SAVANTA
A GEI Company

Level 1 and Level 2 Natural Environment Technical Report

Proposed Burlington Quarry Extension, Nelson Aggregates Co.

APRIL 2020

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Burlington, ON

REPORT PREPARED FOR
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EXECUTIVE SUMMARY

The Nelson Aggregate Company is proposing to expand the existing Burlington Quarry license (#5499), located in Burlington, Region of Halton. A Class A Licence, Category 2 application, along with a Niagara Escarpment Plan Amendment and Development Permit, a Halton Region Official Plan Amendment and a City of Burlington Official Plan Amendment are proposed to extend the Licensed Boundary to include a West Quarry Extension and a South Quarry Extension.

This report consists of the Level 1 and Level 2 Natural Environment Technical Report and has been prepared to address the requirements of the Aggregate Resources Act, the Niagara Escarpment Planning Act, the Halton Region Official Plan and the City of Burlington Official Plan.

All potential sites in Halton Region are designated as part of the Agricultural System and/or the Natural Heritage System and are within proximity to adjacent natural heritage features. The proposed extension is sited in an optimal location; most of the land use is comprised of an active golf course and actively managed agricultural row crops, is adjacent to an existing quarry operation and contains minimal natural heritage features.

Initially, an extensive and multi-season field investigation program was undertaken in the earlier 2000s. This helped form the basis of the current natural heritage field program, which was established and implemented in later 2018 and all of 2019. A comprehensive terrestrial and aquatic field investigation program, assessments of significance, assessments of potential negative impacts, as well as recommended avoidance and mitigation measures have resulted in a final proposed footprint that will result in no negative impacts and will ultimately result in a connected, larger, more diverse and resilient Natural Heritage System.

Three natural heritage features were confirmed within the proposed Limit of Extraction. These include one Butternut tree, Barn Swallow nesting habitat in three buildings related to the golf course, a wooded feature (0.48 ha) that contains significant wildlife habitat for bats and Eastern Wood-pewee, as well as endangered species habitat for bats, and a second wooded feature (0.48 ha) that contains significant wildlife habitat for Eastern Wood-pewee. One additional small wooded feature (0.26 ha), which does not meet the definition of a woodland nor a significant woodland according to both provincial and regional definitions, is also proposed to be removed. Therefore, a total of 1.22 ha will be removed by the proposed Limit of Extraction, all of which is located within the West Quarry Extension. No features have been identified within the Limit of Extraction in the South Quarry Extension.

These features are all small (0.48 ha; 0.48 ha; 0.26 ha), patchy, disconnected (all greater than 20 m from any adjacent feature and located within a maintained golf course), managed and disturbed (i.e., routinely-used paved golf cart paths within the features, located within a golf course and subject to any adjacent maintenance and/or activity). None of these features are considered ones that would prohibit aggregate extraction based on applicable planning documents.

This report includes recommendations, mitigation measures and enhancement opportunities to ensure that no negative impact will occur to the identified features within and adjacent to the proposed Limit of Extraction. The proposed setbacks from the key natural heritage features either meet or exceed those required by the agencies.

The proposed Rehabilitation Plan will expand upon the adjacent Natural Heritage System and provide it with connectivity, diversity and resilience. There will be 3.6 ha of new wetland habitat, 29.2 ha of new woodland habitat and 20.3 ha of new lake habitat. In addition to these rehabilitation measures, 4.0 ha of Jefferson Salamander habitat will be created/enhanced through tree planting and vernal pools, even though no impacts to the species or its habitat are anticipated. As a result, there will be a total of 33.2 ha of new woodland.

The report also recommends that water from the existing quarry continue to be discharged post closure in order to ensure long-term public water management benefits and to mitigate impacts to natural heritage features that depend on the existing quarry discharge from the adjacent License #5499.

1 INTRODUCTION

The Nelson Aggregates Company has proposed an aggregate extraction application, referred to as the Burlington Quarry Extension (the Extension), located in the City of Burlington, within the Region of Halton. The application is for a Class 'A' License, Category 2, with below water table extraction, as well as a Niagara Escarpment Plan Amendment and Development Permit, a Halton Region Official Plan Amendment and a City of Burlington Official Plan Amendment.

The Extension consists of two separate areas: the Burlington Quarry West Extension and the Burlington Quarry South Extension. The lands subject to the proposed License are 78.3 ha in size: 18.3 ha for the West Extension and 60.1 ha for the South Extension (MHBC November 2019). The combined proposed Limit of Extraction is 50.4 ha in size: 35.7 ha for the West Extension and 14.5 ha for the South Extension (MHBC April 2020).

The term, "Adjacent Lands", refers to the areas adjacent to the proposed License Boundary. Collectively, the proposed License Boundary and the 120 m Adjacent Lands are referred to as the Study Area. These identified areas are located within the Nelson Aggregate Company's landholdings, referred to as the Subject Lands. The extent of the proposed Limit of Extraction, the proposed License Boundary, the 120 m Adjacent Lands, the Study Area and the Subject Lands are shown on **Figure 1**, **Appendix A**.

This Level 1 and 2 Natural Environment Technical Report (NETR) has been undertaken in accordance with the requirements of the *Aggregate Resources Act, 1997*. The Aggregate Resources of Ontario Provincial Standards version 1.0, for Natural Environment Level 1 section 2.2.3 for a Category 2 - Class 'A' Quarry Below Water states:

> *Natural Environment Level 1: determine whether any of the following features exist on and within 120m of the site: significant wetland, significant portions of the habitat of endangered or threatened species, fish habitat, significant woodlands (south and east of the Canadian Shield), significant valley lands (south and east of the Canadian Shield), significant wildlife habitat and significant areas of natural and scientific interest.*

The Aggregate Resources of Ontario Provincial Standards version 1.0, for Natural Environment Level 2 section 2.2.4 for a Category 2 - Class 'A' Quarry Below Water states:

> *Natural Environment Level 2: impact assessment where the level 1 identified any features on and within 120 metres of the site to determine any negative impacts on the natural features or ecological functions for which the area is identified, and any proposed preventative, mitigative or remedial measures.*

Within the Aggregate Resources of Ontario Provincial Standards version 1.0, for Terminology & Definitions section, it states:

> *For the purpose of these standards, references should be made to the Provincial Policy Statement (revised February 1, 1997) issued under Section 3 of the Planning Act for definitions and terms used in the Natural Environment Level 1 and 2.*

This NETR addresses the Provincial Policy Statement (PPS; MMAH 2020) and related guidance presented in the Natural Heritage Reference Manual (NHRM; MNR 2010), as well as the Niagara Escarpment Plan (NEP), the Region of Halton Official Plan, the Aggregate Resources Reference Manual Guidelines (Halton Region) and the City of Burlington Official Plan.

This NETR also meets the technical requirements of an Environmental Impact Study/Environmental Impact Assessment (EIS/EIA) and will be complemented by planning reporting completed by other specialist members of the applicant's consulting team. It will identify, evaluate and assess direct, indirect and cumulative impacts to those natural heritage features that are present within the Study Area. Rehabilitation and required mitigation measures will also be discussed in detail.

A Terms of Reference (ToR) was submitted and has received agency comments. This report has been prepared in accordance with the terms of reference and to address all agency comments received as of December 10, 2019.

Supporting reports and operational/rehabilitation plans developed by the applicant's consulting team have been reviewed for potential environmental impacts and cumulative effects to Natural Heritage Features, as outlined within this report. These reports include the following:

- Burlington Quarry Extension – Surface Water Assessment, Nelson Aggregates Co. Tatham Engineering (April 2020);
- Level 1 and Level 2 Hydrogeological Assessment – Proposed Burlington Quarry Extension, Nelson Aggregates Co. EarthFX Incorporated (April 2020);
- Preliminary Adaptive Management Plan – Proposed Burlington Quarry Extension, Nelson Aggregates Co. EarthFX and Tatham Engineering (April 2020).

2 BACKGROUND REVIEW

2.1 Natural Heritage Policy Overview

An assessment of the quality and extent of natural heritage features found on, and adjacent to, the Subject Lands and the potential impacts to these features from the proposed aggregate application was undertaken in association with the following legislation and policies:

- Provincial Policy Statement (PPS; MMAH 2020);
- Niagara Escarpment Plan (MNRF 2017);
- Halton Region Official Plan (2018):
  - Halton Region Official Plan Guidelines – Aggregate Resources Reference Manual;
- City of Burlington Official Plan (2017);
- Provincial *Endangered Species Act, (ESA;* 2007);
- Federal *Fisheries Act* (2019); and
- Conservation Halton Policies and Guidelines (2016).

2.1.1 Provincial Policy Statement

The PPS (MMAH 2020) provides direction on matters of provincial interest related to land use planning and development. The PPS is to be read in its entirety and decision-makers need to consider all relevant policies and how they work together.

This NETR addresses those policies that are specific to Natural Heritage (section 2.1) with some reference to other policies with relevance to Natural Heritage and impact assessment considerations.

Eight types of natural heritage features are defined in the PPS, as follows:

- Significant wetlands;
- Significant coastal wetlands;
- Significant woodlands;
- Significant valleylands;
- Significant wildlife habitat (SWH);
- Fish habitat;
- Habitat of endangered and threatened species; and
- Significant areas of natural and scientific interest (ANSIs).

Development and site alteration shall not be permitted in Significant Wetlands or in Significant Coastal Wetlands. Development and site alteration shall not be permitted in Significant Woodlands, Significant Valleylands, SWH or significant ANSIs, unless it is demonstrated that there will be no negative impacts on the natural features or their ecological functions.

Development and site alteration shall not be permitted in the habitat of Endangered and Threatened species or in fish habitat, except in accordance with provincial and federal requirements. Development and site alteration may be permitted on lands adjacent to significant natural heritage features (i.e., within 120 m of the Subject Lands, as identified in the NHRM (MNR 2010) provided it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.

2.1.2 Niagara Escarpment Plan

The *Niagara Escarpment Planning and Development Act* was last amended in 2017 and is enforced by the Niagara Escarpment Commission (NEC). The objectives of the NEP specific to this aggregate application focus on Sections 2.7.3 through 2.7.8 and Section 2.7.12, which include:

> *2.7.3. The diversity and connectivity between key natural heritage features and key hydrologic features shall be maintained, and where possible, enhanced for the movement of native plants and animals across the landscape.*
>
> *2.7.4. Development in the other natural features not identified as key natural heritage features or key hydrologic features should be avoided. Such features should be incorporated into the planning and design of the proposed use wherever possible, and the impact of the development on the natural feature and its functions shall be minimized.*
>
> *2.7.5 Where policies or standards of other public bodies or levels of government exceed the policies related to key natural heritage features or key hydrologic features in this Plan, such as may occur with habitat of endangered species and threatened species under the Endangered Species Act, 2007; with natural hazards where section 28 regulations of the Conservation Authorities Act apply; or with fisheries under the Federal Fisheries Act, the most restrictive provision or standard applies.*
>
> *2.7.6 If in the opinion of the implementing authority, a proposal for development within 120 metres of a key natural heritage feature has the potential to result in a negative impact on the feature and/or its functions, or on the connectivity between key natural heritage features and key hydrologic features, a natural heritage evaluation will be required that:*
>
> *a. Demonstrates that the development, including any alteration of the natural grade or drainage, will protect the key natural heritage feature or the related functions of that feature;*
> *b. Identifies planning, design and construction practices that will minimize erosion, sedimentation and the introduction of nutrients or pollutants and protect and, where possible, enhance or restore the health, diversity and size of the key natural heritage feature;*
> *c. Determines the minimum vegetation protection zone required to protect and where possible enhance the key natural heritage feature and its functions; and*
> *d. Demonstrates that the connectivity between key natural heritage features and key hydrologic features located within 240 metres of each other will be maintained and where possible enhanced for the movement of native plants and animals across the landscape.*
>
> *Except with respect to a key natural heritage feature that is solely the habitat of endangered species or threatened species, which is subject to Par 2.7.8 below.*

2.7.7 For the purposes of 2.7.6, a vegetation protection zone shall:

- *a. Be of sufficient width to protect and where possible enhance the key natural heritage feature and its functions from the impacts of the proposed change and associated activities that may occur before, during, and after, construction;*
- *b. Be established to achieve, and be maintained as, natural self-sustaining vegetation; and*
- *c. In the case of Areas of Natural and Scientific Interest (Earth Science and Life Science), include without limitation an analysis of land use, soil type and slope class.*

2.7.8 Development within the habitat of endangered species and threatened species:

- *a. Located within Escarpment Natural Areas and Escarpment Protection Areas, is not permitted, except for development referred to in Parts 2.7.2 a) b) c) d) or e) which may be permitted provided it is in compliance with the Endangered species Act, 2007; and*
- *b. Located within Escarpment Rural Areas, Mineral Resource Extraction Areas, Urban Areas, Minor Urban Centres and Escarpment Recreation Areas, is not permitted unless it is in compliance with the Endangered Species Act, 2007.*

2.7.12 Development where permitted in woodlands should protect and where possible enhance the woodland and associated wildlife habitat. All development involving the cutting of trees requires approval from the implementing authority, subject to the following criteria:

- *a. Cutting of trees and removal of vegetation shall be limited to the minimum necessary to accommodate the permitted use;*
- *b. Using tree-cutting methods designed to minimize negative impacts to the natural environment, including surface drainage and groundwater;*
- *c. Minimizing disruption to wildlife habitat in the area;*
- *d. Retaining the diversity of native species;*
- *e. Aiming over the long term to protect and where possible enhance the quality and biodiversity of the woodland;*
- *f. Protecting trees and vegetation to be retained by acceptable means during construction; and*
- *g. Maintaining existing tree cover of other stabilizing vegetation, on steep slopes in excess of 25 per cent (1:4 slope).*

Section 2.9 states that mineral aggregate operations may be permitted in key natural heritage features (KNHF) and any vegetation protection zone (VPZ) associated therewith, except for wetlands and significant woodlands, that are not young plantation or early successional habitat (as defined by the Ministry of Natural Resources and Forestry; MNRF). It also states that mineral aggregate operations may be permitted in a KNHF or its VPZ, which is solely the habitat of endangered or threatened species and not any other KNHF, provided it is in compliance with the ESA.

The Subject Lands are designated as Escarpment Rural Area (**Figure 2a, Appendix A**).

2.1.3 Halton Regional Official Plan

The Regional Official Plan (OP) sets its own Natural Heritage System (NHS) policies.

The Limit of Extraction and the 120 m Adjacent Lands contain combinations of Key Features, Enhancement Areas, Linkages and Buffers, Prime Agricultural Areas in NHS Enhancements/Linkages/Buffers and Mineral Resource Extraction (**Figure 2b, Appendix A**). Given that the Limit of Extraction is within the NHS, the following Regional OP policies apply:

> *Require the proponent of any development or site alteration that meets the criteria set out in Section 118(3.1) to carry out an Environmental Impact Assessment (EIA)…The purpose of an EIA is to demonstrate that the proposed development or site alteration will result in no negative impacts to that portion of the Regional Natural Heritage System or unmapped Key Features affected by the development or site alteration by identifying components of the Regional Natural Heritage System as listed in Section 115.3 and their associated ecological functions and assessing the potential environmental impacts, requirements for impact avoidance and mitigation measures, and opportunities for enhancement. The EIA shall, as a first step, identify Key Features on or near the subject site that are not mapped on Map 1G* (Section 118(3)).

As noted in Section 118(3) of the Regional OP, Section 115.3 lists the components of the RNHS as follows:

> *115.3 The Regional Natural Heritage System is a systems approach to protecting and enhancing natural features and functions and is scientifically structured on the basis of the following components:*
>
> *(1) Key Features, which include:*
>   *a. Significant habitat of endangered and threatened species;*
>   *b. Significant wetlands;*
>   *c. Significant coastal wetlands;*
>   *d. Significant woodlands;*
>   *e. Significant valleylands;*
>   *f. Significant wildlife habitat;*
>   *g. Significant areas of natural and scientific interest; and*
>   *h. Fish habitat;*
>
> *(2) Enhancements to the Key Features including Centres for Biodiversity;*
>
> *(3) Linkages;*
>
> *(4) Buffers;*
>
> *(5) Watercourses within a Conservation Authority Regulation Limit or that provide a linkage to a wetland or a significant woodland; and*
>
> *(6) Wetlands other than those considered significant under Section 115.3(1)b.*

Section 116.1 notes that the boundaries of the NHS may be refined, with additions, deletions and/or boundary adjustments through several processes (e.g., Sub-watershed Study, an Environmental Impact Assessment, or similar study), including one based on a terms of reference accepted by the Region.

Regional Official Plan Guidelines - Aggregate Resources Reference Manual

The guidelines were prepared by Halton Region to clarify, inform and aid in the implementation of the Regional OP policies with respect to aggregate resources developments. It is noted in the guidelines that they are meant to provide direction and outline approaches that can be used to satisfy the relevant policies of the Regional OP, and are not meant to introduce additional policy requirements.

Section 4.4 of the guidelines provided guidance to the preparation of this Report in that the application will not have a negative impact on natural features or their ecological functions; that extraction will occur in a manner that minimizes environmental impacts; that long-term ecological function and biodiversity of the natural heritage system can be maintained, restored or even improved; and within the NEP area, that the Project will maintain the Niagara Escarpment land in its vicinity as a continuous natural environment and will be compatible with the Niagara Escarpment and the lands in its vicinity.

The objectives when applying the Guidelines include the following:

1. *To identify all natural heritage features that have the potential to be impacted by the proposed aggregate operations.*
2. *To identify the connections and linkages between natural heritage features and areas, surface water features and groundwater features.*
3. *To determine how the diversity and connectivity of the natural features in an area and the long-term ecological function and biodiversity of the natural heritage system can be maintained, resorted or where possible improved.*
4. *Identify all potential impacts on significant natural heritage features and/or key natural heritage features.*
5. *Determine whether the proposal will have negative impacts on significant natural heritage features and/or key natural heritage features.*
6. *Determine what mitigation and monitoring measures, if required, are necessary to ensure that environmental impacts are minimized.*
7. *To determine and make recommendations on how net environmental gain can be provided in the short term and in the longer term both on the site and for the surrounding area.*
8. *Within the NEP area, identify all potential individual and cumulative impacts on the natural environment.*

2.1.4 City of Burlington Official Plan

The Subject Lands are located outside of the City of Burlington Greenlands Designation. Many of the policies of the 2017 Official Plan (OP) are deferred by Nelson Aggregate Company, and, therefore, most of the enforced policies are in the 2004 OP. Based on the current status of the Burlington OP, the Natural Heritage policies of both the NEP and Regional OP are more current and restrictive than the OP in force.

2.1.5 Provincial Endangered Species Act

The provincial *Endangered Species Act* (ESA) (2007) was developed to:

- Identify species at risk, based upon best available science;
- Protect species at risk and their habitats and to promote the recovery of species at risk; and
- Promote stewardship activities that would support those protection and recovery efforts.

The ESA protects all threatened, endangered and extirpated species listed on the Species at Risk in Ontario (SARO) list. These species are legally protected from harm or harassment and their associated habitats are legally protected from damage or destruction, as defined under the ESA.

2.1.6 Federal Fisheries Act

The Department of Fisheries and Oceans Canada (DFO) administers the federal *Fisheries Act* which defines fish habitat as "*spawning grounds and other areas, including nursery, rearing, food supply and migration areas, on which fish depend directly or indirectly in order to carry out their life processes*" (subsection (2)1). The *Fisheries Act* prohibits the death of fish by means other than fishing (subsection 34.4 (1)) and the harmful alteration, disruption or destruction of fish habitat (HADD; subsection 35. (1)). A HADD is defined as "*any temporary or permanent change to fish habitat that directly or indirectly impairs the habitat's capacity to support one or more life processes*" (DFO 2019a).

Some projects may be eligible for exemption from the DFO review process, as specified under Step 3 of the DFO Fish and Fish Habitat Protection Program review process (DFO 2019b; e.g., artificial waterbodies with no hydrological connection to occupied fish habitat).

2.1.7 Conservation Halton

Conservation Halton (CH) administers the *Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation* (O. Reg.) 162/06, which defines the areas of interest that allow CH to:

- Prohibit, regulate, or provide permission for straightening, changing, diverting or interfering in any way with the existing channel of a river, creek, stream, watercourse or changing or interfering with a wetland; and
- Prohibit, regulate, or provide permission for development if the control of flooding, erosion, dynamic beaches, pollution or the conservation of land may be affected by the development.

In addition to their regulatory role, CH provides peer review comments for Natural Heritage, Natural Hazard and Mineral Aggregate Resource sections of the PPS (MMAH 2020) under Memoranda of Understanding with its municipal partners; however, activities approved under the ARA are exempt from requiring Conservation Authority approval.

2.2 Background Data Collection

Savanta has relied, in part, on supporting background information from government agencies and previous site surveys/investigations to provide additional insight into the overall character of these Subject Lands. These agencies/resources include:

- MNRF Land Information Ontario (LIO) Natural Features Mapping;
- Natural Heritage Information Centre (NHIC) database;
- Aquatic SAR distribution maps;
- Ontario Breeding Bird Atlas;
- Ontario Nature Reptile and Amphibian Atlas; and
- Ontario Butterfly Atlas.

Savanta was involved in the previous application. Given the period of time that has passed, changes in policies and the changes in both the footprint and field conditions, we have not relied on it but have considered the field data and information obtained during that process to enhance the background data collection review and establishment of the field program.

The results of the background review are discussed in the following sections. All data available from the various agencies/resources are summarized below and are provided and shown only as a point of reference. This data assisted in defining the target species, habitat and survey effort for studies within the Study Area. Field investigation efforts may confirm what the high-level agency/resource data show; however, there is also the potential to refine this data in that some features shown in the data may not be present or features may be present that are not shown. Field investigation results will show all existing conditions, and these features will be assessed for significance in subsequent sections of this report.

2.2.1 Natural Features Desktop Summary

Study Area

Based on the provincial LIO geographic database (MNRF 2019), the following features were identified on or within the Study Area:

- Grindstone Creek Headwaters Wetland Complex (provincially significant);
- Lake Medad and Medad Valley Environmentally Sensitive Area (ESA);
- Tributary of Willoughby Creek (which itself is a tributary of Bronte Creek);
- Unnamed Tributary of Lake Medad;
- West Arm of the West Branch of the Mount Nemo Tributary of Grindstone Creek; and
- Unevaluated Wetland.

In addition to those provincial features provided on the LIO database (MNRF 2019), mapping was also obtained for the regulated habitat boundaries for a provincially endangered and protected species at risk: Jefferson Salamander (*Ambystoma jeffersonianum*).

Broader Landscape

Within the broader local area, the following features were identified (LIO 2019):

- Deer Wintering Area;
- Lake Medad Valley Wetland Complex (provincially significant);
- Lake Medad Meltwater Channel Area of Natural and Scientific Interest (ANSI);
- Medad Valley ANSI;
- East Arm of the West Branch of the Mount Nemo Tributary of Grindstone Creek; and
- Mount Nemo Wetland Complex (provincially significant).

All provincial natural heritage features provided by LIO (MNRF 2019) and the regulated habitat mapping for Jefferson Salamander are shown on **Figure 2c, Appendix A**.

2.2.2 Species Desktop Summary

A desktop species and habitat range review was completed to inform the type and level of survey effort within the Study Area. Sources for this summary included:

- Natural Heritage Information Centre;
- Ontario Butterfly and Moth Atlases;
- Ontario Reptile and Amphibian Atlas;
- Ontario Breeding Bird Atlas;
- Species at Risk Regulation Habitat Mapping;
- Aquatic Species at Risk Distribution Mapping; and
- Conservation Halton Long-Term Environmental Monitoring Program Data.

2.2.3 Natural Heritage Information Centre

The Natural Heritage Information Centre (NHIC) database (MNRF 2019) was searched for records of provincially significant plants, vegetation communities and wildlife on, and in the vicinity of, the Subject Lands. The database provides occurrence data by 1 km^2 area squares, with four squares overlapping a portion of the Subject Lands (17NJ8805, 17NJ8905, 17NJ9005, and 17NJ9004). Within these squares, the search revealed four records.

- Species listed as Historical (greater than 50 years old) and Extirpated:
    - Timber Rattlesnake (*Crotalus horridus*);

- Species listed as Threatened or Endangered on the Species at Risk in Ontario (SARO) list:
    - Butternut (*Juglans cinerea*) – Endangered;
    - Eastern Meadowlark (*Sturnella magna*) – Threatened;

- Species of Conservation Concern (i.e., listed as Special Concern on the SARO list or identified as an S1-S3 species):
    - Perfoliate Bellwort (*Uvularia perfoliata*) – S1S2.

2.2.4 Ontario Butterfly and Moth Atlases

The Ontario Butterfly and Moth Atlases (Toronto Entomologists' Association 2019a, 2019b) contain detailed information on the population and distribution status of Ontario butterflies and moths. The data are presented on 100 km^2 area squares with two squares overlapping a portion of the Subject Lands (17NJ80 and 17NJ90). It should be noted that the Subject Lands are a small component of the overall atlas square, and therefore it is unlikely that all butterfly and moth species are found within the Subject Lands. Habitat type, availability and size are all contributing factors in butterfly and moth species presence and use.

A total of 127 species were recorded in the atlas squares that overlap with the Subject Lands, of which 73 are butterfly species and 54 are moth species. Of these species, the following species of interest are noted:

- Species listed as Threatened or Endangered on the SARO list:
    - Mottled Duskywing (*Erynnis martialis*) – Endangered;

- Species of Conservation Concern (i.e., listed as Special Concern on the SARO list or identified as an S1-S3 species):
    - Monarch (*Danaus plexippus*) – Special Concern;
    - West Virginia White (*Pieris virginiensis*) – Special Concern; and
    - Black Dash (*Euphyes conspicua*) – S3.

2.2.5 Ontario Reptile and Amphibian Atlas

The Ontario Reptile and Amphibian Atlas contains detailed information on the population and distribution status of Ontario herpetofauna (Ontario Nature 2019). The data are presented on 100 km^2 area squares with two squares overlapping a portion of the Subject Lands (17NJ80 and 17NJ90). It should be noted that the Subject Lands are a small component of the overall atlas square, and therefore it is unlikely that all herpetofauna species are found within the Subject Lands. Habitat type, availability and size are all contributing factors in herpetofauna species presence and use.

A total of 28 species were recorded in the atlas squares that overlap with the Subject Lands, of which eight are salamander species, nine are frog and toad species, three are turtle species, seven are snake species, and one is a lizard species. Of these species, the following species of interest are noted:

- Species listed as Threatened or Endangered on the SARO list:
    - Jefferson Salamander – Endangered;

- Species of Conservation Concern (i.e., listed as Special Concern on the SARO list or identified as an S1-S3 species):
    - Common Five-lined Skink (Southern Shield Population) (*Plestiodon fasciatus* pop. 2) – Special Concern;
    - Eastern Musk Turtle (*Sternotherus odoratus*) – Special Concern; and
    - Snapping Turtle (*Chelydra serpentina*) – Special Concern.

2.2.6 Ontario Breeding Bird Atlas

The Ontario Breeding Bird Atlas (OBBA) contains detailed information on the population and distribution status of Ontario birds (Bird Studies Canada et al. 2006). The data are presented on 100 km^2 area squares with two squares overlapping a portion of the Subject Lands (17NJ80 and 17NJ90). It should be noted that the Subject Lands are a small component of the overall bird atlas square, and therefore it is unlikely that all bird species are found within the Subject Lands. Habitat type, availability and size are all contributing factors in bird species presence and use.

A total of 121 species were recorded in the atlas squares that overlap with the Subject Lands, with the following species of interest noted:

- Species listed as Threatened or Endangered on the SARO list:
  - Bank Swallow (*Riparia riparia*) – Threatened;
  - Bobolink (*Dolichonyx oryzivorus*) – Threatened;
  - Eastern Meadowlark – Threatened; and
  - Louisiana Waterthrush (*Parkesia motacilla*) – Threatened;

- Species of Conservation Concern (i.e., listed as Special Concern on the SARO list or identified as an S1-S3 species):
  - Canada Warbler (*Cardellina canadensis*) – Special Concern;
  - Common Nighthawk (*Chordeiles minor*) – Special Concern;
  - Eastern Wood-pewee (*Contopus virens*) – Special Concern;
  - Golden-winged Warbler (*Vermivora chrysoptera*) – Special Concern;
  - Grasshopper Sparrow (*Ammodramus savannarum*) – Special Concern;
  - Red-headed Woodpecker (*Melanerpes erythrocephalus*) – Special Concern;
  - Wood Thrush (*Hylocichla mustelina*) – Special Concern; and
  - Purple Martin (*Progne subis*) – S3S4B.

2.2.7 Species at Risk Regulation Habitat Mapping

Regulated habitat mapping has been obtained for the Jefferson Salamander, a provincially endangered and protected species at risk. The habitat limits overlap with the 120 m Adjacent Lands. There is no regulated habitat within the Licensed Area.

2.2.8 Aquatic Species at Risk Distribution Mapping

Aquatic species at risk distribution mapping (DFO 2018) was reviewed to identify any known occurrences of aquatic species at risk, including fish and mussels, within the subwatershed where the Subject Lands are located.

No aquatic species at risk were identified within the Study Area or at any location within the Willoughby Creek or Mount Nemo Tributary subwatersheds.

2.2.9 Conservation Halton Long-Term Environmental Monitoring Program Data

Conservation Halton initiated the Long-Term Environmental Monitoring Program (LTEMP) in 2005 to monitor the health of various watersheds within their jurisdiction, including Grindstone Creek and Bronte Creek. With respect to the aquatic ecosystem, Conservation Halton monitors fish community, benthic invertebrates, stream temperature and habitat. Monitoring results for stations in relative proximity to the Study Area are discussed by watershed below.

Grindstone Creek Watershed

The Burlington Quarry South Extension Study Area is located in the Mount Nemo Tributary Subwatershed of the Grindstone Creek watershed. Specifically, the West Arm of the West Branch of the Mount Nemo Tributary is located on the west side of the South Extension Study Area and the East Arm of the West Branch of the Mount Nemo Tributary is located east and south of the South Extension Study Area. The East Branch of the Mount Nemo Tributary is located approximately 800 m east and 1 km south of the South Extension Study Area.

Conservation Halton monitoring station GRN-73 is located on the Mount Nemo Tributary of Grindstone Creek, approximately 4.6 km downstream from the Burlington Quarry South Extension License Boundary. Conservation Halton indicates that the watercourse at this location is intermittent. No fish were caught during fish community surveys at this sampling location in 2006 or 2009 (Conservation Halton 2009 and 2013). Benthic invertebrate sampling at this station in 2006 found a potentially impaired benthic community (Conservation Halton 2009), but in 2011, the community was found to be unimpaired (Conservation Halton 2011).

Conservation Halton monitoring station GRN-69 is located on the West Branch of the Mount Nemo Tributary, approximately 4.6 km downstream from the Burlington Quarry South Extension License Boundary. Conservation Halton assessed the watercourse at this sampling station as coldwater (Conservation Halton 2009). No fish community sampling has been completed at this station and the benthic invertebrate community was found to be potentially impaired during sampling in 2006 (Conservation Halton 2009).

Bronte Creek Watershed

The Burlington Quarry West Extension Study Area is located within the Bronte Creek watershed and the Willoughby Creek Subwatershed. The discharge from the quarry forms the headwaters of an unnamed Tributary of Willoughby Creek. No fish community sampling is known to have been conducted in the unnamed tributary of Willoughby Creek downstream from the Subject Lands. Conservation Halton (2002) identifies the tributary as “unclassified” habitat, on the basis of lack of fish community information.

Conservation Halton (2002) has designated the upper reaches of Willoughby Creek around the mouth of the unnamed tributary (outside of the Study Area) as “potential coldwater” habitat. Fish species previously captured by Conservation Halton (2013) at a monitoring station approximately 600 m downstream from the mouth of the unnamed tributary (BRO-219) included Blacknose Dace (*Rhinichthys atratulus*), Brook Stickleback (*Culaea inconstans*), Creek Chub (*Semotilus atromaculatus*), Fantail Darter (*Etheostoma flabellare*) and White Sucker (*Catostomus commersonii*). In 2018, Conservation

Halton indicated that this monitoring station had a Poor fish community index of biotic integrity score, which is a measure of health of the overall fish community.

Conservation Halton (2002) has designated the lower reaches of Willoughby Creek (outside of the Study Area) as coldwater habitat. Fish species captured in 2012 at a monitoring station approximately 1 km downstream from the mouth of the unnamed tributary (BRO-42) included young of the year Atlantic Salmon (*Salmo salar*), Brook Trout (*Salvelinus fontinalis*), Blacknose Dace and Fantail Darter (Conservation Halton 2013). This reach of Willoughby Creek was stocked with Atlantic Salmon eggs in winter 2012 (Conservation Halton 2013). In 2018, Conservation Halton indicated that this monitoring station had a Good fish community index of biotic integrity score.

3 PHYSIOGRAPHIC CONDITIONS

3.1 Terrain

The Limit of Extraction and Licensed Boundary for both the West and South Extension areas are rural in nature. Land use within the Limit of Extraction for the West Extension consists of an active golf course and is immediately adjacent an existing and active quarry. Land use within the Limit of Extraction for the South Extension consists of actively managed row crops and a residential lot. Overall, the local landscape contains woodland, coniferous plantations, wetland, intermittent warm and cool water aquatic systems (several of which are primarily supplied by flow pumped from the existing quarry), active golf courses, actively managed row crops and an active aggregate operation. Rural residences are in the area along Cedar Springs Road and Colling Road.

3.2 Hydrogeology

The study area is predominantly covered by the low permeability Halton Till, a fine grained silty to clayey till that was deposited approximately 13,000 years ago by a glacial lobe that advanced out of the Lake Ontario basin. Beneath the Halton Till are occasional deposits of sands on the bedrock surface. These sands and the upper weathered bedrock form an upper water table aquifer.

The upper most bedrock unit is commonly referred to as the Amabel Formation, but in recent literature it has been subdivided into the Goat Island and Gasport Formations. The Amabel is a massive, fine grained dolostone with an average thickness of 25 m. The Amabel includes occasional vertical fractures and there is good evidence of an intermediate and lower fracture zone. Beneath the Amabel are thin interbedded shale and limestone units and the thick, low permeability Cabot Head Shale.

The highest measured ground water elevations are located near the crest of Mt. Nemo, northwest of the existing quarry. There is radial flow in all directions from this regional high, but, in general, the predominant groundwater flow direction follows the dipping topography and bedrock layers to the south and west. The Medad Valley is incised into the Cabot Head shale aquitard and receives groundwater discharge from the overlying dolostones.

In general, there is limited interaction between the local streams and groundwater system because of the low permeability of the surficial Halton Till aquitard. The water table is generally found in the shallow bedrock but in low lying areas in the spring it can rise into the overburden and discharge to the streams and wetlands. There are two karstic streams to the south and north of the quarry where streamflow disappears into the shallow bedrock and reappears a few hundred metres downslope as small groundwater springs. There are other groundwater springs (and karst discharge features) in the Medad Valley, but these are masked by the wetlands that fill the valley.

Groundwater monitoring since 2003 has delineated the effects of quarry development on water levels in and around the active quarry. A distinctive pattern of water level changes in the Amabel layers are observed as the quarry advances, with enhanced variability observed up to 650 m from the quarry face during the late summer. Baseline (current condition) numerical model simulations closely replicate this pattern and illustrate how groundwater recharge in the spring replenishes the system but leakage occurs downwards through vertical fractures.

The numerical simulations confirm that the majority of the wetlands and streams are isolated from the water table by the low permeability Halton Till. A total of five of the 20 mapped wetlands in and around the quarry receive groundwater upwelling in the spring, however groundwater is in every case a very small percentage (less than 3%) of the overall inflows into the wetland.

4 FIELD INVESTIGATIONS AND METHODS

Field investigations and data collection were conducted from October 2018 through November 2019. Details of survey types and dates are provided in **Table 2**, **Appendix B**. A summary of fieldwork completed to date is contained herein. All field data collection sheets are provided in **Appendix C**. CVs are provided for all individuals involved in the Natural Heritage assessment in **Appendix D**.

4.1 Vegetation Survey Methods

Vegetation surveys consisted of a multi-season ecological land classification assessment and vascular plant inventory, a Butternut stem inventory and a tree density survey.

4.1.1 Three-season Ecological Land Classification Survey Methodology

Vegetation communities were first identified on aerial imagery and then verified in the field. Vegetation community types were confirmed, sampled and revised, if necessary, using the sampling protocol of the ecological land classification (ELC) for Southern Ontario (Lee at al. 1998). ELC was completed to the finest level of resolution (Vegetation Type) where feasible.

A preliminary on-site review of the Study Area was conducted on November 28, 2018, with detailed ELC surveys completed on May 27, July 22, 31, September 11 and 13, 2019.

4.1.2 Three-season Vascular Plant Inventory Methodology

Species names generally follow nomenclature from the Database of Vascular Plants of Canada (Brouillet et al. 2010+). The provincial status of all plant species and vegetation communities is based on NHIC (2018 and 2016, respectively). Identification of potentially sensitive native plant species is based on their assigned coefficient of conservatism (CC) value, as determined by Oldham et al. (1995). This CC value, ranging from 0 (low) to 10 (high), is based on a species tolerance of disturbance and fidelity to a specific natural habitat. Species with a CC value of 9 or 10 generally exhibit a high degree of fidelity to a narrow range of habitat parameters.

A comprehensive vascular plant inventory was conducted on the following dates in 2019:

- Spring Botanical:
  - May 27;
- Summer Botanical:
  - July 22;
  - July 31;
- Fall Botanical:
  - September 11;
  - September 13.

Additional data was also collected during a site reconnaissance survey completed on November 28, 2018.

4.1.3 Butternut Stem Survey Methodology

Butternut is listed as Endangered under the ESA and therefore requires specific survey effort. Butternut is intolerant of shade and is generally found growing individually or in small populations within hardwood stands, along hedgerows or in open fields (Farrar 1995). Survey effort focused on forests, as well as all cultural habitats (e.g., cultural woodlands, meadows, hedgerows, etc.). Habitat adjacent to the proposed Limit of Extraction was scanned using binoculars since Butternuts are afforded up to 25 m of protected buffers. Surveys were completed by a certified Butternut Health Assessor; where observed, a Butternut health assessment was completed for each tree during the leaf-on period.

A site reconnaissance survey was completed on November 28, 2018, at which time any Butternut observations were documented and mapped. In 2019, Butternut search efforts were completed concurrently with the spring, summer and fall botanical inventories. Formal Butternut health assessments were completed on July 22, 31 and September 11 and 13.

4.1.4 Tree Density Survey Methodology

Tree density surveys were completed in thicket communities (e.g., cultural or swamp thickets) to determine if the thicket area, as defined by ELC codes using the percent canopy cover, meets the woodland definition using stem density values, as required by the Regional OP. These surveys were also completed in any cultural woodland community types if tree densities appeared relatively sparse (**Figures 3a and 3b, Appendix A**).

These surveys were completed using circular plots, the size of which were selected based on the size of the overall community as well as variability of species and density within the feature and ranged between a 5 m and 15 m radii. A minimum of 8% of each treed feature was surveyed. Trees within plots were categorized as having a diameter at breast height (DBH) of > 20 cm, 13 - 20 cm, 6 - 12 cm or ≤ 5 cm.

These surveys were completed on November 28, 2018 and October 8, 2019.

4.2 Wildlife Survey Methods

Wildlife surveys included detailed species and habitat inventories and investigations for insects, amphibians, reptiles, breeding birds and mammals, including bats. Generally accepted wildlife survey methodologies were employed, and species and habitat specific methodologies for species at risk were applied to each survey type as appropriate. All recorded fauna species have been provided in **Tables 5-12, Appendix B** with current rankings, status levels and highest bird breeding codes observed, where applicable.

4.2.1 Insect (Odonata and Lepidoptera) Survey Methodology

Insect surveys do not currently have a set protocol in Ontario. Species detection is dependent on repeated visits during the appropriate flight times for a given species in suitable habitat. Dragonflies and butterflies are conspicuous, easily observed and have plentiful resources to aid in identification and as a result, focus is on these groups during surveying.

Surveys were conducted between mid-morning and noon with mostly sunny skies, suitable low wind conditions and no fog or precipitation. Temperatures were between 22°C and 30°C, such that insect activity was optimal. Area searches were placed within all habitats present within the Study Area to help determine the presence, variety and abundance of insect species. In order to provide comprehensive coverage of all insect species' flight periods, three survey periods were chosen: early May to mid-June; mid-June to mid-July; and late July to late August.

During insect surveys, vegetation and landscape features (e.g., rivers, streams, other waterbodies) were assessed for potential habitat. If suitable habitat or food plants (butterflies only) were encountered or individuals were observed, standard protocols were applied. Features surveyed for insects are shown on **Figures 4a and 4b, Appendix A**.

Insect surveys were completed on June 10, 11, 25, 26 and August 9.

4.2.2 Salamander Habitat Assessment and Hydro-period Monitoring Methodology

Survey protocols were based on those prepared by the Jefferson Salamander Recovery Team (2013) and on general correspondence with the MNRF over the years at various locations in southern Ontario.

All wetland habitats identified through orthophotograph interpretation and provincial wetland mapping (LIO 2018) were ground truthed to determine salamander habitat suitability. The identified wetlands were verified during a full-site reconnaissance survey in November 2018 and further assessed for suitability throughout the spring and summer of 2019. No wetland habitat was identified within the proposed Limit of Extraction. Six candidate wetland habitats were identified in the 120 m Adjacent Lands. Vernal Pools (VP) 1 through 6 are shown on **Figures 4a and 4b, Appendix A.** VP4 through VP6 are also identified as Regulated Jefferson Salamander Habitat (LIO 2018).

The salamander habitat suitability surveys recorded micro-habitat characteristics including water presence/absence, water depth, wetland shape, canopy cover, in-feature vegetation, presence of suitable egg attachment sites and observations of predatory fish, as well as hydroperiod monitoring.

Habitat suitability was assessed over a number of days in March and April due to the late winter thaw in 2019. Additional survey dates in May and June were conducted to collect hydroperiod data. Overall, habitat assessment surveys were conducted on March 25, April 2, 3, 4, 5, 6, 10, 22, May 10, 16 and June 11, 26 2019.

4.2.3 Salamander Minnow Trapping Survey Methodology

Survey protocols were based on those prepared by the Jefferson Salamander Recovery Team (2013) and on general correspondence with the MNRF over the years at various locations in southern Ontario. Survey protocols were also approved by the MNRF as part of the 17(2)(b) permit application process, which is required to complete salamander trapping surveys in suitable habitat within the Jefferson Salamander habitat range (Permit No. AU-B-002-19).

Salamander movement in southern Ontario is closely monitored and reported by the MNRF, conservation authorities, private sector ecologists and the general public on a widely used message forum. These updates were monitored to optimize trapping opportunities by setting the traps on dates during a noted migration movement period.

Fifteen salamander minnow traps were set throughout four candidate wetland habitats (VP1, VP2, VP3 and VP4) identified during the Salamander Habitat Assessment surveys (the remaining two potentially candidate wetland habitats did not contain any water at time of trapping) (**Figures 4a and 4b, Appendix A**). Each minnow trap was anchored to a fixed feature, flagged, labeled and mapped (UTM coordinates). The minnow traps were set for five evenings and, if possible, the traps were submerged horizontally. The traps were collected early each morning, and the contents of the traps were documented and released.

Salamander trapping surveys were conducted during appropriate weather conditions (light rain events) and/or when confirmed migration movements were reported on the message forum overnight on April 2, 3, 4, 5 and 6, 2019.

4.2.4 Egg Mass Survey Methodology

An amphibian egg mass survey was conducted in the same four potentially suitable habitats identified during the Salamander Habitat Assessment surveys (VP1 through VP4 – VP5 and VP6 were dry at time of egg mass survey, **Figures 4a and 4b, Appendix A**). Survey effort included walking the perimeter of the vernal pool/wetland while scanning for egg masses. Submerged sticks, emergent vegetation and shrubs were carefully checked for eggs/egg masses, with minimal intrusion into the vernal pool/wetland. Logs or debris in the vicinity of each feature were also checked for presence of adult salamanders (all items were returned to their original location/position to maintain micro-habitat conditions).

The egg mass survey was conducted after confirmed migration movements were reported on the message forum on April 10, 2019.

4.2.5 Amphibian Call Count Survey Methodology

Survey protocols were based on the "Marsh Monitoring Program" (BSC 2014).

Survey station locations were determined through an assessment of orthophotography and provincial wetland mapping (LIO 2018) and verified with a full-site vegetation and habitat reconnaissance survey. A total of 12 amphibian call count (ACC) stations were surveyed within the Study Area. Stations were located within swamps, marshes and ponds (**Figures 4a and 4b, Appendix A**).

The call count surveys were conducted at night within the appropriate timing window from approximately 30 minutes after sunset until midnight. Each station was surveyed three times during optimal weather conditions (low wind levels, no heavy rain) if water was present. Minimum night air temperatures of 5°C, 10°C and 17°C were applied to each of the respective survey periods. Surveys were conducted at least 15 days apart. All calls heard within a survey station were recorded, as well as any call observations outside of the survey station, including on Adjacent Lands.

Amphibian call count surveys were conducted on April 25, May 22 and June 17, 2019.

4.2.6 Turtle Basking Habitat and Nesting Survey Methodology

Survey protocols were developed in consideration of MNRF (2012) and Toronto Zoo (Caverhill et al. 2011) turtle survey methods.

Survey station locations were identified using orthophotograph interpretation (i.e., ponds, open wetlands) and provincial wetland mapping (LIO 2018) and verified with a full-site vegetation and habitat reconnaissance survey. A total of six turtle basking stations (BS) were established to survey five features within the Study Area (**Figures 4a and 4b, Appendix A**).

Three surveys were conducted, starting in April, shortly after spring thaw conditions, through mid-June. The surveys were conducted during optimal weather conditions (sunny/partly sunny days between 9 am and 5 pm with low/no wind and air temperatures between 6 to 25°C, or if cloudy with temperatures above 15°C).

Binoculars were used to scan, from a distance, for 30 minutes, the edge and surface of each feature for basking turtles. Once scanning was completed, feature micro-habitat data was collected, which included water and air temperatures, water depth, adjacent vegetation composition, percent slope leading to water edge, percent coverage of basking features (i.e., logs, floating vegetation mats, floating/emergent debris like tires) and percent canopy cover.

Turtle basking surveys were conducted on April 22, May 10 and June 11, 2019.

Turtle nesting habitat was assessed where basking turtles had been observed, as well as adjacent habitat to wetland features. Suitable nesting micro-habitat characteristics included open, sunny areas of looser sand and gravel mineral soils adjacent to undisturbed shallow weedy areas of marsh habitat. Such habitat conditions were absent from the Study Area. Turtle nesting surveys were not completed due to absence of suitable habitat.

4.2.7 Snake Habitat and Visual Encounter Survey Methodology

Survey methods are based on MNRF species at risk protocols (2016) and Toronto Zoo snake survey protocols (Caverhill et al. 2011). Species at risk protocols were used as a general guide to inform surveys; however, specific protocols were not applied as no threatened or endangered snakes have been recorded in the area, based on the species desktop summary (Section 2.2.2).

Three snake visual encounter surveys were conducted on mild spring mornings (minimum 8°C on sunny days or 15°C on overcast days, no greater than 25°C) between 8 am and 5 pm. Data recorded during snake surveys included species observed and locations (UTM coordinates), air temperature and weather conditions.

Visual encounter surveys for basking snakes were conducted throughout various vegetation communities grouped into 14 snake search areas by scanning rock outcrops, debris piles, trails and paths, as well as transition areas between vegetation communities (i.e., agricultural fields that abut woodland) (**Figures 4a and 4b, Appendix A**).

Snake surveys were conducted during the spring emergence period on April 22, May 16 and June 11, 2019.

4.2.8 Breeding Bird Survey Methodology

Breeding bird surveys were conducted following protocols by the Ontario Breeding Bird Atlas (Cadman et al. 2007), the Ontario Forest Bird Monitoring Program (Cadman et al. 1998) and the MNR (2012) Guidelines for Bobolink and Eastern Meadowlark, as appropriate.

Surveys were conducted between dawn and five hours after dawn with suitable wind conditions, no thick fog or precipitation (Cadman et al. 2007). A total of 20 point count stations were surveyed within the Study Area (**Figures 4a and 4b, Appendix A**). Point count stations were located in various habitat types and combined with area searches to help determine the presence, diversity and abundance of bird species. Each point count station was surveyed for 10 minutes for birds within 100 m and outside 100 m. All species recorded at a point count were mapped to provide specific spatial information and were observed for signs of breeding behaviour.

Breeding bird surveys were conducted on June 10, 11, 25 and 26, 2019.

In addition to breeding bird surveys, Barn Swallow (*Hirundo rustica*) nest habitat assessments and searches were completed within all structures within the proposed Limit of Extraction. The interior and/or exterior of each anthropogenic structure (i.e., maintenance facilities, sheds, residences, etc.) was visually inspected for intact and remnant Barn Swallow nests.

The Barn Swallow nest habitat assessment and search was conducted on November 5, 2019.

4.2.9 Bat Habitat Assessment Survey Methodology

Bat roosting tree density surveys were completed in all appropriate ELC communities present on the Study Area using a combination of MNRF survey guidelines as outlined in “Bats and Bat Habitats: Guidelines for Wind Power Projects” (MNR 2011) and “Survey Protocols for Species at Risk Bats within Treed Habitats: Little Brown Myotis, Northern Myotis, and Tri-Coloured Bat” (MNRF 2017) and professional experience.

Bat habitat assessments are used to determine whether identified features are considered candidate SWH or if the habitat provides conditions favourable for SAR bats.

Surveys were completed during leaf-off season using either a transect approach in areas less than 1 ha, where transects ranged from 5 m to 20 m apart (depending on visibility), or a plot-based approach in areas greater than 1 ha. All trees greater than or equal to 10 cm DBH were visually inspected using binoculars to document any cavities that may or may not be present along the trunk or large branches. Each tree containing suitable cavities or peeling bark had the following information recorded: UTM, species, DBH, height class and snag attributes (i.e., peeling bark, decay class, presence of cavities, etc.).

Consideration was also given to occurrences of rocky outcrop habitat information within the Study Area. Eastern Small-footed Myotis (*Myotis leibii*) are known to prefer this habitat type for summer roosting, where they will roost alone or in small groups within small cracks and crevices (Humphrey

2017). The amount of rocky habitat and the potential for sun permeation were considerations when assessing habitat potential (**Figures 5a and 5b, Appendix A**).

The bat habitat assessment was conducted over multiple days: April 10, 11, 15, 16 and May 10, 2019.

4.2.10 Bat Acoustic Survey Methodology

Survey methods were developed based on professional experience and using a combination of MNRF survey guidelines as outlined in "Bats and Bat Habitats: Guidelines for Wind Power Projects" (MNRF 2011) and "MNRF Survey Protocols for Species at Risks Bats within Treed Habitats: Little Brown Myotis, Northern Myotis, and Tri-Coloured Bat" (MNRF 2017).

Surveys to detect bat species were carried out in June and early July 2019 and were completed using Wildlife Acoustics Song Meter SM3BAT/SM4BAT recording devices over a duration of ten consecutive evenings.

Acoustic survey stations were selected based on identification of suitable bat micro-habitat, such as clusters of ≥10 cm DBH trees with peeling bark, leaf clusters and cavities. Three stations were identified within the proposed Limit of Extraction associated with the woodland communities of Polygons E, F, G **(Figures 5a and 5b, Appendix A)**.

Passive acoustic recorders were programmed to begin recording at sunset and to end recording at sunrise. In addition, the SM3BAT/SM4BAT passive recorder microphones were elevated approximately 2 m above the ground to reduce background noise and echo. All ultrasonic recordings were filtered to eliminate recordings with high levels of noise or those with no bat calls and then further analyzed using SonoBat's auto-classification tool. Any calls with a positive identification were manually vetted by a wildlife ecologist with training in bat species identification by sonogram.

Acoustic surveys were conducted over 13 nights between the evening of June 20 and the morning of July 4, 2019.

4.3 Aquatic Survey Methodology

4.3.1 Headwater Drainage Feature Assessment

Per the requirements of the Evaluation, Classification and Management of Headwater Drainage Feature Guidelines (HDFA Guidelines; CVC and TRCA 2014), Savanta completed three site visits to assess headwater drainage features (HDFs) within the study area on the following dates:

- Round 1 – April 18, 2019;
- Round 2 – June 3, 2019; and
- Round 3 – August 26, 2019.

During the first site visit, the License Boundary and portions of the 120 m Adjacent Lands where access was available (i.e., within the Subject Lands) were walked to identify potential HDFs. Each HDF observed was separated into specific reaches, per the guidance on reach delineation in the HDFA Guidelines, and data collection was completed for each reach based on Ontario Stream Assessment

Protocols for Unconstrained Headwater Sampling, Section 4: Module 11 (Stanfield, ed. 2017). A photographic record of each HDF was collected during each survey event.

Following completion of the three survey rounds, the collected data was used to classify each HDF, based on the HDFA Guideline hierarchy.

4.3.2 Aquatic Habitat Assessment

The aquatic habitat assessment, completed on June 17 and 24, 2019, consisted of a visual survey of existing instream and riparian habitat conditions along and adjacent to watercourses running through the Subject Lands and the Adjacent Lands (where access was possible), as well as within the irrigation channel and irrigation ponds on the Burlington Springs Golf Course. The assessment took note of any of the following features:

- Hydrology (e.g., flowing or standing water);
- General watercourse morphology (e.g., riffle, run, pools);
- Wetted width and depth (at time of survey);
- Bed and bank substrate;
- Instream habitat (e.g., woody debris, aquatic vegetation, undercut banks);
- Presence of obstructions to fish movement (e.g., culverts, debris dams);
- Evidence of groundwater inputs (e.g., seeps or springs, iron flocculation/staining); and
- Riparian habitat.

The Unnamed Tributary of Willoughby Creek and West Arm of the West Branch of the Mount Nemo Tributary of Grindstone Creek were identified as potential aquatic habitat within the study area. Existing surface water drainage features on the Burlington Springs Golf Course were also assessed. **Figures 6a** and **6b** (**Appendix A**) depict the aquatic habitat assessment locations, all of which coincide with the fish community survey stations.

4.3.3 Fish Community

Fish community sampling was completed on June 17 and 24, 2019. A minimum of one fish community sampling station was located in all watercourses within the Subject Lands. Sampling was also completed in the irrigation channel and main irrigation pond on the Burlington Springs Golf Course. Backpack electrofishing (using a Halltech HT-2000 electrofishing unit) and seine netting (using a 30.5-m long by 1.83-m high, small mesh seine net) were used in combination to survey all habitats present. **Figures 6a** and **6b** (**Appendix A**) show the electrofishing stations and seine net locations.

Electrofishing was conducted according to the single-pass survey methodology guidelines presented in the Ontario Stream Assessment Protocol Manual (Stanfield, ed. 2017). Electrofishing was conducted within the roadside ditch receiving discharge from the quarry (location MDT-1), in several locations on the Burlington Springs Golf Course (MD-1, MD-2 and MDD) and within one reach of the West Arm of the West Branch of the Mount Nemo Tributary (MN-1). Prior to electrofishing within the reach to be sampled, the appropriate electrofisher settings (i.e., voltage and frequency) were determined by shocking in a downstream area to ensure that the power of the unit was sufficient to stun fish without inducing mortality or injury. Electrofishing in each sampled reach was conducted moving upstream in a grid-like fashion. Any fish that were stunned were recovered with dip nets, placed in recovery buckets and taken to shore for processing.

Seine netting was conducted according to the guidelines presented in "Protocols Manual for Water Quality Sampling in Canada" (CCME 2011) where electrofishing was not an appropriate method due to water depth. Seine netting was conducted in wadable areas of the main irrigation pond on the golf course (**Figure 6a**, **Appendix A**). Once the net was carefully hauled in to shore, the captured fish were extracted by hand, placed in recovery buckets and processed.

The other excavated golf course ponds were steep-sided and too deep to wade; therefore, visual observations of fish presence were recorded.

At each electrofishing and seine netting station, the date, crew members, water temperature, and sampling method parameters (e.g., electrofishing unit settings) were recorded. All fish captured were recorded by capture method, station, species, number of individuals and total weight. Maximum, minimum and average lengths of all fish caught were measured prior to their return to the watercourse.

5 FIELD SURVEY RESULTS

Field investigations and data collection included in this submission were carried out from October 2018 through November 2019. Details of survey types and dates are provided in **Table 1**, **Appendix B**. A summary of fieldwork completed to date is contained herein.

5.1 Vegetation Survey Results

5.1.1 Three-Season Ecological Land Classification (ELC) Survey

A total of 24 vegetation types were identified during ELC surveys, each of which are further described in **Table 2, Appendix B**. Of these, one vegetation community type is considered rare in Ontario: Fresh-Moist Black Walnut Lowland Deciduous Forest (FOD7-4). This community type is ranked S2S3 and was observed in three locations within the 120 m Adjacent Lands, occupying a combined area of 3.2 ha.

5.1.2 Three-Season Vascular Plant Inventory

Botanical inventories completed in the Study Area identified a total of 324 species of vascular plants. Of that number, 200 (or 62%) are native, 114 (or 38%) are exotic and five are hybrid (2%). A full species list is included in **Table 3, Appendix B.** Within this table a general overview and comparison of the data specific to the proposed Limit of Extraction in relation to the data for the overall Study Area has been provided.

Vascular Plants – Limit of Extraction

A total of 203 vascular plants were identified within the proposed Limit of Extraction. Of that number, 113 (or 56%) are native, 88 (or 43%) are exotic, and two are hybrid (1%). The majority of native species (90%) are ranked S5 (secure in Ontario). Ten species (9%) are ranked S4 (apparently secure in Ontario; NHIC, 2016), while one species is ranked S3? (presumed vulnerable; further described below). Six regionally rare plants were observed, as per the Halton Region rarity rankings (Varga et al. 2005); an additional four native species observed are not recognized by Varga et al. as occurring within the Region. None of the regionally rare/non-ranked species are considered rare in Ontario. None of the species observed in the proposed Limit of Extraction had a co-efficient of conservation (CC) value of 9 or 10.

Butternut was observed within the proposed Limit of Extraction (and Adjacent Lands) (**Figures 7a and 7b, Appendix A**). This provincially rare species is ranked S3? and is also listed as Endangered in Ontario and Canada. No other plant species at risk were observed. Butternut observations are further addressed in section 5.1.3.

Vascular Plants – Study Area

Of the 324 species observed in the overall Study Area, the majority of the native species (89%) are ranked S5 (secure in Ontario). Nineteen species (10%) are ranked S4 (apparently secure in Ontario; NHIC, 2016), while two species are considered provincially rare. Ten regionally rare plants were observed, as per the Halton Region rarity rankings (Varga et al. 2005); an additional four native species observed are not recognized by Varga et al. as occurring within the Region. None of the regionally rare/non-ranked species are considered rare in Ontario. One species observed had a co-efficient of conservation (CC) value of 10.

