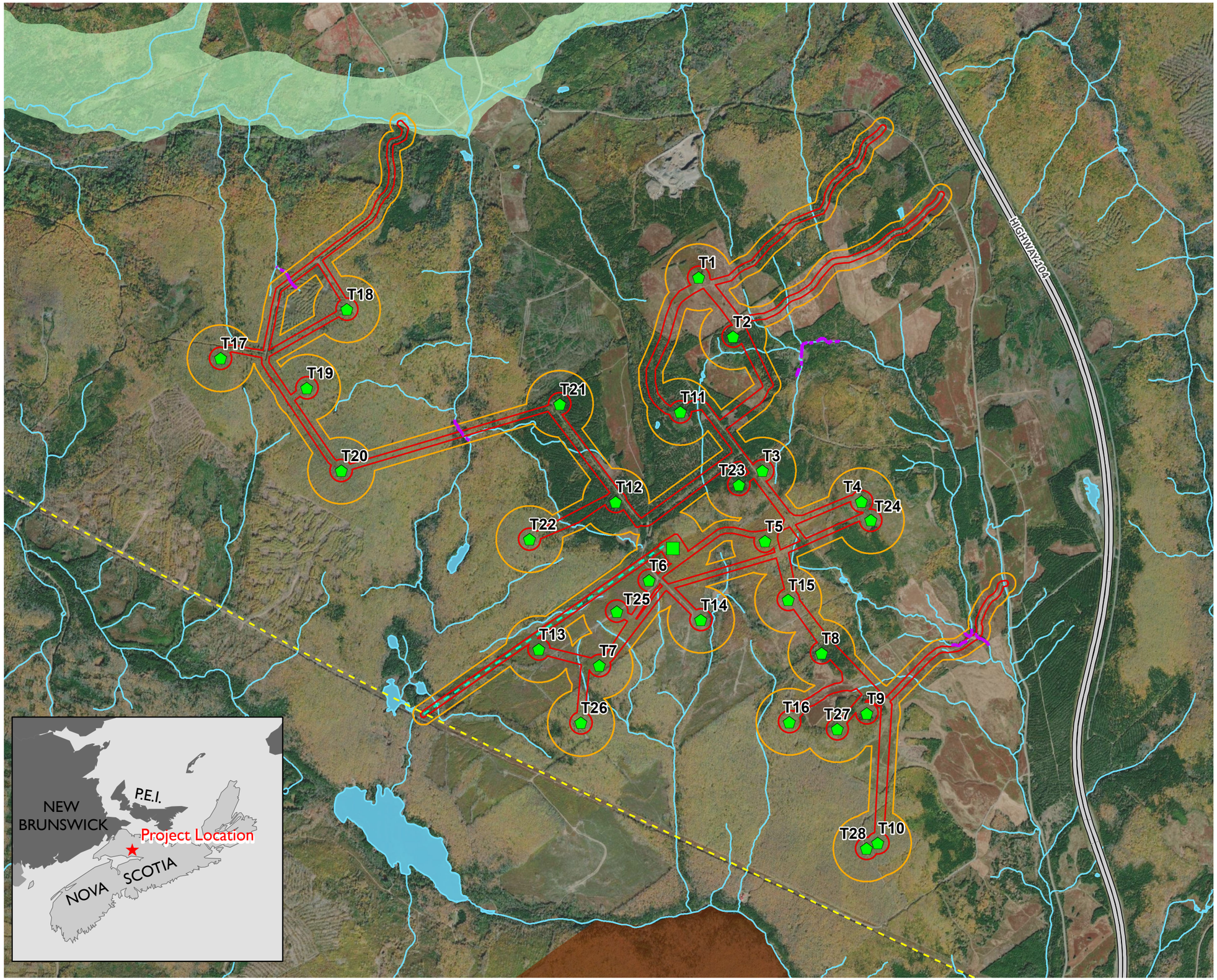


Natural Forces

WESTCHESTER WIND PROJECT

STUDY AREA AND LOCAL ASSESSMENT AREA FOR WILDLIFE

FIGURE 2

- Proposed Turbine Location
- Proposed Substation Location
- Proposed Interconnection Line
- Transmission Line
- Turtle Transect
- Potential Development Area (PDA)
- Local Assessment Area (LAA)
- Portapique River Wilderness Area
- Deer Wintering Area
- Highway
- Watercourse
- Waterbody

