flags B6. This area is further described below in the Area Subject to Storm Flowage (ASSF) Section.

The C-series FW can be characterized as a scrub-shrub/special aquatic site, as the FW edges contain woody plants less than 20 feet tall and the FW contains less than 1/4 acre open standing water. Trace amount of aquatic vegetation was observed within the inundated portion of the FW and the inner edges of the FW consist of individual red maple saplings, sweet pepperbush, and cinnamon fern. The eastern and southern edges of the FW are dominated by dense concentrations of common greenbrier, Asiatic bittersweet, and multiflora rose.

As noted above, the C-series FW exhibits the characteristics of a special aquatic site (i.e., Vernal Pool); however, due to the time of year, LEC was unable to perform a formal survey to confirm the presence/absence of obligate and/or facultative amphibian breeding activity. Based on the historic aerial

imagery and LECs field observations, it appears that the FW is likely capable of supporting and providing habitat for aquatic lifeforms; however, the groundwater contamination associated with the site may affect the success of any breeding activity within the FW. Further survey during the active breeding season would be necessary to determine the presence/absence of obligate and/or facultative amphibian breeding activity.

Freshwater Wetland Invasive Species

LEC observed invasive vegetation within portions of the A, B and C series FWs. The eastern portion of the B-series FW contains dense patches of honeysuckle and the eastern and southern portions of the C-series FW contain dense patches of honeysuckle, Asiatic bittersweet, and multiflora rose. The western portion of the A series FW also contains honeysuckle, Asiatic bittersweet, and multiflora rose along its eastern boundary.

Perimeter Wetland (Area of Land Within Fifty Feet)

Perimeter Wetland (Area of Land within Fifty Feet) is defined at Rule 4.00 of the *Act Regulations* and Section 2.4(A)(5) of the *CRMC Regulations* as *a freshwater wetland consisting of the area of land within fifty feet (50') of the edge of any freshwater wetland consisting in part, or in whole, of a bog, marsh, swamp or pond, as defined by these Rules. For purposes of identification, this area shall be measured horizontally, without regard for topography, from the edge of such a wetland.*

The 50-foot Perimeter Wetland extends horizontally from the edge of the aforementioned Freshwater Wetland boundaries. The Perimeter Wetland includes paved portions of the National Grid substation and forested uplands.

Area Subject to Stormwater Flowage (ASSF)

Rule 4.00 of the *Act Regulations* and Section 2.4(A)(7) of the *CRMC Regulations* defines ASSF as *drainage swales and channels that lead into, out of, pass through or connect other freshwater wetlands or coastal wetlands, and that carry flows resulting from storm events, but may remain relatively dry at other times.*

ASSF is associated with the aforementioned man-made ditch which extends between wetland flags C1 – C11 and B5 – B6 (Attachment A). The ditch measures approximately five feet wide by five feet high and did not contain any standing or flowing water at the time of LEC's site evaluation. The ditch is generally unvegetated, with the exception of a few dense patches of invasive honeysuckle.

Flood Plain

Flood Plain is defined at Rule 4.00 of the *Act Regulations* and Section 2.4(A)(31) of the *CRMC Regulations* as *that land area adjacent to a river or stream or other flowing body of water that is, on average, likely to be covered with flood waters resulting from a one hundred (100) year frequency storm. A storm of this nature is one that is to be expected to be equaled or exceeded once in one hundred (100)*

years, and hence may be said to have a one percent (1%) probability of being equaled or exceeded in any given year.

As previously noted, a Zone AE (el. 13) extends into the northwestern and eastern portions of the site and is contained within the A and B-series FWs.

Summary

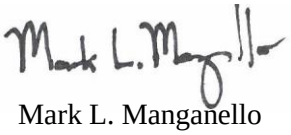
LEC identified and delineated the boundaries of three Freshwater Wetlands located at 109 Circuit Drive in North Kingstown, Rhode Island. Additional jurisdictional areas identified on the site include Perimeter Wetlands, Areas Subject to Storm Flowage, and Flood Plain. The aforementioned Freshwater Wetlands are protected under the federal *Clean Water Act* (33 U.S.C. 1344, s.404) and its *Regulations* (33 CFR and 40 CFR), the Rhode Island *Fresh Water Wetlands Act* (Sections 2-1-18 through 2-1-15 of the R.I.G.L.) and its implementing *Rules and Regulations Governing the Administration and Enforcement of the Fresh Water Wetlands Act* (revised July 16, 2014), and the *Rules and Regulations Governing the Protection and Management of Freshwater Wetlands in the Vicinity of the Coast* (CRMC 2008). Any proposed alteration within the Freshwater Wetlands may require filing the necessary permit applications with the Department of the Army Corps of Engineers, Rhode Island Department of Environmental Management, and/or the Coastal Resource Management Council.

We appreciate the opportunity to work with you on this project. If you should have any questions or require additional information, please do not hesitate to contact us at (508) 746-9491 or ajohnson@lecenvironmental.com.

Sincerely,

LEC Environmental Consultants, Inc.

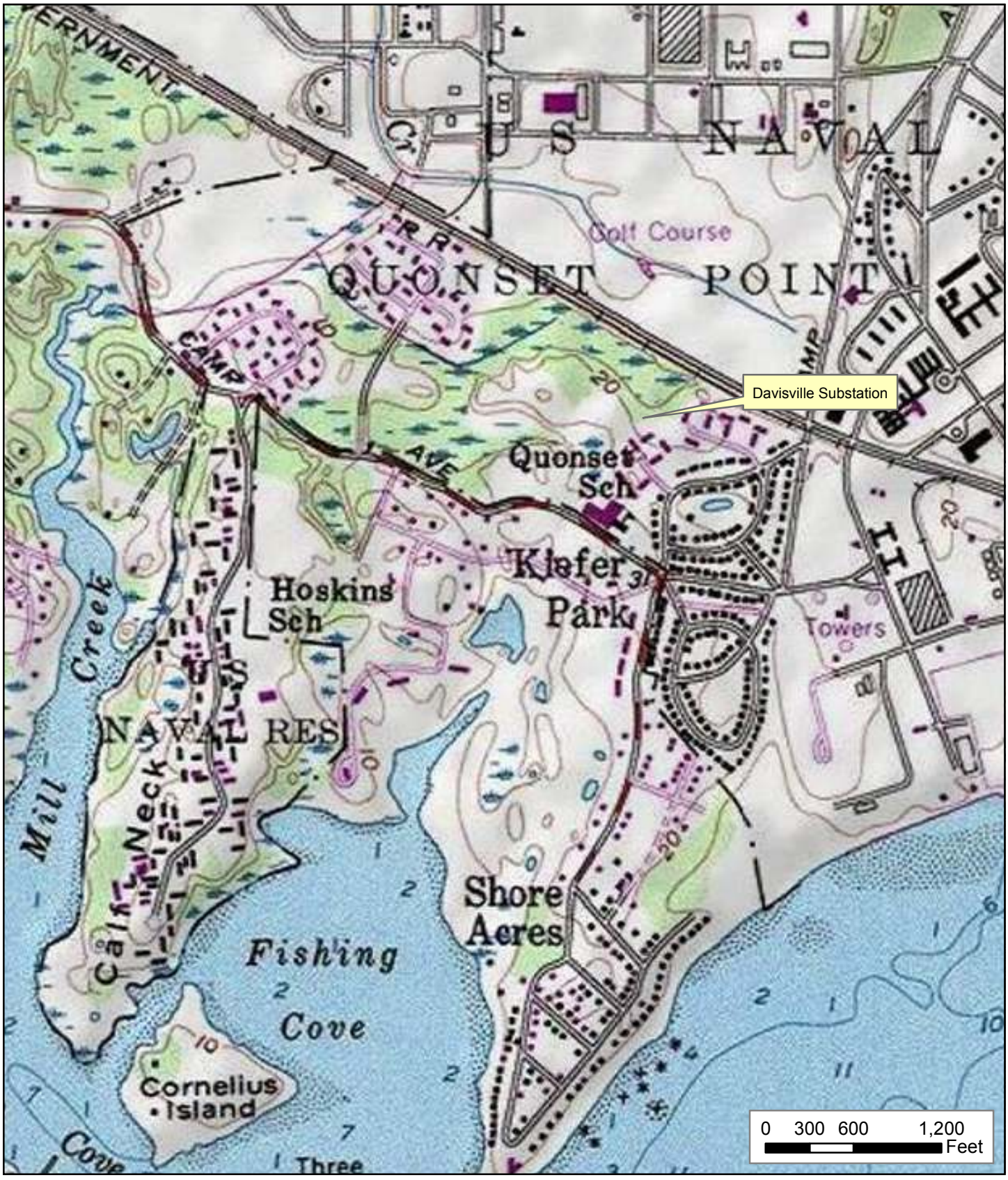
Andrew Johnson
Environmental Scientist



Mark L. Manganello
Assistant Director of Ecological Services

Attachment A

Figure 1: USGS Topographic Map
Figure 2: Aerial Orthophoto
Figure 3: Natural Heritage Map
Figure 4: FEMA FIRM



LEC Environmental Consultants, Inc.

Plymouth, MA
508.746.9491
www.lecenvironmental.com

Figure 1: USGS Topographic Map

109 Circuit Drive (Davisville Substation)
Assessor's Plat 179, Lot 5
North Kingstown, Rhode Island

N

December 17, 2019

LEC Environmental Consultants, Inc.
Plymouth, MA
508.746.9491
www.lecenvironmental.com

Figure 2: Aerial Orthophoto

109 Circuit Drive (Davisville Substation)
Assessor's Plat 179, Lot 5
North Kingstown, Rhode Island

N

December 17, 2019

LEC Environmental Consultants, Inc.

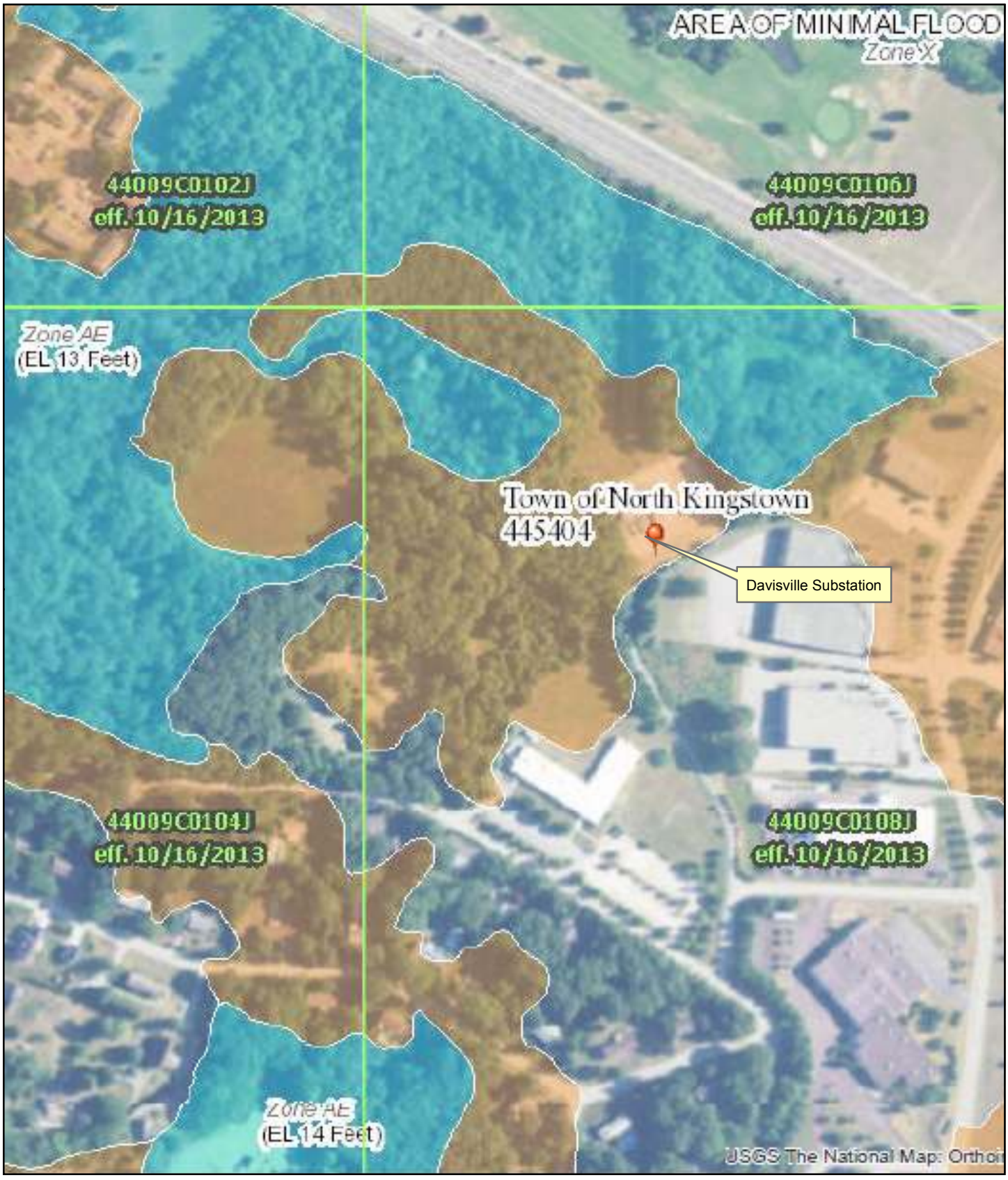
Plymouth, MA
508.746.9491
www.lecenvironmental.com

Figure 3: Natural Heritage Map

109 Circuit Drive (Davisville Substation)
Assessor's Plat 179, Lot 5
North Kingstown, Rhode Island

N

December 17, 2019



LEC Environmental Consultants, Inc.

Plymouth, MA
508.746.9491
www.lecenvironmental.com

Figure 4: FEMA FIRM

109 Circuit Drive (Davisville Substation)
Assessor's Plat 179, Lot 5
North Kingstown, Rhode Island

N

December 17, 2019

Attachment B

Aerial Orthophoto: GPS Survey

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Aerial Orthophoto: GPS Survey

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North Kingstown, Rhode Island

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December 17, 2019

Attachment C

U.S. ACOE Wetland Determination Field Data Forms

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Davisville Substation City/County: Washington Co. Sampling Date: 12/10/19

Applicant/Owner: National Grid State: RI Sampling Point: A①

Investigator(s): AJohnson + CHoogeboom (LEC) Section, Township, Range: North Kingstown

Landform (hillslope, terrace, etc.): Outwash Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR or MLRA): LRR-R Lat: 41°35'33"N Long: 71°26'04"W Datum: WGS84

Soil Map Unit Name: Wa-Walpole Sandy Loam, 0-3% Slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil X, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.)

- Test pit located East of wetland flag numbers A3-A4
- the property is a state-listed facility (SR 23-0874) and subject to an environmental Land Use Restriction (ELUR)
- Contaminated Soils are identified at grade upto 4 feet below grade
- Contaminants are identified in the groundwater table

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- X Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No _____	Depth (inches): 1-6" w/in 20'
Water Table Present?	Yes X	No _____	Depth (inches): 1-6" w/in 20'
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches): Surface

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: AD

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Pinus strobus	30	Yes	FACU
2. Quercus alba	30	Yes	FACU
3. Quercus bicolor	10	No	
4. Nyssa sylvatica	5	No	
5. Quercus rubra	5	No	
6.			
7.			
	80	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1. Clethra alnifolia	30	Yes	FAC
2. Nyssa sylvatica	5	No	
3. Vaccinium corymbosum	2	No	
4. Sassafras albidum	1	No	
5.			
6.			
7.			
	38	= Total Cover	

Herb Stratum (Plot size: 5')			
1. Lycopodium obscurum	2	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	2	= Total Cover	

Woody Vine Stratum (Plot size: 10')			
1. Smilax rotundifolia	5	Yes	FAC
2.			
3.			
4.			
	5	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: .4 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	2	x 3 =	6
FACU species	3	x 4 =	12
UPL species		x 5 =	
Column Totals:	5 (A)		18 (B)

Prevalence Index = B/A = 3.6

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

X 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (Include photo numbers here or on a separate sheet.)

- Vegetation observed with buttressed roots (indicators of hydric soils and wetland hydrology are present)

SOIL

Sampling Point: A(1)

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1"	leaf litter							
0-16"	10YR2/1	100	—	—	—	—	MUCK	
16-24"	10YR4/2	100	—	—	—	—	FSL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- X Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): N/A

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks:

- Soil profile saturated to surface
- free water observed in test pit 16" below surface

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Davisville Substation City/County: Washington Co. Sampling Date: 12/10/19
Applicant/Owner: National Grid State: RI Sampling Point: B01
Investigator(s): A. Johnson + C. Hoageboom (IEC) Section, Township, Range: North Kingstown
Landform (hillslope, terrace, etc.): outwash Local relief (concave, convex, none): concave Slope (%): 0
Subregion (LRR or MLRA): LRR-R Lat: 41°35'33"N Long: 71°26'10"W Datum: WGS 84
Soil Map Unit Name: MU- Merrimac-Urban Land complex, 0-8% Slopes NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X
Are Vegetation ____, Soil X, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	If yes, optional Wetland Site ID: ____
Wetland Hydrology Present?	Yes X	No ____	

Remarks: (Explain alternative procedures here or in a separate report.)
- Test pit located 15' North of wetland flag B3.
- The property is a State-Listed facility (RK 23-0874) and subject to an Environmental Land-Use Restriction (ELUR)
- Contaminated soils identified at grade upto 4 feet below grade
- Contaminants identified in the groundwater table

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No ____	Depth (inches): 1-6" Wtn 20'
Water Table Present?	Yes X	No ____	Depth (inches): 1-6" Wtn 20'
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): Surface.

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: B1

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	60	Yes	FAC
2. Nyssa sylvatica	10	No	
3.			
4.			
5.			
6.			
7.			
	70	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1. Acer rubrum	15	Yes	FAC
2. Lonicera tatarica	10	Yes	FACU
3. Vaccinium corymbosum	7	No	
4.			
5.			
6.			
7.			
	32	= Total Cover	

Herb Stratum (Plot size: 5')			
1. Toxicodendron radicans	10	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	10	= Total Cover	

Woody Vine Stratum (Plot size: 10')			
1. Lonicera japonica	10	Yes	FACU
2. Smilax rotundifolia	3	Yes	FAC
3.			
4.			
	13	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: .666 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	4	x 3 =	12
FACU species	2	x 4 =	8
UPL species		x 5 =	
Column Totals:	6 (A)		20 (B)

Prevalence Index = B/A = 2.5

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ✓ 3 - Prevalence Index is ≤3.0[1]
- ✓ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

- Woody vegetation exhibits buttressed roots

SOIL

Sampling Point: B(1)

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1"	leaf litter							
0-5"	10YR 2/2	100	—	—	—	—	SL	
5-13"	10YR 4/1	80-90	10YR 5/6	10-20	C	m	VGSL	
13-24"	10YR 4/1	80-90	10YR 5/6	10-20	C	m	SL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): N/A

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks:

- Saturated to the mineral soil surface
- Free standing water in test pit 14" below mineral soil surface.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Davisville Substation City/County: Washington Co. Sampling Date: 12/10/19

Applicant/Owner: National Grid State: RI Sampling Point: B(2)

Investigator(s): AJohnson+CHoogeboom (TEC) Section, Township, Range: North Kingstown

Landform (hillslope, terrace, etc.): Outwash Local relief (concave, convex, none): Convex Slope (%): 0-3

Subregion (LRR or MLRA): LRR-R Lat: 41°35'33"N Long: 71°26'09"W Datum: WGS 84

Soil Map Unit Name: MU-Merrimac Urban Land Complex, 0-3% Slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X

Are Vegetation ____, Soil X, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

- Test pit located in disturbed upland area between wetland flags C1 and B6
- The property is a State-listed facility (SR 23-0874) and subject to an Environmental Land Use Restriction (ELUR)
- Contaminated soils identified at grade up to 4 feet below grade
- Contaminants identified in the groundwater table

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: B(2)

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus rubra	30	Yes	FACU
2. Quercus alba	30	Yes	FACU
3. Acer rubrum	30	Yes	FAC
4.			
5.			
6.			
7.			
	90	= Total Cover	

Sapling/Shrub Stratum (Plot size:)			
1. Prunus Serotina	5	Yes	FACU
2. Vaccinium Corymbosum	3	Yes	FACW
3. Frangula alnus	2	Yes	FAC
4.			
5.			
6.			
7.			
	10	= Total Cover	

Herb Stratum (Plot size:)			
1. Frangula alnus	10	Yes	FAC
2. Rubus sp.	2	No	
3. Lycopodium obscurum	2	No	
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	14	= Total Cover	

Woody Vine Stratum (Plot size: 10')			
1. Lonicera japonica	15	Yes	FACU
2. Celastrus orbiculatus	10	Yes	UPL
3. Smilax rotundifolia	5	No	
4. Rosa multiflora	3	No	
	33	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: .33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	1	x 2 =	2
FAC species	3	x 3 =	9
FACU species	4	x 4 =	16
UPL species	1	x 5 =	5
Column Totals:	9 (A)		32 (B)

Prevalence Index = B/A = 3.5

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: B(2)

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1"	leaf litter							
0-4"	10YR 3/2	100	-	-	-	-	SL	
4-18"	10YR 5/4	100	-	-	-	-	CSL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): N/A

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Davisville Substation City/County: Washington Co. Sampling Date: 12/10/19

Applicant/Owner: National Grid State: RI Sampling Point: C1

Investigator(s): AJohnson + CHoogeboom (LEC) Section, Township, Range: North Kingstown

Landform (hillslope, terrace, etc.): Outwash Local relief (concave, convex, none): Convex Slope (%): 0

Subregion (LRR or MLRA): LRR-R Lat: 41°35' 32" N Long: 71°26'08" W Datum: WGS 84

Soil Map Unit Name: MU-Merrimac Urbanland Complex, 0-3% slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X

Are Vegetation ____, Soil X, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?**	**Yes X No ____**
Hydric Soil Present?	Yes ____ No X	If yes, optional Wetland Site ID:	
Wetland Hydrology Present?	Yes X No ____		

Remarks: (Explain alternative procedures here or in a separate report.)
- Test pit located South of wetland flags C1-C2
- The property is a State-listed facility (SR-23-0874) and subject to an Environmental Land Use Restriction (ELUR).
- Contaminated soil identified at grade up to 4 feet below grade
- Contaminants are identified in the groundwater, as well

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- X Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No ____	Depth (inches): 1.5' +/-
Water Table Present?	Yes X	No ____	Depth (inches): Surface
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): Surface

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
- Surface water within wetland depression located within 1-3 feet of wetland boundary.

VEGETATION – Use scientific names of plants.

Sampling Point: C(1)

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	30	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	30	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. Clethra alnifolia	30	Yes	FAC
2. Acer rubrum	10	Yes	FAC
3. Berberis thunbergii	3	No	
4.			
5.			
6.			
7.			
	43	= Total Cover	
Herb Stratum (Plot size: 5')			
1. Toxicodendron radicans	5	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	5	= Total Cover	
Woody Vine Stratum (Plot size: 10')			
1. Smilax rotundifolia	10	Yes	FAC
2. Lonicera japonica	5	Yes	FACU
3.			
4.			
	15	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: .83 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	5	x 3 =	15
FACU species	1	x 4 =	4
UPL species		x 5 =	
Column Totals:	6	(A)	19 (B)

Prevalence Index = B/A = 3.16

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: C(1)

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1"	leaf litter							
0-5"	10YR 3/1	100	-	-	-	-	CSL	
5-18"	10YR 5/3	95	10YR 6/6	5	C	M	VCSL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Saturated gravel

Depth (inches): 18"

Hydric Soil Present? Yes ____ No X

Remarks:

- Saturated to Mineral Soil surface
- Free water observed in test pit 5" below Mineral Soil Surface.
- Depression appears to have been excavated, likely manipulating the soil profile.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Davisville Substation City/County: Washington Co. Sampling Date: 12/10/19

Applicant/Owner: National Grid State: RI Sampling Point: EA(1)

Investigator(s): A Johnson + C Hoogeboom (LEC) Section, Township, Range: North Kingstown

Landform (hillslope, terrace, etc.): Outwash Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): LRR-R Lat: 41°35'31"N Long: 71°26'09"W Datum: WGS84

Soil Map Unit Name: MU-Merrimac-Urban Land Complex NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X

Are Vegetation ____, Soil X, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No X	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes ____ No X	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

- Test Pit located in disturbed upland area
- The property is a State-listed facility (SK 23-0874) and subject to an Environmental Land Use Restriction (ELUR)
- Contaminated soils identified at grade up to 4 feet below grade.
- Contaminants are identified in the groundwater table

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____ No X	Depth (inches): ____
Water Table Present?	Yes ____ No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____ No X	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: EA(1)

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Juniperus virginiana	50	Yes	FACU
2. Acer rubrum	15	Yes	FAC
3. Quercus rubra	10	No	
4.			
5.			
6.			
7.			
	75	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1. Lonicera tatarica	20	Yes	FACU
2. Elaeagnus angustifolia	20	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	40	= Total Cover	

Herb Stratum (Plot size: 5')			
1. Viola sp.	25	Yes	NI
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	25	= Total Cover	

Woody Vine Stratum (Plot size: 10')			
1.			
2.			
3.			
4.			
		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: .2 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	1	x 3 =	3
FACU species	3	x 4 =	12
UPL species		x 5 =	
Column Totals:	4 (A)		15 (B)

Prevalence Index = B/A = 3.75

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

- Viola sp. difficult to identify species in winter conditions

SOIL

Sampling Point: EA(1)

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12"	10YR 3/1	100	—	—	—	—	CSL	HTM

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ROCKY

Depth (inches): 12"

Hydric Soil Present? Yes ____ No X

Remarks:

- Test Pit located in historically altered area
- No saturation within test pit
- Small pieces of asphalt observed within top 12" of soil profile

Attachment D

Photographic Log

LEC

PHOTOGRAPHIC LOG

Client Name: National Grid | **Site Location:** Davisville Substation

Photo No.	Date:
1	12/10/19

Direction Photo Taken:
N

Description:

View of the site entrance and the Davisville Substation.