The two provincially rare species were:

- Butternut – observed in both the proposed Limit of Extraction and the 120 m Adjacent Lands; and
- Large Toothwort (*Cardamine maxima*) – ranked S3 in Ontario and having a CC value of 10, this provincially rare species was observed as a single population on the Adjacent Lands.

Butternut observations are further addressed in section 5.1.3.

The single population of Large Toothwort was observed in the Dry-Fresh Sugar Maple-Hickory Deciduous Forest (FOD5-5, known as Woodland D) (**Figure 7a, Appendix A**). This population contained approximately 30 individuals occupying an area of less than 1 m^2. This species is considered by some to be a hybrid between Cut-leaved Toothwort (*Cardamine concatenata*) and Two-leaved Toothwort (*Cardamine diphylla*) (Al-Shehbaz 1988). It was observed at a location immediately adjacent to both Cut-leaved Toothwort and Two-leaved Toothwort. Correspondence with the NHIC (October 2019) confirmed that Ontario treats Large Toothwort as a species (not a hybrid) and it is considered provincially rare.

5.1.3 Butternut Tree Survey

Twelve Butternut trees were observed in the Study Area and subject to Butternut health assessment. Of these, nine were assessed as Category 1 and the remaining three were assessed as Category 2 (**Figures 7a and 7b, Appendix A**). Category 1 trees are those that are affected by Butternut canker to such an advanced degree that retaining the tree would not support the protection or recovery of Butternut trees. Category 2 trees are those that are not affected by Butternut canker, or the tree is affected, but the degree to which it is affected is not too advanced and retaining the tree could support the protection or recovery of Butternut trees.

Two Category 1 trees are present within the proposed Limit of Extraction and seven are on the Adjacent Lands. Of the Category 2 trees, one is located within the proposed Limit of Extraction, and the other two are greater than 25 m from the Licensed Boundary (**Figures 7a and 7b, Appendix A**). A Butternut Health Assessment Report has been prepared and will be submitted to the MECP for review.

5.1.4 Tree Density Survey

Five vegetation communities had a stem density survey completed to determine if they contained the required number of stems per hectare to be considered a woodland under the Ontario *Forestry Act* (1990), which is the definition used in the Regional OP (**Figures 3a and 3b, Appendix A**). The five communities included three areas of cultural thicket (CUT), a residential/disturbed (RES/DIST) treed area and a disturbed deciduous forest (FOD5/DIST) community, which contains a tree canopy that meets the definition of forest as per ELC (>60% canopy cover) but contains no understory. None of the five vegetation communities met the density criteria to be defined as a woodland (details provided in **Table 4, Appendix B**).

5.2 Wildlife Survey Results

5.2.1 Insects (Odonata and Lepidoptera)

A total of 46 species, 30 dragonfly and 16 butterfly species, were observed within the Study Area. Of the 46 species, all but two are provincially ranked S5 and S4. The other two species, Unicorn Clubtail and Giant Swallowtail, are ranked S2S3 and S3, respectively. A list of all observed species are shown on **Table 5, Appendix B**.

Giant Swallowtail was observed at station BP14 and between stations BP9 and BP10 (**Figures 4a and 4b, Appendix A)**. It is typically associated with the Carolinian zone of Ontario but has been observed northwards (in varying numbers year to year) to the southern Canadian Shield. Its preferred hostplant is Common Hoptree (*Ptelea trifoliata*); however it is also known to utilize Prickly Ash (*Xanthoxylem americanum*), a widespread species in the Halton region in dry to moist woodlands. Neither of these hostplant species were observed within the Study Area. Habitat for this species is considered absent from the Study Area.

Unicorn Clubtail was observed at BP1 and is reviewed and assessed further in section 6.4 (**Figure 7a, Appendix A; Table 17, Appendix B**).

5.2.2 Salamander Habitat Assessment and Hydro-period Monitoring

A total of six candidate wetland habitats were identified and surveyed within the 120 m Adjacent Lands (**Figures 4a and 4b, Appendix A**). Of the six features, four contained water, and therefore these four features (VP1 – VP4) were further assessed for salamander habitat suitability through salamander trapping, hydroperiod monitoring and egg mass surveys. Each of the four features provided the following breeding habitat characteristics: sufficient canopy cover, in-feature vegetation, presence of suitable egg attachment sites and absence of predatory fish **(Photolog 1, Appendix B).**

In addition to providing the above-noted suitable breeding habitat characteristics, hydroperiod data was also collected to confirm that sufficient water presence would persist long enough to support salamander development. Each feature was regularly visited throughout the spring and summer: VP1 (located within a deciduous forest) and VP2 (located in Wetland 13201) were dry by June 11; VP4 (located within a deciduous forest) was dry by June 26. VP3 (located on the West Arm of the West Branch of the Mount Nemo Tributary) was the only feature that retained water presence past June. Suitable hydroperiod conditions depend on more than just water presence; suitability also requires a feature to be wet long enough to support salamander development but to dry-out in the later summer months (August). Permanent water features are more likely to support predatory species, making the feature unsuitable for salamander habitat. VP3 is an online permanent pond feature on the landscape and is therefore not suitable habitat.

5.2.3 Salamander Minnow Trapping Survey Results

No salamanders were caught or observed during the five evenings/mornings of trapping surveys. Aquatic beetles were caught in some traps at VP1 and VP2; stickleback, a fish, were caught at VP3. Nothing was captured at VP4. All observations are summarized in **Table 6 (Appendix B).**

5.2.4 *Egg Mass Survey Results*

No egg masses, or other life stages of amphibians, were observed during the egg mass survey.

5.2.5 *Amphibian Call Count Survey Results*

Four amphibian species were heard calling within the Study Area during the three rounds of call count surveys: Spring Peeper (*Pseudacris crucifer*), Northern Leopard Frog (*Lithobates pipiens*), Green Frog (*L. clamitans*) and Gray Treefrog (*Hyla versicolor*) (**Figures 4a and 4b, Appendix A; Table 7, Appendix B**). Three amphibian species were heard calling on Adjacent Lands: American Toad (*Anaxyrus americanus*), Spring Peeper and Gray Treefrog. All species are provincially ranked S5 (common and secure; NHIC 2019) or S4 (apparently common and secure; NHIC 2019).

- ACC1 is located within an anthropogenic weir pond (Wetland 13202). Water was present during all three rounds, and feeds the large, central main irrigation pond. Water presence and depth is reliant on the adjacent quarry discharge. A total of three species were heard calling from this feature in low numbers: one Spring Peeper, two Northern Leopard Frogs, and two Green Frogs.
- ACC2 and ACC3 are located within the large, central anthropogenic golf course main irrigation pond. Water was present during all three rounds. Water presence and depth are reliant on the adjacent quarry discharge. A total of two species were heard calling from this feature in low numbers: three Green Frogs were recorded at ACC2 and one Northern Leopard Frog was recorded at ACC3 over the breeding season.
- ACC4 is located within a smaller anthropogenic irrigation pond that is connected to the large, central main irrigation pond. Water was present during all three rounds. Water presence and depth is reliant on the adjacent quarry discharge. No amphibians were heard calling from this feature.
- ACC5 is located within a smaller anthropogenic irrigation pond that is connected to the large, central main irrigation pond. Water was present during all three rounds. Water presence and depth are reliant on the adjacent quarry discharge. A single Northern Leopard Frog was heard calling from this feature throughout the breeding season.
- ACC6 is located within a larger anthropogenic irrigation pond that is connected to the large, central main irrigation pond. Water was present during all three rounds. Water presence and depth are reliant on the adjacent quarry discharge. A total of three species were heard calling from this feature in low numbers: one Spring Peeper; one Northern Leopard Frog; and two Green Frogs.
- ACC7 is a vernal pool located within a deciduous forest (FOD7-2). Water was present during rounds 1 and 2; the feature was dry by round 3. One Spring Peeper was heard calling from this feature throughout the breeding season.
- ACC8 is a vernal pool located within a meadow marsh (MAM2-2) in Wetland 13201. Water was present during rounds 1 and 2 and was dry by round 3. Spring Peeper were heard calling in full chorus (call code of 3) from this feature.

- ACC9 is located within a deciduous swamp (SWD3-2b) in Wetland 13201. Water was present during rounds 1 and 2 and was dry by round 3. No amphibians were heard calling from this feature.
- ACC10 is a small submerged shallow aquatic (SAS1) inclusion within a marsh/thicket wetland (MAM2-2/SWT2-2), forming part of an on-line system. Water was present during all three rounds. A total of four species were heard calling from this feature: 11 Spring Peepers; one Northern Leopard Frog; six Gray Tree Frogs; and two Green Frogs. A total of 20 calls were recorded throughout the breeding season.
- ACC11 is a vernal pool located within a deciduous forest (FOD5-6). Water was present during all three rounds. No amphibians were heard calling from this feature.
- ACC12 is located within a meadow marsh (MAM2) in Wetland 13037. Water was present during round 1 and had dried by round 2. No amphibians were heard calling from this feature.

Overall, ACC1 through ACC6 are all connected and managed as part of the golf course irrigation system, which are not considered natural heritage features. Water presence and depth are reliant on the adjacent quarry discharge, which is piped and channeled to the main and upper irrigation ponds. ACC Stations 4, 9, 11 and 12 had no calling amphibian activity. ACC Stations 7 and 8 had low diversity and abundance of calling species (Spring Peeper) and both features were dry before round 3.

ACC7 through ACC12 are located outside of the proposed Limit of Extraction. Based on field results, ACC10 contained 20 calling individuals and may be considered significant wildlife habitat. It is reviewed and assessed further in section 6.4 and **Table 17 (Appendix B)**.

5.2.6 Turtle Basking Habitat and Nesting Survey Results

Two turtle species were observed throughout the basking surveys across all stations: Midland Painted Turtle (*Chrysemys picta marginata*) and Snapping Turtle (*Chelydra serpentine*). One Midland Painted Turtle (S4 common and secure; NHIC 2019) was observed at BS6, within the 120 m Adjacent Lands on April 22, 2019 and one Snapping Turtle (S4 label; NHIC 2019) was observed at BS3, within the proposed Limit of Extraction on June 11, 2019 (**Figures 4a and 4b, Appendix A and Table 8, Appendix B**).

Snapping Turtle is a species of Special Concern; one individual was observed on land moving from one irrigation pond to another at BS3 on the active golf course. This observation was likely of an individual moving through the area, as the irrigation ponds are regularly maintained. The irrigation ponds are highly managed with water input and levels reliant on the diversion of water at the Weir Pond, which is dependent on the pumping from the adjacent active quarry. The irrigation ponds are not considered suitable habitat for this species.

5.2.7 Snake Habitat and Visual Encounter Survey Results

Despite survey effort across 14 areas searches (AS), only one snake species was recorded throughout the Study Area: Eastern Gartersnake (*Thamnophis sirtalis sirtalis)*, which is provincially ranked S5 (common and secure; NHIC 2016). A total of three Eastern Gartersnakes were observed: one individual was observed within AS7 on April 22; another individual was observed within AS8 on April 22; and a third individual was observed at AS8 on May 16, 2019 (**Figures 4a and 4b, Appendix A, Table 9, Appendix B**). Each individual was observed outside of the proposed Limit of Extraction.

5.2.8 Breeding Bird Survey Results

A total of 59 bird species were observed within the Study Area. Of this total, 11 species are confirmed, 34 are probable and 10 are possible breeders within the Study Area. The remaining four bird species are considered non-breeders, flyovers or migrants. The observed breeding bird species are discussed in the sections below. All species observed within the Study Area are listed in **Table 10** (**Appendix B**).

A total of 55 (100%) of the confirmed, probable or possible breeders are provincially ranked S5 (common and secure), S4 (apparently common and secure) or SNA (species not native to Ontario). Three bird species at risk were observed during breeding bird surveys and are discussed below. All bird species at risk results will be interpreted and discussed in section 6.7.

The following bird species at risk were observed within the proposed Limit of Extraction (**Figures 4a and 4b, Appendix A**):

- Eastern Wood-pewee, provincially designated as Special Concern: Singing males were present in suitable breeding habitat at BP8 and BP11.

- Barn Swallow, provincially designated as Threatened: During breeding bird surveys, Barn Swallows were observed foraging over the golf course Irrigation Ponds. A total of nine intact nests were observed at structures B, E and R1.

The following bird species at risk were observed within the 120 m Adjacent Lands (**Figures 4a and 4b, Appendix A**):

- Eastern Wood-pewee: Singing males were present in suitable breeding habitat at point counts BP5, BP6, BP9, BP10 and BP17.

- Barn Swallow: During breeding bird surveys, Barn Swallows were observed foraging within the 120 m Adjacent Lands. A total of two intact nests were recorded at structure C.

- Bobolink: Two males and one female were observed in the 120 m Adjacent Lands, south of BP18 in the Camisle Golf Course. Additional habitat was considered at BP14, as it showed some suitable characteristics such as plant species composition, vegetation density, ratio of forbs to grasses and presence of a thatch layer. However, the small size of this habitat (0.75 ha) is well below accepted size criteria for these species. Survey effort in this small cultural meadow confirmed that both Bobolink and Eastern Meadowlark were absent.

No additional observations or suitable habitat were observed within the Study Area.

5.2.9 *Bat Habitat Assessment Results*

Bat maternity colony SWH is associated with communities with an ELC code corresponding with forests (FO) or swamps (SW) – polygons D, E, F, G, K, M and Na and Nb are described as being forests and swamps (**Table 11, Appendix B**). To be candidate SWH, these features must have a minimum density of > 10 habitat trees with a DBH > 25 cm per hectare. Seven of these communities met the minimum density criteria for candidate SWH; polygon Nb did not meet the minimum density and was not considered candidate SWH. Of the seven features that did meet the criteria for candidate SWH, three (E, F, G) are within the proposed Limit of Extraction and will require further assessment through acoustic surveys. The remaining four polygons (D, K, M and Na) are located within the 120 m Adjacent Lands.

Similar to bat maternity colony SWH, SAR bat habitat for tree-roosting species is associated with communities with an FO/SW ELC code, though minimum density is not a criteria. All eight communities identified above with respect to bat maternity colony SWH are considered to provide candidate SAR bat roosting habitat, with polygons E, F and G located within the Limit of Extraction and the subject of further acoustic surveys.

Rocky outcrop habitat was present in seven polygons: D, F, H, K, M and Na and Nb. Within these polygons, the amount of rocky habitat present varies, with polygons D, K, M and Na and Nb providing the largest areas of rocky outcrop, while F and H contain limited amounts of exposed rock. Of these seven polygons, two are within the proposed Limit of Extraction. Polygon F contains a small amount of rocky outcrop habitat on the upper portion of the sloped area closest to a high traffic golf cart path. The rocky habitat is low to the ground and consists of individual rock pieces with fairly limited crevicing to provide roosting habitat. Polygon H contains large boulders spread throughout the small feature, with limited crevicing to provide roosting habitat. In addition, canopy cover and moss presence on the rocks limits the amount of sunlight able to warm the features to provide suitable micro-habitat conditions for roosting. Therefore, the rocky outcrop areas are considered unsuitable roosting habitat for Small-footed Myotis.

5.2.10 *Bat Acoustic Survey Results*

Seven bat species were confirmed present during the acoustic monitoring surveys: Big Brown Bat (*Eptesicus fuscus*), Silver-haired Bat *(Lasionycteris noctivagans),* Hoary Bat *(Lasiurus cinereus)*, Eastern Red Bat *(L. borealis)*, Little Brown Myotis (*Myotis lucifugus*), Tri-coloured Bat *(Perimyotis subflavus)* and Small-footed Myotis. During the 13 evenings of acoustic surveys across three passive survey stations, a total of 1,861 recorded calls were confirmed as low frequency calls and 2,175 recorded calls were confirmed as high frequency calls.

The 1,861 low frequency calls were recorded as follows:

- 63% of calls were Big Brown Bat;
- 34% of calls were Hoary Bat; and
- 3% of calls were Silver-haired Bat.

The 2,175 high frequency calls were recorded as follows:

- 62% of calls were Little Brown Bat;
- 31% of calls were Eastern Small-footed Myotis;
- 6% of calls were Eastern Red Bat; and
- 1% of calls were Tri-coloured Bat.

Locations of monitoring stations and recorded bat species are shown on **Figure 5a, Appendix A and Table 12, Appendix B.**

Two of the seven recorded bat species are considered SWH indicators: Big Brown Bat and Silver-haired Bat. Three of the recorded species are species at risk, listed as endangered on the SARO List: Little Brown Myotis, Tri-coloured Bat and Small-footed Myotis.

The presence of SWH and SAR habitat are discussed further in sections 6.4 and 6.7, respectively.

5.3 Aquatic Habitat Survey Results

5.3.1 Headwater Drainage Feature and Aquatic Habitat Results

There are no HDFs within the License Boundary (**Figures 6a and 6b**, **Appendix A**). There is one HDF (referred to as H2) within 120 m of the Limit of Extraction in the South Extension. This HDF, which flows into the West Arm of the West Branch of the Mount Nemo Tributary, was divided into three distinct reaches (H2S1, H2S2 and H2S3), as shown on **Figure 6b** (**Appendix A**). The feature is located approximately 60 m from the License Boundary.

This HDF has a total length of approximately 345 m, all located on the Adjacent Lands, and contained flowing water in spring. By August, all standing water was gone from the channel and wetland pockets, and the feature was dry.

Reach H2S1 is comprised of an approximately 180 m long headwater wetland (Wetland 13037) within a woodland area. The substrate was composed of sand, silt and organic materials, which is expected due to the broad, flat flow path. The channel, when there is minimal flow, is small and meandering through wetland vegetation. Flow was highest during the spring freshet, where the extent of the wetland was inundated and no channel was observable. Flow decreased to minimal in June and the feature was dry in August. No fish were observed in this feature during any of the survey periods, nor would they be expected based on lack of suitable habitat conditions. The feature is adjacent to amphibian survey station ACC11; there was no evidence of amphibian breeding within the wetland (see section 4.2.5).

Reach H2S2, which is approximately 50 m long, consists of a defined channel connecting H2S1 to H2S3 and to the downstream golf course pond. There are riparian wetland species associated with the channel, which had mainly a sand substrate with minimal silt deposition. Flow was highest during spring freshet, decreasing to minimal flow in June and the feature was dry in August. As expected, due to a lack of suitable habitat, no fish were observed in this feature, nor does it provide amphibian breeding habitat (see section 4.2.5).

Reach H2S3 is entirely on the adjacent property where access was not available. The feature appears to continue through the cultural meadow to the pond on the Camisle Golf Course. The feature is not visible through the tall grasses in the summer and fall. It is assumed to have a similar hydroperiod to the upstream reaches. Since there was no access to assess this reach, habitat for fish and breeding amphibians could not be confirmed, but it is considered unlikely due to the visible channel features and riparian vegetation.

There is a mineral meadow marsh headwater wetland complex consisting of Wetlands 13016, 13022 and 13027 (referred to as H1 on **Figure 6b**, **Appendix A**) within the 120 m Adjacent Lands of the South Extension area, which, under freshet and discharge conditions, provides overland surface water contributions to the East Arm of the West Branch of the Mount Nemo Tributary. This HDF is outside the scope of this assessment, since it is located beyond the Study Area. However, the assessment of the function and potential impacts to the wetland complex with respect to indirect fish habitat are addressed in sections 5.3.2 and 6.6**.**

The Unnamed Tributary of Lake Medad, located on private property within the 120 m Adjacent Lands, currently appears to originate as a HDF in the ditch just south of Sideroad 2. Historically, the HDF likely originated on the land currently occupied by the Burlington Springs Golf Course and both MNRF LIO and Conservation Halton mapping show the headwaters of this tributary as originating on the Golf Course property. Water was present in the area on the golf course property in November 2018 and in spring 2019, although no hydraulic connection across Sideroad 2 was observed and the area appeared to be effectively hydraulically isolated. A culvert beneath Sideroad 2 is present, but accumulated sediment and soil within and upstream from the culvert appears to block flow no flow conveyance from Wetland 13201 occurs past Sideroad 2. The downstream end of the culvert is not visible and may have been filled or extended further downstream during development on the adjacent private property. No access to this adjacent property was available and therefore, a standard HDFA survey was not completed for this feature. Observations from the road right-of-way determined no connectivity from north of Sideroad 2 to south of Sideroad 2 where mapping indicated a feature may exist.

Headwater Drainage Feature Management Recommendations

Part 2 of the HDFA Guidelines (CVC and TRCA 2014) provides an approach to classify HDFs by providing a step-by-step characterization of specific functions that may be associated with the features assessed, including hydrology, riparian function and provision of fish or terrestrial habitat. **Table 13** (**Appendix B**) highlights the key components of this analysis based on the three rounds of HDFA completed in 2019.

Part 3 of the HDFA Guidelines provides guidance on linking the characteristics and functions of features to specific management recommendations that may be applied to those features. To assist, the HDFA Guidelines include Figure 2: "Flowing Chart Providing Direction on Management Options". The flow chart depicts various decision points associated with hydrology, fish habitat, riparian vegetation and terrestrial habitat, and ultimately leads the user to an appropriate management recommendation for each HDF segment. Management recommendations can include the following:

- Protection;
- Conservation;
- Mitigation;
- Maintain Recharge;

- Maintain/Replicate Terrestrial Linkage; or
- No Management Required.

The flow chart was used to determine the management recommendation for HDF H2 (as identified in the final column of **Table 13**, **Appendix B**). Both reaches of HDF H2 on the Subject Lands within the Study Area, as depicted in **Figure 6b** (**Appendix A**), were recommended for "Protection". This management recommendation means the HDF should be protected in place and its hydroperiod should be maintained, as per the guidance in the HDFA Guidelines (CVC and TRCA 2014).

5.3.2 Fish and Fish Habitat Assessment Results

The overall Study Area is located in both the Bronte Creek watershed (specifically, the Willoughby Creek sub-watershed) and the Grindstone Creek watershed (specifically, the Mount Nemo Creek sub-watershed and the Unnamed Tributary of Lake Medad sub-watershed). Aquatic habitat and fish communities within each sub-watershed within the study area are discussed separately in the following sections.

Willoughby Creek Sub-watershed

There is one unnamed tributary of Willoughby Creek within the West Extension Study Area **(Figure 6a**, **Appendix A**). Under existing conditions, water from the northwest portion of the existing Nelson Quarry (Sump 0100) is pumped into the Colling Road roadside ditch, which forms the upstream end of the unnamed tributary of Willoughby Creek. The roadside ditch is a channelized feature with limited riparian vegetation widths due to its proximity to the road and the quarry limit. During the aquatic habitat assessment in June 2019, the width and depth of this feature averaged 2 m and 0.3 m, respectively, with little variation in channel morphology. Some instream habitat was provided by woody debris and submerged vegetation. There was no evidence of siltation or eutrophication.

Water in the roadside ditch flows into the downstream end of the Weir Pond on the golf course property. The downstream end of the Weir Pond is controlled by a V-notch weir, located approximately 7 m upstream from the culvert beneath Colling Road. Water that flows past the weir discharges into the natural channel of the unnamed Tributary of Willoughby Creek on the downstream side of the Colling Road culvert. The weir is used to raise the water level of the Weir Pond and promote flow back into the irrigation channel on the golf course. Two 4-cm diameter holes have been drilled into the weir to maintain a minimum flow (2 L/s) to the unnamed tributary of Willoughby Creek, as required by the golf course's Permit to Take Water (PTTW) No. 00-P-3072).

The unnamed Tributary of Willoughby Creek downstream of the Colling Road culvert could only be assessed from Colling Road since no access was available to the downstream reach, which is situated on private property. The reach downstream of the road was observed to be a broad and shallow defined channel, containing clear, transparent water. No pools or riffles were visible from the road and substrate was fine material (sand and sediment). A few small pieces of woody debris were visible in the channel. The riparian vegetation was well established, providing full cover over the channel.

This tributary flows through a woodlot in a northwesterly direction for approximately 300 m before turning in a southwesterly direction. Worthington (2020) indicated that the tributary enters a karst sink approximately 500 m downstream from Colling Road and approximately 380 m northeast of Cedar

Springs Road. Worthington (2020) concluded that, from the sink area, the creek travels underground before discharging at one of two spring locations, both of which are adjacent to Cedar Springs Road. Both springs discharge into Willoughby Creek. No fish community sampling is known to have been completed in the Unnamed Tributary of Willoughby Creek between Colling Road and the sink location. Conservation Halton (2002) identifies the tributary as "unclassified" habitat, on the basis of lack of fish community information. The presence of the sink and underground flow would prevent upstream migration from downstream areas of Willoughby Creek that are known to provide direct fish habitat. Given that quarry discharge is relatively permanent and this section of the unnamed tributary is not known to dry up, there is some limited potential that the reach between Colling Road and the sink location provides direct fish habitat. Therefore, for the purposes of this report, provision of direct fish habitat downstream from Colling Road is assumed.

From the spring mouth area, Willoughby Creek flows in a northwesterly direction for approximately 2.4 km before draining into Bronte Creek. As noted in section 2.2.9, Willoughby Creek is considered to be direct fish habitat.

On the golf course, the man-made irrigation channel and irrigation ponds, which were originally installed when the golf course was constructed in 1962, consist of an excavated channel and a series of five ponds, connected via culverts beneath golf cart paths. The weir is used to raise the water level of the Weir Pond and promote flow back onto the golf course. The Weir Pond is connected to the main irrigation pond via an approximately 375-m long excavated channel that is crossed by eight different cart path crossings. The channel is linear and uniform, with an excavated top width of approximately 5 m, generally steep banks up to 1 m in height and generally flat bottom with substrate of fine sediment, up to 30 cm deep. The channel is relatively flat and consists of a mix of open, featureless stretches and stretches with dense emergent aquatic vegetation. Riparian vegetation consists almost entirely of manicured grass.

There is evidence of tile drainage input from the golf course into the irrigation channel. During the April 2019 HDFA survey, the channel between the irrigation ponds and the Weir Pond was not flowing, but contained standing water with a depth of approximately 0.2 m. At 6 am on June 24, 2019, the water temperature was 16°C and the air temperature was 14°C. The adjacent vegetation is manicured golf course grass and there is little vegetation to shade the feature. The water was clear and colourless although the sediment in the channel was covered by mats of algae. The depth of the sediment deposition within the channel was at least 0.2 m.

Upstream from this channel, there is a series of five irrigation ponds. The largest pond (the "main irrigation pond") is approximately 290 m in length with an average width of 35 m and maximum width of approximately 65 m. The pond has an approximate surface area of 0.9 ha. The depth of the pond is unknown but appears to be 2 m or greater. Substrate is generally fine grained and there is some submergent vegetation along the periphery. The western riparian area is dominated by manicured lawn, while the eastern riparian area is dominated by trees and shrubs. This pond has been in place since the golf course was originally constructed in 1962, although it was enlarged after the original construction.

Three additional irrigation ponds, constructed in the early 2000s, are present upstream from the main irrigation pond. They have an approximate surface area of 2 ha and general maximum water depth of 2 m. Riparian vegetation is primarily manicured lawn, although some meadow is present adjacent to the southwestern-most pond. These ponds were excavated to increase water storage capacity for irrigation purposes, such that water is available at times when the quarry discharge is not sufficient to promote flow into the ponds and recharge of irrigation volume.

The golf course ponds, as expected with dug ponds, were bowl shaped with little wadable area. The ponds contained submergent vegetation, woody debris, algae and 0.1 to 0.3 m of sediment in the wadable areas. The water in the ponds was clear and colourless.

The existing ponds on the golf course are primarily used for irrigation purposes. Burlington Springs Golf and Country Club can withdraw up to 2,270 litres per minute and 2,692,000 litres per day, up to a maximum of 183 days per year, from the ponds to provide irrigation water for the golf course, in accordance with Permit to Take Water No. 00-P-3072, issued under the *Ontario Water Resources Act*.

No fish were captured during electrofishing, or observed during any visual surveys within the Colling Road roadside ditch portion of the Unnamed Tributary of Willoughby Creek downstream from the quarry discharge.

The only fish species captured/observed on the golf course was Largemouth Bass (*Micropterus salmoides*). This species was captured in low numbers (total of 10 individuals, **Table 14**, **Appendix B**) in the excavated irrigation channel between the Weir Pond and the Main Irrigation Pond (sampling location MD-1 and MD-2) and around the periphery of the Main Irrigation Pond (sampling location MDD). The catch included yearling and young-of-the-year (YOY) bass. Although not captured, larger adult bass were visually observed in the Main Irrigation Pond. Based on the presence of YOY fish, the population appears self-sustaining.

No fish community survey work was possible in the upper ponds due to the steep-sided nature of the excavated ponds, which prohibited safe access for wading/electrofishing. However, adult bass were also observed in the uppermost pond.

In September 2019, Largemouth Bass were visually observed from the Weir Pond to the uppermost irrigation pond. Observations included YOY, juvenile and adult bass. No other fish species were observed.

The presence of Largemouth Bass, a warmwater species, is likely due to unauthorized stocking in the past. Their presence is inconsistent with the existing natural habitat of the headwater areas of the Willoughby Creek sub-watershed, which is considered a coldwater stream.

Mount Nemo Tributary Sub-watershed

The West Arm of the West Branch of the Mount Nemo Tributary is located within the 120 m Adjacent Lands of the South Extension area. The East Arm of the West Branch of the Mount Nemo Tributary is located south of the South Extension area and does not enter the 120 m Adjacent Lands **(Figure 6b**, **Appendix A**).

West Arm of the West Branch of the Mount Nemo Tributary

The West Arm of the West Branch of the Mount Nemo Tributary originates from pumped quarry discharge at Sideroad 2. It flows in a southerly direction for approximately 550 m through the Subject Lands before flowing onto the Camisle Golf Course property. The West Arm converges with the East

Arm approximately 1.4 km south of the License Boundary. The West Branch converges with the East Branch of the Mount Nemo Tributary approximately 4.5 km downstream from the Study Area. The Mount Nemo Tributary flows into the main branch of Grindstone Creek approximately 9 km downstream from the Study Area.

Under existing conditions, water from the southeast portion of the Nelson Quarry (Sump 0200) is pumped into the pond immediately downstream from Sideroad 2, which forms the starting point of the West Arm of the West Branch of the Mount Nemo Tributary. Quarry pumping represents the majority of flow in the upper reaches of this watercourse with overland flow from within the adjacent catchment area representing the remainder of the flow. No groundwater discharge occurs within this watercourse on the Subject Lands (Tatham 2020).

The defined natural channel upstream from the Camisle Golf Course property had an average width of approximately 2 m, with abundant emergent vegetation (*Typha* spp. and Reed Canary Grass) and multiple flow paths. Water depth on June 3, 2019 ranged from 0.1 to 0.5 m. The riparian vegetation consists primarily of meadow marsh and cultural meadow although the reach comes in close proximity to the adjacent plantation in several locations.

Based on aerial photography, once the watercourse leaves the Subject Lands, it flows south into a chain of online ponds on the Camisle Golf Course.

No fish were caught or observed within the West Arm of the West Branch of the Mount Nemo Tributary during electrofishing in June 2019 (**Figure 6b**, **Appendix A**). However, Sticklebacks (order: *Gasterosteidae*) were caught during salamander surveys from April 2 to 6, 2019 in the upper most online pond within the study area (section 5.2.3). No barriers to fish movement were observed upstream from the fish capture location. Therefore, the reach upstream to Sideroad 2 appears to provide direct seasonal fish habitat during the early spring. The online Camisle Golf Course ponds on the adjacent property likely provide permanent year-round refuge habitat for fish.

This is consistent with observations from previous fisheries studies where low numbers of Brook Stickleback (*Culaea inconstans*) and Pumpkinseed (*Lepomis gibbosus*) were captured within the West Arm of the West Branch (Stantec 2010).

East Arm of the West Branch

The East Arm of the West Branch of the Mount Nemo Tributary originates in a number of HDF branches, with the regulated watercourse portion arising approximately 370 m northeast of the South Extension License Boundary. This intermittent watercourse flows through a forested and agricultural landscape for approximately 2.1 km before joining the West Arm, approximately 1.4 km south of the License Boundary.

Approximately 1 km upstream from the confluence with the West Arm, the watercourse enters a sink associated with the karst environment. It emerges approximately 162 m downstream (Worthington 2020) at a spring discharging to an online pond, which is located approximately 800 m southeast of the proposed Limit of Extraction (**Figure 6b**, **Appendix A**). This pond represents the upstream limit of direct fish habitat in the East Arm of the West Branch (Stantec 2010), since the pond is generally permanent and can provide refuge habitat and further upstream movement is prevented by the underground flow. Stantec (2010) noted anecdotal reports of the pond drying up during drier periods.

In 2006, MNR captured several different age classes of Fathead Minnow (*Pimephales promelas*), Bluntnose Minnow (*Pimephales notatus*), Brook Stickleback and Green Sunfish (*Lepomis cyanellus*) in the pond (MNR 2006; cited in Stantec 2010).

Unnamed Tributary of Lake Medad

The Unnamed Tributary of Lake Medad is shown in the LIO watercourse data set to extend to Sideroad 2 and onto the Subject Lands. Although standing water was observed during the Round 1 HDF survey, no flowing water conditions were found during any of the HDFA survey rounds. There is a culvert beneath Sideroad 2, although it appears to be substantially blocked by accumulated sediment and soil and does not convey flow. Therefore, the reach of this drainage feature upstream from Sideroad 2 appears to be hydraulically isolated from the downstream reach south of Sideroad 2. Based on this, the LIO mapping identifying the reach on the golf course as a watercourse was concluded to be inaccurate.

The upstream end of the tributary appears to be located on private property south of Sideroad 2 and could therefore, only be assessed from the roadside and aerial photo interpretation. During freshet and rain events, it appears that surface water collects south of Sideroad 2 adjacent to the residential driveway. This surface water may drain across the manicured lawn to several anthropogenic pond features, located approximately 100 m south of the Study Area. No specific conveyance channel appears to be present on the manicured lawn and this area appeared to be dry in summer 2019. Therefore, this surface drainage feature on the manicured lawn (located within 120 m of the License Boundary) does not appear to meet the criteria to be considered a watercourse and no fish would be expected in this portion of the feature based on lack of suitable habitat.

The ponds on the private property south of Sideroad 2 (outside the Adjacent Lands) could potentially provide direct fish habitat, although no fish community sampling is known to have been completed.

6 NATURAL HERITAGE FEATURE ASSESSMENT

The presence/absence of natural heritage features as defined in the PPS (MMAH 2020) within the Study Area is assessed in detail in the following sections. The NHRM (MNR 2010), NEP (2017), Halton Region OP (2018) and City of Burlington OP, which provide technical guidance for implementing the natural heritage policies of the PPS, were referenced to assess the potential significance of natural areas and associated functions.

6.1 Significant Wetlands and Significant Coastal Wetlands

Within Ontario, significant wetlands are identified by the MNRF or by their designates through the application of the Ontario Wetland Evaluation System (OWES). Other evaluated or unevaluated wetlands may be determined to be important by the municipality or Conservation Authority.

6.1.1 Significant and Other Wetlands – Limit of Extraction

There are no evaluated, unevaluated or coastal wetlands within the Limit of Extraction.

6.1.2 Significant Wetlands – 120 m Adjacent Lands

The Grindstone Creek Wetland Complex (provincially evaluated as significant), is mapped by the MNRF within the 120 m Adjacent Lands (**Figure 2c, Appendix A**). Overall, the provincially significant Grindstone Creek Headwaters Wetland Complex includes 15 wetland units and totals approximately 17.6 ha in size. The complex is composed of various wetland types including riparian marshes, isolated marshes, swamp thickets and treed swamps.

Two wetland units (collectively referred to as Wetland 13037) associated with the PSW complex are located within the 120 m Adjacent Lands of the South Extension (**Figure 2c, Appendix A**). The smaller of the two units is a small pond located within a White Pine Coniferous Plantation (CUP3-2). The second wetland unit is a mix of two mineral meadow marsh types: Reed Canary Grass (MAM2-2) and Jewelweed (MAM2-9) (**Figure 3b, Appendix A**). Both of these wetland units were monitored for water presence/absence as part of the Salamander Habitat and Trapping surveys. The small pond within the CUP3-2, VP4, contained water throughout the spring and had dried up by June 26, 2019. The marsh unit, MAM2-2/MAM2-9, VP5, was dry for all site visits, which ranged from March 25 through June 26, 2019.

The Surface Water Assessment Report (Tatham 2020) determined that water levels in Wetland 13037 can drop to 0.0 m as early as July 5th in the spring and that a permanent pool is typically re-established by October 31st each fall. Additional monitoring data will be collected during the approvals process to verify the wetland hydroperiod prior to extraction in the South Extension.

Existing condition water balances were prepared to predict the existing wetland hydroperiods for periods outside the available monitoring period from the available climatological data for the area, providing a greater period of assessment. The existing condition water balance predicts that the MAM2-2/MAM2-9, VP5 associated with Wetland 13037, can dry out as early as May 25th in the spring and that a permanent pool may be re-established in the wetland as late as December 25th.

Precipitation and surface runoff is the primary source of water into the MAM2-2/MAM2-9, VP5 component of Wetland 13037. The results of the integrated surface water/groundwater model predict minor groundwater influx into the wetland. The overall groundwater contribution into the wetland is estimated to be less than 2% of the total inflow into the MAM2-2/MAM2-9, VP5 wetland unit of Wetland 13037.

There is potential for these wetlands to be affected by the proposed Extraction; therefore, further discussion is provided in the Level 2 Assessment.

The Lake Medad Valley wetland complex is provincially significant and is located greater than 120 m from the proposed Licensed Boundary of the West Extension (**Figure 2c, Appendix A**). Water balances, hydroperiods, wetland hydrological inputs/contributions and water temperatures, as well as any potential negative impacts and mitigation measures are reported in detail in both the EarthFX (2020) and Tatham (2020) reports. No negative impacts to this significant feature are anticipated.

6.1.3 Other Wetlands within the 120 m Adjacent Lands

Wetland units that have not been identified or evaluated per OWES were identified during the 2018 and 2019 field investigations within the 120 m Adjacent Lands: Reed Canary Marsh (MAM2-2; part of Wetland 13201), Silver Maple Mineral Deciduous Swamp (SWD3-2a; Wetland 13200 and SWD3-2b; part of Wetland 13201), Weir Pond/Cattail Mineral Shallow Marsh (MAS2-1; Wetland 13202), Submerged Shallow Aquatic (SAS1) and Willow Mineral Thicket Swamp (SWT2-2) (**Figures 3a and 3b, Appendix A** and **Table 3, Appendix B**). These are described below.

<u>Reed Canary Grass Mineral Meadow Marsh (MAM2-2; part of Wetland 13201)</u>

This is an open meadow marsh community dominated by Reed Canary Grass (*Phalaris arundinacea var. arundinacea*) with scattered occurrences of Spotted Jewelweed, Bittersweet Nightshade and Panicled Aster. Approximately 30 cm of water was present throughout the feature in early spring and had dried up by mid June. This feature was surveyed for salamanders and calling amphibians (VP2; ACC8; **Figure 4a, Appendix A**). No amphibians were caught in the minnow traps and a full chorus of Spring Peepers were heard during calling surveys; the feature was dry by the third round of calling surveys.

Hydrologically, wetland units MAM2-2 and SWD3-2b (collectively referred to as Wetland 13201) have been identified and combined as a unit northwest of No. 2 Sideroad, upstream of an obstructed culvert on the Burlington Springs Golf Course property (Tatham 2020). The wetland has a drainage area of 14.9 ha and no defined outlet except for the obstructed culvert under No. 2 Sideroad. It is believed that the wetland and its drainage area historically formed the headwaters of the unnamed tributary of Lake Medad and Grindstone Creek via the blocked culvert, although no flow conveyance has been observed. Precipitation and surface runoff is the primary source of water into these wetland units. The results of the integrated surface water/groundwater model predict minor groundwater influx into the wetland. The overall groundwater contribution into the wetland is estimated to be less than 3% of the total inflow into these wetland units. Wetland hydroperiod and shallow groundwater monitoring stations will be established in wetland unit MAM2-2 in the spring of 2020 to establish its hydroperiod.

Silver Maple Mineral Deciduous Swamp (SWD3-2a; Wetland 13200 & SWD3-2b; part of Wetland 13201)

These features contained mature canopy most commonly composed of Silver Maple with associations of Green Ash. Different variations of this community type were observed: SWD3-2a (Wetland 13200) consisted of a complex microtopography (allowing for associations of some upland species) that formed a fairly dense understory; surface water was generally absent, and where present, depth was <10 cm; and SWD3-2b consisted of a canopy dominated by Silver Maple with a relatively open understory and a ground cover of mainly 40% Spotted Jewelweed, the remainder unvegetated. Surface water was generally present in the spring, drying out over the season.

The SWD3-2a features were not surveyed for amphibians (e.g., trapping or calling) due to absence of water. The SWD3-2b feature in Wetland 13201 was surveyed for salamanders and calling amphibians (VP2; ACC9; **Figure 4a, Appendix A**). No amphibians were caught in the minnow traps and no amphibians were heard during calling surveys; the feature was dry by the third round of calling surveys.

Wetland units SWD3-2a (Wetland 13200) have been identified on the Burlington Springs Golf Course property northeast of the existing irrigation ponds. The wetlands have a drainage area of approximately 7.4 ha and no defined outlet. If the storage volume of the wetland is exceeded, runoff will spill southwest overland into the irrigation ponds. Precipitation and surface runoff is the only source of water into wetland units SWD3-2a. Wetland hydroperiod and shallow groundwater monitoring stations will be established in one of these wetland units in the spring of 2020 to establish their hydroperiod (Tatham 2020).

Reed Canary Grass Mineral Meadow Marsh/Willow Mineral Thicket Swamp (MAM2-2/SWT2-2)

This is an open meadow marsh dominated by Reed Canary Grass and scattered occurrences of Spotted Jewelweed, Bittersweet Nightshade and Panicled Aster. On the South Extension area (west edge), Reed Canary Grass was dominant and surface water was restricted to the associated watercourse (depth ~25 cm); this community was complexed with Willow Mineral Thicket Swamp, most often consisting of Cottony Willow. Outside of the watercourse, the feature was dry and was not assessed for amphibians or turtles.

Weir Pond/Cattail Mineral Shallow Marsh (MAS2-1; Wetland 13202)

This community is generally dominated by Cattail, with observations of both Narrow-leaved Cattail and Hybrid Cattail. Surface water was generally absent in this community, with the exception of a drainage feature along Colling Road and around the edge of the Weir Pond. Water presence and depth is reliant on the adjacent quarry discharge. This feature was surveyed for calling amphibians and basking turtles (ACC1; BS5; **Figure 4a, Appendix A**). A total of three species were heard calling from this feature (Spring Peeper, Northern Leopard Frog, and Green Frog). No turtles were observed in this feature.

Wetland unit MAS2-1 is hydraulically connected to the Weir Pond created following the installation of a weir structure upstream of Colling Road to divert the quarry discharge from Quarry Sump 0100 to a series of irrigation ponds on the Burlington Springs Golf Course property for irrigation of the golf course. From the available aerial photographs of the area, the irrigation pond, diversion channel and weir structure did not exist prior to the golf course construction. Streamflow monitoring location

SW1 was established in the Weir Pond downstream of the Quarry Sump 0100 discharge (Tatham 2020).

The monitoring data collected to date shows how the Weir Pond, wetland unit MAS2-1, and golf course irrigation are dependent on the quarry discharge. Outside the spring freshet and significant storm events, flow leaving the Weir Pond via the weir structure is less than the measured quarry discharge due to the diversion of flow to the golf course for irrigation. Since 2015, there are several occasions where zero flow passed through the weir structure when the quarry was discharging from Quarry Sump 0100 and when the discharge had ceased. This trend continued in 2018 and 2019 when the quarry generally maintained a discharge from Quarry Sump 0100 at a rate of 68 L/s (permitted 4,090 L/min).

The water temperature within the Weir Pond was also monitored and the water temperature generally followed climatic trends and was essentially the same as the ambient air temperature. During the year, the water temperature drops to near freezing (0°C) in the winter months to highs of 25°C during the summer months.

Submerged Shallow Aquatic (SAS1)

This feature is an inclusion within the MAM2-2/SWT2-2. It is bordered by European Reed and contained Sago and Curly-Leaved Pondweeds. It is an online pond on the West Arm of the West Branch of the Mount Nemo Tributary that was surveyed for salamanders, calling amphibians and turtles (VP3; ACC10; BS6 **Figure 4a, Appendix A**). No salamanders were caught and are considered absent from the feature. Calling amphibian diversity consisted of four species (Spring Peeper, Northern Leopard Frog, Gray Tree Frog and Green Frog), and one Midland Painted Turtle was observed basking in the feature.

As noted in the Tatham Report (2020), wetland units MAM2-2, SAS-1, and SWT2-2 are located along the West Arm of the West Branch of the Mount Nemo Tributary of Grindstone Creek downstream of the quarry discharge from Quarry Sump 0200. Quarry Sump 0200 discharges to the West Arm southeast of No. 2 Sideroad and flows south to Grindstone Creek.

6.2 Significant and Other Woodlands

6.2.1 The Natural Heritage Reference Manual

The NHRM (MNR 2010) includes a multi-step approach when defining, delineating and assessing woodlands:

1) Determine that each wooded feature meets the definition of a woodland (e.g., stem densities and/or forest ELC communities; a minimum size threshold is not included in the NHRM definition of woodland);
2) Delineate the limits of the woodland feature(s) (e.g., i) plantations, excluding fruit orchards or Christmas tree plantations, are recognized as investments made with the objective of forest restoration and can be considered to be woodlands; ii) woodland openings: a bisecting opening 20 m or less in width between crown edges is not considered to divide a woodland

into separate woodlands; and iii) minimum patch width: to exclude relatively narrow linear treed areas, a minimum 60 m average width where the size threshold is 10 ha or more); and

3) Assess the delineated woodland for significance.

Woodland Definition

"Woodlands" means treed areas that provide environmental and economic benefits to both the private landowner and the general public, such as erosion prevention, hydrological and nutrient cycling, provision of clean air and the long-term storage of carbon, provision of wildlife habitat, outdoor recreational opportunities, and the sustainable harvest of a wide range of woodland products. Woodlands include treed areas, woodlots or forested areas and vary in their level of significance at the local, regional and provincial levels.
Percentage of tree cover and/or the *Forestry Act* definition for Woodlands can apply.

The ELC system defines "forest" as a treed area with greater than 60% tree cover (Lee et al. 1998).

The *Forestry Act* defines "woodlands" as land with at least,

a) 1,000 trees, of any size, per hectare,
b) 750 trees, measuring over five centimetres in diameter at breast height (1.37m), per hectare,
c) 500 trees, measuring over 12 centimetres in diameter at breast height, per hectare, or
d) 250 trees measuring over 20 centimetres in diameter at breast height, per hectare,

but does not include a cultivated fruit or nut orchard or a plantation established for the purpose of producing Christmas trees.

Woodland Delineation

As stated above, five vegetation communities had a stem density survey completed to determine if they contained the required number of stems per hectare to be considered a woodland under the Ontario *Forestry Act* (1990), which is the definition used in the Regional OP (**Figures 3a and 3b, Appendix A**). The five communities included three areas of cultural thicket (CUT), a residential/disturbed (RES/DIST) treed area and a disturbed deciduous community (FOD5/DIST), which contains a tree canopy that meets the definition of forest as per ELC (>60% canopy cover) but contains no understory. None of the five vegetation communities met the density criteria to be defined as a woodland (details provided in **Table 4, Appendix B**). The FOD/DIST (Woodland and Stem Density feature: E) community did not meet the provincial *Forestry Act* definition; however, it does contain greater than 60% tree canopy cover, which meets the ELC definition of forest.

All identified wooded features within the Study Area were assessed to determine which patches meet the definition of woodland (**Table 15, Appendix B**). The limits of each wooded feature were initially established through imagery interpretation, then refined following ELC surveys and stem density surveys. Contiguous communities (which included non-wooded gaps ≤ 20 m wide) were collectively identified as being part of the same wooded feature. The entirety of wooded features occurring on and extending outside of the Study Area were included in this mapping exercise (**Figures 8a and 8b, Appendix A**).

Wooded features B, E, F, G, H, J, K, L and Q do not have minimum average widths >60 m, and therefore these patches were excluded from further assessment. The significance of the remaining wooded features A, C, D, I, M, N, O and P are assessed below. All wooded features are shown on **Figures 8a and 8b (Appendix A)**.

Woodland Assessment

Woodland size criteria and thresholds identified in the NHRM are dependent on Regional woodland cover. According to "Rationale and methodology for determining significant woodlands in Regional Municipality Halton" (Gartner Lee 2002), woodland cover in Halton Region is 22.9%. Various components of ecological functions criteria, uncommon characteristics criteria and economic and social functional value criteria are also considered within the NHRM when assessing significance (**Table 16, Appendix B**).

Woodland A is located on the north side of Colling Road. This woodland was assessed visually from the road due to lack of property access. Based on air photo interpretation, it appears to be 10.41 ha in size, may have patches >99 years old and contains fish habitat.

Woodland D is relatively isolated and located on the golf course, adjacent to the existing quarry. This woodland is 4.2 ha in size and largely consists of deciduous forest (Dry-fresh Sugar Maple Hickory – FOD5-5) and some small areas of deciduous swamp (Silver Maple Mineral – SWD3-2a, Wetland 13200). A small population (approximately 30 individuals occupying an area of <1 m^2) of Large Toothwort (provincially ranked S3) was identified within the FOD5-5. The FOD5/DIST community is disturbed due to a lack of understory development and actively maintained turf grass and paved golf cart pathways. The linear strip of cultural woodland (CUW1a) is dominated by Black Locust with a dense subcanopy of Common Buckthorn, Chokecherry, Black Raspberry and European Red Currant. This community is 2.37 ha in size, composing approximately 37% of Woodland D and was removed from the overall woodland assessment. Woodland D meets the definition of significant woodland. The two wetland areas, SWD3-2a, are discussed in the wetland section above.

Woodland C was assessed and confirmed as not significant since it did not meet any of the criteria.

Woodland I was assessed and confirmed as not significant since it did not meet any of the criteria; though it contains two Butternut stems, both of these are Category 1, dead/non-retainable. Therefore, this species is considered absent from the community and should not trigger the rare woodland plants criterion.

Woodland M is largely a deciduous forest with a deciduous swamp located adjacent to Sideroad 2, at the southern end of the golf course. It is 4.09 ha in size. The Ash Lowland forest (FOD7-2) is a relatively open forest with dead and dying Green Ash and some Silver Maple, White Elm and Basswood associations. The Black Walnut Lowland forest (FOD7-4) is composed of a mid-age canopy abundant with Black Walnut and associations of Green Ash. The wetland areas (SWD3-2b and MAM2-2 which comprise Wetland 13201) are discussed in the wetland section above.

Woodland N is 4.39 ha in size and consists of cultural woodland, cultural plantation and deciduous forest. It is a linear feature within the South Extension that is located between the Camisle Golf Course and row crop agricultural fields. The CUP3-13 and CUP3-14 are White Spruce and White Cedar coniferous plantations. The eastern section of Woodland N is a Black Walnut Lowland forest (FOD7-4) with abundant levels of Black Walnut and Green Ash associations.

Woodland O extends beyond the Subject Lands and consists of a linear White Pine coniferous plantation (CUP3-2) and Sugar Maple - Basswood forest (FOD5-6).

Woodland P is a large feature that extends beyond the Subject Lands. It consists of coniferous plantations – White Spruce (CUP3-13), European Larch (CUP3-6), White Pine (CUP3-2), White Cedar (CUP3-14), deciduous forest and deciduous swamp.

Significance was confirmed for six woodlands: A, D, M, N, O and P (**Table 16, Appendix B**). Generally, significance was triggered when applying the water protection criteria and uncommon ecological characteristics (e.g., rare vegetation community types, rare woodland plants and/or older woodlands). One woodland (P) was greater than 20 ha, which is the minimum size threshold for woodlands in Halton Region to confirm significance based on size alone.
No significant woodlands are within the Limit of Extraction.

6.2.2 Halton Region Official Plan

According to ROP (2018), any wooded vegetation community that meets the definition of Woodland can be assessed for significance.

Section 295 of ROP (2018) defines Woodland as the following:

> *"Woodland" means land with at least: 1000 trees of any size per ha, or 750 trees over 5 cm in diameter per ha, or 500 trees over 12 cm in diameter per ha, or 250 trees over 20 cm in diameter per ha but does not include an active cultivated fruit or nut orchard, a Christmas tree plantation, a plantation certified by the Region, a tree nursery, or a narrow linear strip of trees that defines a laneway or a boundary between fields. For the purpose of this definition, all measurements of the trees are taken at 1.37 m from the ground and trees in regenerating fields must have achieved that height to be counted."*

All identified wooded features within the Study Area were assessed to determine which patches meet the definition of a woodland that would be assessed for significance (**Table 17, Appendix B**). The limits of each wooded feature were initially established through imagery interpretation, then refined following ELC surveys and stem density surveys. Contiguous communities (i.e., without any gaps or extended hedgerow connections) were collectively identified as being part of the same wooded feature. The entirety of wooded features occurring on and extending outside of the Study Area were included in this mapping exercise (**Figures 8a and 8b, Appendix A**).

As stated above, five vegetation communities had a stem density survey completed to determine if they contained the required number of stems per hectare to be considered a woodland under the Ontario *Forestry Act* (1990), which is the definition used in the Regional OP (**Figures 3a and 3b, Appendix A**). The five communities included three areas of cultural thicket (CUT), a residential/disturbed (RES/DIST) treed area and a disturbed deciduous community (FOD5/DIST), which contains a tree canopy that meets the definition of forest as per ELC (>60% canopy cover) but contains no understory. None of the five vegetation communities met the density criteria to be defined as a woodland (details provided in **Table 4, Appendix B**). The FOD/DIST (Woodland and Stem Density feature: E) community did not meet the provincial *Forestry Act* definition; however, it does contain greater than 60% tree canopy cover, which meets the ELC definition of forest.

Wooded features B, E, F, G, H, J, K, L and Q do not meet the minimum size threshold (0.5 ha), and therefore these patches were excluded from further assessment. The significance of the remaining wooded features A, C, D, I, M, N, O and P are assessed below. All wooded features are shown on **Figures 8a and 8b (Appendix A)**.

Section 277 (ROP 2018) defines Significant Woodland and provides the criteria to assess significance.

SIGNIFICANT WOODLAND means a Woodland 0.5 ha or larger determined through a Watershed Plan, a Sub-watershed Study or a site-specific Environmental Impact Assessment to meet one or more of the four following criteria:

> *277(1) the Woodland contains forest patches over 99 years old,*
>
> *277(2) the patch size of the Woodland is 2 ha or larger if it is located in the Urban Area, or 4 ha or larger if it is located outside the Urban Area but below the Escarpment Brow, or 10 ha or larger if it is located outside the Urban Area but above the Escarpment Brow,*
>
> *277(3) the Woodland has an interior core area of 4 ha or larger, measured 100m from the edge, or*
>
> *277(4) the Woodland is wholly or partially within 50 m of a major creek or certain headwater creek or within 150m of the Escarpment Brow.*

The proposed expansion areas are situated on the Mt. Nemo Plateau and are above the Escarpment Brow. Therefore, in accordance with criteria 277(2), any woodlands greater than 10 ha are automatically considered significant. Any woodlands greater than 0.5 ha and meet criteria 277(1)(3) or (4) would also be considered significant.

Woodland Assessment

As discussed above, the Black Locust cultural woodland (CUW1a) was removed from the assessment of Woodland D. Woodlands C and I were assessed but did not meet any of the criteria and therefore were confirmed not significant.

Consistent with the results from the NHRM significance assessment, significance was confirmed for six woodlands: A, D, M, N, O and P (**Table 18, Appendix B**). Generally, significance was triggered by woodland size in combination with maturity and/or proximity to a major creek. Only two woodlands (A and P) were over the 10 ha size threshold.

None of the significant woodlands are within the Limit of Extraction.

Significant and Other Woodland Summary

Six woodlands (A, D, M, N, O and P) were identified as significant when applying both the NHRM and ROP assessment criteria.

None of the identified and evaluated significant woodlands are within the Limit of Extraction.

Further discussion on impact assessment for Significant Woodlands within the 120 m Adjacent Lands is provided in the Level 2 assessment.

Wooded features E, F, G and H, which are less than the average 60 m width noted in the NHRM (MNRF 2010) and do not meet the definition of Woodland under the ROP (2018), total 1.22 ha in size (0.48 ha; 0.22 ha; 0.48 ha; 0.04 ha, respectively). Wooded feature G is labeled a Key Feature in the Region's Natural Heritage System, and features E, F and H are labeled Enhancement, Linkage, Buffer. These features will be discussed further in the Level 2 Report.

6.3 Significant Valleylands

Significant valleylands are defined and designated by the planning authority. General guidelines for determining significance of these features are presented in the NHRM (MNR 2010). Recommended criteria for designating significant valleylands include prominence as a distinctive landform, degree of naturalness and importance of its ecological functions, restoration potential and historical and cultural values.

Topographic, provincial and regional mapping did not identify valleylands within the Subject Lands. In addition to the absence of mapped features, field investigations confirmed the absence of valleylands. The Lake Medad Valley ESA overlaps with the outer edges of the 120 m Adjacent Lands on the south side of Cedar Springs Road (**Figure 2c, Appendix A**). The Lake Medad Valley ESA is within the 120 m Adjacent Lands; however, due to its location in relation to the Limit of Extraction, no impacts are anticipated to this feature. Significant valleylands are not present within the proposed Limit of Extraction.

6.4 Significant Wildlife Habitat

Significant wildlife habitat is one of the more complex natural heritage features to identify and evaluate. There are several provincial documents that discuss identifying and evaluating SWH including the NHRM (MNR 2010), the Significant Wildlife Habitat Technical Guide (MNR 2000) and the SWH Eco-region Criteria Schedule (MNRF 2015). The Subject Lands are in Eco-region 7E and were therefore assessed using the 7E Criteria Schedule (MNRF 2015).

There are four general types of Significant Wildlife Habitat:

- Seasonal concentration areas of animals;
- Rare vegetation communities or specialized habitat for wildlife;
- Habitat for species of conservation concern; and
- Animal movement corridors.

Seasonal Concentration Areas of Animals

Seasonal concentration areas of animals are those sites where large numbers of a species gather together at one time of the year or where several species congregate.

Rare Vegetation Communities or Specialized Habitat for Wildlife

Rare vegetation communities and specialized habitat are two separate components.

Rare habitats are those with vegetation communities that are considered rare in the province. SRANKS are rarity rankings applied to species at the 'state', or in Canada, at the provincial level, and are part of a system developed under the auspices of the Nature Conservancy (Arlington, VA). Generally, community types with SRANKS of S1 to S3 (extremely rare to rare-uncommon in Ontario), as defined by the NHIC, could qualify. It is assumed that these habitats are at risk and that they are also likely to support additional wildlife species that are considered significant.

Specialized habitats are micro-habitats that are critical to some wildlife species. The NHRM (MNR 2010) defines specialized habitats as those that support wildlife species with highly specific habitat requirements; areas with exceptionally high species diversity or community diversity; and areas that provide habitat that greatly enhances species' survival.