0 0.25 0.5 1 km

N W E S

SCALE 1:25,000

MAP DRAWING INFORMATION:
DATA PROVIDED BY DILLON CONSULTING, GEONB, NATURAL FORCES

MAP CREATED BY: DU
MAP CHECKED BY: KB
MAP PROJECTION: NAD 1983 UTM ZONE 20N

DILLON CONSULTING

PROJECT: 21-1329
STATUS: DRAFT
DATE: 2022-12-09

FILE LOCATION: K:\2021\211329\Product\Internal\Westchester_Figures_2022\Wildlife Figures 2022\WC_F02_StudyArea_LAA_Wildlife_2022.mxd

3.1.2.1 Desktop Assessment

Approach and Methodology

Prior to completing the terrestrial wildlife and Mainland moose field surveys, Dillon reviewed readily available information from reputable sources. The information was reviewed to evaluate the potential for wildlife and wildlife habitat (including Mainland moose) within the LAAs for the Project and to assist in scoping the field program. The information was reviewed, along with information on habitats present in the LAAs to determine preliminary potential for at risk wildlife species and/or their critical habitat. Dillon completed a review of the following sources and data lists prior to completing the field surveys:

- Guide to Addressing Wildlife Species and Habitat in an EA Registration Document (NSE 2009);
- Data from AC CDC (AC CDC 2021; 2022; **Appendix K**);
- NSDNRR 2021 Recovery Plan for Mainland Moose;
- Fauna Desktop Study by Strum Environmental (2013);
- The federal SAR registry;
- The Provincial Endangered Species Registry;
- NS Provincial Landscape Viewer mapping resource; and,
- Google Earth satellite imagery for the site from August 2012, September 2014, June 2017, July 2019 and August 2021.

Results

The following managed or protected habitats have been identified the within the 10 km PDA and surrounding areas based on the sources above:

- An area designated as Core Habitat for Mainland Moose (NSDNRR 2021). The PDA is located within this area;
- Portapique River Wilderness Area is 2,050 hectares of old growth hemlock (*Tsuga Canadensis*), red spruce (*Picea rubens*), hardwood mixed-wood forests (NSE 2022b). This Wilderness Area is approximately 1 km south from the PDA.
- A deer wintering area (DWA) is located approximately 1.5 km northeast of the PDA. During the winter, White-tailed Deer (*Odocoileus virginianus*) congregate in high density groups in areas which provide shelter from the prevailing wind, offer maximum exposure to the sun and offer cover as well as access to vegetation for browse (NSDNR 2012b). DWAs are identified by NSDNRR for identifying areas for special management practices in Nova Scotia. No designated DWAs are located within the PDA and deer wintering within the PDA is considered to be unlikely because the lands have been cut and cleared in part for forestry and agricultural operations, providing limited protection from wind.
- An easement will be required over an approximately 300 m stretch of crown land along an existing access road for a proposed access route to the north of the PDA. A proposed access road for the Project intersects with a Crown Land Parcel located to the north of the

PDA. Additional Crown Land Parcels are located approximately 400 metres to the west, 1.5 km southeast and 1.5 km east of the PDA.

A fauna desktop study conducted by Strum Environmental in 2012 for a previous iteration of the Project overlapped the LAA for the 2021-2022 Mainland moose surveys. The 2012 study did not identify any evidence of Mainland moose; however, it acknowledged the potential for suitable moose habitat being present within the PDA.

Site-specific ACCDC data reports were generated on May 7, 2021 and September 20, 2022, and included rare and sensitive species observations that were reported within 100 km of the study area. Data from the later ACCDC report indicated that moose had been reported on 217 occasions within 8.9 km of the PDA (ACCDC 2022). The observation dates and temporal range of the ACCDC data are not specified in the report.