Photo No.	Date:
2	12/10/19

Direction Photo Taken:
E

Description:
View of the Davisville Substation.

Photo No. **3**	**Date:** 12/10/19
Direction Photo Taken: E	
Description: View of wetland series A.	

Photo No. **4**	**Date:** 12/10/19
Direction Photo Taken: E	
Description: View of wetland series A with standing water present within the offsite portion of the wetland.	

Photo No. 5	Date: 12/10/19
Direction Photo Taken: N	
Description: View of the western portion of wetland series B. A significant amount of concrete and other construction debris was present within the eastern portion of the wetland.	

Photo No. 6	Date: 12/10/19
Direction Photo Taken: N	
Description: View of the eastern portion of wetland series B depicting dense vegetation consisting of asiatic bittersweet *(Celastrus orbiculatus)* and honeysuckle *(Lonicera sp.).*	

Photo No. 7	Date: 12/10/19	
Direction Photo Taken: N		
Description: View of the northern portion of wetland series C.		

Photo No. 8	Date: 12/10/19	
Direction Photo Taken: N		
Description: View of the southern portion of wetland series C.		

Appendix C: Observed and Potential Bird, Mammal, Amphibian, and Reptile Species within Project Area

Table C-1 Observed and Potential Bird Species

	Inland Key Habitats					Coastal Key Habitats	
	Ruderal Grassland/ Shrubland	**Ruderal Forested Swamp**	**Mixed Oak/White Pine Forest**	**Oak Forest**	**Pitch Pine Woodland/ Barren**	**Coastal Beach**	**Tidal Salt Marsh**
Bald Eagle (BCC)						**P**	**P**
Great egret(S-C)						**P**	**P**
Snowy egret(S-C)						**P**	**O**
American oystercatcher(S-C) (BCC)						**P**	
Glossy ibis(S-C)						**P**	**P**
Great blue heron[B]	P						P
Black-crowned night heron(S-C)						P	**P**
Yellow-crowned night heron(S-C)						P	**P**
Green heron[B]		P				P	P
Tricolored heron						P	P
Herring gull (BCC)						**O**	
Ring-billed gull (BCC)						**O**	
Great Black-Backed Gull (BCC)						P	
Northern Gannet (BCC)						**P**	
Double-crested cormorant[B] (BCC)						O	
Great cormorant[M]						O	
Common tern (BCC)						**P**	

P = Potential to occur O = observed by VHB during Summer 2019 **P/O** = GCN Species in the 2015 RIWAP. B = breeding in Rhode Island M = migrant/visitor
S-E = State-endangered S-T= State-threatened S-C = State Concern F-E = Federally endangered F-T = Federally Threatened BCC = Bird of Conservation Concern
Source: DeGraaf, Richard M. and Mariko Yamasaki. 2001. New England Wildlife: Habitat, Natural History and Distribution, University Press of New England, Hanover, New Hampshire, 2001.
RIDEM, The Rhode Island Nature Conservancy, University of Rhode Island. 2015. Rhode Island Wildlife Action Plan. http://www.dem.ri.gov/programs/fish-wildlife/wildlifehuntered/swap15.php

	Inland Key Habitats					Coastal Key Habitats	
	Ruderal Grassland/ Shrubland	**Ruderal Forested Swamp**	**Mixed Oak/White Pine Forest**	**Oak Forest**	**Pitch Pine Woodland/ Barren**	**Coastal Beach**	**Tidal Salt Marsh**
Roseate Tern (F-E)						**P**	
Least tern(S-T) (BCC)						**P**	
Ruddy turnstone						**P**	
Sanderling						**P**	
Dunlin						**P**	
Buff-Breasted Sandpiper (BCC)							
White-rumped sandpiper						**P**	
Purple sandpiper						**P**	
Least sandpiper						**P**	
Semipalmated sandpiper (BCC)						**P**	
Semipalmated plover						**P**	
Piping plover(F-E; S-E)M						**P**	
Short-billed dowitcher (BCC)						**P**	
Black-bellied plover						**P**	
Greater yellowlegs						**P**	P
Nelson's sparrowM							**P**
Saltmarsh sparrow							**P**
Seaside sparrow(S-C)							**P**

P = Potential to occur O = observed by VHB during Summer 2019 **P/O** = GCN Species in the 2015 RIWAP. B = breeding in Rhode Island M = migrant/visitor
S-E = State-endangered S-T= State-threatened S-C = State Concern F-E = Federally endangered F-T = Federally Threatened BCC = Bird of Conservation Concern
Source: DeGraaf, Richard M. and Mariko Yamasaki. 2001. New England Wildlife: Habitat, Natural History and Distribution, University Press of New England, Hanover, New Hampshire, 2001.
RIDEM, The Rhode Island Nature Conservancy, University of Rhode Island. 2015. Rhode Island Wildlife Action Plan. http://www.dem.ri.gov/programs/fish-wildlife/wildlifehuntered/swap15.php

	Inland Key Habitats					Coastal Key Habitats	
	Ruderal Grassland/ Shrubland	**Ruderal Forested Swamp**	**Mixed Oak/White Pine Forest**	**Oak Forest**	**Pitch Pine Woodland/ Barren**	**Coastal Beach**	**Tidal Salt Marsh**
American black duck							**P**
Clapper rail[S-C]							**P**
Willet[S-C]							**P**
Osprey[S-C]						**O**	**O**
Turkey vulture[B]	P	P	P	P	P		
Canada Goose[B]	**P**					**O**	**O**
Mallard[B]						O	
Lesser scaup						**P**	
Greater scaup						**P**	
Canvasback						**P**	
Atlantic brant						**P**	
Bufflehead						**P**	
Common goldeneye						**P**	
Common Loon						**P**	
Red-throated Loon [BCC]						**P**	
Black scoter						**P**	
White-winged scoter [BCC]						**P**	
Surf scoter [BCC]						**P**	

P = Potential to occur O = observed by VHB during Summer 2019 **P/O** = GCN Species in the 2015 RIWAP. B = breeding in Rhode Island M = migrant/visitor
S-E = State-endangered S-T= State-threatened S-C = State Concern F-E = Federally endangered F-T = Federally Threatened BCC = Bird of Conservation Concern
Source: DeGraaf, Richard M. and Mariko Yamasaki. 2001. New England Wildlife: Habitat, Natural History and Distribution, University Press of New England, Hanover, New Hampshire, 2001.
RIDEM, The Rhode Island Nature Conservancy, University of Rhode Island. 2015. Rhode Island Wildlife Action Plan. http://www.dem.ri.gov/programs/fish-wildlife/wildlifehuntered/swap15.php

	Inland Key Habitats					Coastal Key Habitats	
	Ruderal Grassland/ Shrubland	**Ruderal Forested Swamp**	**Mixed Oak/White Pine Forest**	**Oak Forest**	**Pitch Pine Woodland/ Barren**	**Coastal Beach**	**Tidal Salt Marsh**
Red-breasted merganser (BCC)						**P**	
Horned grebe						**P**	
Common eider (BCC)						**P**	
Sharp-shinned Hawk[M (S-E)]	P	P	P	P	P		
Cooper's Hawk[B]	P	P	P	P	P		
Northern Goshawk[M (S-C)]	**P**	**P**	**P**	**P**	**P**		
Red-shouldered Hawk[B]	P	O	O	O	P		
Broad-winged Hawk[B]	P	P	P	P	P		
Red-tailed Hawk[B]	P	O	O	P	P		
Rough-legged Hawk[M]	P	P	P	P	P		
American Kestrel[B]	**P**	**P**	**P**	**P**	**P**		
Ring-necked Pheasant[B]	P	P	P	P	P		
Wild Turkey[B]	P	P	P	P	P		
Northern Bobwhite[B]	P	P	P	P	P		
Killdeer[B]	P					O	
Spotted Sandpiper[B]						P	
American Woodcock[B]	**P**	**P**	**P**	**P**	**P**		
Rock Pigeon[B]	P					O	

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	Inland Key Habitats					Coastal Key Habitats	
	Ruderal Grassland/ Shrubland	**Ruderal Forested Swamp**	**Mixed Oak/White Pine Forest**	**Oak Forest**	**Pitch Pine Woodland/ Barren**	**Coastal Beach**	**Tidal Salt Marsh**
Mourning Dove[B]	P	P	P	P	P	P	
Black-billed Cuckoo[B (BCC)]	**P**	**P**	**P**	**P**	**P**	P	
Yellow-billed Cuckoo[B]	**P**	**P**	**P**	**P**	**P**		
Eastern Screech-Owl[B]	P	P	P	P	P		
Great Horned Owl[B]	P	P	P	P	P		
Barred Owl[B]	P	**O**	P		P		
Northern Saw-whet Owl[B]	P	P					
Common Nighthawk [B]	P	P	P	P	P		
Eastern whip-poor-will[B]	**P**	**P**	**P**	**P**	**P**		
Chimney Swift[B]	**P**	**P**	**P**	**P**	**P**		
Ruby-throated Hummingbird[B]	P	P	P	P	P		P
Belted Kingfisher[B]							P
Red-bellied Woodpecker[B]		O	P	P	P		
Pileated Woodpecker[B(S-C)]		**P**	**P**	**P**	**P**		
Yellow-bellied Sapsucker[B]		P	P	P	P		
Downy Woodpecker[B]		O	O	P	P		
Hairy Woodpecker[B]		**P**	**P**	**P**	**P**		
Northern Flicker[B]	**P**	**P**	**P**	**P**	**P**		

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	Inland Key Habitats					Coastal Key Habitats	
	Ruderal Grassland/ Shrubland	**Ruderal Forested Swamp**	**Mixed Oak/White Pine Forest**	**Oak Forest**	**Pitch Pine Woodland/ Barren**	**Coastal Beach**	**Tidal Salt Marsh**
Eastern Wood-Pewee[B]		O	O	P	P		
Acadian Flycatcher[B(S-C)]		**P**	**P**	**P**	**P**		
Willow Flycatcher[B]	**P**	**P**	**P**	**P**	**P**		
Least Flycatcher[B]		**P**	**P**	**P**	**P**		
Eastern Phoebe[B]	P	O	O	P	P		
Great Crested Flycatcher[B]		**P**	**P**	**P**	**P**		
Eastern Kingbird[B]	**P**	**P**	**P**	**P**	**P**		
Northern Shrike[M]	P	P	P	P	P		
White-eyed Vireo[B]		P	P	P	P		
Yellow-throated Vireo[B]		**P**	**P**	**P**	**P**		
Warbling Vireo[B]		O	O	O	P		
Red-eyed Vireo[B]	P	O	O				
Blue-headed vireo		**P**	**P**	**P**	**P**		
Blue Jay[B]	P	O	O	P	P		
American Crow[B]	P	O	O	O	P		
Fish Crow[B]						O	O
Horned Lark [B (S-C)]	**P**						
Purple Martin[B]	P		P	P	P	O	P

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	Inland Key Habitats					Coastal Key Habitats	
	Ruderal Grassland/ Shrubland	**Ruderal Forested Swamp**	**Mixed Oak/White Pine Forest**	**Oak Forest**	**Pitch Pine Woodland/ Barren**	**Coastal Beach**	**Tidal Salt Marsh**
Tree Swallow[B]	**P**	**P**	**P**	**P**	**P**	**O**	**P**
Northern Rough-winged Swallow[B]	P	P	P	P	P		P
Bank Swallow[B]	P					P	P
Barn Swallow[B]	P					O	O
Black-capped Chickadee[B]	P	O	O	P	P		
Tufted Titmouse[B]		O	O	P	P		
Red-breasted Nuthatch[B]		P	P	P	P		
White-breasted Nuthatch[B]		P	P	P	P		
Brown Creeper[B]		P	P	P	P		
Carolina Wren[B]	O	O	O	O	O		
House Wren[B]	P	P	P	P	P		
Winter Wren[B]	P	P	P	P	P	P	
Golden-crowned Kinglet[B]		P	P	P	P		
Ruby-crowned Kinglet[M]		P	P	P	P		
Blue-gray Gnatcatcher[B]		P	P	P	P		
Eastern Bluebird[B]	**P**	**P**	**P**	**P**	**P**		
Veery[B]		**P**	**P**	**P**	**P**		
Hermit Thrush[B]		P	P	P	P		

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	Inland Key Habitats					Coastal Key Habitats	
	Ruderal Grassland/ Shrubland	**Ruderal Forested Swamp**	**Mixed Oak/White Pine Forest**	**Oak Forest**	**Pitch Pine Woodland/ Barren**	**Coastal Beach**	**Tidal Salt Marsh**
Wood Thrush[B (BCC)]		**P**	**P**	**P**	**P**		
American Robin[B]	P	O	O	O	P		
Gray Catbird[B]	**P**	**O**	**O**	**P**	**P**		
Northern Mockingbird[B]	P	O	O	P	P	O	O
Brown Thrasher[B]	**P**	**P**	**P**	**P**	**P**		
European Starling[B]	P	P	P	P	P	O	O
Cedar Waxwing[B]		P	P	P	P		
Blue-winged Warbler[B]	**P**						
Northern parula[M(S-T)]		**P**	**P**	**P**	**P**		
Black-and-white warbler[B]		**P**	**P**	**P**	**P**		
Golden-winged Warbler[B]		P	P	P	P		
Nashville Warbler[B]	**P**	**P**	**P**	**P**	**P**		
Yellow Warbler[B]	O	P	O	O	P		
Yellow-rumped warbler[M]		**O**	**P**	**P**	**P**		
Chestnut-sided Warbler[B]	**P**	**P**	**P**	**P**	**P**		
Black-throated Green Warbler[B]		P	P	P	P		
Black-throated blue warbler[B(S-T)]		**P**	**P**	**P**	**P**		
Blackburnian warbler [M(S-T)]		**P**	**P**	**P**	**P**		

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	Inland Key Habitats					Coastal Key Habitats	
	Ruderal Grassland/ Shrubland	**Ruderal Forested Swamp**	**Mixed Oak/White Pine Forest**	**Oak Forest**	**Pitch Pine Woodland/ Barren**	**Coastal Beach**	**Tidal Salt Marsh**
Pine Warbler[B]		P	P	P	O		
Prairie Warbler[B (BCC)]	**P**				**P**		
American Redstart[B]	**P**	**O**	**O**	**P**	**P**		
Worm-eating Warbler[B]	P	O	P	P	P		
Ovenbird[B]	P	P	P	P	P		
Northern Waterthrush[B]		**P**					
Louisiana Waterthrush[B]		P					
Common Yellowthroat[B]	P	O	O	P	P		
Hooded Warbler[B]		**P**	**P**	**P**	**P**		
Canada Warbler[B (BCC)]		**P**	**P**	**P**	**P**		
Cerulean warbler[B(S-E)]		**P**	**P**	**P**	**P**		
Scarlet Tanager[B]		**P**	**P**	**P**	**P**		
Eastern Towhee[B]	**P**	**P**	**P**	**P**	**P**		
American Tree Sparrow[M]	P	P	P	P	P		
Chipping Sparrow[B]	P	P	P	P	P		
Field Sparrow[B]	**P**						
Savannah Sparrow[B]	**P**						
Fox Sparrow[M]	P	P	P	P	P		

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	Inland Key Habitats					Coastal Key Habitats	
	Ruderal Grassland/ Shrubland	**Ruderal Forested Swamp**	**Mixed Oak/White Pine Forest**	**Oak Forest**	**Pitch Pine Woodland/ Barren**	**Coastal Beach**	**Tidal Salt Marsh**
Song Sparrow[B]	P	O	O	O	P	O	O
Swamp Sparrow[B]	P	P					
White-throated Sparrow[M]	P	P	P	P	P		
Dark-eyed Junco [M]	P	P	P	P	P		
Lapland Longspur[M]	P						
Snow Bunting[M]						P	
Northern Cardinal[B]	P	O	O	P	P		
Rose-breasted Grosbeak[B]		**P**	**P**	**P**	**P**		
Indigo Bunting[B]	**P**						
Bobolink[B] (S-SC)	**P**						
Red-winged Blackbird[B]	P						O
Rusty Blackbird (BCC)	**P**	**P**	**P**	**P**			
Eastern Meadowlark[B]	**P**						
Common Grackle[B]	P	P	O	O	P	P	P
Brown-headed Cowbird[B]	P	P	P	P	P		O
Orchard Oriole		P	P	P	P		
Baltimore Oriole[B]		P	P	P	P		
Pine Grosbeak[M]		P	P	P			

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	Inland Key Habitats					Coastal Key Habitats	
	Ruderal Grassland/ Shrubland	**Ruderal Forested Swamp**	**Mixed Oak/White Pine Forest**	**Oak Forest**	**Pitch Pine Woodland/ Barren**	**Coastal Beach**	**Tidal Salt Marsh**
Purple Finch[M]		**P**	**P**	**P**	**P**		
House Finch[B]	P	O	P	O	P		
Common Redpoll[M]	P	P	P	P	P		
Pine Siskin[M]	P	P	P	P	P		
American Goldfinch[B]	P	O	O	P	P	O	P
Evening Grosbeak[M]	P	P	P	P	P		
House Sparrow[B]	O	P	P	O	P	P	P

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Table C-2 Observed and Potential Amphibian and Reptile Species

	Inland Key Habitats					Coastal Key Habitats	
	Ruderal Grassland/ Shrubland	**Ruderal Forested Swamp**	**Mixed Oak/White Pine Forest**	**Oak Forest**	**Pitch Pine Woodland/ Barren**	**Coastal Beach**	**Tidal Salt Marsh**
Marbled Salamander[B]		**P**	**P**	**P**	**P**		
Spotted Salamander[B]		**P**	**P**	**P**	**P**		
Red Spotted Newt[B]		**P**	**P**	**P**	**P**		
Northern Dusky Salamander[B]		P	P	P	P		
Northern Redback Salamander[B]		P	P	P	P		
Four-toed Salamander[B]		**P**	**P**	**P**	**P**		
Northern Two-Lined Salamander[B]		P	P	P	P		
American Toad[B]	P	P	P	P	P		
Fowler's Toad[B]	P	P	P	P	P		
Northern Spring Peeper[B]	P	P	P	P	P		
Gray Treefrog[B]		P	P	P	P		
American Bullfrog[B]							
Green Frog[B]		P					
Wood Frog[B]	**P**	**P**	**P**	**P**			
Pickerel Frog[B]	P	P	P	P			
Common Snapping Turtle[B]	P	P	P	P			
Painted Turtle[B]	P	P					

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	Inland Key Habitats					Coastal Key Habitats	
	Ruderal Grassland/ Shrubland	**Ruderal Forested Swamp**	**Mixed Oak/White Pine Forest**	**Oak Forest**	**Pitch Pine Woodland/ Barren**	**Coastal Beach**	**Tidal Salt Marsh**
Spotted Turtle[B]	**P**	**P**	**P**	**P**			
Wood Turtle[B (S-C)]	**P**	**P**	**P**	**P**	**P**		
Eastern Box Turtle[B]	P	P	P	P	P		
Common Musk Turtle[B]	P	P	P	P	P		
Diamondback Terrapin[B(S-E)]						**P**	**P**
Northern Water Snake[B]	P	P	P	P	P		
Northern Red-bellied Snake[B]	P	P	P	P	P		
Common Garter Snake[B]	P	P	P	P	P		
Eastern Ribbon Snake[B (S-SC)]	P	P	P	P	P		
Eastern Hognose Snake[B]	P	P	P	P	P		
Northern Ringneck Snake[B]	P	P	P	P	P		
Eastern Worm Snake[B]	P	P	P	P	P		
Northern Black Racer[B]	**P**	**P**	**P**	**P**	**P**		
Eastern Smooth Green Snake[B]	P	P	P	P	P		
Northern Brownsnake[B]	P	P	P	P	P		
Black Rat Snake[B]	P	P	P	P	P		
Eastern Milk Snake[B]	P	P	P	P	P		

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Table C-3 Observed and Potential Mammal Species

	Inland Key Habitats					Coastal Key Habitats	
	Ruderal Grassland/ Shrubland	**Ruderal Forested Swamp**	**Mixed Oak/White Pine Forest**	**Oak Forest**	**Pitch Pine Woodland/ Barren**	**Coastal Beach**	**Tidal Salt Marsh**
Virginia Opossum[B]	P	P	P	P	P	P	P
Masked Shrew [B]	P	P	P	P	P		P
Water Shrew[B(S-C)]	P	**P**	**P**	**P**	**P**	**P**	**P**
Northern Short-tailed Shrew[B]		P	P	P	P		
Smoky Shrew[B(S-C)]	**P**	**P**	**P**	**P**	**P**		
Star-nosed Mole[B]	P	P	P	P	P		
Little Brown Bat[B]	**P**	**P**	**P**	**P**	**P**		**P**
Silver-haired Bat[B]	**P**	**P**	**P**	**P**	**P**		**P**
Tricolored bat[B]	P	P	P	P	P		P
Big Brown Bat[B]	**P**	**P**	**P**	**P**	**P**		**P**
Eastern Red Bat[B]	**P**	**P**	**P**	**P**	**P**		**P**
Hoary Bat[M (S-SC)]	**P**	**P**	**P**	**P**	**P**		**P**
Northern Long-eared Bat[B (F-T)]	**P**	**P**	**P**	**P**	**P**		**P**
Eastern Cottontail[B]	P	P	P	P	P	P	P
New England Cottontail[B(S-C)]	**P**	**P**	**P**	**P**	**P**		

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	Inland Key Habitats					Coastal Key Habitats	
	Ruderal Grassland/ Shrubland	**Ruderal Forested Swamp**	**Mixed Oak/White Pine Forest**	**Oak Forest**	**Pitch Pine Woodland/ Barren**	**Coastal Beach**	**Tidal Salt Marsh**
Snowshoe Hare[B]	P	P	P	P	P	P	
Eastern Chipmunk[B]	O	O	O	O	O		
Woodchuck[B]	P	P	P	P	P		
Gray Squirrel[B]	O	O	O	O	O		
Red Squirrel[B]	P	P	P	P	P		
Southern Flying Squirrel[B]		P	P	P	P		
White-footed Mouse[B]	P	P	P	P	P		P
Southern Red-backed Vole[B]	P	P	P	P	P		P
Meadow Vole[B]	**P**	**P**	**P**	**P**	**P**		**P**
Woodland Vole[B]	P	P	P	p	P		
Muskrat[B]		P	P	P	P	P	P
Southern Bog Lemming[B]	P	P	P	P	P		
Norway Rat[B]	P	P	P	P	P	P	P
House Mouse	P	P	P	P	P	P	P
Meadow Jumping Mouse[B]	P	P	P	P	P		
Coyote[B]	P	P	P	P	P	P	P
Red Fox[B]	P	P	P	P	P	P	P

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	Inland Key Habitats					Coastal Key Habitats	
	Ruderal Grassland/ Shrubland	**Ruderal Forested Swamp**	**Mixed Oak/White Pine Forest**	**Oak Forest**	**Pitch Pine Woodland/ Barren**	**Coastal Beach**	**Tidal Salt Marsh**
Gray Fox[B]	P	P	P	P	P	P	P
Raccoon[B]	P	P	P	P	P	P	P
Ermine (Short-tailed weasel)[B]	P	P	P	P	P	P	P
Fisher[B]	P	P	O				
Long-tailed Weasel[B]	P	P	P	P	P	P	P
Mink[B]	P	P	P	P	P	P	P
Striped Skunk[B]	P	P	P	P	P	P	O
White-tailed Deer[B]	P	O	O	P	P	P	P
Black Bear[B]	**P**	**P**	**P**	**P**	**P**	**P**	
Bobcat[B(S-T)]	**P**	**P**	**P**	**P**	**P**	**P**	

P = Potential to occur O = observed by VHB during Summer 2019 **P/O** = GCN Species in the 2015 RIWAP. B = breeding in Rhode Island M = migrant/visitor
S-E = State-endangered S-T= State-threatened S-C = State Concern F-E = Federally endangered F-T = Federally Threatened BCC = Bird of Conservation Concern
Source: DeGraaf, Richard M. and Mariko Yamasaki. 2001. New England Wildlife: Habitat, Natural History and Distribution, University Press of New England, Hanover, New Hampshire, 2001.
RIDEM, The Rhode Island Nature Conservancy, University of Rhode Island. 2015. Rhode Island Wildlife Action Plan. http://www.dem.ri.gov/programs/fish-wildlife/wildlifehuntered/swap15.php

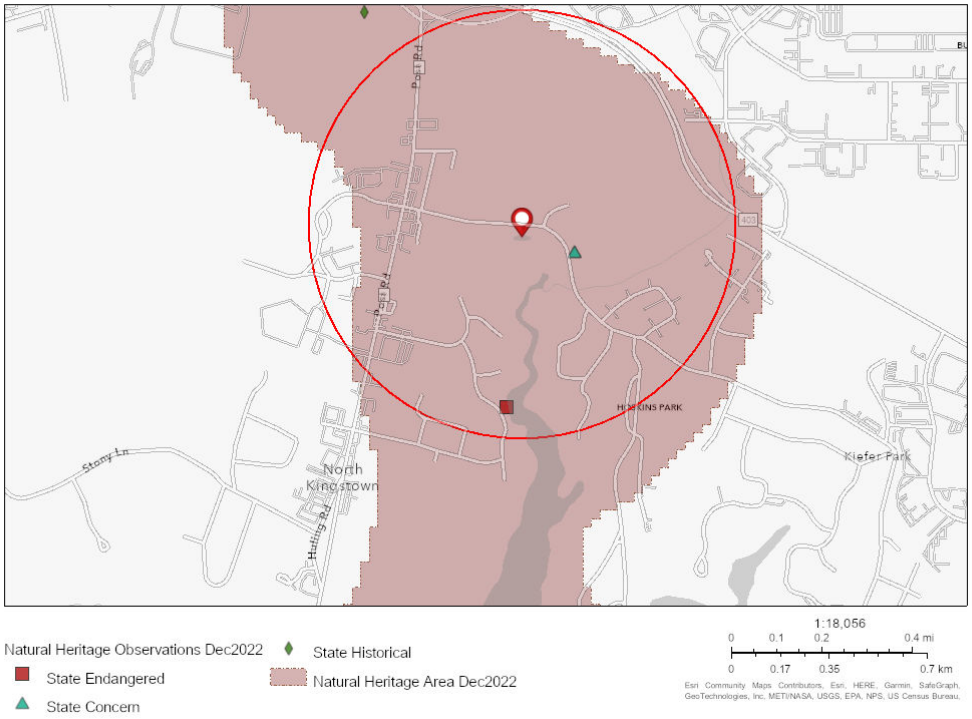
Appendix D: USFWS Official Species List & RIDEM Natural Heritage Area Species Records

Natural Heritage Screening Camp Ave

Area of Interest (AOI) Information

Area : 19,605,308.92 ft²

Feb 16 2023 8:13:14 Eastern Standard Time



Summary

Name	Count	Area(ft²)	Length(ft)
Natural Heritage Observations Dec2022	3	N/A	N/A

Natural Heritage Observations Dec2022

#	Family	Genus	Species	COMNAME	SurvDate	LAST_OBS	RI_ STAT	Count
1	Asteraceae	Pityopsis	falcata	Sickle-leaved or Falcate Golden Aster	9/2/2007	2002	State Concern	1
2	Asteraceae	Pityopsis	falcata	Sickle-leaved or Falcate Golden Aster	08/30/2002	2002	State Concern	1
3	Reptile	Malaclemys	terrapin	Diamondback Terrapin	6/2/2021	2021	State Endangered	1

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To: February 17, 2023
Project Code: 2023-0046862
Project Name: Revolution Wind LLC, Onshore Facilities

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

Updated 12/27/2022 - Please review this letter each time you request an Official Species List, we will continue to update it with additional information and links to websites may change.