Habitat for Species of Conservation Concern

Species of conservation concern include four types of species, those:

- that are rare;
- whose populations are significantly declining;
- that have been identified as being at risk to certain common activities; and/or
- with relatively large populations in Ontario compared to the remainder of the globe.

Generally, species of conservation concern include those species listed as S1 to S3 or SH by SRANKS and those listed on the Species at Risk in Ontario (SARO) List as Special Concern. Habitats of species of conservation concern do not include habitats of endangered or threatened species as identified by the ESA. Endangered and threatened species are discussed in section 6.7. All regionally rare wildlife species, and species of Special Concern observed during the desktop review and/or on the Subject Lands are listed in **Table 19** (**Appendix B**), including current provincial statuses (NHIC 2018).

Animal Movement Corridors

Animal movement corridors are areas that are traditionally used by wildlife to move from one habitat to another, usually in response to different seasonal habitat requirements.

6.4.1 SWH Assessment Summary

All SWH types were assessed, where applicable, within the Study Area. Details regarding the methods used to determine the presence/absence of SWH, including confirmation of appropriate ecosites, requirement of targeted surveys, presence of candidate SWH and confirmation of SWH are summarized for each SWH type in **Table 19, Appendix B**.

Two types of SWH were confirmed within the Limit of Extraction, and six types of SWH were confirmed within the 120 m Adjacent Lands, as shown on **Figures 7a and 7b (Appendix A).** These are summarized and discussed in further detail, below:

Significant Wildlife Habitat Confirmed within the Limit of Extraction

- Bat Maternity Colonies:

    - Polygon E (FOD5/DIST);
- Special Concern and Rare Wildlife – Eastern Wood-pewee:
    - BP8 (FOD5/DIST);
    - BP11 (FOD7-2).

Significant Wildlife Habitat Confirmed within the 120 m Adjacent Lands

- Candidate Bat Maternity Colonies:
    - Polygons D, K, M and Na;
- Deer Winter Congregation Areas;
- Rare Vegetation Type:
    - FOD7-4 Fresh–Moist Black Walnut Lowland Deciduous Forest;
- Woodland Amphibian Breeding Habitat:
    - ACC10 (SAS1 inclusion in the MAM2-2/SWT2-2);
- Amphibian Movement Corridor;
- Special Concern and Rare Wildlife Species:
    - Eastern Wood-pewee:
        - BP5;
        - BP6;
        - BP9;
        - BP10;
        - BP17;
    - Large Toothwort:
        - Woodland D – FOD5-5;
    - Unicorn Clubtail:
        - BP1.

Significant Wildlife Habitat Confirmed within the Limit of Extraction

Bat Maternity Colonies

The 7E Criteria Schedule states that bat SWH is confirmed when a suitable habitat polygon contains >10 individual Big Brown Bats or >5 individual Silver-haired Bats. Acoustic call surveys do not allow the confirmation of the exact number of individuals present within an area. For example, 20 calls recorded in a given night could have been made by one individual passing the recorder 20 times, or by 20 individuals passing the recorder one at a time. As a result, significant wildlife habitat was determined to occur where levels of bat activity were recorded in reasonable numbers (i.e., greater than 5 calls per night) across the monitoring period.

Polygon F contained 55 passes of Big Brown Bat and 28 passes of Silver-haired Bat. An analysis of the Big Brown Bat calls showed that several calls were recorded in close time succession (i.e., 21 calls were recorded over a 20-minute period on July 4th), and outside of this period, the maximum number of calls observed in an evening was five. Similarly, approximately half of the Silver-haired Bat calls were recorded on a single evening over a period of about an hour. These observations are suggestive of multiple passes by a single individual, and therefore this community is not considered to meet the test of bat maternity colony SWH.

Polygon G contained 66 passes of Big Brown Bat and 10 passes of Silver-haired Bat. The number of Silver-haired Bat detected is considered too low to support the identification of SWH. An analysis of the calls of Big Brown Bats again showed evidence of numerous periods of call clusters indicative of multiple passes by a single individual, and given the relatively low number of calls identified, this community is not considered to meet the test of bat maternity colony SWH.

Polygon E was determined to provide bat maternity colony SWH as more than 1,000 calls of Big Brown Bats were recorded within this polygon. Direct impacts are expected to occur for this community; further assessment of this SWH type is provided in the Level 2 Assessment.

Special Concern and Rare Wildlife

One species with Special Concern status was observed: Eastern Wood-pewee.

Singing males were recorded at BP8 (two males on both rounds) and BP11 (one male during the first round only), located in FOD5/DIST and FOD7-2 communities, respectively (**Figure 7a, Appendix A**).

Direct impacts are expected to occur for these two communities; further assessment for this SWH type is provided in the Level 2 Assessment.

Significant Wildlife Habitat Confirmed within the 120 m Adjacent Lands

Candidate Bat Maternity Colonies

Four woodland polygons met the minimum density criteria and ELC ecosite for significance (D, K, M and Na). These have been identified as Candidate Bat Maternity Colony SWH. Acoustic surveys were not completed within these polygons as they are outside of the proposed Limit of Extraction, meaning Bat Maternity Colony SWH was not confirmed. Impacts may occur for this habitat type; further assessment is provided in the Level 2 Assessment.

Deer Winter Congregation Areas

Deer winter congregation areas considered significant are mapped by MNRF. This data is available in LIO (**Figure 2c, Appendix A**). This mapped area is within the Medad Valley, on the west side of Cedar Springs Road, and overlaps with the periphery of the 120 m Adjacent Lands for the West Extension. Given the current land use in the West Extension (active golf course with smaller areas of natural vegetation), no direct impacts are anticipated to this SWH type.

Rare Vegetation Type

The rare vegetation community present within the 120 m Adjacent Lands is the Fresh-Moist Black Walnut Lowland Deciduous Forest (FOD7-4), an S2S3 provincially ranked community (NHIC 2018). It was identified in three areas (**Figures 7a and 7b, Appendix A**). Though this vegetation community is included in Appendix M of the SWHTG (MNR 2000), which confirms SWH (MNRF 2015), it is frequently identified in Halton Region.

The FOD7-4 in the South Extension (**Figure 7b, Appendix A**) are planted communities. Based on the data collected for the initial application, these trees were planted in the late 1970s or early 1980s. These communities appear to have naturalized with expected succession patterns and plant associations. No direct impacts are anticipated to these communities.

Woodland Amphibian Breeding Habitat

Woodland amphibian breeding SWH was confirmed at ACC10, an on-line pond within the 120 m Adjacent Lands and part of the Camisle Golf Course (**Figure 7b, Appendix A**). The SWH consists of the wetland unit itself, plus a 230 m radius of woodland (MNRF 2015) (**Figure 7b, Appendix A**). The SWH will be retained, and therefore no direct impacts are anticipated; however, this habitat relies on hydrological inputs and therefore will be discussed in the Level 2 Assessment.

Amphibian Movement Corridor

Amphibian breeding SWH was identified at ACC10. The summer habitat consists of the adjacent marsh and thicket swamp features (MAM2-2/SWT2-2) and could extend to the FOD7-4. The movement corridor will be retained. No direct impacts are anticipated to this SWH type.

Special Concern and Rare Wildlife Species

One species with Special Concern status was observed within the Adjacent Lands: Eastern Wood-pewee.

Singing males were recorded calling from BP5, BP6, BP9, BP10 and BP17 in deciduous forest and swamp ELC communities (FOD5-5, FOD5-6, FOD7-2, FOD7-4, SWD3-2a and SWD3-2b) (**Figure 7a and 7b, Appendix A**). These communities are all outside of the proposed Limit of Extraction.

No direct impacts are anticipated; however, there is potential for indirect impacts, which will be discussed in the Level 2 Assessment.

Two provincially rare species were observed within the Study Area: Large Toothwort (S3) and Unicorn Clubtail (S2S3).

Large Toothwort was observed as a single population within an upland forest community, FOD5-5 (**Figure 7a, Appendix A**). This population contained approximately 30 individuals occupying an area of less than 1 m^2. No direct impacts are anticipated to this small plant population and SWH type.

Unicorn Clubtail was observed at BP1, the Weir Pond associated with the MAS2-1 wetland community (**Figure 7a, Appendix A**). No direct impacts are anticipated for this community; however, this wetland feature relies on hydrological inputs and therefore will be discussed in the Level 2 Assessment.

6.5 Significant Areas of Natural and Scientific Interest

The Limit of Extraction does not overlap with either of the ANSIs in the local landscape. The Lake Medad Meltwater Channel ANSI and the Medad Valley ANSI are located south of Cedar Springs toward the outer edge of the 120 m Adjacent Lands (**Figure 2c, Appendix A**).

No ANSIs occur within the Limit of Extraction. Due to the location in proximity to the Limit of Extraction, no impacts are anticipated to these features.

6.6 Fish Habitat

Fish habitat, as defined in the federal *Fisheries Act,* c. F-14, means "spawning grounds and nursery, rearing, food supply, and migration areas on which fish depend directly or indirectly in order to carry out their life processes". Fish, as defined in S.2 of the *Fisheries Act*, c. F-14, includes "parts of fish, shellfish, crustaceans, marine animals and any parts of shellfish, crustaceans or marine animals, and the eggs, sperm, spawn, larvae, spat and juvenile stages of fish, shellfish, crustaceans and marine animals". The definition of fish habitat includes direct fish habitat (i.e., habitat that may be occupied by fish on a permanent or periodic basis) and indirect fish habitat (i.e., habitat that would not be used directly by fish, but that may be important for downstream direct fish habitat).

There is no direct or indirect fish habitat within the proposed Limit of Extraction (**Figures 9a** and **9b**, **Appendix A**). While fish are present in the irrigation ponds and channel on the Burlington Springs Golf Course, the feature is of anthropogenic origin, highly unnatural, serves a primarily commercial purpose (source of irrigation water) and may have adverse effects on downstream natural fish-bearing watercourses and, therefore, should not be considered "fish habitat". More information on this rationale is provided in section 6.6.1. Nelson Aggregate Company is consulting with DFO to obtain their concurrence with this assessment.

The headwaters of the Unnamed Tributary of Willoughby Creek (i.e., from the quarry discharge point in the Colling Road ditch, to the downstream end of the Colling Road culvert) have been identified as indirect fish habitat (**Figure 9a**, **Appendix A**). No fish were caught in the reach during fish community sampling in June 2019, nor have they been observed on any other occasion. However, as the reach conveys the main source of flow to the watercourse downstream from Colling Road, this reach does provide indirect habitat that supports downstream fish populations. This reach is located in the ditch on the edge of the License Boundary.

No fish community surveys were completed in the Unnamed Tributary of Willoughby Creek downstream from Colling Road, since it is located on private property, and no fish community information is available from any background sources to confirm if this reach provides direct fish habitat. For the purposes of this assessment, it is assumed that the Unnamed Tributary of Willoughby Creek downstream from the Colling Road culvert (within 120 m of the License Boundary) provides direct fish habitat (**Figure 9a**, **Appendix A**). The actual ability of the upstream portions of this tributary to provide direct fish habitat may be limited as a result of the presence of a karst sink along its path.

The West Arm of the West Branch of the Mount Nemo Tributary has been assessed as providing direct fish habitat along its full length to its upstream limit at Sideroad 2 (**Figure 9b**, **Appendix A**). There are no barriers to fish passage and sticklebacks were caught within the Study Area in 2019. Previous fisheries studies in the early 2000s also resulted in the capture of Brook Stickleback and Pumpkinseed upstream from the Camisle Golf Course property.

Headwater Drainage Feature H2, located within 120 m of the Subject Lands and a tributary of the West Arm of the West Branch of the Mount Nemo Tributary, was identified as indirect fish habitat (**Figure 9b**, **Appendix A**). Fish are not expected to directly use the feature, based on lack of suitable habitat, but contributing functions of the feature (i.e., seasonal flow conveyance, water quality maintenance, allochthonous inputs, sediment transport) may be important in sustaining downstream fish populations.

Although located outside the Study Area, the East Arm of the West Branch of the Mount Nemo Tributary provides indirect fish upstream from the spring and online pond (located approximately 800 m southeast of the proposed Limit of Extraction). The online pond and the downstream reaches of the East Arm of the West Branch provide direct fish habitat (**Figure 9b**, **Appendix A**).

The Unnamed Tributary of Lake Medad provides indirect fish habitat downstream from Sideroad 2 and potentially direct fish habitat within a series of online ponds outside the Study Area (**Figure 9a**, **Appendix A**), although the presence of fish has not been confirmed as the reach is entirely located on private property. Historically, the reach may have extended upstream onto the Burlington Springs Golf Course property, but no hydraulic connection appears to be present, so this area does not currently provide direct or indirect fish habitat functions.

Fish Habitat Summary

No direct or indirect fish habitat is present within the Limit of Extraction.

Direct fish habitat within the 120 m Adjacent Lands includes the following reaches:

- The Unnamed Tributary of Willoughby Creek downstream of the Colling Road culvert; and
- West Arm of the West Branch of the Mount Nemo Tributary of Grindstone Creek.

The following aquatic feature, located partially within the Adjacent Lands and partially on the edge of the License Boundary and the 120 m Adjacent Lands, provides indirect fish habitat contributing allochthonous materials and flow to downstream fisheries:

- Unnamed Tributary of Willoughby Creek, from quarry discharge point to the Colling Road culvert.

The following aquatic features, located within the 120 m Adjacent Lands, provide indirect fish habitat contributing allochthonous materials and flow to downstream fisheries:

- Unnamed Tributary of Lake Medad downstream from Sideroad 2; and
- HDF reaches H2S1 and H2S2.

Although located outside the Study Area, the East Arm of the West Branch provides indirect fish habitat upstream from the spring and online pond and direct fish habitat within and downstream from the pond.

6.6.1 Golf Course Irrigation Channel and Irrigation Pond Habitat Assessment

Based on the results of the June 2019 fish community survey on the Burlington Springs Golf Course, it is evident that the irrigation channel and ponds do support fish, comprised of a single species (i.e., an apparently self-sustaining population of Largemouth Bass, which likely originated from historical stocking).

However, while fish are present, the feature is of anthropogenic origin, highly unnatural, serves a primarily commercial purpose (source of irrigation water) and may have adverse effects on downstream natural fish-bearing watercourses and therefore, should not be considered "fish habitat".

Based on aerial photograph analysis, prior to construction of the golf course in 1962, no water or potential fish habitat existed on the golf course property.

The existing irrigation ponds and channel are reliant upon water pumped from the Nelson Quarry and the operation of the diversion weir structure installed at the downstream end of the Weir Pond, which promotes the diversion of flow into the golf course. Pumping from the quarry does not occur on a continuous basis and, therefore, flow into, and water level alteration within, the golf course channel and pond system is highly altered. When no, or low, flows are being pumped from the quarry, the irrigation ponds discharge flows back to the watercourse downstream from Colling Road until they reach a threshold elevation when no further discharge occurs.

Therefore, the irrigation channel and ponds, and associated Largemouth Bass population, is only present as a direct result of golf course construction, pumping of flows from the existing quarry and the manipulation of the downstream natural watercourse (through installation/operation of a water control structure) to cause water to flow into the feature on the golf course.

The primary purpose of the anthropogenic irrigation channel and ponds is to provide a source of irrigation water for the golf course, with secondary benefits of providing a golf course hazard and an aesthetic feature on the course.

Furthermore, habitat conditions within the irrigation channel and ponds are generally degraded compared to a natural watercourse. Highly manicured lawns are present to the edge of most areas of the feature, with limited riparian areas consisting of naturalized vegetation. The channel itself is linear and uniform, with limited natural structure and dense aquatic vegetation that chokes the channel. There is evidence of erosion throughout the excavated channel and a number of water crossing culverts beneath golf course paths. The ponds generally lack habitat structure, although aquatic vegetation is present, and they do appear to support a self-sustaining population of Largemouth Bass.

Finally, the presence of the irrigation ponds and connecting channels on the golf course could potentially be resulting in a number of negative impacts on the natural watercourse downstream from the property, including, but not limited to:

- Alterations in watercourse hydrology due to flow diversion into the ponds and consumptive irrigation uses;
- Impaired water quality due to golf course runoff during periods when the feature is discharging to the natural watercourse, potentially including:

  a. Fertilizers or other chemicals used for golf course maintenance;
  b. Organic deposits (due to geese utilizing areas adjacent to the ponds and channel);
  c. Increased fine sediments (due to channel erosion on the golf course); and
  d. Increased water temperature (due to potential thermal loading within the ponds);

- Source of fish (i.e., Largemouth Bass) that may not be a natural component of the downstream, native coldwater fish community, potentially resulting in increased competition for resources and decreased productivity of the natural community.

Removal of the anthropogenic irrigation channel and ponds from the golf course could provide long-term benefits to the overall downstream watercourse and associated fish habitat.

Based on the information provided above, the golf course irrigation ponds and associated on-site channel do not constitute fish habitat.

6.7 Habitat of Endangered and Threatened Species

A literature search for historic records of Endangered and Threatened species has been undertaken for the surrounding landscape extending 1 km from the Subject Lands utilizing the SARO listings and the NHIC website, maintained by the provincial government (**Table 20**, **Appendix B**).

The historical data record review identified three Endangered species (Jefferson Salamander, Mottled Duskywing and Butternut) and four Threatened species (Bank Swallow, Bobolink, Eastern Meadowlark and Louisiana Waterthrush). In addition to the information collected in the historical data record, the presence of woodlands and rocky outcrops requires that SAR bat species (Little Brown Myotis, Northern Myotis, Small-footed Myotis and Tri-Coloured Bat) should be considered during survey efforts.

A desktop analysis was first conducted to determine if suitable habitat was present within the Study Area for each Endangered or Threatened species. Each species had targeted surveys completed where suitable habitat was present (**Table 20, Appendix B**). Despite appropriate survey effort, Jefferson Salamander, Mottled Duskywing, Northern Myotis, Eastern Meadowlark and Louisiana Waterthrush were not observed and are considered absent from the Study Area. The species that were observed are discussed below. Though Jefferson Salamander is considered absent from the Study Area, its regulated habitat is within the 120 m Adjacent Lands. Therefore, this species and its habitat are discussed below.

Summary of Habitat of Threatened and Endangered Species present within the Study Area

- Butternut;
- Barn Swallow;
- Bobolink;
- Jefferson Salamander;
- Little Brown Myotis;
- Small-footed Myotis; and
- Tri-coloured Bat.

Butternut

Butternut trees are provincially listed as endangered on the SARO list. Butternut trees with a Category 2 or Category 3 health assessment designation are protected under the ESA, while Category 1 trees are not protected. A Butternut health assessment was completed for each tree during the leaf-on period by a certified Butternut Health Assessor. Butternut tree observations and Category designations are shown on **Figures 7a and 7b, Appendix A**. As Category 1 trees are not protected, they are not addressed within this section of the report. The Ministry of the Environment, Conservation and Parks considers the habitat for Butternut protected under the ESA to be locations within 25 m of each individual Butternut.

One Category 2 tree is present within the Limit of Extraction, and two Category 2 trees are within the Adjacent Lands, but greater than 25 m from the Limit of Extraction (**Figure 7a and 7b, Appendix A**). The removal, and therefore direct impact, of the one Category 2 tree will be discussed further in the Level 2 Assessment. As the remaining two Category 2 trees are greater than 25 m from the Limit of Extraction, their habitat will not be affected by the Limit of Extraction.

Barn Swallow

Barn Swallow is provincially designated Threatened on the SARO List, and both the species and its habitat are protected under the ESA.

Barn Swallows were observed foraging over the golf course Irrigation Ponds. A total of nine intact nests were observed at structures B, E and R1 (five, two and two intact nests, respectively) (**Figures 7a and 7b, Appendix A**). These structures are associated with the golf course.

Barn Swallows also were observed foraging on Adjacent Lands. A total of two intact nests were observed at structure C, also a golf course maintenance building.

The removal of the three nesting structures, B, E and R1 will result in direct impacts to this species and its habitat. This is discussed further in the Level 2 Assessment. Impacts to this species' foraging habitat are not anticipated due to the existing suitable foraging habitat in the immediately adjacent landscape.

Bobolink

Bobolink is provincially designated Threatened on the SARO List, and both the species and its habitat are protected under the ESA.

Bobolink was observed from point count station BP18 along the western edge of the South Extension (**Figure 7b, Appendix A**). Two males and a female in suitable breeding habitat were observed on the adjacent Camisle Golf Course lands. This habitat is partially present within the 120 m Adjacent Lands, with the majority of suitable habitat located further west outside of the Study Area. No additional observations or suitable habitat were observed within the Study Area.

No impacts are anticipated given the 30 m setback from the habitat type and any proposed works on the Subject Lands; therefore, further discussion is not required in the Level 2 Assessment.

Jefferson Salamander

Jefferson Salamander is provincially listed as endangered on the SARO List, and both the species and its habitat are protected under the ESA. It is afforded Regulated Habitat protection under Ontario Regulation 242/08, Section 28.

No wetlands are located within the Limit of Extraction. None of the identified and surveyed wetlands within the 120 m Adjacent Lands are considered suitable salamander breeding habitat due to surveyed hydroperiods. Two of these features are located within the existing MECP Jefferson Salamander Regulated habitat. Trapping surveys were completed at all wetlands within the 120 m Adjacent Lands that contained water at the time of the survey (March and April). No salamanders were caught.

Wetland units will be retained, and therefore no direct impacts are anticipated; however, these features rely on hydrological inputs and therefore will be discussed in the Level 2 Assessment.

Additional wetland hydroperiod and water balance details are provided in the Surface Water Assessment Report (Tatham 2020) and the Level 1 and Level 2 Hydrogeological Assessment Report (EarthFX 2020) and discussed in the Level 2 Assessment.

Bats

Three bat species, Little Brown Myotis, Tri-coloured Bat and Small-footed Myotis, provincially listed as Endangered on the SARO List, were detected during acoustic monitoring surveys.

Recordings of Small-footed Myotis are considered to represent foraging individuals due to the absence of roosting habitat within the Study Area. Impacts to this species' foraging habitat are not anticipated due to the existing suitable foraging habitat in the immediately adjacent landscape, and therefore this species is not carried forward to the Level 2 Assessment.

The acoustic monitoring unit in Polygon E recorded more than 1,300 passes of Little Brown Myotis and 20 passes of Tri-coloured Bat over the 13 nights of monitoring. Though the number of Tri-coloured Bat passes is not considered to be representative of species at risk bat habitat, the large number of Little Brown Myotis passes results in this feature being considered species at risk bat habitat.

Comparatively, Polygon F only recorded three passes of Little Brown Myotis, and no passes of Tri-coloured Bats, and therefore is not considered to represent species at risk bat habitat.

No recordings of species at risk bats were made from the acoustic monitoring unit in polygon G.

Removal of polygon E could adversely affect SAR bat habitat. This will be discussed further in the Level 2 Assessment.

All adverse effects to threatened or endangered SAR or their habitats will be addressed through additional consultation with the MECP to meet requirements of the ESA.

6.8 Level 1 Summary

Through the Level 1 analysis of the provincial Natural Heritage features assessed, several have been identified to occur at some level of importance (e.g., local, regional, provincial) either within the Limit of Extraction or within the 120 m Adjacent Lands (**Figures 7a and 7b, Appendix A**).

Within the Limit of Extraction:

- Significant Wildlife Habitat:
    - Bat Maternity Colonies;
    - Special Concern and Rare Wildlife:
        - Eastern Wood-pewee.
- Habitat for Threatened or Endangered Species:
    - Butternut;
    - Barn Swallow Nesting Habitat;
    - Bat Habitat.

Within 120 m Adjacent Lands:

- Significant Wetlands:
    - The Grindstone Creek Wetland Complex (PSW);
- Significant Woodlands;
- Significant Wildlife Habitat:
    - Bat Maternity Colonies;
    - Woodland Amphibian Breeding Habitat;
    - Special Concern and Rare Wildlife Species:
        - Eastern Wood-pewee;
        - Unicorn Clubtail;
- Direct Fish Habitat:
    - Unnamed Tributary of Willoughby Creek downstream of the Colling Road culvert (assumed direct habitat);
    - West Arm of the West Branch of the Mount Nemo Tributary of Grindstone Creek;
- Indirect Fish Habitat:
    - Unnamed Tributary of Willoughby Creek, from quarry discharge point to the Colling Road culvert;
    - Unnamed Tributary of Lake Medad downstream from Sideroad 2; and
    - HDF reaches H2S1 and H2S2;
- Habitat for Threatened or Endangered Species:
    - Jefferson Salamander;
    - Bat Habitat.

The aforementioned features identified within the Level 1 review are assessed in greater detail within the Level 2 Impact Assessment component, which also meets the requirements of a Natural Heritage Environmental Impact Assessment (EIA).

7 LEVEL 2: IMPACT ASSESSMENT

Based on the Level 1 natural heritage assessment summarized above, the presence of Significant Wetlands, Significant Woodlands, Significant Wildlife Habitat, Direct and Indirect Fish Habitat and Habitat of Endangered or Threatened Species within the Study Area and Subject Lands necessitates a Level 2 evaluation of the potential impacts due to the quarry development and operation. A Level 2 assessment also includes recommendations regarding any mitigation and/or enhancement measures, as well as rehabilitation plans. An Adaptive Management Plan (AMP) (EarthFX and Tatham Engineering April 2020) has been prepared to allow for an evaluation of the local effects and facilitate insightful and strategic decision-making to mitigate unforeseen impacts resulting from quarry development. The goal is to operate the proposed Burlington Quarry Extension without creating any negative impacts to the natural environment. All proposed monitoring locations, threshold values, methodologies and mitigation measures are considered preliminary and will be finalized in consultation with the MNRF, CH and the MECP.

7.1 General Mitigation Measures

This section includes general mitigation measures (e.g., erosion and sedimentation, accidental spills, dust, noise and workspace limitations) that apply to all potentially impacted features (e.g., wetlands, woodlands, SWH, fish habitat and habitat of threatened and endangered species). Specific potential impacts and mitigation and/or enhancement measures proceed these general mitigation measures.

7.1.1 Erosion and Sedimentation

Erosion and sedimentation from the quarry construction, operations and rehabilitation work areas could potentially result in adverse effects to water quality (e.g., increased turbidity) or sedimentation and associated effects on amphibians and/or fish (e.g., injury or mortality due to suspended sediments or altered habitat use) or wetland, woodland and/or fish habitat (e.g., loss of interstitial spaces in rocky areas, smothering of aquatic vegetation and/or incubating eggs).

An Erosion and Sedimentation Control (ESC) Plan will be prepared and implemented to minimize the potential for erosion and sedimentation from the quarry construction site. Basic elements of the plan should include consideration of:

- Construction and operation phasing to minimize the amount of time soils are barren and therefore, more susceptible to erosion;
- Requirements and timing for rehabilitation of disturbed areas;
- Stormwater management strategies during construction;
- Grading and removal of golf course irrigation channel and ponds during periods when the features are not flowing, to minimize potential for adverse effects on downstream water quality;
- Erosion prevention measures (e.g., hydroseeding, sodding, erosion control matting, tarping of stockpiles);
- Sedimentation control measures (e.g., silt fences); and
- Inspection and performance monitoring requirements and adaptive management considerations.

Implementation of an effective ESC Plan, incorporating both erosion and sediment controls, coupled with regular inspection and performance monitoring and implementation of any remedial actions necessary to ensure effective performance, is anticipated to be largely effective in preventing the movement of eroded soil particles off-site towards adjacent fish habitat.

Overall, no negative effects to identified natural heritage features are predicted to occur as a result of erosion and sedimentation during any phase of quarry development, provided an effective ESC Plan, including monitoring and adaptive management, is implemented.

7.1.2 Accidental Spills

Accidental spills of potentially hazardous materials (e.g., fuel and oil from heavy equipment), if transported to wetlands or watercourses providing reptile, amphibian and/or fish habitat, could cause stress or injury to vegetation, wildlife and other aquatic biota (e.g., benthic invertebrates).

In order to mitigate the potential for adverse effects due to accidental spills during quarry construction and operation, it is recommended that a spill prevention and response plan be prepared to outline the material handling and storage protocols, mitigation measures (e.g., spill kits on-site), monitoring measures and spill response plans (i.e., emergency contact procedures, including the Spills Action Centre, and response measures including containment and clean-up). An approved plan has been prepared for the active Burlington Quarry and would be expanded to include the West and South Extensions (Nelson 2019). Implementation of this effective spill prevention and response plan is anticipated to be effective in preventing adverse effects on wildlife, vegetation, wetlands and fish habitat.

7.2 Impact Assessment and Mitigation and Enhancement Measures

7.2.1 Wetlands

Impacts on wetlands can be either direct (i.e., encroachment of the Limit of Extraction within a wetland) or indirect (i.e., changes to water balance or hydroperiods). Potential direct and indirect impacts of the proposed extraction, operation and rehabilitation phases are assessed in the following sections.

Direct Impacts – Limit of Extraction

The Limit of Extraction has been designed to avoid direct impacts to all wetlands, regardless of level of significance. There are no wetlands within the Limit of Extraction within either the South or West Extension areas. Therefore, no direct impacts to wetlands are anticipated within the Limit of Extraction during any phase of the project.

Direct Impacts – Licensed Boundary

The Licensed Boundary has been designed to avoid direct impacts to all wetlands within the South Extension area. There is one wetland feature that falls within the edge of the Licensed Boundary within the West Extension Area: the Weir Pond and the associated MAS2-1 (Wetland 13202), located adjacent to Colling Road. Water presence and depth are reliant on the adjacent quarry discharge.

To avoid direct impact to the Weir Pond and the associated MAS2-1, the proposed Limit of Extraction has been set back a minimum of 30 m from the feature edge. No operational activities will occur within the 30 m setback; however, a berm is proposed to be constructed within the 30 m setback. The berm will be a minimum of 14 m from the feature edge and will be vegetated to ensure soil stability and prevention of erosion. Limit of workspace indicators (flagging or fencing) will be installed within the 30 m setback to ensure there is no accidental encroachment into the wetland during construction of the berm. Where existing areas within the 30 m setback are not naturally vegetated (i.e., on portions of the Burlington Springs Golf Course within 30 m of the feature), these areas will be naturalized with plantings to assist in maintaining and enhancing wetland function. No direct impacts on this wetland are anticipated following implementation of the mitigation measures identified above.

Direct Impacts – 120 m Adjacent Lands

Wetlands are located within the 120 m Adjacent Lands within both the West and South Extension areas. To protect these wetland features, the Limit of Extraction has been setback >30 m from any feature boundary. No direct impacts will occur.

Indirect Impacts

Indirect impacts could potentially occur (i.e., erosion and sedimentation from extraction or other land alterations, or changes affecting water balance or hydroperiod). These recommended mitigation measures, where appropriate, are discussed in the following sections.

The Weir Pond and the associated MAS2-1 (Wetland 13202) within the Licensed Boundary are supplied with water by pumping from the existing adjacent quarry. The proposed quarry Extension is not anticipated to have any impact on pumping or water quality related to discharge from the existing quarry. Pumping and discharge are recommended to occur at the same location at the upstream end of the tributary and in the same manner as existing pumping.

The remaining identified wetlands are all located within the 120 m Adjacent Lands. The potential for indirect effects from hydrological changes to these features relies on the assessment of ground and surface water data and any input these may have on the identified wetlands. The data collected and assessed to date indicates that there are minor groundwater contributions to two of the existing wetland units (EarthFX 2020).

The surface water data assessment reveals that the wetland units are primarily dependent on precipitation and overland runoff inputs (Tatham 2020). Therefore, wetland hydroperiods could be affected due to changes in catchment area sizes, infiltration rates or discharge of pumped water from the quarry (e.g., drier conditions from reduced surface water runoff; wetter conditions from increased inputs of pumped water). Changes in wetland hydroperiods could affect wetland vegetation communities or wetland-dependent wildlife species depending on the nature and magnitude of the change.

Water quality conditions are anticipated to remain unaffected throughout any of the operational phases.

Wetland Units SWD3-2a (Wetland 13200)

Extraction will reduce the drainage area to Wetland 13200, located northeast of the existing irrigation ponds within the Burlington Springs Golf Course property. Reducing the drainage area of the wetland has the potential to adversely impact the wetlands' hydroperiod. As such, a mitigation strategy has been developed to supplement the flow into the wetland during operations as required. Quarry water will be pumped from Quarry Sump 0100 directly into the wetland at specified rates and volumes to maintain the wetland hydroperiod. As part of the rehabilitation of the west extension, grade around the wetland to original ground level, reinstating the wetland's drainage area. The portion of the wetland's drainage area reinstated through rehabilitation will be graded to drain overland into the wetland and will be planted with trees, consistent with existing conditions.

Wetland hydroperiod and shallow groundwater monitoring stations will be established in these wetland units in the spring of 2020 to establish the wetland hydroperiod. The wetland hydroperiod and water temperature are critical to the form and function of the wetland from a natural heritage, habitat and breeding perspective. As such, wetland hydroperiod thresholds will be established for these wetland units to identify potential unforeseen changes and impacts to the surface water and natural heritage features as a result of extraction and quarry dewatering.

It is recommended that the wetland hydroperiod thresholds be established from the results of the historic surface water monitoring, existing condition water balance and integrated surface water groundwater model completed in support of the proposed quarry extension. Specifically, dates when the wetlands must remain wet should be established from the monitoring data and water balance and integrated surface water groundwater model results. It is anticipated that the wetland hydroperiod thresholds may be refined as additional baseline monitoring data is collected during the approvals process, prior to extraction, through consultation with the requisite approval agencies.

Wetland Units MAM2-2 and SWD3-2b (Wetland 13201)

Extraction will reduce the drainage area to the wetland units northwest of No. 2 Sideroad. Reducing the drainage area of the wetland units has the potential to adversely impact the wetlands' hydroperiod; therefore, a mitigation strategy has been developed to supplement the flow into the wetland during operations. A bottom draw outlet will be constructed in the southeast corner of the proposed pond and an outlet pipe complete with a control valve will be installed to discharge water into the roadside ditch along No. 2 Sideroad feeding the wetland. The wetland hydroperiod will be monitored and water will be discharged to the wetland as required to maintain the wetland hydroperiod. The discharge of water, both rate and quantity, will be controlled by the control valve operated by Nelson staff during operations. The bottom draw outlet and outlet pipe complete with a control valve will remain post extraction as part of the rehabilitation of the site.

Wetland hydroperiod and shallow groundwater monitoring stations will be established in these wetland units in the spring of 2020 to establish the wetland hydroperiod. The wetland hydroperiod and water temperature are critical to the form and function of the wetland from a natural heritage, habitat and breeding perspective. As such, wetland hydroperiod thresholds will be established for these wetland units to identify potential unforeseen changes and impacts to the surface water and natural heritage features as a result of extraction and quarry dewatering.

It is recommended that the wetland hydroperiod thresholds be established from the results of the historic surface water monitoring, existing condition water balance and integrated surface water groundwater model completed in support of the proposed quarry extension. Specifically, dates when the wetlands must remain wet should be established from the monitoring data and water balance and integrated surface water groundwater model results. It is anticipated that the wetland hydroperiod thresholds may be refined as additional baseline monitoring data is collected during the approvals process, prior to extraction, through consultation with the requisite approval agencies.

The drainage areas contributing to each wetland east and south of the south extension will remain undisturbed through extraction and rehabilitation. The extraction limit proposed was refined through the development of the Site Plans to maintain the surface water catchments to each wetland east and south of the south extension and to the East Arm of the West Branch of the Mount Nemo Tributary of Grindstone Creek.

Dust is another potential impact to adjacent wetlands. Processing operations will continue within the existing quarry only and will not occur in either the West or the South Extension areas. Removal of the overlying soils, blasting and material transport within the Extension areas could result in locally generated dust, with the potential to escape the Limit of Extraction. However, the Limit of Extraction has been sited >30 m from any identified wetland boundary. In addition to the minimum 30 m setback, best management practices will be applied by implementing Nelson's current Dust Control Measures.

The Site Plans contain all necessary details regarding operations, extraction and licensing boundaries, berm location, etc. to inform effective mitigation.

No negative impacts are anticipated to the ecological form or function of the identified wetland features if the recommended mitigation and enhancement measures are implemented.

Wetland rehabilitation is provided on the Rehabilitation Plan (MHBC 2020). Consultation with Conservation Halton is recommended to work through the details.

7.2.2 Woodlands

Impacts on woodlands can be either direct (i.e., encroachment of the Limit of Extraction within a woodland) or indirect (i.e., dust, soil compaction). Potential direct and indirect impacts of the proposed extraction, operation and rehabilitation phases are assessed in the following sections.

<u>Direct Impacts – Limit of Extraction, Licensed Boundary and 120 m Adjacent Lands, Significant Woodlands</u>

The Limit of Extraction and Licensed Boundary have been designed to avoid direct impacts to all significant woodlands and have been sited almost entirely 30 m from these features, with the exception of two small nodes of significant woodland M; the Limit of Extraction is 15 m from the dripline of these two nodes. Therefore, no direct impacts to significant woodlands are anticipated within the Limit of Extraction during any phase of the project.

No operational activities will occur within the 30 m setback; however, berms are proposed within specific areas of the setbacks of significant woodlands M, N, O and P (MHBC Operation Plan April

2020). A berm will be constructed 15 m from the dripline of a portion of significant woodland M (3 m from each of the two small nodes) of the West Extension. Berms will also be constructed along portions of significant woodlands N, O and P in the South Extension. These berms will be constructed 15 m from the edge of the dripline to significant woodlands N and O. A berm will be constructed 3 m from the edge of a portion of the cultural plantation (CUP) of significant woodland P.

Six significant woodlands (A, D, M, N, O and P) are located within the 120 m Adjacent Lands within both the West and South Extension areas; however, due to the minimum 15 m setback, and the majority of setbacks are 30 m, no direct impacts will occur.

All berms will be vegetated to ensure soil stability and prevention of erosion. Where existing areas within the setback are not naturally vegetated (i.e., on portions of the Burlington Springs Golf Course), these areas will be naturalized with plantings to assist in maintaining and enhancing woodland size and function.

Direct Impacts – Limit of Extraction, Other Wooded Features

Wooded features E, F, G and H do not meet the definition of woodland, and therefore are not significant (MNRF 2010; ROP 2018). Collectively, these four areas total 1.22 ha in size. These four features are small, isolated, disturbed and anthropogenically influenced due to golf course maintenance activities. These four areas are within the Limit of Extraction and will be removed and replicated in locations that better contribute to the overall form, function and resiliency of the Regional NHS.

The proposed Rehabilitation Plan (MHBC 2020) will result in a net gain of woodland features and functions within the local landscape, ensuring no negative impact to canopy cover. Further information is provided in section 11.

Indirect Impacts

Indirect impacts could potentially occur to woodlands adjacent to the Limits of Extraction or other work areas (i.e., soil compaction, introduction of non-native species and stress/dieback of woodland edge). Recommended mitigation measures, where appropriate, are discussed in the following sections.

To prevent damage to adjacent woodland habitat located within the setback of the Limit of Extraction or other work areas (such as berm locations), tree protection measures (e.g., hoarding, temporary fencing at the dripline) may be applied. Native vegetation species will be planted within setbacks. The Site Plans contain all necessary details regarding operations, extraction and licensing boundaries, berm location, etc. to inform effective mitigation.

No negative impacts are anticipated on the ecological form or function of the significant woodlands if the recommended mitigation and enhancement measures are implemented.

7.2.3 Significant Wildlife Habitat

Impacts on SWH can be either direct (i.e., encroachment of the Limit of Extraction within a feature) or indirect (i.e., changes to water balance or hydroperiods, soil compaction, etc.). Potential direct and indirect impacts of the proposed extraction, operation and rehabilitation phases are assessed in the following sections.

Bat Maternity Colonies – within the Limit of Extraction and the 120m Adjacent Lands

Polygon E is located with the Limit of Extraction in the West Extension area and was determined to provide bat maternity colony SWH as more than 1,000 calls of Big Brown Bats were recorded within this polygon (**Figure 7a, Appendix A**).

Bats frequently move their pups during the active maternity roosting season. Although individuals will return to the same general area year after year, they are not loyal to a specific roosting tree or particular location in the broader context of a contiguous woodland or where woodlands are abundant within the local landscape.

In this case, Big Brown Bats were present in sufficient numbers during the month of June to indicate that suitable roosting trees may be used as maternity roosting sites within polygon E. This community makes up 0.48 ha of FOD5/DIST habitat within the Limit of Extraction. Within 200 m of this feature, additional trees suitable for roosting occur, accounting for more than 6 ha of FOD and SWD communities within the 120 m Adjacent Lands to the northeast and southeast of the Limit of Extraction. The bat maternity colonies within the Study Area are not unique in the Subject Lands or even within the landscape.

To retain and enhance bat habitat function in the extraction and post-extraction landscape, a reforestation strategy to increase suitable forest cover will be implemented prior to extraction. Also prior to extraction, bat boxes and artificial bark stations will be installed in suitable locations within the Subject Lands to provide functional artificial roosting structures.

In addition to these enhancement measures, avoidance of complete removal of snag habitat within the Limit of Extraction will be incorporated into the Operational Phasing to ensure that forest communities in later phases of extraction will be retained on site to provide rotational habitat for roosting bats. As earlier phases are extracted, woodlands in later phases will mature to suitable decay classes to provide bat roosting habitat. Removal of bat roosting habitat would occur outside of the active bat season; therefore, removal would be restricted to November 1 through March 31. Given these habitat enhancement opportunities and mitigation measures, no negative impacts are expected on bat roosting habitat.

Special Concern and Rare Wildlife

Eastern Wood-pewee – within the Limit of Extraction and the 120m Adjacent Lands

Within the Limit of Extraction, singing males were recorded at BP8, also referred to as Polygon E (two males on both rounds) and BP11 (one male during the first round only), located in FOD5/DIST and FOD7-2 communities, respectively (**Figure 7a, Appendix A**).

Within the 120 m Adjacent Lands, singing males were recorded at BP5, BP6, BP9, BP10 and BP17 in deciduous forest and swamp ELC communities (FOD5-5, FOD5-6, FOD7-2, FOD7-4, SWD3-2a and SWD3-2b) (**Figures 7a and 7b, Appendix A**).

This bird is a provincial species of Special Concern and was added to the SARO list in June 2014. The cause of the decline of this species is unknown; however, there is speculation that there is a loss and/or degradation of preferred habitat, a reduction in the availability of flying insect prey and a loss of eggs and fledgling birds due to an increasing number of predators (e.g., Blue Jays and Red Squirrels) (MNRF 2015).

This species prefers to nest in the mid-canopy layer of forest clearings and edges of deciduous and mixed forests. It is most abundant in mid-age-to-mature woodlots that contain little understory vegetation (MNRF 2015). The area of SWH for this habitat type and species is the area of the habitat to the finest ELC scale that protects the habitat form and function.

This habitat is not limited within the Subject Lands nor on the landscape; it is present in the surrounding woodland and swamp habitats.

Wooded features within the West Extension, associated with the active golf course, are patchy, highly disturbed and altered due to ongoing golf course use and maintenance. Enhancement opportunities exist in targeted reforestation efforts in the open and isolated areas, connecting and creating woodland habitat, including interior forest habitat. Removal of Eastern Wood-pewee habitat would occur outside of the breeding bird season; therefore, removal would be restricted to August 1 through April 30. Given these enhancement opportunities and mitigation measures, no negative impacts are anticipated regarding Eastern Wood-pewee habitat.

Unicorn Clubtail – within the 120m Adjacent Lands

Unicorn Clubtail was observed at BP1, the Weir Pond associated with Wetland 13202 (**Figure 7a, Appendix A**). This dragonfly is found in southern Ontario in scattered locations, often associated with anthropogenic wetlands/waterbodies such as those found in quarries and golf course water traps. In Halton/Hamilton, where it is most abundant, they are also found in natural wetlands with abundant shoreline vegetation and typically fishless waterbodies.

This feature will remain on the Subject Lands and will continue to provide breeding habitat and habitat for the larval stage of the species.

Potential impacts and mitigation measures are provided in the Wetland section above.

Woodland Amphibian Breeding Habitat – within the 120m Adjacent Lands

Woodland amphibian breeding SWH was confirmed at ACC10, an on-line pond located at the outside edge of the 120 m Adjacent Lands and part of the Camisle Golf Course (**Figure 7b, Appendix A**). The SWH consists of the wetland unit itself (SAS1; MAM2-2/SWT2-2), plus a 230 m radius of woodland (MNRF 2015) (**Figure 7b, Appendix A**).

This feature will remain on the Subject Lands and will continue to provide breeding and overwintering habitat.

Potential impacts and mitigation measures are provided in the Wetland and Woodland sections above.

No negative impacts are anticipated to SWH. With natural environment setbacks, maintenance of key habitat diversity areas, local movement corridor functions, and the implementation of the recommended mitigation and enhancement measures, habitat for these species will be enhanced in the post-extraction landscape.

7.2.4 Fish Habitat

Impacts on fish habitat can either be direct (i.e., encroachment of a project component or activity into fish habitat) or indirect (i.e., where changes in other physical variables such as flow, groundwater inputs or water quality occur as a result of project components or activities outside the limits of feature, but affect the fish habitat functions of the feature). Potential direct and indirect impacts of the proposed development, including during the temporary construction phase, the long-term operations phase and the post-operations rehabilitation phase, are assessed in the following sections.

Direct Impacts

Direct Impacts – Limit of Extraction

There is no direct or indirect fish habitat within the proposed Limit of Extraction within either the South or West Extension areas. Therefore, no direct encroachment into any watercourse providing fish habitat will occur and no direct impacts on fish habitat are anticipated within the Limit of Extraction, during any phase of the Project.

Direct Impacts – License Boundary

The headwaters of the Unnamed Tributary of Willoughby Creek upstream from the Colling Road culvert are located on the edge of the License Boundary. This portion of the tributary is considered to be indirect fish habitat.

To protect indirect fish habitat within the tributary on the edge of the License Boundary, the proposed Limit of Extraction has been set back a minimum of 30 m from the bankfull channel and the wetlands associated with the Weir Pond, which will be maintained. No operational activities will occur within the 30 m setback; however, a berm is proposed within the 30 m setback. The berm will be a minimum of 14 m from the feature edge and will be vegetated to ensure soil stability and prevention of erosion.

Where existing areas within the 30 m setback are not naturally vegetated (i.e., on portions of the Burlington Springs Golf Course within 30 m of the Unnamed Tributary of Willoughby Creek), these areas will be naturalized with plantings to assist in maintaining and enhancing riparian functions adjacent to fish habitat. As a result, there will be no direct impacts to fish habitat within the License Boundary.

The weir structure will remain in place to divert flow to the proposed pond adjacent to the West Extension in a manner similar to existing diversion to the golf course ponds, while maintaining baseflow downstream to the tributary of Willoughby Creek. The weir plate (currently operated by Burlington Springs Golf Course) will be installed permanently to control the diversion of flow and maintain the Weir Pond, wetland and proposed pond water levels. In-water work associated with weir plate alterations is recommended to occur between July 16 and August 30 to minimize the potential for any indirect impacts on the reproductive activities of downstream fish communities in Willoughby Creek. No long-term impacts on fish habitat are anticipated due to permanent installation of the weir plate.

A diversion pipe will be constructed from the Weir Pond to divert water into the ponds proposed on the western side of the West Extension area. Limited encroachment into the Weir Pond may occur during installation of the diversion pipe. It is recommended that any in-water work required to install the diversion pipe be completed between July 16 and August 30 to minimize the potential for any indirect impacts on the reproductive activities of downstream fish communities in Willoughby Creek. With appropriate mitigation, no negative impacts on the indirect fish habitat function are anticipated to occur as a result of installation of the diversion pipe and no Harmful Alteration, Disruption or Destruction (HADD) of fish habitat is anticipated.

Direct Impacts – 120 m Adjacent Lands

No construction or long-term operation activities will occur within the 120 m Adjacent Lands from the West Extension area. Therefore, no direct impacts on fish habitat will occur within the area during those project phases.

The only construction activity proposed within the 120 m Adjacent Lands next to the South Extension will be the installation of a temporary settling pond/sump outlet, which will discharge flow to the West Arm of the West Branch of the Mount Nemo Tributary. The settling pond outlet is anticipated to be installed at the bank of the watercourse, although no detailed design has been completed to date. Some minor disruption in riparian and bank habitat would be anticipated at the outlet location during installation and as a result of the long-term presence of the outlet. It is recommended that the outlet be installed outside the warm-water in-water works window (i.e., installation should occur between July 16 and March 14) to prevent disturbance to fish reproductive activities. Other standard in-water and near-water work mitigation measures (e.g., sediment and erosion controls, spill prevention and response measures, work-site isolation, as may be necessary) should be implemented to minimize potential impacts on fish habitat. Any riparian areas disturbed during installation of the outfall should be rehabilitated with appropriate native vegetation species. With implementation of appropriate mitigation, installation of the outfall is not anticipated to cause the HADD of fish habitat. Following completion of detailed design of the outlet, potential impacts on fish and fish habitat should be reviewed and assessed under the fish habitat protection provisions of the *Fisheries Act* and follow-up with DFO completed as necessary.

A water level control outlet is not proposed for the permanent lake and the lake water level will fluctuate seasonally. The integrated surface water/groundwater model predicts that the lake will fill to an elevation of 271 m. A high-water level overflow weir will be graded into the south corner of the lake to ensure discharge during extremely rare storm events (less frequent than the 1:100-year storm). Should discharge from the overflow weir ever occur, it would drain overland into the adjacent woodland, which contains HDF H2 and eventually into the West Arm of the West Branch of the Mount Nemo Tributary of Grindstone Creek. However, no structural measures associated with the emergency outlet are proposed outside the License Boundary, therefore, no directs impacts on fish habitat in H2 will occur.

Indirect Impacts

Indirect impacts could potentially occur during construction (e.g., due to erosion and sedimentation from the construction areas) or as a result of changes in physical watercourse characteristics (e.g., flow, water quality). Potential indirect impacts, including specific indirect impacts on specific fish habitat features and recommended mitigation measures, where appropriate, are discussed in the following sections. General mitigation (e.g., erosion and sediment controls) is discussed in section 7.1.

Indirect Impacts – Unnamed Tributary of Willoughby Creek

Under current conditions, the Unnamed Tributary of Willoughby Creek is primarily maintained by pumping from the existing Quarry Sump 0100, with some limited contributions from the Burlington Springs Golf Course irrigation channel and ponds during high flow periods. During lower flow periods, water is withdrawn by the golf course for irrigation purposes. Therefore, hydrology of the feature is highly manipulated and maintained/impacted by anthropogenic activities.

The proposed quarry Extension is not anticipated to have any impact on flows or water quality related to discharge from the quarry into the Unnamed Tributary of Willoughby Creek. Pumping and discharge are recommended to occur at the same location at the upstream end of the tributary and in the same manner as existing pumping in accordance with the existing PTTW and Environmental Compliance Approval. The existing 2 L/s minimum baseflow is recommended to be maintained throughout the duration of the operations, rehabilitation and post-rehabilitation periods, as discussed in more detail in the Adaptive Management Plan (EarthFX and Tatham Engineering 2020). Therefore, quarry discharge, which is the main source of flow to the Unnamed Tributary of Willoughby Creek, will continue in the same manner as it currently does in order to prevent indirect impacts on downstream direct fish habitat.

Tatham (2020) has identified seasonal water temperature targets for the Unnamed Tributary at Colling Road (ranging from 20°C in the spring to 30°C in the summer) and in the downstream Willoughby Creek (ranging from 23°C in the spring to 25°C in the summer) to prevent impacts on the water temperature regime.

Construction of the West Extension is not anticipated to have any effect on groundwater discharge to the Unnamed Tributary of Willoughby Creek (EarthFX 2020 and Tatham 2020); therefore, no impacts on fish habitat are anticipated as a result of localized hydrogeological changes occurring as a result of quarry extraction.

The existing quarry approvals permit the cessation of all pumping from Sump 0100 into the Unnamed Tributary of Willoughby Creek once quarry operation ceases. Cessation of pumping could potentially result in impacts on fish habitat in the unnamed Tributary, as well as in Willoughby Creek itself, which is known to provide direct fish habitat. Therefore, it has been recommended that pumping from the quarry continue indefinitely, in order to prevent impacts on downstream fish habitat.

Removal of the existing irrigation channel and irrigation ponds on the Burlington Springs Golf Course will result in alterations to the hydrological regime of the Unnamed Tributary of Willoughby Creek downstream from Colling Road. Once the irrigation channel and ponds are removed, flow will no longer be diverted out of Willoughby Creek for golf course irrigation purposes. However, in order to provide water to the proposed pond west of the West Extension area, water will be diverted out of the Weir Pond through a diversion pipe. The diversion pipe inlet will be established at the same elevation as the inflow channel to the current golf course ponds, such that diversion into the proposed pipe will generally be the same as current diversion into the golf course irrigation ponds. Therefore, diversion of flow into the proposed pond is not anticipated to have any impact on downstream fish habitat compared to current conditions.

The proposed diversion from Catchment S101, northwest of Colling Road, as discussed previously in section 7.2.1, will result in flow from this catchment area being input directly into the upstream end of the Unnamed Tributary of Willoughby Creek, as opposed to the current situation where this water is routed through the quarry and pumped back into the tributary. Overall, this diversion will result in the same volume of water being discharged into the Tributary, although, given that it will no longer go through the quarry, it is anticipated that the hydrological regime of this discharge will be more natural with seasonal peaks. Therefore, this diversion will not result in any overall change in the volume of water, but discharge will follow a more natural hydrograph, which may enhance fish habitat in downstream reaches of the Tributary and in Willoughby Creek itself.

In addition to the minimum baseflow threshold of 2 L/s upstream from Colling Road, Tatham (2020) has recommended preliminary minimum baseflow thresholds in Willoughby Creek itself, based on flow monitoring data. This includes thresholds of 25 L/s in the spring, 15 L/s in the summer and 10 L/s in the fall. Monitoring and adaptive measures are specified in the Adaptive Management Plan (EarthFX and Tatham Engineering 2020) to ensure these thresholds are met.

Overall, no negative impacts on downstream fish habitat in the Unnamed Tributary of Willoughby Creek and Willoughby Creek itself are anticipated as a result of any water management activities associated with the proposed quarry Extension. Existing discharge is recommended to occur in accordance with the PTTW limits; the minimum baseflow will be maintained at all times, and pumping is recommended to continue, following cessation of quarry operations to continue to maintain fish habitat. As noted in the Adaptive Management Plan (EarthFX and Tatham Engineering 2020), flow monitoring and adaptive measures are proposed to ensure that minimum flows, water quality and adherence to the PTTW conditions are maintained to prevent impacts on downstream fish habitat.

Removal of the golf course irrigation ponds and irrigation channel could potentially have short-term negative impacts and long-term positive impacts on fish habitat in the downstream Unnamed Tributary of Willoughby Creek. Depending on the method and timing of removal of the irrigation channel and ponds, negative impacts on the downstream watercourse, in the absence of mitigation, could potentially include erosion and sedimentation and associated water quality impacts, if sediment-laden water were transferred downstream. To mitigate these potential concerns, it is recommended that the downstream end of the golf course channel be blocked to isolate the irrigation channel. If water is to be pumped from the feature to facilitate filling or grading in the area, it should be appropriately treated, as may be necessary, prior to discharge to the downstream watercourse. No turbid water should be discharged to the natural watercourse.

It is anticipated that the existing irrigation channel from the Weir Pond to the golf course will be filled and naturalized within the 30 m setback from the Weir pond, including on the proposed berm that will be installed within the setback. The existing golf cart path and culvert at the outflow from the Weir Pond should be removed and the area should be restored. Any associated in-water work associated with pond removal on the golf course should adhere to appropriate cold-water timing restrictions to prevent negative impacts on potential downstream coldwater fish species in Willoughby Creek.

Over the long-term, removal of the golf course irrigation channel and ponds is expected to have a positive impact on fish habitat in the downstream Unnamed Tributary of Willoughby Creek by:

- Eliminating the existing thermal impacts of the golf course;
- Eliminating potential water quality impacts of the golf course; and
- Eliminating potential sediment loading from the golf course.

Indirect Impacts – Unnamed Tributary of Lake Medad

The Unnamed Tributary of Lake Medad is located within and downstream from the 120 m Adjacent Lands from the West Extension area. As discussed in section 4.3.2, historically, this tributary may have originated on the Subject Lands, although currently, there does not appear to be a hydrological connection between the Subject Lands and the upstream end of the Tributary on the south side of Sideroad 2. The portions of this intermittently flowing Tributary downstream from Sideroad 2 have been assumed to provide a mix of indirect and direct fish habitat.

The proposed West Extension is not anticipated to have any direct effect on surface water in the Unnamed Tributary of Lake Medad downstream from Sideroad 2, given the lack of a direct connection (Tatham 2020). However, modeling completed by EarthFX (2020) has predicted a reduction in baseflow values in the Unnamed Tributary of Lake Medad at the monitoring location on Cedar Springs Road, as a result of localized changes in groundwater due to the West Extension. The predicted reduction in flow could potentially have negative impacts on fish and fish habitat in the tributary.

As discussed in section 7.2.1, hydrological mitigation has been proposed to maintain water balance and hydroperiod within the wetland on the Subject Lands. The water that will be discharged into the wetland from the proposed pond is not anticipated to be discharged via direct surface flow into the Unnamed Tributary of Lake Medad downstream from Sideroad 2. However, water pumped into the wetland is anticipated to infiltrate into the shallow groundwater table or overburden interflow and ultimately be discharged into the Unnamed Tributary and this is anticipated to mitigate long-term flow changes in the tributary due to the West Extension (Tatham 2020). Therefore, no indirect effects on fish habitat in the tributary are anticipated to occur.

A preliminary minimum spring baseflow threshold of 0.5 L/s and seasonal water temperatures thresholds (ranging from 20°C in the spring to 30°C in the summer) have been specified by Tatham (2020) for the Unnamed Tributary of Lake Medad and monitoring and adaptive measures will be completed as per the Adaptive Management Plan (EarthFX and Tatham Engineering 2020). Overall, no negative impacts on fish habitat in the Unnamed Tributary of Lake Medad are anticipated to occur as a result of the proposed Extension.

Indirect Impacts – West Arm of the West Branch of the Mount Nemo Tributary

This watercourse provides direct fish habitat within and downstream from the 120 m Adjacent Lands from the South Extension. Flow in the watercourse is primarily maintained by discharge from Quarry Sump 0200 at Sideroad 2 (the existing PTTW permits discharge of up to 945 L/min) with only limited overland runoff inputs from the adjacent lands along its length (Tatham 2020). EarthFX (2020) has indicated that there is no groundwater discharge to this reach of the watercourse and monitoring has demonstrated that the reach between Sideroad 2 and the property line loses flow to groundwater infiltration over its length (Tatham 2020). Under the existing quarry permit, pumping of flows from Sump 0200 to this watercourse would cease once operations are completed.