3.1.2.2 Terrestrial Wildlife Field Assessment

Approach and Methodology

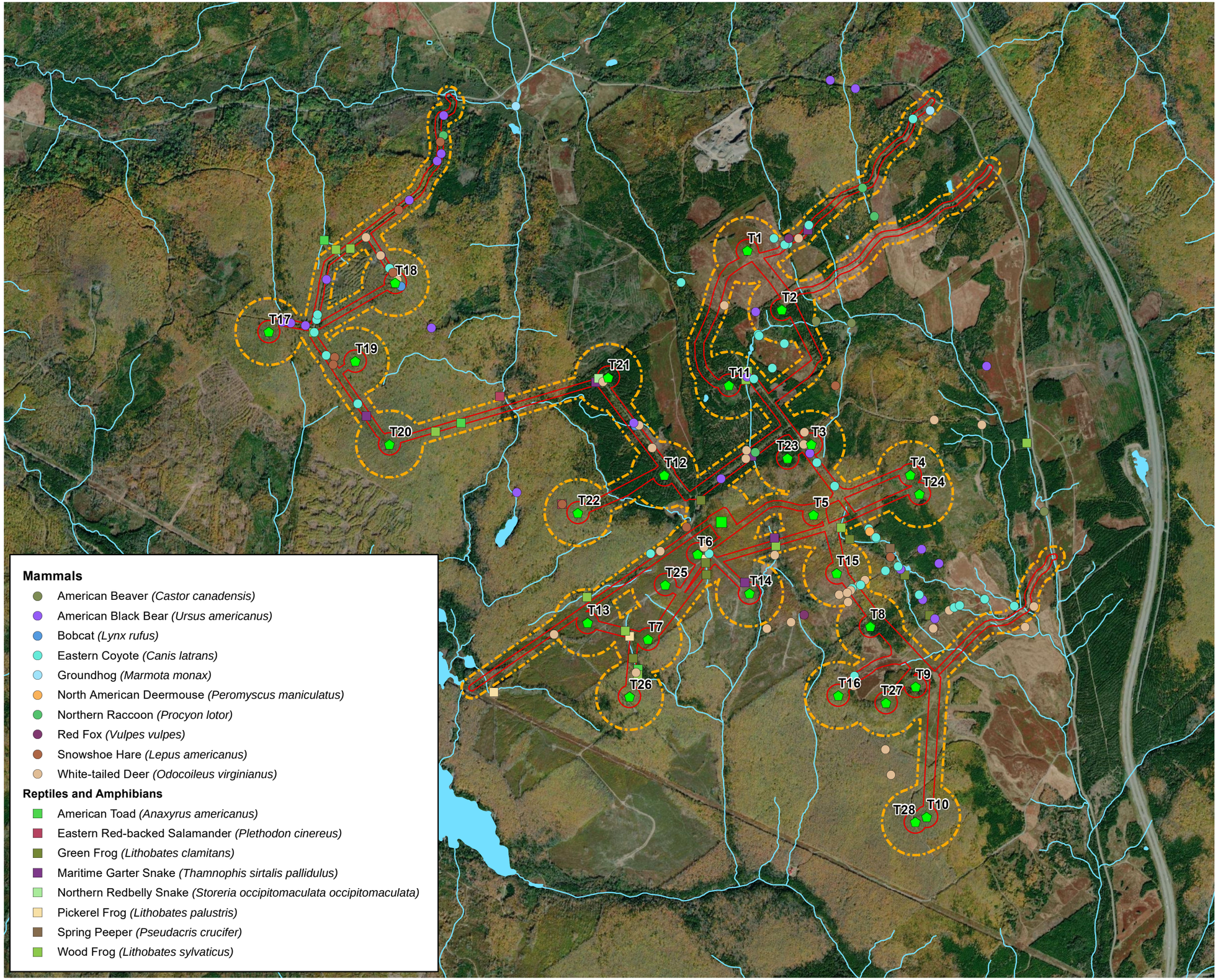
Field studies of terrestrial habitats were conducted between April and October in 2021 and 2022, in collaboration with other targeted field surveys (i.e., bird surveys, wetlands, watercourses, baseline vegetation and rare plants). Biologists focused on the general characterization of available terrestrial habitats within the survey area, as well as the potential for sensitive species or their critical habitats occurring in the survey area. The following criteria were documented:

- Occurrence of SAR/SoCC;
- Potential habitat for SAR/SoCC; and
- Incidental observation and documentation of observed wildlife (regardless of conservation status), and/or signs of wildlife and their habitat.

During the 2021 and 2022 biophysical surveys, biologists recorded incidental observations or detections of wildlife during the course of other survey efforts and when possible, photographs were taken (see **Appendix C** for representative photos). Such detections are rarely direct observations or vocalizations, but rather proxy evidence that is left behind and remains identifiable to species for some time after the animal has moved on. This includes more readily detectable indicators such as animal tracks in snow/mud or animal scat, but also less obvious indicators such as browse marks, dens and/or burrow structures.

Results

During the 2021 and 2022 field surveys, observations of ten mammal species and eight herptile species were identified within the assessment area by Dillon biologists. Where data are available, the locations where observations were reported are shown on **Figure 7**.