About Official Species Lists

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Federal and non-Federal project proponents have responsibilities under the Act to consider effects on listed species.

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested by returning to an existing project's page in IPaC.

Endangered Species Act Project Review

Please visit the "**New England Field Office Endangered Species Project Review and Consultation**" website for step-by-step instructions on how to consider effects on listed

species and prepare and submit a project review package if necessary:

https://www.fws.gov/office/new-england-ecological-services/endangered-species-project-review

NOTE Please do not use the **Consultation Package Builder** tool in IPaC except in specific situations following coordination with our office. Please follow the project review guidance on our website instead and reference your **Project Code** in all correspondence.

Northern Long-eared Bat - (Updated 12/27/2022) Please visit our New England Field Office Project Review webpage at the link above for updated northern long-eared bat consultation guidance. The Service published a final rule to reclassify the northern long-eared bat (NLEB) as endangered on November 30, 2022. The final rule will go into effect on **January 30, 2023**. After that date, the current 4(d) rule for NLEB will no longer be in effect, and the 4(d) determination key will no longer be available. New compliance tools will be available by mid- to late-January, and information will be posted on our New England Field Office Project Review webpage in January, so please check this site often for updates.
Depending on the type of effects a project has on NLEB, the change in the species' status may trigger the need to re-initiate consultation for any actions that are not completed and for which the Federal action agency retains discretion once the new listing determination becomes effective. If your project may result in incidental take of NLEB after the new listing goes into effect, this will need to be addressed in an updated consultation that includes an Incidental Take Statement. Many of these situations will be addressed through the new compliance tools. If your project may require re-initiation of consultation, please wait for information on the new tools to appear on our website or contact our office at **newengland@fws.gov** for additional guidance.

Additional Info About Section 7 of the Act
Under section 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to determine whether projects may affect threatened and endangered species and/or designated critical habitat. If a Federal agency, or its non-Federal representative, determines that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Federal agency also may need to consider proposed species and proposed critical habitat in the consultation. 50 CFR 402.14(c)(1) specifies the information required for consultation under the Act regardless of the format of the evaluation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/service/section-7-consultations

In addition to consultation requirements under Section 7(a)(2) of the ESA, please note that under sections 7(a)(1) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species. Please contact NEFO if you would like more information.

Candidate species that appear on the enclosed species list have no current protections under the

ESA. The species' occurrence on an official species list does not convey a requirement to consider impacts to this species as you would a proposed, threatened, or endangered species. The ESA does not provide for interagency consultations on candidate species under section 7, however, the Service recommends that all project proponents incorporate measures into projects to benefit candidate species and their habitats wherever possible.

Migratory Birds

In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see:

https://www.fws.gov/program/migratory-bird-permit

https://www.fws.gov/library/collections/bald-and-golden-eagle-management

Please feel free to contact us at **newengland@fws.gov** with your **Project Code** in the subject line if you need more information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat.

Attachment(s): Official Species List

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

PROJECT SUMMARY

Project Code: 2023-0046862
Project Name: Revolution Wind LLC, Onshore Facilities
Project Type: Transmission Line - New Constr - Above Ground
Project Description: The Onshore Facilities for the Revolution Wind Project will include the Landfall Work Area, the Onshore Transmission Cable, an Onshore Substation (OnSS) and Interconnection Facility (ICF) adjacent to the The existing Narragansett Electric Company d/b/a National GridRhode Island Energy's ("TNEC") existing Davisville Substation . The ICF is an expansion of the TNEC Davisville Substation. There will also be new underground circuits connecting the OnSS to the ICF (Interconnection Right-of-Way [ROW]) and new overhead circuits connecting the ICF to TNEC's Davisville Substation (TNEC ROW). A short segment of the existing Davisville Tap will be reconfigured to connect to the ICF.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@41.5890095,-71.43347249498993,14z

Counties: Washington County, Rhode Island

ENDANGERED SPECIES ACT SPECIES

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

BIRDS

NAME	STATUS
Roseate Tern *Sterna dougallii dougallii* Population: Northeast U.S. nesting population No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2083	Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

IPAC USER CONTACT INFORMATION

Agency: Bureau of Ocean Energy Management
Name: Chelsea Glinka
Address: 1 Cedar St. Suite 400
City: Providence
State: RI
Zip: 02903
Email cglinka@vhb.com
Phone: 4014572059

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
http://www.fws.gov/newengland

In Reply Refer To: January 07, 2020
Consultation Code: 05E1NE00-2020-SLI-0935
Event Code: 05E1NE00-2020-E-02600
Project Name: Compass Rose Beach

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2020-SLI-0935

Event Code: 05E1NE00-2020-E-02600

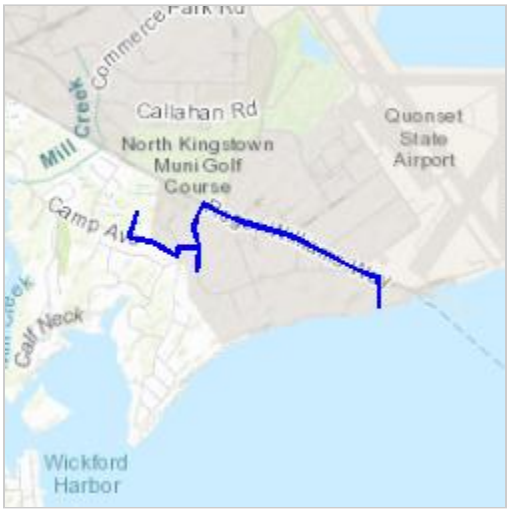
Project Name: Compass Rose Beach

Project Type: TRANSMISSION LINE

Project Description: Potential Onshore Cable Route

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/41.58976753493634N71.42078761166601W



Counties: Washington, RI

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Birds

NAME	STATUS
Roseate Tern *Sterna dougallii dougallii* Population: Northeast U.S. nesting population No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2083	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
http://www.fws.gov/newengland

In Reply Refer To: September 28, 2019
Consultation Code: 05E1NE00-2019-SLI-3000
Event Code: 05E1NE00-2019-E-07872
Project Name: Revolution Wind

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2019-SLI-3000

Event Code: 05E1NE00-2019-E-07872

Project Name: Revolution Wind

Project Type: ** OTHER **

Project Description: Potential onshore project area associated with Revolution Wind

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/41.5892010096223N71.43272767855015W

Counties: Washington, RI

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Appendix E: Vernal Pool Survey Memorandum

Memorandum

To: Mark Roll
Senior Project Lead
Revolution Wind, LLC

Date: April 26, 2021

Project #: 73030.00

From: Chelsea Glinka ENV SP
Jeff Peterson, PWS

Re: Vernal Pool Survey Memorandum for Revolution Wind Interconnection Facility
Parcel ID 179-005
Camp Avenue, North Kingstown, Rhode Island

Proposed Project and Site Description

This Vernal Pool Survey Memorandum has been developed by VHB for Revolution Wind LLC (Revolution Wind) to describe vernal pool resources present within the existing Davisville Substation parcel, identified by the North Kingstown Tax Assessor as Parcel 179-005. The existing Davisville Substation parcel is owned and operated by The Narragansett Electric Company d/b/a National Grid (TNEC) which previously contracted LEC Environmental Consultants, Inc. (LEC) to conduct Site Evaluations of its property to document regulated environmental resources. Environmental documentation in this parcel will support the permit filings for the proposed Interconnection Facility (ICF) which will connect the power generated from the offshore Revolution Wind Project to the regional electric transmission grid via the Davisville Substation. The Davisville Substation parcel is within Quonset Business Park off Camp Avenue in North Kingstown, Rhode Island.

Wetlands Description

Wetlands within the Davisville Substation parcel were delineated by LEC on December 10, 2019. The wetland that is the subject of this report was identified as the "C-series" wetland, herein after referred to as Freshwater Wetland 5 (refer to attached **Figure 1**). Wetland flags were present and legible during the field visits conducted for this vernal pool survey. Freshwater Wetland 5 is a small topographic depression immediately southwest of Davisville Substation which measures approximately 3,800 square feet (0.09 acres). This isolated forested wetland is seasonally flooded with maximum water depths of four feet. Freshwater Wetland 5 has an ephemeral connection to the larger Freshwater Wetland 4, a Marsh within the northwest corner of the Davisville Substation parcel that was previously identified as a vernal pool by VHB[1], via an Area Subject to Storm Flowage (ASSF). LEC classified Freshwater Wetland 5 as a Special Aquatic Site under Rules and Regulations Governing the Protection and Management of Freshwater Wetlands in the Vicinity of the Coast (650-RICR-20-00-2; FWW Rules). This classification is often assigned to classic vernal pools. LEC was unable to verify that Freshwater Wetland 5 functioned as a vernal pool because their site visits were made outside of the season when vernal pool species are present. To follow up on this matter, VHB conducted two site visits during early Spring 2021 to investigate the presence of vernal pool indicators.

[1] Refer to separate Vernal Pool report dated September 20, 2020 which was submitted as an appendix to the Onshore Natural Resources and Biological Assessment Technical Report in support of the Construction and Operations Plan (COP) filed with revisions April 2021 with the Bureau of Ocean Energy Management (BOEM).

1 Cedar Street
Suite 400
Providence, RI 02903-1023
P 401.272.8100

Vernal Pool Identification Criteria

Neither the Coastal Resources Management Council (CRMC) or Rhode Island Department of Environmental Management (RIDEM) provide a definition of vernal pools. However, vernal pools are regulated in Rhode Island under the FWW Rules as Special Aquatic Sites, which are defined as:

"…a body of open standing water, either natural or artificial, which does not meet the definition of pond, but which is capable of supporting and providing habitat for aquatic life forms, as documented by the:

a. Presence of standing water during most years, as documented on site or by aerial photographs; and

b. Presence of habitat features necessary to support aquatic life forms of obligate wildlife species, or the presence of or evidence of, or use by aquatic life forms of obligate wildlife species (excluding biting flies)."

Special Aquatic Sites are seasonal water bodies that pond water continuously for a minimum period beginning in the winter and extending at least into the early summer. They may be situated within larger wetland systems or occur as hydrologically isolated features situated in uplands. In the northeastern United States, they are characterized by vernal-pool-specific fauna, certain amphibian and invertebrate species (indicator species) that require the pools to complete a portion of their life cycles (Colburn, 2004).

The common and scientific names for Rhode Island species considered by Calhoun and Klemens (2002) to be obligate biological indicators of vernal pool habitat are listed within Table 1.

Table 1. Vernal Pool Obligate Species

Common Name	Scientific name
Jefferson Salamander	*Ambystoma jeffersonianum*
Blue-spotted Salamander complex	*Ambystoma laterale*
Spotted Salamander	*Ambystoma maculatum*
Marbled Salamander	*Ambystoma opacum*
Wood Frog	*Lithobates sylvaticus*
Fairy Shrimp	*Eubranchipus sp.*

Methodology to Identify Vernal Pools

A VHB biologist surveyed Freshwater Wetland 5 for vernal pool indicators on April 5 and April 19, 2021 using auditory cues (e.g. wood frog chorusing), waders, polarized sunglasses, and a dipnet to search for wood frog and spotted salamander adults, egg masses and larvae, and fairy shrimp. Discretion was used during dipnet sweeps, such that small, shallow areas containing obligate vernal pool indicators were disrupted as little as possible (i.e., mucking-up of pool bottoms was avoided). Field notes were recorded on the Connecticut Association of Wetland Scientists (CAWS)

Vernal Pool Observation Form[2] and the U.S. Army Crops of Engineers New England District Draft Vernal Pool Characterization Form, and photographs were taken (see attached).

Findings

Freshwater Wetland 5 functions as a vernal pool. This wetland occurs within an area that has been previously disturbed by the U.S. military which used this area as a general landfill prior to 1970. Artifacts within the wetland, including several monitoring wells and an abandoned storage tank, indicate that the area has experienced anthropogenic disturbance. Vegetation within and around the wetland also include areas dominated by invasive vegetation providing further evidence of anthropogenic disturbance.

Based on field investigations and documentation from LEC, the pool floods seasonally and dries up during late summer and fall. Freshwater Wetland 5 contributes flow to Freshwater Wetland 4 during storm events via an ASSF that connects the two wetlands. Water depths at the deepest points of the vernal pool are between three to four feet and the pool bottom is firm consisting of leaf litter resting on a mineral soil substrate. Vegetation within the shrub layer consists of sweet pepper bush (*Clethra alnifolia*), red maple (*Acer rubrum*), autumn olive (*Elaeagnus umbellata*), Japanese barberry (*Berberis thunbergii*), multiflora rose (*Rosa multiflora*), and poison ivy (*Toxicodendron radicans*). The forested perimeter of the pool includes red maple, red and white oak (*Quercus rubra* and *alba*), and eastern red cedar (*Juniperus virginiana*).

During the vernal pool investigations using dip net sweeps, the VHB biologist identified wood frog larvae and fairy shrimp which are both considered obligate vernal pool species. A summary of the findings is included in Table 2. Facultative vernal pool species observed include predacious diving beetles and backswimmers. Photos of the vernal pool and the data forms are appended to this memorandum.

Although Freshwater Wetland 5 exhibits indicators of anthropogenic disturbance it provides vernal pool habitat. The depth of the pool indicates that its hydroperiod during an average rainfall year is likely sufficient to allow obligate species such as wood frog to complete their metamorphosis.

Table 2. Summary of Findings

Pond ID	Area (SF)	Inlet/Outlet Flowing	Obligate Indicators	Fish Present	Vernal Pool Classification
Freshwater Wetland 5	3,800	Yes	WFL, FS	No	Classic

WFC: Wood frog chorusing; WFEM: Wood frog egg masses; WFL: Wood frog larvae; SSEM: Spotted salamander egg masses; FS fairy shrimp

[2] The CAWS form was used because Rhode Island does not have a state-specific vernal pool evaluation form.

References

Calhoun, A. J. K. and M. W. Klemens. 2002. Best development practices: Conserving pool-breeding amphibians in residential and commercial developments in the northeastern United States. MCA Technical Paper No. 5, Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, New York.

Colburn E. A. 2004. Vernal pools: Natural history and conservation. Blacksburg, VA: McDonald and Woodward.

Rhode Island Department of Environmental Management vernal pool brochure: http://www.dem.ri.gov/programs/benviron/water/wetlands/pdfs/vernbroc.pdf

Rhode Island Department of Environmental Management. Vernal Pools. http://www.dem.ri.gov/programs/water/wetlands/vernal-pools.php. Accessed April 22, 2021.

Attachments

Attachment A: Figure 1

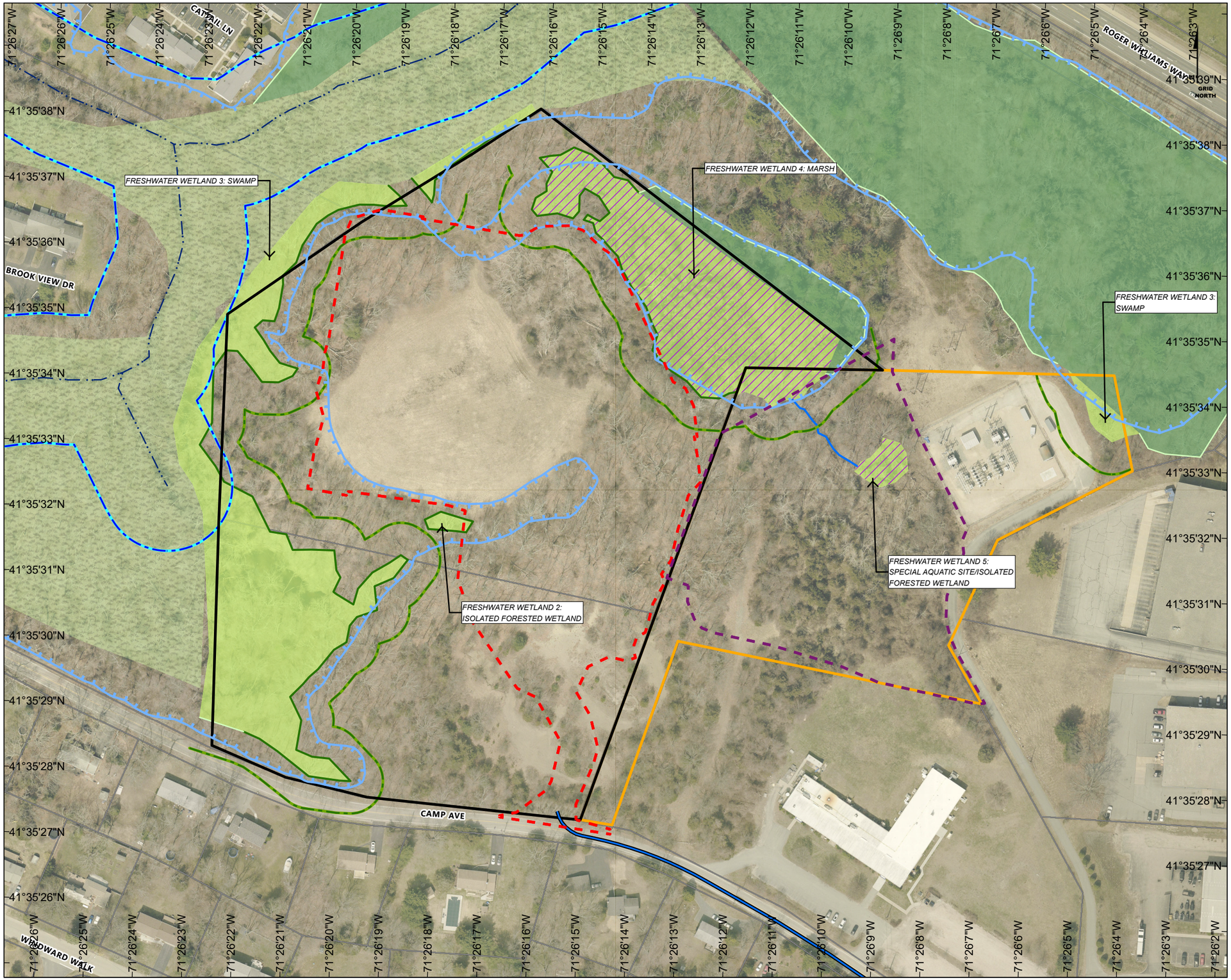
Attachment B: Site Photographs

Attachment C: CAWS Vernal Pool Observation Form

Attachment D: USACE New England District Draft Vernal Pool Characterization Form

Revolution Wind

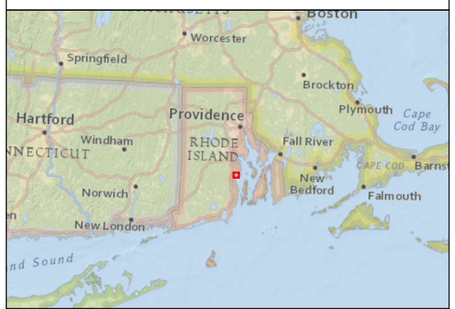
Figure 1
Wetland Resources: Large Scale view near OnSS and Davisville Substation Parcels
NORTH KINGSTOWN, RI



Legend

- Onshore Transmission Cable
- Substation Limit of Work
- ICF Limit of Work
- Parcel ID 179-030 & 179-001
- Parcel ID 179-005
- Parcel Boundary
- One-Percent Annual Chance Flood Hazard Area
- Delineated Wetland Edge
- Approximate Wetland Edge
- LEC Delineated ASSF
- Approximate Stream
- Delineated Wetland Resources
- Interpolated Wetland
- Vernal Pool Area
- Wetland (NWI)

Service Layer Credits: RIDEM/Tax_Parcels: RI State, 37 Towns
National Geographic World Map: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.
Rhode Island Aerial Photographs (Spring 2018; State Plane):



Reference system: NAD83 (2011)
Projection: UTM Zone 19N

0 20 40 60 Meters

0 60 120 180 Feet

Date: 05/19/2020
Document no:

Created by: S. PELLETIER
Checked by: S. MOBERG
Approved by: STEPW

Revolution Wind

Powered by Ørsted & Eversource

Revolution Wind: Existing Davisville Substation/Proposed ICF Parcel
Vernal Pool Survey Photo Log
April 26, 2021

Photo 1

Description:
View of Freshwater Wetland 5 looking northeast towards the Davisville Substation. Freshwater Wetland 5 is a classic vernal pool; a topographic depression within an upland that pools seasonally and dries during the summer and fall.

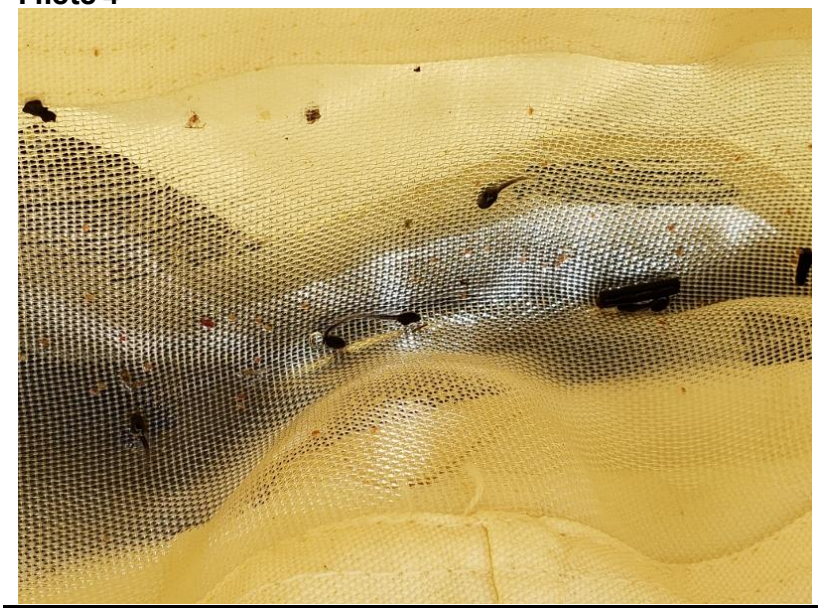
Photo 2

Description:
Freshwater Wetland 5 includes several artifacts indicative of past anthropogenic disturbance, including the abandoned storage tank visible in the foreground and several monitoring wells in the background of the photo.

Photo 3

Description:
This photo shows a single fairy shrimp and one wood frog larvae. These obligate species were captured during dip net surveys on April 19, 2021.

Photo 4



Description:
Several wood frog larvae were captured during dip net surveys on April 19, 2021.