No changes in the existing pumping regime from Sump 0200 will occur as a result of the proposed Extension and therefore, the main source of flow to this watercourse will continue unchanged. Given the potential impacts on fish habitat in the West Arm that could occur if pumping were to cease following completion of extraction/rehabilitation activities, it has been recommended that pumping from Sump 0200 continue indefinitely, following surrender of the aggregate license. In this manner, the main source of flow maintaining fish habitat in the reach will continue indefinitely and this represents a significant improvement in fish habitat conditions compared to what would occur under the current end-of-life plan where pumping would cease.

Tatham (2020) has calculated that the proposed South Extension will result in a reduction in the surface water catchment area of the West Arm. This is predicted to result in a decrease of up to 50 L/s of overland runoff to the West Arm at its furthest downstream point on the Subject Lands. This could potentially result in a negative impact on fish habitat. However, Nelson is proposing to construct a temporary settling pond during the early stages of the South Extension and a longer-term sump during the later stages. These water management features will discharge to the West Arm approximately mid-way between Sideroad 2 and the western property boundary. The settling pond and sump will be sized to convey a maximum discharge rate of 50 L/s, which will offset the reduction in overland flow as a result of quarry extraction. Limiting the discharge to 50 L/s will also ensure that flow in the watercourse does not exceed existing conditions for the 1:2 year to 1:100 year storm events (Tatham 2020). While some minor reductions in flow will occur between Sideroad 2 and the settling pond/sump discharge location, no corresponding negative impacts on fish habitat are anticipated, given that the bulk of flow in this reach will be maintained by discharge from Sump 0200. The proposed settling pond and sump will ensure adequate water quality treatment to meet the discharge criteria specified in quarry's existing Environmental Compliance Approval.

Given that there is no groundwater discharge to the West Arm of the West Branch of the Mount Nemo Tributary within the 120 m Adjacent Lands, no effects on flow in the watercourse are anticipated as a result of localized alterations in the groundwater table due to extraction in the South Extension.

Overall, given the proposed mitigation, no negative effects on fish and fish habitat within the West Arm of the West Branch of the Mount Nemo Tributary are anticipated during any project phase.

Indirect Impacts – Headwater Drainage Feature H2

This HDF provides indirect fish habitat within the 120 m Adjacent Lands from the South Extension. Its primary function is to supplement flows and maintain water quality within the downstream West Arm of the West Branch of the Mount Nemo Tributary.

Tatham (2020) confirmed that there will be no alteration in the surface water catchment area associated with HDF H2, therefore no changes in surface water runoff to the feature are predicted. EarthFX (2020) has predicted a 3% reduction in groundwater discharge to the wetland at the upstream end of HDF H2, as a result of quarry extraction. However, this minor reduction in groundwater discharge is not anticipated to have a negative impact on the indirect fish habitat functions provided by H2, as it will continue to convey flow to the downstream direct fish habitat in the West Arm of the West Branch on a seasonal basis. A 3% reduction in the groundwater contribution is not anticipated to have a measurable effect in downstream direct fish habitat.

Given the minor reduction in groundwater, no mitigation measures are proposed to supplement flows in the wetland/HDF. However, the feature will continue to be monitored throughout the operations period, as specified in the Adaptive Management Plan (EarthFX and Tatham Engineering 2020). If adverse effects on flow and/or wetland function are observed as a result of quarry extraction, mitigation (e.g., pumping from the quarry into the wetland) could be implemented, if needed to maintain ecological and biophysical functions.

Indirect Impacts – East Arm of the West Branch of the Mount Nemo Tributary

This watercourse provides indirect and direct fish habitat outside the South Extension Study Area. Tatham (2020) indicates that there will be no change in the surface water catchment area of the headwaters of the East Arm of the West Branch and therefore, no change in surface water flow contributions to the watercourse.

EarthFX (2020) predicted a minor reduction in groundwater discharge to the headwater wetlands (corresponding to 0.3 to 1.8% of existing groundwater contributions) at the maximum extraction level. Tatham (2020) indicated that this would result in an approximately 4 to 6% reduction in runoff volume in the East Arm of the West Branch.

This upstream reach of the West Arm does not provide direct fish habitat, but flow conveyed from this area eventually reaches portions of the West Arm downstream from the spring and online pond that does provide direct fish habitat. However, an overall reduction of 4 to 6% of runoff volume is not anticipated to negatively impact direct fish habitat, given the small change is within the range of natural fluctuation.

Flow and wetland hydroperiod will be monitored, with mitigation implemented as necessary if adverse effects are observed, as discussed in the Adaptive Management Plan (EarthFX and Tatham Engineering 2020).

7.2.5 Habitat of Threatened or Endangered Species

The following threatened and endangered species were observed within the Limit of Extraction:

- Butternut;
- Barn Swallow Nesting Habitat; and
- Bat Habitat.

It is assumed that SAR bat habitat and Jefferson Salamander habitat is present within the 120 m Adjacent Lands.

One Category 2 Butternut tree will be affected by the Limit of Extraction (**Figure 7a, Appendix A**). The proposed removal of this species is typically addressed through the registration of the activity under section 23.7, O.Reg. 242/08.

Nine Barn Swallow nests, identified within three structures, will be adversely affected by the Limit of Extraction and the proposed pond west of the West Extension. The proposed removal of the three structures (B, E and R1, **Figure 7a, Appendix A**) is typically addressed through the registration of the activity under section 23.5, O.Reg. 242/08.

SAR bat habitat may be adversely affected by the removal of confirmed SAR bat habitat in Polygon E (**Figure 7a, Appendix A**). However, project phasing, avoidance windows and mitigation measures, along with a comprehensive rehabilitation plan is anticipated to off-set any negative impacts, and increase and improve the amount of suitable SAR bat habitat.

Regulated Jefferson Salamander habitat is located within 120 m from the proposed Limit of Extraction. There will be no direct or indirect impacts to Jefferson Salamander habitat, including the breeding ponds. Extensive surface water and groundwater evaluations have been completed by Tatham (2020) and EarthFX (2020). These analyses include water levels, hydroperiods and water balancing and confirm there will be no impacts to the breeding ponds. Though it is anticipated that there will be no adverse effects from the proposed expansion and operation of the Burlington Quarry Extensions, a detailed AMP will be implemented to verify these conclusions on an on-going basis. In addition, specific enhancement and creation measures have been established to benefit this SAR. Details are provided in Section 11.

Potential direct and indirect impacts to these SAR and any associated habitat will be addressed through consultation with the MECP to meet requirements under the ESA (2007).

8 NIAGARA ESCARPMENT PLAN

The Subject Lands, and therefore the Limit of Extraction and Licensed Boundary for both the West and South Extensions, are designated as Escarpment Rural Area (**Figure 2c, Appendix A**). This section provides a summary of ecological considerations related to the NEP and provides input to the planning reporting and opinions.

The natural heritage objectives of the NEP for an aggregate application focus on Sections 2.7.3 through 2.7.8 and Section 2.7.12. These are discussed further below.

Diversity and connectivity of key natural heritage and hydrologic features: Existing connectivity and diversity is relatively minimal within the Limit of Extraction and Licensed Boundary of either Extension. In the West Extension, KNHF were identified in the ROP within the active golf course; however, detailed field investigations and survey effort determined that these areas provide minimal diversity and are patchy, relatively isolated, managed features. Removal of the open row crops that make up the Limit of Extraction in the South Extension will not provide a disconnect of KNHFs as these features are all associated with the Regional NHS, for which connectivity between key features was a key consideration. It is anticipated that through the implementation of mitigation and enhancement measures, discussed above, the application of a phased extraction and the implementation of progressive restoration and rehabilitation efforts, both species diversity and connectivity will increase and improve. Site Plans and the Rehabilitation Plan provide further details (MHBC 2020).

Natural features not identified as a KNHF: No unidentified KNHF were observed within the Limit of Extraction and Licensed Boundary of either Extension, despite survey effort.

Protection of KNHF and related functions: Avoidance, mitigation and/or enhancement measures have been discussed for Wetlands, Woodlands, SWH, Fish Habitat and Habitat for threatened and endangered species in the Impact Assessment section above. It is anticipated that through the implementation of these measures and the progressive Rehabilitation Plan (MHBC 2020; section 11), KNHF and their functions will be protected.

Erosion, sedimentation and introduction of pollutants: An ESC plan and a Spill Contingency and Pollution Prevention Plan (Nelson 2019) have been prepared as part of this application process. Implementation of these Plans will occur if/when appropriate to protect KNHF and functions.

Vegetation protection zone: Setbacks from the Limits of Extraction have been recommended based on the type of KNHF:

- Wetland (regardless of significance): minimum 30 m;
- Significant woodland: mostly 30 m, though some areas are 15 m;
- Fish habitat: minimum 30 m.

These setbacks have been designed to be of sufficient width to protect and enhance the KNHFs during all phases of the quarry Extension. Where existing areas within the 30 m setback are not naturally vegetated (i.e., on portions of the Burlington Springs Golf Course within 30 m of a KNHF), these areas will be naturalized with natural self-sustaining vegetation plantings to assist in maintaining and enhancing feature form and function.

Threatened and endangered species: These have been identified within the Limit of Extraction and in the 120 m Adjacent Lands. Correspondence will occur directly with the MECP in order to meet the requirements of the ESA.

Significant woodlands and tree cutting: The Limit of Extraction has been sited outside of significant woodlands.

Wetlands: The Limit of Extraction has been sited outside of all wetland features, regardless of level of provincial significance.

9 REGIONAL OFFICIAL PLAN

As noted in the ROP section 116.1, the boundaries of the NHS may be refined, with additions, deletions and/or boundary adjustments through several processes, including completion of an EIA. The technical requirements of an EIA have been met.

Significant Woodland

Field surveys and data analysis show that features E, F, G and H do not meet the definition of Significant Woodland, and therefore would not be considered part of the Regional NHS.

SWH – Bat Maternity Colonies

Polygon E is located with the Limit of Extraction in the West Extension area and was determined to provide bat maternity colony SWH as more than 1,000 calls of Big Brown Bats were recorded within this polygon. This community makes up 0.48 ha of FOD5/DIST habitat within the Limit of Extraction. Within 200 m of this feature, additional trees suitable for roosting occur, accounting for more than 6 ha of FOD and SWD communities within the 120 m Adjacent Lands to the northeast and southeast of the Limit of Extraction. The bat maternity colonies within the Study Area are not unique in the Subject Lands or even within the landscape.

To retain and enhance bat habitat function in the extraction and post-extraction landscape, a reforestation strategy to increase suitable forest cover will be implemented prior to extraction. Also prior to extraction, bat boxes and artificial bark stations will be installed in suitable locations within the Subject Lands to provide functional artificial roosting structures.

In addition to these enhancement measures, avoidance of complete removal of snag habitat within the Limit of Extraction will be incorporated into the Operational Phasing to ensure that forest communities in later phases of extraction will be retained on site to provide rotational habitat for roosting bats. As earlier phases are extracted, woodlands in later phases will mature to suitable decay classes to provide bat roosting habitat. Removal of bat roosting habitat would occur outside of the active bat season; therefore, removal would be restricted to November 1 through March 31. Given these habitat enhancement opportunities and mitigation measures, no negative impacts are expected on bat roosting habitat.

SWH – Special Concern and Rare Wildlife

Eastern Wood-pewee

Singing males were recorded at BP8, also referred to as Polygon E (two males on both rounds) and BP11 (one male during the first round only), located in FOD5/DIST and FOD7-2 communities, respectively. This habitat is not limited within the Subject Lands nor on the landscape; it is present in the surrounding woodland and swamp habitats.

Wooded features within the West Extension, associated with the active golf course, are patchy, highly disturbed and altered due to ongoing golf course use and maintenance. Enhancement opportunities exist in targeted reforestation efforts in the open and isolated areas, connecting and creating woodland habitat, including interior forest habitat. Removal of Eastern Wood-pewee habitat would occur outside of the breeding bird season; therefore, removal would be restricted to August 1 through April 30. Given these enhancement opportunities and mitigation measures, no negative impacts are anticipated regarding Eastern Wood-pewee habitat.

Habitat of Threatened and Endangered Species – Bats

The acoustic monitoring unit in Polygon E recorded more than 1,300 passes of Little Brown Myotis and 20 passes of Tri-coloured Bat over the 13 nights of monitoring. Though the number of Tri-coloured Bat passes is not considered to be representative of species at risk bat habitat, the large number of Little Brown Myotis passes results in this feature being considered species at risk bat habitat.

All adverse effects to threatened or endangered SAR or their habitats will be addressed through additional consultation with the MECP to meet requirements of the ESA.

SWH and Habitat of Threatened and Endangered Species are KNHFs in the ROP section 115.3. These two features are patchy, highly disturbed and/or altered due to ongoing golf course activity and maintenance. Due to the surrounding suitable and available habitat and implemented recommended mitigation measures, in addition to the proposed Rehabilitation Plan (MHBC 2020; section 11), no negative impacts will occur to the species.

10 REGIONAL OFFICIAL PLAN GUIDELINES – AGGREGATE RESOURCES REFERENCE MANUAL

These Guidelines provide direction and outline approaches that can be used to satisfy the relevant policies of the ROP through a number of objectives. These objectives and how they have been satisfied are provided and discussed below.

Identification of natural heritage features: All natural features within the Limit of Extraction, the Licensed Boundary and the 120 m Adjacent Lands for both the West and the South Extensions have been identified and assessed.

Connectivity and linkages between NHF and between KNHF and the NHS: As stated in the NEP section above, existing connectivity and diversity is relatively minimal within the Limit of Extraction and Licensed Boundary of either Extension. In the West Extension, KNHF were identified in the ROP within the active golf course; however, detailed field investigations and survey effort determined that these areas provide minimal diversity and are patchy, relatively isolated, managed features. Removal of the open row crops that make up the Limit of Extraction in the South Extension will not provide a disconnect of KNHFs as these features are all associated with the Regional NHS, for which connectivity between key features was a key consideration. It is anticipated that through the implementation of mitigation and enhancement measures, discussed above, the application of a phased extraction and the implementation of progressive restoration and rehabilitation efforts, both species diversity and connectivity will increase and improve. Site Plans and the Rehabilitation Plan provide further details (MHBC 2020).

Potential impacts on KNHF: An impact assessment has been prepared for all features within the Limit of Extraction, as well as in the 120 m Adjacent Lands in section 7.2.

Negative impacts on KNHF: Discussed in detail in section 7.2, it is anticipated that through the implementation of mitigation and enhancement measures, discussed above, the application of a phased extraction and the implementation of progressive restoration and rehabilitation efforts, both species diversity and connectivity will increase and improve. Site Plans and the Rehabilitation Plan provide further details (MHBC 2020).

Mitigation and monitoring: Avoidance, mitigation and enhancement measures have been provided as part of the impact assessment (section 7.2).

Net environmental gain: Details are provided in the Site Plans and Rehabilitation Plan (MHBC 2020).

Potential individual and cumulative impacts on the natural environment: As mentioned in the connectivity sections above, the existing conditions within the Limits of Extraction and Licenced Boundaries are active golf course and actively managed row crop, which do not support a connected Regional NHS. Therefore, removal of the exiting features for a temporary development will not affect connectivity or linkages. The progressive rehabilitation of these two Extension areas will result in a larger, enhanced and connected Regional NHS (MHBC 2020). In addition, the existing quarry operation continues to pump water discharge, accumulated through surface runoff, direct precipitation and intercepted groundwater, from Sumps 0100 and 0200 to the Unnamed Tributary of Willoughby Creek and the West Arm of the West Branch of the Mount Nemo Tributary, respectively. Current approvals for the existing quarry will stop the water discharge pumping at both locations once extraction is complete, which would have a negative impact on any associated fish habitat in both watercourses. The proposed revised rehabilitation plan recommends that the dewatering and pumping should continue at the same locations and in the same manner to ensure there are no negative impacts to any of the hydrological features that rely on this water input. This will result in long-term enhancements to downstream fish habitat compared to the existing approved post-extraction water management plan. Further information is provided in section 11.

11 REHABILITATION EFFORTS

11.1 Vegetation Community and Habitat Creation and Enhancement Opportunities

The existing conditions of the West and South Extensions consist largely of active golf course and actively farmed row crop. The West Extension is 60.1 ha in size (Limit of Extraction is 35.7 ha). Within the Limit of Extraction of the West Extension, the golf course and irrigation ponds account for 33.72 ha (94%). The remaining 2.18 ha consists of wooded features (polygons E, F, G and H), hedgerow, cultural meadow and cultural thicket.

Within the remaining section of the Licensed Boundary, outside of the Limit of Extraction, the golf course and irrigation ponds account for 16.1 ha (67%). The remaining 8 ha consist of wooded features, woodland, hedgerow, cultural meadow and cultural thicket.

The South Extension is 18.3 ha in size (Limit of Extraction is 14.51 ha). Within the Limit of Extraction of the South Extension, the farmed row crops and residential area account for 11.89 ha (82%). The remaining 2.62 ha consist of hedgerow and cultural meadow.

Within the remaining section of the Licensed Boundary, outside of the Limit of Extraction, the farmed row crops and residential area account for 3.01 ha (80%). The remaining 0.77 ha consist of hedgerow and cultural thicket.

A Rehabilitation Plan (MHBC 2020) has been prepared to demonstrate the restoration goals post extraction for both the West and the South Extension areas. Rehabilitated communities include beach, pond, wetland, shallow and/or deep lake, grassland with existing trees, forested areas and exposed cliff face.

The West Extension will include 60.1 ha of rehabilitated area; this is divided into two main rehabilitation areas: within the Limit of Extraction and within the Setback Area (i.e., remaining area of the Licensed Boundary). Within the Limit of Extraction, vegetation communities and total sizing (35.7 ha) will include the following:

- Pond 0.7 ha;
- Wetland 2.8 ha;
- Deep lake 9.7 ha;
- Forested side slope 13.4 ha;
- Restored to existing grade and forested 0.9 ha;
- Gradual grade (with trees and vernal pools) or islands 8.1 ha.

Within the remaining area outside of the Limit of Extraction (e.g. setback and buffer areas), vegetation communities and total sizing (24.4 ha) will include the following:

- Pond 4.3 ha;
- Wetland 0.3 ha;
- Forested 2.4 ha;
- Grassland and existing trees 17.4 ha.

Exposed cliff face for the West Extension is 210 m.

The South Extension will include 18.3 ha of rehabilitated area; this is divided into two main rehabilitation areas: within the Limit of Extraction and within the Setback Area (i.e., remaining area of the Licensed Boundary). Within the Limit of Extraction, vegetation communities and total sizing (14.5 ha) will include the following:

- Beach 1.6 ha;
- Shallow lake 0.8 ha;
- Deep lake 9.8 ha;
- Wetland 0.8 ha;
- Forested side slope 1.5 ha.

Within the Licensed Boundary, vegetation communities and total sizing (3.8 ha) will include the following:

- Forested 2.9 ha;
- Grassland and existing trees 0.9 ha.

Exposed cliff face for the West Extension is 1,248 m.

Overall, 3.6 ha of wetland habitat and 29.2 ha of woodland habitat will be created. No wetland or significant woodland habitat will be removed by the Limit of Extraction. A total of 1.22 ha of wooded features will be removed from the West Extension; however, these four units do not meet the definition of woodland according to either the NHRM (2010) or the Halton ROP (2018) assessment criteria. These units are non-contiguous and either managed and/or disturbed to a certain degree due to active golf course maintenance and paved golf cart paths. The resulting woodland cover will increase by 28 ha.

In addition to increasing wetland and woodland habitat, the creation of 20.3 ha of lake will be added to the landscape – a key hydrologic feature in the NEP.

11.2 Jefferson Salamander Habitat Creation and Enhancement Opportunities

The proposed Limit of Extraction and the Licensed Boundary have been sited outside of the MECP Regulated Jefferson Salamander Habitat. In addition to avoiding any direct impacts to this endangered species' habitat, results from the Team Reports (Tatham 2020; EarthFX 2020) indicate that there will be no indirect impacts to the existing wetland units that may support this species. Despite that no direct or indirect impacts will occur to Jefferson Salamanders or their habitat, habitat creation and enhancement opportunities have been identified for this species.

An opportunity for Jefferson Salamander habitat enhancement has been identified outside of the South Extension, within Jefferson Salamander regulated habitat. This proposed enhancement area (**Figure 10, Appendix A**) presently consists of active agricultural land use, occupying an area of 4.00 hectares. This agricultural field separates two established woodlands, which are connected by a narrow treed hedgerow. The woodland to the west consists primarily of mature deciduous/mixed forest with a wetland component, while the woodland to the east consists of mid-age/mature deciduous swamp and deciduous forest. The treed swamp on the east has been identified as JESA breeding habitat with potential for providing suitable habitat for summer refuge and overwintering. The forest on the west also has potential for providing suitable summer refuge and overwintering habitat, as well as potentially suitable breeding pools (though no evidence of salamander breeding has been observed to-date).

The long-term enhancement opportunity for this location focuses on a restoration design targeting upland forest with small ephemeral pools as the end objective. This would enhance JESA habitat by providing increased coverage of summer refuge and overwintering habitat and improve connectivity between the two existing woodlands. The design of this restoration could also increase opportunity for JESA breeding by incorporating pit and mound construction techniques. Pit features would be designed to replicate ephemeral pools by ensuring the substrate and hydrological inputs and outputs adequately address ephemeral hydroperiods.

Based on visual observations of existing conditions, the majority of this agricultural field as-is would likely support upland plant species, though strategic design could aid in the establishment of ephemeral pools in desired locations. The planting plan would include a variety of woody and herbaceous species, the former of which would be mixed maturity to mimic natural regeneration. Species selection for proposed ephemeral pools would include those that are known to provide suitable egg attachment sites, such as perimeter shrubs. This approach could increase woodland cover in JESA regulated habitat through a planting plan and site design that will essentially advance its successional state.

11.3 Plant Species List and Planting Design Approach

A preliminary plant species list has been prepared based on the existing vegetation identified within the Subject Lands and in consideration of the restoration targets, as depicted on Figure 4 Rehabilitated Land Formation (MHBC 2020). The land formations that require vegetation include Pond/Wetland (PW), Grassland and Existing Trees (GL), Gradual Grade/Side Slope with Trees (GG), Forested Setback – During Operation (FSO), Forested Setback – Post Berm (FSB), Restored to Existing Grade and Forested (REG). The proposed plant list identifies a complete list of plant species, indicating which species are suitable for each land formation (**Table 21, Appendix B**). These species are provincially ranked S5 or S4 (i.e., common, apparently common, respectively).

The planting design and approach will by guided by the Conservation Halton Landscaping and Tree Preservation Guidelines (2010). Details (e.g., species lists, planting densities, spacing, etc.) will evolve as wetland depths and soil regimes are determined within the restored land formations and consultation occurs with Conservation Halton.

Generally, planting densities will be determined based on the restoration objectives and presence/absence of existing natural features. For example, planting densities will be highest where the objective is to restore/establish a woodland, but may be reduced if/when objective is to establish a buffer adjacent to a naturalized area. The type of species planted will also be dependent on adjacent habitat (e.g., greater reliance on shrub plantings when restoration occurs adjacent to a meadow, and tree plantings when planting next to woodland).

Where the restoration objective is the establishment of a woodland/forest/treed swamp, trees will be planted at a density of 10 trees per 100 m^2. Within this area, the shrub to tree ratio will be 5:1, with trees planted no closer than 2.5 m on centre and shrubs planted between 0.75 m and 1.5 m apart.

Where the restoration objective is the establishment of a buffer adjacent to a natural feature, planting densities will be dependent on the features they abut (e.g., densities will be higher when planting next to an existing forest relative to the densities when planting next to an anthropogenic or cultural feature).

The planting design of a proposed buffer will follow a 3-band approach, where woody planting densities will be highest within Band 1 (closest to the existing adjacent feature) and reduced in Band 2. No woody species will be planted in Band 3, which will be seeded with a soil and moisture-appropriate seed mix. Where trees will be planted, the following planting densities will be applied:

- Band 1 – five trees per 100 m^2. Where shrubs are also being proposed, these will be planted at a shrub to tree ratio of 5:1;
- Band 2 – three trees per 100 m^2. Where shrubs are also being proposed, these will be planted at a shrub to tree ratio of 5:1.

The width of each band will be determined during refinements and finalization of the final design.

11.4 Recommendations

The Level 1 and Level 2 Natural Environment Technical Report includes a series of recommendations which have been incorporated into the Burlington Quarry Extension Site Plans (MHBC April 2020).

Subject to implementation of these recommendations, Savanta is of the opinion that no negative impacts will occur to identified KNHF, and the application will result in an enhancement to the regional NHS.

12 CONCLUDING REMARKS

The proposed West Extension is located within an active golf course and is sited outside of wetlands, significant woodlands, significant valleylands, significant ANSIs and fish habitat. The West Extension contains wooded features (which do not meet the definitions of woodland or significant woodland under both the NHRM and ROP criteria assessments) and limited amounts of bat habitat (both SWH and SAR habitat) and Eastern Wood-pewee habitat (SWH) that will be directly removed as they are located within the identified Limit of Extraction.

The South Extension is located within actively farmed row crops and is sited outside of wetlands, significant woodlands, significant valleylands, SWH, significant ANSIs, fish habitat and habitat of threatened or endangered species. No natural features have been identified within the South Extension.

This report and the supporting Team Reports (EarthFX 2020; Tatham 2020; EarthFX and Tatham 2020) have characterized and assessed all potential impacts on existing natural features and functions within the Study Area, and for some studies within the Subject Lands and beyond (e.g., surface water, groundwater). Implementation of the recommended avoidance, mitigation and enhancement measures should ensure that no negative impacts will occur to the identified KNHF or functions.

The Rehabilitation Plan (MHBC 2020) has considered the existing conditions and surrounding landscape to include a mix of open water, shoreline, wetland and woodland elements to achieve an increase in biodiversity and to maintain and enhance connectivity of KNHF and the Regional NHS.

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Appendix A – Figures

Figure 1
Project Location

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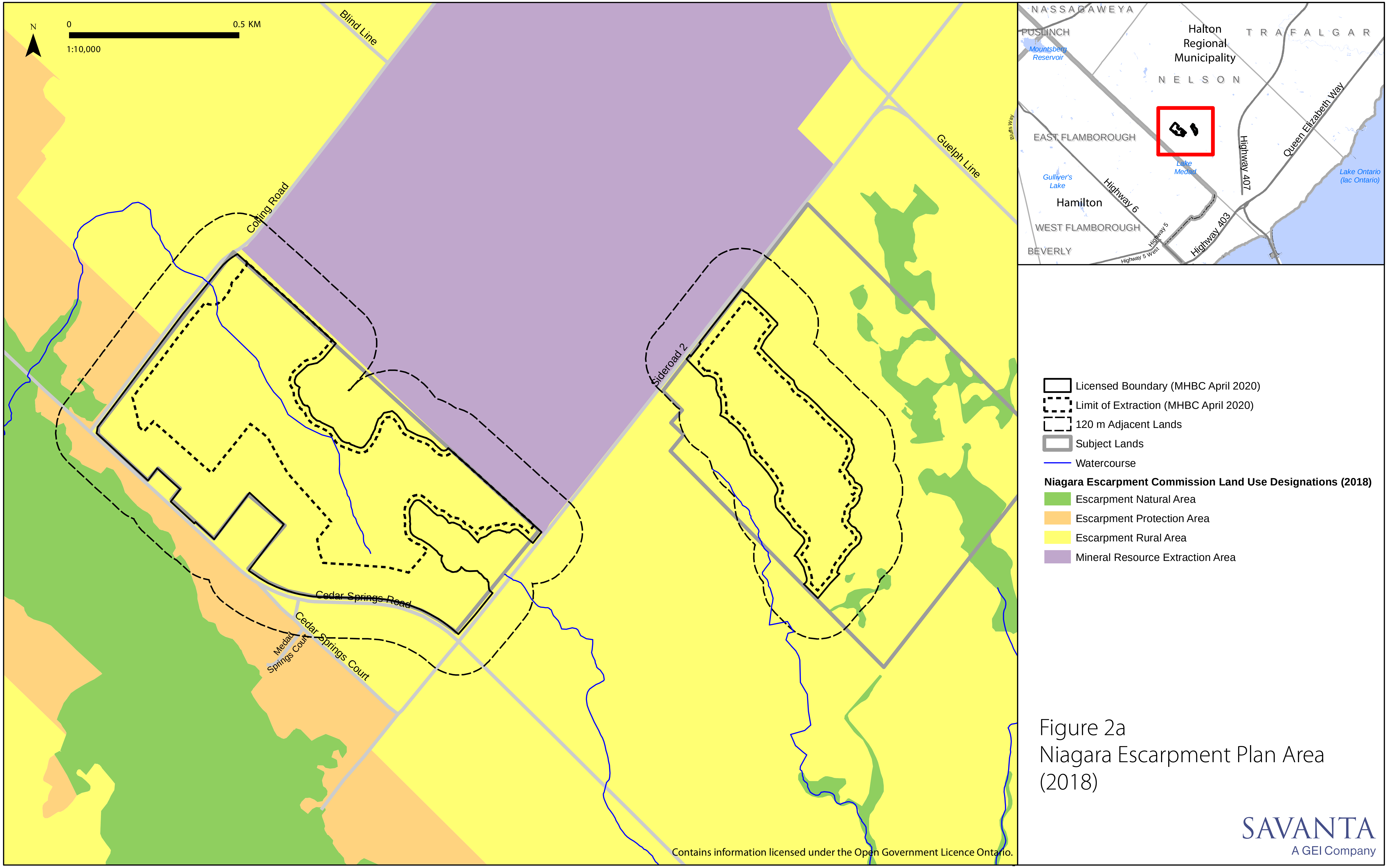

Figure 2a
Niagara Escarpment Plan Area
(2018)

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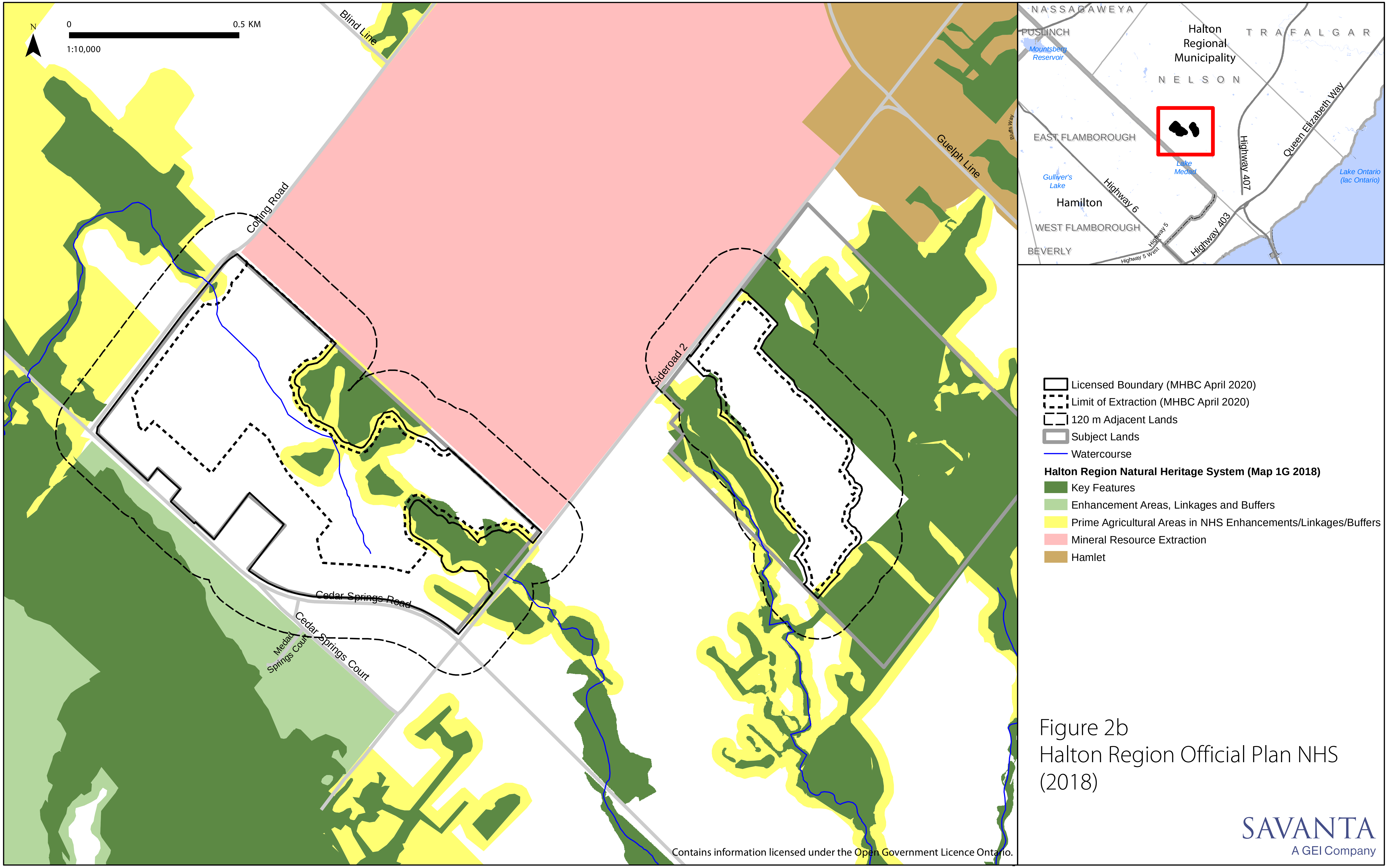

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Figure 2b
Halton Region Official Plan NHS (2018)

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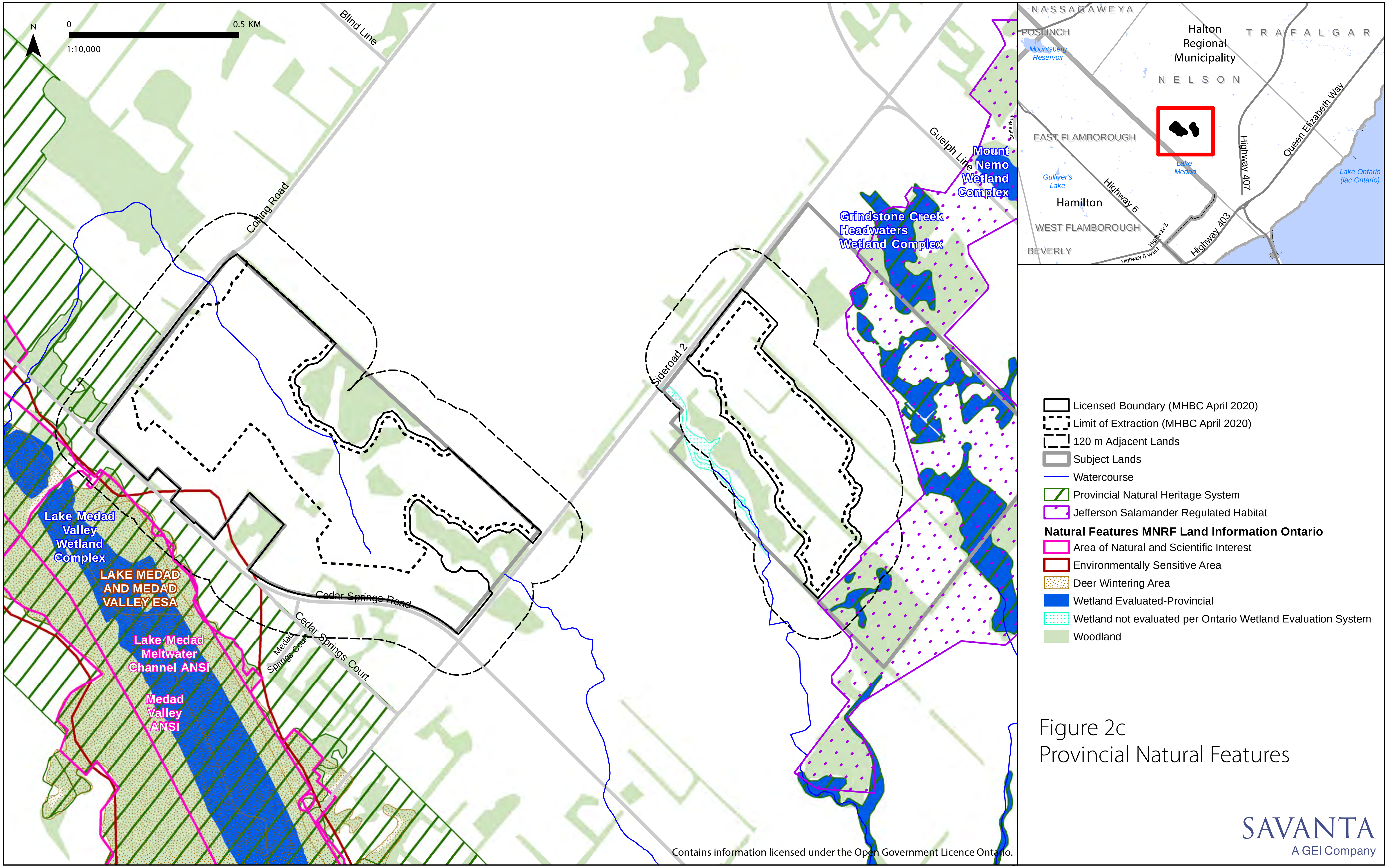

Figure 2c
Provincial Natural Features

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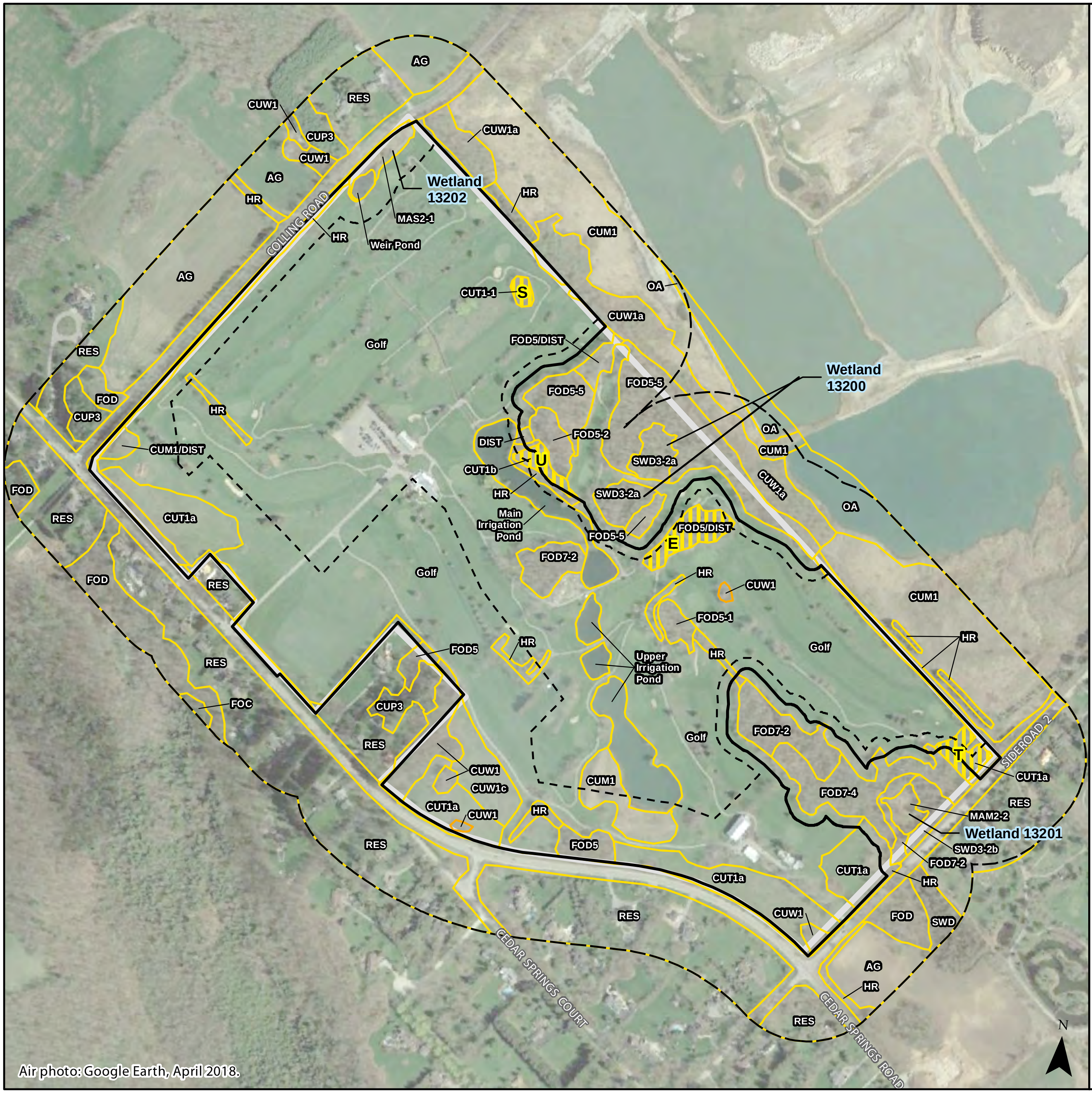

ELC Legend

CUM1	Mineral Cultural Meadow
CUP3	Coniferous Plantation
CUT1	Mineral Cultural Thicket
CUT1a	Mineral Cultural Thicket (planted saplings)
CUT1b	Mineral Cultural Thicket (naturalized saplings)
CUT1-1	Sumac Cultural Thicket
CUW1	Mineral Cultural Woodland
CUW1a	Black Locust Cultural Woodland
CUW1c	Mineral Cultural Woodland (planted trees)
FOC	Coniferous Forest
FOD	Deciduous Forest
FOD5	Dry- Fresh Sugar Maple Deciduous Forest Ecosite
FOD5-1	Dry- Fresh Sugar Maple Deciduous Forest
FOD5-2	Dry- Fresh Sugar Maple-Beech Deciduous Forest
FOD5-5	Dry- Fresh Sugar Maple-Hickory Deciduous Forest
FOD7-2	Fresh-Moist Ash Lowland Deciduous Forest
FOD7-4	Fresh-Moist Black Walnut Lowland Deciduous Forest
MAM2-2	Reed-canary Grass Mineral Meadow Marsh
MAS2-1	Cattail Mineral Shallow Marsh
SWD	Deciduous Swamp
SWD3-2a	Silver Maple Mineral Deciduous Swamp
SWD3-2b	Silver Maple Mineral Deciduous Swamp
AG	Agricultural
DIST	Disturbed
Golf	Golf
HR	Hedgerow
OA	Open Aquatic
Main/Upper /Weir Pond	Pond
RES	Residential

▭	Licensed Boundary
⬚	Limit of Extraction
⬚	120 m Adjacent Lands
▭	Subject Lands
▭	Ecological Land Classification
▭	ELC Inclusion
▨	Stem Density

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Figure 3a
Ecological Land Classification
WEST EXTENSION

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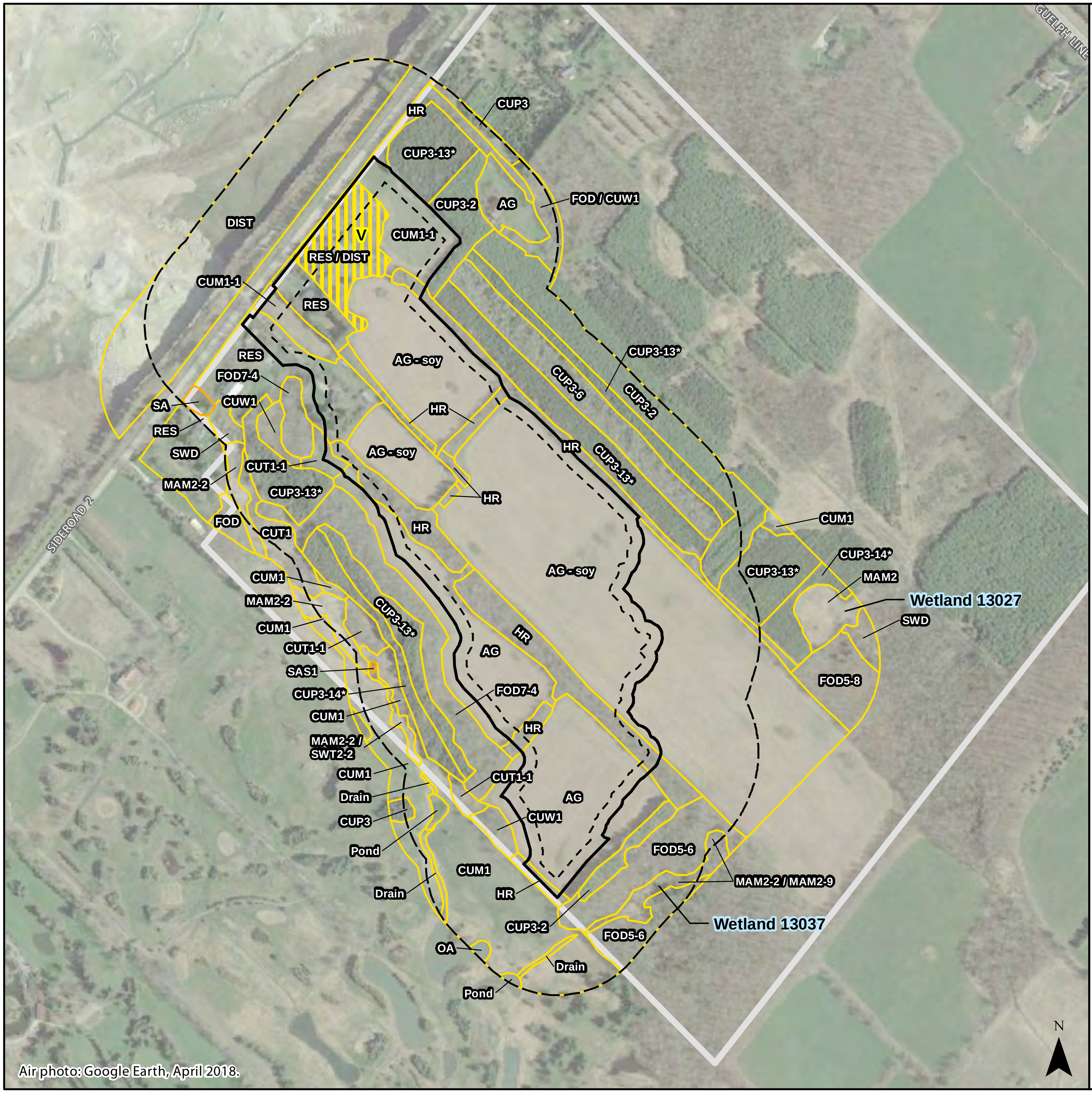

ELC Legend

CUM1	*Mineral Cultural Meadow*
CUM1-1	*Dry Moist Old Field Meadow*
CUP3	*Coniferous Plantation*
*CUP3-13**	*White Spruce Coniferous Plantation*
*CUP3-14**	*White Cedar Coniferous Plantation*
CUP3-2	*White Pine Coniferous Plantation*
CUP3-6	*European Larch Coniferous Plantation*
CUT1	*Mineral Cultural Thicket*
CUT1-1	*Sumac Cultural Thicket*
CUW1	*Mineral Cultural Woodland*
FOD	*Deciduous Forest*
FOD5-6	*Dry- Fresh Sugar Maple-Basswood Deciduous Forest*
FOD7-4	*Fresh- Moist Black Walnut Lowland Deciduous Forest*
MAM2-2	*Reed-canary Grass Mineral Meadow Marsh*
MAM2-9	*Jewelweed Mineral Meadow Marsh*
SA	*Shallow Aquatic*
SAS1	*Submerged Shallow Aquatic*
SWD	*Deciduous Swamp*
SWT2-2	*Willow Mineral Thicket Swamp*
AG	*Agricultural*
DIST	*Disturbed*
Drain	*Drain*
HR	*Hedgerow*
OA	*Open Aquatic*
RES	*Residential*

**Denotes a type not listed in Southern Ontario ELC Guide.*

▭ Licensed Boundary
▭ Limit of Extraction
▭ 120 m Adjacent Lands
▭ Subject Lands
▭ Ecological Land Classification
▭ ELC Inclusion
▥ Stem Density

Figure 3b
Ecological Land Classification
SOUTH EXTENSION

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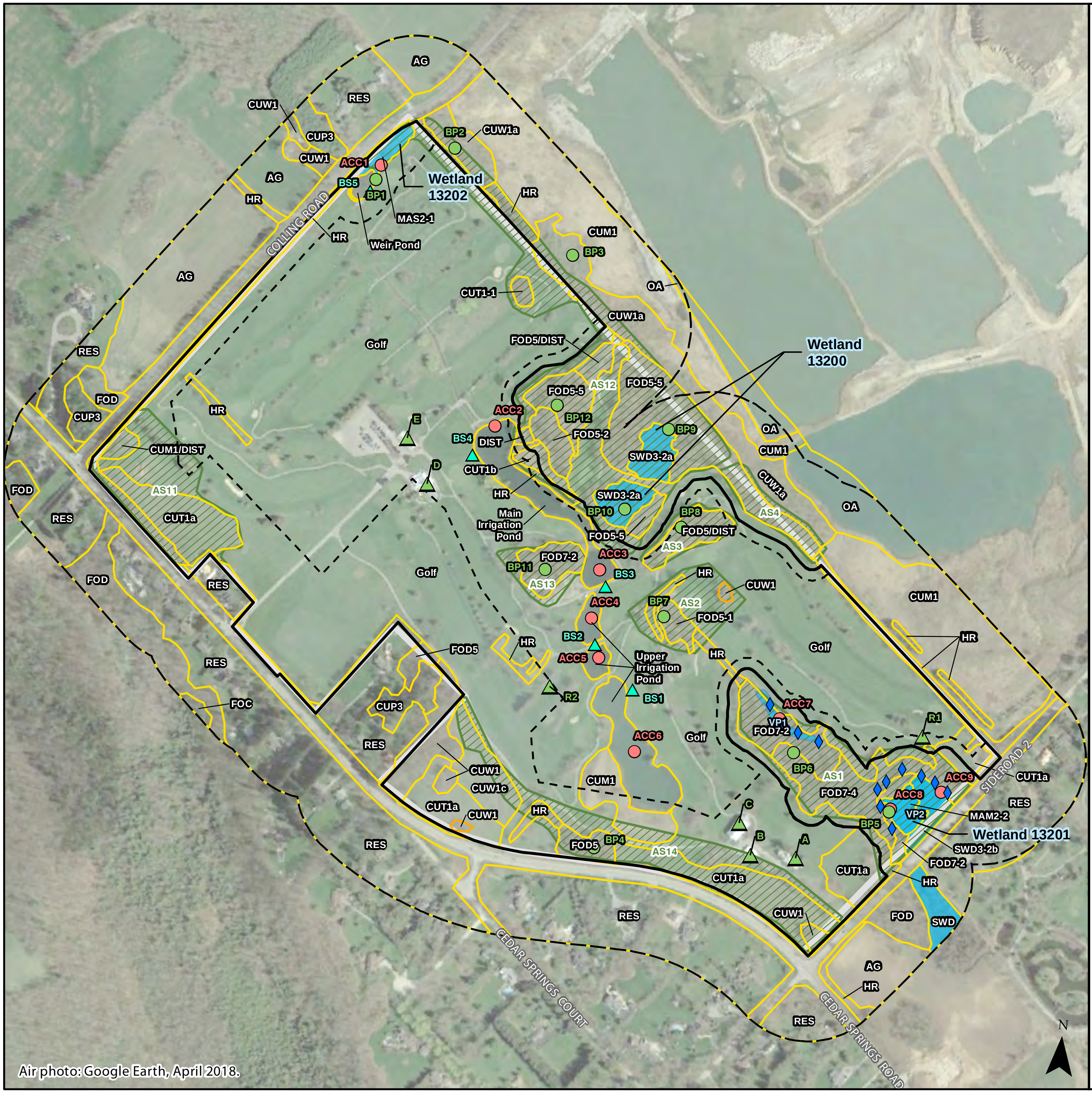

ELC Legend

CUM1	Mineral Cultural Meadow
CUP3	Coniferous Plantation
CUT1	Mineral Cultural Thicket
CUT1a	Mineral Cultural Thicket (planted saplings)
CUT1b	Mineral Cultural Thicket (naturalized saplings)
CUT1-1	Sumac Cultural Thicket
CUW1	Mineral Cultural Woodland
CUW1a	Black Locust Cultural Woodland
CUW1c	Mineral Cultural Woodland (planted trees)
FOD	Deciduous Forest
FOD5	Dry- Fresh Sugar Maple Deciduous Forest Ecosite
FOD5-1	Dry- Fresh Sugar Maple Deciduous Forest
FOD5-2	Dry- Fresh Sugar Maple-Beech Deciduous Forest
FOD5-5	Dry- Fresh Sugar Maple-Hickory Deciduous Forest
FOD7-2	Fresh-Moist Ash Lowland Deciduous Forest
FOD7-4	Fresh-Moist Black Walnut Lowland Deciduous Forest
MAM2-2	Reed-canary Grass Mineral Meadow Marsh
MAS2-1	Cattail Mineral Shallow Marsh
SWD	Deciduous Swamp
SWD3-2a	Silver Maple Mineral Deciduous Swamp
SWD3-2b	Silver Maple Mineral Deciduous Swamp
AG	Agricultural
DIST	Disturbed
Drain	Drain
Golf	Golf
HR	Hedgerow
OA	Open Aquatic
RES	Residential

▭	Licensed Boundary
▭	Limit of Extraction
▭	120 m Adjacent Lands
▭	Subject Lands
🟨	Ecological Land Classification
🟧	ELC Inclusion
🟦	Salamander Habitat Assessment

Wildlife Survey Stations

●	Amphibian Call Count Station
▲	Barn Swallow Nest Search
●	Breeding Bird Point Count Station
◆	Salamander Trap
▨	Snake Area Search
▲	Turtle Basking Station

Figure 4a
Wildlife Survey Stations
WEST EXTENSION

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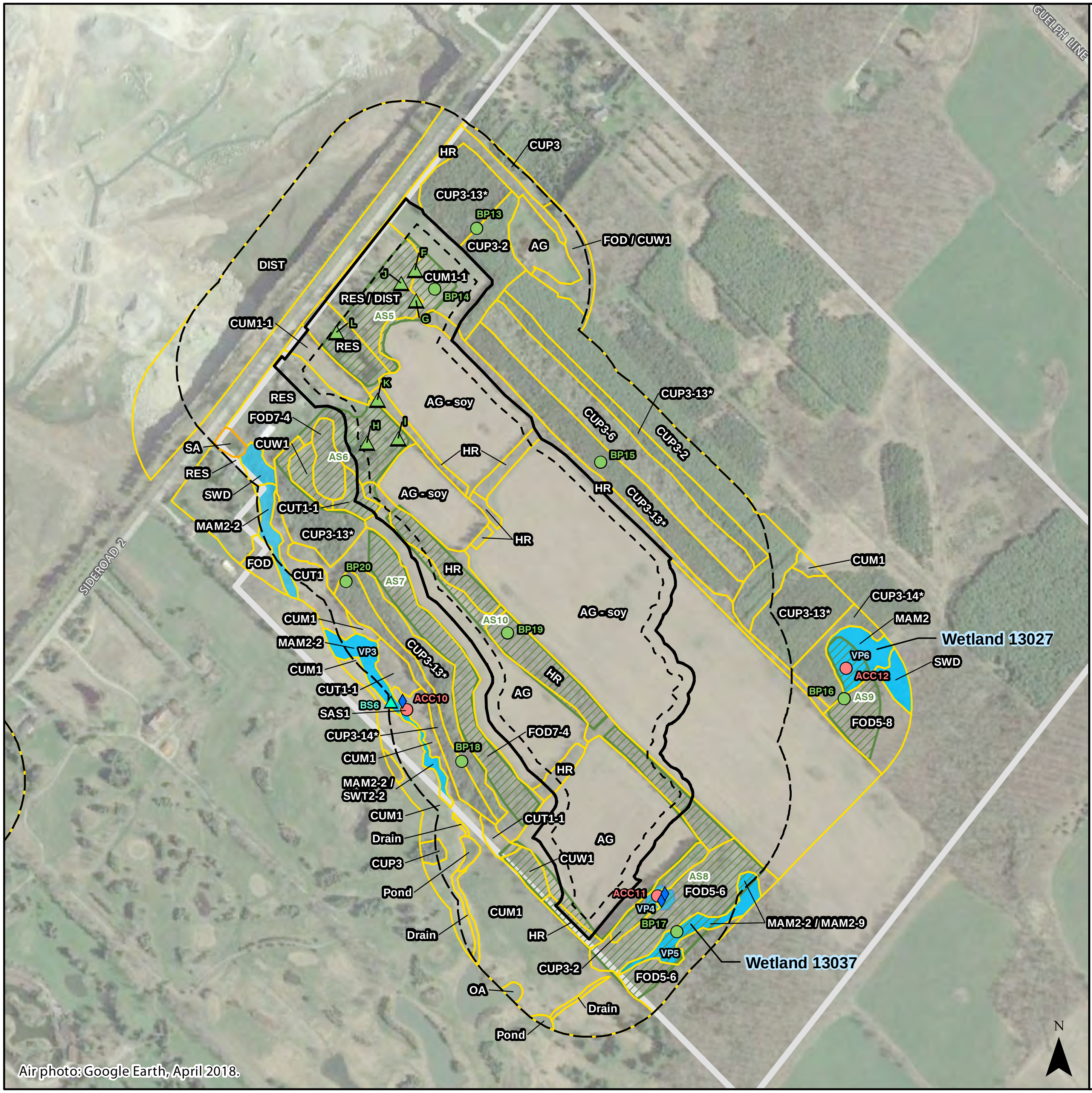
Path: C:\Savanta\8133 - Burlington Quarry\figures\report_figures\2020 05 05 figure updates\Figure 4a Wildlife Survey Stations W-EXT.mxd REVISED: May 6, 2020



ELC Legend

CUM1	Mineral Cultural Meadow
CUM1-1	Dry Moist Old Field Meadow
CUP3	Coniferous Plantation
CUP3-13*	White Spruce Coniferous Plantation
CUP3-14*	White Cedar Coniferous Plantation
CUP3-2	White Pine Coniferous Plantation
CUP3-6	European Larch Coniferous Plantation
CUT1-1	Sumac Cultural Thicket
CUW1	Mineral Cultural Woodland
CUW1b	Poplar Cultural Woodland
FOD5-6	Dry- Fresh Sugar Maple-Basswood Deciduous Forest
FOD5-8	Dry- Fresh Sugar Maple-White Ash Deciduous Forest
FOD7-4	Fresh- Moist Black Walnut Lowland Deciduous Forest
MAM2	Mineral Meadow Marsh
MAM2-2	Reed-canary Grass Mineral Meadow Marsh
MAM2-9	Jewelweed Mineral Meadow Marsh
SWT2-2	Willow Mineral Thicket Swamp
AG	Agricultural
DIST	Disturbed
Drain	Drain
HR	Golf
OA	Hedgerow
Pond	Open Aquatic
RES	Residential
SA	Shallow Water
SAS1	Submerged Shallow Aquatic

**Denotes a type not listed in Southern Ontario ELC Guide.*

- Licensed Boundary
- Limit of Extraction
- 120 m Adjacent Lands
- Subject Lands
- Ecological Land Classification
- ELC Inclusion
- Salamander Habitat Assessment