Mammals

- American Beaver *(Castor canadensis)*
- American Black Bear *(Ursus americanus)*
- Bobcat *(Lynx rufus)*
- Eastern Coyote *(Canis latrans)*
- Groundhog *(Marmota monax)*
- North American Deermouse *(Peromyscus maniculatus)*
- Northern Raccoon *(Procyon lotor)*
- Red Fox *(Vulpes vulpes)*
- Snowshoe Hare *(Lepus americanus)*
- White-tailed Deer *(Odocoileus virginianus)*

Reptiles and Amphibians

- American Toad *(Anaxyrus americanus)*
- Eastern Red-backed Salamander *(Plethodon cinereus)*
- Green Frog *(Lithobates clamitans)*
- Maritime Garter Snake *(Thamnophis sirtalis pallidulus)*
- Northern Redbelly Snake *(Storeria occipitomaculata occipitomaculata)*
- Pickerel Frog *(Lithobates palustris)*
- Spring Peeper *(Pseudacris crucifer)*
- Wood Frog *(Lithobates sylvaticus)*

Natural Forces

WESTCHESTER WIND PROJECT

TERRESTRIAL WILDLIFE OBSERVATIONS

FIGURE 7

- Proposed Turbine Location
- Proposed Substation Location
- Potential Development Area (PDA)
- Local Assessment Area (LAA)
- Watercourse
- Waterbody

0 0.25 0.5 1 km

N W E S

SCALE 1:25,000

MAP DRAWING INFORMATION:
DATA PROVIDED BY DILLON CONSULTING, NSDNRR, NATURAL FORCES

MAP CREATED BY: GAM
MAP CHECKED BY: KB
MAP PROJECTION: NAD 1983 UTM ZONE 20N

DILLON CONSULTING

PROJECT: 21-1329
STATUS: DRAFT
DATE: 2022-12-10

FILE LOCATION: K:\2021\211329\Product\Internal\Westchester_Figures_2022\Wildlife Figures 2022\WC_F04_Terrestrial_Wildlife_Observations_2022.mxd

The mammal species observed or detected include:

- White-tailed deer (*Odocoileus virginianus*)
- American beaver (*Castor canadensis*)
- American black bear (*Ursus americanus*);
- Eastern coyote (*Canis latrans*)
- Red fox (*Vulpes vulpes*)
- Bobcat (*Lynx rufus*)
- Northern raccoon (*Procyon lotor*)
- North American deer mouse (*Peromyscus maniculatus*)
- Snowshoe hare (*Lepus americanus*)
- Groundhog (*Marmota monax*).

Reptiles and amphibian (i.e., herptile) species observed, or detected, include:

- Wood frog (*Lithobates sylvaticus*)
- Green frog (*Lithobates clamitans*)
- Pickerel frog (*Lithobates palustris*)
- Spring peeper (*Pseudacris crucifer*)
- American toad (*Anaxyrus americanus*);
- Eastern red-backed salamander (*Plethodon cinereus*)
- Maritime garter snake (*Thamnophis sirtalis pallidulus*)
- Northern red-bellied snake (*Storeria occipitomaculata occipitomaculata*).

A list of recorded observations of wildlife species from the 2021 and 2022 field surveys (excluding bats, birds and moose which are included in their own reports), including their AC CDC S-ranks are included in **Appendix C**. All wildlife species observed have secure populations (S4 or S5) within Nova Scotia according to the AC CDC (2022).

3.1.2.3 Mainland Moose Field Assessment Approach and Methodology

NSDNRR has designated three core habitats and five concentration areas for the Mainland Moose population in the province. Core habitat refers to areas considered essential for the long-term survival and recovery of Mainland Moose, and that meets Moose seasonal (summer, winter, calving) requirements. Concentration areas provide occupancy and distribution information, however, do not necessarily reflect the most suitable Mainland Moose habitat (NSDNRR, 2021). Mainland Moose concentration areas were identified by the NSDNRR in 2012 using maps of preferred habitat, occupied range, and observational data from 1999 to 2011 to pinpoint areas of potential occupancy (NSDNR 2012a; NSDNRR 2021).