VERNAL POOL DATA SHEET

Survey Date: 4/5/21 & 4/19/21	Investigator(s): C. Glinka	Town: North Kingstown	CAWS Pool #: VWetland 5	CAWS Project #:	
Town Staff Contacted? Yes ☐ No ☑	Project/property name: Revolution Wind ICF		Pool Type: classic	Development: ☐	Reference: ☐
Address/location (*or include annotated map*): north of Camp Ave			Investigator's Contact information: cglinka@vhb.com		

SEARCH CONDITIONS AND METHODS *(required)*

WEATHER:

Precipitation: Within last 24 hours

Current	Within last 24 hours
None	None

Cloud Cover:
- clear ☑
- partly cloudy ☐
- mostly cloudy ☐
- full cloud cover ☐

Start time: 1030
End time: 1145

Methods used:
- Visual ☑
- Dipnetting ☑

Type of Inspection:
- baseline ☑
- during construction ☐
- post construction ☐

Polarized sunglasses used? Yes ☑ No ☐

Comments: Temperature during both surveys was ~50 F

Temporary flagging used to mark egg masses? Yes ☐ No ☑

AMPHIBIAN EGG MASS COUNTS *(required)*

Wood frogs: ☐ 1-25 ☐ 26-49 ~~50~~

condition
If condition mixed, note "some","many" or "most"
intact: All
breaking up:
hatching:

Abundance categories			
50-75	☐	250-300	☐
75-100	☐	300-400	☐
100-150	☐	400-500	☐
150-200	☐	500-750	☐
200-250	☐	750-1000	☐
		1000-1250	☐
		>1250	☐

Describe estimation method used for a large raft:
Egg masses were not observed

Spotted Salamanders:

Condition:	Total Number
intact:	0
breaking up:	
hatching:	

ADDITIONAL NOTES: *(optional)*

Approximately 30 minutes of dip net sweeps on April 5, 2021 resulted in the capture of only one fair shrimp. No egg masses were observed during that field visit.
On a follow-up visit on April 19, 2021 another 30 minutes of dip net sweeps was performed and that resulted in the capture of several fairy shrimp and many wood frog larvae. No egg masses were observed during this follow-up visit.

CONDITIONS/OBSERVATIONS WITHIN POOL

(required data)

			Flowing	Not flowing
Inlet observed?	No ☑	Yes ☐	☐	☐
Outlet observed?	No ☐	Yes ☑	☐	☑
finfish observed?	No ☑	Yes ☐		

Estimated water depth range? 4 ft at deepest point

Optional Data (see also back of sheet)

Other Vernal Pool Species:
- fairy shrimp present? Yes ☑ No ☐
- marbled salamander larvae present? Yes ☐ No ☑

Vegetation (within or overhanging pool):
- Trees/Saplings: red maple, oak, eastern red cedar
- Shrubs/Vines: sweet pepperbush, red maple, autumn olive
- Herbs: sensitive fern

Percent tree canopy closure? 60
Woody debris content? High ☐ Med. ☑ Low ☐

Pool Substrate: (top three)
- Mud/muck ☐
- Sand/Silt ☐
- Peat ☐
- Bedrock ☐
- Leaf Litter ☑
- Silt/clay ☐
- Gravel/cobbles ☐

Water Quality:
ph ☐ conductivity(uS/cm) ☐ temperature (°C) ☐
Nitrate-N (mg/l) ☐ Total P (ug/l) ☐ DO(mg/l) ☐
turbidity(NTU's) ☐ Sulphidic odor? No ☐ Yes ☑
Approximate % cover by algal mat or duckweed? 0
GPS coordinates: 41.592417, -71.435668

CONDITIONS IN ENVELOPE WITHIN 100 FT OF POOL

(required data) *Give approximate percentage or show on sketch on back*

Landuses/conditions					
forest	75	shrubland		meadow	
pasture		lawn		building	25
exposed soil		grading		ag. field	

road ☐ busy (>1 car/10 min.) yes ☐ no ☐
parking lot ☐

Comments: VP is immediately southwest of Davisville Substation

Leaf Litter:	*If variable, note location (e.g. "N. shore")*
none/low:	
moderate:	
high:	✓

Cover Objects:	*Logs*	*Rocks*
none:		✓
low:		
moderate:	✓	
high:		

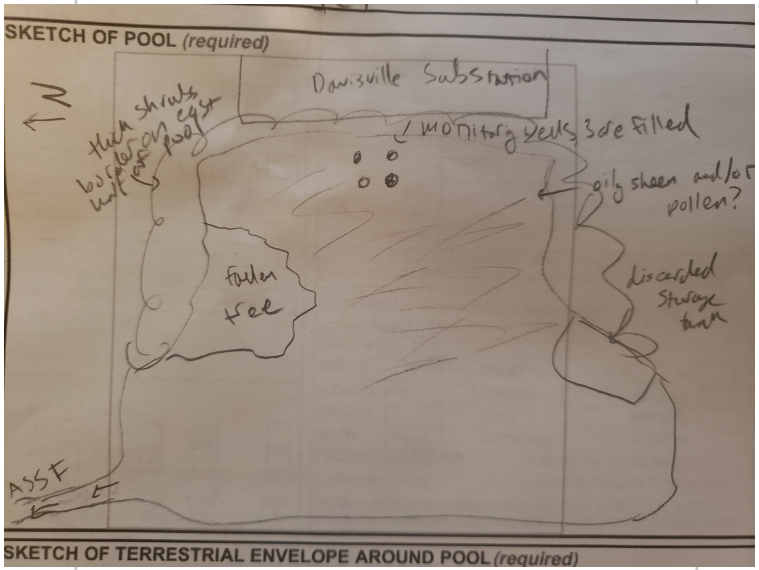
Dominant vegetation *(optional)*
- Trees/saplings: red maple
- Shrubs/Vines: Sweet pepperbush, autumn olive
- Herbs: sensitive fern

VERNAL POOL DATA SHEET, *p. 2*

Survey Date: 4/5/21 & 4/19/21	Investigator(s): C. Glinka,	Town: North Kingstown	**CAWS Pool #:**	Wetland 5	CAWS Project #:
Project/property name: Revolution Wind ICF				Pool Type:	Development: ☐ Reference ☐

*Draw a **rough, quick** sketch of the pool showing **approximate locations of egg mass rafts & clusters** in relation to pool features, like logs, algal mats, and islands. Show inlet/outlet if present. Include north arrow and approxImate scale.*

SKETCH OF POOL *(required)*



WILDLIFE OBSERVATIONS: *(optional)*

Checklist of Facultative Herptile Fauna (Pool & Fringe):

Green Frog	☐	Spring Peeper	☐
Pickerel Frog	☐	Gray Tree Frog	☐
Bull Frog	☐	Pickerel Frog	☐
Eastern Toad	☐	Painted Turtle	☐
Spotted Turtle	☐	Snapping Turtle	☐
N. Water Snake	☐	Blue-spot. salam.	☐

Other Observed Fauna (Pool & Fringe):

predacious diving beetles, backswimmers

*Draw a **rough, quick** sketch of the pool's **terrestrial envelope,** extending at least 200' from pool in all directions. Provide **detail on conditions & landuses within 100 feet of edge of pool.** Include north arrow and approxImate scale.*

SKETCH OF TERRESTRIAL ENVELOPE AROUND POOL *(required)*

Circle any of the following factors that impaired your ability to observe egg masses, and indicate severity of impairment.

Factor	Severity (Low/Mod./High)
1. Surface algae	☐
2. Surface pollen	☑
3. Dark, tannin-colored water	☑
4. Deep water	☐
5. Turbidity	☐
6. Dense shrubs	☑
7. Other (specify)	☐

ADDITIONAL NOTES: *(optional)*

US Army Corps of Engineers - New England District
DRAFT Vernal Pool Characterization Form

Project File # 73030.00 Project Name Revolution Wind ICF Pool ID Wetland 5
Observer Chelsea Glinka Phone or E-mail cglinka@vhb.com
Landowner/Applicant National Grid d/b/a TNEC & Revolution Wind, LLC Phone or E-mail mroll@orsted.com
Address 56 Exchange Terrace, Suite 300 City Providence State RI Zip 02903
Location of vernal pool: City/State North Kingstown, RI
Survey date(s) 4/5/21 and 4/19/21
Longitude/Latitude (in decimal degrees) 41.592417, -71.435668

A. VERNAL POOL CHARACTERISTICS (fill in all information known):

1. Landscape setting (check all that apply):

☑ Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
☐ Pool part of wildlife corridor (4 pts)
☑ Pool part of a pool complex (within 1000 feet of one or more other vernal pools) (NA)
☐ Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
☐ Other: _____ (variable pts)

2. Vernal pool condition:

Describe any recent modifications to the pool and associated landscape: Pool is directly southwest of Davisville Substation. It has evidence of anthropogenic disturbance, including monitoring wells, abandoned storage tank, and oily sheen on the water's surface. Invasives form a dense barrier around the pool.

3. Parent material:

☑ Glacial fluvial ("outwash")
☐ Loose till
☐ Peat
☐ Dense till
☐ Alluvium
☐ Coastal marine sediments

4. Aquatic resource type that best applies to this pool (choose dominant):

☑ Forested wetland (4 pts)
☐ Herbaceous wetland (4 pts)
☐ Floodplain (overflow/oxbow) (3 pts)
☐ Shrub wetland (4 pts)
☐ Open water (2 pts)
☐ Other: _____ (variable points)
☐ Peatland (acidic fen or bog) (4 pts)
☐ Intermittent stream reach (2 pts)

5. Pool canopy cover (%): 60

6. Predominant substrate:

☒ Mineral soil
☐ Organic matter (peat/muck) Depth 4 ft Sampling location (e.g., deepest zone, edge, etc.) Deepest section is approximately 4 ft

7. Pool size:

a. Approximate dimensions of pool (at maximum capacity; include units): Length 100 ft Width 75 ft
Area: 0.09 acre

b. Maximum depth at deepest point at time of survey (include units): 4 ft

8. Hydrology:

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

☐ Dries between early March and early July (e.g., *Thelypteris palustris, Carex stricta, Impatiens capensis, Ilex verticillata*) (6 pts)
☒ Dries between early July and early September (e.g., *Sagittaria latifolia, Scirpus cyperinus, Dulichium arund., Cephalanthus occ.*) (8 pts)
☐ Dries between early September and early November (e.g., *Eleocharis palustris, Glyceria cana., Utricularia* spp., *Decodon vert.*) (8 pts)
☐ Dries between early November and late December, or intermittently exposed (e.g., *Nuphar* spp., *Potamogeton* spp.) (2 pts)

b. Inlet/outlet (pick one):

☐ No inlet/outlet (8 pts)
☐ Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
☑ Temporary inlet/outlet (6 pts)

9. Water quality:

☐ Clear
☐ High turbidity
☐ High algae content
☑ Tannic

22 **TOTAL for Pool Characteristics (out of 28 max.)**

B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):

1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:

☑ Forested 75 % (16 pts) ☐ Open (e.g., meadow, agriculture, golf course) _____ % (4 pts)

☐ Shrub _____ % (10 pts) ☑ Developed 25 % (0 pts)

2. **Landuse type and approximate percentage within the 100 - 750-ft vernal pool critical terrestrial habitat:**

☑ Forested 50 % (16 pts) ☐ Open (e.g., agriculture, golf course) _____ % (4 pts)

☐ Shrub _____ % (10 pts) ☑ Developed 50 % (0 pts)

☑ Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on: ☑ Field estimate ☐ GIS ☑ Aerial photo estimate

20 **TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

C. SPECIES PRESENT IN VERNAL POOL

INDICATOR SPECIES	**DATE**	**EGG MASSES (#)**	**TADPOLES/LARVAE**
Wood Frog (*Lithobates sylvaticus*)	4/19/21		Many larvae observed
Spotted Salamander (*Ambystoma maculatum*)			
Blue-spotted Salamander (*Ambystoma laterale*)			
Jefferson's Salamander (*Ambystoma jeffersonianum*)			
Marbled Salamander (*Ambystoma opacum*)			
Fairy Shrimp (*Eubranchipus* spp.)	4/5/21 & 4/19/21	**PRESENT/ABSENT**	**ABUNDANCE:** many
OTHER SPECIES	**DATE**	**PRESENCE/ABSENCE**	**FEW/COMMON/MANY**
Facultative Species (e.g., Spring Peeper (*Pseudacris crucifer*), Gray Tree Frog (*Hyla versicolor*), Caddisflies (Limnephilidae, Phryganeidae), American Toad (*Anaxyrus americanus*), Eastern Spadefoot Toad (*Scaphiopus holbrookii*), Fowler's Toad (*Anaxyrus fowleri*), Fingernail Clams (Sphaeriidae, Pisidiidae))(list):			
Rare Species (list): None			
Predator Species (e.g., Bullfrog/Green frog tadpoles, Fish) (list): None			
Other species (e.g., Ducks, Turtles, etc.)(list): None			

Presence of Indicator Species ☑ Yes ☐ No

SUMMARY:

22 **TOTAL for Pool Characteristics** 20 **TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other comments (append photographs, additional notes, sketch of pool and surrounding landscape):

Vegetation within the shrub layer consists of sweet pepper bush (Clethra alnifolia), red maple (Acer rubrum), autumn olive (Elaeagnus umbellata), Japanese barberry (Berberis thunbergii), multiflora rose (Rosa multiflora), and poison ivy (Toxicodendron radicans). The forested perimeter of the pool includes red maple, red and white oak (Quercus rubra and alba), and eastern red cedar (Juniperus virginiana).

Memorandum

To: Mark Roll
Senior Project Lead
Revolution Wind, LLC

Date: September 21, 2020

Project #: 73030.00

From: Chelsea Glinka ENV SP

Re: Vernal Pool Survey Memorandum for Revolution Wind Onshore Facilities
Parcel ID 179-030 & 179-001
Camp Avenue, North Kingstown, Rhode Island

Proposed Project and Site Description

This Vernal Pool Survey Memorandum has been developed to supplement the Onshore Natural Resources & Biological Assessment Technical Report (**Appendix K** of the Construction and Operations Plan) for the Revolution Wind Project (Revolution Wind, LLC). The Onshore Facilities of the Revolution Wind Project include the Landfall Envelope Area (LEA), Onshore Export Cable, Alternative Cable Route Segment, the Onshore Substation (OnSS) and the transmission interconnection, collectively the Project Site. The OnSS is proposed to be located within two parcels identified by the North Kingstown Tax Assessor as 179-030 and 179-001. The transmission interconnection will be partially located within the adjacent parcel 179-005.

The Project Site occurs within Quonset Point in North Kingstown, Rhode Island which was developed by the United States Department of Defense as the Naval Air Station Quonset Point, commissioned in 1941 and decommissioned in 1974. Today, most of the land is owned and managed by the Quonset Development Corporation and has been developed as a business park. The two areas within the Project Site that are undeveloped include the western limits of the LEA and the parcels proposed for the OnSS.

Wetlands and Vernal Pool Resources

Freshwater wetlands were delineated within the Project Site between July 2019 and August 2019 by VHB wetland scientists, and by LEC Environmental Consultants, Inc. (LEC) on December 10, 2019. There are five wetlands within the Project Site. Four of the wetlands were investigated for vernal pool indicators by VHB biologists on March 27, 2020, and the fifth wetland within parcel 179-005 was surveyed by LEC on July 13, 2020 (refer to **Figures 1** and **2** in **Attachment A**).

Vernal Pool Identification Criteria

The Rhode Island Department of Environmental Management (RI DEM) does not provide a definition of vernal pools on its website (RI DEM, 2020). However, vernal pools are regulated in Rhode Island under the Freshwater Wetland Rules (650-RICR-20-00-2) as part of the larger Freshwater Wetland which envelops them or as Special Aquatic Sites if they are isolated from other wetlands. Special Aquatic Sites are defined as:

"…a body of open standing water, either natural or artificial, which does not meet the definition of pond, but which is capable of supporting and providing habitat for aquatic life forms, as documented by the:

a. Presence of standing water during most years, as documented on site or by aerial photographs; and

b. Presence of habitat features necessary to support aquatic life forms of [wetland] obligate wildlife species, or the presence of or evidence of, or use by aquatic life forms of [wetland] obligate wildlife species (excluding biting flies)."

1 Cedar Street
Suite 400
Providence, RI 02903-1023
P 401.272.8100

Vernal pools are seasonal water bodies that pond water continuously for a minimum period beginning in the winter or early spring and typically extending into the early summer. They may be situated within larger wetland systems or occur as hydrologically isolated features situated in uplands. In the northeastern United States, they are characterized by vernal-pool-dependent fauna, certain amphibian and invertebrate species (indicator species) that require the pools to complete at least a portion of their life cycles (Colburn, 2004).

The common and scientific names for Rhode Island species considered by Calhoun and Klemens (2002) to be obligate biological indicators of vernal pool habitat are listed within Table 1.

Table 1. Vernal Pool Obligate Species

Common Name	Scientific name
Jefferson Salamander	*Ambystoma jeffersonianum*
Blue-spotted Salamander complex	*Ambystoma laterale*
Spotted Salamander	*Ambystoma maculatum*
Marbled Salamander	*Ambystoma opacum*
Wood Frog	*Lithobates sylvaticus*
Fairy Shrimp	*Eubranchipus sp.*

Vernal Pool Survey Methodology

Vernal pools were surveyed by VHB biologists on March 27, 2020 by traversing the wetlands to find potentially suitable pools. Once potential vernal pools were identified, VHB biologists logged any auditory cues (e.g., wood frog chorusing) and searched the pools for egg masses while wearing waders and polarized sunglasses. Biologists used dipnets to search for wood frog and spotted salamander adults, egg masses and larvae, and fairy shrimp. Discretion was used during dipnet sweeps, such that small, shallow areas containing obligate vernal pool indicators were disrupted as little as possible (i.e., mucking-up of cryptic pools was avoided). Field notes were recorded on the Connecticut Association of Westland Scientists (CAWS[1]) Vernal Pool Observation Forms (**Attachment B**) and supporting photographs were taken at vernal pools (**Attachment C**). Biologists hung flagging around the perimeter of vernal pool and located flags using a global positioning device.

On behalf of the property owner, parcel 179-005 was investigated by LEC on July 13, 2020 for potential vernal pools. LEC concluded that a vernal pool survey is required during the active breeding season in 2021 to determine if this resource meets the criteria of a vernal pool. A vernal pool survey for wetlands within this parcel will be conducted at a later date.

[1] RI DEM does has not published a comparable vernal pool documentation form.

Findings

VHB biologists identified one vernal pool within the Project Site that meets the vernal pool criteria described above. The vernal pool was contained entirely within Wetland 4 which is classified as a Marsh[2] under the RI DEM Freshwater Wetland Rules. Wetland 4 has a forested perimeter along the northern boundary of the OnSS parcels (see **Figure 2 – Attachment A** for the location of the vernal pool). Obligate species identified within the pool included adult wood frogs, wood frog egg masses, salamander egg masses, and fairy shrimp. A description of the vernal pool is provided below.

Vernal Pool 1

Vernal Pool 1 is a cryptic Vernal Pool within Wetland 4 along the northeastern boundary of parcel 179-030. Based on existing topography and aerial photos, Wetland 4 may have originated as a kettle hole, however, due to anthropogenic disturbance including filling and cutting, the natural form of this feature has been obscured.

No watercourse enters or leaves this wetland. Water depth within Vernal Pool 1 ranged from six inches to two feet in its deepest points at the time of the field survey. The bottom is semi-firm with a leaf litter and muck substrate. Filamentous algae were present near the surface of the pool at the time of the investigation and impaired the search for vernal pool fauna in some areas. Dense shrubs and tannin-stained waters also impaired the ability to observe egg masses in some portions of the pool. The wetland is forested and dominated by red maple (*Acer rubrum*) and cottonwood (*Populus deltoides*). Canopy closure was estimated to be 80 percent.

During the investigation, adult wood frogs were heard chorusing within the pool along with spring peepers (*Pseudacris c. crucifer*) across the wider wetland. The survey yielded estimated counts of 50-75 wood frog egg masses and 20 spotted salamander egg masses. Adult wood frogs were also observed in the pool. Fairy shrimp were captured with a dip net. Facultative vernal pool species include backswimmers (*Notonectidae*).

Conclusions

In March 2020, VHB biologists identified one vernal pool within the Project Site. Vernal Pool 1 is a cryptic vernal pool within Wetland 4. A summary of findings is presented in Table 3 below. The appended CAWS Vernal Pool Observation Forms provide further data on each of the pools (**Attachment B**). Photos of the pool are also appended (**Attachment C**).

Table 3. Summary of Findings

Pond ID	Area (SF)	Inlet/Outlet Flowing	Obligate Indicators	Fish Present	Vernal Pool Classification
Vernal Pool 1	1,300	No	WFC, WFEM, SSEM, FS	No	Cryptic

WFC: Wood frog chorusing; WFEM: Wood frog egg masses; WFL: Wood frog larvae; SSEM: Spotted salamander egg masses; FS fairy shrimp

[2] The Freshwater Wetland Rules define a Marsh as a wetland feature not less than 1 ac (0.40 ha) in size that has standing or running water during the growing season and is made up of herbaceous vegetation such as grasses and sedges and/or shrubs.

References

Calhoun, A. J. K. and M. W. Klemens. 2002. Best development practices: Conserving pool-breeding amphibians in residential and commercial developments in the northeastern United States. MCA Technical Paper No. 5, Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, New York.

Colburn E. A. 2004. Vernal pools: Natural history and conservation. Blacksburg, VA: McDonald and Woodward.

Rhode Island Department of Environmental Management vernal pool brochure: http://www.dem.ri.gov/programs/benviron/water/wetlands/pdfs/vernbroc.pdf

Rhode Island Department of Environmental Management. Vernal Pools. http://www.dem.ri.gov/programs/water/wetlands/vernal-pools.php. Accessed September 9, 2020.

Attachments

Attachment A: Figure 1: USGS Overview Map and Figure 2: Vernal Pool Resources

Attachment B: CAWS Vernal Pool Observation Form

Attachment C: Representative Site Photographs

Revolution Wind

Figure 1
USGS Overview
NORTH KINGSTON, RI

Legend
- Parcel ID 179-030 & 179-001
- Parcel ID 179-005

Project Location

Service Layer Credits: National Geographic World Map: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.
USGS Historical Topographic Maps: Source: Historical Topographic Map Collection courtesy of the U.S. Geological Survey, Esri

Reference system: NAD83 (2011)
Projection: UTM Zone 19N

0 270 540 810 Meters

0 790 1,580 2,370 Feet

Date: 05/19/2020
Document no:

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Checked by: S. MOBERG
Approved by: STEPW

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Revolution Wind

Figure 2
Vernal Pool Resources
NORTH KINGSTOWN, RI

Legend

- Onshore Transmission Cable
- Alternative Cable Route Segment
- Substation Limit of Work
- Parcel ID 179-030 & 179-001
- Parcel ID 179-005
- Parcel Boundary
- One-Percent Annual Chance Flood Hazard Area
- Potential Vernal Pool
- Delineated Wetland Edge
- Approximate Wetland Edge
- LEC Delineated ASSF
- Approximate Stream
- Delineated Wetland Resources
- Interpolated Wetland
- Vernal Pool
- Wetland (NWI)

Service Layer Credits: RIDEM/Tax_Parcels: RI State, 37 Towns
National Geographic World Map: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.
Rhode Island Aerial Photographs (Spring 2018; State Plane):

Reference system: NAD83 (2011)
Projection: UTM Zone 19N

0 20 40 60 Meters

0 60 120 180 Feet

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VERNAL POOL DATA SHEET

Survey Date: 3/27/2020	Investigator(s): C. Glinka, E. Deluski	Town: North Kingstown	CAWS Pool #: VP1 - Wetland 4	CAWS Project #:
Town Staff Contacted? Yes ☐ No ☑	Project/property name: Revolution Wind On-Shore Substation		Pool Type: Development: ☐	Reference: ☐
Address/location (*or include annotated map*): north of Camp Ave		Investigator's Contact information: cglinka@vhb.com		

SEARCH CONDITIONS AND METHODS *(required)*

WEATHER:

Precipitation: Within last 24 hours

Current	24 hours
0"	0"

Cloud Cover:
- clear ☐
- partly cloudy ☑
- mostly cloudy ☐
- full cloud cover ☐

Start time: 1030
End time: 1215

Methods used:
- Visual ☑
- Dipnetting ☑

Type of Inspection:
- baseline ☑
- during construction ☐
- post construction ☐

Polarized sunglasses used? Yes ☑ No ☐

Comments:
GPS location was taken of one egg mass.

Temporary flagging used to mark egg masses? Yes ☐ No ☑

AMPHIBIAN EGG MASS COUNTS *(required)*

Wood frogs: ☑ 1-25 ☐ 26-49

condition	Abundance categories			
If condition mixed, note "some","many" or "most"	50	☐	250-300	☐
	50-75	☑	300-400	☐
	75-100	☐	400-500	☐
	100-150	☐	500-750	☐
	150-200	☐	750-1000	☐
intact: All	200-250	☐	1000-1250	☐
breaking up:			>1250	☐
hatching:				

Describe estimation method used for a large raft:

Spotted Salamanders:

Condition:	Total Number
intact: All	20
breaking up:	
hatching:	

ADDITIONAL NOTES: *(optional)*

VP 1 is a cryptic vernal pool within Wetland 4. The vernal pool is large and takes up nearly the entire footprint of Wetland 4, which further extends to the National Grid property line.

Wood frogs and spring peepers were heard chorusing within Wetland 4.