Wildlife Survey Stations

- ● Amphibian Call Count Station
- ▲ Barn Swallow Nest Search
- ● Breeding Bird Point Count Station
- ◆ Salamander Trap
- ▨ Snake Area Search
- ▲ Turtle Basking Station

Figure 4b
Wildlife Survey Stations
SOUTH EXTENSION

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SAVANTA
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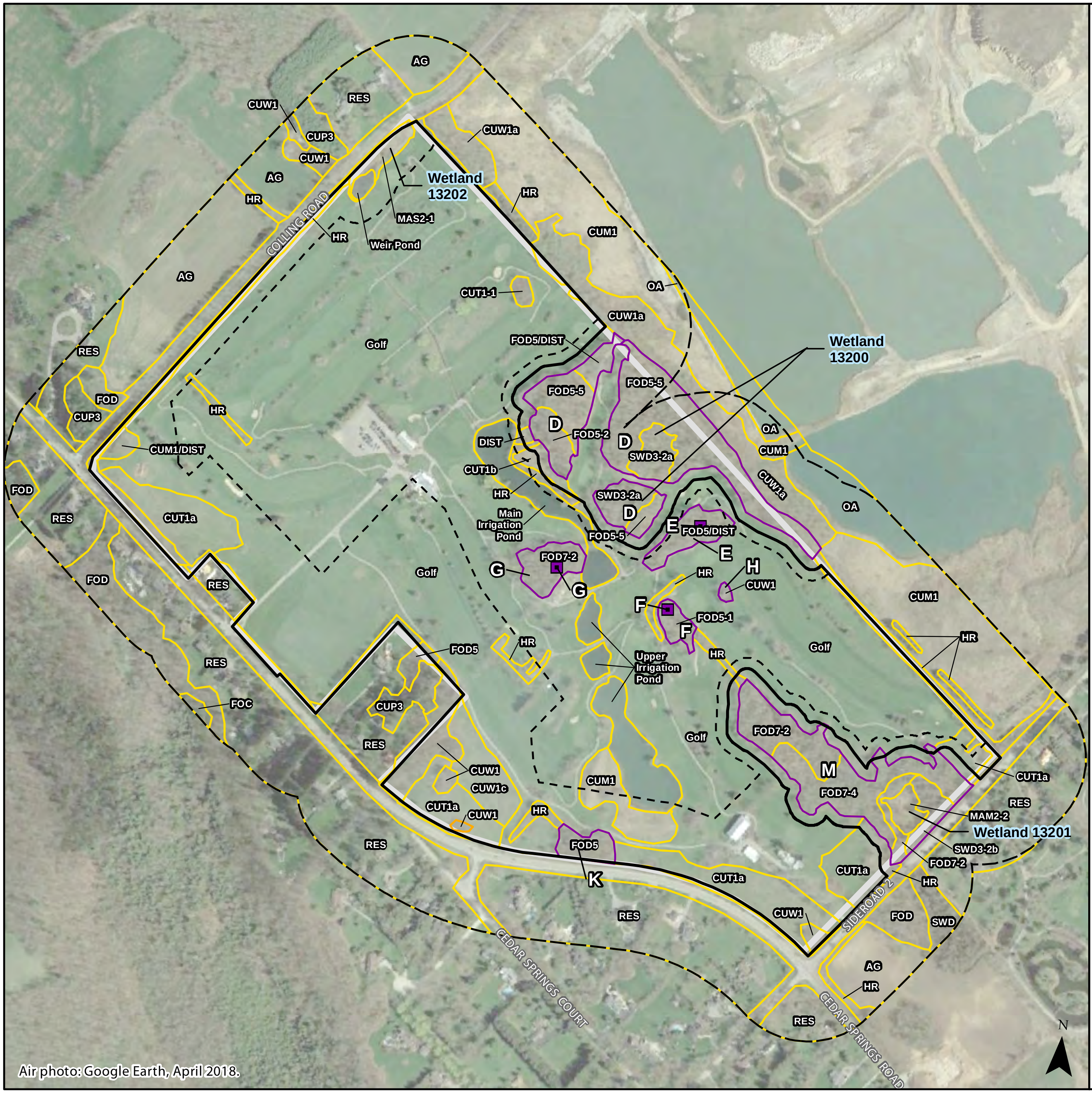

ELC Legend

CUM1	Mineral Cultural Meadow
CUP3	Coniferous Plantation
CUT1	Mineral Cultural Thicket
CUT1a	Mineral Cultural Thicket (planted saplings)
CUT1b	Mineral Cultural Thicket (naturalized saplings)
CUT1-1	Sumac Cultural Thicket
CUW1	Mineral Cultural Woodland
CUW1a	Black Locust Cultural Woodland
CUW1c	Mineral Cultural Woodland (planted trees)
FOD	Deciduous Forest
FOD5	Dry- Fresh Sugar Maple Deciduous Forest Ecosite
FOD5-1	Dry- Fresh Sugar Maple Deciduous Forest
FOD5-2	Dry- Fresh Sugar Maple-Beech Deciduous Forest
FOD5-5	Dry- Fresh Sugar Maple-Hickory Deciduous Forest
FOD7-2	Fresh-Moist Ash Lowland Deciduous Forest
FOD7-4	Fresh-Moist Black Walnut Lowland Deciduous Forest
MAM2-2	Reed-canary Grass Mineral Meadow Marsh
MAS2-1	Cattail Mineral Shallow Marsh
SWD	Deciduous Swamp
SWD3-2a	Silver Maple Mineral Deciduous Swamp
SWD3-2b	Silver Maple Mineral Deciduous Swamp
AG	Agricultural
DIST	Disturbed
Drain	Drain
Golf	Golf
HR	Hedgerow
OA	Open Aquatic
RES	Residential

- Licensed Boundary
- Limit of Extraction
- 120 m Adjacent Lands
- Subject Lands
- Ecological Land Classification
- ELC Inclusion
- ■ Bat Acoustic Station
- Bat Habitat Assessment Areas

Figure 5a
Bat Habitat Assessment and Acoustic Stations
WEST EXTENSION

0 100 M
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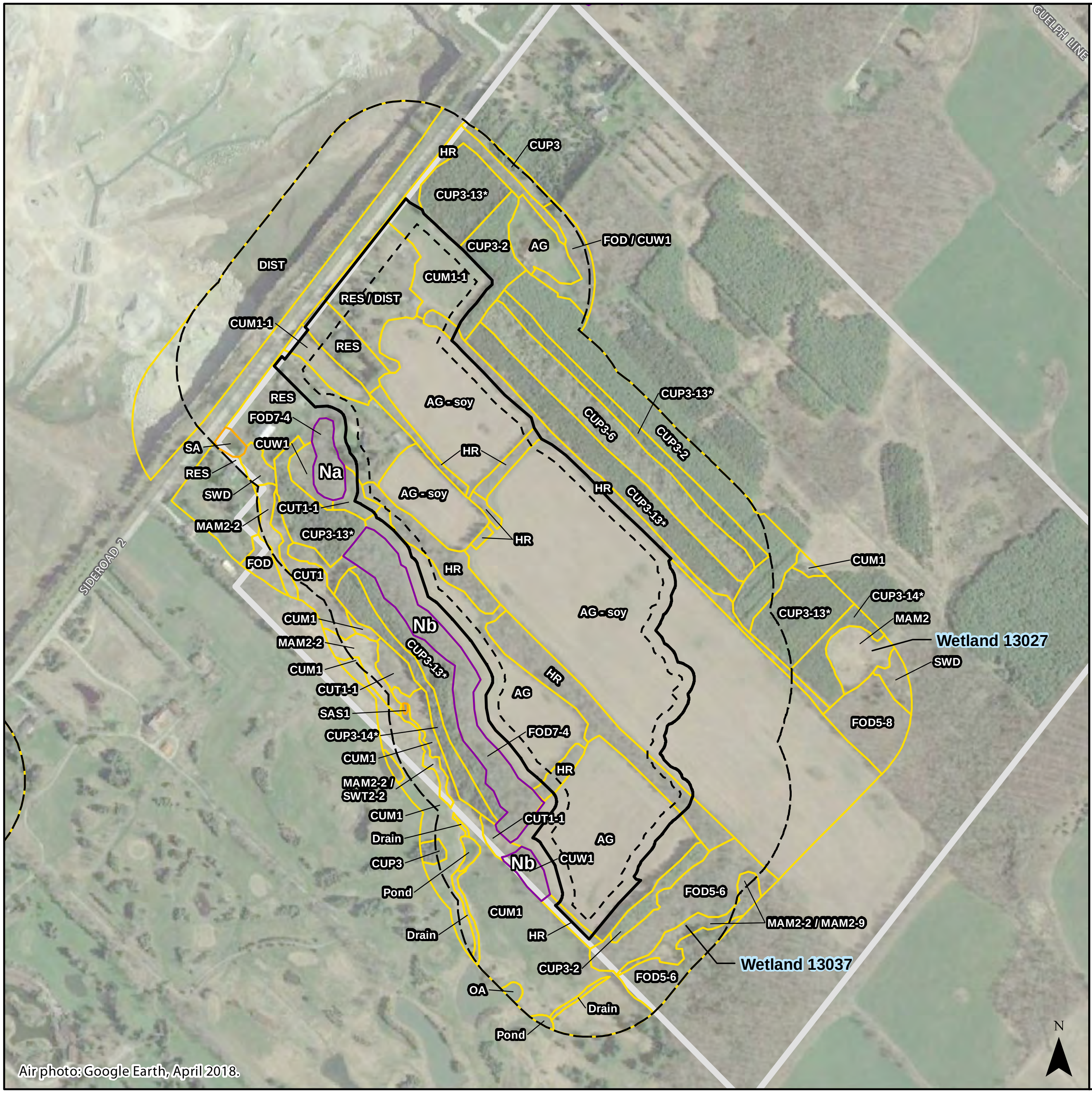

ELC Legend

CUM1	Mineral Cultural Meadow
CUM1-1	Dry Moist Old Field Meadow
CUP3	Coniferous Plantation
CUP3-13*	White Spruce Coniferous Plantation
CUP3-14*	White Cedar Coniferous Plantation
CUP3-2	White Pine Coniferous Plantation
CUP3-6	European Larch Coniferous Plantation
CUT1-1	Sumac Cultural Thicket
CUW1	Mineral Cultural Woodland
CUW1b	Poplar Cultural Woodland
FOD5-6	Dry- Fresh Sugar Maple-Basswood Deciduous Forest
FOD5-8	Dry- Fresh Sugar Maple-White Ash Deciduous Forest
FOD7-4	Fresh- Moist Black Walnut Lowland Deciduous Forest
MAM2	Mineral Meadow Marsh
MAM2-2	Reed-canary Grass Mineral Meadow Marsh
MAM2-9	Jewelweed Mineral Meadow Marsh
SWT2-2	Willow Mineral Thicket Swamp
AG	Agricultural
DIST	Disturbed
Drain	Drain
HR	Golf
OA	Hedgerow
Pond	Open Aquatic
RES	Residential
SA	Shallow Water
SAS1	Submerged Shallow Aquatic

*Denotes a type not listed in Southern Ontario ELC Guide.

Licensed Boundary
Limit of Extraction
120 m Adjacent Lands
Subject Lands
Ecological Land Classification
ELC Inclusion
Bat Habitat Assessment Areas

Figure 5b
Bat Habitat Assessment and Acoustic Stations
SOUTH EXTENSION

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SAVANTA
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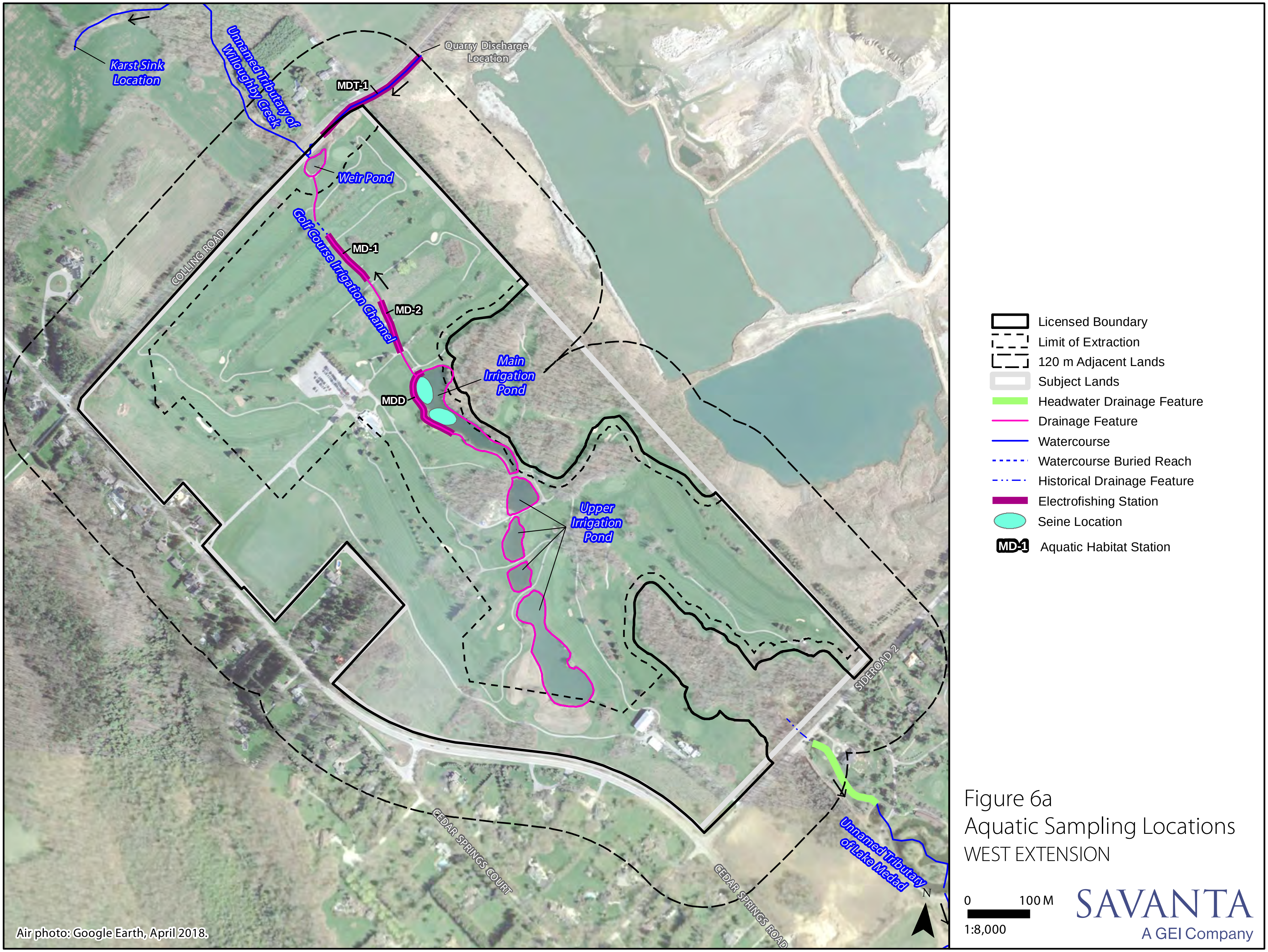

Figure 6a
Aquatic Sampling Locations
WEST EXTENSION

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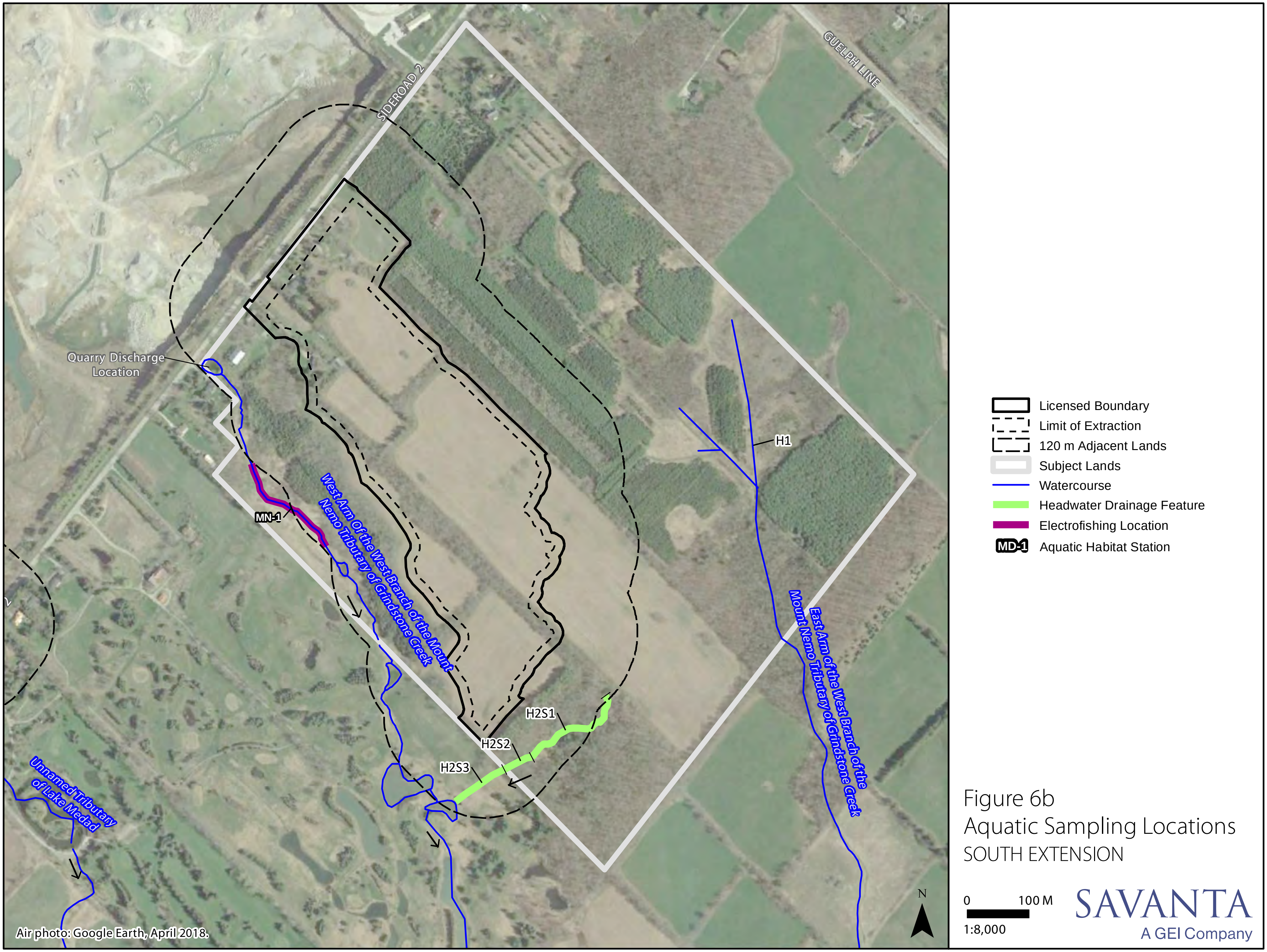

Figure 6b
Aquatic Sampling Locations
SOUTH EXTENSION

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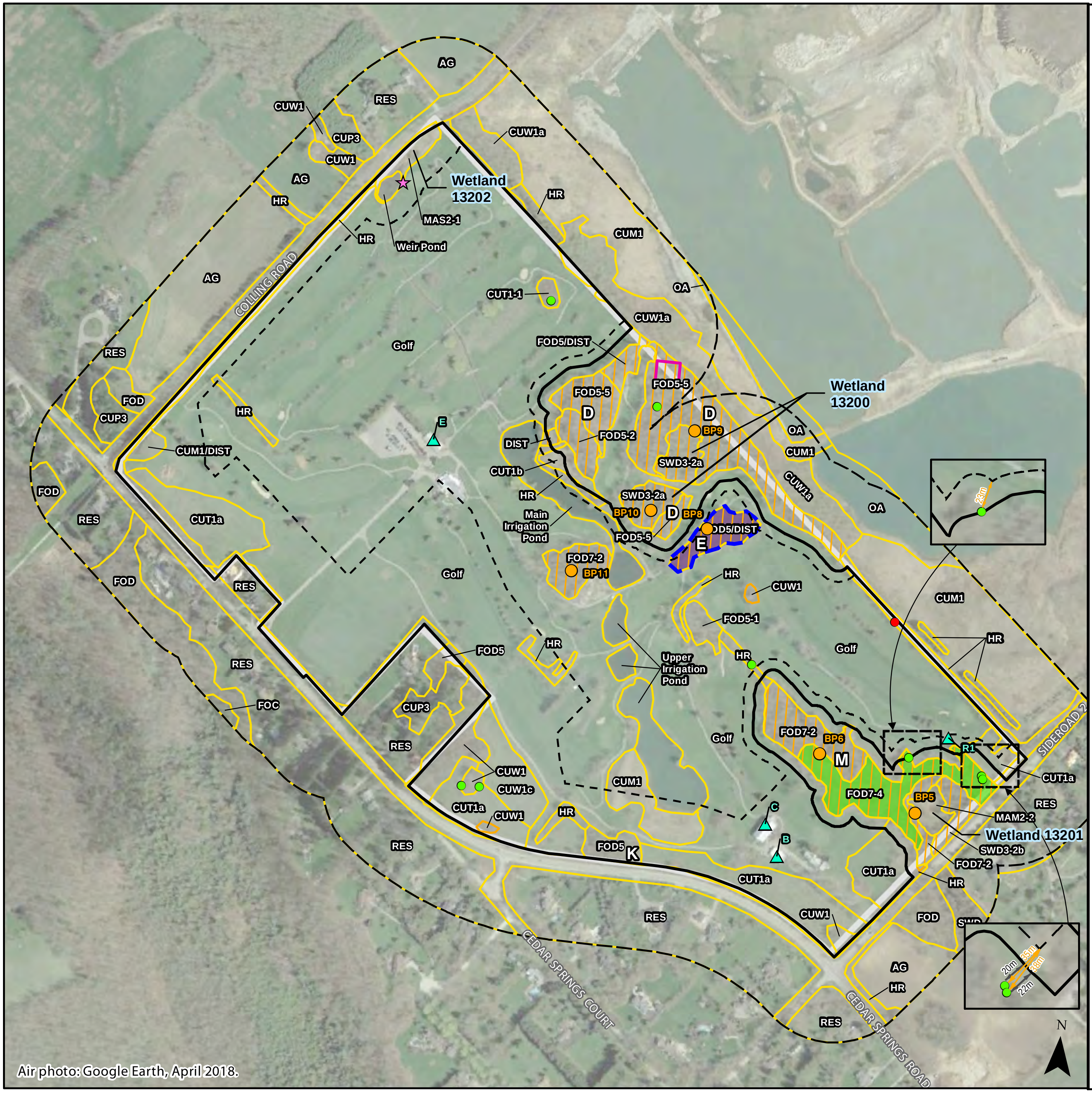
Path: C:\Savanta\8133 - Burlington Quarry\figures\report_figures\2020 05 05 figure updates\Figure 6b Aquatic Sampling Locations S-EXT.mxd REVISED: May 5, 2020



ELC Legend

CUM1	Mineral Cultural Meadow
CUP3	Coniferous Plantation
CUT1	Mineral Cultural Thicket
CUT1a	Mineral Cultural Thicket (planted saplings)
CUT1b	Mineral Cultural Thicket (naturalized saplings)
CUT1-1	Sumac Cultural Thicket
CUW1	Mineral Cultural Woodland
CUW1a	Black Locust Cultural Woodland
CUW1c	Mineral Cultural Woodland (planted trees)
FOC	Coniferous Forest
FOD	Deciduous Forest
FOD5	Dry- Fresh Sugar Maple Deciduous Forest Ecosite
FOD5-1	Dry- Fresh Sugar Maple Deciduous Forest
FOD5-2	Dry- Fresh Sugar Maple-Beech Deciduous Forest
FOD5-5	Dry- Fresh Sugar Maple-Hickory Deciduous Forest
FOD7-2	Fresh-Moist Ash Lowland Deciduous Forest
FOD7-4	Fresh-Moist Black Walnut Lowland Deciduous Forest
MAM2-2	Reed-canary Grass Mineral Meadow Marsh
MAS2-1	Cattail Mineral Shallow Marsh
SWD	Deciduous Swamp
SWD3-2a	Silver Maple Mineral Deciduous Swamp
SWD3-2b	Silver Maple Mineral Deciduous Swamp
AG	Agricultural
DIST	Disturbed
Golf	Golf
HR	Hedgerow
OA	Open Aquatic
Main/Upper /Weir Pond	
RES	Residential

- ▭ Licensed Boundary
- ▭ Limit of Extraction
- ▭ 120 m Adjacent Lands
- ▭ Subject Lands
- ▭ Ecological Land Classification
- ▭ ELC Inclusion

Significant Wildlife Habitat

- ▭ Bat Maternity Colony
- 🟩 Rare Vegetation Community

Species of Conservation Concern

- ● Breeding Bird Point Count Station
- ☆ Unicorn Clubtail
- ▥ Eastern Wood-pewee
- ▭ Large Toothwort Community

Species At Risk

- ● Butternut Category 1
- ● Butternut Category 2
- △ Barn Swallow Nest Observation
- ▨ Bat Habitat - (Little Brown Myotis and Tri-coloured Bat)

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Figure 7a
Significant Wildlife Habitat and Species at Risk Observations
WEST EXTENSION

SAVANTA
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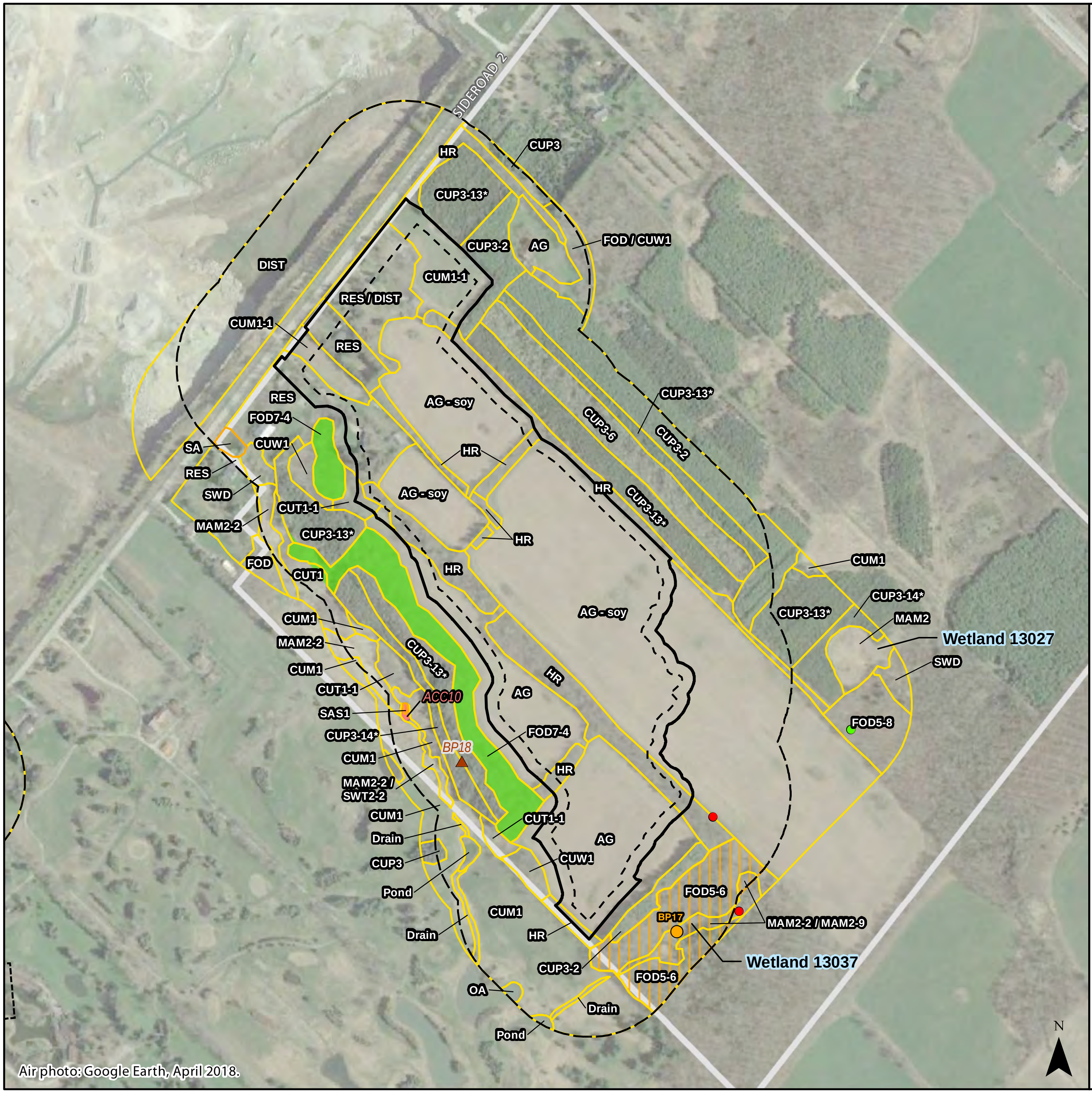

ELC Legend

CUM1	Mineral Cultural Meadow
CUM1-1	Dry Moist Old Field Meadow
CUP3	Coniferous Plantation
CUP3-13*	White Spruce Coniferous Plantation
CUP3-14*	White Cedar Coniferous Plantation
CUP3-2	White Pine Coniferous Plantation
CUP3-6	European Larch Coniferous Plantation
CUT1	Mineral Cultural Thicket
CUT1-1	Sumac Cultural Thicket
CUW1	Mineral Cultural Woodland
CUW1b	Poplar Cultural Woodland
FOD	Deciduous Forest
FOD5-6	Dry- Fresh Sugar Maple-Basswood Deciduous Forest
FOD7-4	Fresh- Moist Black Walnut Lowland Deciduous Forest
MAM2-2	Reed-canary Grass Mineral Meadow Marsh
MAM2-9	Jewelweed Mineral Meadow Marsh
SA	Shallow Aquatic
SAS1	Submerged Shallow Aquatic
SWD	Deciduous Swamp
SWT2-2	Willow Mineral Thicket Swamp
AG	Agricultural
DIST	Disturbed
Drain	Drain
HR	Hedgerow
OA	Open Aquatic
RES	Residential

**Denotes a type not listed in Southern Ontario ELC Guide.*

- Licensed Boundary
- Limit of Extraction
- 120 m Adjacent Lands
- Subject Lands
- Ecological Land Classification
- ELC Inclusion

Significant Wildlife Habitat

- 🟥 Amphibian Breeding (Woodland)
- 🟩 Rare Vegetation Community

Species of Conservation Concern

- ● Breeding Bird Point Count Station
- ▥ Eastern Wood-pewee

Species At Risk

- ● Butternut Category 1
- ● Butternut Category 2
- ▲ Bobolink

Figure 7b
Significant Wildlife Habitat and Species at Risk Observations
SOUTH EXTENSION

0 100 M
1:7,000

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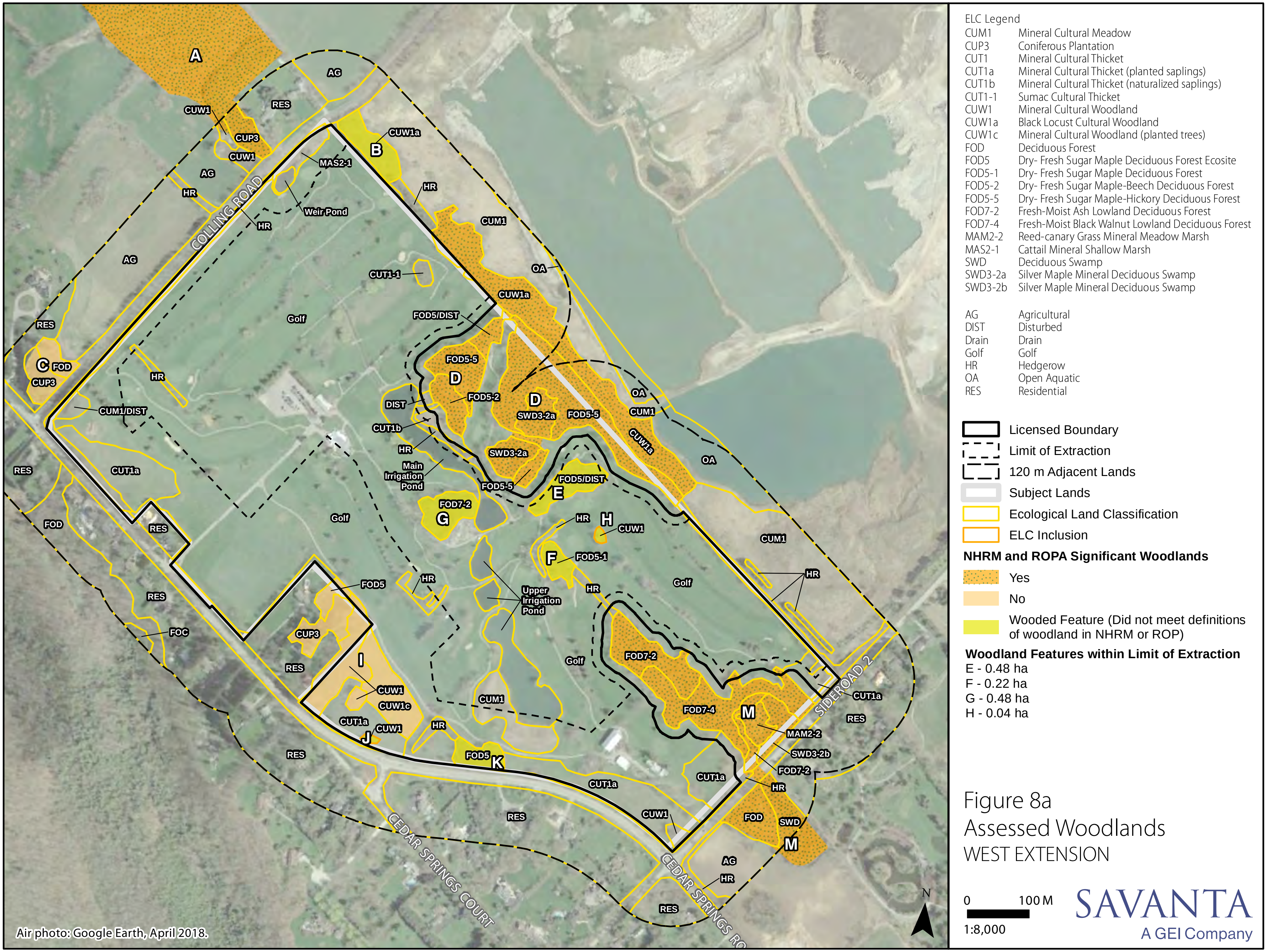
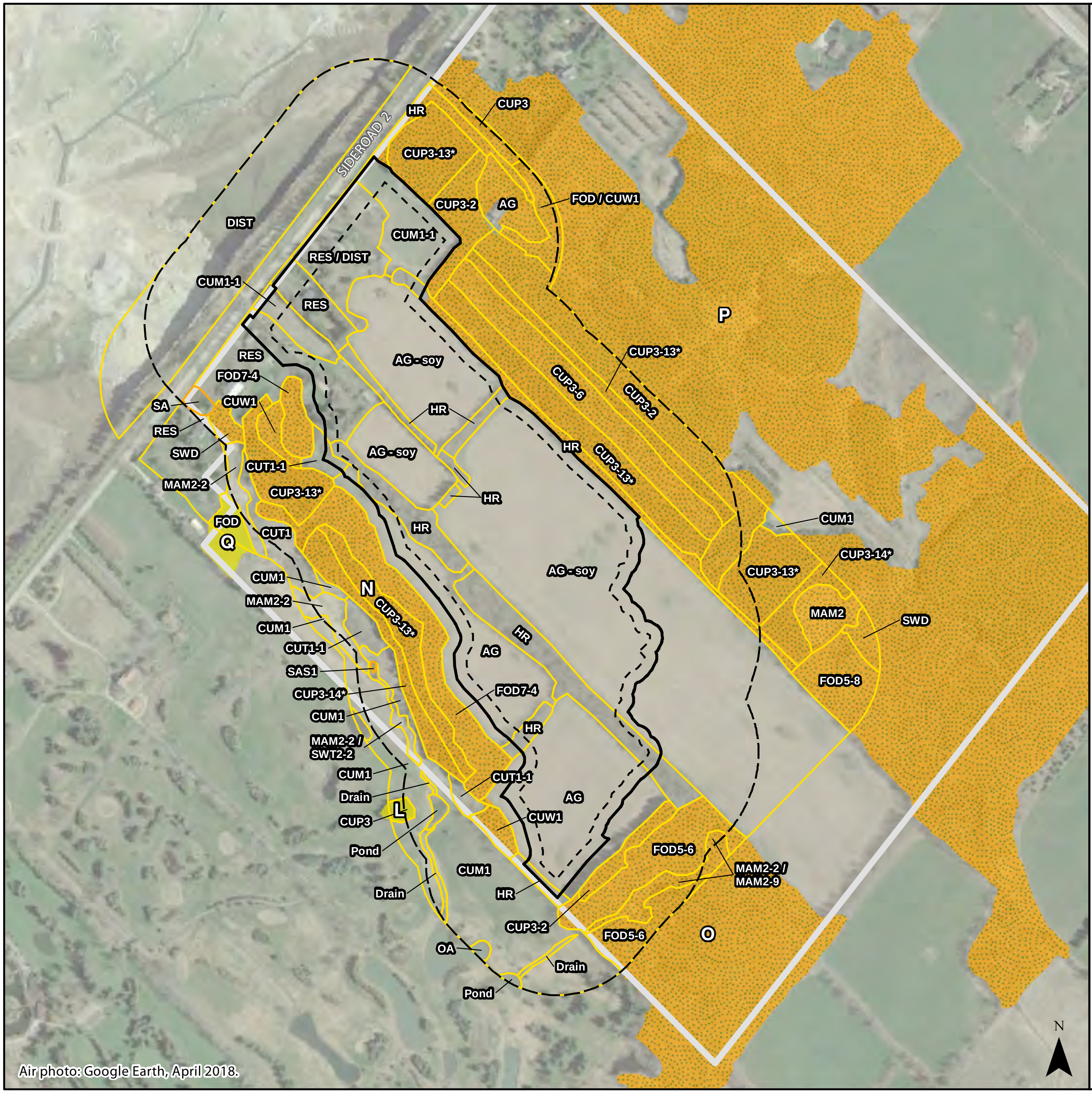


Figure 8a
Assessed Woodlands
WEST EXTENSION

Path: C:\Savanta\8133 - Burlington Quarry\figures\report_figures\2020 04 23 figure updates\Figure 8a Assessed Woodlands W-EXT.mxd REVISED: April 23, 2020



ELC Legend

CUM1	Mineral Cultural Meadow
CUM1-1	Dry Moist Old Field Meadow
CUP3	Coniferous Plantation
CUP3-2	White Pine Coniferous Plantation
CUP3-6	European Larch Coniferous Plantation
CUP3-13*	White Spruce Coniferous Plantation
CUP3-14*	White Cedar Coniferous Plantation
CUT1-1	Sumac Cultural Thicket
CUW1	Mineral Cultural Woodland
CUW1b	Poplar Cultural Woodland
FOD5-6	Dry- Fresh Sugar Maple-Basswood Deciduous Forest
FOD5-8	Dry- Fresh Sugar Maple-White Ash Deciduous Forest
FOD7-4	Fresh- Moist Black Walnut Lowland Deciduous Forest
MAM2	Mineral Meadow Marsh
MAM2-2	Reed-canary Grass Mineral Meadow Marsh
MAM2-9	Jewelweed Mineral Meadow Marsh
SWT2-2	Willow Mineral Thicket Swamp
AG	Agricultural
DIST	Disturbed
Drain	Drain
HR	Golf
OA	Hedgerow
Pond	Open Aquatic
RES	Residential
SA	Shallow Water
SAS1	Submerged Shallow Aquatic

**Denotes a type not listed in Southern Ontario ELC Guide.*

- ▭ Licensed Boundary
- ▭ Limit of Extraction
- ▭ 120 m Adjacent Lands
- ▭ Subject Lands
- ▭ Ecological Land Classification
- ▭ ELC Inclusion

NHRM and ROPA Significant Woodlands

- ▨ Yes
- ▨ Wooded Feature (Did not meet definitions of woodland in NHRM or ROP)

Figure 8b
Assessed Woodlands
SOUTH EXTENSION

0 100 M
1:7,000

SAVANTA
A GEI Company

Path: C:\Savanta\8133 - Burlington Quarry\figures\report_figures\2020 04 23 figure updates\Figure 8b Assessed Woodlands S-EXT.mxd REVISED: April 23, 2020

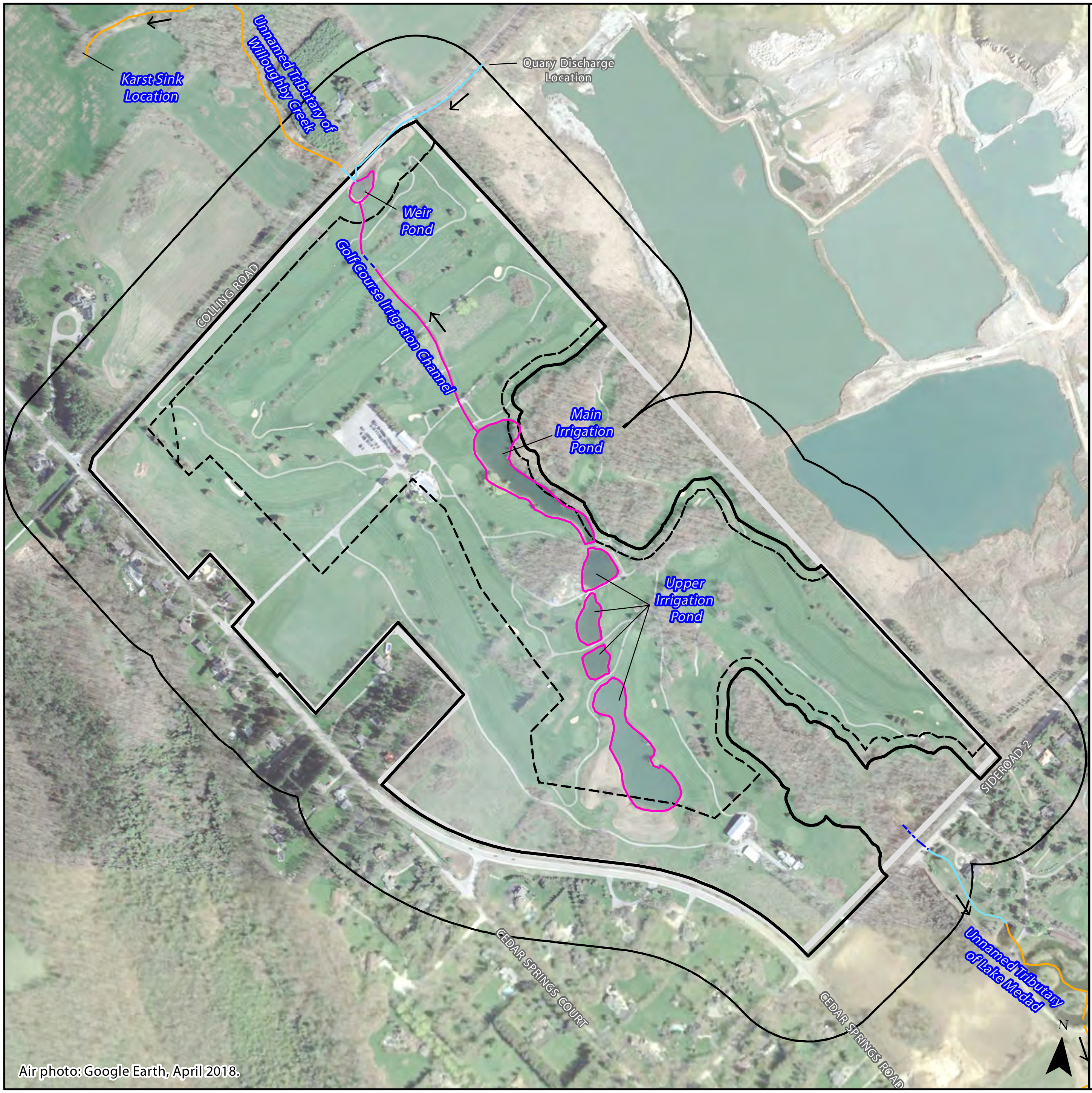


Figure 9a
Fish Habitat
WEST EXTENSION

SAVANTA
A GEI Company

Path: C:\Savanta\8133 - Burlington Quarry\figures\report_figures\2020 05 05 figure updates\Figure 9a Fish Habitat W-EXT.mxd REVISED: May 5, 2020

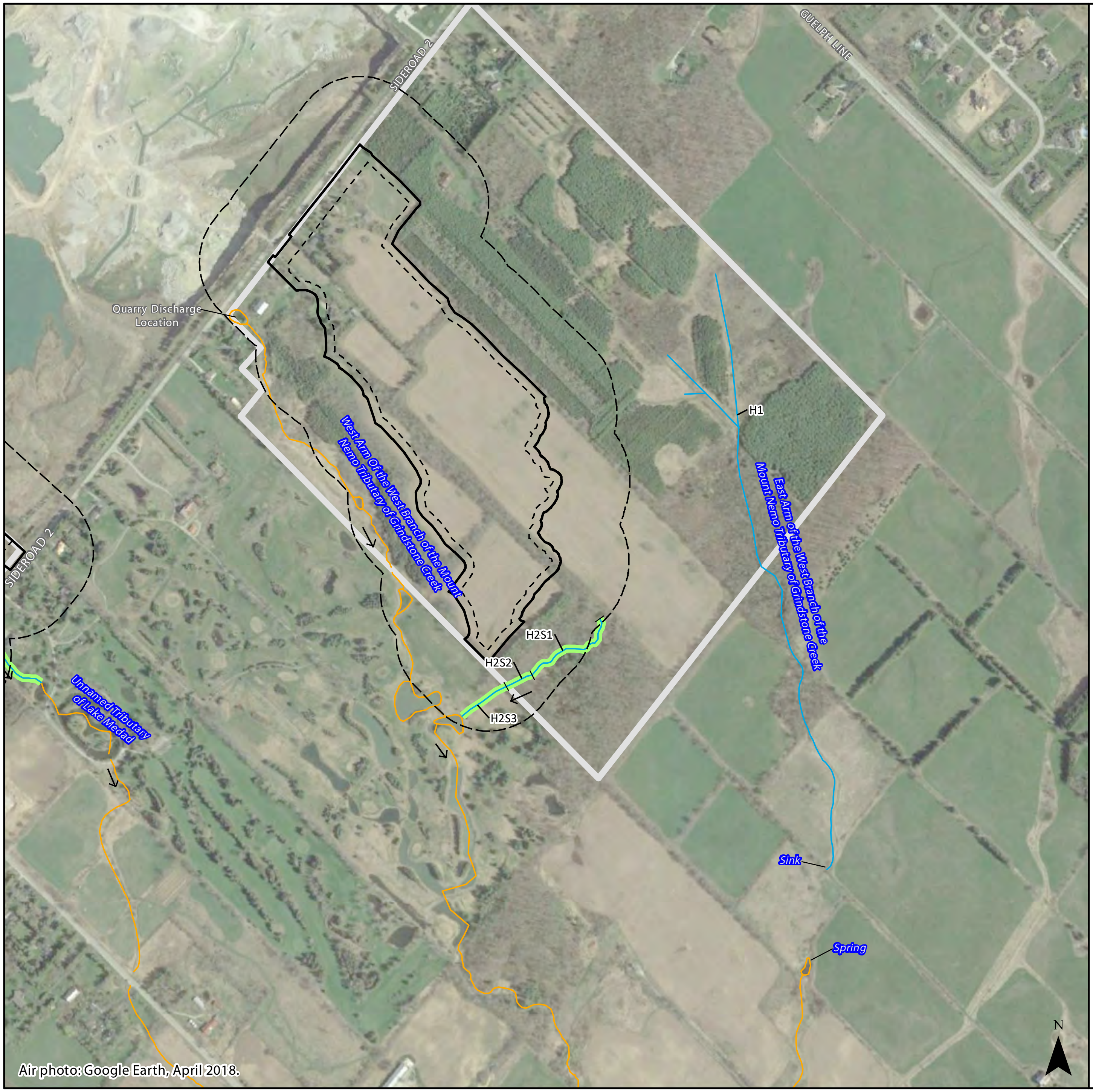
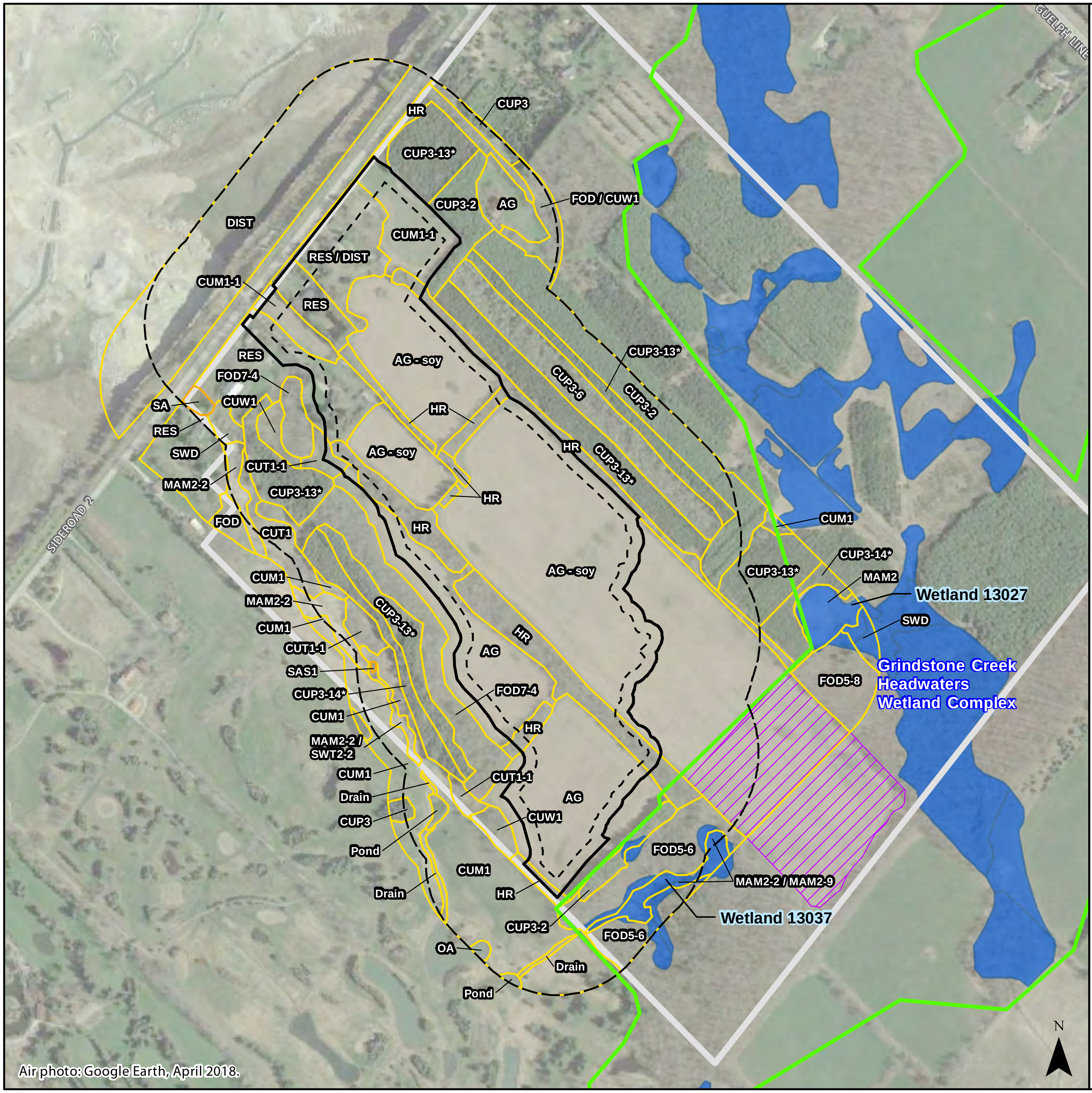


Figure 9b
Fish Habitat
SOUTH EXTENSION

SAVANTA
A GEI Company

Path: C:\Savanta\8133 - Burlington Quarry\figures\report_figures\2020 05 05 figure updates\Figure 9b Fish Habitat S-EXT.mxd REVISED: May 5, 2020



ELC Legend

CUM1	Mineral Cultural Meadow
CUM1-1	Dry Moist Old Field Meadow
CUP3	Coniferous Plantation
CUP3-13*	White Spruce Coniferous Plantation
CUP3-14*	White Cedar Coniferous Plantation
CUP3-2	White Pine Coniferous Plantation
CUP3-6	European Larch Coniferous Plantation
CUT1	Mineral Cultural Thicket
CUT1-1	Sumac Cultural Thicket
CUW1	Mineral Cultural Woodland
FOD	Deciduous Forest
FOD5-6	Dry- Fresh Sugar Maple-Basswood Deciduous Forest
FOD7-4	Fresh- Moist Black Walnut Lowland Deciduous Forest
MAM2-2	Reed-canary Grass Mineral Meadow Marsh
MAM2-9	Jewelweed Mineral Meadow Marsh
SA	Shallow Aquatic
SAS1	Submerged Shallow Aquatic
SWD	Deciduous Swamp
SWT2-2	Willow Mineral Thicket Swamp
AG	Agricultural
DIST	Disturbed
Drain	Drain
HR	Hedgerow
OA	Open Aquatic
RES	Residential

*Denotes a type not listed in Southern Ontario ELC Guide.