The Project is located within an area that is designated as core habitat (Cumberland/ Colchester) within a concentration area for the Mainland Moose population (Cobequid Mountains). Approximately 57% of the PDA is located within areas that have been previously disturbed by forestry, agriculture, recreational trails and access roads (**Figure 5**; **Table 8**). While the Mainland moose would not use agricultural areas as part of their habitat, some forested areas on site could be suitable habitat, and they may move through the Project to access more suitable habitats. While the Project is located within one of the areas considered to be core habitat in the Recovery Plan to the Moose (*Alces americana*) in Mainland Nova Scotia (NSDNRR 2021), anthropogenic areas including agricultural fields are not considered part of core habitat as they do not meet the diverse biophysical requirements. Therefore, special consideration was taken by the proponent to maximize the PDA located

within the anthropogenic area and to minimize the proportion of the Project that is situated in core moose habitat.

Spring Pellet Group Inventory (PGI) surveys were conducted on April 28, 2021 and May 5, 2022, targeting endangered Mainland Moose, with transects running through different habitat types and high-probability areas for moose. High-probability areas were defined as areas with which moose are associated (i.e., forested habitats with varying ages and types of coniferous and mixed-wood forest habitats with an abundance of mature forest that they use for security and thermal cover and interspersed young deciduous trees and shrubs that they use for food [NSDNRR 2021]). PGI surveys were performed by experienced wildlife biologists and field technologists who are skilled at identifying signs of Mainland moose presence (including pellets).

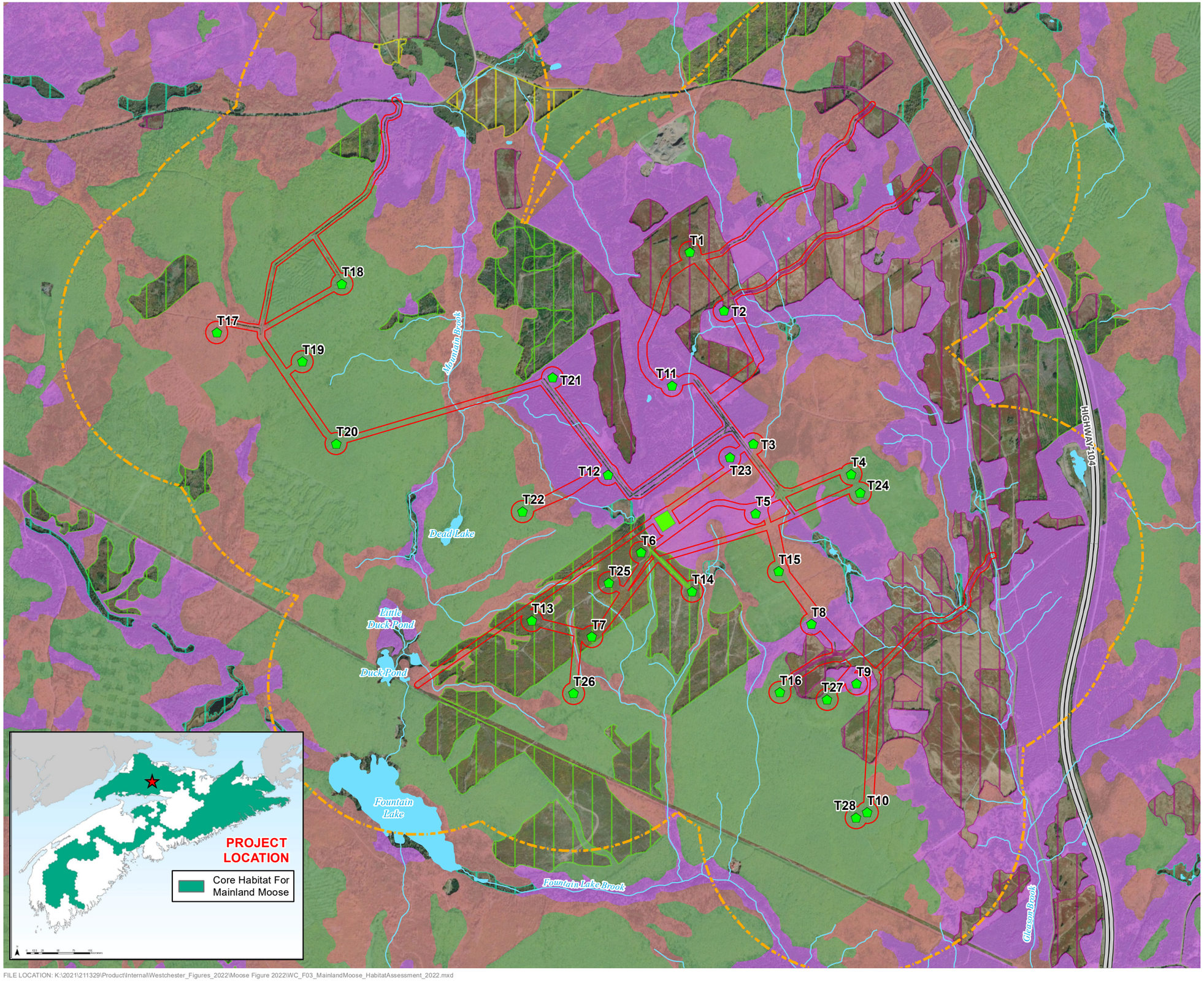
PGI surveys were conducted on April 28, 2021 and May 5, 2022, targeting endangered Mainland Moose, with transects running through different habitat types and high-probability areas for moose (i.e., areas which Moose are associated such as forested habitat as with varying areas and types of coniferous, and mixed-wood forest habitat with abundance of mature forest). A detailed description of PGI surveys and the conditions during the 2021 and 2022 fieldwork activities are included in **Appendix J**. Transect 1 was 1825 m long and Transect 2 was 4725 m long. In 2022, one continuous 4915 m transect was completed. The locations of the moose PGI survey transects are shown in **Figure 8**.