CONDITIONS/OBSERVATIONS WITHIN POOL

(required data)

			Flowing	Not flowing
Inlet observed?	No ☑	Yes ☐	☐	☐
Outlet observed?	No ☑	Yes ☐	☐	☐
finfish observed?	No ☑	Yes ☐		

Estimated water depth range? 6 inches to 2 feet

Optional Data (see also back of sheet)

Other Vernal Pool Species:
- fairy shrimp present? Yes ☑ No ☐
- marbled salamander larvae present? Yes ☐ No ☑

Vegetation (within or overhanging pool):
- Trees/Saplings: red maple, cottonwood
- Shrubs/Vines: speckled alder
- Herbs:
- Percent tree canopy closure? 80%
- Woody debris content? High ☑ Med. ☐ Low ☐

Pool Substrate: (top three)

Mud/muck ☑	Sand/Silt ☐	Peat	☐
Leaf Litter ☑	Silt/clay ☐	Bedrock	☐
		Gravel/cobbles	☐

Water Quality:
- ph ☐ conductivity(uS/cm) ☐ temperature (°C) ☐
- Nitrate-N (mg/l) ☐ Total P (ug/l) ☐ DO(mg/l) ☐
- turbidity(NTU's) ☐ Sulphidic odor? No ☐ Yes ☐
- Approximate % cover by algal mat or duckweed? 0%
- GPS coordinates:

CONDITIONS IN ENVELOPE WITHIN 100 FT OF POOL

(required data) *Give approximate percentage or show on sketch on back*

Landuses/conditions					
forest	100%	shrubland		meadow	
pasture		lawn		building	
exposed soil		grading		ag. field	

road X busy (>1 car/10 min.) yes ☐ no ☐

parking lot

Comments:
Road noise is audible from the vernal pool. The road is located >500 feet north of the pool.

Leaf Litter:	*If variable, note location (e.g. "N. shore")*
none/low:	
moderate:	
high:	X

Cover Objects:	*Logs*	*Rocks*
none:		X
low:		
moderate:		
high:	X	

Dominant vegetation *(optional)*
- Trees/saplings: red maple, cottonwood
- Shrubs/Vines: speckled alder
- Herbs:

VERNAL POOL DATA SHEET, *p. 2*

Survey Date: 3/27/2020	Investigator(s): C. Glinka, E. Deluski	Town: North Kingstown	***CAWS Pool #:***	VP1	CAWS Project #:
Project/property name: Revolution Wind On-Shore Substation				Pool Type:	Development: ☐ Reference ☐

*Draw a **rough, quick** sketch of the pool showing **approximate locations of egg mass rafts & clusters** in relation to pool features, like logs, algal mats, and islands. Show inlet/outlet if present. Include north arrow and approxImate scale.*

SKETCH OF POOL *(required)*

WILDLIFE OBSERVATIONS: *(optional)*

Checklist of Facultative Herptile Fauna (Pool & Fringe):

Green Frog	☐	Spring Peeper	☑
Pickerel Frog	☐	Gray Tree Frog	☐
Bull Frog	☐	Pickerel Frog	☐
Eastern Toad	☐	Painted Turtle	☐
Spotted Turtle	☐	Snapping Turtle	☐
N. Water Snake	☐	Blue-spot. salam.	☐

Other Observed Fauna (Pool & Fringe):

fairy shrimp, backswimmer, wood frog

*Draw a **rough, quick** sketch of the pool's **terrestrial envelope,** extending at least 200' from pool in all directions. Provide **detail on conditions & landuses within 100 feet of edge of pool.** Include north arrow and approxImate scale.*

SKETCH OF TERRESTRIAL ENVELOPE AROUND POOL *(required)*

Circle any of the following factors that impaired your ability to observe egg masses, and indicate severity of impairment.

Factor	Severity (Low/Mod./High)
1. Surface algae ☑	Low, higher in some areas
2. Surface pollen ☐	
3. Dark, tannin-colored water ☑	Low to moderate
4. Deep water ☐	
5. Turbidity ☐	
6. Dense shrubs ☑	
7. Other (specify) ☐	

ADDITIONAL NOTES: *(optional)*

Revolution Wind On-Shore Substation
Vernal Pool Survey Photo Log

Vernal Pool 1 Photos

Vernal Pool 1 - Photo 1	**Description:**
	View of Vernal Pool 1, a cryptic vernal pool within the larger Wetland 4. No watercourse enters or leaves this wetland. Water depth within Vernal Pool 1 ranged from six inches to two feet and the bottom is semi-firm with a leaf litter and muck substrate.
Vernal Pool 1 - Photo 2	**Description:**
	Dense shrubs in Vernal Pool 1 made some areas of the pool difficult to investigate.

Vernal Pool 1 - Photo 3	**Description:**
	A cluster of spotted salamander egg masses on a submerged branch. On March 27, 2020 VHB biologists inventoried an estimated 20 spotted salamander egg masses within Vernal Pool 1.
Vernal Pool 1 - Photo 4	**Description:**
	A raft of wood frog egg masses, some attached to submerged branches. VHB biologists counted approximately 50-75 egg masses on March 27, 2020.

Appendix F: Bat Acoustic Survey Report

October 29, 2020

Ref: 73030.00

Ms. Susi von Oettingen
U.S. Fish & Wildlife Service
70 Commercial Street, Suite 300
Concord, NH 03301

Re: Bat Acoustic Survey for Revolution Wind Onshore Facilities
Parcel ID 179-030 & 179-001
Camp Avenue, North Kingstown, Rhode Island

Dear Ms. von Oettingen,

This Bat Acoustic Survey has been developed to supplement the Onshore Natural Resources & Biological Assessment Technical Report (**Appendix H** of the Construction and Operations Plan) for the Revolution Wind Project (the Project). The Onshore Facilities of the Project include the Landfall Envelope Area (LEA), Onshore Export Cable, Alternative Cable Route Segment, and the Onshore Substation (OnSS, collectively referred to herein as the Project Site) The OnSS is proposed to be located within two parcels identified by the North Kingstown Tax Assessor as 179-030 and 179-001.

The Project Site occurs within Quonset Point in North Kingstown, Rhode Island which was developed by the United States Department of Defense as the Naval Air Station Quonset Point, commissioned in 1941 and decommissioned in 1974. Today, most of the land is owned and managed by the Quonset Development Corporation and has been developed as a business park. The two areas within the Project Site that are undeveloped include the western limits of the LEA and the parcels proposed for the OnSS (See Figure A-1 in **Appendix A**).

VHB biologists conducted the acoustic surveys in accordance with the Phase 2 Study Plan submitted to United States Fish and Wildlife Service's (USFWS) on July 22, 2020. Five full-spectrum detectors were deployed within the Project Site for two consecutive detector-nights, July 29-30 and July 30-31, 2020. A detector-night spans the evening and early morning hours of two calendar dates. Photographs of the survey site and the field data form are included in **Appendix B**.

Existing Conditions

The five survey sites were located along the LEA, the alternative Cable Route segment, and on the proposed OnSS location. Site 1 was located within the pine barren area formed as a result of former gravel mining activities within the OnSS parcels. The habitat is mostly early successional upland scrub-shrub habitat and adjacent upland forest and includes, gray birch (*Betula populifolia*), eastern cedar shrubs (*Juniperus virginiana*), white pine (*Pinus strobus*), scrub oak (*Quercus ilicifolia*), and red oak (*Quercus rubra*)

Engineers | Scientists | Planners | Designers

1 Cedar Street
Suite 400
Providence, RI 02903
P 401.272.8100
F 401.277.8400

and several grass species. Site 2 was located set on the edge of the capped landfill, parallel to the mature forest tree line, within the OnSS parcels. The deciduous upland forest surrounding the capped landfill includes red maple (*Acer rubrum*), gray birch, and species of oak (*Quercus sp.*) and autumn olive (*Elaeagnus umbellata*). The landfill is managed with grass with some herbaceous and forbs on the slopes. Site 3 was located within a grassed access road that leads to the capped landfill. The access road corridor is approximately 30 feet (ft) wide with forested edge on either side. The forested edge is dominated by red maple, white oak (*Quercus alba*), and autumn olive. Site 4 was located along the alternative cable route in a vegetated area near the intersection of Camp Avenue, Shore Acres Avenue, and a commercial/industrial parking area. Vegetation in the area is managed and includes white pine and landscaped shrubs. Site 5 was located along a walking path, with forested habitat along either side, within parcel 179-022. Vegetation includes red maple, black chokeberry (*Aronia melanocarpa*), Virginia white oak, red oak, creeper (*Parthenocissus quinquefolia*) and poison ivy (*Toxicodendron radicans*).

Results

Acoustic surveys for the for the northern long-eared bat (*Myotis septentrionalis*, "MYSE") and tri-colored bat (*Perimyotis subflavus*) did not identify individuals of these two species in the Project Site. Call data were auto classified with Bat Call Identification East, Version 2.8b (BCID), which resulted the detection of the following species: big brown bat (*Eptesicus fuscus;* n=540 calls), eastern red bat (*Lasiurus borealis;* n=891 calls), Hoary bat (*Lasiurus cinereus*; n=23 calls) and silver-haired bat (*Lasionycteris noctivagans*; n=130 calls). Qualitative analysis of unknown and species of concern calls confirmed 11 big brown bat calls and 135 eastern red bat calls. One unknown bat call was unable to be qualitatively reviewed (**Appendix C**). The data provided in this report includes the General Checklist for Acoustic Surveys of Indiana bats (also for MYSE), which is provided below, from the 2020 Range-wide Indiana Bat Survey Guidelines[1]. The completed Northeast 2020 Reporting Form for Acoustic Surveys was submitted to USFWS as an electronic Excel file on October 28, 2020.

Please email (cglinka@vhb.com) or call me at (401) 457-2059 if you have any questions.

Sincerely,

Chelsea O. Glinka
Environmental Scientist

1 U.S. Fish and Wildlife Service. 2020. Range-wide Indiana Bat Survey Guidelines. Available at https://www.fws.gov/midwest/endangered/mammals/inba/surveys/pdf/FINAL%20Range-wide%20IBat%20Survey%20Guidelines%203.23.20.pdf

General Checklist for Acoustic Surveys of Northern Long-Eared Bats

Acoustic Survey Info

- ☒ Project Name: Revolution Wind Onshore Facilities, Onshore Substation Site off of Camp Avenue in North Kingstown, RI
- ☒ Site ID No./Name: Proposed Revolution Wind Onshore Facilities Site
- ☒ State and County: Washington County, Rhode Island
- ☒ Site Lat./Long. Coordinates:
  Site 1 (51504): 41.591574500, -71.437452500
  Site 2 (51501): 41.592677833, -71.439076500
  Site 3 (51488): 41.5925885, -71.4370793333333
  Site 4 (51510): 41.589440833, -71.434139667
  Site 5 (51405): 41.58487216667, -71.430723833
- ☒ Approx. accuracy of Lat./Long. Coordinates: sub-meter
- ☒ Survey Date(s): July 29 – 31, 2020
- ☒ Person who Selected Acoustic Site(s): Chelsea Glinka (see **Appendix D**).
- ☒ Person who Deployed Detector(s): Chelsea Glinka and Evan Deluski
- ☒ Detector Brand & Model: Pettersson D500x
- ☒ Microphone Brand & Model: D500x External
- ☒ Detector Microphone Type: Directional
- ☒ Type of Weatherproofing (if any): PVC Tube
- ☒ Microphone Height above Ground-level Vegetation (m): Site 1: 2.1
  Site 2: 2.1
  Site 3: 2.1
  Site 4: 2
  Site 5: 2.1
- ☒ Distance from Nearest Vegetation or other Obstruction: Site 1 was approximately 15 feet away from the nearest tree.
  Site 2 was approximately 20 feet away from the nearest tree.
  Site 3 was approximately 15 feet away from the nearest tree.
  Site 4 was located approximately 3 feet away from the nearest tree.
  Site 5 was located approximately 6 feet away from the nearest tree.
- ☒ Horizontal Orientation of Microphone (1-360°):
  Site 1: 0°, parallel to tree line
  Site 2: 90°, parallel to tree line
  Site 3: 180°, parallel to tree line
  Site 4: 45°, parallel to parking area
  Site 5: 180°, parallel to tree line
- ☒ Vertical Orientation of Microphone (assuming 0° is parallel with horizon): 0°
- ☒ Photographs of Detector Set-up at each Site: See photographs in **Appendix B**
- ☒ Settings (all settings used for each brand/model of detector. For example, sensitivity, gain, data division, 16k high filter, sample rate, min./max. duration, min. trigger freq., trigger level, etc.):
  Sampling frequency: 500
  PreTrig: Off
  Recording Length: 5 seconds
  HP-Filter: Yes Auto-Record: Yes
  Sensitivity: High
  Input gain: 60
  Trigger level: 160
  Interval: 0
- ☒ Survey Start Time (military:): 19:35
- ☒ Survey End Time (military) 06:10
- ☒ Methods used to field-test proper functioning of detector: Finger rub sound test & Event log (**Appendix B & E**)
- ☒ Were calls collected in Full Spectrum or Zero Crossing? Full spectrum

☒ Habitat Type and/or Feature Surveyed:
Site 1 was located within the pine barren area formed after the area was apparently excavated to the cap the adjacent landfill. The habitat is mostly open early successional upland scrub-shrub habitat and includes, gray birch, white pine, scrub oak, red oak, eastern cedar shrubs, and several grass species.
Site 2 was located set on the edge of the capped landfill, parallel to the mature forest tree line. The deciduous upland forest surrounding the capped landfill includes red maple, gray birch, oak sp., and autumn olive. The landfill is managed with grass with some herbaceous and forbs on the slopes.
Site 3 was located within a grassed access road that leads to the capped landfill. The access road corridor is approximately 30 ft wide with forested edge on either side. The forested edge is dominated by red maple, white oak, and autumn olive.
Site 4 was located along the alternative cable route in a vegetated area near the intersection of Camp Avenue, Shore Acres Avenue, and a commercial/industrial parking area. Vegetation in the area is managed and includes white pine and landscaped shrubs.
Site 5 was located along a walking path, with forested habitat along either side. Vegetation includes red maple, white oak, red oak, black chokeberry, Virginia creeper, and poison ivy.

☒ Weather Conditions during Survey Period:
7/29-7/30 Average temp.: 74.0°F, Max temp.: 77.6°F, Min temp.: 72.9°F, Average wind speed: 1.94 mph, no precipitation.
7/30-7/31: Average temp.: 74.6°F, Max temp.: 80.6°F, Min temp.: 68.8°F, Average wind speed: 0.60 mph, Total precipitation: 0.03 in.

ACOUSTIC ANALYSIS INFO

☒ Program used to convert Full Spectrum to Zero Cross: BCID East V 2.8b

☒ Filter(s) used (if any) and parameters used (e.g., CFRead, noise, bug, etc.) Files were scrubbed and attributed using SonoBat Data Wizard, set to medium: accepts all but poor-quality calls; accepts some noise with tonal content, include signals from 5-20kHz.

☒ Name of Service-approved Bat ID Software Program(s) and Version(s) used and Candidate program(s) (if used) BCID East 2.8b

☒ Program Settings (if applicable):
- BCID
  - Min. # of pulses for species ID-0
  - Min. # of pulses per group ID-0.00%
  - Min. discrim. prob. for species ID-0
  - Other relevant settings affecting ID: BCID set to Rhode Island species setting
  - Suite of species/groups included in program analysis: EPFU, LANO, LABO, LACI, MYLU, MYSE, MYSO, PESU (see species key in **Appendix C**).

☒ Table summarizing Number of Calls ID'd for each Species/Site/Night/Program (including MLE p-values): See **Appendix C**

☒ If Qualitative Analysis was conducted, include Number of Calls Confirmed through Qualitative ID for each Species/Site/Night: Qualitative analysis was performed for one call auto-classified as PESU on the first detector night (7/29-7/30) at Site 1. Qualitative analysis determined the call as LABO. Qualitative analysis was performed for two calls auto-classified as unknown and one call auto-classified as PESU on the second detector night (7/30-7/31). Qualitative analysis determined the calls as to be two EPFU and one LABO. Qualitative analysis was performed for three calls auto classified as unknown, one call auto classified as MYSE, two calls auto classified as MYLU, and one call auto classified as PESU on the first detector night (7/29-7/30) at Site 2. Qualitative analysis determined the calls to be 7 LABO calls.

Qualitative analysis was performed for two calls auto classified as unknown and two calls auto classified as PESU on the second detector night (7/30-7/31) at Site 2. Qualitative analysis determined the calls to be two EPFU calls and two LABO calls.

Qualitative analysis was performed for five calls auto classified as unknown, three calls auto classified as PESU, and 14 calls auto classified as MYLU on the first detector night (7/29-7/30) at Site 3. Qualitative analysis determined the calls to be 21 LABO calls and four EPFU calls.

Qualitative analysis was performed for two unknown calls on the second detector night (7/30-7/31) at Site 3. Qualitative analysis determined the calls to be one LABO call and one EPFU call.

Qualitative analysis was performed for 19 calls auto classified as unknown, 32 calls auto classified as MYLU, and 26 calls auto classified as PESU on the first detector night (7/29-7/30) at Site 5. Qualitative analysis determined the calls to be 77 LABO calls and two EPFU calls.

Qualitative analysis was performed for nine calls auto classified as unknown, seven calls auto classified as MYLU, and nine calls auto classified as PESU. Qualitative analysis determined the calls to be 25 LABO calls.

☒ Full Name of Person(s) who conducted Qualitative Analysis: Chris Corben

☒ Acoustic Report Appendices:

- Site Figure: Appendix A
- Field Data Forms and Site Photos: Appendix B
- Acoustic Analysis Results from BCID East V. 2.8b and Qualitative Review: Appendix C
- Resumes of qualified individuals: Appendix D
- Event Log: Appendix E

Appendix A: Site Figure

Revolution Wind

Figure 1
Onshore Facilities Overview and Proposed Bat Survey Locations
NORTH KINGSTOWN, RI

Legend

- Onshore Transmission Cable
- Alternative Cable Route Segment
- Landfall Envelope
- Parcel ID 179-030 & 179-001
- Parcel Boundary
- Bat Survey Location

Service Layer Credits: RIDEM/Tax_Parcels: RI State, 37 Towns
National Geographic World Map: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.
Rhode Island Aerial Photographs (Spring 2018; State Plane):

Reference system: NAD83 (2011)
Projection: UTM Zone 19N

0 60 120 180 Meters

0 200 400 600 Feet

Date: 05/19/2020
Document no:

Created by: S. PELLETIER
Checked by: S. MOBERG
Approved by: STEPW

Revolution Wind

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Appendix B: Field Data Forms and Photos

Bat Acoustic Monitoring Data Form

Project:	RevWind Onshore Facilities					**Site#:**	1	**Site Name:**	Site 1; sand pit		
Municipality:	North Kingstown	**County:**	Washington	**State:**	RI	**Survey Contact**	CGlinka@vhb.com				
Latitude:	41.5915745	**Longitude:**	-71.4374525			**Datum:**	WGS 84	**Elevation (meters):**	9.4		
Surveyed By:	C. Glinka & E. Deluski					**Setup**	07/29/2020 13:14	**Retrieval**	07/31/2020 08:25		
Land Use:	Mixed Barren	**Mic Test**	Setup	Yes	**Battery Capacity (v)**	Setup	5.1	**CF Card Capacity (GB)**	Setup	37.257	
			Retrieval	Yes		Retrieval	4.7		Retrieval	34.647	

BD #	Latitude	Longitude	Trigger Sensitivity	Mic	Mic Orientation	HT [1]	Clutter	Gain	Trigger	Interval	Recording Start Time	Recording End Time
51504	41.591574500	-71.437452500	High	External / High Frequency / Directional Horned	N	2.1	LOW	45	120	0	19:35	18:10

Site Description

Site 1 is within the pine barren area formed after this area was apparently excavated to cap the adjacent landfill. Due to Site constraints the detector was placed on a 7ft tripod. Vegetation includes white pine, gray birch, red oak, eastern cedar shrubs, scrub oak, several grass species and other herbs and forbs. Habitat is mostly open and clutter is low. Microphone oriented 0 degrees (parallel with the horizon) in case of rain.

Site sketch

[1] *Height of microphone above ground level (in meters)*

1 – URBAN OR BUILT-UP		2 – AGRICULTURAL		3 – RANGELAND		4 – FOREST LAND		5 – WATER		6 – WETLAND		7 – BARREN LAND	
11	Residential	21	Cropland/Pasture	31	Herbaceous	41	Deciduous	51	Streams / Canals	61	Forested	71	Dry Salt Flats
12	Commercial Services	22	Orchards, Groves	32	Shrub and Brush	42	Evergreen	52	Lakes	62	Non-forested	72	Beaches
13	Industrial	23	CFO's	33	Mixed	43	Mixed	53	Reservoirs			73	Non-beach Dunes
14	Transport, Utilities	24	Other					54	Bays / Estuaries			74	Bare Exposed Rock
15	Industrial Complex											75	Quarries / Gravel Pits
16	Mixed Urban/Built-up											76	Transitional Areas
17	Other Urban/Built-up											77	Mixed Barren

Bat Acoustic Monitoring Data Form

Photo 1

A view of the microphone set up looking west towards the open area with low shrub and herbaceous cover.

Photo 2

A view of detector # 51504 looking north toward the open scrub-shrub habitat. The cone of detection captures potential flight paths of bats commuting along the foraging corridor between the pine barrens to the west and white pine forest to the east.

Bat Acoustic Monitoring Data Form

Photo 3

A view of the microphone set up looking east towards the white pine forest.

Photo 4

A view of the microphone set up looking south towards the open area with low shrub and herbaceous cover.

Bat Acoustic Monitoring Data Form

Project:	RevWind Onshore Facilities				Site#:	2	Site Name:	Site 2; edge habitat near capped landfill	
Municipality:	North Kingstown	County:	Washington	State:	RI	Survey Contact	CGlinka@vhb.com		
Latitude:	41.5926778333333	Longitude:	-71.4390765		Datum:	WGS 84	Elevation (meters):	9.8	
Surveyed By:	C. Glinka & E. Deluski				Setup	07/29/2020 13:52	Retrieval	07/31/2020 08:02	
Land Use:	Deciduous Forest	Mic Test	Setup	Yes	Battery Capacity (v)	Setup	5.1	CF Card Capacity (GB)	Setup 37.257
			Retrieval	Yes		Retrieval	4.7		Retrieval 33.637

BD #	Latitude	Longitude	Trigger Sensitivity	Mic	Mic Orientation	HT [1]	Clutter	Gain	Trigger	Interval	Recording Start Time	Recording End Time
51501	41.592677833	-71.439076500	High	External / High Frequency / Directional Horned	E	2.1	EDGE	45	120	0	19:35	18:10

Site Description

Site 2 is set on the edge of capped landfill approximately 20 ft from tree line. Set on 7 ft high tripod due to site constraints. Deciduous forest surrounds the landfill, species include red maple, gray birch, autumn olive, oak sp. Landfill is managed grass with some herbs and forbs on the slopes.

Site sketch

[1] Height of microphone above ground level (in meters)

1 – URBAN OR BUILT-UP		2 – AGRICULTURAL		3 – RANGELAND		4 – FOREST LAND		5 – WATER		6 – WETLAND		7 – BARREN LAND	
11	Residential	21	Cropland/Pasture	31	Herbaceous	41	Deciduous	51	Streams / Canals	61	Forested	71	Dry Salt Flats
12	Commercial Services	22	Orchards, Groves	32	Shrub and Brush	42	Evergreen	52	Lakes	62	Non-forested	72	Beaches
13	Industrial	23	CFO's	33	Mixed	43	Mixed	53	Reservoirs			73	Non-beach Dunes
14	Transport, Utilities	24	Other					54	Bays / Estuaries			74	Bare Exposed Rock
15	Industrial Complex											75	Quarries / Gravel Pits
16	Mixed Urban/Built-up											76	Transitional Areas
17	Other Urban/Built-up											77	Mixed Barren

Bat Acoustic Monitoring Data Form

Photo 1

A view of the microphone setup looking north toward the capped landfill.

Photo 2

A view of detector #51501 looking east along the upland tree line, towards the capped landfill. The cone of detection captures the potential flight paths of bats commuting along the foraging corridor of the forest edge.

Bat Acoustic Monitoring Data Form

Photo 3

View of the microphone set up looking south toward the upland tree line.

Photo 4

View of the microphone set up looking west toward the upland tree line.

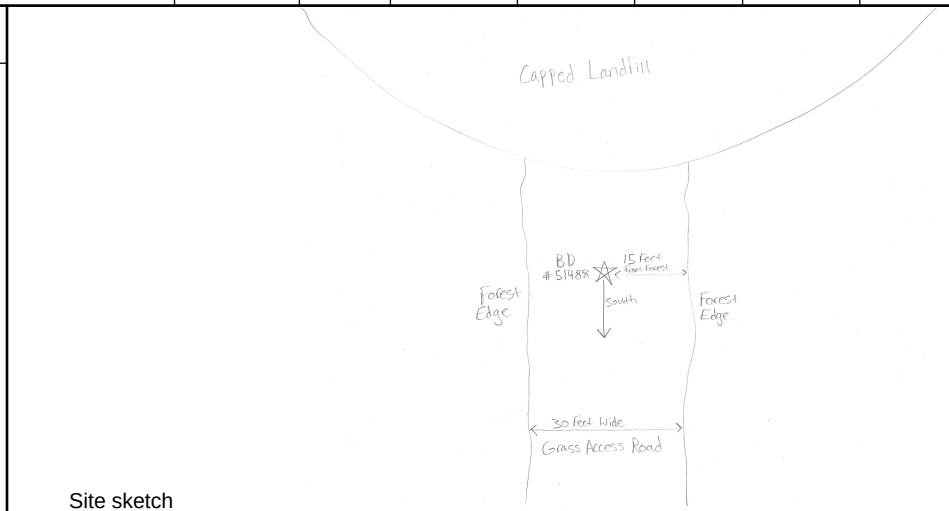
Bat Acoustic Monitoring Data Form

Project:	RevWind Onshore Facilities					Site#:	3	Site Name:	Site 3; access road through forest		
Municipality:	North Kingstown	County:	Washington	State:	RI	Survey Contact	CGlinka@vhb.com				
Latitude:	41.5925885	Longitude:	-71.4370793333333		Datum:	WGS 84	Elevation (meters):	20.0			
Surveyed By:	C. Glinka & E. Deluski				Setup	07/29/2020 14:47	Retrieval	07/31/2020 08:15			
Land Use:	Mixed Forested		Mic Test	Setup	Yes	Battery Capacity (v)	Setup	5	CF Card Capacity (GB)	Setup	37.237
				Retrieval	Yes		Retrieval	4.7		Retrieval	30.997

BD #	Latitude	Longitude	Trigger Sensitivity	Mic	Mic Orientation	HT [1]	Clutter	Gain	Trigger	Interval	Recording Start Time	Recording End Time
51488	41.592588500	-71.437079333	High	External / High Frequency / Directional Horned	S	2.1	EDGE	45	120	0	19:35	06:10

Site Description

Site 3 set up within grassed access road that leads to capped landfill. Microphone attached to tripod due to site constraints. Corridor is approximately 30 ft wide with forested edge on either side. Vegetation includes red and white oak, red maple, autumn olive. Microphone oriented 0 degrees (parallel to the horizon) to protect microphone in case of rain showers.