Licensed Boundary
Limit of Extraction
120 m Adjacent Lands
Subject Lands
Ecological Land Classification
ELC Inclusion
Proposed Jefferson Salamander Habitat Creation (4.0 ha)
MECP Jefferson Salamander Regulated Habitat
Wetland Evaluated-Provincial

Figure 10
Jefferson Salamander Habitat Creation and Enhancement Opportunities

0 100 M
1:7,000

SAVANTA
A GEI Company

Path: C:\Savanta\8133 - Burlington Quarry\figures\report_figures\2020 05 05 figure updates\Figure 10 JESA Habitat Creation and Enhancement Opportunities.mxd REVISED: May 6, 2020

Appendix B – Photolog and Tables

Photo 1: VP1 south-east area (April 4, 2019)

Photo 2: VP1 central area (April 4, 2019)

Photo 3: VP1 north-west area (April 4, 2019)

Photo 4: VP1 attachment example (April 4, 2019)

Photo 5: VP1 south-east area. Dry. (June 11, 2019)

Photo 6: VP1 north-west area. Dry. (June 11, 2019)

Photolog: Representative Photos of Vernal Pools and Suitable ELC Polygons

Photo 7: VP2 north-east area (SWD) (April 4, 2019)

Photo 8: VP2 north-east area (SWD) (April 4, 2019)

Photo 9: VP2 southern area (MAM2-2) (April 4, 2019)

Photo 10: VP2 southern area (MAM/FOD) (April 4, 2019)

Photo 11: VP2 NE area (SWD). Dry. (June 11, 2019)

Photo 12: VP2 NE area (SWD). Dry. (June 11, 2019)

Photolog: Representative Photos of Vernal Pools and Suitable ELC Polygons

Photo 13: VP2 S area (MAM). Dry. (June 11, 2019)

Photo 14: VP2 S area (MAM). Dry. (June 11, 2019)

Photo 15: VP3 MAS (April 4, 2019)

Photo 16: VP3 MAS (April 4, 2019)

Photo 17: VP3 MAS (June 26, 2019)

Photo 18: VP3 MAS (June 26, 2019)

Photo 19: VP4 (SWT/CUP) (April 4, 2019)

Photo 20: VP4 (SWT/CUP) (April 4, 2019)

Photo 21: VP4 (SWT). Depth: 10 cm. (June 11, 2019)

Photo 22: VP4 (SWT). (June 11, 2019)

Photo 23: VP4 (SWT). Dry. (June 26, 2019)

Photo 24: VP4 (SWT). Dry. (June 26, 2019)

Photo 25: VP5 (MAM) Dry. No Habitat. (April 4, 2019)

Photo 26: VP5 (MAM) Dry. No Habitat. (April 4,2019)

Photo 27: VP5 (MAM). No Habitat. (April 4, 2019)

Photo 28: VP5 (MAM) Dry. No Habitat. (April 4, 2019)

Photo 29: VP6 (MAM2) Dry. No Habitat. (April 4, 2019)

Photo 30: VP6 (MAM2) Dry. No Habitat. (April 4, 2019)

Table 1: Field Investigation Inventory

FIELD DATE	NATURE OF INVESTIGATION	SURVEYOR
2018		
October 5	Aquatic Site Reconnaissance	N. Boucher S. Catton
October 19	Reconnaissance Site Visit	S. Catton T. Hilditch
November 28	Terrestrial Site Reconnaissance Woodland Stem Density Survey	J. Leslie
2019		
March 25	Salamander Site Recon Survey Salamander Habitat Assessment	J. Leslie L. Williamson
April 2	Salamander Trapping Salamander Habitat Assessment	J. Leslie R. Lee
April 3	Salamander Trapping Salamander Habitat Assessment	J. Leslie L. Williamson
April 4	Salamander Trapping Salamander Habitat Assessment	L. Williamson E. Lee
April 5	Salamander Trapping Salamander Habitat Assessment	L. Williamson E. Lee
April 6	Salamander Trapping Salamander Habitat Assessment	J. Leslie L. Williamson
April 10	Bat Habitat Assessment Amphibian Egg Mass Survey Salamander Habitat Assessment	L. Williamson S. Catton A. Leadbetter
April 11	Bat Habitat Assessment	L. Williamson A. McLaren
April 15	Bat Habitat Assessment	L. Williamson A. McLaren
April 16	Bat Habitat Assessment	L. Williamson E. Lee
April 18	Headwater Drainage Feature Assessment Round 1	M. Letourneau O. Park
April 22	Turtle Basking Survey Round 1	L. Williamson

Table 1: Field Investigation Inventory

FIELD DATE	NATURE OF INVESTIGATION	SURVEYOR
April 22	Snake Visual Encounter Survey Round 1 Salamander Habitat Assessment	R. Lee
April 25	Amphibian Call Count Survey Round 1	L. Williamson O. Park
May 10	Bat Habitat Assessment Turtle Basking Survey Round 2 Salamander Habitat Assessment	L. Williamson E. Lee
May 16	Snake Visual Encounter Survey Round 2 Salamander Habitat Assessment	L. Williamson
May 22	Amphibian Call Count Survey Round 2	L. Williamson A. McLaren
May 27	Ecological Land Classification Spring Botanical Survey	J. Leslie A. Szabo
June 3	Headwater Drainage Feature Assessment Round 2	M. Letourneau O. Park
June 10, 11	Breeding Bird Survey Round 1 Insect Survey Round 1	P. Burke
June 11	Turtle Basking Survey Round 3 Snake Visual Encounter Survey Round 3 Salamander Habitat Assessment	L. Williamson M. Green
June 17	Fish Community Sampling and Aquatic Habitat Assessment (West Arm of the West Branch of the Mount Nemo Tributary Grindstone Creek) Amphibian Call Count Survey Round 3	M. Letourneau O. Park L. Williamson
June 20 – July 3	Bat Acoustic Monitoring	R. Lee
June 24	Fish Community Sampling and Aquatic Habitat Assessment (Unnamed Tributary of Willoughby Creek and Golf Course irrigation channel/ponds)	M. Letourneau O. Park A. McLaren A. Leadbetter
June 25, 26	Breeding Bird Survey Round 2 Insect Survey Round 2	P. Burke
June 26	Salamander Habitat Assessment	L. Williamson

Table 1: Field Investigation Inventory

FIELD DATE	NATURE OF INVESTIGATION	SURVEYOR
July 22, 31	Ecological Land Classification Summer Botanical Survey	J. Leslie
August 9	Insect Survey Round 3	P. Burke
August 26	Headwater Drainage Feature Assessment Round 3	M. Letourneau A. McLaren
September 11, 13	Ecological Land Classification Fall Botanical Survey	J. Leslie
October 8	Stem Density Woodland Survey	J. Leslie
November 5	Barn Swallow Nest Habitat Assessment	E. Lee

Table 2: Ecological Landscape Characterization (ELC) Community Descriptions

ELC TYPE	COMMUNITY DESCRIPTION	S-RANK / G-RANK (NHIC, 2013)
FOREST		
Deciduous Forest		
FOD5-1 Dry-Fresh Sugar Maple Deciduous Forest	- Mid-age canopy dominated by Sugar Maple (*Acer saccharum*); sub-canopy with abundance of Sugar Maple and Eastern Hop-Hornbeam (*Ostrya virginiana*). - Understory composed of canopy saplings and occasional Chokecherry (*Prunus virginiana*). - Ground cover often includes Enchanter's Nightshade (*Circaea canadensis* ssp. *canadensis*), Herb-Robert (*Geranium robertianum*), Garlic Mustard *(Alliaria petiolata),* Zig-Zag Goldenrod (*Solidago flexicaulis*), Early Meadow-Rue (*Thalictrum dioicum*), Jack-in-the-pulpit (*Arisaema triphyllum* ssp. *triphyllum*), and Western Poison Ivy (*Toxicodendron radicans* var. *rydbergii*).	S5
FOD5-2 Dry-Fresh Sugar Maple - Beech Deciduous Forest	- Mature canopy composed primarily of American Beech *(Fagus grandifolia)*, Sugar Maple, and White Ash (*Fraxinus americana*), with Eastern Hop-Hornbeam common in the understory. - Understory contains abundance of American Beech saplings, with associations of Chokecherry, and Alternate-leaved Dogwood (*Cornus alternifolia*). - Herbs include Zig-Zag Goldenrod, Hairy Solomon's Seal *(Polygonatum pubescens)*, Beechdrops (*Epifagus virginiana*), and Jack-in-the-pulpit, among others. - Observations of disturbance include old garbage mounds.	S5
FOD5-5 Dry-Fresh Sugar Maple – Hickory Deciduous Forest	- Mature canopy, commonly composed of Sugar Maple, Bitternut Hickory *(Carya cordiformis),* and White Ash. - Understory species often include canopy saplings, Chokecherry and Alternate-leaved Dogwood. - Groundcover containing abundance of Western Poison Ivy in association with Enchanter's Nightshade, White Baneberry *(Actaea pachypoda),* Herb-Robert, and Blue-stemmed Goldenrod *(Solidago caesia)* - Areas of exposed bedrock were periodically observed.	S4
FOD5-6 Dry-Fresh Sugar Maple – Basswood Deciduous Forest	- Mature forest with abundance of Sugar Maple in canopy and associations American Basswood (*Tilia americana*), Black Cherry (*Prunus serotina*), and Bitternut Hickory. - Understory species often include Chokecherry, Red Raspberry (*Rubus idaeus* ssp. *strigosus*), and Eastern Poison Ivy (*Toxicodendron radicans* var. *radicans*). - Ground cover composed of Enchanter's Nightshade, White Avens (*Geum canadense*), Mayapple (*Podophyllum peltatum*), Herb-Robert,	S5

Table 2: Ecological Landscape Characterization (ELC) Community Descriptions

ELC TYPE	COMMUNITY DESCRIPTION	S-RANK / G-RANK (NHIC, 2013)
	Red Baneberry (*Actaea rubra* ssp. *rubra*), and Long-Stalked Sedge (*Carex pedunculata*), among others. • Contained a small Red-Osier Mineral Thicket Swamp inclusion; surface water was present in the spring but absent in the summer and fall.	
FOD7-2 Fresh-Moist Ash Lowland Deciduous Forest	• Relatively open canopy with primarily dead/dying Green Ash with associations of Silver Maple (*Acer saccharinum*), White Elm *(Ulmus Americana)* and American Basswood. • Understory composed primarily of Multiflora Rose (*Rosa multiflora*), Alternate-leaved Dogwood, Spicebush (*Lindera benzoin*), Red Raspberry, and Common Buckthorn (*Rhamnus cathartica*). • Groundcover with abundance of Western Poison-Ivy, and occasional occurrences of Enchanter's Nightshade, Jack-in-the-pulpit, Graceful Sedge (*Carex gracillima*), Calico Aster (*Symphyotrichum lateriflorum* var. *lateriflorum*), Tall Goldenrod (*Solidago altissima var. altissima*), and Thicket Creeper (*Parthenocissus vitacea*). • Surface water was absent throughout majority of community in the spring – where present, depth <10cm. Dry during July & September surveys.	S4S5
FOD7-4 Fresh-Moist Black Walnut Lowland Deciduous Forest	• Mid-age canopy with abundance of Black Walnut (*Juglans nigra*) and associations of Green Ash. • Understory with abundance of Black Raspberry (*Rubus occidentalis*), and Riverbank Grape (*Vitis riparia*), and occasional occurrences of Showy Fly Honeysuckle (*Lonicera* x *bella*), Virginia Creeper (*Parthenocissus quinquefolia*), and Thicket Creeper. • Herbaceous diversity varied but most commonly consisted of Garlic Mustard (*Alliaria petiolata*), White Avens, Enchanter's Nightshade, Arrow-leaved Aster *(Symphyotrichum urophyllum),* Spotted Jewelweed (*Impatiens capensis*), Dame's Rocket *(Hesperis matronalis)*, Jack-in-the-pulpit, Tall Goldenrod, and Wild Cucumber (*Echinocystis lobata*).	S2S3
CULTURAL		
Cultural Plantation		
CUP3-2 White Pine Coniferous Plantation	• Mid-age plantation dominated by Eastern White Pine (*Pinus strobus*) with infrequent associations of White Spruce (*Picea glauca*) and Manitoba Maple (*Acer negundo*). • Average DBH of canopy trees ~15cm – 20cm and average height ~ 12m. • Understory and herbaceous layer typically absent.	Not ranked

Table 2: Ecological Landscape Characterization (ELC) Community Descriptions

ELC TYPE	COMMUNITY DESCRIPTION	S-RANK / G-RANK (NHIC, 2013)
CUP3-6 European Larch Coniferous Plantation	• Mid-age plantation with abundance of European Larch (*Larix decidua*) in canopy. • Average DBH of canopy trees ~ 8cm – 18cm and average height ~15m. • Understory often composed of Manitoba Maple and Green Ash, with associations of Red-osier Dogwood (*Cornus sericea*), Showy Fly Honeysuckle, Common Buckthorn, Red Raspberry, and Black Raspberry. • Herbaceous layer with abundance of Herb-Robert, Yellow Avens (*Geum aleppicum*), Common Nipplewort (*Lapsana communis*), and associations of Garlic Mustard, Common Dandelion (*Taraxacum officinale*), and Enchanter's Nightshade. • Many Larch have fallen, creating canopy openings.	Not ranked
CUP3-13* White Spruce Coniferous Plantation	• Young to mid-age plantation dominated by White Spruce with infrequent associations of Green Ash and Eastern Cottonwood (*Populus deltoides* ssp. *deltoides*). • Average DBH of canopy trees ~ 12cm – 15cm and average height ~10m. • Understory and herbaceous layer typically absent.	Not ranked
CUP3-14* White Cedar Coniferous Plantation	• Young plantation dominated by Eastern White Cedar (*Thuja occidentalis*). • Average DBH of canopy trees ~ 10cm – 12cm and average height ~ 8m. • Understory with infrequent Green Ash and Grey Dogwood (*Cornus racemosa*). • Ground cover generally undeveloped.	Not ranked
Cultural Meadow		
CUM1 Mineral Cultural Meadow	• Open meadow containing a mix of native and non-native forbs and graminoids. • Frequently observed species include Kentucky Bluegrass (*Poa pratensis*), Smooth Brome (*Bromus inermis*), Orchard Grass (*Dactylus glomerata*), Tall Goldenrod, New England Aster (*Symphyotrichum novae-angliae*), Wild Carrot (*Daucus carota*), Common Teasel (*Dipsacus fullonum*), Garden Bird's-Foot Trefoil (*Lotus corniculatus*), English Plantain (*Plantago lanceolata*), Sulphur Cinquefoil (*Potentilla recta*), Canada Thistle (*Cirsium arvense*), White Sweet-Clover (*Melilotus albus*), and Great Burdock (*Arctium lappa*). • Cover of tree and shrub species variable but also < 10%; species include Black Walnut, Manitoba Maple, Staghorn Sumac (*Rhus typhina*), and Common Buckthorn.	Not ranked

Table 2: Ecological Landscape Characterization (ELC) Community Descriptions

ELC TYPE	COMMUNITY DESCRIPTION	S-RANK / G-RANK (NHIC, 2013)
CUM1-1 Old Field Cultural Meadow	• Former agricultural fields well established as cultural meadow. • Kentucky Bluegrass and Orchard Grass abundant in herbaceous layer, with associations of Common Timothy (*Phleum pratense*), Tall Goldenrod, Bull Thistle (*Cirsium vulgare*), and Curled Dock (*Rumex crispus*). • Infrequent occurrences of Black Locust (*Robinia pseudoacacia*) and Black Walnut saplings.	Not ranked
Cultural Thicket		
CUT1a Mineral Cultural Thicket (planted saplings)	• Young plantation of coniferous and deciduous trees, each generally between 1 m to 2.5 m tall having an overall cover of approximately 25%. • Canopy species diverse but commonly composed of Eastern White Pine, Eastern White Cedar, Black Walnut, and Bur Oak (*Quercus macrocarpa*). • Ground cover was unmanaged, composed of species typical of cultural meadows; abundant species were Kentucky Bluegrass and English Plantain, while Quackgrass (*Elymus repens*), Orchard Grass, Common St. John's-Wort (*Hypericum perforatum* ssp*. perforatum*), Red Clover (*Trifolium pratense*), Annual Fleabane (*Erigeron annuus*), and Tall Goldenrod were also commonly observed.	Not ranked
CUT1b Mineral Cultural Thicket (naturalized saplings)	• Natural regeneration of young trees (~2m to 6m tall), consisting primarily of Green Ash with scattered Eastern Red Cedar (*Juniperus virginiana* var. *virginiana*). • Abundance of Tall Fescue (*Lolium arundinaceum*) in herbaceous layer, with associations of Grass-leaved Goldenrod (*Euthamia graminifolia*), New England Aster, Purple Crown-vetch (*Securigera varia*), Canada Bluegrass (*Poa compressa*), Arrow-Leaved Aster, Poverty Oatgrass (*Danthonia spicata*), and Woodland Sedge (*Carex blanda*).	Not ranked
CUT1-1 Sumac Cultural Thicket	• Shrub thicket with abundance of Staghorn Sumac and associations of Alternate-leaved Dogwood, Common Buckthorn, Multiflora Rose, Black Raspberry, Red Raspberry, and saplings of White Ash and Black Cherry. • Herb layer with frequent occurrences of Herb-Robert, Garlic Mustard, Annual Fleabane, Yellow Avens, and Tall Goldenrod.	Not ranked
Cultural Woodland		
CUW1	• Canopy cover ~ 50%, this mid-age/mature woodland generally consisted of Sugar Maple, Black Cherry, and Black Walnut. • Understory species often included Alternate-leaved Dogwood, Red Raspberry, Riverbank Grape, and Virginia Creeper.	Not ranked

Table 2: Ecological Landscape Characterization (ELC) Community Descriptions

ELC TYPE	COMMUNITY DESCRIPTION	S-RANK / G-RANK (NHIC, 2013)
Mineral Cultural Woodland	• Ground cover included an abundance of Western Poison Ivy, with occasional occurrences of Garlic Mustard, Herb-Robert, and Tall Goldenrod. • Exposed bedrock observed.	
CUW1a Black Locust Cultural Woodland	• Young to mid-age woodland with periodic mature trees along the outer edge facing the golf course. • Canopy & subcanopy most commonly composed of Black Locust, with occasional occurrences of Sugar Maple, Norway Spruce (*Picea abies*), Black Cherry, and Manitoba Maple. • Understory dense, often with canopy saplings, Common Buckthorn, Chokecherry, Black Raspberry, European Red Currant (*Ribes rubrum*), Thicket Creeper, and Riverbank Grape. • Herbaceous species frequently include Herb-Robert, Garlic Mustard, Enchanter's Nightshade, Yellow Avens, and Tall Goldenrod.	Not ranked
CUW1b Poplar Cultural Woodland	• Mid-age canopy of varying cover and diversity (cover 35% to 60%). • Canopy species often include Trembling Aspen, Black Walnut, Green Ash, Black Cherry, and Sweet Cherry (*Prunus avium*). • Understory was often dense, composed of canopy saplings as well as Common Buckthorn, Red Raspberry, Alternate-leaved Dogwood, Multiflora Rose, Large-thorned Hawthorn (*Crataegus macracantha*), Chokecherry, Staghorn Sumac, and Black Raspberry. • Ground cover generally consisted of White Avens, Garlic Mustard, Enchanter's Nightshade, Hooked Agrimony (*Agrimonia gryposepala*), and Tall Goldenrod.	Not ranked
CUW1c Mineral Cultural Woodland (planted trees)	• Similar to the CUT1 community type (i.e. planted assemblage of coniferous and deciduous trees), but denser and more mature (average height ~3 m – 5 m), with 50-60% canopy cover. • Frequent canopy species were Eastern White Pine, White Birch (*Betula papyrifera*), Red Oak (*Quercus rubra*), Eastern White Cedar, and Silver Maple. • Ground cover composition was similar to CUM1 – English Plantain, Kentucky Bluegrass, Wild Carrot, Red Clover, Tall Goldenrod, among others.	Not ranked
SWAMP		
Thicket Swamp		
SWT2-2 Willow Mineral Thicket Swamp	• Part of a complex with MAM2-2 • Shrub species most often consisting of Cottony Willow (*Salix eriocephala*), with associations of Sandbar Willow (*Salix interior*), and Meadow Willow (*Salix petiolaris*).	S5

Table 2: Ecological Landscape Characterization (ELC) Community Descriptions

ELC TYPE	COMMUNITY DESCRIPTION	S-RANK / G-RANK (NHIC, 2013)
Deciduous Swamp		
SWD3-2a/b Silver Maple Mineral Deciduous Swamp	• Mature canopy most commonly composed of Silver Maple with associations of Green Ash. • Shrub/vine species include Spicebush, Red Elderberry (*Sambucus racemosa* ssp. *pubens*), Chokecherry, Canada Moonseed (*Menispermum canadense*), Prickly Cucumber, and Riverbank Grape. • Herbaceous layer with abundance of Ostrich Fern (*Matteuccia struthiopteris* var. *pensylvanica*) and Jack-in-the-pulpit, with associations of Enchanter's Nightshade, Herb-Robert, and Fringed Yellow Loosestrife (*Lysimachia ciliata*). • Different variations of this community type were observed; **(a)** as described above with complex microtopography (allowing for associations of some upland species); surface water usually absent, where present, depth <10cm (dry during July & September surveys); and **(b)** canopy was dominated by Silver Maple, had a relatively open understory (no Spicebush), ground cover of mainly 40% Spotted Jewelweed, the remainder unvegetated, and surface water usually present, depth ~10-25cm in the spring but also dry in July & September.	S5
MARSH		
Meadow Marsh		
MAM2-2 Reed-canary Grass Mineral Meadow Marsh	• Open meadow marsh dominated by Reed Canary Grass (*Phalaris arundinacea* var. *arundinacea*) and scattered occurrences of Spotted Jewelweed, Bittersweet Nightshade (*Solanum dulcamara*), and Panicled Aster. • Where adjacent to Sideroad 2, surface water was present in the early spring (~30cm). • On the east property (east corner), Reed Canary Grass was the most abundant species but included a higher diversity of associate species, such as Panicled Aster (*Symphyotrichum lanceolatum* ssp. *lanceolatum*), Creeping Bentgrass (*Agrostis stolonifera*), Kentucky Bluegrass, Troublesome Sedge (*Carex molesta*), occasionally intermixed with upland species, such as Tufted Vetch (*Vicia cracca*) and Common St. John's-Wort. Surface water was absent in this community in the spring, summer, and fall. • On the east property (southwest edge), Reed Canary Grass was dominant and surface water was restricted to the associated watercourse (depth ~ 25cm); this community was complexed with Willow Mineral Thicket Swamp, most often consisting of Cottony Willow.	S5
MAM2-9	• Species diversity varied but Spotted Jewelweed was the most consistently observed species throughout with frequent associations	S4

Table 2: Ecological Landscape Characterization (ELC) Community Descriptions

ELC TYPE	COMMUNITY DESCRIPTION	S-RANK / G-RANK (NHIC, 2013)
Jewelweed Mineral Meadow Marsh	of Reed Canary Grass and Bittersweet Nightshade; occasional observations of Spotted Water-hemlock (*Cicuta maculata* var. *maculata*), Sensitive Fern (*Onoclea sensibilis*), Spotted Joe Pye Weed (*Eutrochium maculatum* var. *maculatum*), Purple-stemmed Aster (*Symphyotrichum puniceum*), and Narrow-leaved Cattail (*Typha angustifolia*). • Small clusters of shrubs were also observed, most often consisting of Red-osier Dogwood and Cottony Willow. • Surface water was present in the spring but absent in the summer and fall.	
Shallow Marsh		
MAS2-1 Cattail Mineral Shallow Marsh	• Community generally dominated by Cattail, with observation of both Narrow-leaved Cattail and Hybrid Cattail (*Typha* x *glauca*). • Associate species include Blue Vervain (*Verbena hastata*), Spotted Jewelweed, Reed Canary Grass, and Panicled Aster • Surface water was generally absent in this community, with exception of a drainage feature along Colling Rd and around the edge of the Weir Pond.	S5
Shallow Water		
SAS1 Submerged Shallow Aquatic	• Bordered by European Reed (*Phragmites australis ssp. australis*), this shallow water feature contained permanent water (depth ~50cm in September) • Species commonly consisted of Sago Pondweed (*Stuckenia pectinata*), and Curly-Leaved Pondweed (*Potamogeton crispus*).	S5
ADDITIONAL ELC UNITS		
RES/DIST Residential / Disturbed	• Former residential area, most structures since removed (some foundations, shed structures, and paved driveways remain). • Amidst the anthropogenic features is natural regeneration of cultural meadow species with some remnant garden plants. • Tree cover and maturity varies – some mature trees with periodic establishment of saplings; overall canopy cover ~20%. • Shrub cover generally sparse (<25%), most commonly consisting of Red Raspberry, Black Raspberry, European Buckthorn, and Riverbank Grape.	Not ranked
FOD5/DIST Sugar Maple Deciduous	• Mid-age to mature trees in canopy, most commonly Sugar Maple with fewer White Ash and Red Oak; canopy cover >60%. • No understory development. • Ground cover composed of maintained turf grass (northwest polygon) or sparse cover (<60%) of Herb-Robert, Garlic Mustard, turf	Not ranked

Table 2: Ecological Landscape Characterization (ELC) Community Descriptions

ELC TYPE	COMMUNITY DESCRIPTION	S-RANK / G-RANK (NHIC, 2013)
Forest / Disturbed	grass with exposed soil (southeast polygon) also maintained by mowing. - Each of these communities have paved golf cart pathways extending through.	
Pond	- Most are active irrigation ponds with pumps controlling water levels; some of these features are manually cleared of aquatic vegetation. - Where present, aquatic plants most commonly consist of Chara (algae), with associations of Eurasian Water-Milfoil (*Myriophyllum spicatum*), Small Pondweed (*Potamogeton pusillus*), and Canada Waterweed (*Elodea canadensis*).	Not ranked

Table 3: Plant List for the Limit of Extraction and 120 m Adjacent Lands

Limit of Extraction	120 m Adjacent Lands	Overall	LATIN NAME	COMMON NAME	CC	WI	OWES WETLAND SPECIES	WEEDINESS INDEX	PROVINCIAL STATUS. (S-RANK)	COSSARO (MECP)	LOCAL STATUS HALTON (Crins et al., 2006)	LOCAL STATUS HALTON (Varga 2005)	LOCAL STATUS GTA (Varga 2005)	AUTHORITY
x	x	x	*Sambucus racemosa ssp. pubens*	Red Elderberry	5	3			S5		X	X	X	(Michaux) Hultén
x	x	x	*Viburnum opulus ssp. opulus*	Cranberry Viburnum		-3		-1	SNA			X	X	L.
x	x	x	*Chenopodium album*	Common Lamb's-Quarters		3		-1	SNA		X	X	X	L.
x	x	x	*Rhus typhina*	Staghorn Sumac	1	3			S5		X	X	X	L.
x	x	x	*Toxicodendron radicans var. radicans*	Eastern Poison Ivy	2	0	T		S5		X	X	X	(L.) Kuntze
x	x	x	*Toxicodendron radicans var. rydbergii*	Western Poison Ivy	2	0			S5		X	X	X	(Small ex Rydberg) Erskine
x	x	x	*Daucus carota*	Wild Carrot		5		-2	SNA		X	X	X	L.
x	x	x	*Apocynum cannabinum var. cannabinum*	Hemp Dogbane (var. cannabinum)	3	0			S5		U	U	X	L.
x	x	x	*Asclepias syriaca*	Common Milkweed	0	5			S5		X	X	X	L.
x	x	x	*Vinca minor*	Lesser Periwinkle		5		-2	SNA		X	X	X	L.
x	x	x	*Vincetoxicum rossicum*	European Swallowwort		5			SNA		X	X	X	(Kleopow) Barbaricz
x	x	x	*Achillea millefolium*	Common Yarrow		3		-1	SNA		X	X	X	L.
x	x	x	*Ambrosia artemisiifolia*	Common Ragweed	0	3			S5		X	X	X	L.
x	x	x	*Arctium lappa*	Great Burdock		3			SNA		X	X	X	L.
x	x	x	*Bidens cernua*	Nodding Beggarticks	2	-5	I		S5		X	X	X	L.
x	x	x	*Carduus nutans*	Nodding Thistle		3			SNA					L.
x	x	x	*Centaurea jacea*	Brown Knapweed		5		-1	SNA		X	X	X	L.
x	x	x	*Cichorium intybus*	Wild Chicory		5		-1	SNA		X	X	X	L.
x	x	x	*Cirsium arvense*	Canada Thistle		3		-1	SNA		X	X	X	(L.) Scop.
x	x	x	*Erigeron annuus*	Annual Fleabane	0	3			S5			X	X	(L.) Pers.
x	x	x	*Erigeron canadensis*	Canada Horseweed	0	3			S5		X	X	X	(L.)
x	x	x	*Eupatorium perfoliatum*	Common Boneset	2	-3	I		S5		X	X	X	L.
x	x	x	*Euthamia graminifolia*	Grass-Leaved Goldenrod	2	0			S5		X	X	X	(L.) Nutt.
x		x	*Gnaphalium uliginosum*	Low Cudweed		0	T	-1	SNA		X	X	X	L.
x	x	x	*Lactuca serriola*	Prickly Lettuce		3		-1	SNA		X	X	X	L.
x		x	*Lapsana communis*	Common Nipplewort		3		-2	SNA		X	X	X	L.
x	x	x	*Leucanthemum vulgare*	Oxeye Daisy		5		-1	SNA		X	X	X	Lam.
x		x	*Matricaria discoidea*	Pineappleweed		3			SNA		X	X	X	de Candolle
x		x	*Pilosella caespitosa*	Meadow Hawkweed		5		-2	SNA		X	X	X	(Dumort.) P.D. Sell & C. West
x	x	x	*Solidago altissima var. altissima*	Tall Goldenrod	1	3			S5		X	X	X	L.
x	x	x	*Solidago flexicaulis*	Zigzag Goldenrod	6	3			S5		X	X	X	L.
x	x	x	*Solidago nemoralis var. nemoralis*	Grey-Stemmed Goldenrod (var. nemorali	2	5			S5		X	X	X	Aiton
x	x	x	*Sonchus arvensis ssp. arvensis*	Field Sow-Thistle		3			SNA		X	X	X	L.
x	x	x	*Symphyotrichum lanceolatum ssp. lanceolatum*	Panicled Aster (ssp. lanceolatum)	3	-3	I		S5		X	X	X	(Willd.) G.L. Nesom
x	x	x	*Symphyotrichum lateriflorum var. lateriflorum*	Calico Aster	3	0	T		S5		X	X	X	(L.) Á. & D. Löve
x	x	x	*Symphyotrichum novae-angliae*	New England Aster	2	-3			S5		X	X	X	(L.) G.L. Nesom
x	x	x	*Symphyotrichum pilosum var. pilosum*	Old Field Aster	1	3			S5		U	U	R	(Willd.) G.L. Nesom
x	x	x	*Symphyotrichum urophyllum*	Arrow-Leaved Aster	6	5			S4		U	R5	U	(Lind. ex DC.) G.L. Nesom
x	x	x	*Taraxacum officinale*	Common Dandelion		3		-2	SNA		X	X	X	F.H. Wiggers
x	x	x	*Tragopogon pratensis*	Meadow Goatsbeard		5		-1	SNA		X	X	X	L.
x	x	x	*Tussilago farfara*	Coltsfoot		3	T	-2	SNA		X	X	X	L.
x	x	x	*Impatiens capensis*	Spotted Jewelweed	4	-3	I		S5		X	X	X	Meerburgh
x	x	x	*Podophyllum peltatum*	May-Apple	5	3			S5		X	X	X	L.
x	x	x	*Betula papyrifera*	Paper Birch	2	3	T		S5		X	X	X	Marshall
x	x	x	*Ostrya virginiana*	Eastern Hop-Hornbeam	4	3			S5		X	X	X	(Miller) K. Koch
x	x	x	*Hydrophyllum virginianum var. virginianum*	Virginia Waterleaf	6	0			S5		X	X	X	L.
x	x	x	*Alliaria petiolata*	Garlic Mustard		0		-3	SNA		X	X	X	(M. Bieb.) Cavara & Grande
x	x	x	*Berteroa incana*	Hoary Alyssum		5		-3	SNA		X	X	X	(L.) de Candolle
x	x	x	*Hesperis matronalis*	Dame's Rocket		3		-3	SNA		X	X	X	L.
x	x	x	*Celtis occidentalis*	Common Hackberry	8	0			S4		R4	R3	R	L.
x	x	x	*Dipsacus fullonum*	Common Teasel		3		-1	SNA		X	X	X	L.
x	x	x	*Lonicera morrowii*	Morrow's Honeysuckle		3		-1	SNA		X	X	X	A. Gray
x	x	x	*Cerastium fontanum ssp. vulgare*	Common Mouse-Ear Chickweed		3		-1	SNA		X	X	X	(Hartman) Greuter & Burdet
x	x	x	*Dianthus armeria ssp. armeria*	Deptford Pink		5		-1	SNA		X	X	X	L.
x	x	x	*Celastrus orbiculatus*	Oriental Bittersweet		5		-1	SNA		X	X	X	Thunberg
x	x	x	*Euonymus obovatus*	Running Strawberry Bush	6	5			S4		X	X	X	Nutt.
x	x	x	*Cornus alternifolia*	Alternate-Leaved Dogwood	6	3			S5		X	X	X	L. f.

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x	x	x	*Cornus sericea*	Red-Osier Dogwood	2	-3	I*		S5		X	X	X	L.
x	x	x	*Echinocystis lobata*	Wild Cucumber	3	-3	T		S5		X	X	X	(Michx.) Torr. & A. Gray
x	x	x	*Elaeagnus umbellata*	Autumn Olive		3		-3	SNA		X	X	X	Thunberg
x	x	x	*Lotus corniculatus*	Garden Bird's-Foot Trefoil		3		-2	SNA		X	X	X	L.
x	x	x	*Medicago lupulina*	Black Medick		3		-1	SNA		X	X	X	L.
x	x	x	*Melilotus albus*	White Sweet-Clover		3		-3	SNA		X	X	X	Medik.
x	x	x	*Robinia pseudoacacia*	Black Locust		3		-3	SNA		X	X	X	L.
x	x	x	*Securigera varia*	Purple Crown-Vetch		5		-2	SNA		X	X	X	(L.) Lassen
x		x	*Trifolium hybridum*	Alsike Clover		3		-1	SNA		X	X	X	L.
x	x	x	*Trifolium pratense*	Red Clover		3		-2	SNA		X	X	X	L.
x	x	x	*Trifolium repens*	White Clover		3		-1	SNA		X	X	X	L.
x	x	x	*Vicia cracca*	Tufted Vetch		5		-1	SNA		X	X	X	L.
x	x	x	*Fagus grandifolia*	American Beech	6	3			S4		X	X	X	Ehrhart
x	x	x	*Quercus macrocarpa*	Burr Oak	5	3	T		S5		X	X	X	Michaux
x	x	x	*Quercus rubra*	Northern Red Oak	6	3			S5		X	X	X	L.
x	x	x	*Geranium robertianum*	Herb-Robert	2	3		-2	S5		X	X	X	L.
x	x	x	*Ribes cynosbati*	Eastern Prickly Gooseberry	4	3			S5		X	X	X	L.
x	x	x	*Ribes rubrum*	European Red Currant		5	T	-2	SNA		X	X	X	L.
x	x	x	*Myriophyllum spicatum*	Eurasian Water-Milfoil		-5	I	-3	SNA		X	X	X	L.
x	x	x	*Hypericum perforatum ssp. perforatum*	Common St. John's-Wort		5		-3	SNA		X	X	X	L.
x	x	x	*Carya cordiformis*	Bitternut Hickory	6	0			S5		X	X	X	(Wangenh.) K. Koch
x	x	x	*Juglans cinerea*	Butternut	6	3			S2?	END	X	X	X	L.
x	x	x	*Juglans nigra*	Black Walnut	5	3			S4?		X	X	X	L.
x	x	x	*Clinopodium vulgare*	Wild Basil	4	5			S5		X	X	X	L.
x	x	x	*Glechoma hederacea*	Ground-Ivy		3		-2	SNA		X	X	X	L.
x	x	x	*Leonurus cardiaca ssp. cardiaca*	Common Motherwort		5		-2	SNA		X	X	X	L.
x	x	x	*Mentha canadensis*	Canada Mint	3	-3	I		S5		X	X	X	L.
x	x	x	*Lindera benzoin*	Northern Spicebush	6	-3	T		S4		X	X	R	(L.) Blume
x	x	x	*Lythrum salicaria*	Purple Loosestrife		-5	I	-3	SNA		X	X	X	L.
x	x	x	*Tilia americana*	Basswood	4	3			S5		X	X	X	L.
x	x	x	*Morus alba*	White Mulberry		0		-3	SNA		X	X	X	L.
x	x	x	*Fraxinus americana*	White Ash	4	3			S4		X	X	X	L.
x	x	x	*Fraxinus pennsylvanica*	Red Ash	3	-3	T		S4		X	X	X	Marshall
x	x	x	*Ligustrum vulgare*	European Privet		3		-2	SNA		X	X	X	L.
x		x	*Syringa vulgaris*	Common Lilac		5		-2	SNA		X	X	X	L.
x	x	x	*Circaea canadensis ssp. canadensis*	Canada Enchanter's Nightshade	2	3			S5		X	X	X	(L.) Hill
x	x	x	*Oxalis stricta*	European Wood-Sorrel	0	3			S5		X	X	X	L.
x	x	x	*Sanguinaria canadensis*	Bloodroot	5	3			S5		X	X	X	L.
x	x	x	*Linaria vulgaris*	Butter-And-Eggs		5		-1	SNA		X	X	X	Miller
x	x	x	*Plantago lanceolata*	English Plantain		3		-1	SNA		X	X	X	L.
x	x	x	*Plantago major*	Common Plantain		3		-1	SNA		X	X	X	L.
x	x	x	*Plantago rugelii*	Rugel's Plantain	1	0			S5		X	X	X	Decaisne
x	x	x	*Veronica officinalis*	Common Speedwell		5		-2	SNA		X	X	X	L.
x	x	x	*Persicaria lapathifolia*	Pale Smartweed	2	-3	T		S5		U		X	(L.) Delarbre
x	x	x	*Rumex crispus*	Curled Dock		0	T	-2	SNA		X	X	X	L.
x		x	*Lysimachia nummularia*	Creeping Yellow Loosestrife		-3		-3	SNA		X	X	X	L.
x	x	x	*Actaea pachypoda*	White Baneberry	6	5			S5		X	X	X	Elliott
x		x	*Actaea x ludovici*	Hybrid Baneberry					HYB		X	X	X	B. Boivin
x	x	x	*Ranunculus abortivus*	Kidney-Leaved Buttercup	2	0			S5		X	X	X	L.
x	x	x	*Thalictrum dioicum*	Early Meadow-Rue	6	3			S5		X	X	X	L.
x	x	x	*Rhamnus cathartica*	European Buckthorn		0	T	-3	SNA		X	X	X	L.
x	x	x	*Agrimonia gryposepala*	Hooked Agrimony	2	3			S5		X	X	X	Wallroth
x	x	x	*Crataegus macracantha*	Large-Thorned Hawthorn	4	5			S5		U	U	X	Loddiges ex Loudon
x	x	x	*Crataegus pruinosa*	Frosted Hawthorn	4	5			SU		X	X	R	(Wendl. f.) K. Koch
x	x	x	*Fragaria virginiana*	Wild Strawberry	2	3			S5		X	X	X	Miller
x	x	x	*Geum aleppicum*	Yellow Avens	2	0	T		S5		X	X	X	Jacquin
x	x	x	*Geum canadense*	White Avens	3	0	T		S5		X	X	X	Jacquin

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x		x	*Geum urbanum*	Wood Avens		5		-1	SNA		X	X	X	L.
x	x	x	*Malus pumila*	Common Apple		5		-1	SNA		X	X	X	Miller
x	x	x	*Potentilla norvegica*	Rough Cinquefoil	0	0	T		S5		X	X	X	L.
x	x	x	*Potentilla recta*	Sulphur Cinquefoil		5		-2	SNA		X	X	X	L.
x	x	x	*Prunus avium*	Sweet Cherry		5		-2	SNA		X	X	X	(L.) L.
x	x	x	*Prunus serotina var. serotina*	Black Cherry	3	3			S5		X	X	X	Ehrhart
x	x	x	*Prunus virginiana var. virginiana*	Chokecherry	2	3			S5		X	X	X	L.
x	x	x	*Rosa multiflora*	Multiflora Rose		3		-3	SNA		X	X	X	Thunberg
x	x	x	*Rubus idaeus ssp. strigosus*	North American Red Raspberry	2	3			S5		X	X	X	(Michaux) Focke
x	x	x	*Rubus occidentalis*	Black Raspberry	2	5			S5		X	X	X	L.
x	x	x	*Sorbus aucuparia*	European Mountain-Ash		5		-2	SNA		X	X	X	L.
x	x	x	*Populus deltoides ssp. deltoides*	Eastern Cottonwood	4	0	T		S5		X	U	X	Bartram ex Marshall
x	x	x	*Populus tremuloides*	Trembling Aspen	2	0	T		S5		X	X	X	Michaux
x	x	x	*Salix x fragilis*	Hybrid Crack Willow			T	-3	HYB		X	X	X	L.
x	x	x	*Acer negundo*	Manitoba Maple	0	0	T		S5		X	X	X	L.
x	x	x	*Acer platanoides*	Norway Maple		5		-3	SNA		X	X	X	L.
x	x	x	*Acer saccharinum*	Silver Maple	5	-3	I		S5		X	X	X	L.
x	x	x	*Acer saccharum*	Sugar Maple	4	3			S5		X	X	X	Marshall
x	x	x	*Verbascum thapsus ssp. thapsus*	Common Mullein		5		-2	SNA		X	X	X	L.
x	x	x	*Solanum dulcamara*	Bittersweet Nightshade		0	T	-2	SNA		X	X	X	L.
x	x	x	*Ulmus americana*	White Elm	3	-3	T		S5		X	X	X	L.
x	x	x	*Ulmus pumila*	Siberian Elm		3		-1	SNA		X	X	X	L.
x		x	*Viola labradorica*	Labrador Violet	3	0			S5		X	X	X	Schrank
x	x	x	*Viola pubescens*	Downy Yellow Violet	5	3			S5		X	X	X	Aiton
x	x	x	*Viola sororia*	Woolly Blue Violet	4	0	T		S5		X	X	X	Willdenow
x	x	x	*Parthenocissus quinquefolia*	Virginia Creeper	6	3			S4?		?	RLR	R	(L.) Planchon ex DC.
x	x	x	*Parthenocissus vitacea*	Thicket Creeper	4	3			S5		X	X	X	(Knerr) Hitchcock
x	x	x	*Vitis riparia*	Riverbank Grape	0	0			S5		X	X	X	Michaux
x		x	*Juniperus communis var. depressa*	Depressed Juniper	4	3			S5			R1	R	Pursh
x	x	x	*Juniperus virginiana var. virginiana*	Eastern Red Cedar	4	3			S5		U	U	U	L.
x	x	x	*Thuja occidentalis*	Eastern White Cedar	4	-3	T		S5		X	X	X	L.
x	x	x	*Abies balsamea*	Balsam Fir	5	-3	T		S5		X	U	X	(L.) Miller
x	x	x	*Picea abies*	Norway Spruce		5		-1	SNA		X	XSR	X	(L.) Karsten
x	x	x	*Picea glauca*	White Spruce	6	3	T		S5		U	U	X	(Moench) Voss
x	x	x	*Picea pungens*	Blue Spruce		3			SNA				X	Engelm.
x	x	x	*Pinus strobus*	Eastern White Pine	4	3	T		S5		X	X	X	L.
x		x	*Pinus sylvestris*	Scots Pine		3		-3	SNA		X	X	X	L.
x	x	x	*Arisaema triphyllum ssp. triphyllum*	Jack-In-The-Pulpit	5	-3	T		S5		X	X	X	(L.) Schott
x		x	*Convallaria majalis var. majalis*	European Lily-Of-The-Valley		5		-2	SNA		X	X	X	L.
x		x	*Maianthemum stellatum*	Star-Flowered False Solomon's Seal	6	0			S5		X	X	X	(L.) Link
x	x	x	*Polygonatum pubescens*	Hairy Solomon's Seal	5	5			S5		X	X	X	(Willd.) Pursh
x	x	x	*Carex blanda*	Woodland Sedge	3	0			S5		X	X	X	Dewey
x		x	*Carex gracillima*	Graceful Sedge	4	3	T		S5		X	X	X	Schweinitz
x	x	x	*Carex hystericina*	Porcupine Sedge	5	-5	I		S5		X	X	X	Muhlenb. ex Willdenow
x	x	x	*Carex leptonervia*	Finely-Nerved Sedge	5	0			S5		X	X	U	(Fern.) Fernald
x	x	x	*Carex rosea*	Rosy Sedge	2	5			S5		X	X	X	Schkuhr ex Willdenow
x		x	*Carex spicata*	Spiked Sedge		3		-1	SNA		X	X	X	Hudson
x		x	*Carex tenera*	Tender Sedge	4	0	T		S5		X	X	X	Dewey
x	x	x	*Carex vulpinoidea*	Fox Sedge	3	-5	I		S5		X	X	X	Michaux
x	x	x	*Eleocharis palustris*	Common Spikerush	6	-5	I		S5		U	U	U	(L.) Roemer & Schultes
x	x	x	*Schoenoplectus tabernaemontani*	Soft-Stemmed Bulrush	5	-5	I		S5		X	X	X	(C.C. Gmelin) Palla
x		x	*Scirpus pedicellatus*	Stalked Bulrush	8	-5	I		SU				R?	Fernald
x		x	*Elodea canadensis*	Canada Waterweed	4	-5	I		S5		R2	R1	U	Michaux
x		x	*Juncus articulatus*	Jointed Rush	5	-5	I		S5		U	U	X	L.
x	x	x	*Juncus dudleyi*	Dudley's Rush	1	-3	T		S5		X	X	X	Wiegand
x	x	x	*Erythronium americanum ssp. americanum*	Yellow Trout Lily	5	5			S5		X	X	X	Ker Gawler
x		x	*Trillium erectum*	Red Trillium	6	3			S5		X	X	X	L.

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x	x	x	*Trillium grandiflorum*	White Trillium	5	3			S5		X	X	X	(Michx.) Salisbury
x	x	x	*Agrostis gigantea*	Redtop		-3		-2	SNA		X	X	X	Roth
x	x	x	*Agrostis stolonifera*	Creeping Bentgrass		-3	T		SNA		X	X	X	L.
x	x	x	*Dactylis glomerata*	Orchard Grass		3		-1	SNA		X	X	X	L.
x	x	x	*Danthonia spicata*	Poverty Oatgrass	5	5			S5		X	X	X	(L.) P. Beauvois ex Roemer & Schultes
x	x	x	*Digitaria ischaemum*	Smooth Crabgrass		3		-1	SNA		X	X	X	(Schreb.) Muhlenberg
x	x	x	*Digitaria sanguinalis*	Hairy Crabgrass		3		-1	SNA		X	X	X	(L.) Scopoli
x	x	x	*Echinochloa crus-galli*	Large Barnyard Grass		-3	T	-1	SNA		X	X	X	(L.) Palisot de Beauvois
x	x	x	*Elymus repens*	Quackgrass		3		-3	SNA		X	X	X	(L.) Gould
x		x	*Elymus virginicus var. virginicus*	Virginia Wildrye	5	-3	T		S5		X	X	X	L.
x		x	*Eragrostis pectinacea var. pectinacea*	Tufted Lovegrass	0	0			S5		?	X	X	(Michx.) Nees
x	x	x	*Festuca rubra*	Red Fescue		3			S5		X	X	X	L.
x	x	x	*Glyceria striata*	Fowl Mannagrass	3	-5	I		S5		X	X	X	(Lam.) Hitchcock
x	x	x	*Leersia oryzoides*	Rice Cutgrass	3	-5	I		S5		X	X	X	(L.) Swartz
x	x	x	*Lolium arundinaceum*	Tall Fescue		3		-1	SNA		X	X	X	(Schreber) Darbyshire
x	x	x	*Lolium perenne*	Perennial Ryegrass		3		-1	SNA		X	X	X	L.
x		x	*Miscanthus sinensis*	Chinese Silvergrass		5		-1	SNA		X			Andersson
x	x	x	*Panicum capillare ssp. capillare*	Common Panicgrass	0	0			S5		X	X	X	L.
x	x	x	*Panicum dichotomiflorum ssp. dichotomiflorum*	Fall Panicgrass		-3		-1	SNA		X	X	X	Michaux
x	x	x	*Phalaris arundinacea var. arundinacea*	Reed Canary Grass	0	-3	T		S5		X	X	X	L.
x	x	x	*Phleum pratense ssp. pratense*	Common Timothy		3		-1	SNA		X	X	X	L.
x		x	*Poa annua*	Annual Bluegrass		3		-2	SNA		X	X	X	L.
x	x	x	*Poa compressa*	Canada Bluegrass		3			SNA		X	X	X	L.
x	x	x	*Poa pratensis*	Kentucky Bluegrass	0	3			S5		X	X	X	L.
x	x	x	*Setaria pumila ssp. pumila*	Yellow Foxtail		0		-1	SNA		X	X	X	(Poir.) Roemer & Schultes
x	x	x	*Setaria viridis var. viridis*	Green Foxtail		5		-1	SNA		X	X	X	(L.) Palisot de Beauvois
x	x	x	*Potamogeton pusillus*	Small Pondweed	4	-5	I		SU		R5	R5	R	L.
x		x	*Smilax herbacea*	Herbaceous Carrionflower	5	0			S4?		X	X	X	L.
x	x	x	*Typha angustifolia*	Narrow-Leaved Cattail		-5	I		SNA		X	X	X	L.
x		x	*Hemerocallis fulva*	Orange Daylily		5		-3	SNA		X	X	X	(L.) L.
x	x	x	*Equisetum arvense*	Field Horsetail	0	0	T		S5		X	X	X	L.
x	x	x	*Onoclea sensibilis*	Sensitive Fern	4	-3	I		S5		X	X	X	L.
	x	x	*Sambucus canadensis*	Common Elderberry	5	-3	T		S5		X	X	X	L.
	x	x	*Cicuta maculata var. maculata*	Spotted Water-Hemlock	6	-5	I		S5		X	X	X	L.
	x	x	*Apocynum androsaemifolium*	Spreading Dogbane	3	5			S5		X	X	X	L.
	x	x	*Arctium minus*	Common Burdock		3		-2	SNA		X	X	X	(Hill) Bernh.
	x	x	*Bidens frondosa*	Devil's Beggarticks	3	-3	I		S5		X	X	X	L.
	x	x	*Cirsium vulgare*	Bull Thistle		3		-1	SNA		X	X	X	(Savi) Tenore
	x	x	*Echinacea purpurea*	Eastern Purple Coneflower		5			SNA					(L.) Moench
	x	x	*Erigeron philadelphicus var. philadelphicus*	Philadelphia Fleabane	1	-3	T		S5		X	X	X	L.
	x	x	*Erigeron strigosus*	Rough Fleabane	4	3			S5		X	X	X	Muhlenb. ex Willd.
	x	x	*Eutrochium maculatum var. maculatum*	Spotted Joe Pye Weed	3	-5	I		S5		X	X	X	(L.) E.E. Lamont
	x	x	*Jacobaea vulgaris*	Tansy Ragwort		5		-1	SNA		X	X	X	Gaertner
	x	x	*Lactuca biennis*	Tall Blue Lettuce	6	0			S5		R4	R3	R	(Moench) Fern.
	x	x	*Picris hieracioides*	Hawkweed Oxtongue		5		-1	SNA		X	X	X	L.
	x	x	*Pilosella aurantiaca*	Orange Hawkweed		5		-2	SNA		X	X	X	(L.) F.W. Shultz & Schultz Bipontinus
	x	x	*Pseudognaphalium obtusifolium*	Fragrant Cudweed	4	5			S5				R	(L.) Hilliard & Burtt
	x	x	*Solidago caesia var. caesia*	Blue-Stemmed Goldenrod	5	3			S5		X	X	X	L.
	x	x	*Solidago canadensis*	Canada Goldenrod	1	3			S5		X	X	X	L.
	x	x	*Symphyotrichum ericoides var. ericoides*	White Heath Aster	4	3			S5		X	X	X	(L.) G.L. Nesom
	x	x	*Symphyotrichum puniceum*	Purple-Stemmed Aster	6	-5	I		S5		X	X	X	(L.) Á. & D. Löve
	x	x	*Impatiens pallida*	Pale Jewelweed	7	-3	T		S4		X	X	U	Nuttall
	x	x	*Berberis thunbergii*	Japanese Barberry		3		-3	SNA		X	X	X	de Candolle
	x	x	*Caulophyllum giganteum*	Giant Blue Cohosh	5	5			S4S5		?	X	X	(Farw.) Loconte & W.H. Blackw.
	x	x	*Betula alleghaniensis*	Yellow Birch	6	0	T		S5		X	X	X	Britton
	x	x	*Carpinus caroliniana ssp. virginiana*	Blue-Beech	6	0	T		S5		X	X	X	(Marshall) Furlow
	x	x	*Hackelia virginiana*	Virginia Stickseed	5	3			S5		U	U	U	(L.) I.M. Johnston

Table 3: Plant List for the Limit of Extraction and 120 m Adjacent Lands

Limit of Extraction	120 m Adjacent Lands	Overall	LATIN NAME	COMMON NAME	CC	WI	OWES WETLAND SPECIES	WEEDINESS INDEX	PROVINCIAL STATUS. (S-RANK)	COSSARO (MECP)	LOCAL STATUS HALTON (Crins et al., 2006)	LOCAL STATUS HALTON (Varga 2005)	LOCAL STATUS GTA (Varga 2005)	AUTHORITY
	x	x	*Lithospermum officinale*	European Gromwell		5		-1	SNA		X	X	X	L.
	x	x	*Myosotis laxa*	Small Forget-Me-Not	6	-5	I		S5		X	X	X	Lehmann
	x	x	*Barbarea vulgaris*	Bitter Wintercress		0		-1	SNA		X	X	X	W.T. Aiton
	x	x	*Cardamine concatenata*	Cut-Leaved Toothwort	6	3			S5		X	X	X	(Michx.) O. Schwarz
	x	x	*Cardamine maxima*	Large Toothwort	10	3			S3		X	X	X	(Nutt.) Alph. Wood
	x	x	*Sisymbrium altissimum*	Tall Tumble Mustard		3		-1	SNA		X	X	X	L.
	x	x	*Thlaspi arvense*	Field Pennycress		5		-1	SNA		X	X	X	L.
	x	x	*Lobelia inflata*	Indian Tobacco	3	3			S5		X	X	X	L.
	x	x	*Lonicera x bella*	Showy Fly Honeysuckle		3		-3	HYB		X	X	X	Zabel
	x	x	*Convolvulus arvensis*	Field Bindweed		5		-1	SNA		X	X	X	L.
	x	x	*Cornus racemosa*	Grey Dogwood	2	0	T		S5		X	X	X	Lamarck
	x	x	*Acalypha rhomboidea*	Common Three-Seed Mercury	0	3			S5		X	X	X	Raf.
	x	x	*Melilotus altissimus*	Tall Yellow Sweet-Clover		5		-1	SNA					Thuillier
	x	x	*Geranium maculatum*	Spotted Geranium	6	3			S5		X	U	U	L.
	x	x	*Lycopus uniflorus*	Northern Water-Horehound	5	-5	I		S5		X	X	X	Michaux
	x	x	*Nepeta cataria*	Catnip		3		-2	SNA		X	X	X	L.
	x	x	*Scutellaria lateriflora*	Mad-Dog Skullcap	5	-5	I		S5		X	X	X	L.
	x	x	*Menispermum canadense*	Canada Moonseed	7	0	T		S4		X	X	U	L.
	x	x	*Claytonia virginica*	Eastern Spring Beauty	5	3	T		S5		U	U	X	L.
	x	x	*Epilobium hirsutum*	Hairy Willowherb		-3	I	-2	SNA		X	X	X	L.
	x	x	*Epilobium parviflorum*	Small-Flowered Willowherb		3	T	-1	SNA		X	X	X	Schreber
	x	x	*Oenothera biennis*	Common Evening Primrose	0	3			S5		?	R1	U	L.
	x	x	*Oenothera parviflora*	Small-Flowered Evening Primrose	1	3			S5		X	X	X	L.
	x	x	*Epifagus virginiana*	Beechdrops	6	5			S5		X	X	X	(L.) Barton
	x	x	*Chelidonium majus*	Greater Celandine		5		-3	SNA		X	X	X	L.
	x	x	*Veronica serpyllifolia*	Thyme-Leaved Speedwell		0			SNA		X	X	X	L.
	x	x	*Persicaria hydropiper*	Marshpepper Smartweed		-5	I		SNA		X	X	X	(L.) Delarbre
	x	x	*Rumex obtusifolius*	Bitter Dock		-3	T	-1	SNA		X	X	X	L.
	x	x	*Lysimachia ciliata*	Fringed Yellow Loosestrife	4	-3	T		S5		X	X	X	L.
	x	x	*Actaea rubra ssp. rubra*	Red Baneberry	6	3			S5		X	X	X	(Aiton) Willdenow
	x	x	*Anemone virginiana*	Tall Anemone	4	3			S5		X	X	X	L.
	x	x	*Aquilegia canadensis*	Red Columbine	5	3			S5		X	X	X	L.
	x	x	*Clematis virginiana*	Virginia Clematis	3	0	T		S5		X	X	X	L.
	x	x	*Ranunculus recurvatus var. recurvatus*	Hooked Buttercup	4	-3			S5		X	X	X	Poiret
	x	x	*Frangula alnus*	Glossy Buckthorn		0	T	-3	SNA		X	X	X	Miller
	x	x	*Geum laciniatum*	Rough Avens	4	-3	T		S4		X	X	U	Murray
	x	x	*Rubus allegheniensis*	Alleghany Blackberry	2	3			S5		X	X	X	Porter
	x	x	*Rubus pubescens*	Dewberry	4	-3	I*		S5		X	X	X	Raf.
	x	x	*Galium aparine*	Common Bedstraw	4	3			S5		X	U	U	L.
	x	x	*Galium palustre*	Common Marsh Bedstraw	5	-5	I		S5		X	X	X	L.
	x	x	*Populus balsamifera*	Balsam Poplar	4	-3	T		S5		X	X	X	L.
	x	x	*Salix alba*	White Willow		-3	T	-2	SNA		X	X	X	L.
	x	x	*Salix amygdaloides*	Peach-Leaved Willow	6	-3	T		S5		X	U	X	Andersson
	x	x	*Salix discolor*	Pussy Willow	3	-3	I		S5		X	X	X	Muhlenberg
	x	x	*Salix eriocephala*	Cottony Willow	4	-3	T		S5		X	X	X	Michaux
	x	x	*Salix interior*	Sandbar Willow	1	-3	T		S5		X	U	X	Rowlee
	x	x	*Salix petiolaris*	Meadow Willow	3	-3	I		S5		X	X	X	J.E. Smith
	x	x	*Salix purpurea*	Purple Willow		-3	T	-1	SNA		X	X	X	L.
	x	x	*Salix x sepulcralis*	Golden Weeping Willow					HYB		X	X	X	Simonkai
	x	x	*Acer nigrum*	Black Maple	7	3			S4?		X	X	X	F. Michaux
	x	x	*Tiarella cordifolia*	Heart-Leaved Foamflower	6	3	T		S5		X	X	X	L.
	x	x	*Physalis heterophylla*	Clammy Ground-Cherry	3	5			S4		U	R2	R	Nees
	x	x	*Boehmeria cylindrica*	Small-Spike False Nettle	4	-5	I		S5		X	X	X	(L.) Swartz
	x	x	*Pilea pumila*	Dwarf Clearweed	5	-3	I		S5		X	X	X	(L.) A. Gray
	x	x	*Verbena hastata*	Blue Vervain	4	-3	I		S5		X	X	X	L.
	x	x	*Viola rostrata*	Long-Spurred Violet	6	3			S5		X	X	X	Pursh
	x	x	*Larix decidua*	European Larch		5		-1	SNA		X		X	Miller

Table 3: Plant List for the Limit of Extraction and 120 m Adjacent Lands

Limit of Extraction	120 m Adjacent Lands	Overall	LATIN NAME	COMMON NAME	CC	WI	OWES WETLAND SPECIES	WEEDINESS INDEX	PROVINCIAL STATUS. (S-RANK)	COSSARO (MECP)	LOCAL STATUS HALTON (Crins et al., 2006)	LOCAL STATUS HALTON (Varga 2005)	LOCAL STATUS GTA (Varga 2005)	AUTHORITY
	x	x	*Larix laricina*	Tamarack	7	-3	I		S5		X	U	X	(Du Roi) K. Koch
	x	x	*Tsuga canadensis*	Eastern Hemlock	7	3	T		S5		X	X	X	(L.) Carrière
	x	x	*Allium sativum var. sativum*	Cultivated Garlic		5		-1	SNA		X	X	X	L.
	x	x	*Maianthemum canadense ssp. canadense*	Wild Lily-Of-The-Valley (ssp. canadense)	5	3			S5		X	X	X	Desf.
	x	x	*Maianthemum canadense ssp. interius*	Wild Lily-Of-The-Valley (ssp. interius)	5	3			S4?					(Fernald) Á. Löve & D. Löve
	x	x	*Carex albursina*	White Bear Sedge	7	5			S5		X	X	U	E. Sheldon
	x	x	*Carex bebbii*	Bebb's Sedge	3	-5	I		S5		X	U	X	(L.H. Bailey) Olney ex Fern.
	x	x	*Carex crinita var. crinita*	Fringed Sedge	6	-5	I		S5		U	U	U	Lamarck
	x	x	*Carex cristatella*	Crested Sedge	3	-3	I		S5		X	X	X	Britton
	x	x	*Carex laxiflora*	Loose-Flowered Sedge	5	0			S5		X	X	U	Lamarck
	x	x	*Carex lupulina*	Hop Sedge	6	-5	I		S5			X	X	Muhlenb. ex Willdenow
	x	x	*Carex molesta*	Troublesome Sedge	5	0	T		S4S5		U	U	U	Mackenzie ex J. Bright
	x	x	*Carex pedunculata*	Long-Stalked Sedge	5	3			S5		X	X	X	Muhlenb. ex Willdenow
	x	x	*Carex pensylvanica*	Pennsylvania Sedge	5	5			S5		X	X	X	Lamarck
	x	x	*Carex radiata*	Eastern Star Sedge	4	0	T		S5		X	X	X	(Wahlenb.) Small
	x	x	*Scirpus atrovirens*	Dark-Green Bulrush	3	-5	T		S5		X	X	X	Willdenow
	x	x	*Juncus tenuis*	Path Rush	0	0			S5		X	X	X	Willdenow
	x	x	*Cypripedium parviflorum var. pubescens*	Large Yellow Lady's-Slipper	5	0			S5		X	X	U	(Willd.) Knight
	x	x	*Epipactis helleborine*	Broad-Leaved Helleborine		3		-2	SNA		X	X	X	(L.) Crantz
	x	x	*Alopecurus pratensis*	Meadow Foxtail		-3		-1	SNA		X	X	X	L.
	x	x	*Bromus inermis*	Smooth Brome		5		-3	SNA		X	X	X	Leysser
	x	x	*Bromus tectorum*	Downy Brome		5		-2	SNA		X	X	X	L.
	x	x	*Dichanthelium implicatum*	slender-stemmed panicgrass	3	0			S5		X	U	X	(Scribner) Kerguélen
	x	x	*Phragmites australis ssp. australis*	European Reed		-3	T		SNA			X	X	(Cav.) Trinius ex Steudel
	x	x	*Poa palustris*	Fowl Bluegrass	5	-3	I		S5		X	X	X	L.
	x	x	*Potamogeton crispus*	Curly-Leaved Pondweed		-5	I	-1	SNA		X	X	X	L.
	x	x	*Stuckenia pectinata*	Sago Pondweed	4	-5	I		S5		U	U	U	(L.) Börner
	x	x	*Smilax tamnoides*	Bristly Greenbrier	6	0			S5		X	U	U	L.
	x	x	*Sparganium eurycarpum*	Broad-Fruited Burreed	3	-5	I		S5		U	R4	U	Engelmann
	x	x	*Typha x glauca*	Blue Cattail		-5	I		HYB		X	X	X	Godron
	x	x	*Athyrium filix-femina var. angustum*	Northeastern Lady Fern	4	0	T		S5		X	X	X	(Willdenow) G. Lawson
	x	x	*Cystopteris bulbifera*	Bulblet Bladder Fern	5	-3	T		S5		X	X	X	(L.) Bernh.
	x	x	*Cystopteris tenuis*	Mackay's Brittle Fern	6	5			S4		X	X	U	(Michx.) Desv.
	x	x	*Dryopteris carthusiana*	Spinulose Wood Fern	5	-3	T		S5		X	X	X	(Vill.) H.P. Fuchs
	x	x	*Dryopteris cristata*	Crested Wood Fern	7	-5	I		S5		X	X	X	(L.) A. Gray
	x	x	*Polystichum acrostichoides*	Christmas Fern	5	3			S5		X	X	X	(Michx.) Schott
	x	x	*Equisetum hyemale ssp. affine*	Common Scouring-Rush	2	0	T		S5		X	X	X	(Engelmann) Calder & Roy L. Taylor
	x	x	*Matteuccia struthiopteris var. pensylvanica*	Ostrich Fern	5	0	T		S5		X	X	X	(Willd.) C.V. Morton

STATISTICS				
Species Diversity	**Limit of Extraction**		**120 m Adjacent Lands**	
Total Number of Species:	203		324	
Native Species:	113	56%	200	62%
Exotic Species:	88	43%	119	37%
Hybrid Species:	2	1%	5	2%
Regionally Rare / Undocumented Species:	10	9%	14	7%
S1-S3 Species:	1	1%	2	1%
S4 Species:	10	9%	19	10%
S5 Species:	99	90%	176	89%
Floristic Quality Indices	**Limit of Extraction**		**120 m Adjacent Lands**	
Mean Co-efficient of Conservatism (CC)	3.4		3.9	
CC 0 - 3 = lowest sensitivity	53	47%	76	38%
CC 4 - 6 = moderate sensitivity	57	51%	112	56%
CC 7 - 8 = high sensitivity	2	2%	10	5%
CC 9 - 10 = highest sensitivity	0	0%	1	1%
Floristic Quality Index (FQI)	36		55	
Weedy & Invasive Species	**Limit of Extraction**		**120 m Adjacent Lands**	
Mean Weediness Index:	-1.8		-1.7	
-1 = low potential invasiveness	38	47%	54	50%
-2 = moderate potential invasiveness	25	31%	32	29%
-3 = high potential invasivenss	18	22%	23	21%

STATISTICS - Limit of Extraction	
Species Diversity	
Total Number of Species:	203
Native Species:	113
Exotic Species:	88
Hybrid Species:	2
Regionally Rare / Undocumented Species:	10
S1-S3 Species:	1
S4 Species:	10
S5 Species:	99
Floristic Quality Indices	
Mean Co-efficient of Conservatism (CC)	3.4
CC 0 - 3 = lowest sensitivity	53
CC 4 - 6 = moderate sensitivity	57
CC 7 - 8 = high sensitivity	2
CC 9 - 10 = highest sensitivity	0
Floristic Quality Index (FQI)	36

Weedy & Invasive Species	
Mean Weediness Index:	-1.8
-1 = low potential invasiveness	38
-2 = moderate potential invasiveness	25
-3 = high potential invasivenss	18
Wetland Species	
Mean Wetness Index	1.6
Upland	44
Facultative upland	84
Facultative	34
Facultative wetland	25
Obligate wetland	14

STATISTICS - 120 m Adjacent Lands	
Species Diversity	
Total Number of Species:	324
Native Species:	200
Exotic Species:	119
Hybrid Species:	5
Regionally Rare / Undocumented Species:	14
S1-S3 Species:	2
S4 Species:	19
S5 Species:	176
Floristic Quality Indices	
Mean Co-efficient of Conservatism (CC)	3.9
CC 0 - 3 = lowest sensitivity	76
CC 4 - 6 = moderate sensitivity	112
CC 7 - 8 = high sensitivity	10
CC 9 - 10 = highest sensitivity	1
Floristic Quality Index (FQI)	55
Weedy & Invasive Species	
Mean Weediness Index:	-1.7
-1 = low potential invasiveness	54
-2 = moderate potential invasiveness	32
-3 = high potential invasivenss	23
Wetland Species	
Mean Wetness Index	1.1
Upland	65
Facultative upland	119
Facultative	53
Facultative wetland	52
Obligate wetland	32

EXPLANATION OF TERMINOLOGY *(See the following pages for addition detailed information on terms.)*

Botanical and Common Name: From Newmaster et. al, 1998. Species requiring confirmation noted (cf).