Results

During the 2021 and 2022 field surveys, as well as a survey completed in 2012, the PGI survey transects (**Figure 8**) were searched for moose fecal pellets, tracks, antler rubbings/hookings, browsed tree and shrubs, and shed hair or antlers. No observations or signs of moose (i.e., antler sheds, rubbings/hookings, tracks, browse, sightings and/or pellets) were observed during the targeted survey or incidentally during any of the other biophysical field surveys that were carried out in the study area in 2021 or 2022.

Mainland Moose require an abundance of mature forest for security and thermal cover, as well as areas of interspersed young deciduous trees and shrubs for browsing (NSDNRR 2021). Suitable habitat for moose was identified within the LAA and study areas in regenerating mix-wood and coniferous forests that can be used for moose browsing; however, minimal mature forests were encountered. Potentially suitable habitat within the LAA is presented on **Figure 5.**

During the field survey, photos, GPS information and general observations were gathered to inform the assessment and mapping of habitat areas within the PDA. Representative photos of habitats encountered during the surveys are also presented in **Appendix J**.



Natural Forces

WESTCHESTER WIND PROJECT

MAINLAND MOOSE HABITAT ASSESSMENT

FIGURE 8

- Proposed Turbine Location
- Proposed Substation Location
- Potential Development Area (PDA)
- Local Assessment Area (LAA)
- Highway
- Watercourse
- Waterbody
- Wetland (Province of Nova Scotia, 2021)

Habitat Type

- Softwood
- Mixedwood
- Hardwood - Dominant Forest

Anthropological Land Use Type

- Recently Cut Area or Regenerating Woodlot
- Agricultural Field
- Blueberry Field

0 0.25 0.5 1 km

N W E S

SCALE 1:25,000

MAP DRAWING INFORMATION:
DATA PROVIDED BY DILLON CONSULTING, NSDNRR, NATURAL FORCES

MAP CREATED BY: MEC
MAP CHECKED BY: KB
MAP PROJECTION: NAD 1983 UTM ZONE 20N

DILLON CONSULTING

PROJECT: 21-1329
STATUS: DRAFT
DATE: 2022-12-09

FILE LOCATION: K:\2021\211329\Product\Internal\Westchester_Figures_2022\Moose Figure 2022\WC_F03_MainlandMoose_HabitatAssessment_2022.mxd

3.1.2.4 Assessments Conclusions

Based on the results of the terrestrial wildlife observations completed in 2021 and 2022, all populations of wildlife found within the PDA are secure according to the AC CDC (2022). In addition, observations the terrestrial wildlife species (excluding birds) encountered during field studies only included species that are considered to be native to Nova Scotia and no invasive wildlife species were encountered.

Based on the results of the desktop and field surveys for Mainland moose, it was concluded that the potential for moose to be currently present within the PDA is low. Existing anthropogenic activities within and surrounding the PDA such as public roads, highway 104, a nearby quarry, All Terrain Vehicle and snowmobile trails, agricultural blueberry fields, and maple syrup production are likely contributing factors that reduce the likelihood of Mainland Moose occupation within the LAA. Mainland Moose have, however, been observed in the region, which is connected to and is present within their core habitat (NSDNRR 2021) therefore, it is possible for moose to travel through the LAA. Effects of the Project on terrestrial wildlife and the proposed mitigation measures are described in **Section 3.2.3**.