Site sketch

[1] Height of microphone above ground level (in meters)

1 – URBAN OR BUILT-UP		2 – AGRICULTURAL		3 – RANGELAND		4 – FOREST LAND		5 – WATER		6 – WETLAND		7 – BARREN LAND	
11	Residential	21	Cropland/Pasture	31	Herbaceous	41	Deciduous	51	Streams / Canals	61	Forested	71	Dry Salt Flats
12	Commercial Services	22	Orchards, Groves	32	Shrub and Brush	42	Evergreen	52	Lakes	62	Non-forested	72	Beaches
13	Industrial	23	CFO's	33	Mixed	43	Mixed	53	Reservoirs			73	Non-beach Dunes
14	Transport, Utilities	24	Other					54	Bays / Estuaries			74	Bare Exposed Rock
15	Industrial Complex											75	Quarries / Gravel Pits
16	Mixed Urban/Built-up											76	Transitional Areas
17	Other Urban/Built-up											77	Mixed Barren

Bat Acoustic Monitoring Data Form

Photo 1

A view of detector #51488 looking south along the grassed access road to the landfill. The cone of detection captures potential flight paths of bats commuting along the corridor of the access road.

Photo 2

View looking west of the microphone set up towards the upland forest edge.

Bat Acoustic Monitoring Data Form

Photo 3

A view of the microphone set up looking east towards the upland forest edge.

Photo 4

A view of the microphone set up looking north towards the capped landfill.

Bat Acoustic Monitoring Data Form

Project:	RevWind Onshore Facilities				Site#:	4	Site Name:	Site 4; Alternative cable route	
Municipality:	North Kingstown	County:	Washington	State:	RI	Survey Contact	CGlinka@vhb.com		
Latitude:	41.5894408333333	Longitude:	-71.4341396666667		Datum:	WGS 84	Elevation (meters):	13.6	
Surveyed By:	C. Glinka & E. Deluski				Setup	07/29/2020 15:48	Retrieval	07/31/2020 07:43	
Land Use:	Residential / Commercial Services / Transport, Utilities			Mic Test	Setup	Yes	Battery Capacity (v)	Setup	5.1
					Retrieval	Yes		Retrieval	4.6
							CF Card Capacity (GB)	Setup	37.237
								Retrieval	36.517

BD #	Latitude	Longitude	Trigger Sensitivity	Mic	Mic Orientation	HT [1]	Clutter	Gain	Trigger	Interval	Recording Start Time	Recording End Time
51510	41.589440833	-71.434139667	High	External / High Frequency / Directional Horned	NE	2	HIGH	60	160	0	19:35	06:10

Site Description

Site 4 is along the alternative cable route in a vegetated area near intersection with Camp Avenue, Shore Acres Avenue, Windward Walk, and commercial/industrial parking area. Vegetation includes white pine and landscaped shrubs. Pole is only 2 m due to high clutter area.

Site sketch

[1] Height of microphone above ground level (in meters)

1 – URBAN OR BUILT-UP		2 – AGRICULTURAL		3 – RANGELAND		4 – FOREST LAND		5 – WATER		6 – WETLAND		7 – BARREN LAND	
11	Residential	21	Cropland/Pasture	31	Herbaceous	41	Deciduous	51	Streams / Canals	61	Forested	71	Dry Salt Flats
12	Commercial Services	22	Orchards, Groves	32	Shrub and Brush	42	Evergreen	52	Lakes	62	Non-forested	72	Beaches
13	Industrial	23	CFO's	33	Mixed	43	Mixed	53	Reservoirs			73	Non-beach Dunes
14	Transport, Utilities	24	Other					54	Bays / Estuaries			74	Bare Exposed Rock
15	Industrial Complex											75	Quarries / Gravel Pits
16	Mixed Urban/Built-up											76	Transitional Areas
17	Other Urban/Built-up											77	Mixed Barren

Bat Acoustic Monitoring Data Form

Photo 1

A view of detector #51510 looking north along Shores Acres Avenue and Camp Avenue. The cone of detection captures potential flight paths of bats commuting along the foraging corridor of Shores Acres Avenue and Camp Avenue.

Photo 2

A view of the microphone set up looking west towards the intersection of Shore Acres Avenue, Windward Walk, and Camp Avenue.

Bat Acoustic Monitoring Data Form

Photo 3

A view of the microphone set up looking east toward the industrial/commercial parking area.

Photo 4

A view of the detector looking south.

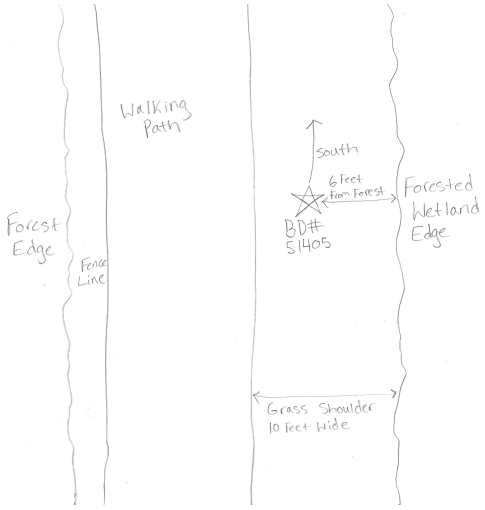
Bat Acoustic Monitoring Data Form

Project:	RevWind Onshore Facilities					Site#:	5	Site Name:	Site 5; along Blue Beach walking path		
Municipality:	North Kingstown	County:	Washington	State:	RI	Survey Contact	CGlinka@vhb.com				
Latitude:	41.5848721666667	Longitude:	-71.4307238333333		Datum:	WGS 84	Elevation (meters):	8.4			
Surveyed By:	C. Glinka & E. Deluski				Setup	07/29/2020 16:25	Retrieval	07/31/2020 07:19			
Land Use:	Forested	Mic Test	Setup	Yes	Battery Capacity (v)	Setup	5.1	CF Card Capacity (GB)	Setup	29.81	
			Retrieval	Yes		Retrieval			Retrieval	24.92	

BD #	Latitude	Longitude	Trigger Sensitivity	Mic	Mic Orientation	HT [1]	Clutter	Gain	Trigger	Interval	Recording Start Time	Recording End Time
51405	41.584872167	-71.430723833	High	External / High Frequency / Directional Horned	S	2.1	EDGE	45	120	0	19:35	06:10

Site Description

Site 5 is along a walking path. Forested edge habitat along either side of path. Path is approximately 10 ft wide with 10 ft grass shoulder on west side that slopes to a forested wetland. East side has property line fence of adjacent business. Vegetation includes red maple, red oak, white oak, Virginia creeper, poison ivy, and black chokeberry.



Site sketch

[1] Height of microphone above ground level (in meters)

1 – URBAN OR BUILT-UP		2 – AGRICULTURAL		3 – RANGELAND		4 – FOREST LAND		5 – WATER		6 – WETLAND		7 – BARREN LAND	
11	Residential	21	Cropland/Pasture	31	Herbaceous	41	Deciduous	51	Streams / Canals	61	Forested	71	Dry Salt Flats
12	Commercial Services	22	Orchards, Groves	32	Shrub and Brush	42	Evergreen	52	Lakes	62	Non-forested	72	Beaches
13	Industrial	23	CFO's	33	Mixed	43	Mixed	53	Reservoirs			73	Non-beach Dunes
14	Transport, Utilities	24	Other					54	Bays / Estuaries			74	Bare Exposed Rock
15	Industrial Complex											75	Quarries / Gravel Pits
16	Mixed Urban/Built-up											76	Transitional Areas
17	Other Urban/Built-up											77	Mixed Barren

Bat Acoustic Monitoring Data Form

Photo 1

A view of detector #51405 looking south along the walking path to Blue Beach. The cone of detection captures potential flight paths of bats commuting along the foraging corridor of the walking path.

Photo 2

A view of the microphone set up looking west towards the wetland forest edge.

Bat Acoustic Monitoring Data Form

Photo 3

A view of the microphone set up looking north along the walking path to Blue Beach.

Photo 4

A view of the microphone set up looking east towards the upland forest edge.

Appendix C: Acoustic Analysis Results from BCID East V. 2.8b and Qualitative Review

Table C-1 Bat Species Key[1]

Species Abbreviation	Scientific Name	Common Name
EPFU	*Eptesicus fuscus*	Big Brown Bat
LABO	*Lasiurus borealis*	Eastern Red Bat
LACI	*Lasiurus cinereus*	Hoary Bat
LANO	*Lasionycteris noctivagans*	Silver-haired Bat
MYLU[2]	*Myotis lucifugus*	Little Brown Bat
MYSE[2]	*Myotis septentrionalis*	Northern Long-eared Bat
PESU[2]	*Perimyotis subflavus*	Tri-colored Bat
UNKN		Unknown

1 The USFWS' Environmental Conservation Online System (https://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=A000) states that the Indiana bat (*Myotis sodalis*) does not occur in Rhode Island. Therefore, the species is not included in Table C-1.

2 The species was not detected during acoustic surveys, although it was included in the suite of species included in the analysis.

Table C-2 Species Identification from Detector-Night July 29 – 30, 2020 using Detector # 51504 (Site 1)

	Species Identification[1]				Frequencies		Total # Calls
	EPFU	LANO	LABO*	LACI	LOW	MID	
Number of Calls	17	22	17	4	43	17	60
Percentage of Calls	28.33	36.67	28.33	6.67	71.67	28.33	
MLE (p)[2]	<0.01	<0.01	N/A	0.23			

1 Refer to species key in Table C-1.

2 MLE (p) values <0.05 suggest presence.

* Call(s) were qualitatively reviewed.

Table C-3 Species Identification from Detector-Night July 30 – 31, 2020 using Detector # 51504 (Site 1)

	Species Identification[1]				Frequencies		Total # Calls
	EPFU*	**LANO**	**LABO***	**LACI**	**LOW**	**MID**	
Number of Calls	22	19	25	4	45	25	70
Percentage of Calls	31.43	27.14	35.71	5.71	64.29	35.71	
MLE (p)[2]	N/A	<0.01	N/A	<0.01			

1 Refer to species key in Table C-1.

2 MLE (p) values <0.05 suggest presence.

* Call(s) were qualitatively reviewed.

Table C-4 Species Identification from Detector-Night July 29 – 30, 2020 using Detector # 51501 (Site 2)

	Species Identification[1]				Frequencies		Total # Calls
	EPFU	**LANO**	**LABO***	**LACI**	**LOW**	**MID**	
Number of Calls	57	30	63	6	93	63	156
Percentage of Calls	36.54	19.23	40.38	3.85	59.62	40.38	
MLE (p)[2]	<0.01	<0.01	N/A	<0.01			

1 Refer to species key in Table C-1.

2 MLE (p) values <0.05 suggest presence.

* Call(s) were qualitatively reviewed.

Table C-5 Species Identification from Detector-Night July 30 – 31, 2020 using Detector # 51501 (Site 2)

	Species Identification[1]				Frequencies		Total # Calls
	EPFU*	LANO	LABO*	LACI	LOW	MID	
Number of Calls	80	51	54	8	139	54	193
Percentage of Calls	41.45	26.42	27.98	4.15	72.02	27.98	
MLE (p)[2]	N/A	<0.01	N/A	<0.01			

1 Refer to species key in Table C-1.

2 MLE (p) values <0.05 suggest presence.

* Call(s) were qualitatively reviewed.

Table C-6 Species Identification from Detector-Night July 29 – 30, 2020 using Detector # 51488 (Site 3)

	Species Identification[1]			Frequencies		Total # Calls
	EPFU*	LANO	LABO*	LOW	MID	
Number of Calls	240	4	124	244	124	368
Percentage of Calls	65.21	1.09	33.70	66.30	33.70	
MLE (p)[2]	N/A	1.00	N/A			

1 Refer to species key in Table C-1.

2 MLE (p) values <0.05 suggest presence.

* Call(s) were qualitatively reviewed.

Table C-7 Species Identification from Detector-Night July 30 – 31, 2020 using Detector # 51488 (Site 3)

	Species Identification[1]			Frequencies			Total # Calls
	EPFU*	LABO*	UNKN+	LOW	MID	UNKN+	
Number of Calls	70	39	1	70	39	1	110
Percentage of Calls	63.64	35.45	0.91	63.64	35.45	0.91	
MLE (p)[2]	N/A	N/A	N/A				

1 Refer to species key in Table C-1.

2 MLE (p) values <0.05 suggest presence.

* Call(s) were qualitatively reviewed.

\+ Call was unable to be manually vetted.

Table C-8 Species Identification from Detector-Night July 29 – 30, 2020 using Detector # 51510 (Site 4)

	Species Identification[1]		Frequencies	Total # Calls
	LANO	LACI	LOW	
Number of Calls	3	1	4	4
Percentage of Calls	75.00	25.00	100.00	
MLE (p)[2]	<0.01	0.03		

1 Refer to species key in Table C-1.

2 MLE (p) values <0.05 suggest presence.

Table C-9 Species Identification from Detector-Night July 30 – 31, 2020 using Detector # 51510 (Site 4)

	Species Identification[1]	Frequencies	Total # Calls
	LANO	LOW	
Number of Calls	2	2	2
Percentage of Calls	100.00	100.00	
MLE (p)[2]	<0.01		

1 Refer to species key in Table C-1.

2 MLE (p) values <0.05 suggest presence.

Table C-10 Species Identification from Detector-Night July 29 – 30, 2020 using Detector # 51405 (Site 5)

	Species Identification[1]		Frequencies		Total # Calls
	EPFU*	LABO*	LOW	MID	
Number of Calls	44	393	44	393	437
Percentage of Calls	10.07	89.93	10.07	89.93	
MLE (p)[2]	N/A	N/A			

1 Refer to species key in Table C-1.

2 MLE (p) values <0.05 suggest presence.

* Call(s) were qualitatively reviewed.

Table C-11 Species Identification from Detector-Night July 30 – 31, 2020 using Detector # 51405 (Site 5)

	Species Identification[1]			Frequencies		Total # Calls
	EPFU	LANO	LABO*	LOW	MID	
Number of Calls	10	2	176	12	176	188
Percentage of Calls	5.32	1.06	93.62	6.38	93.62	
MLE (p)[2]	<0.01	0.02	N/A			

1 Refer to species key in Table C-1.

2 MLE (p) values <0.05 suggest presence.

* Call(s) were qualitatively reviewed.

Appendix D: Resumes of Qualified Individuals

Chelsea Glinka, ENV SP

Environmental Scientist

Chelsea Glinka is an Environmental Scientist in VHB's Providence, Rhode Island office. Her experience includes developing environmental permit applications for small and large-scale projects within the private and public sectors. She also has experience conducting rare, threatened, and endangered species surveys, facilitating Section 7 consultations under the Endangered Species Act, and habitat assessment and wetland delineation.

Education

MS, Natural Resource Science with a concentration in Aquatic Toxicology, University of Connecticut, 2013

BS, Environmental Science and Management, University of Rhode Island, 2010

Registrations/Certifications

Envision™ Sustainability Professional, 2017

10 years of professional experience

Acoustic Bat Surveys and Habitat Assessments, Massachusetts and Rhode Island
Since 2015, Chelsea has conducted northern long-eared bat acoustic surveys for the Massachusetts Department of Transportation (MassDOT) and Rhode Island Department of Transportation (RIDOT). Surveys included multiple locations in a variety of habitat types. Her project responsibilities include habitat assessment and study plan development, technical guidance on field survey plans and equipment operation, completion of automated and qualitative acoustic data analysis, report writing and review, and coordination with the U.S. Fish and Wildlife Service.

Tobacco Valley Solar Natural Resource Documentation, Simsbury, CT
Chelsea was part of VHB's team that was responsible for the preparation for a Petition for a Declaratory Ruling from the Connecticut Siting Council for a proposed 26.4 MW for a solar photovoltaic development in the town of Simsbury, CT. Chelsea was responsible for conducting natural resource assessments within the 300-acre project area, including included breeding bird surveys that targeted State-listed grassland and shrubland species, vernal pool surveys, rare flora and fauna surveys, and thorough documentation of the different vegetative communities and Key Habitat types present within the project area. Bird survey techniques employed passive acoustic and visual observations in line-transect surveys which followed pre-determined survey routes to maximize the opportunities to observe State-listed species. Call-back surveys were conducted following the passive acoustic surveys to further target the State-listed species. Chelsea also helped to develop conservation measures to protect sensitive resources within the project area that were approved by the Connecticut Natural Diversity Database Program. These conservation measures have been incorporated in the Development and Management Plan for the client and subcontractors to ensure compliance with conservation and resource protection measures that have been required by permit conditions

Groton – New London Airport, Wetland Mitigation Assessment, New London, CT
Under an on-call environmental services contract with the Connecticut Airport Authority, Chelsea was part of a team that conducted field surveys for two state-listed rare plants present on the airfield and reported on the populations trends by reviewing previous reports. She also completed an annual wetland mitigation monitoring report required by the U.S. Army Corps of Engineers (USACE) and the Connecticut Department of Energy (CTDEEP) for a tidal wetland creation and enhancement project

along the Poquonnock River on airport property. Additionally, Chelsea completed an invasive species field investigation and management report for the CAA.

Narragansett Indian Tribe Natural Resource Resiliency Assessment and Action Plan, Charlestown, RI
Chelsea was part of a team that performed a natural resource resiliency assessment of the Narragansett Indian Tribe's (NIT) coastal forest to determine the effects of wind damage from previous storms such as Superstorm Sandy. She collected field data to illustrate the baseline conditions of the forest and conducted an extensive literature review of similar studies to understand the forest's long-term vulnerability to significant storm events. The forest provides fish and wildlife habitat and is also an important cultural resource to the NIT. Chelsea helped to identify options for the protection and recovery of the NIT's natural resources and helped to make recommendations to improve the resiliency of the forest against future storms and climate change

National Grid, Aquidneck Island Reliability Project, Middletown and Newport, RI
Chelsea was part of a team responsible for the complex permitting needs of the Aquidneck Island Reliability Project (AIRP). This project has required the careful documentation of the environmental resources within the project area, which included an inventory of the environmental, social, and economic assets of the project area. Chelsea also described the anticipated effects from the project on habitat structure, water resources, and wildlife, and the measures that will be taken to minimize impact to the surrounding environment while ensuring successful completion of the project.

National Grid, Z1Y2 Transmission Line Refurbishment, Somerset & Fall River, MA
Chelsea is working to secure the applicable local, state, and federal environmental permits for the completion of the Z1Y2 Transmission Line Project. The Z1Y2 lines pass through several freshwater wetland areas and they span the tidal Taunton River which presents unique permitting and project design challenges. Chelsea has assisted in documenting natural resources within the transmission right-of-way (ROW) and wetland delineation as well as developing the different environmental permit applications necessary for the project to be completed.

Lawton Farm Recreation Area, Scituate, RI
Chelsea worked with the Scituate Land Trust to performed breeding bird point count surveys at the Lawton Farm Recreation Area and documented the findings in annual reports in 2014 and 2015. The land trust was specifically interested in the use of the property by grassland species such as bobolink and meadowlark.

TITLEY SCIENTIFIC

Christopher John Corben
Acoustics Expert

Education

Bachelor of Science

University of Queensland

Brisbane Australia, 1981

Mr. Corben is a co-founder of BatSense, a DBA of Titley Scientific. BatSense was founded in 2009 to provide natural resource services as well as training courses in bat ecology and acoustic monitoring. Mr. Corben leads the acoustics work and conducts bat netting and radio telemetry during threatened and endangered (T&E) species consultations. Mr. Corben has a 35 year background in bat surveys and specializes in manual bat call analysis. He is a leader in the field of bat acoustics,

Project Experience

Major Manual Identification Analyses Projects

• 2009— Developed a set of filters to identify Californian bats based on expert manual identification skills for California Fish and Game.

• 2016 to 2018—Several Manual Identification projects in Illinois for the US FWS: Cypress NWR, Crab Orchard NWR, and Scott Airforce Base. Special attention to *M. sodalist* and *M. septentrionalis.*

• 2017 and 2019 - Provided manual identification on 2 masters thesis projects for University of Missouri. Special attention to *M. sodalis, M. lucifugus,* and *M. septentrionalis*.

• 2019 and 2020—Manual identification of species in Alabama and Florida acoustic data. Special attention to species of concern including *M. sodalis, M. lucifugus*, *M. septentrionalis. M. austroriparious, P. subflavous, and E. Floridanus.*

• 2019 to present—Manual identification of species of concern in datasets across the state of Missouri for the US FWS including *M. sodalis, M. lucifugus*, *M. septentrionalis*, *P. subflavous*, and *L. cinereus.*

Major Acoustic Surveys

• 1993 to 2003 – Various long-term surveys in California, including Yosemite National Park, Sacramento Valley, Vandenberg Airforce Base.

• 1994 to 1999 – Surveys of several National Monuments and other sites in Arizona for Northern Arizona University.

• July 1996 to October 1997 – Surveys of bats in Grand Canyon, AZ for NPWS and Northern Arizona University.

• 2000 – Bat surveys n Mt Rainier National Park, WA for NPWS.

• 2001 – Western Red Bat Survey, CA for US Forest Service.

• 2003 – Surveys for USGS on Channel Islands, CA.

• 2005 to 2006 – Surveys at Mumbullah, NSW, Australia.

• 2007 to 2009 – Three bat surveys in Sabah, Malaysia with James Cook University, Australia.

Recent Acoustic Projects

• 2011 to 2013 – Deployed detectors for wind turbine monitoring, managed data collection, analyzed data, identified recorded bats and reported results for Adams Electric Coop, Western IL.

• 2014 – Deployed detectors for wind turbine monitoring, managed data collection, , analyzed data, identified recorded bats and reported results for Illinois Rural Cooperative.

• 2015 – Conducted acoustic survey to determine presence/absence of listed species. Deployed detectors, identified recorded bats, and reported on results. Cherokee County, OK.

• 2016 – Conducted acoustic and mist net surveys to determine presence/absence of *M. sodalis* and *M. septentrionalis*. Deployed detectors, identified recorded bats, and reported on results.

Chris Corben

Acoustics Expert

+ 1 573-864-2999

cjcorben@hoarybat.com

TITLEY SCIENTIFIC

Christopher John Corben
Acoustics Expert

Recent Mist Netting Projects

• 2016 – Conducted mist net surveys to determine presence/absence of *M. sodalis* and *M. septentrionalis*.
• 2019—Conducted mist net surveys to determine the presence/absence of *M. sodalis, M. sep-*

Professional Experience

• 30 years – with identification of bats in the hand primarily: North America and Australia
• 28 years – recording of bat calls from bats which have been capture and released
• 30 years – capturing bats using mist nets, harp traps, hand nets and trip lines
• 33 years – radio telemetry of bats and other animals, including attachment of transmitters, location of bat roosts, tracking of bats foraging at night
• 28 years – comprehensive understanding of bat acoustics for bat identification
• 40 years – recording and analyzing animal sounds including frog and bat calls using Anabat and other systems, Zero-crossings and full spectrum analysis

Bat Experience

• 1985 to 1992 – Led and conducted fauna surveys, including bats, for the Queensland Forest Service in Australia
• 1988 to present – Research echolocation calls of bat species including: Australia, North America, Europe, Central America, SE Asia, and South Africa.
• 1995 to 2003 – Conducted many bat surveys in California, Arizona, Oregon and Washington. Responsible for acoustic component of these surveys. Surveys included biodiversity surveys, hydroelectric relicensing, and surveys of potentially endangered species on military land.
• 2001 to 2007 – Researched echolocation calls of eastern species of *Myotis*. Including: capture, in hand identification, and acoustic recording of *M. sodalis*, *M. lucifugus*, *M. septentrionalis* and *M. grisescens*. Developed a technique for determination of bat detection distances in flight and the intensity of their calls. Wrote a software program called AnaVolumes, used for estimating detection volumes and distances of bats based on various known and estimated parameters.

Teaching Bat Acoustic Classes

• 1994 to present – Have been an instructor for many classes teaching bat acoustic survey techniques, mostly in North America but also in Australia, England, France, Poland, Nicaragua, Puerto Rico, Belize, South Africa, Croatia, Hungary, Lithuania, and Norway. This includes over 50 classes taught in the USA since 2006, including 6 with Bat Conservation International but most with BatSense.