Co-efficient of Conservatism: This value, ranging from 0 (low) to 10 (high), is based on a species tolerance of disturbance and fidelity to a specific habitat integrity.

Wetness Index: This value, ranging from -5 (obligate wetland) to 5 (upland) provides the probability of a species occurring in wetland or upland habitats.

FACW (Facultative Wetland): usually occurs in wetlands, but occasionally found in non-wetlands (estimated 67-99% probability)

FAC (Facultative): equally likely to occur in wetlands or non-wetlands (estimated 34-66% probability)

FACU (Facultative Upland): occasionally occurs in wetlands, but usually occurs in non-wetlands (estimated 1-33% probability)

UPL (Upland): occurs almost never in wetlands under natural conditions (estimated <1% probability)

Further refinement of the Facultative categories are denoted by a “+” or “-” to express exaggerated tendencies for those species. The “+” denotes a greater estimated probability occurring in wetlands than species in the general indicator category, but a lesser probability than species occurring in the next higher category. The "-" denotes a lesser estimated probability of occurring in wetlands than species in the general indicator category, but a greater probability than species occurring in the next lower general category.

Each wetland category has been assigned a numerical value to facilitate the quantification of the wetness index. The wetland categories and their corresponding values are as follows:

OBL : -5

FACW+: -4

FACW: -3

FACW-: -2

FAC+: -1

FAC: 0

FAC-: 1

FACU+: 2

FACU: 3

FACU-: 4

UPL: 5

Weediness Index: This value, ranging from -1 (low) to -3 (high) quantifies the potential invasiveness of non-native plants. In combination with the percentage of non-native plants, it can be used as an indicator of disturbance.

The sensitivity of natural areas can be assessed through application of the Weediness Index. The Weediness Index quantifies the potential invasiveness of non-native plants, and, in combination with the percentage of non-native plants can be used as an indicator of disturbance. Values (ranging from 1- to -3) have been assigned to most non-native species based on the potential impact each species can have in natural areas:

-1: little or no impact on natural areas (most non-native plants are in this category)

-2: occasional impacts on natural areas, generally infrequent or localized

-3: major potential impacts on natural areas

Provincial Status: Provincial ranks are used by the NHIC to set protection priorities for rare species and natural communities. These rankings are based on the total number of extant Ontario populations and the degree to which they are potentially or actively threatened with destruction. The ranks are:

S1: Critically Imperiled - Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.

S2: Imperiled - Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.

S3: Vulnerable - Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

S4: Apparently Secure - Uncommon but not rare; some cause for long-term concern due to declines or other factors.

S5: Secure - Common, widespread, and abundant in the nation or state/province.

SH: Possibly Extirpated (Historical)—Species or community occurred historically in the nation or state/province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20-40 years. A species or community could become NH or SH without such a 20-40 year delay if the only known occurrences in a nation or state/province were destroyed or if it had been extensively and unsuccessfully looked for. The NH or SH rank is reserved for species or communities for which some effort has been made to relocate occurrences, rather than simply using this status for all elements not known from verified extant occurrences.

SR: Reported in Ontario, but without persuasive documentation.

SX: Presumed Extirpated—Species or community is believed to be extirpated from the nation or state/province. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.

SE: Exotic; not believed to be a native component of Ontario's flora. Numerical rankings after SE follow designations described above for native species.

SNA: Unranked — Status not assigned.

SU: Unranked — Nation or state/province conservation status not yet assessed.

Rank ranges, e.g. S2S3, indicate that the rank is either S2 or S3, but that current information is insufficient to differentiate.

"**?**" following a rank indicates uncertainty about the assigned rank.

Q: Questionable taxonomy —Taxonomic distinctiveness of this entity is questionable; resolution of this uncertainty may result in change from a species to a subspecies or hybrid, or the inclusion of this taxon in another taxon, with the resulting taxon having a lower-priority conservation status.

Local Status:

X: native species present (collection-based) and all exotic species

R: native species locally rare (number of sites): Hamilton-Wentworth (<6 sites), Durham (<10 sites), GTA (<40 sites), Site District 6E7 (<20 sites), Oak Ridges Moraine (20 or fewer sites), Halton (<5 sites); Peterborough (suspected of being rare, 5 or fewer occurrences); CVC/Peel Region (<11 sites)

U: native species locally uncommon Hamilton-Wentworth (6-10 sites), Durham (11-20 sites), GTA (41-80 sites), Site District 6E7 (21-40 sites), Halton (5-15 sites).

E: Presumed Extirpated

?: More work required to determine status

H: historic record

O: only old (>20 years) records known (Peterborough)

Record Type

SR - sight record

SRP - sight record with photograph

VARGA 2005 Rankings:

+	Introduced species
X+	Native species that is introduced in that municipality
(+)	Possibly introduced species or a native species that is introduced in some municipalities
X	Common native species or an introduced species that is present
R	Rare native species
E	Extirpated native species that has not been refound at its known locations or its habitat is gone
SR	Species record based on a sight record (all other species records based on herbarium collections)
LR	Species record based on a literature record
U	Uncommon native species
R6	Number of stations for a rare native species
H	Historical species not seen since 1950, however its habitat is still present
X	Species that occur only in the portion of site district 6E7 outside of the Greater Toronto Area

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Table 4: Tree Density Survey Results

Required Woodland Criteria	Trees Per Hectare as Surveyed				
	Stem Density S CUT1-1	Stem Density T CUT1a	Stem Density U CUT1b	Stem Density E FOD5/DIST	Stem Density V RES/DIST
(a) 1,000 trees, of any size, per hectare;	438	254	958	255	427
(b) 750 trees, measuring over five cm in diameter, per hectare;	313	0	208	255	89
(c) 500 trees, measuring over 12 cm in diameter, per hectare; or	63	0	83	255	64
(d) 250 trees, measuring over 20 cm in diameter, per hectare.	0	0	0	239	57

Table 5: Insect Survey Results

Within Limit of Extraction	Within 120 m Adjacent Lands	COMMON NAME	SCIENTIFIC NAME	Provincial Status (S RANK)	COSSARO (MECP)	Local Status Halton	BP1	BP2	BP3	BP4	BP5	BP6	BP7	BP8	BP9	BP10	BP11	BP12	BP13	BP14	BP15	BP16	BP17	BP18	BP19	BP20
ODONATA																										
	x	Emerald Spreadwing	*Lestes dryas*	S5																				x		
x		Swamp Spreadwing	*Lestes vigilax*	S4		HR											x							x		
x	x	Violet Dancer	*Argia fumipennis violacea*	S5		HU											x						x			
x	x	Familiar Bluet	*Enallagma civile*	S5							x															
	x	Spring Northern Bluet	*Enallagma vernale*	S4												x								x		
	x	Marsh Bluet	*Enallagma ebrium*	S5			x				x	x			x								x	x		
x	x	Skimming Bluet	*Enallagma geminatum*	S4		HR					x						x									
x	x	Orange Bluet	*Enallagma signatum*	S4		HU											x									
x	x	Fragile Forktail	*Ischnura posita*	S4		HU	x										x							x		
x	x	Eastern Forktail	*Ischnura verticalis*	S5			x								x	x	x								x	x
	x	Sedge Sprite	*Nehalennia irene*	S5		HU																		x		
x	x	Common Green Darner	*Anax junius*	S5						x					x				x	x	x				x	
x		Springtime Darner	*Basiaeschna janata*	S5		HR									x	x	x									
	x	Unicorn Clubtail	*Arigomphus villosipes*	S2S3		HU	x																			
	x	Lancet Clubtail	*Gomphus exilis*	S5		HU																				x
x	x	Common Baskettail	*Epitheca cynosura*	S5		HU					x	x			x		x	x	x		x	x	x	x		
x	x	Prince Baskettail	*Epitheca princeps*	S5		HU											x							x		
x	x	Calico Pennant	*Celithemis elisa*	S5													x									
x	x	Halloween Pennant	*Celithemis eponina*	S4		HU											x									
x	x	Eastern Pondhawk	*Erythemis simplicicollis*	S5											x	x	x						x	x		x
x	x	Dot-tailed Whiteface	*Leucorrhinia intacta*	S5			x																x	x	x	
	x	Widow Skimmer	*Libellula luctuosa*	S5							x				x	x						x	x			x
x	x	Twelve-Spotted Skimmer	*Libellula pulchella*	S5			x				x				x					x	x		x	x	x	x
x	x	Blue Dasher	*Pachydiplax longipennis*	S5								x			x	x								x	x	x
x	x	Spot-winged Glider	*Pantala hymenaea*	S4		HR											x									
x	x	Eastern Amberwing	*Perithemis tenera*	S4		HU											x									
x	x	Common Whitetail	*Plathemis lydia*	S5															x	x				x	x	
x	x	Band-winged Meadowhawk	*Sympetrum semicinctum*	S4		HU											x									
x	x	Yellow-legged Meadowhawk	*Sympetrum vicinum*	S5		HU										x	x									
x	x	Black Saddlebags	*Tramea lacerata*	S4															x					x		
BUTTERFLIES																										
x	x	Silver Spotted Skipper	*Epargyreus clarus*	S4												x										
	x	Juvenal's Duskywing	*Erynnis juvenalis*	S5																			x			
	x	Least Skipper	*Ancyloxypha numitor*	S5			x																	x		
	x	Tawny-edged Skipper	*Polites themistocles*	S5																				x		x
	x	Hobomok Skipper	*Poanes hobomok*	S5																			x			
x	x	Giant Swallowtail	*Papilio cresphontes*	S3		HR										x				x						
x	x	Canadian Tiger Swallowtail	*Papilio canadensis*	S5							x					x			x							
x	x	Cabbage White	*Pieris rapae*	SNA					x																	
	x	Clouded Sulphur	*Colias philodice*	S5																				x		
	x	Northern Crescent	*Phycoides pascoensis*	S5												x										x
	x	American Painted Lady	*Vanessa virginiensis*	S5																						
	x	Red Admiral	*Vanessa atalanta*	S5																						x
x	x	Red-spotted Purple	*Limenitis arthemis astyanax*	S5																		x	x	x	x	
	x	Viceroy	*Limenitis archippus*	S5																			x			
x	x	Little Wood-Satyr	*Megisto cymela*	S5						x	x				x	x			x				x	x	x	x
x	x	Common Ringlet	*Coenonympha tullia*	S5							x	x			x				x	x	x	x			x	

Table 6: Salamander Trapping Results

8133 Salamander Trapping Results 2019										
ESA Permit/ Registration No.: AU-B-002-19		SWCP No.: 1092112			Savanta Project Code: 8133					
Date (dd-mm-yy)	Surveyors	UTM (Easting, Northing)		Vernal Pool ID (V#)	Trap No. (T#)	Tissue Sample ID (#)	Length of Salamander (cm)	Total # of Salamanders in Trap	Total # Salamanders Sampled (tail tipped)	Comments
02-04-19	JL, RL	589730	4805105	VP1	T1	-	-	-	-	
02-04-19	JL, RL	589703	4805113		T2	-	-	-	-	1 Aquatic Beetle
02-04-19	JL, RL	589681	4805115		T3	-	-	-	-	3 Aquatic Beetles
02-04-19	JL, RL	589664	4805142		T4	-	-	-	-	
02-04-19	JL, RL	589830	4805032	VP2	T1	-	-	-	-	
02-04-19	JL, RL	589841	4805037		T2	-	-	-	-	
02-04-19	JL, RL	589861	4805059		T3	-	-	-	-	
02-04-19	JL, RL	589882	4805053		T4	-	-	-	-	
02-04-19	JL, RL	589893	4805047		T5	-	-	-	-	
02-04-19	JL, RL	589915	4805037		T6	-	-	-	-	1 Aquatic Beetle
02-04-19	JL, RL	589835	4804999		T7	-	-	-	-	
02-04-19	JL, RL	589852	4804986		T8	-	-	-	-	
02-04-19	JL, RL	590576	4805194	VP3	T1	-	-	-	-	24 Stickleback
02-04-19	JL, RL	590890	4804948	VP4	T1	-	-	-	-	
02-04-19	JL, RL	590897	4804952		T2	-	-	-	-	
03-04-19	JL, LW	589730	4805105	VP1	T1	-	-	-	-	
03-04-19	JL, LW	589703	4805113		T2	-	-	-	-	
03-04-19	JL, LW	589681	4805115		T3	-	-	-	-	
03-04-19	JL, LW	589664	4805142		T4	-	-	-	-	2 Aquatic Beetles
03-04-19	JL, LW	589830	4805032	VP2	T1	-	-	-	-	
03-04-19	JL, LW	589841	4805037		T2	-	-	-	-	
03-04-19	JL, LW	589861	4805059		T3	-	-	-	-	
03-04-19	JL, LW	589882	4805053		T4	-	-	-	-	2 Aquatic Beetles
03-04-19	JL, LW	589893	4805047		T5	-	-	-	-	
03-04-19	JL, LW	589915	4805037		T6	-	-	-	-	
03-04-19	JL, LW	589835	4804999		T7	-	-	-	-	
03-04-19	JL, LW	589852	4804986		T8	-	-	-	-	1 Aquatic Beetle
03-04-19	JL, LW	590576	4805194	VP3	T1	-	-	-	-	5 Stickleback
03-04-19	JL, LW	590890	4804948	VP4	T1	-	-	-	-	
03-04-19	JL, LW	590897	4804952		T2	-	-	-	-	
04-04-19	LW, EL	589730	4805105	VP1	T1	-	-	-	-	1 Aquatic Beetle
04-04-19	LW, EL	589703	4805113		T2	-	-	-	-	
04-04-19	LW, EL	589681	4805115		T3	-	-	-	-	1 Aquatic Beetle
04-04-19	LW, EL	589664	4805142		T4	-	-	-	-	2 Aquatic Beetles
04-04-19	LW, EL	589830	4805032	VP2	T1	-	-	-	-	
04-04-19	LW, EL	589841	4805037		T2	-	-	-	-	
04-04-19	LW, EL	589861	4805059		T3	-	-	-	-	1 Aquatic Beetle
04-04-19	LW, EL	589882	4805053		T4	-	-	-	-	
04-04-19	LW, EL	589893	4805047		T5	-	-	-	-	
04-04-19	LW, EL	589915	4805037		T6	-	-	-	-	1 Aquatic Beetle
04-04-19	LW, EL	589835	4804999		T7	-	-	-	-	
04-04-19	LW, EL	589852	4804986		T8	-	-	-	-	
04-04-19	LW, EL	590576	4805194	VP3	T1	-	-	-	-	1 Stickleback
04-04-19	LW, EL	590890	4804948	VP4	T1	-	-	-	-	
04-04-19	LW, EL	590897	4804952		T2	-	-	-	-	
05-04-19	LW, EL	589730	4805105	VP1	T1	-	-	-	-	
05-04-19	LW, EL	589703	4805113		T2	-	-	-	-	
05-04-19	LW, EL	589681	4805115		T3	-	-	-	-	
05-04-19	LW, EL	589664	4805142		T4	-	-	-	-	
05-04-19	LW, EL	589830	4805032	VP2	T1	-	-	-	-	2 Aquatic Beetles
05-04-19	LW, EL	589841	4805037		T2	-	-	-	-	
05-04-19	LW, EL	589861	4805059		T3	-	-	-	-	
05-04-19	LW, EL	589882	4805053		T4	-	-	-	-	
05-04-19	LW, EL	589893	4805047		T5	-	-	-	-	
05-04-19	LW, EL	589915	4805037		T6	-	-	-	-	
05-04-19	LW, EL	589835	4804999		T7	-	-	-	-	
05-04-19	LW, EL	589852	4804986		T8	-	-	-	-	
05-04-19	LW, EL	590576	4805194	VP3	T1	-	-	-	-	3 Stickleback
05-04-19	LW, EL	590890	4804948	VP4	T1	-	-	-	-	
05-04-19	LW, EL	590897	4804952		T2	-	-	-	-	
06-04-19	JL, LW	589730	4805105	VP1	T1	-	-	-	-	
06-04-19	JL, LW	589703	4805113		T2	-	-	-	-	
06-04-19	JL, LW	589681	4805115		T3	-	-	-	-	
06-04-19	JL, LW	589664	4805142		T4	-	-	-	-	1 Aquatic Beetle
06-04-19	JL, LW	589830	4805032	VP2	T1	-	-	-	-	1 Aquatic Beetle
06-04-19	JL, LW	589841	4805037		T2	-	-	-	-	
06-04-19	JL, LW	589861	4805059		T3	-	-	-	-	
06-04-19	JL, LW	589882	4805053		T4	-	-	-	-	
06-04-19	JL, LW	589893	4805047	VP2	T5	-	-	-	-	1 Aquatic Beetle
06-04-19	JL, LW	589915	4805037		T6	-	-	-	-	
06-04-19	JL, LW	589835	4804999		T7	-	-	-	-	

Table 6: Salamander Trapping Results

8133 Salamander Trapping Results 2019										
ESA Permit/ Registration No.: AU-B-002-19			SWCP No.: 1092112		Savanta Project Code: 8133					
Date (dd-mm-yy)	Surveyors	UTM (Easting, Northing)		Vernal Pool ID (V#)	Trap No. (T#)	Tissue Sample ID (#)	Length of Salamander (cm)	Total # of Salamanders in Trap	Total # Salamanders Sampled (tail tipped)	Comments
06-04-19	JL, LW	589852	4804986		T8	-	-	-	-	
06-04-19	JL, LW	590576	4805194	VP3	T1	-	-	-	-	18 Stickleback
06-04-19	JL, LW	590890	4804948	VP4	T1	-	-	-	-	
06-04-19	JL, LW	590897	4804952		T2	-	-	-	-	

Table 7: Amphibian Call Count Survey Station Results

SURVEY ROUND	STATION ID	SURVEY DATE (2019)	SPECIES CODE AND RESULTS					WATER
			NOAM	GRTR	SPPE	NLFR	GRFR	Present (Y/N)
1	ACC1	April 25				1(2)		Y
2	ACC1	May 22			1(1)			Y
3	ACC1	June 17					1(2)	Y
1	ACC2	April 25	X					Y
2	ACC2	May 22	X					Y
3	ACC2	June 17					1(3)	Y
1	ACC3	April 25				1(1)		Y
2	ACC3	May 22	X					Y
3	ACC3	June 17	X					Y
1	ACC4	April 25	X					Y
2	ACC4	May 22	X					Y
3	ACC4	June 17	X					Y
1	ACC5	April 25				1(1)		Y
2	ACC5	May 22	X					Y
3	ACC5	June 17	X					Y
1	ACC6	April 25				1(1)		Y
2	ACC6	May 22			1(1)			Y
3	ACC6	June 17					1(2)	Y
1	ACC7	April 25			1(1)			Y
2	ACC7	May 22	X					Y
3	ACC7	June 17	X					N
1	ACC8	April 25			3			Y
2	ACC8	May 22			1(4)			Y
3	ACC8	June 17	X					N
1	ACC9	April 25	X					Y
2	ACC9	May 22	X					Y

Table 7: Amphibian Call Count Survey Station Results

SURVEY ROUND	STATION ID	SURVEY DATE (2019)	SPECIES CODE AND RESULTS					WATER
			NOAM	GRTR	SPPE	NLFR	GRFR	Present (Y/N)
3	ACC9	June 17	X					N
1	ACC10	April 25			2(11)	1(1)		Y
2	ACC10	May 22			1(2)			Y
3	ACC10	June 17		1(6)			1(2)	Y
1	ACC11	April 25	X					Y
2	ACC11	May 22	X					Y
3	ACC11	June 17	X					Y
1	ACC12	April 25	X					Y
2	ACC12	May 22	X					N
3	ACC12	June 17	X					N

LEGEND:

SPECIES CODE	COMMON NAME	SCIENTIFIC NAME
NOAM	No Amphibians	No amphibians despite survey effort
GRTR	Gray Treefrog	*Hyla versicolor*
NLRF	Northern Leopard Frog	*Lithobates pipiens*
GRFR	Green Frog	*Lithobates clamitans*
SPPE	Spring Peeper	*Pseudacris crucifer*

CALL CODES	
X	No amphibians heard
1	Calls can be counted without error
2	Calls overlap but can be reliably estimated
3	Calls overlap too much to estimate number

Note: For each species, the first number is the call code; the number in brackets represents the number of calling individuals.

Table 8: Turtle Basking Results

SURVEY ROUND	STATION ID	DATE SURVEYED	SPECIES CODE		
			NOTU	MPTU	SNTU
1	BS1	22-AP-2019	X		
2	BS1	10-MA-2019	X		
3	BS1	11-JN-2019	X		
1	BS2	22-AP-2019	X		
2	BS2	10-MA-2019	X		
3	BS2	11-JN-2019	X		
1	BS3	22-AP-2019	X		
2	BS3	10-MA-2019	X		
3	BS3	11-JN-2019			1
1	BS4	22-AP-2019	X		
2	BS4	10-MA-2019	X		
3	BS4	11-JN-2019	X		
1	BS5	22-AP-2019	X		
2	BS5	10-MA-2019	X		
3	BS5	11-JN-2019	X		
1	BS6	22-AP-2019		1	
2	BS6	10-MA-2019	X		
3	BS6	11-JN-2019	X		

LEGEND:

SPECIES CODE	COMMON NAME	SCIENTIFIC NAME
NOTU	No Turtles	No turtles despite survey effort
MPTU	Midland Painted Turtle	*Chrysemys picta marginata*
SNTU	Snapping Turtle	*Chelydra serpentina*

DATE	
MONTH	CODE
January	JA
February	FE
March	MR
April	AP
May	MA
June	JN
July	JL
August	AU
September	SE
October	OC
November	NO
December	DE

Table 9: Visual Encounter Snake Survey Results

SURVEY ROUND	AREA SEARCH ID	DATE SURVEYED	SPECIES CODE	
			NOSN	EAGA
1	AS1	22-April-2019	X	
2	AS1	16-May-2019	X	
3	AS1	11-June-2019	X	
1	AS2	22-April-2019	X	
2	AS2	16-May-2019	X	
3	AS2	11-June-2019	X	
1	AS3	22-April-2019	X	
2	AS3	16-May-2019	X	
3	AS3	11-June-2019	X	
1	AS4	22-April-2019	X	
2	AS4	16-May-2019	X	
3	AS4	11-June-2019	X	
1	AS5	22-April-2019	X	
2	AS5	16-May-2019	X	
3	AS5	11-June-2019	X	
1	AS6	22-April-2019	X	
2	AS6	16-May-2019	X	
3	AS6	11-June-2019	X	
1	AS7	22-April-2019		1
2	AS7	16-May-2019	X	
3	AS7	11-June-2019	X	
1	AS8	22-April-2019		1
2	AS8	16-May-2019		1
3	AS8	11-June-2019	X	
1	AS9	22-April-2019	X	
2	AS9	16-May-2019	X	
3	AS9	11-June-2019	X	

Table 9: Visual Encounter Snake Survey Results

SURVEY ROUND	AREA SEARCH ID	DATE SURVEYED	SPECIES CODE	
			NOSN	EAGA
1	AS10	22-April-2019	X	
2	AS10	16-May-2019	X	
3	AS10	11-June-2019	X	
1	AS11	22-April-2019	X	
2	AS11	16-May-2019	X	
3	AS11	11-June-2019	X	
1	AS12	22-April-2019	X	
2	AS12	16-May-2019	X	
3	AS12	11-June-2019	X	

LEGEND:

SPECIES CODE	COMMON NAME	SCIENTIFIC NAME
NOSN	No Snakes	No snakes despite survey effort
EAGA	Eastern Gartersnake	*Thamnophis sirtalis sirtalis*

Table 10: Master Bird Table

Common Name	Scientific Name	Provincial Status (S Rank)	COSSARO (MECP)	BP1	BP2	BP3	BP4	BP5	BP6	BP7	BP8	BP9	BP10	BP11	BP12	BP13	BP14	BP15	BP16	BP17	BP18	BP19	BP20
Anseriformes																							
Anatidae																							
Canada Goose	*Branta canadensis*	S5		X	X		X																
Mute Swan	*Cygnus olor*	SNA																					
Wood Duck	*Aix sponsa*	S5																					
Mallard	*Anas platyrhynchos*	S5		X																			
Columbiformes																							
Columbidae																							
Mourning Dove	*Zenaida macroura*	S5		X		X	X		X	X	X		X	X	X	X							
Cuculiformes																							
Cuculidae																							
Yellow-billed Cuckoo	*Coccyzus americanus*	S4B																	X				
Black-billed Cuckoo	*Coccyzus erythropthalmus*	S5B			X															X			
Apodiformes																							
Trochilidae																							
Ruby-throated Hummingbird	*Archilochus colubris*	S5B											X										
Charadriiformes																							
Scolopacidae																							
American Woodcock	*Scolopax minor*	S4B							X														
Spotted Sandpiper	*Actitis macularius*	S5			X	X																	
Laridae																							
Ring-billed Gull	*Larus delawarensis*	S5B,S4N																					
Pelecaniformes																							
Ardeidae																							
Great Blue Heron	*Ardea herodias*	S4																					
Green Heron	*Butorides virescens*	S4B																					
Cathartiformes																							
Cathartidae																							
Turkey Vulture	*Cathartes aura*	S5B																					
Accipitridae																							
Red-tailed Hawk	*Buteo jamaicensis*	S5	NAR									X											
Piciformes																							
Picidae																							
Red-bellied Woodpecker	*Melanerpes carolinus*	S4								X				X									
Downy Woodpecker	*Picoides pubescens*	S5							X						X		X				X		X
Hairy Woodpecker	*Dryobates villosus*	S5							X		X												
Northern Flicker	*Colaptes auratus*	S4B						X		X					X								X
Passeriformes																							
Tyrannidae																							
Great Crested Flycatcher	*Myiarchus crinitus*	S4B						X		X	X	X				X	X	X		X	X		
Eastern Kingbird	*Tyrannus tyrannus*	S4B		X	X		X	X			X												
Eastern Wood-Pewee	*Contopus virens*	S4B	SC					X	X		X	X	X	X						X			
Alder Flycatcher	*Empidonax alnorum*	S5B																	X				
Eastern Phoebe	*Sayornis phoebe*	S5B														X	X						
Vireonidae																							

Table 10: Master Bird Table

Common Name	Scientific Name	Provincial Status (S Rank)	COSSARO (MECP)	BP1	BP2	BP3	BP4	BP5	BP6	BP7	BP8	BP9	BP10	BP11	BP12	BP13	BP14	BP15	BP16	BP17	BP18	BP19	BP20
Warbling Vireo	*Vireo gilvus*	S5B				X	X		X	X	X		X	X									
Red-eyed Vireo	*Vireo olivaceus*	S5B					X	X		X	X	X	X		X		X		X	X			X
Corvidae																							
Blue Jay	*Cyanocitta cristata*	S5				X	X	X	X	X		X				X			X		X		X
American Crow	*Corvus brachyrhynchos*	S5B						X												X	X	X	
Common Raven	*Corvus corax*	S5																					
Hirundinidae																							
Tree Swallow	*Tachycineta bicolor*	S4B		X																			
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	S4B																					
Cliff Swallow	*Petrochelidon pyrrhonota*	S4B																					
Barn Swallow	*Hirundo rustica*	S4B	THR				X		X													X	X
Paridae																							
Black-capped Chickadee	*Poecile atricapillus*	S5		X	X			X	X							X		X	X	X		X	X
Sittidae																							
White-breasted Nuthatch	*Sitta carolinensis*	S5						X					X	X					X				
Troglodytidae																							
House Wren	*Troglodytes aedon*	S5B		X	X	X	X		X	X	X				X	X	X	X					X
Polioptilidae																							
Blue-gray Gnatcatcher	*Polioptila caerulea*	S4B										X											
Turdidae																							
American Robin	*Turdus migratorius*	S5B		X		X	X		X	X	X	X	X	X	X				X			X	
Mimidae																							
Gray Catbird	*Dumetella carolinensis*	S4B		X		X		X	X	X									X	X			
Sturnidae																							
European Starling	*Sturnus vulgaris*	SNA		X	X									X			X				X		
Bombycillidae																							
Cedar Waxwing	*Bombycilla cedrorum*	S5B		X	X		X				X		X			X		X	X	X		X	X
Fringillidae																							
American Goldfinch	*Spinus tristis*	S5B		X			X				X					X	X		X	X		X	
Passerellidae																							
Eastern Towhee	*Pipilo erythrophthalmus*	S4B																	X				
Chipping Sparrow	*Spizella passerina*	S5B		X				X			X			X		X	X	X	X	X	X		X
Field Sparrow	*Spizella pusilla*	S4B														X		X	X		X	X	X
Vesper Sparrow	*Pooecetes gramineus*	S4B																X	X				
Savannah Sparrow	*Passerculus sandwichensis*	S4B					X	X															
Song Sparrow	*Melospiza melodia*	S5B		X	X	X	X	X	X		X			X		X	X		X	X	X	X	
Icteridae																							
Bobolink	*Dolichonyx oryzivorus*	S4B	THR																		X		
Baltimore Oriole	*Icterus galbula*	S4B		X	X	X		X	X	X	X	X	X	X	X						X		X
Red-winged Blackbird	*Agelaius phoeniceus*	S4		X	X																X		X
Brown-headed Cowbird	*Molothrus ater*	S4B		X		X				X	X	X				X			X				
Common Grackle	*Quiscalus quiscula*	S5B			X	X	X						X						X				
Parulidae																							

Table 10: Master Bird Table

Common Name	Scientific Name	Provincial Status (S Rank)	COSSARO (MECP)	BP1	BP2	BP3	BP4	BP5	BP6	BP7	BP8	BP9	BP10	BP11	BP12	BP13	BP14	BP15	BP16	BP17	BP18	BP19	BP20
Common Yellowthroat	*Geothlypis trichas*	S5B			X														X	X	X		
American Redstart	*Setophaga ruticilla*	S5B												X									
Yellow Warbler	*Setophaga petechia*	S5B			X	X	X	X	X		X			X	X				X				
Cardinalidae																							
Northern Cardinal	*Cardinalis cardinalis*	S5		X		X		X	X					X		X	X	X	X	X	X	X	X
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	S4B										X	X		X				X	X			
Indigo Bunting	*Passerina cyanea*	S4B			X			X								X	X	X	X	X	X	X	X

Table 11: Bat Habitat Assessment Results

Nelson Burlington - Bat Habitat Assessment Spring 2019							
Polygon ID	**ELC**	**Area Surveyed (ha)**	**Plots**	**# of Snags**	**Total # of Trees**	**Trees per hectare**	**Ecosite and density habitat criteria met? (Y/N)**
D-FOD	FOD5-5/ SWD3-2a	0.75	1	2	51	68.00	Y
			2	5			
			3	1			
			4	7			
			5	4			
			6	5			
			7	4			
			8	2			
			9	4			
			10	3			
			11	3			
			12	3			
			13	3			
			14	3			
			15	2			
E	FOD5/DIST	0.48	N/A	37	37	77.08	Y
F	FOD5-1	0.27	N/A	31	31	114.81	Y
G	FOD7-2	0.55	N/A	35	35	63.64	Y
K	FOD5	0.39	N/A	27	27	69.23	Y
M-SWD	SWD3-2b	0.19	N/A	24	24	126.32	Y
M-FOD	FOD7-2/ FOD7-4	0.55	1	2	27	49.09	Y
			2	2			
			3	0			
			4	2			
			5	5			
			6	2			
			7	3			
			8	4			
			9	1			
			10	3			
			11	3			
Na	FOD7-4	0.64	N/A	9	10	15.63	Y
Nb	FOD7-4	1.61	N/A	15	15	9.32	N

* Plots are conducted in all polygons that are 1 ha or greater in size.

Table 12: Bat Acoustic Monitoring Results

SM3 Monitoring Station	ELC Community	Low Frequency Calls				High Frequency Calls					
		Hoary Bat Calls	Big Brown Bat^ Calls	Silver-haired Bat^ Calls	Total Low Frequency Calls	Eastern Red Bat Calls	Eastern Small-footed Myotis* Calls	Northern Myotis* Calls	Little Brown Myotis* Calls	Tri-colored Bat* Calls	Total High Frequency Calls
E	FOD5/DIST	499	1056	18	1573	109	306	0	1356	20	1791
F	FOD5-1	38	55	28	121	14	351	0	3	0	368
G	FOD7-2	91	66	10	167	0	16	0	0	0	16

Table 13: Headwater Drainage Feature Classification and Management Recommendations

DRAINAGE FEATURE SEGMENT	STEP 1. HYDROLOGY		STEP 2. RIPARIAN	STEP 3. FISH HABITAT	STEP 4. TERRESTRIAL HABITAT	MANAGEMENT RECOMMENDATION
	FUNCTION	MODIFIERS				
H2S1	FT – 6 FC – 5 (Round 1) FC – 4 (Round 2) FC – 1 (Round 3) **Important** – Wetland feature containing water in Round 2.	Agricultural operations in upstream catchment.	**Important Functions** – wetland and forest communities.	**Contributing Functions** – flow and allochthonous transport through feature to downstream habitat.	**Valued Functions** – no breeding amphibians documented.	**Protection** – Due to Important Hydrology.
H2S2	FT – 1 FC – 5 (Round 1) FC – 4 (Round 2) FC – 1 (Round 3) **Valued** – Channel connecting upstream wetland to downstream.	Agricultural operations in upstream catchment.	**Important Functions** – wetland and forest communities.	**Contributing Functions** – flow and allochthonous transport through feature to downstream habitat.	**Valued Functions** – no breeding amphibians documented.	**Protection** – Due to protected reach upgradient (H2S1).
H2S3 (no access)	FT – 1 FC – 5 (Round 1) FC – 4 (Round 2) FC – 1 (Round 3) **Valued** – Channel connecting upstream wetland to downstream.	Agricultural operations in upstream catchment.	**Valued Functions** – cultural meadow.	**No information**	**No information**	**Protection** – Due to protected reach upgradient (H2S1).

LEGEND:

FT	Feature Types (1-defined natural channel, 2-channelized, 3-multi-thread, 4-no defined feature, 5-tiled drainage, 6-wetland, 7-swale, 8-roadside ditch, 9-online pond outlet)
FC	Flow Conditions (1-no surface water, 2-standing water, 3-interstitial flow, 4-surface flow minimal, 5-surface flow substantial)

Note: Codes correspond with Ontario Stream Assessment Protocol (OSAP) guidelines.

Table 14: Aquatic Fish Community Survey Results (Electrofishing and Seine Netting June 17 and 24, 2019)

SPECIES		**STATION**				
Common Name	**Scientific Name**	**MDT-1**	**MN-1**	**MDD (Seine)**	**MD-1**	**MD-2**
Largemouth Bass	*Micropterus salmoides*	-	-	0	5	4
Total Fish Caught		0	0	0	5	4
Species Richness		0	0	0	1	1
Effort (sec)		640	944.4	n/a	190.7	1318.1

Note: Depth of water at MDD (main irrigation pond) was too great (greater than 1m) in the centre; fish survey occurred along the shore.

Table 15: Natural Heritage Reference Manual (MNR 2010) Woodland Definition and Wooded Features

Wooded Feature ID	ELC Code	Size (ha)	Minimum Patch Width - >60m average width (y/n)	Woodland (y/n)	Significant Woodland* (y/n)	Area of Woodland within the Limit of Extraction (ha)	Area of Significant Woodland* within the Limit of Extraction (ha)
A	CUP3 / FOD	**10.41**	Y	Y	Y	0	0
B	CUW1a	**0.48**	N	N	N	0	0
C	CUP3 / FOD	**0.53**	Y	Y	N	0	0
D	FOD5-5 FOD5-2 FOD5/DIST SWD3-2a Non-woodland inclusions	2.85 0.34 0.2 0.73 0.08 **Total: 4.2**	Y	Y	Y	0	0
E	FOD5/DIST	**0.48**	N	N	N	0.44	0
F	FOD5-1	**0.22**	N	N	N	0.22	0
G	FOD7-2	**0.48**	N	N	N	0.48	0
H	Inclusion (CUW1)	**0.04**	N	N	N	0.04	0
I	CUW1 CUW1c CUP3 FOD5	0.76 0.88 0.46 0.17 **Total: 2.27**	Y	Y	N	0	0
J	Inclusion (CUW1)	**0.03**	N	N	N	0	0
K	FOD5	**0.31**	N	N	N	0	0
L	CUP3	**0.09**	N	N	N	0	0
M	FOD7-2 FOD7-4 SWD3-2b SWD FOD MAM2-2 Non-woodland inclusions	1.03 1.35 0.32 0.25 0.48 0.23 0.43 **Total: 4.09**	Y	Y	Y	0	0
N	CUW1 FOD7-4 CUP3-13*	0.36 1.86 1.4	Y	Y	Y	0	0

Table 15: Natural Heritage Reference Manual (MNR 2010) Woodland Definition and Wooded Features

Wooded Feature ID	ELC Code	Size (ha)	Minimum Patch Width - >60m average width (y/n)	Woodland (y/n)	Significant Woodland* (y/n)	Area of Woodland within the Limit of Extraction (ha)	Area of Significant Woodland* within the Limit of Extraction (ha)
	CUP3-14* SWD Non-woodland inclusions	0.62 0.14 0.01 **Total: 4.39**					
O	CUP3-2 FOD5-6 MAM Contiguous wooded features extending outside Subject Lands	0.27 1.13 0.37 5.52 **Total: 7.29**	Y	Y	Y	0	0
P	FOD5-8 CUP3-2 CUP3-6 CUP3-13* CUP3-14* HR Contiguous wooded features extending outside Subject Lands	0.43 3.14 1.48 3.08 0.68 0.61 37.77 **Total: 47.19**	Y	Y	Y	0	0
Q	FOD	**0.36**	N	N	N	0	0

*Significance assessed in Table 16.

Table 16: Assessment of Woodland Significance (NHRM, MNR 2010)

Woodland ID	Woodland Area (ha)	Average Width (m)	Woodland Size Criteria	Ecological Functions Criteria					Uncommon Characteristics Criteria				Economic and Social Functional Value Criteria			Significant (yes/no)
			≥ 20 ha?	Woodland Interior ≥ 2ha?	Proximity	Linkages	Water Protection	Woodland Diversity	Unique Species or Representation?	Rare Vegetation Community Types?	Rare, Uncommon or Restricted Plants?	Older Woodlands or Trees Present?	Productivity	Special Services	Educational, Cultural, or Historical Value?	
A	10.41	> 60	No	No (no interior)	Yes	Excluded*	Yes	Excluded*	No supporting data	No supporting data	No supporting data	Yes	No supporting data	No supporting data	No supporting data	Yes
C	0.53	60.5	No	No (no interior)	Excluded*	Excluded*	Excluded*	Excluded*	No supporting data	No supporting data	No supporting data	Excluded*	Excluded*	Excluded*	Excluded*	No
D	6.57	> 60	No	No (no interior)	Excluded*	Excluded*	Yes	Excluded*	No	No	Yes	Yes	No supporting data	No	No	Yes
I	2.27	62.7	No	No (no interior)	Excluded*	Excluded*	Excluded*	Excluded*	No	No	No~	Excluded*	Excluded*	Excluded*	Excluded*	No
M	4.09	> 60	No	No (no interior)	Excluded*	Excluded*	Excluded*	Excluded*	No	Yes	Yes	Excluded*	Excluded*	Excluded*	Excluded*	Yes
N	4.78	71	No	No (no interior)	Excluded*	Excluded*	Excluded*	Excluded*	No	Yes	No	Excluded*	Excluded*	Excluded*	Excluded*	Yes
O	7.35	> 60	No	(interior is 0.14	Excluded*	Excluded*	No	Excluded*	No	No supporting data	Yes	Yes	No supporting data	No supporting data	No supporting data	Yes
P	47.19	> 60	Yes	Yes (interior is 3 ha, collectively)	Yes	No	Yes	No supporting data	No supporting data	No supporting data	Yes	Yes	No supporting data	No supporting data	No supporting data	Yes

* Below Size Threshold
~ Butternut are Category 1, dead/non-retainable

Woodland Size Criteria
Based on "Rationale and methodology for determining significant woodlands in regional Municipality of Halton" 2002, Gartner Lee, indicating 22.9% woodland cover in Halton Region

Proximity to other Woodlands or Habitats? (10.25 ha threshold), Based on "Rationale and methodology for determining significant woodlands in regional municipality of halton" 2002, Gartner Lee, indicating 22.9% woodland cover in Halton Region
Water Protection: Located within a sensitive or threatened watershed OR a specific distance from sensitive groundwater discharge/recharge, sensitive headwater area, watercourse or fish habitat? (5.3 ha theshold)
Linkages: Located within a defined NHS or provide a connecting link between two other significant features? (10.5 ha threshold)
Water Protection: Located within a sensitive or threatened watershed OR a specific distance from sensitive groundwater discharge/recharge, sensitive headwater area, watercourse or fish habitat? (5.3 ha theshold)
Woodland Diversity: Contains naturally occuring composition of native forest species that have declined significantly south and east of Canadian Shield OR high native diversity through a combination of composition and terrain)? (10.5-11 ha threshold)

Unique species composition OR site represented by less than 5% overall in woodland area? (0.5 ha theshold)
S1, S2, S3 ranking vegetation community? (0.5 ha threshold)
Habitat of rare, uncommon or restricted woodland plant? (0.5 ha theshold)
Characteristics of older woodlands OR woodlands with larger tree size structure in native species? (5.5 ha theshold)

High productivity in terms of economic valuable products together with continuous native natural attributes? (6 ha threshold)
High value in special services (air quality, recreation)? (5.1 ha threshold)
Important identified appreciation, education, cultural or historical value? (5.1 ha threshold)

Table 17: Halton Region Official Plan (2018) Woodland Definition and Wooded Features

Wooded Feature ID	ELC Code	Size (ha)	Woodland ≥0.5 ha and Assessed for Significance (Halton Region OP 2018) (y/n)	Significant Woodland* (y/n)	Area of Woodland within the Limit of Extraction (ha)	Area of Significant Woodland* within the Limit of Extraction (ha)
A	CUP3 / FOD	**10.41**	Y	Y	n/a	0
B	CUW1a	**0.48**	N	N	0	0
C	CUP3 / FOD	**0.53**	Y	N	0	0
D	FOD5-5 FOD5-2 FOD5/DIST SWD3-2a Non-woodland inclusions	2.85 0.34 0.2 0.73 0.08 **Total: 4.2**	Y	Y	n/a	0
E	FOD5/DIST	**0.48**	N	N	0.44	0
F	FOD5-1	**0.22**	N	N	0.22	0
G	FOD7-2	**0.48**	N	N	0.48	0
H	Inclusion (CUW1)	**0.04**	N	N	0.04	0
I	CUW1 CUW1c CUP3 FOD5	0.76 0.88 0.46 0.17 **Total: 2.27**	Y	N	0	0
J	Inclusion (CUW1)	**0.03**	N	N	0	0
K	FOD5	**0.31**	N	N	0	0
L	CUP3	**0.09**	N	N	0	0
M	FOD7-2 FOD7-4 SWD3-2b SWD FOD MAM2-2 Non-woodland inclusions	1.03 1.35 0.32 0.25 0.48 0.23 0.43 **Total: 4.09**	Y	Y	n/a	0
N	CUW1 FOD7-4 CUP3-13* CUP3-14*	0.36 1.86 1.4 0.62	Y	Y	n/a	0

Table 17: Halton Region Official Plan (2018) Woodland Definition and Wooded Features

Wooded Feature ID	ELC Code	Size (ha)	Woodland ≥0.5 ha and Assessed for Significance (Halton Region OP 2018) (y/n)	Significant Woodland* (y/n)	Area of Woodland within the Limit of Extraction (ha)	Area of Significant Woodland* within the Limit of Extraction (ha)
	SWD Non-woodland inclusions	0.14 0.01 **Total: 4.39**				
O	CUP3-2 FOD5-6 MAM CUW1b Contiguous wooded features extending outside Subject Lands	0.27 1.13 0.37 0.06 5.52 **Total: 7.35**	Y	Y	n/a	0
P	FOD5-8 CUP3-2 CUP3-6 CUP3-13* CUP3-14* HR Contiguous wooded features extending outside Subject Lands	0.43 3.14 1.48 3.08 0.68 0.61 37.77 **Total: 47.19**	Y	Y	n/a	0
Q	FOD	**0.36**	N	N	0	0

*Significance assessed in Table 18.

Table 18: Assessment of Woodland Significance (ROP 2018)

Woodland ID	Woodland Area (ha)	Size - greater than 0.5 ha?	Woodland contains patches over 99 Years Old?	Woodland is 10 ha or larger? (located outside Urban Area but above Escarpment Brow)	Woodland has interior core habitat of 4 ha or larger (measured 100 m from the edge)?	Woodland is wholly or partially within 50 m of a major creek or certain headwater creek, or within 150 m of the Escarpment Brow?	Significant (Yes/No)
A	10.41	Yes	Yes*	Yes	No (no interior)	Yes	Yes
C	0.53	Yes	No	No	No (no interior)	No	No
D	6.57	Yes	Yes*	No	No (no interior)	No	Yes
I	2.27	Yes	No	No	No (no interior)	No	No
M	4.09	Yes	Yes*	No	No (no interior)		Yes
N	4.78	Yes	No	No	No (no interior)	Yes	Yes
O	7.35	Yes	Yes*	No	No (interior is 0.14 ha)	Yes	Yes
P	47.19	Yes	Yes*	Yes	No (interior is 3 ha, collectively)	Yes	Yes

*Based on interpretation of historical imagery.

Table 19: Significant Wildlife Habitat Assessment

SIGNIFICANT WILDLIFE HABITAT TYPE	ELC ECOSITE(S) PRESENT	HABITAT CRITERIA MET	TARGETED FIELD STUDIES REQUIRED	DEFINING CRITERIA MET (MINIMUM ABUNDANCES AND/OR DIVERSITY REQUIRED TO CONFIRM SWH)	SWH TYPE PRESENT within Proposed Extraction Footprint	SWH TYPE PRESENT within 120 m Adjacent Lands
1. SEASONAL CONCENTRATION AREAS						
Waterfowl Stopover and Staging Areas (terrestrial)	Yes – CUT; CUM	No – no seasonal flooding observed	No	N/A	No	No
Waterfowl Stopover and Staging Areas (aquatic)	Yes – MAS2; SWD3	No – MAS2 is managed by adjacent quarry discharge and is too small of a feature; SWD3 habitat does not contain open water; managed irrigation ponds do not meet SWH criteria.	No	N/A	No	No
Shorebird Migratory Stopover Areas	Yes – MAM2	No – MAM2 does not contain shoreline or flooded/open water habitat.	No	N/A	No	No
Raptor Wintering Areas	Yes – FOD and CUM; CUT; CUW	No – Does not meet >20 ha combined size criteria.	No	N/A	No	No
Bat Hibernacula	No	No	No	N/A	No	No
Bat Maternity Colonies	Yes – FOD; SWD	Yes – Wooded Features on the Subject Lands Assumed – Features within 120 m Adjacent Lands	Yes – Wooded Features on the Subject Lands	Yes – Polygon E N/A – Features within 120 m Adjacent Lands	Yes Figure 9a, Appendix A	Assumed (No Acoustics Completed)

Table 19: Significant Wildlife Habitat Assessment

SIGNIFICANT WILDLIFE HABITAT TYPE	ELC ECOSITE(S) PRESENT	HABITAT CRITERIA MET	TARGETED FIELD STUDIES REQUIRED	DEFINING CRITERIA MET (MINIMUM ABUNDANCES AND/OR DIVERSITY REQUIRED TO CONFIRM SWH)	SWH TYPE PRESENT within Proposed Extraction Footprint	SWH TYPE PRESENT within 120 m Adjacent Lands
			N/A – Features within 120 m Adjacent Lands			
Turtle Wintering Areas	Yes – MA; SW	Yes	Yes	No	No	No
Reptile Hibernaculum	Yes	Yes	Yes	No	No	No
Colonial Bird Nesting Sites (bank/cliff)	Yes – CUM; CUT	No – eroding banks, slopes, hills, piles absent	No	N/A	No	No
Colonial Bird Nesting Sites (tree/shrubs)	Yes - SWD	Yes – snags and some emergent vegetation	Yes	No	No	No
Colonial Bird Nesting Sites (ground)	Yes – MAM; MAS; CUM; CUT	No	No	N/A	No	No
Migratory Butterfly Stopover Areas	Yes – CUM; CUT; FOD; CUP	No – 15 km away from Lake Ontario	No	N/A	No	No
Migratory Landbird Stopover Areas	Yes – FOD; SWD	No – 15 km away from Lake Ontario	No	N/A	No	No
Deer Winter Congregation Areas	Yes – FOD; SWD	Yes – managed and mapped by the MNRF.	No	N/A	No	Yes

Table 19: Significant Wildlife Habitat Assessment

SIGNIFICANT WILDLIFE HABITAT TYPE	ELC ECOSITE(S) PRESENT	HABITAT CRITERIA MET	TARGETED FIELD STUDIES REQUIRED	DEFINING CRITERIA MET (MINIMUM ABUNDANCES AND/OR DIVERSITY REQUIRED TO CONFIRM SWH)	SWH TYPE PRESENT within Proposed Extraction Footprint	SWH TYPE PRESENT within 120 m Adjacent Lands
		Habitat present within 120 m Adjacent Lands (LIO 2019).				Figure 2c, Appendix A
2. RARE VEGETATION COMMUNITIES OR SPECIALIZED HABITAT FOR WILDLIFE						
2a. Rare Vegetation Communities						
Rare Vegetation Types (cliffs, talus slopes, sand barrens, alvars, old-growth forests, savannahs, and tallgrass prairies)	No	No	No	N/A	No	No
Other Rare Vegetation Types (S1 to S3 communities)	Yes – FOD7-4 (S2/S3)	Yes	Yes	Yes	No	Yes Figure 9b, Appendix A
2b. Specialized Wildlife Habitat						
Waterfowl Nesting Area	Yes – MAS; MAM; SWD	Yes	Yes	No	No	No
Bald Eagle and Osprey Habitats	Yes – FOD; SWD	No – lakes, ponds rivers or wetlands with forested shorelines absent	No	N/A	No	No

Table 19: Significant Wildlife Habitat Assessment

SIGNIFICANT WILDLIFE HABITAT TYPE	ELC ECOSITE(S) PRESENT	HABITAT CRITERIA MET	TARGETED FIELD STUDIES REQUIRED	DEFINING CRITERIA MET (MINIMUM ABUNDANCES AND/OR DIVERSITY REQUIRED TO CONFIRM SWH)	SWH TYPE PRESENT within Proposed Extraction Footprint	SWH TYPE PRESENT within 120 m Adjacent Lands
Woodland Raptor Nesting Habitat	Yes – FOD; SWD; CUP	No – does not meet the >30 ha size criteria with >4 ha of interior habitat	No	N/A	No	No
Turtle Nesting Areas	Yes – MAS	No – sand or gravel mineral soils adjacent to wetlands absent	No	N/A	No	No
Seeps and Springs	Yes – FO; SW	Yes	Yes	No	No	No
Woodland Amphibian Breeding Habitat	Yes – FOD; SWD	Yes	Yes	Yes	No	Yes Figure 9b, Appendix A
Wetland Amphibian Breeding Habitats	Yes – MAM	No – Wetland features are within 120 m from a woodland	No	N/A	No	No
Woodland Area-Sensitive Bird Breeding Habitat	Yes – FOD; SWD	No – >30 ha size criteria and interior habitat criteria not met. Mature forest criteria may also not have been met.	No	N/A	No	No
3. HABITATS OF SPECIES OF CONSERVATION CONCERN						
Marsh Breeding Bird Habitat	Yes – MAM	Yes	Yes	No	No	No
Open Country Bird Breeding Habitat	Yes – CUM	No – cultural meadow does not meet >30 ha size criteria	No	N/A	No	No

Table 19: Significant Wildlife Habitat Assessment

SIGNIFICANT WILDLIFE HABITAT TYPE	ELC ECOSITE(S) PRESENT	HABITAT CRITERIA MET	TARGETED FIELD STUDIES REQUIRED	DEFINING CRITERIA MET (MINIMUM ABUNDANCES AND/OR DIVERSITY REQUIRED TO CONFIRM SWH)	SWH TYPE PRESENT within Proposed Extraction Footprint	SWH TYPE PRESENT within 120 m Adjacent Lands
Shrub/Early Successional Bird Breeding Habitat	Yes – CUT; CUW	No – cultural thicket does not meet >10 ha size criteria	No	N/A	No	No
Terrestrial Crayfish	Yes – MAM; MAS; SWD	Yes	Yes	No	No	No
Special Concern and Rare Wildlife Species						
Eastern Wood-pewee (SC)	Yes – FOD; SWD	Yes	Yes	Yes – Eastern Wood-pewee was recorded at BP5, BP6, BP8, BP9, BP10, BP11, BP17	Yes Figure 9a, Appendix A	Yes Figure 9b, Appendix A
Canada Warbler (SC)	Yes – FOD, SWD	Yes – ecosites present. Addition of shrub layers throughout portions of the woodlands are present to support this species	Yes	No – Species not observed during either round of BBS	No	No
Common Nighthawk (SC)	Yes – forested areas	No – suitable habitat is absent. This species prefers to nest in rock outcrops, alvars, sand barrens, bogs, fens and forest openings created by clear cuts and burns.	No	N/A	N/A	N/A

Table 19: Significant Wildlife Habitat Assessment

SIGNIFICANT WILDLIFE HABITAT TYPE	ELC ECOSITE(S) PRESENT	HABITAT CRITERIA MET	TARGETED FIELD STUDIES REQUIRED	DEFINING CRITERIA MET (MINIMUM ABUNDANCES AND/OR DIVERSITY REQUIRED TO CONFIRM SWH)	SWH TYPE PRESENT within Proposed Extraction Footprint	SWH TYPE PRESENT within 120 m Adjacent Lands
Golden-winged Warbler (SC)	Yes – FOD, CUT, DIST	Yes	Yes	No – Species not observed during either round of BBS	No	No
Grasshopper Sparrow (SC)	Yes - CUM	Yes	Yes	No – Species not observed during either round of BBS	No	No
Red-headed Woodpecker (SC)	Yes – FOD/DIST	Yes – Forested communities present. Species often inhabits human-maintained areas such as golf courses.	Yes	No – Species not observed during either round of BBS	No	No
Wood Thrush (SC)	Yes – FOD	Yes – Forested communities are present with areas of undergrowth. Size of the communities may not be preferred.	Yes	No – Species not observed during either round of BBS	No	No
Purple Martin (S3S4B)	Yes – CUM, MAM, DIST	Yes – generally found in urban areas and forage over CUM and MAM communities.	Yes	No – Species not observed during either round of BBS	No	No
Snapping Turtle (SC)	Yes – MA/SW	Yes	Yes	No – 1 Snapping Turtle observed moving between irrigation ponds on golf course (BS3; Figure 4a, Appendix A). Highly managed	No	No

Table 19: Significant Wildlife Habitat Assessment

SIGNIFICANT WILDLIFE HABITAT TYPE	ELC ECOSITE(S) PRESENT	HABITAT CRITERIA MET	TARGETED FIELD STUDIES REQUIRED	DEFINING CRITERIA MET (MINIMUM ABUNDANCES AND/OR DIVERSITY REQUIRED TO CONFIRM SWH)	SWH TYPE PRESENT within Proposed Extraction Footprint	SWH TYPE PRESENT within 120 m Adjacent Lands
				anthropogenic irrigation pond not considered habitat.		
Eastern Musk Turtle (SC)	Yes – MA, SW	No - Very limited emergent vegetation present within the Subject Property. All irrigation ponds have no emergent vegetation. One pond within the 120 m adjacent lands is surrounded with phragmites and has algae present but is lacking the abundant emergent vegetation required to be suitable for this species.	No	N/A – Though basking surveys were conducted in all permanent water bodies. No species were observed.	N/A	N/A
Five-lined Skink (SC)	Yes – FO	No – Rocky outcrops are present in some wooded areas, but do not include open area, primarily within deciduous trees, preventing suitable sunlight permeation conditions. Small population of this species exists on the escarpment and is not known to be present outside of it as it provides	No	N/A – Though area searches were conducted in all rocky outcrop areas and cover objects were lifted during the snake survey effort.	N/A	N/A

Table 19: Significant Wildlife Habitat Assessment

SIGNIFICANT WILDLIFE HABITAT TYPE	ELC ECOSITE(S) PRESENT	HABITAT CRITERIA MET	TARGETED FIELD STUDIES REQUIRED	DEFINING CRITERIA MET (MINIMUM ABUNDANCES AND/OR DIVERSITY REQUIRED TO CONFIRM SWH)	SWH TYPE PRESENT within Proposed Extraction Footprint	SWH TYPE PRESENT within 120 m Adjacent Lands
		the only suitable habitat in the surrounding area.				
Monarch (SC)	Yes - CUM	Moderately, nectaring habitat present. Limited-to-no-breeding habitat (Milkweed) presence on the Subject Property.	Yes	No - Species not observed during the three rounds of insect surveys.	No	No
West Virginia White (SC)	Yes - FO	Yes – Large Toothwort community present in the 120 m adjacent lands within an FOD5-5 (**Figure 9a, Appendix A**).	Yes	No - Species not observed during the three rounds of insect surveys.	No	No
Black Dash (S3)	Yes - MA	No – Species not observed despite survey effort.	No	N/A	N/A	N/A
Unicorn Clubtail (S2/S3)	Yes – OA, MA, DIST	Yes – Unicorn Clubtail often frequent man-made waterbodies such as the habitat found on the Subject Property	Yes	Yes – one exuviae observed at BP1.	No	Yes Figure 9a, Appendix A
Giant Swallowtail (S3)	Yes – FO, CUM	No – Foraging habitat is present, but its two known host plants are not present within the Subject Property.	No	N/A	N/A	N/A

Table 19: Significant Wildlife Habitat Assessment

SIGNIFICANT WILDLIFE HABITAT TYPE	ELC ECOSITE(S) PRESENT	HABITAT CRITERIA MET	TARGETED FIELD STUDIES REQUIRED	DEFINING CRITERIA MET (MINIMUM ABUNDANCES AND/OR DIVERSITY REQUIRED TO CONFIRM SWH)	SWH TYPE PRESENT within Proposed Extraction Footprint	SWH TYPE PRESENT within 120 m Adjacent Lands
4. ANIMAL MOVEMENT CORRIDORS						
Amphibian Movement Corridors	N/A	Yes – Amphibian Breeding Habitat (Woodland is present)	No	Habitat is assumed present between ACC10 (breeding habitat) and the adjacent FOD7-4 (summer habitat).	No	Yes Figure 9b, Appendix A

Table 20: Species at Risk Desktop Habitat Assessment

Species Common Name	Species Scientific Name	Provincial Status	S Rank	Description of Suitable Habitat in Ontario	Habitat Present within Proposed Extraction Footprint	Habitat Present within 120 m Adjacent Lands	Species Present within Extraction Footprint?	Species Present within 120 m Adjacent Lands?
Endangered								
Butternut	*Juglans cinerea*	END	S2?	Found in well-drained, rich soils in valleys or on slopes. Prefers full sun and moist to moderately dry conditions (MNR, 2016)	Yes. Open and maintained habitat exisits on site providing full sun conditions. Moderately moist conditions generally met on the property.	Yes. Open and maintained habitat exisits on site providing full sun conditions. Moderately moist conditions generally met on the property.	Yes. Species observed during botanical surveys.	Yes. Species observed during botanical surveys.
Eastern Small-footed Myotis	*Myotis leibii*	END	S2S3	In the spring and summer, Eastern Small-footed Myotis will roost in a variety of habitats, including in or under rocks, in rock outcrops, in buildings, under bridges, or in caves, mines, or hollow trees. In the winter, these bats hibernate, most often in caves and abandoned mines. They seem to choose colder and drier sites than similar bats and will return to the same spot each year (MNR, 2016).	No. Small superfical rocky outcrops are present in high traffic locations within the golf course. Limited crevices are present for roosting habitat.	No. Small superfical rocky outcrops are present, limited crevices are present for roosting habitat.	Yes. Species recorded in three polygons (E, F and G) during 13 eveings of acoustic surveying. However, recordings are attributed to foraging behaviour and not the use of the polygon as roosting habitat.	Assumed present. Acoustic surveys not conducted outside of the extraction limit.
Jefferson Salamander	*Ambystoma jeffersonianum*	END	S2	Adults live in moist, loose soil, under logs or in leaf litter of deciduous forests. They spend much of their time underground in rodent burrows or under rocks and stumps. They breed in vernal pools and lay their eggs in clumps attached to underwater vegetation (MNR, 2013).	No. No vernal pool or wetland presence located within the extraction footprint.	No. Six potential vernal pool features assessed for suitability, all six were unsuitable. Five had hydroperiodies too short to support the larval stage of Jefferson Salamander, and the sixth is an online pond with high predation risks and limited canopy and forest habitat.	No. No habitat present.	No. Despite five evenings of trapping effort in vernal pools during spring migration. Regulated habitat is located within the 120 m Adjacent Lands.
Little Brown Myotis	*Myotis lucifugus*	END	S4	Little Brown Myotis most often hibernate in caves or abandoned mines that are humid and remain above freezing (MNR, 2016). In the spirng and summer woodlands are used for maternity roosting habitat.	Yes. Three forested communities are present within the Limit of Extraction. Each polygon (E, F and G) contained snag trees to provide habitat.	Yes. Forested communities are present within the 120 m Adjacent Lands. Each polygon (D, K, M, Na and Nb) contained snag trees to provide habitat.	Yes. Species recorded in two polygons (E and F) during 13 eveings of acoustic surveying. Only polygon E had sufficent passes to be considered habitat for Little Brown Myotis.	Assumed present. Acoustic surveys not conducted outside of the extraction limit.
Mottled Duskywing	*Erynnis martialis*	END	S2	The Mottled Duskywing tends to live in dry habitats with sparse vegetation. These include open barrens, sandy patches among woodlands, and alvars. In Ontario, the Mottled Duskywing will only deposit their eggs on two closely-related plants: New Jersey Tea and Prairie Redroot (MNR, 2016).	No. Suitable habitat is not present. Subject Lands do not contain barrens/alvars or New Jersey Tea/Prairie Redroot present to meet breeding requirements for species.	No. Suitable habitat is not present. Subject Lands do not contain barrens/alvars or New Jersey Tea/Prairie Redroot present to meet breeding requirements for species.	Species not targeted due to lack of habitat. However, none observed despite three rounds of insect surveys completed.	Species not targeted due to lack of habitat. However, none observed despite three rounds of insect surveys completed.