Although not encountered during any of the documented field surveys in 2012, 2021, and 2022, Mainland Moose have been historically reported in the vicinity of the Project. As previously mentioned, Mainland Moose have been reported on 217 occasions within 8.9 km of the PDA (AC CDC 2022). Additionally, Mainland Moose are known to reside in the Economy River Wilderness Area, which is less than 10 km southwest of the Project (NSECC 2022a, **Sections 3.1.7.7; 5.1.2**).

The Project has been sited to minimize the potential impact of the Project on natural landscapes and undisturbed natural habitat by selecting lands previously impacted by anthropogenic activities. In this case, the majority (i.e., approximately 57%) of the PDA is sited on lands previously or presently used for forestry activities, agricultural operations, and access roads and trails. These impacted lands do not meet the biophysical requirements for core moose habitat as defined by NSDNRR (2021). Effects of the Project o Mainland moose and the proposed mitigation measures are described in **Section 3.2.3.1**. As previously mentioned, Mainland moose in the vicinity would likely prefer Wilderness Areas in the region. There is a potential species wildlife corridor approximately 5 km southwest of the Project. The Project's potential influence on biodiversity values and ecological connectivity is described in further detail in **Section 5**.

3.1.3 Wetlands

Scope of VECs

Wetlands are included as a biophysical VEC as these ecosystems are important to maintaining the health of watersheds by moderating floods, reducing the rate of runoff, and minimizing sedimentation and erosion, among other functions (NSE 2019).

The wetlands LAA covers a buffer of 500 m around the PDA, where predicted wetlands were modelled. The study area is where fieldwork surveys were conducted, and it encompassed wetlands located within 30 m of the PDA. A 30 m wide protective buffer of natural,

undisturbed vegetation around a wetland is encouraged to protect wetlands from the impact of outside threats, and serves as important habitat for wildlife (NBDELG, 2002).

3.1.3.1 Desktop Assessment

Approach and Methodology

Prior to field assessments, public information from reputable sources was reviewed to inform existing conditions of the Project LAA and to guide field surveys. The following sources were reviewed:

- Google Earth aerial imagery;
- The Nova Scotia Wetlands Inventory (NSDNRR 2021a); and,
- Publicly available GIS map layers.

High-resolution Google Earth imagery was available for the site from August 2021, September 2014, June 2017, July 2019 and August 2021. The imagery was primarily reviewed for recent changes in land use (e.g., logging).

A site-specific wet areas model (WAM) was developed by Dillon using GIS to predict potential watercourse and wetland crossings not mapped in provincial or wetland watercourse datasets. Development of the model relied heavily on the availability of Light Detection and Ranging (LiDAR) Digital Elevation Models (DEM), which are freely available in Nova Scotia. As part of the modelling, a flow accumulation analysis was completed to determine the upstream area that flows into each cell (a 1 m by 1 m grid). Using these data and applying a suitable threshold (i.e., greater than 100,000 upstream cells) is a useful predictor of watercourses, potential watercourses, and drainage channels within the local assessment area. The potential watercourses and drainage channels are then used as an input into potential wet areas modeling as an additional source of known mapped water features.

Wet areas modeling compares the elevations of each cell in a study area against the elevation of the nearest known mapped water features (e.g., lakes, rivers, wetlands, etc.). Where there are slight differences in the ground elevation against the elevation of these water features (e.g., less than 1 m in the DEM), these areas can be good predictors of potential wet areas. The predicted watercourse crossings and wet areas were compared against aerial imagery and included as potential constraints in the 28-turbine layout design.

Results

Desktop assessment and the wet areas model identified the potential for wetlands to be located in the LAA. The desktop-based analysis constraints mapping informed an avoidance-based design approach for the Project layout. Wetlands whose boundaries were predicted to overlap with the study area were then ground-truthed during the 2021 and 2022 field seasons to identify, delineate and conduct functional assessments. The results of the field assessment were informed by the results of the desktop assessment.

3.1.3.2 Wetland Delineation
Approach and Methodology

The wetland field survey included the delineation, classification and functional assessment of wetlands within 30 m of the PDA. Field surveys of the wetlands in the study area were conducted by qualified professionals experienced in wetland delineation and functional assessment. The preliminary wetland surveys were conducted between June 1, 2021 and September 30, 2021 to classify and delineate the wetlands present within the study area. Following updates to the Project layout (**Section 1.3**), the study area for the wetland assessment was expanded in 2022. In July 2022, the wetlands in the updated study area were classified and delineated. A functional assessment of wetlands within the study area was conducted concurrently.