Bat Detector and Software Development

• 1985 – started designing and building bat detectors.
• 1987 – designed the original Anabat detectors. Widely used in Australia, North America and Europe as an effective way to monitor bat echolocation signals, displaying, measuring and managing bat call data from Anabat detectors
• 1998 to present – development of AnalookW software in C++ and running under Windows for recording, displaying, measuring and managing bat calls. Implemented automated call identification capabilities through the use of filters.

Chris Corben

Acoustics Expert

+1 573-864-2999

cjcorben@hoarybat.com

Kim Livengood
Project Manager

Education

M.S., Wildlife Biology, Department of Fisheries and Wildlife; University of Missouri Columbia, 2003

B.S., Biology - Naturalist, Department of Biology; Minor in Geography, Appalachian State University, Boone NC, 1994

Kim Livengood

Project Manager

(573) 424-8367

Kim.Livengood@Titley-Scientific.us

Ms. Livengood is the founder of BatSense, a DBA of Titley Scientific. Kim founded the company in 2010 to provide natural resource services as well as training courses in bat ecology and acoustic monitoring. Kim manages the natural resource team during threatened and endangered (T&E) species consultations, habitat assessments, bat mist net and acoustic surveys as well as bird and arthropod surveys. As a US Fish and Wildlife Biologist, Kim helped develop permitting, mitigation, as well as recovery and monitoring plans for T&E species. Kim's field expertise includes: avian surveys (territory mapping, banding, and nest searches), bat surveys (mist netting, radio-telemetry, acoustic recording and analyses). She has experience working with T&E species, including the Florida scrub ridge plants, southwest willow flycatchers, Mariana's Crow, Indiana bat, gray bat, northern long-eared bat, and the Florida grasshopper sparrow.

Project Experience

Forest Hills Subdivision Bat Habitat Assessment Survey [Columbia, MO]

Provided oversight for T&E bat habitat assessment surveys, reporting, and USFWS coordination.

Bonne Femme Creek Bat Habitat Assessment Survey [Columbia MO]

Provided oversight for T&E bat habitat assessment surveys, reporting, and USFWS coordination.

East Locust Creek Reservoir [Milan, MO]

Supervised Indiana and northern long-eared bat T&E bat surveys (acoustic and mist net, telemetry, emergence counts) in a proposed 2,000 acre water reservoir.

Cypress Creek and Scott Air Force Base [Illinois]

Conducted bat call analyses of acoustic data and prepared a summary report.

Ashland Sewer Line Habitat Bat Survey [Ashland, MO]

Provided oversight for T&E bat habitat assessment surveys and reporting.

NE Fort Gibson Rd Acoustic Survey [Cherokee County, OK]

Determined suitability of habitat for T&E species, conducted acoustic survey to determine presence/absence of federally listed bat species, identified recorded data, and prepared survey summary report.

Lee Nuclear Wind Turbine Site [Frontier City, OK]

Deployed bat detectors, conducted species identification analyses, prepared report.

Illinois Rural Cooperative Wind Energy Acoustic Survey [Western IL]

Deployed bat detectors, monitored, and identified acoustic activity at a wind turbine site. Prepared summary report.

Adams Electric Coop Wind Energy Acoustic Survey [Quincy IL]

Deployed acoustic bat detectors, monitored, and identified acoustic activity at a wind turbine site. Prepared summary report.

Kim Livengood
Project Manager

Professional Experience

BatSense a DBA to Titley Scientific, Columbia MO *(March 2009 – Present)*
Senior Instructor and Project Manager
Design and conduct training courses on the use of the Anabat System bat detector equipment, field deployment, and bat call analysis both using visual identification and auto identification programs including AnalookW, BCID, Kaleidoscope, and Echoclass. Conduct acoustic surveys including field deployment of acoustic bat detectors, analyzing data, and preparing reports for field studies. Conduct acoustic surveys, including field deployment of acoustic bat detectors, data analysis, and report preparation. Conduct threatened and endangered species presence/absence mist net survey and radio tracking (*M. sodalis, M. septentrionalis*)

Titley Scientific, Columbia MO *(2007 to present)*
Senior Scientist and Business Manager
Conduct training courses on the use of the Anabat System and AnalookW analysis software. Develop, implement, and manage an international training program for the use of the AnaBat bat detector system and associated data analyses. Represent the company and our products at professional conferences worldwide and organize appropriate exhibition booths and demonstrations. Develop materials for marketing and product support, including website, flyers and user manuals, in conjunction with marketing staff and R&D engineering team. Assist with the development, field testing and launch of new scientific products in conjunction with the R&D engineering team.

University of Missouri, Columbia, MO *(2004–2007)*
Senior Research Specialist
Conducted a field study to determine call identification characters of Missouri bats, including the endangered Indiana bat. Developed a method to measure call intensity of free flying bats to determine the volume of detection for the Anabat bat detector.

University of Missouri, Columbia, MO *(1998 –2003)*
Research Assistant
Conducted a field study exploring the efficacy of Anabat equipment used to acoustically survey bats. Defined the zone in which a bat must fly to be detected, and how this zone changes under various conditions. Developed a method to differentiate the endangered Indiana bat, little brown bat, and the northern long-eared bat acoustically. Study development required the use of computer software, field responsibilities include bat trapping (harp trap and mist net), taking morphological measurements, Determining species identity (in the hand and acoustically), and use of Anabat detectors.

Kim Livengood

Project Manager

(573) 424-8367

Kim.Livengood@Titley-Scientific.us

Appendix E: Event Log

Detector 51504_20200729_20200731 Event Log

MODEL NO: SDCFXS-032G
FW REV: HDX16.01
SERIAL: L ZA118091518072
LABEL: D500X
2020-07-27 21:09:17 $$SYSTEM START, FW VERSION: D500X V2.3.6 191122, 09:33:53, S/N: 51504, TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:14/05:38, DST=ON, BATTERY: 5.2V, FILE: -, TOTAL FREE: 37.26G
2020-07-27 21:09:22 $$KEYBOARD SLEEP ---- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:14/05:38, DST=ON, BATTERY: 5.1V, FILE: -, TOTAL FREE: 37.26G
2020-07-29 13:16:34 $$SYSTEM START, FW VERSION: D500X V2.3.6 191122, 09:33:53, S/N: 51504, TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 5.1V, FILE: -, TOTAL FREE: 37.26G
2020-07-29 13:27:49 $$KEYBOARD WAKEUP --- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 5.0V, FILE: -, TOTAL FREE: 37.26G
2020-07-29 13:28:00 $$TIMER SLEEP ------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 5.0V, FILE: -, TOTAL FREE: 37.26G
2020-07-29 14:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 5.0V, FILE: -, TOTAL FREE: 37.26G
2020-07-29 15:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 5.0V, FILE: -, TOTAL FREE: 37.26G
2020-07-29 16:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 5.0V, FILE: -, TOTAL FREE: 37.26G
2020-07-29 17:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 5.1V, FILE: -, TOTAL FREE: 37.26G
2020-07-29 18:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 5.1V, FILE: -, TOTAL FREE: 37.26G
2020-07-29 19:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 5.1V, FILE: -, TOTAL FREE: 37.26G
2020-07-29 19:35:01 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 5.0V, FILE: -, TOTAL FREE: 37.26G
2020-07-29 20:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 5.0V, FILE: -, TOTAL FREE: 37.26G
2020-07-29 21:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 4.9V, FILE: M000023.WAV, TOTAL FREE: 37.15G
2020-07-29 22:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 4.8V, FILE: M000043.WAV, TOTAL FREE: 37.06G
2020-07-29 23:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 4.8V, FILE: M000092.WAV, TOTAL FREE: 36.83G
2020-07-30 00:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000105.WAV, TOTAL FREE: 36.77G
2020-07-30 01:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000111.WAV, TOTAL FREE: 36.74G

Detector 51504_20200729_20200731 Event Log

MODEL NO: SDCFXS-032G
FW REV: HDX16.01
SERIAL: L ZA118091518072
LABEL: D500X
2020-07-30 02:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.7V, FILE: M000116.WAV, TOTAL FREE: 36.71G
2020-07-30 03:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.7V, FILE: M000133.WAV, TOTAL FREE: 36.63G
2020-07-30 04:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.7V, FILE: M000151.WAV, TOTAL FREE: 36.55G
2020-07-30 05:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.7V, FILE: M000156.WAV, TOTAL FREE: 36.53G
2020-07-30 06:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.7V, FILE: M000162.WAV, TOTAL FREE: 36.50G
2020-07-30 06:10:30 $$TIMER SLEEP ------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.7V, FILE: M000162.WAV, TOTAL FREE: 36.50G
2020-07-30 07:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.7V, FILE: M000162.WAV, TOTAL FREE: 36.50G
2020-07-30 08:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000162.WAV, TOTAL FREE: 36.50G
2020-07-30 09:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000162.WAV, TOTAL FREE: 36.50G
2020-07-30 10:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000162.WAV, TOTAL FREE: 36.50G
2020-07-30 11:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000162.WAV, TOTAL FREE: 36.50G
2020-07-30 12:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000162.WAV, TOTAL FREE: 36.50G
2020-07-30 13:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000162.WAV, TOTAL FREE: 36.50G
2020-07-30 14:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000162.WAV, TOTAL FREE: 36.50G
2020-07-30 15:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000162.WAV, TOTAL FREE: 36.50G
2020-07-30 16:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.9V, FILE: M000162.WAV, TOTAL FREE: 36.50G
2020-07-30 17:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.9V, FILE: M000162.WAV, TOTAL FREE: 36.50G
2020-07-30 18:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.9V, FILE: M000162.WAV, TOTAL FREE: 36.50G

Detector 51504_20200729_20200731 Event Log

MODEL NO: SDCFXS-032G
FW REV: HDX16.01
SERIAL: L ZA118091518072
LABEL: D500X
2020-07-30 19:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.9V, FILE: M000162.WAV, TOTAL FREE: 36.50G
2020-07-30 19:35:01 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.9V, FILE: M000162.WAV, TOTAL FREE: 36.50G
2020-07-30 20:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000162.WAV, TOTAL FREE: 36.50G
2020-07-30 21:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.7V, FILE: M000207.WAV, TOTAL FREE: 36.29G
2020-07-30 22:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.7V, FILE: M000247.WAV, TOTAL FREE: 36.10G
2020-07-30 23:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.7V, FILE: M000276.WAV, TOTAL FREE: 35.96G
2020-07-31 00:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.6V, FILE: M000307.WAV, TOTAL FREE: 35.82G
2020-07-31 01:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.6V, FILE: M000324.WAV, TOTAL FREE: 35.74G
2020-07-31 02:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.6V, FILE: M000331.WAV, TOTAL FREE: 35.70G
2020-07-31 03:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.6V, FILE: M000337.WAV, TOTAL FREE: 35.68G
2020-07-31 04:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.6V, FILE: M000344.WAV, TOTAL FREE: 35.64G
2020-07-31 05:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.6V, FILE: M000440.WAV, TOTAL FREE: 35.19G
2020-07-31 05:44:18 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.7V, FILE: M000499.WAV, TOTAL FREE: 34.91G
2020-07-31 06:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.6V, FILE: M000539.WAV, TOTAL FREE: 34.73G
2020-07-31 06:10:30 $$TIMER SLEEP ------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.6V, FILE: M000556.WAV, TOTAL FREE: 34.65G
2020-07-31 07:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.6V, FILE: M000556.WAV, TOTAL FREE: 34.65G
2020-07-31 08:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.6V, FILE: M000556.WAV, TOTAL FREE: 34.65G
2020-07-31 08:22:26 $$KEYBOARD WAKEUP --- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.7V, FILE: M000556.WAV, TOTAL FREE: 34.65G

Detector 51504_20200729_20200731 Event Log

MODEL NO: SDCFXS-032G
FW REV: HDX16.01
SERIAL: L ZA118091518072
LABEL: D500X
2020-07-31 08:25:22 $$KEYBOARD SLEEP ---- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.6V, FILE: M000556.WAV, TOTAL FREE: 34.65G

Detector 51501_20200729_20200731 Event Log

MODEL NO: SDCFXS-032G
FW REV: HDX16.01
SERIAL: A ZA601191120582
LABEL: D500X
2020-07-27 21:05:32 $$SYSTEM START, FW VERSION: D500X V2.3.6 191122, 09:33:53, S/N: 51501, TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:14/05:38, DST=ON, BATTERY: 5.2V, FILE: -, TOTAL FREE: 37.26G
2020-07-27 21:06:01 $$KEYBOARD SLEEP ---- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:14/05:38, DST=ON, BATTERY: 5.1V, FILE: -, TOTAL FREE: 37.26G
2020-07-29 13:53:28 $$SYSTEM START, FW VERSION: D500X V2.3.6 191122, 09:33:53, S/N: 51501, TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 5.1V, FILE: -, TOTAL FREE: 37.26G
2020-07-29 14:06:00 $$TIMER SLEEP ------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 5.1V, FILE: -, TOTAL FREE: 37.26G
2020-07-29 14:13:40 $$KEYBOARD WAKEUP --- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 5.1V, FILE: -, TOTAL FREE: 37.26G
2020-07-29 14:13:58 $$KEYBOARD SLEEP ---- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 5.0V, FILE: -, TOTAL FREE: 37.26G
2020-07-29 14:16:59 $$KEYBOARD WAKEUP --- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 5.0V, FILE: -, TOTAL FREE: 37.26G
2020-07-29 15:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 5.0V, FILE: -, TOTAL FREE: 37.26G
2020-07-29 16:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 5.0V, FILE: -, TOTAL FREE: 37.26G
2020-07-29 17:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 5.0V, FILE: -, TOTAL FREE: 37.26G
2020-07-29 18:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 5.0V, FILE: -, TOTAL FREE: 37.26G
2020-07-29 19:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 5.1V, FILE: -, TOTAL FREE: 37.26G
2020-07-29 19:35:01 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 5.1V, FILE: -, TOTAL FREE: 37.26G
2020-07-29 20:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 5.1V, FILE: -, TOTAL FREE: 37.26G
2020-07-29 21:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 4.9V, FILE: M000042.WAV, TOTAL FREE: 37.06G
2020-07-29 21:09:58 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 5.0V, FILE: M000070.WAV, TOTAL FREE: 36.93G
2020-07-29 21:12:15 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 5.0V, FILE: M000080.WAV, TOTAL FREE: 36.88G
2020-07-29 21:19:43 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 5.0V, FILE: M000085.WAV, TOTAL FREE: 36.86G

Detector 51501_20200729_20200731 Event Log

MODEL NO: SDCFXS-032G
FW REV: HDX16.01
SERIAL: A ZA601191120582
LABEL: D500X
2020-07-29 21:50:51 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 4.9V, FILE: M000118.WAV, TOTAL FREE: 36.70G
2020-07-29 22:00:05 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 4.9V, FILE: M000138.WAV, TOTAL FREE: 36.61G
2020-07-29 23:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 4.8V, FILE: M000190.WAV, TOTAL FREE: 36.37G
2020-07-29 23:51:27 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 4.9V, FILE: M000224.WAV, TOTAL FREE: 36.21G
2020-07-30 00:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000227.WAV, TOTAL FREE: 36.19G
2020-07-30 01:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000243.WAV, TOTAL FREE: 36.12G
2020-07-30 02:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000260.WAV, TOTAL FREE: 36.04G
2020-07-30 02:13:10 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.9V, FILE: M000263.WAV, TOTAL FREE: 36.02G
2020-07-30 03:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000277.WAV, TOTAL FREE: 35.96G
2020-07-30 03:23:40 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.9V, FILE: M000281.WAV, TOTAL FREE: 35.94G
2020-07-30 04:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000287.WAV, TOTAL FREE: 35.91G
2020-07-30 05:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000302.WAV, TOTAL FREE: 35.84G
2020-07-30 06:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000303.WAV, TOTAL FREE: 35.84G
2020-07-30 06:10:30 $$TIMER SLEEP ------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000303.WAV, TOTAL FREE: 35.84G
2020-07-30 07:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000303.WAV, TOTAL FREE: 35.84G
2020-07-30 08:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000303.WAV, TOTAL FREE: 35.84G
2020-07-30 09:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000303.WAV, TOTAL FREE: 35.84G
2020-07-30 10:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000303.WAV, TOTAL FREE: 35.84G

Detector 51501_20200729_20200731 Event Log

MODEL NO: SDCFXS-032G
FW REV: HDX16.01
SERIAL: A ZA601191120582
LABEL: D500X
2020-07-30 11:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.9V, FILE: M000303.WAV, TOTAL FREE: 35.84G
2020-07-30 12:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.9V, FILE: M000303.WAV, TOTAL FREE: 35.84G
2020-07-30 13:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.9V, FILE: M000303.WAV, TOTAL FREE: 35.84G
2020-07-30 14:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.9V, FILE: M000303.WAV, TOTAL FREE: 35.84G
2020-07-30 15:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.9V, FILE: M000303.WAV, TOTAL FREE: 35.84G
2020-07-30 16:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.9V, FILE: M000303.WAV, TOTAL FREE: 35.84G
2020-07-30 17:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.9V, FILE: M000303.WAV, TOTAL FREE: 35.84G
2020-07-30 18:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.9V, FILE: M000303.WAV, TOTAL FREE: 35.84G
2020-07-30 19:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.9V, FILE: M000303.WAV, TOTAL FREE: 35.84G
2020-07-30 19:35:01 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.9V, FILE: M000303.WAV, TOTAL FREE: 35.84G
2020-07-30 20:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000304.WAV, TOTAL FREE: 35.83G
2020-07-30 20:41:04 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000320.WAV, TOTAL FREE: 35.76G
2020-07-30 20:57:47 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000356.WAV, TOTAL FREE: 35.59G
2020-07-30 21:00:15 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.7V, FILE: M000366.WAV, TOTAL FREE: 35.54G
2020-07-30 21:02:50 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000369.WAV, TOTAL FREE: 35.52G
2020-07-30 21:07:03 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000382.WAV, TOTAL FREE: 35.46G
2020-07-30 21:15:21 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000395.WAV, TOTAL FREE: 35.40G
2020-07-30 21:21:12 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000424.WAV, TOTAL FREE: 35.27G

Detector 51501_20200729_20200731 Event Log

MODEL NO: SDCFXS-032G
FW REV: HDX16.01
SERIAL: A ZA601191120582
LABEL: D500X
2020-07-30 21:23:17 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000428.WAV, TOTAL FREE: 35.25G
2020-07-30 21:39:52 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000442.WAV, TOTAL FREE: 35.18G
2020-07-30 21:47:54 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000455.WAV, TOTAL FREE: 35.12G
2020-07-30 22:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.7V, FILE: M000465.WAV, TOTAL FREE: 35.07G
2020-07-30 22:14:26 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000469.WAV, TOTAL FREE: 35.05G
2020-07-30 22:25:20 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000490.WAV, TOTAL FREE: 34.96G
2020-07-30 22:30:20 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000503.WAV, TOTAL FREE: 34.90G
2020-07-30 22:58:50 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.7V, FILE: M000536.WAV, TOTAL FREE: 34.74G
2020-07-30 23:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.7V, FILE: M000536.WAV, TOTAL FREE: 34.74G
2020-07-30 23:13:24 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.7V, FILE: M000547.WAV, TOTAL FREE: 34.69G
2020-07-30 23:19:27 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.7V, FILE: M000561.WAV, TOTAL FREE: 34.62G
2020-07-30 23:38:25 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.7V, FILE: M000582.WAV, TOTAL FREE: 34.52G
2020-07-31 00:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.7V, FILE: M000593.WAV, TOTAL FREE: 34.47G
2020-07-31 00:25:30 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.7V, FILE: M000603.WAV, TOTAL FREE: 34.43G
2020-07-31 00:53:40 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.7V, FILE: M000630.WAV, TOTAL FREE: 34.30G
2020-07-31 01:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.7V, FILE: M000632.WAV, TOTAL FREE: 34.29G
2020-07-31 01:42:56 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.7V, FILE: M000637.WAV, TOTAL FREE: 34.27G
2020-07-31 01:57:12 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.7V, FILE: M000641.WAV, TOTAL FREE: 34.25G

Detector 51501_20200729_20200731 Event Log

MODEL NO: SDCFXS-032G
FW REV: HDX16.01
SERIAL: A ZA601191120582
LABEL: D500X
2020-07-31 02:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.7V, FILE: M000641.WAV, TOTAL FREE: 34.25G
2020-07-31 03:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.7V, FILE: M000658.WAV, TOTAL FREE: 34.17G
2020-07-31 03:16:20 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.7V, FILE: M000660.WAV, TOTAL FREE: 34.16G
2020-07-31 04:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.6V, FILE: M000665.WAV, TOTAL FREE: 34.13G
2020-07-31 04:25:04 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.7V, FILE: M000681.WAV, TOTAL FREE: 34.06G
2020-07-31 04:35:02 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.7V, FILE: M000695.WAV, TOTAL FREE: 33.99G
2020-07-31 04:55:07 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.7V, FILE: M000708.WAV, TOTAL FREE: 33.93G
2020-07-31 05:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.6V, FILE: M000719.WAV, TOTAL FREE: 33.88G
2020-07-31 05:58:17 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.7V, FILE: M000757.WAV, TOTAL FREE: 33.70G
2020-07-31 06:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.7V, FILE: M000757.WAV, TOTAL FREE: 33.70G
2020-07-31 06:08:15 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.7V, FILE: M000768.WAV, TOTAL FREE: 33.65G
2020-07-31 06:11:00 $$TIMER SLEEP ------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.7V, FILE: M000771.WAV, TOTAL FREE: 33.64G
2020-07-31 07:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.7V, FILE: M000771.WAV, TOTAL FREE: 33.64G
2020-07-31 08:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.7V, FILE: M000771.WAV, TOTAL FREE: 33.64G
2020-07-31 08:00:12 $$KEYBOARD WAKEUP --- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.7V, FILE: M000771.WAV, TOTAL FREE: 33.64G
2020-07-31 08:03:18 $$KEYBOARD SLEEP ---- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.7V, FILE: M000771.WAV, TOTAL FREE: 33.64G

Detector 51488_20200729_20200731 Event Log

MODEL NO: SanDisk SDCFHSNJC-032G
FW REV: HDX 7.07
SERIAL: A ZE505051618225
LABEL: D005_CF_1
2020-07-27 21:12:57, CF1: $$SYSTEM START, FW VERSION: D500X V2.2.6 140516, 17:19:14, S/N: 51488 --- TIMER OFF, BATTERY: 5.2V, FILE: -, TOTAL FREE: 37.24G
2020-07-27 21:13:11, CF1: $$KEYBOARD SLEEP --- TIMER ON, BATTERY: 5.1V, FILE: -, TOTAL FREE: 37.24G
2020-07-29 14:47:15, CF1: $$SYSTEM START, FW VERSION: D500X V2.2.6 140516, 17:19:14, S/N: 51488 --- TIMER OFF, BATTERY: 5.1V, FILE: -, TOTAL FREE: 37.24G
2020-07-29 15:00:00, CF1: $$HOUR LOG --- TIMER OFF, BATTERY: 5.0V, FILE: M00001.WAV, TOTAL FREE: 37.24G
2020-07-29 16:00:00, CF1: $$HOUR LOG --- TIMER OFF, BATTERY: 5.0V, FILE: M00001.WAV, TOTAL FREE: 37.24G
2020-07-29 17:00:00, CF1: $$HOUR LOG --- TIMER OFF, BATTERY: 5.0V, FILE: M00001.WAV, TOTAL FREE: 37.24G
2020-07-29 18:00:00, CF1: $$HOUR LOG --- TIMER OFF, BATTERY: 5.0V, FILE: M00001.WAV, TOTAL FREE: 37.24G
2020-07-29 19:00:00, CF1: $$HOUR LOG --- TIMER OFF, BATTERY: 5.0V, FILE: M00001.WAV, TOTAL FREE: 37.24G
2020-07-29 19:35:01, CF1: $$TIMER WAKEUP --- TIMER ON, BATTERY: 5.0V, FILE: M00001.WAV, TOTAL FREE: 37.24G
2020-07-29 20:00:00, CF1: $$HOUR LOG --- TIMER ON, BATTERY: 5.0V, FILE: M00001.WAV, TOTAL FREE: 37.24G
2020-07-29 21:00:20, CF1: $$HOUR LOG --- TIMER ON, BATTERY: 4.8V, FILE: M00115.WAV, TOTAL FREE: 36.70G
2020-07-29 22:00:05, CF1: $$HOUR LOG --- TIMER ON, BATTERY: 4.8V, FILE: M00299.WAV, TOTAL FREE: 35.84G
2020-07-29 23:00:00, CF1: $$HOUR LOG --- TIMER ON, BATTERY: 4.8V, FILE: M00354.WAV, TOTAL FREE: 35.58G
2020-07-30 00:00:00, CF1: $$HOUR LOG --- TIMER ON, BATTERY: 4.8V, FILE: M00357.WAV, TOTAL FREE: 35.56G
2020-07-30 01:00:00, CF1: $$HOUR LOG --- TIMER ON, BATTERY: 4.7V, FILE: M00369.WAV, TOTAL FREE: 35.51G
2020-07-30 02:00:10, CF1: $$HOUR LOG --- TIMER ON, BATTERY: 4.7V, FILE: M00383.WAV, TOTAL FREE: 35.44G
2020-07-30 03:00:00, CF1: $$HOUR LOG --- TIMER ON, BATTERY: 4.7V, FILE: M00386.WAV, TOTAL FREE: 35.43G
2020-07-30 04:00:00, CF1: $$HOUR LOG --- TIMER ON, BATTERY: 4.7V, FILE: M00391.WAV, TOTAL FREE: 35.40G
2020-07-30 05:00:00, CF1: $$HOUR LOG --- TIMER ON, BATTERY: 4.7V, FILE: M00447.WAV, TOTAL FREE: 35.14G
2020-07-30 06:00:00, CF1: $$HOUR LOG --- TIMER ON, BATTERY: 4.7V, FILE: M00450.WAV, TOTAL FREE: 35.13G
2020-07-30 06:10:05, CF1: $$TIMER SLEEP --- TIMER OFF, BATTERY: 4.7V, FILE: M00450.WAV, TOTAL FREE: 35.13G
2020-07-30 07:00:00, CF1: $$HOUR LOG --- TIMER OFF, BATTERY: 4.7V, FILE: M00450.WAV, TOTAL FREE: 35.13G
2020-07-30 08:00:00, CF1: $$HOUR LOG --- TIMER OFF, BATTERY: 4.8V, FILE: M00450.WAV, TOTAL FREE: 35.13G
2020-07-30 09:00:00, CF1: $$HOUR LOG --- TIMER OFF, BATTERY: 4.8V, FILE: M00450.WAV, TOTAL FREE: 35.13G
2020-07-30 10:00:00, CF1: $$HOUR LOG --- TIMER OFF, BATTERY: 4.8V, FILE: M00450.WAV, TOTAL FREE: 35.13G
2020-07-30 11:00:00, CF1: $$HOUR LOG --- TIMER OFF, BATTERY: 4.8V, FILE: M00450.WAV, TOTAL FREE: 35.13G
2020-07-30 12:00:00, CF1: $$HOUR LOG --- TIMER OFF, BATTERY: 4.8V, FILE: M00450.WAV, TOTAL FREE: 35.13G