Methods of wetland determination and delineation used in the wetland surveys were based upon established protocols from the US Army Corps of Engineers Wetland Delineation Manual (Environmental Laboratory 1987/2010). Wetland Delineation Data Sheets that were adapted from U.S. Army Corps of Engineers form for Northeast-North Central Supplement for use in Nova Scotia (2011) were used to record data collected in the field. Wetland determination and delineation primarily focused upon establishing the wetland-upland edge, and was based upon the presence of positive indicators for three parameters, including:

- Hydric (wet) soil conditions;
- Hydrophytic (wet adapted) vegetation; and,
- Wetland hydrology.

Soil sampling is performed to a depth of at least 50 cm (or to a point of refusal, such as bedrock) to assess wetland soils for hydric soil conditions. Soil horizons are documented in terms of their texture, thickness, colour (Munsell value/chroma/hue), and presence of hydric soil indicators (when applicable). Hydric soil indicators (e.g., gleyed matrix, redox features) were determined following the Field Indicators of Hydric Soils in the United States (USACE 2012) guide.

For each wetland, a minimum of one plant plot was assessed to confirm the dominance of hydrophytic vegetation. For each wetland plant plot, plant species observed were analyzed at three strata (tree, shrub, and herbaceous) and were documented in terms of their percent (%) cover within a given plot size (10 m, 5 m, and 2 m radius, respectively). Wetland indicator status for plant species observed within the plant plots were determined as per United States Department of Agriculture (USDA) Region 1 (Nova Scotia and New Brunswick) listings for interpreting USDA Wetland Indicator Status.

At each wetland soil sampling pit and over the greater area of the wetland, observations were made on the wetland hydrological regime. To determine the hydrological regime, the wetland

context, site location, and microtopography of the wetland area were taken into consideration. Both primary and secondary hydrology indicators were recorded, if present, at each wetland. To confirm hydric soil conditions, at least one primary hydrology indicator (e.g., surface water, a high water table, soil saturation, and sediment deposits) must be present. Secondary indicators used (of which two are required in the absence of a primary indicator) include surface soil cracks, drainage patterns, moss trim lines, and drift or sediment deposits, among others (USACE 1987).

Results

Based on wetland assessments conducted between 2021 and 2022, 15 wetlands were identified that were entirely within or had a portion of their area within a 30 m buffer of the PDA, shown on

Figure 9**a-d**. For wetlands that extended beyond the study area, the entire wetland was either field delineated if feasible or the portion of the wetland outside the study area was modeled based on the site-specific WAM. The total area of wetlands that intersect with the study area is approximately 23 ha, noting that this value includes wetlands that extend beyond the study area. The 15 surveyed wetlands are shown on

Figure 9**a-b**. Their general characteristics are summarized in **Table 11**. Detailed water flow paths, landscape position, landform, and wetland factsheets, with representative photos are presented in **Appendix D**.

The majority of these wetlands (i.e., 12 of them) are classified as swamps based on the Canadian Wetland Classification System (National Wetlands Working Group 1997). Swamp wetlands within the study area are located on the fringes of flowing streams and intermittent watercourses and are dominated by mixed-wood and hardwood forests, many with a dense shrub layer of speckled alder (*Alnus incana*). Within the study area, identified swamp wetlands include a mixture of mixed-wood treed swamps, wet meadows and shrub swamps.

Three of the assessed wetlands are fen or fen/swamp complexes; WL-6, WL 7 and WL11 are classified as fens with shrub-dominated swamp components. These wetlands contained a dominant herbaceous strata comprising grasses, sedges and cinnamon fern and were enriched by throughflow streams.

As mentioned above, the Project layout was designed to avoid the placement of WTGs, their associated infrastructure, and the substation within wetlands. Although 15 wetlands (totalling approximately 23 ha) were identified within the study area, only 10 wetlands are anticipated to be partially located within the PDA (i.e., 1.6 ha or 7% of total wetland area within the study area) as a result of avoidance-based project planning. Further, only three wetlands are shown to be directly impacted by potential construction activities within the PDA. As previously noted, the Project would consist of up to 12 turbines and their associated infrastructure. As such, the impact area described is the maximum impact to any individual wetland. Final layout selection will work to minimize impacts to wetlands as much as feasible. The areas of wetlands in the study area along with the proposed alterations and impacts are summarized below in **Table 11**.