Detector 51488_20200729_20200731 Event Log

MODEL NO: SanDisk SDCFHSNJC-032G
FW REV: HDX 7.07
SERIAL: A ZE505051618225
LABEL: D005_CF_1
2020-07-30 13:00:00, CF1: $$HOUR LOG --- TIMER OFF, BATTERY: 4.8V, FILE: M00450.WAV, TOTAL FREE: 35.13G
2020-07-30 14:00:00, CF1: $$HOUR LOG --- TIMER OFF, BATTERY: 4.8V, FILE: M00450.WAV, TOTAL FREE: 35.13G
2020-07-30 15:00:00, CF1: $$HOUR LOG --- TIMER OFF, BATTERY: 4.8V, FILE: M00450.WAV, TOTAL FREE: 35.13G
2020-07-30 16:00:00, CF1: $$HOUR LOG --- TIMER OFF, BATTERY: 4.8V, FILE: M00450.WAV, TOTAL FREE: 35.13G
2020-07-30 17:00:00, CF1: $$HOUR LOG --- TIMER OFF, BATTERY: 4.8V, FILE: M00450.WAV, TOTAL FREE: 35.13G
2020-07-30 18:00:00, CF1: $$HOUR LOG --- TIMER OFF, BATTERY: 4.8V, FILE: M00450.WAV, TOTAL FREE: 35.13G
2020-07-30 19:00:00, CF1: $$HOUR LOG --- TIMER OFF, BATTERY: 4.8V, FILE: M00450.WAV, TOTAL FREE: 35.13G
2020-07-30 19:35:01, CF1: $$TIMER WAKEUP --- TIMER ON, BATTERY: 4.8V, FILE: M00450.WAV, TOTAL FREE: 35.13G
2020-07-30 20:00:00, CF1: $$HOUR LOG --- TIMER ON, BATTERY: 4.8V, FILE: M00450.WAV, TOTAL FREE: 35.13G
2020-07-30 21:00:00, CF1: $$HOUR LOG --- TIMER ON, BATTERY: 4.7V, FILE: M00493.WAV, TOTAL FREE: 34.92G
2020-07-30 22:00:00, CF1: $$HOUR LOG --- TIMER ON, BATTERY: 4.7V, FILE: M00526.WAV, TOTAL FREE: 34.77G
2020-07-30 23:00:00, CF1: $$HOUR LOG --- TIMER ON, BATTERY: 4.6V, FILE: M00555.WAV, TOTAL FREE: 34.63G
2020-07-31 00:00:00, CF1: $$HOUR LOG --- TIMER ON, BATTERY: 4.6V, FILE: M00583.WAV, TOTAL FREE: 34.50G
2020-07-31 01:00:00, CF1: $$HOUR LOG --- TIMER ON, BATTERY: 4.6V, FILE: M00587.WAV, TOTAL FREE: 34.48G
2020-07-31 02:00:00, CF1: $$HOUR LOG --- TIMER ON, BATTERY: 4.6V, FILE: M00602.WAV, TOTAL FREE: 34.41G
2020-07-31 03:00:00, CF1: $$HOUR LOG --- TIMER ON, BATTERY: 4.6V, FILE: M00610.WAV, TOTAL FREE: 34.37G
2020-07-31 04:00:00, CF1: $$HOUR LOG --- TIMER ON, BATTERY: 4.6V, FILE: M00612.WAV, TOTAL FREE: 34.36G
2020-07-31 05:00:25, CF1: $$HOUR LOG --- TIMER ON, BATTERY: 4.6V, FILE: M00893.WAV, TOTAL FREE: 33.04G
2020-07-31 06:00:15, CF1: $$HOUR LOG --- TIMER ON, BATTERY: 4.5V, FILE: M01266.WAV, TOTAL FREE: 31.30G
2020-07-31 06:10:05, CF1: $$TIMER SLEEP --- TIMER OFF, BATTERY: 4.5V, FILE: M01334.WAV, TOTAL FREE: 30.97G
2020-07-31 07:00:00, CF1: $$HOUR LOG --- TIMER OFF, BATTERY: 4.6V, FILE: M01334.WAV, TOTAL FREE: 30.97G
2020-07-31 08:00:00, CF1: $$HOUR LOG --- TIMER OFF, BATTERY: 4.6V, FILE: M01334.WAV, TOTAL FREE: 30.97G
2020-07-31 08:10:38, CF1: $$KEYBOARD WAKEUP --- TIMER OFF, BATTERY: 4.7V, FILE: M01334.WAV, TOTAL FREE: 30.97G
2020-07-31 08:13:12, CF1: $$KEYBOARD SLEEP --- TIMER OFF, BATTERY: 4.7V, FILE: M01334.WAV, TOTAL FREE: 30.97G

Detector 51510_20200729_20200731 Event Log

MODEL NO: SanDisk SDCFHSNJC-032G
FW REV: HDX 7.07
SERIAL: C ZD500251207280
LABEL: D007_CF1
2020-07-27 21:16:40 $$SYSTEM START, FW VERSION: D500X V2.3.6 191122, 09:33:53, S/N: 51510, TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:14/05:38, DST=ON, BATTERY: 5.2V, FILE: -, TOTAL FREE: 37.24G
2020-07-29 15:39:41 $$SYSTEM START, FW VERSION: D500X V2.3.6 191122, 09:33:53, S/N: 51510, TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 5.1V, FILE: -, TOTAL FREE: 37.24G
2020-07-29 15:49:00 $$TIMER SLEEP ------- TIMER OFF, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 5.0V, FILE: -, TOTAL FREE: 37.24G
2020-07-29 16:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 5.0V, FILE: -, TOTAL FREE: 37.24G
2020-07-29 17:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 5.0V, FILE: -, TOTAL FREE: 37.24G
2020-07-29 18:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 5.0V, FILE: -, TOTAL FREE: 37.24G
2020-07-29 19:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 5.0V, FILE: -, TOTAL FREE: 37.24G
2020-07-29 19:35:01 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 5.0V, FILE: -, TOTAL FREE: 37.24G
2020-07-29 20:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 4.9V, FILE: M000003.WAV, TOTAL FREE: 37.23G
2020-07-29 21:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 4.9V, FILE: M000005.WAV, TOTAL FREE: 37.22G
2020-07-29 21:45:51 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 4.9V, FILE: M000009.WAV, TOTAL FREE: 37.20G
2020-07-29 22:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 4.9V, FILE: M000011.WAV, TOTAL FREE: 37.19G
2020-07-29 23:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:12/05:40, DST=ON, BATTERY: 4.8V, FILE: M000018.WAV, TOTAL FREE: 37.16G
2020-07-30 00:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000024.WAV, TOTAL FREE: 37.13G
2020-07-30 01:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000046.WAV, TOTAL FREE: 37.03G
2020-07-30 02:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000052.WAV, TOTAL FREE: 37.00G
2020-07-30 03:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000056.WAV, TOTAL FREE: 36.98G
2020-07-30 04:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000061.WAV, TOTAL FREE: 36.95G

Detector 51510_20200729_20200731 Event Log

MODEL NO: SanDisk SDCFHSNJC-032G
FW REV: HDX 7.07
SERIAL: C ZD500251207280
LABEL: D007_CF1
2020-07-30 05:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000062.WAV, TOTAL FREE: 36.95G
2020-07-30 06:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.7V, FILE: M000065.WAV, TOTAL FREE: 36.94G
2020-07-30 06:10:30 $$TIMER SLEEP ------- TIMER OFF, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000067.WAV, TOTAL FREE: 36.93G
2020-07-30 07:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000067.WAV, TOTAL FREE: 36.93G
2020-07-30 08:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000067.WAV, TOTAL FREE: 36.93G
2020-07-30 09:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000067.WAV, TOTAL FREE: 36.93G
2020-07-30 10:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000067.WAV, TOTAL FREE: 36.93G
2020-07-30 11:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000067.WAV, TOTAL FREE: 36.93G
2020-07-30 12:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000067.WAV, TOTAL FREE: 36.93G
2020-07-30 13:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000067.WAV, TOTAL FREE: 36.93G
2020-07-30 14:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000067.WAV, TOTAL FREE: 36.93G
2020-07-30 15:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000067.WAV, TOTAL FREE: 36.93G
2020-07-30 16:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000067.WAV, TOTAL FREE: 36.93G
2020-07-30 17:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000067.WAV, TOTAL FREE: 36.93G
2020-07-30 18:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000067.WAV, TOTAL FREE: 36.93G
2020-07-30 19:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000067.WAV, TOTAL FREE: 36.93G
2020-07-30 19:35:01 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000067.WAV, TOTAL FREE: 36.93G
2020-07-30 20:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.8V, FILE: M000068.WAV, TOTAL FREE: 36.92G

Detector 51510_20200729_20200731 Event Log

MODEL NO: SanDisk SDCFHSNJC-032G
FW REV: HDX 7.07
SERIAL: C ZD500251207280
LABEL: D007_CF1
2020-07-30 21:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.7V, FILE: M000073.WAV, TOTAL FREE: 36.90G
2020-07-30 22:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.7V, FILE: M000076.WAV, TOTAL FREE: 36.88G
2020-07-30 23:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:11/05:41, DST=ON, BATTERY: 4.7V, FILE: M000085.WAV, TOTAL FREE: 36.84G
2020-07-31 00:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.7V, FILE: M000095.WAV, TOTAL FREE: 36.79G
2020-07-31 01:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.6V, FILE: M000099.WAV, TOTAL FREE: 36.78G
2020-07-31 01:07:11 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.7V, FILE: M000099.WAV, TOTAL FREE: 36.78G
2020-07-31 02:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.6V, FILE: M000115.WAV, TOTAL FREE: 36.70G
2020-07-31 03:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.6V, FILE: M000120.WAV, TOTAL FREE: 36.68G
2020-07-31 04:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.6V, FILE: M000121.WAV, TOTAL FREE: 36.67G
2020-07-31 05:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.6V, FILE: M000134.WAV, TOTAL FREE: 36.61G
2020-07-31 06:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.6V, FILE: M000152.WAV, TOTAL FREE: 36.53G
2020-07-31 06:10:30 $$TIMER SLEEP ------- TIMER OFF, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.6V, FILE: M000154.WAV, TOTAL FREE: 36.52G
2020-07-31 07:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.6V, FILE: M000154.WAV, TOTAL FREE: 36.52G
2020-07-31 07:34:40 $$KEYBOARD WAKEUP --- TIMER OFF, INPUT GAIN=60, TRIG LEV=160, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:42, DST=ON, BATTERY: 4.7V, FILE: M000154.WAV, TOTAL FREE: 36.52G

Detector 51405_20200729_20200731 Event Log

MODEL NO: SDCFXS-032G
FW REV: HDX10.05
SERIAL: A ZA603251110354
LABEL: D004_CF1
2020-07-27 21:18:28 $$SYSTEM START, FW VERSION: D500X V2.3.6 191122, 09:33:53, S/N: 51405, TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:13/05:38, DST=ON, BATTERY: 5.2V, FILE: -, TOTAL FREE: 29.81G
2020-07-29 16:26:23 $$SYSTEM START, FW VERSION: D500X V2.3.6 191122, 09:33:53, S/N: 51405, TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:39, DST=ON, BATTERY: 5.1V, FILE: -, TOTAL FREE: 29.81G
2020-07-29 16:39:30 $$TIMER SLEEP ------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:39, DST=ON, BATTERY: 5.1V, FILE: -, TOTAL FREE: 29.81G
2020-07-29 17:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:39, DST=ON, BATTERY: 5.1V, FILE: -, TOTAL FREE: 29.81G
2020-07-29 18:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:39, DST=ON, BATTERY: 5.1V, FILE: -, TOTAL FREE: 29.81G
2020-07-29 19:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:39, DST=ON, BATTERY: 5.1V, FILE: -, TOTAL FREE: 29.81G
2020-07-29 19:35:01 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:39, DST=ON, BATTERY: 5.1V, FILE: -, TOTAL FREE: 29.81G
2020-07-29 20:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:39, DST=ON, BATTERY: 5.0V, FILE: M000009.WAV, TOTAL FREE: 29.77G
2020-07-29 20:41:01 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:39, DST=ON, BATTERY: 5.0V, FILE: M000017.WAV, TOTAL FREE: 29.73G
2020-07-29 20:47:17 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:39, DST=ON, BATTERY: 5.0V, FILE: M000031.WAV, TOTAL FREE: 29.67G
2020-07-29 20:52:26 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:39, DST=ON, BATTERY: 5.0V, FILE: M000044.WAV, TOTAL FREE: 29.61G
2020-07-29 20:54:28 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:39, DST=ON, BATTERY: 5.0V, FILE: M000049.WAV, TOTAL FREE: 29.58G
2020-07-29 21:00:25 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:39, DST=ON, BATTERY: 4.9V, FILE: M000065.WAV, TOTAL FREE: 29.51G
2020-07-29 21:52:23 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:39, DST=ON, BATTERY: 4.9V, FILE: M000169.WAV, TOTAL FREE: 29.02G
2020-07-29 22:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:39, DST=ON, BATTERY: 4.8V, FILE: M000180.WAV, TOTAL FREE: 28.97G
2020-07-29 22:01:37 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:39, DST=ON, BATTERY: 4.9V, FILE: M000180.WAV, TOTAL FREE: 28.97G
2020-07-29 22:08:00 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:39, DST=ON, BATTERY: 4.9V, FILE: M000188.WAV, TOTAL FREE: 28.93G
2020-07-29 22:14:42 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:39, DST=ON, BATTERY: 4.9V, FILE: M000202.WAV, TOTAL FREE: 28.86G

Detector 51405_20200729_20200731 Event Log

MODEL NO: SDCFXS-032G
FW REV: HDX10.05
SERIAL: A ZA603251110354
LABEL: D004_CF1
2020-07-29 23:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:39, DST=ON, BATTERY: 4.8V, FILE: M000213.WAV, TOTAL FREE: 28.81G
2020-07-29 23:32:27 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:39, DST=ON, BATTERY: 4.9V, FILE: M000226.WAV, TOTAL FREE: 28.75G
2020-07-29 23:54:45 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:10/05:39, DST=ON, BATTERY: 4.9V, FILE: M000239.WAV, TOTAL FREE: 28.69G
2020-07-30 00:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000243.WAV, TOTAL FREE: 28.67G
2020-07-30 00:11:57 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.9V, FILE: M000246.WAV, TOTAL FREE: 28.66G
2020-07-30 00:31:28 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000259.WAV, TOTAL FREE: 28.59G
2020-07-30 00:47:09 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000320.WAV, TOTAL FREE: 28.31G
2020-07-30 00:56:02 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000333.WAV, TOTAL FREE: 28.25G
2020-07-30 01:00:05 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000336.WAV, TOTAL FREE: 28.23G
2020-07-30 01:04:29 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000340.WAV, TOTAL FREE: 28.21G
2020-07-30 01:12:03 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000353.WAV, TOTAL FREE: 28.15G
2020-07-30 02:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000360.WAV, TOTAL FREE: 28.12G
2020-07-30 02:06:14 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000366.WAV, TOTAL FREE: 28.09G
2020-07-30 02:27:29 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000426.WAV, TOTAL FREE: 27.81G
2020-07-30 03:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000437.WAV, TOTAL FREE: 27.76G
2020-07-30 03:04:58 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000439.WAV, TOTAL FREE: 27.75G
2020-07-30 03:12:45 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000453.WAV, TOTAL FREE: 27.68G
2020-07-30 03:16:50 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000466.WAV, TOTAL FREE: 27.62G

Detector 51405_20200729_20200731 Event Log

MODEL NO: SDCFXS-032G
FW REV: HDX10.05
SERIAL: A ZA603251110354
LABEL: D004_CF1
2020-07-30 03:48:50 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000519.WAV, TOTAL FREE: 27.37G
2020-07-30 03:58:27 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000533.WAV, TOTAL FREE: 27.31G
2020-07-30 04:00:22 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000537.WAV, TOTAL FREE: 27.29G
2020-07-30 04:00:22 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000537.WAV, TOTAL FREE: 27.29G
2020-07-30 04:04:11 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000545.WAV, TOTAL FREE: 27.25G
2020-07-30 04:07:08 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000553.WAV, TOTAL FREE: 27.21G
2020-07-30 04:11:47 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000566.WAV, TOTAL FREE: 27.15G
2020-07-30 04:27:43 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000579.WAV, TOTAL FREE: 27.09G
2020-07-30 05:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.7V, FILE: M000595.WAV, TOTAL FREE: 27.02G
2020-07-30 06:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.7V, FILE: M000599.WAV, TOTAL FREE: 27.00G
2020-07-30 06:10:30 $$TIMER SLEEP ------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.7V, FILE: M000599.WAV, TOTAL FREE: 27.00G
2020-07-30 07:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.7V, FILE: M000599.WAV, TOTAL FREE: 27.00G
2020-07-30 08:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000599.WAV, TOTAL FREE: 27.00G
2020-07-30 09:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000599.WAV, TOTAL FREE: 27.00G
2020-07-30 10:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000599.WAV, TOTAL FREE: 27.00G
2020-07-30 11:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000599.WAV, TOTAL FREE: 27.00G
2020-07-30 12:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000599.WAV, TOTAL FREE: 27.00G
2020-07-30 13:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000599.WAV, TOTAL FREE: 27.00G

Detector 51405_20200729_20200731 Event Log

MODEL NO: SDCFXS-032G
FW REV: HDX10.05
SERIAL: A ZA603251110354
LABEL: D004_CF1
2020-07-30 14:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000599.WAV, TOTAL FREE: 27.00G
2020-07-30 15:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000599.WAV, TOTAL FREE: 27.00G
2020-07-30 16:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000599.WAV, TOTAL FREE: 27.00G
2020-07-30 17:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000599.WAV, TOTAL FREE: 27.00G
2020-07-30 18:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000599.WAV, TOTAL FREE: 27.00G
2020-07-30 19:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000599.WAV, TOTAL FREE: 27.00G
2020-07-30 19:35:01 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000599.WAV, TOTAL FREE: 27.00G
2020-07-30 20:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.8V, FILE: M000602.WAV, TOTAL FREE: 26.98G
2020-07-30 21:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.7V, FILE: M000608.WAV, TOTAL FREE: 26.95G
2020-07-30 22:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.7V, FILE: M000616.WAV, TOTAL FREE: 26.92G
2020-07-30 23:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.7V, FILE: M000629.WAV, TOTAL FREE: 26.86G
2020-07-30 23:41:38 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:09/05:40, DST=ON, BATTERY: 4.7V, FILE: M000646.WAV, TOTAL FREE: 26.78G
2020-07-31 00:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:08/05:41, DST=ON, BATTERY: 4.7V, FILE: M000650.WAV, TOTAL FREE: 26.76G
2020-07-31 00:57:50 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:08/05:41, DST=ON, BATTERY: 4.7V, FILE: M000667.WAV, TOTAL FREE: 26.68G
2020-07-31 01:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:08/05:41, DST=ON, BATTERY: 4.7V, FILE: M000672.WAV, TOTAL FREE: 26.65G
2020-07-31 01:03:52 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:08/05:41, DST=ON, BATTERY: 4.7V, FILE: M000680.WAV, TOTAL FREE: 26.62G
2020-07-31 01:07:00 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:08/05:41, DST=ON, BATTERY: 4.7V, FILE: M000686.WAV, TOTAL FREE: 26.59G
2020-07-31 02:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:08/05:41, DST=ON, BATTERY: 4.7V, FILE: M000704.WAV, TOTAL FREE: 26.50G

Detector 51405_20200729_20200731 Event Log

MODEL NO: SDCFXS-032G
FW REV: HDX10.05
SERIAL: A ZA603251110354
LABEL: D004_CF1
2020-07-31 02:44:45 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:08/05:41, DST=ON, BATTERY: 4.7V, FILE: M000745.WAV, TOTAL FREE: 26.31G
2020-07-31 02:50:03 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:08/05:41, DST=ON, BATTERY: 4.7V, FILE: M000756.WAV, TOTAL FREE: 26.26G
2020-07-31 03:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:08/05:41, DST=ON, BATTERY: 4.7V, FILE: M000774.WAV, TOTAL FREE: 26.17G
2020-07-31 03:02:50 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:08/05:41, DST=ON, BATTERY: 4.7V, FILE: M000779.WAV, TOTAL FREE: 26.15G
2020-07-31 03:07:10 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:08/05:41, DST=ON, BATTERY: 4.7V, FILE: M000785.WAV, TOTAL FREE: 26.12G
2020-07-31 04:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:08/05:41, DST=ON, BATTERY: 4.7V, FILE: M000810.WAV, TOTAL FREE: 26.01G
2020-07-31 04:34:57 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:08/05:41, DST=ON, BATTERY: 4.7V, FILE: M000852.WAV, TOTAL FREE: 25.81G
2020-07-31 04:39:05 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:08/05:41, DST=ON, BATTERY: 4.7V, FILE: M000856.WAV, TOTAL FREE: 25.79G
2020-07-31 04:45:42 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:08/05:41, DST=ON, BATTERY: 4.7V, FILE: M000864.WAV, TOTAL FREE: 25.75G
2020-07-31 04:49:50 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:08/05:41, DST=ON, BATTERY: 4.7V, FILE: M000871.WAV, TOTAL FREE: 25.72G
2020-07-31 04:56:22 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:08/05:41, DST=ON, BATTERY: 4.7V, FILE: M000884.WAV, TOTAL FREE: 25.66G
2020-07-31 04:59:36 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:08/05:41, DST=ON, BATTERY: 4.7V, FILE: M000892.WAV, TOTAL FREE: 25.62G
2020-07-31 05:00:15 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:08/05:41, DST=ON, BATTERY: 4.6V, FILE: M000897.WAV, TOTAL FREE: 25.60G
2020-07-31 05:13:21 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:08/05:41, DST=ON, BATTERY: 4.7V, FILE: M000960.WAV, TOTAL FREE: 25.30G
2020-07-31 05:15:21 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:08/05:41, DST=ON, BATTERY: 4.7V, FILE: M000964.WAV, TOTAL FREE: 25.28G
2020-07-31 05:20:08 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:08/05:41, DST=ON, BATTERY: 4.7V, FILE: M000971.WAV, TOTAL FREE: 25.25G
2020-07-31 05:31:14 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:08/05:41, DST=ON, BATTERY: 4.7V, FILE: M000985.WAV, TOTAL FREE: 25.18G
2020-07-31 05:51:18 $$TIMER WAKEUP ------ TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:08/05:41, DST=ON, BATTERY: 4.7V, FILE: M000998.WAV, TOTAL FREE: 25.12G

Detector 51405_20200729_20200731 Event Log

MODEL NO: SDCFXS-032G
FW REV: HDX10.05
SERIAL: A ZA603251110354
LABEL: D004_CF1
2020-07-31 06:00:00 $$HOUR LOG ---------- TIMER ON, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:08/05:41, DST=ON, BATTERY: 4.6V, FILE: M001012.WAV, TOTAL FREE: 25.06G
2020-07-31 06:10:30 $$TIMER SLEEP ------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:08/05:41, DST=ON, BATTERY: 4.6V, FILE: M001040.WAV, TOTAL FREE: 24.92G
2020-07-31 07:00:00 $$HOUR LOG ---------- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:08/05:41, DST=ON, BATTERY: 4.7V, FILE: M001040.WAV, TOTAL FREE: 24.92G
2020-07-31 07:16:49 $$KEYBOARD WAKEUP --- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:08/05:41, DST=ON, BATTERY: 4.7V, FILE: M001040.WAV, TOTAL FREE: 24.92G
2020-07-31 07:20:03 $$KEYBOARD SLEEP ---- TIMER OFF, INPUT GAIN=45, TRIG LEV=120, INTERVAL=0, RTIMER ON/OFF: --:--/--:--, SET/RISE 20:08/05:41, DST=ON, BATTERY: 4.7V, FILE: M001040.WAV, TOTAL FREE: 24.92G