Table 20: Species at Risk Desktop Habitat Assessment

Species Common Name	Species Scientific Name	Provincial Status	S Rank	Description of Suitable Habitat in Ontario	Habitat Present within Proposed Extraction Footprint	Habitat Present within 120 m Adjacent Lands	Species Present within Extraction Footprint?	Species Present within 120 m Adjacent Lands?
Tri-Coloured Bat	*Perimyotis subflavus*	END	S3?	Little Brown Myotis most often hibernate in caves or abandoned mines that are humid and remain above freezing (MNR, 2016). In the spirng and summer woodlands are used for maternity roosting habitat.	Yes. Three forested communities are present within the Limit of Extraction. Each polygon (E, F and G) contained snag trees to provide habitat.	Yes. Forested communities are present within the 120 m Adjacent Lands. Each polygon (D, K, M, Na and Nb) contained snag trees to provide habitat.	Yes. Species recorded in one polygon (E) during 13 eveings of acoustic surveying. However, recordings are attributed to foraging behaviour and not the use of the polygon as roosting habitat.	Assumed present. Acoustic surveys not conducted outside of the extraction limit.
Threatened								
Bank Swallow	*Riparia riparia*	THR	S4B	Bank Swallows nest in burrows in natural and human-made settings where there are vertical faces in silt and sand deposits. Many nests are on banks of rivers and lakes, but they are also found in active sand and gravel pits or former ones where the banks remain suitable (MNR, 2016).	No. No natural or man-made sand/silt deposits are present to support nesting Bank Swallow.	No. No natural or man-made sand/silt deposits are present to support nesting Bank Swallow.	No. Despite two rounds of breeding bird surveys completed.	No. Despite two rounds of breeding bird surveys completed.
Barn Swallow	*Hirundo rustica*	THR	S4B	Barn Swallows often live in close association with humans, building their cup-shaped mud nests almost exclusively on human-made structures such as open barns, under bridges and in culverts. The species is attracted to open structures that include ledges where they can build their nests, which are often re-used from year to year. They prefer unpainted, rough-cut wood, since the mud does not adhere as well to smooth surfaces.	Yes, the property contains a number of maintenance buildings that provide the open structure habitat preferred by Barn Swallows.	Yes, the property contains a number of maintenance buildings that provide the open structure habitat prefered by Barn Swallows.	Yes. Species' nests observed during surveys.	Yes. Species' nests observed during surveys.
Bobolink	*Dolichonyx oryzivorus*	THR	S4B	Bobolink nest on the ground in open fields, lightly grazed pasture or hayfields that contain a dense layer of thatch (MNR, 2013).	No. No suitable field habitat is present to support this species. Majority of the area within the proposed extraction footprint is open maintained golf course and agricultral fields with farmed row crops.	Yes. The lands adjacent to the South Extension consist of an abandoned golf course. A small portion of this area is captured within the 120 m Adjacent Lands.	Species not targeted due to lack of habitat. However, none observed despite two rounds of breeding bird surveys completed.	Yes. Probable breeding evidence observed in the CUM1 community (abandoned golf course) adjacent to the South Extension.
Eastern Meadowlark	*Sturnella magna*	THR	S4B	Eastern Meadowlark nest on the ground in a variety of open to slightly shrubby habitats including fields, pasture, hayfields, weedy edges of cropland and shrubby fields. Perching posts (such as small trees, shrubs or fence posts) are also commonly used (MNR, 2013).	No. No suitable field habitat with shrub presence is present to support this species. Majority of the area within the proposed extraction footprint is open maintained golf course and agricultral fields with farmed row crops.	Yes. The lands adjacent to the South Extension consist of an abandoned golf course. However, limited shrub cover is present, and may not provide necessary features for this species. A small portion of this habitat is captured within the 120 m Adjacent Lands.	Species not targeted due to lack of habitat. However, none observed despite two rounds of breeding bird surveys completed.	No. Despite two rounds of breeding bird surveys completed.

Table 20: Species at Risk Desktop Habitat Assessment

Species Common Name	Species Scientific Name	Provincial Status	S Rank	Description of Suitable Habitat in Ontario	Habitat Present within Proposed Extraction Footprint	Habitat Present within 120 m Adjacent Lands	Species Present within Extraction Footprint?	Species Present within 120 m Adjacent Lands?
Louisiana Waterthrush	*Seiurus motacilla*	THR	S3B	The Louisiana Waterthrush is usually found in steep, forested ravines with fast-flowing clear, coldwater streams. It also less frequently inhabits heavily wooded, deciduous swamps with large pools of open water (MNR, 2013).	No. No suitable ravines present within the extraction footprint. Additionally, no heavily wooded habitat with pooling water present.	Potential for moderate habitat to be present within the 120 m adjacent lands. Portions of landscape include small swamp habitat, and can be described as heavily wooded, with pooling water in the spring. Areas are fairly small, and more robust habitat is present in the Medad Valley adjacent to the Subject Lands.	No. Despite two rounds of breeding bird surveys completed.	No. Despite two rounds of breeding bird surveys completed.

Table 21: Preliminary Rehabilitation Plant List Recommendations

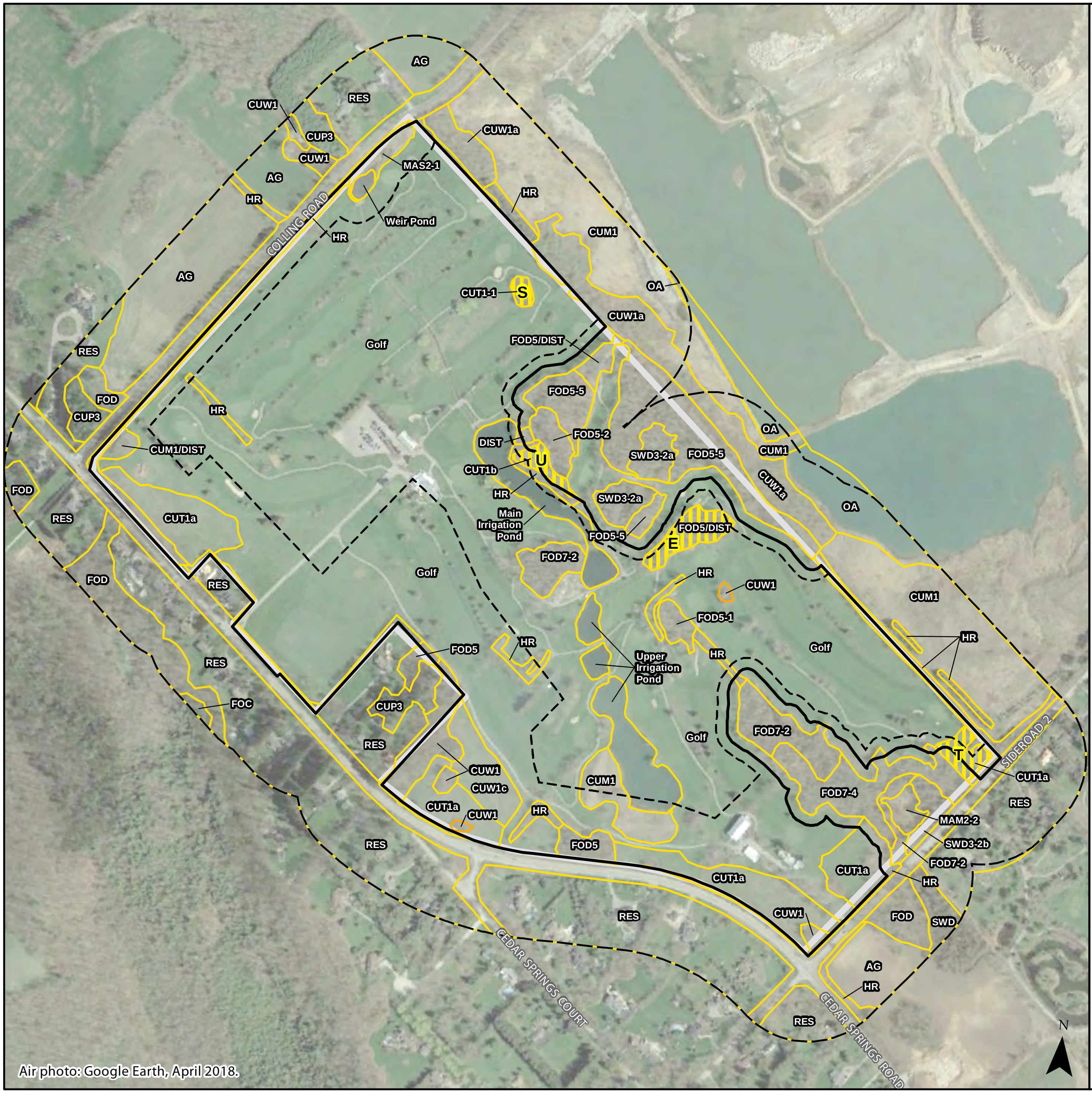
Location	LATIN NAME	COMMON NAME	COEFFICIENT OF CONSERVATISM	WETNESS INDEX	OWES WETLAND SPECIES	PROVINCIAL STATUS (S-RANK)	LOCAL STATUS HALTON (Varga 2005)
FSB, REG	*Sambucus racemosa ssp. pubens*	Red Elderberry	5	3		S5	X
FSB, REG	*Cornus alternifolia*	Alternate-Leaved Dogwood	6	3		S5	X
FSB, REG	*Cornus racemosa*	Grey Dogwood	2	0	T	S5	X
PW, FSB, REG	*Cornus sericea*	Red-Osier Dogwood	2	-3	I*	S5	X
FSB, REG	*Ribes cynosbati*	Eastern Prickly Gooseberry	4	3		S5	X
FSB, REG	*Prunus virginiana var. virginiana*	Chokecherry	2	3		S5	X
FSB, REG	*Rubus allegheniensis*	Alleghany Blackberry	2	3		S5	X
FSB, REG	*Rubus occidentalis*	Black Raspberry	2	5		S5	X
PW	*Salix discolor*	Pussy Willow	3	-3	I	S5	X
PW, FSB, REG	*Salix eriocephala*	Cottony Willow	4	-3	T	S5	X
PW, FSB, REG	*Salix interior*	Sandbar Willow	1	-3	T	S5	U
PW	*Salix petiolaris*	Meadow Willow	3	-3	I	S5	X
GG, FSB, REG	*Betula alleghaniensis*	Yellow Birch	6	0	T	S5	X
GG, FSO, FSB, REG	*Betula papyrifera*	Paper Birch	2	3	T	S5	X
GG, FSB, REG	*Carpinus caroliniana ssp. virginiana*	Blue-Beech	6	0	T	S5	X
GL, GG, FSO, FSB, REG	*Ostrya virginiana*	Eastern Hop-Hornbeam	4	3		S5	X
GL, GG, FSO, FSB, REG	*Fagus grandifolia*	American Beech	6	3		S4	X
GL, GG, FSO, FSB, REG	*Quercus macrocarpa*	Burr Oak	5	3	T	S5	X
GL, GG, FSO, FSB, REG	*Quercus rubra*	Northern Red Oak	6	3		S5	X
GL, GG, FSB, REG	*Carya cordiformis*	Bitternut Hickory	6	0		S5	X
GL, GG, FSO, FSB, REG	*Tilia americana*	Basswood	4	3		S5	X
GL, GG, FSO, FSB, REG	*Prunus serotina var. serotina*	Black Cherry	3	3		S5	X
GG, FSB, REG	*Populus balsamifera*	Balsam Poplar	4	-3	T	S5	X
GL, GG, FSO, FSB, REG	*Populus deltoides ssp. deltoides*	Eastern Cottonwood	4	0	T	S5	U
GL, GG, FSO, FSB, REG	*Populus tremuloides*	Trembling Aspen	2	0	T	S5	X
PW, GG, FSB, REG	*Salix amygdaloides*	Peach-Leaved Willow	6	-3	T	S5	U
GL, GG, FSO, FSB, REG	*Acer nigrum*	Black Maple	7	3		S4?	X
GG, FSB, REG	*Acer saccharinum*	Silver Maple	5	-3	I	S5	X
GL, GG, FSO, FSB, REG	*Acer saccharum*	Sugar Maple	4	3		S5	X
GG, FSB, REG	*Thuja occidentalis*	Eastern White Cedar	4	-3	T	S5	X
GG, FSB, REG	*Abies balsamea*	Balsam Fir	5	-3	T	S5	U
GL, GG, FSO, FSB, REG	*Picea glauca*	White Spruce	6	3	T	S5	U
GL, GG, FSO, FSB, REG	*Pinus strobus*	Eastern White Pine	4	3	T	S5	X
GL, GG, FSO, FSB, REG	*Tsuga canadensis*	Eastern Hemlock	7	3	T	S5	X

Herbaceous seed mixes will be applied where appropriate (e.g. if soil seedbank is deemed unsuitable). Potential mixes could include Upland Dry Meadow Mix, Early Succession/Riparian Mix, and Meadow Marsh Mix, following Conservation Halton guidelines.

A nurse crop will be applied to exposed soil, the species of which will depend on season of application but will follow Conservation Halton guidelines.

Appendix C – Ecological Field Data

Appendix C – Ecological Field Data – Vegetation



ELC Legend

CUM1	Mineral Cultural Meadow
CUP3	Coniferous Plantation
CUT1	Mineral Cultural Thicket
CUT1a	Mineral Cultural Thicket (planted saplings)
CUT1b	Mineral Cultural Thicket (naturalized saplings)
CUT1-1	Sumac Cultural Thicket
CUW1	Mineral Cultural Woodland
CUW1a	Black Locust Cultural Woodland
CUW1c	Mineral Cultural Woodland (planted trees)
FOC	Coniferous Forest
FOD	Deciduous Forest
FOD5	Dry- Fresh Sugar Maple Deciduous Forest Ecosite
FOD5-1	Dry- Fresh Sugar Maple Deciduous Forest
FOD5-2	Dry- Fresh Sugar Maple-Beech Deciduous Forest
FOD5-5	Dry- Fresh Sugar Maple-Hickory Deciduous Forest
FOD7-2	Fresh-Moist Ash Lowland Deciduous Forest
FOD7-4	Fresh-Moist Black Walnut Lowland Deciduous Forest
MAM2-2	Reed-canary Grass Mineral Meadow Marsh
MAS2-1	Cattail Mineral Shallow Marsh
SWD	Deciduous Swamp
SWD3-2a	Silver Maple Mineral Deciduous Swamp
SWD3-2b	Silver Maple Mineral Deciduous Swamp
AG	Agricultural
DIST	Disturbed
Golf	Golf
HR	Hedgerow
OA	Open Aquatic
Main/Upper /Weir Pond	Pond
RES	Residential

Licensed Boundary
Limit of Extraction
120 m Adjacent Lands
Subject Lands
Ecological Land Classification
ELC Inclusion
Stem Density

Figure 3a
Ecological Land Classification
WEST EXTENSION

0 100 M
1:8,000

SAVANTA
A GEI Company

Path: S:\8133 - Burlington Quarry\figures\report_figures\2020 02 28 figure updates\Figure 3a Ecological Land Classification W-EXT.mxd REVISED: March 12, 2020

ELC **COMMUNITY DESCRIPTION & CLASSIFICATION**	**PROJECT NAME:** 8133		**POLYGON:** GOLF PLANTATIONS	
	SURVEYOR(S): JTL	**DATE:** JULY 31-19		**PHOTO:**
	START:	**END:**	**UTM:**	

LAYERS: 1=CANOPY>10m **2=**SUB-CANOPY **3=**UNDERSTOREY **4=**GROUND (GRD.) LAYER
ABUNDANCE CODES: N=NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT **D=**DOMINANT

SPECIES CODE	LAYER 1	2	3	4	COLL.
THUOCCI	O				
PICGLAU	O				
QUEMACR	O				
ACESASA	O				
POPDELT	O				
BETPAPY	O				
PINSTRO	O				
QUERUBR	O				
HACKBERRY	R				
ACENEGU	R				

SPECIES CODE	LAYER 1	2	3	4	COLL.
1					

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☐ MINERAL SOIL ☐ PARENT MIN. ☐ ACIDIC BEDRK. ☐ BASIC BEDRK. ☐ CARB. BEDRK.	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLL. UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE / CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH / BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING-LVD. ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**		
☐ OPEN WATER ☐ SHALLOW WATER ☐ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED		

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	3-4	3	
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER			

HT CODES: **1=**>25m **2=**10<HT≤25m **3=**2<HT≤10m **4=**1<HT≤2m **5=**0.5<HT≤1m **6=**0.2<HT≤0.5m **7=**HT<0.2m
CVR CODES: **0=**NONE **1=**0%<CVR≤10% **2=**10<CVR≤25% **3=**25<CVR≤60% **4=**CVR>60%

SIZE CLASS ANALYSIS:	A	<10	R	10 – 24	R	25 – 50	N	>50
STANDING SNAGS:	R	<10	N	10 – 24	N	25 – 50	N	>50
DEADFALL/LOGS:	N	<10	N	10 – 24	N	25 – 50	N	>50

ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT

WOODLAND MATURITY:	X	YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	**#1**	**#2**	**#3**	**#4**		**SOIL PROFILE**
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:		**CODE:** PART OF
VEGETATION TYPE:		**CODE:** GOLF
INCLUSION		**CODE:**
COMPLEX		**CODE:**

Notes:
-YOUNG PLANTATIONS; MOWED GRASS TURF GROUND COVER; HEIGHT ~1 TO 4m; CANOPY COVER ~ 40-50%
- NO UNDERSTORY OR SUBCANOPY. FEW REMNANT MATURE TREES PRESENT.
-TREE COMPOSITION CONSISTENTLY VARIED

ELC **COMMUNITY DESCRIPTION & CLASSIFICATION**	**PROJECT NAME:** 8133		**POLYGON:** 1a	
	SURVEYOR(S): JTL		**DATE:** JULY 31-19	**PHOTO:**
	START:	**END:**	~~**UTM:**~~ SEPT 11-19	

POLYGON DESCRIPTION

SYSTEM
- ☒ TERRESTRIAL
- ☐ WETLAND
- ☐ AQUATIC

SITE
- ☐ OPEN WATER
- ☐ SHALLOW WATER
- ☒ SURFICIAL DEP.
- ☐ BEDROCK

SUBSTRATE
- ☐ ORGANIC
- ☒ MINERAL SOIL
- ☐ PARENT MIN.
- ☐ ACIDIC BEDRK.
- ☐ BASIC BEDRK.
- ☐ CARB. BEDRK.

TOPOGRAPHIC FEATURE
- ☐ LACUSTRINE
- ☐ RIVERINE
- ☐ BOTTOMLAND
- ☐ TERRACE
- ☐ VALLEY SLOPE
- ☒ TABLELAND
- ☐ ROLL. UPLAND
- ☐ CLIFF
- ☐ TALUS
- ☐ CREVICE / CAVE
- ☐ ALVAR
- ☐ ROCKLAND
- ☐ BEACH / BAR
- ☐ SAND DUNE
- ☐ BLUFF

HISTORY
- ☐ NATURAL
- ☒ CULTURAL

COVER
- ☐ OPEN
- ☐ SHRUB
- ☒ TREED

PLANT FORM
- ☐ PLANKTON
- ☐ SUBMERGED
- ☐ FLOATING-LVD.
- ☐ GRAMINOID
- ☐ FORB
- ☐ LICHEN
- ☐ BRYOPHYTE
- ☐ DECIDUOUS
- ☐ CONIFEROUS
- ☒ MIXED

COMMUNITY
- ☐ LAKE
- ☐ POND
- ☐ RIVER
- ☐ STREAM
- ☐ MARSH
- ☐ SWAMP
- ☐ FEN
- ☐ BOG
- ☐ BARREN
- ☐ MEADOW
- ☐ PRAIRIE
- ☒ THICKET
- ☐ SAVANNAH
- ☐ WOODLAND
- ☐ FOREST
- ☐ PLANTATION

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	3-4	3	
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER	5-7	4	

HT CODES: **1**=>25m **2**=10<HT≤25m **3**=2<HT≤10m **4**=1<HT≤2m **5**=0.5<HT≤1m **6**=0.2<HT≤0.5m **7**=HT<0.2m
CVR CODES: **0**=NONE **1**=0%<CVR≤10% **2**=10<CVR≤25% **3**=25<CVR≤60% **4**=CVR>60%

SIZE CLASS ANALYSIS:	A	<10	R	10 – 24	R	25 – 50	~	>50
STANDING SNAGS:	~	<10	~	10 – 24	~	25 – 50	~	>50
DEADFALL/LOGS:	~	<10	~	10 – 24	~	25 – 50	~	>50

ABUNDANCE CODES: **N**=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT

WOODLAND MATURITY:		YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	**#1**	**#2**	**#3**	**#4**		**SOIL PROFILE**
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:		**CODE:**
VEGETATION TYPE: MINERAL CULTURAL THICKET		**CODE:** CUT 1/a
INCLUSION	(PLANTED TREES)	**CODE:**
COMPLEX		**CODE:**

Notes:
- TREES GENERALLY SHORTER THAN MAINTAINED VERSION, HEIGHT ~1-2.5m, COVER ~25%

LAYERS: **1**=CANOPY>10m **2**=SUB-CANOPY **3**=UNDERSTOREY **4**=GROUND (GRD.) LAYER
ABUNDANCE CODES: **N**=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT **D**=DOMINANT

SPECIES CODE	LAYER				COLL.
	1	2	3	4	
PINSTRO	O				
THUOCCI	O			O	
JUGNIGR	O				
BETPAPY	R				
QUEMACR	O			O	
CARCORD	R			R	
HACKBERRY				R-O	
ACENIGR	R				
PICGLAU				O	
ACESASA	R			R	
QUE RUBR	R			R	

SPECIES CODE	LAYER				COLL.
	1	2	3	4	
POAPRAT				A	
ELY REPE				O	
TAROFFI				O	
DACGLOM				O	
HYPPERF				O	
DAUCARO				O	
PLALANC				A	
TRI PRAT				O	
PHLPRAT				O	
CER FONT				O	
AGR STOL				O	
LOT CORN				R	
CIRVULG				R	
ARCLAPP				R	
ECHIN. PURP.				R	PIC ~20
ERI ANNU				O	
CON ARVE				R	
RUMCRIS				R	
AGR GIGA				R	
ERI PHIL				R	
MULLEIN				R	
MED LUPU				R-O	
JACOB. VULG				R	
CARD. NUTA				R	
FRAVIRG				R	
SOL ALTI				O	
SYM PILO				R	
PIC HIER				R	
SYM LATE				R-O	
SYM NOVA				R	
SYM LANC				O	
ERI CANA				R	
SYM UROP				R	

ELC **COMMUNITY DESCRIPTION & CLASSIFICATION**	**PROJECT NAME:** 8133		**POLYGON:** 2	
	SURVEYOR(S): JTL		**DATE:** JULY 31 - 19	**PHOTO:**
	START:	**END:**	**UTM:** SEPT 11-19	

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MIN. ☐ ACIDIC BEDRK. ☐ BASIC BEDRK. ☐ CARB. BEDRK.	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLL. UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE / CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH / BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING-LVD. ☒ GRAMINOID ☒ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☒ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**		
☐ OPEN WATER ☐ SHALLOW WATER ☒ SURFICIAL DEP. ☐ BEDROCK			☒ OPEN ☐ SHRUB ☐ TREED		

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	3	1	
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER	4-7	4	

HT CODES: **1=**>25m **2=**10<HT≤25m **3=**2<HT≤10m **4=**1<HT≤2m **5=**0.5<HT≤1m **6=**0.2<HT≤0.5m **7=**HT<0.2m

CVR CODES: **0=**NONE **1=**0%<CVR≤10% **2=**10<CVR≤25% **3=**25<CVR≤60% **4=**CVR>60%

SIZE CLASS ANALYSIS:	R	<10	R	10 – 24	N	25 – 50	N	>50
STANDING SNAGS:	N	<10	N	10 – 24	N	25 – 50	N	>50
DEADFALL/LOGS:	N	<10	N	10 – 24	N	25 – 50	N	>50

ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT

WOODLAND MATURITY:		YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	#1	#2	#3	#4		SOIL PROFILE
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:	MINERAL CULTURAL MEADOW	**CODE:** CUM1
VEGETATION TYPE:		**CODE:**
INCLUSION		**CODE:**
COMPLEX		**CODE:**

Notes:

- FORMER FILL / TOPSOIL MOUND

LAYERS: **1=**CANOPY>10m **2=**SUB-CANOPY **3=**UNDERSTOREY **4=**GROUND (GRD.) LAYER

ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT **D=**DOMINANT

SPECIES CODE	LAYER				COLL.
	1	2	3	4	
ACENEGU	R			R	
JUG NIGR	R			R	
SAL ALBA	R				
MOR ALBA	R				
LON MORR					
RHA CATH	R				
RHU TYPH	R				

SPECIES CODE	LAYER				COLL.
	1	2	3	4	
DIP FULL				O	
DAC GLOM				O	
LOT CORN				O	
LIN VULG				R	
POA PRAT				A	
CON ARVE				R	
POT RECT				O	
CAR NUTA				O	
SOL ALTI				O-A	
BERT. INCAN				R	
CIRARVE				O	
MELI ALBV				O	
MELI ALTI				R	
CIC INTY				R-O	
ARC LAPP				O-A	
PLA LANC				O-A	
PICRIS HIER				R	
TUS FARF				R	
SYM NOVA				O	
SYM PILO				R-O	
SYM ERIC				R	
SYM LANC				R-O	

ELC **COMMUNITY DESCRIPTION & CLASSIFICATION**	**PROJECT NAME:** 8133		**POLYGON:** 3	
	SURVEYOR(S): JTL	**DATE:** JULY 31-19		**PHOTO:**
	START:	**END:**	~~**UTM:**~~ SEPT 11-19	

POLYGON DESCRIPTION

SYSTEM
☐ TERRESTRIAL
☐ WETLAND
☐ AQUATIC

SITE
☐ OPEN WATER
☐ SHALLOW WATER
☐ SURFICIAL DEP.
☐ BEDROCK

SUBSTRATE
☐ ORGANIC
☐ MINERAL SOIL
☐ PARENT MIN.
☐ ACIDIC BEDRK.
☐ BASIC BEDRK.
☐ CARB. BEDRK.

TOPOGRAPHIC FEATURE
☐ LACUSTRINE
☐ RIVERINE
☐ BOTTOMLAND
☐ TERRACE
☐ VALLEY SLOPE
☐ TABLELAND
☐ ROLL. UPLAND
☐ CLIFF
☐ TALUS
☐ CREVICE / CAVE
☐ ALVAR
☐ ROCKLAND
☐ BEACH / BAR
☐ SAND DUNE
☐ BLUFF

HISTORY
☐ NATURAL
☐ CULTURAL

COVER
☐ OPEN
☐ SHRUB
☐ TREED

PLANT FORM
☐ PLANKTON
☐ SUBMERGED
☐ FLOATING-LVD.
☐ GRAMINOID
☐ FORB
☐ LICHEN
☐ BRYOPHYTE
☐ DECIDUOUS
☐ CONIFEROUS
☐ MIXED

COMMUNITY
☐ LAKE
☐ POND
☐ RIVER
☐ STREAM
☐ MARSH
☐ SWAMP
☐ FEN
☐ BOG
☐ BARREN
☐ MEADOW
☐ PRAIRIE
☐ THICKET
☐ SAVANNAH
☐ WOODLAND
☐ FOREST
☐ PLANTATION

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY			
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER			

HT CODES: 1=>25m 2=10<HT≤25m 3=2<HT≤10m 4=1<HT≤2m 5=0.5<HT≤1m 6=0.2<HT≤0.5m 7=HT<0.2m
CVR CODES: 0=NONE 1=0%<CVR≤10% 2=10<CVR≤25% 3=25<CVR≤60% 4=CVR>60%

SIZE CLASS ANALYSIS:		<10		10 – 24		25 – 50		>50
STANDING SNAGS:		<10		10 – 24		25 – 50		>50
DEADFALL/LOGS:		<10		10 – 24		25 – 50		>50

ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT

WOODLAND MATURITY:		YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	#1	#2	#3	#4		SOIL PROFILE
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:		**CODE:** GOLF IRRIGATION
VEGETATION TYPE:		**CODE:** PONDS
INCLUSION		**CODE:**
COMPLEX		**CODE:**

Notes:
- MAINLY CHARA IN LARGER OPEN PORTIONS; ELODEA, POTAMO. & MYRIOPH. MORE ABUNDANT IN CHANNELS
- ALGAE O-A

LAYERS: 1=CANOPY>10m 2=SUB-CANOPY 3=UNDERSTOREY 4=GROUND (GRD.) LAYER
ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT D=DOMINANT

SPECIES CODE	LAYER 1	LAYER 2	LAYER 3	LAYER 4	COLL.

SPECIES CODE	LAYER 1	LAYER 2	LAYER 3	LAYER 4	COLL.
ELOD. CANA				O	PIC
MYR SPIC				O	✓
POT PUSIL.				O	✓
PERS. LAPATH				R	✓
ELE PALU				R	✓
CHARA				O-A	
LEE ORYZ				R	
CAREX LF BEB				R	✓
SCH TABERN.				R	
POT CRIS				R	✓

SEPT 11 →
<25% COVER AQUATIC SPP.

JULY 31 →

ELC **COMMUNITY DESCRIPTION & CLASSIFICATION**	**PROJECT NAME:** 8133		**POLYGON:** 4	
	SURVEYOR(S): JTL	**DATE:** JULY 31-19		**PHOTO:**
	START:	**END:**	**UTM:**	

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☒ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MIN. ☐ ACIDIC BEDRK. ☐ BASIC BEDRK. ☐ CARB. BEDRK.	☐ LACUSTRINE ☒ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLL. UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE / CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH / BAR ☐ SAND DUNE ☐ BLUFF	☒ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING-LVD. ☐ GRAMINOID ☒ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☒ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**		
☐ OPEN WATER ☐ SHALLOW WATER ☒ SURFICIAL DEP. ☐ BEDROCK			☒ OPEN ☐ SHRUB ☐ TREED		

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	1	
2	SUB-CANOPY		—	
3	UNDERSTOREY	—		
4	GRD. LAYER	3-7	4	

HT CODES: **1=**>25m **2=**10<HT≤25m **3=**2<HT≤10m **4=**1<HT≤2m **5=**0.5<HT≤1m **6=**0.2<HT≤0.5m **7=**HT<0.2m

CVR CODES: **0=**NONE **1=**0%<CVR≤10% **2=**10<CVR≤25% **3=**25<CVR≤60% **4=**CVR>60%

SIZE CLASS ANALYSIS:	—	<10	—	10 – 24	R	25 – 50	—	>50
STANDING SNAGS:	—	<10	R	10 – 24	—	25 – 50	—	>50
DEADFALL/LOGS:	—	<10	—	10 – 24	—	25 – 50	—	>50

ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT

WOODLAND MATURITY:		YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	#1	#2	#3	#4		SOIL PROFILE
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:		**CODE:**
VEGETATION TYPE: CATTAIL MINERAL SHALLOW MARSH		**CODE:** MAS2-1
INCLUSION		**CODE:**
COMPLEX		**CODE:**

Notes:

- GENERALLY SURFACE H2O ABSENT, THOUGH PRESENT ALONG POND TRANSITION (JULY & SEPT)

LAYERS: **1=**CANOPY>10m **2=**SUB-CANOPY **3=**UNDERSTOREY **4=**GROUND (GRD.) LAYER

ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT **D=**DOMINANT

SPECIES CODE	LAYER				COLL.	SPECIES CODE	LAYER				COLL.
	1	2	3	4			1	2	3	4	
POP DELT	R					TYP ANGU				D	
						VER HAST				R	
						EUT MACU				R	
						EUP PERF				R	
						SYM LANC				R-O	
						PHA ARUN				O	
						IMP CAPE				R-O	
						BID CERN				R	
						ONO SENS				R	
VIB OPUL				R							
VIT RIPA				R-O							

ELC

COMMUNITY DESCRIPTION & CLASSIFICATION

PROJECT NAME: 8133		**POLYGON:** 5	
SURVEYOR(S): JTL	**DATE:** JULY 31-19	**PHOTO:**	
START:	**END:**	**UTM:** SEPT 11-19	

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL	☐ ORGANIC	☐ LACUSTRINE	☐ NATURAL	☐ PLANKTON	☐ LAKE
		☐ RIVERINE		☐ SUBMERGED	☐ POND
☐ WETLAND	☒ MINERAL SOIL	☐ BOTTOMLAND	☒ CULTURAL	☐ FLOATING-LVD.	☐ RIVER
		☐ TERRACE		☐ GRAMINOID	☐ STREAM
☐ AQUATIC	☐ PARENT MIN.	☐ VALLEY SLOPE		☐ FORB	☐ MARSH
		☒ TABLELAND		☐ LICHEN	☐ SWAMP
	☐ ACIDIC BEDRK.	☐ ROLL. UPLAND		☐ BRYOPHYTE	☐ FEN
		☐ CLIFF		☒ DECIDUOUS	☐ BOG
	☐ BASIC BEDRK.	☐ TALUS		☐ CONIFEROUS	☐ BARREN
SITE		☐ CREVICE / CAVE	**COVER**	☐ MIXED	☐ MEADOW
☐ OPEN WATER	☐ CARB. BEDRK.	☐ ALVAR	☐ OPEN		☐ PRAIRIE
☐ SHALLOW WATER		☐ ROCKLAND	☐ SHRUB		☐ THICKET
		☐ BEACH / BAR	☒ TREED		☐ SAVANNAH
☒ SURFICIAL DEP.		☐ SAND DUNE			☒ WOODLAND
☐ BEDROCK		☐ BLUFF			☐ FOREST
					☐ PLANTATION

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	3	
2	SUB-CANOPY	3	3	
3	UNDERSTOREY	4-5	3	
4	GRD. LAYER	6-7	4	

HT CODES: **1**=>25m **2**=10<HT≤25m **3**=2<HT≤10m **4**=1<HT≤2m **5**=0.5<HT≤1m **6**=0.2<HT≤0.5m **7**=HT<0.2m

CVR CODES: **0**=NONE **1**=0%<CVR≤10% **2**=10<CVR≤25% **3**=25<CVR≤60% **4**=CVR>60%

SIZE CLASS ANALYSIS:	A	<10	A	10 – 24	O	25 – 50	R	>50
STANDING SNAGS:	R	<10	R	10 – 24	N	25 – 50	N	>50
DEADFALL/LOGS:	O	<10	R	10 – 24	N	25 – 50	N	>50

ABUNDANCE CODES: **N**=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT

WOODLAND MATURITY:	☒	YOUNG	☒	MID-AGE	☐	MATURE	☐	OLD GROWTH

SOIL ASSESSMENT:	#1	#2	#3	#4	SOIL PROFILE
TEXTURE:					
DEPTH TO MOTTLES (g):					
DEPTH TO GLEY (G):					
DEPTH OF ORGANICS:					
DEPTH TO BEDROCK:					
MOISTURE REGIME:					

COMMUNITY CLASSIFICATION:

ECOSITE:		**CODE:**	
VEGETATION TYPE:	CULTURAL WOODLAND	**CODE:**	CUW1a
INCLUSION	(LOCUST)	**CODE:**	
COMPLEX		**CODE:**	

Notes:

- OVERALL, MIDAGE W/ YOUNG PORTIONS AS WELL AS REMNANT MATURE TREES
- FOLLOWS BERM; MOISTURE AT TOE SLOPE (IMPATIENS)

LAYERS: **1**=CANOPY>10m **2**=SUB-CANOPY **3**=UNDERSTOREY **4**=GROUND (GRD.) LAYER

ABUNDANCE CODES: **N**=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT **D**=DOMINANT

SPECIES CODE	LAYER 1	2	3	4	COLL.
ROB PSEU	A	O-A	O		
ACESASA	O	O	O		
PRUSERO	R	O	O		
FRAPENN	R	R	O		
ACEPLAT		R	R		
ACENEGU		O	O		
PIC ABIE	O				
POP TREM	R				
RIBCYNO			R		
RHUTYPH		R	R		
RIBRUBR			O		
ROSMULT			R-O		
RUBOCCI			O-A		
PARVITA				O-A	
VITRIPA				O	
CORALTE			R		
PRUVIRG			O		
PARQUIN				R	
RHACATH		R	O		

SPECIES CODE	LAYER 1	2	3	4	COLL.
GERROBE				O-A	
CIR CANA				O	
ARI TRIP				R	
GEU CANA				R	
ALL PETIO				O-A	
ECH LOBA				R-O	
PHAARUN				R-O	
GEUALEP				O	
SOLALTI				O	
IMPPALL				R	
HYD VIRG				R-O	
PODPELT				R	
IMP CAPE				R-O	
RUM OBTUS				R	
SOLCANA				R	
SYM LANC				R-O	

ELC **COMMUNITY DESCRIPTION & CLASSIFICATION**	**PROJECT NAME:** 8133		**POLYGON:** 6
	SURVEYOR(S): JTL	**DATE:** JULY 31-19	**PHOTO:**
	START:	**END:**	**UTM:**

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL	☐ ORGANIC	☐ LACUSTRINE	☐ NATURAL	☐ PLANKTON	☐ LAKE
		☐ RIVERINE		☐ SUBMERGED	☐ POND
☐ WETLAND	☒ MINERAL SOIL	☐ BOTTOMLAND	☒ CULTURAL	☐ FLOATING-LVD.	☐ RIVER
		☐ TERRACE		☐ GRAMINOID	☐ STREAM
☐ AQUATIC	☐ PARENT MIN.	☐ VALLEY SLOPE		☐ FORB	☐ MARSH
		☒ TABLELAND		☐ LICHEN	☐ SWAMP
	☐ ACIDIC BEDRK.	☐ ROLL. UPLAND		☐ BRYOPHYTE	☐ FEN
		☐ CLIFF		☒ DECIDUOUS	☐ BOG
	☐ BASIC BEDRK.	☐ TALUS		☐ CONIFEROUS	☐ BARREN
SITE		☐ CREVICE / CAVE	**COVER**	☐ MIXED	☐ MEADOW
☐ OPEN WATER	☐ CARB. BEDRK.	☐ ALVAR	☐ OPEN		☐ PRAIRIE
☐ SHALLOW WATER		☐ ROCKLAND	☒ SHRUB		☒ THICKET
		☐ BEACH / BAR	☐ TREED		☐ SAVANNAH
☒ SURFICIAL DEP.		☐ SAND DUNE			☐ WOODLAND
☐ BEDROCK		☐ BLUFF			☐ FOREST
					☐ PLANTATION

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2-3	4	
2	SUB-CANOPY	—	—	
3	UNDERSTOREY	4-5	4	
4	GRD. LAYER	6.7	4	

HT CODES: **1=**>25m **2=**10<HT≤25m **3=**2<HT≤10m **4=**1<HT≤2m **5=**0.5<HT≤1m **6=**0.2<HT≤0.5m **7=**HT<0.2m

CVR CODES: **0=**NONE **1=**0%<CVR≤10% **2=**10<CVR≤25% **3=**25<CVR≤60% **4=**CVR>60%

SIZE CLASS ANALYSIS:	O	<10	R	10 – 24	R	25 – 50	R	>50
STANDING SNAGS:	R	<10	R	10 – 24	N	25 – 50	N	>50
DEADFALL/LOGS:	O	<10	O	10 – 24	N	25 – 50	N	>50

ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT

WOODLAND MATURITY:		YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	#1	#2	#3	#4		**SOIL PROFILE**
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:	**CODE:**
VEGETATION TYPE: SUMAC CULTURAL THICKET	**CODE:** CUT 1-1

INCLUSION		**CODE:**
COMPLEX		**CODE:**

Notes:

LAYERS: **1=**CANOPY>10m **2=**SUB-CANOPY **3=**UNDERSTOREY **4=**GROUND (GRD.) LAYER

ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT **D=**DOMINANT

SPECIES CODE	LAYER 1	LAYER 2	LAYER 3	LAYER 4	COLL.
FRAAMER	R		O		
JUG CINE	R				
PRUSERO			O		
CRAT. MAC	R				
CORALTE	O		O		
VIT RIPA			O		
RUBIDAE			O		
RHACATH	O		O		
RUB OCCI			O		
ROSMULT			A		
RHUTYPH	A				

SPECIES CODE	LAYER 1	LAYER 2	LAYER 3	LAYER 4	COLL.
GERROBE				O-A	
DACGLOM				R	
GEU ALEP				O	
SOL ALTI				O	
ALL PETI				A	
SAN CANA				O	

ELC **COMMUNITY DESCRIPTION & CLASSIFICATION**	**PROJECT NAME:** 8133		**POLYGON:** 7	
	SURVEYOR(S): JTL		**DATE:** JULY 31 - 19	**PHOTO:**
	START:	**END:**	**UTM:** SEPT 11 - 19	

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MIN. ☐ ACIDIC BEDRK. ☐ BASIC BEDRK. ☐ CARB. BEDRK.	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLL. UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE / CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH / BAR ☐ SAND DUNE ☐ BLUFF	☒ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING-LVD. ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☒ FOREST ☐ PLANTATION
SITE			**COVER**		
☐ OPEN WATER ☐ SHALLOW WATER ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☒ TREED		

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	1-2	4	
2	SUB-CANOPY	3	3	
3	UNDERSTOREY	4-5	4	
4	GRD. LAYER	6-7	4	

HT CODES: 1=>25m 2=10<HT≤25m 3=2<HT≤10m 4=1<HT≤2m 5=0.5<HT≤1m 6=0.2<HT≤0.5m 7=HT<0.2m

CVR CODES: 0=NONE 1=0%<CVR≤10% 2=10<CVR≤25% 3=25<CVR≤60% 4=CVR>60%

SIZE CLASS ANALYSIS:	A	<10	O	10 – 24	O	25 – 50	O	>50
STANDING SNAGS:	R	<10	O	10 – 24	R	25 – 50	R	>50
DEADFALL/LOGS:	R	<10	O	10 – 24	R	25 – 50	R	>50

ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT

WOODLAND MATURITY:		YOUNG		MID-AGE	X	MATURE		OLD GROWTH

SOIL ASSESSMENT:	#1	#2	#3	#4		SOIL PROFILE
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:		**CODE:**	
VEGETATION TYPE: D-F SUGAR MAPLE - HICKORY DECID. FOREST		**CODE:**	FOD 5-5
INCLUSION		**CODE:**	
COMPLEX		**CODE:**	

Notes:

- AREAS W/ EXPOSED BEDROCK

LAYERS: 1=CANOPY>10m **2**=SUB-CANOPY **3**=UNDERSTOREY **4**=GROUND (GRD.) LAYER

ABUNDANCE CODES: N=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT **D**=DOMINANT

SPECIES CODE	LAYER				COLL.
	1	2	3	4	
ACESASA	A	O	O	O	
QUERUBR	R	—	—		
FRAPENN	—	—	R		
OSTVIRG	—	O	O		
ULMAMER	—	R	—		
TILAMER	R	R	R		
BEJALLE	R-O	R	R-O		
PINSTRO	R	—	—		
FRAAMER	O	R	O		
CAR CORD	O	R	O		
BETPAPY	R	R	—		
FAGGRAN	R	R	R		
SAM RACE			R		
CORALTE			O		
RUB IDST			R		
TOX RADI			R		
RIB CYNO			R		
TOX RYDB				A	
PRUVIRG			O		

SPECIES CODE	LAYER				COLL.
	1	2	3	4	
CIR CANA				O	
CAR ROSE				R	
ACT PACH				O	
AQU CANA				R	
MAI CAN INT				O	
MAI CAN CAN				R	
SOL FLEX				O	
SOL CAES				O	
ARI TRIP				R	
SANCANA				R	
RANABOR				R	
GERROBE				O	
EUO OBOV				R	
ALL PETI				O	
CAR PENS				R-O	
SYMLATE				R-O	
DACGLOM				R	
XMAS FERN				R	
LADY FERN				R	
CAULOPHYLLUM				R	

ELC

COMMUNITY DESCRIPTION & CLASSIFICATION

PROJECT NAME: 8133		**POLYGON:** 8a	
SURVEYOR(S): JTL		**DATE:** JULY 31-19	**PHOTO:**
START:	**END:**	**UTM:** SEPT 11-19	

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☒ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MIN. ☐ ACIDIC BEDRK. ☐ BASIC BEDRK. ☐ CARB. BEDRK.	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLL. UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE / CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH / BAR ☐ SAND DUNE ☐ BLUFF	☒ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING-LVD. ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☒ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**		
☐ OPEN WATER ☐ SHALLOW WATER ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☒ TREED		

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	1-2	4	
2	SUB-CANOPY	3	3	
3	UNDERSTOREY	4-5	4	
4	GRD. LAYER	6-7	4	

HT CODES: **1**=>25m **2**=10<HT≤25m **3**=2<HT≤10m **4**=1<HT≤2m **5**=0.5<HT≤1m **6**=0.2<HT≤0.5m **7**=HT<0.2m

CVR CODES: **0**=NONE **1**=0%<CVR≤10% **2**=10<CVR≤25% **3**=25<CVR≤60% **4**=CVR>60%

SIZE CLASS ANALYSIS:	O	<10	O	10 – 24	O	25 – 50	R-O	>50
STANDING SNAGS:	R	<10	O	10 – 24	R	25 – 50	N	>50
DEADFALL/LOGS:	O	<10	O	10 – 24	R	25 – 50	N	>50

ABUNDANCE CODES: **N**=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT

WOODLAND MATURITY:		YOUNG		MID-AGE	☒	MATURE		OLD GROWTH

SOIL ASSESSMENT:	#1	#2	#3	#4	SOIL PROFILE
TEXTURE:					
DEPTH TO MOTTLES (g):					
DEPTH TO GLEY (G):					
DEPTH OF ORGANICS:					
DEPTH TO BEDROCK:					
MOISTURE REGIME:					

COMMUNITY CLASSIFICATION:

ECOSITE:		**CODE:**	
VEGETATION TYPE: SILVER MAPLE MINERAL DECID. SWAMP		**CODE:**	SWD 3-2 a
INCLUSION		**CODE:**	
COMPLEX		**CODE:**	

LAYERS: **1**=CANOPY>10m **2**=SUB-CANOPY **3**=UNDERSTOREY **4**=GROUND (GRD.) LAYER

ABUNDANCE CODES: **N**=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT **D**=DOMINANT

SPECIES CODE	LAYER 1	LAYER 2	LAYER 3	LAYER 4	COLL.
ACESASA	O	O	R	O	
FRAPENN	O	O	O	O	
CARCORD	R-O	R	R		
ACESACH	OA	R	—	—	
TILAMER	R	O	R		
FAGGRAN	R	O	R-O		
PRUSERO	—	R	R-O		
PINSTRO	R	—	—		
CARCARO			R		
BETALLE		R			
SAL X SEPT	R				
SAM CANA			R		
RIB LUNO			R		
COR ALTE			R		
PRUVIRG			R-O		
SAM RACE			O		
LIND BENZ			D-A		

SPECIES CODE	LAYER 1	LAYER 2	LAYER 3	LAYER 4	COLL.
OST FERN				A-D	
ARI TRIP				O-A	
EPI HELL				R	
CIR CANA				O	
GER ROBE				O	
PAR VITA				O	
ECH LOBA				O	
MOONSEED				O	
CLEVIRG				R	
PAR QUIN			R		
LYS CILI				R	
THA DIOC				R-O	
SCU LATE				R	
BID FRON				R	
EUP PERF				R	
GLY STRI				R	
SOL DULC				R	
LYC UNIF				R	
3-SEED MERC				R	

Notes:

- BEE HIVE UP IN TREE CAVITY - SEE RUNNING LIST FOR DISTINCTION BETWEEN A+B.
- NO SURFACE H2O (JULY / SEPT, A+B) - H2O PRESENT IN 'B' IN SPRING BUT NOT IN 'A'
- COMPLEX MICRO-TOPOGRAPHY LIKELY SUPPORTS UPLAND SPP (THOUGH THEY ALSO OCCUR IN LOWER AREAS

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	PROJECT NAME: 8133		POLYGON: 9	
	SURVEYOR(S): JTL		DATE: JULY 31-19	PHOTO:
	START:	END:	~~UTM~~: SEPT 11-19	

POLYGON DESCRIPTION

SYSTEM
- ☒ TERRESTRIAL
- ☐ WETLAND
- ☐ AQUATIC

SITE
- ☐ OPEN WATER
- ☐ SHALLOW WATER
- ☒ SURFICIAL DEP.
- ☐ BEDROCK

SUBSTRATE
- ☐ ORGANIC
- ☒ MINERAL SOIL
- ☐ PARENT MIN.
- ☐ ACIDIC BEDRK.
- ☐ BASIC BEDRK.
- ☐ CARB. BEDRK.

TOPOGRAPHIC FEATURE
- ☐ LACUSTRINE
- ☐ RIVERINE
- ☐ BOTTOMLAND
- ☐ TERRACE
- ☐ VALLEY SLOPE
- ☒ TABLELAND
- ☐ ROLL. UPLAND
- ☐ CLIFF
- ☐ TALUS
- ☐ CREVICE / CAVE
- ☐ ALVAR
- ☐ ROCKLAND
- ☐ BEACH / BAR
- ☐ SAND DUNE
- ☐ BLUFF

HISTORY
- ☒ NATURAL
- ☐ CULTURAL

COVER
- ☐ OPEN
- ☐ SHRUB
- ☒ TREED

PLANT FORM
- ☐ PLANKTON
- ☐ SUBMERGED
- ☐ FLOATING-LVD.
- ☐ GRAMINOID
- ☐ FORB
- ☐ LICHEN
- ☐ BRYOPHYTE
- ☒ DECIDUOUS
- ☐ CONIFEROUS
- ☐ MIXED

COMMUNITY
- ☐ LAKE
- ☐ POND
- ☐ RIVER
- ☐ STREAM
- ☐ MARSH
- ☐ SWAMP
- ☐ FEN
- ☐ BOG
- ☐ BARREN
- ☐ MEADOW
- ☐ PRAIRIE
- ☐ THICKET
- ☐ SAVANNAH
- ☐ WOODLAND
- ☒ FOREST
- ☐ PLANTATION

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	3	
2	SUB-CANOPY	3	4	
3	UNDERSTOREY	4	4	
4	GRD. LAYER	5-7	4	

HT CODES: **1=**>25m **2=**10<HT≤25m **3=**2<HT≤10m **4=**1<HT≤2m **5=**0.5<HT≤1m **6=**0.2<HT≤0.5m **7=**HT<0.2m

CVR CODES: **0=**NONE **1=**0%<CVR≤10% **2=**10<CVR≤25% **3=**25<CVR≤60% **4=**CVR>60%

SIZE CLASS ANALYSIS:	O	<10	A	10 – 24	O	25 – 50	N	>50
STANDING SNAGS:	R	<10	O	10 – 24	R	25 – 50	N	>50
DEADFALL/LOGS:	O	<10	O	10 – 24	N	25 – 50	N	>50

ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT

WOODLAND MATURITY:	☐	YOUNG	☒	MID-AGE	☐	MATURE	☐	OLD GROWTH

SOIL ASSESSMENT:	#1	#2	#3	#4		SOIL PROFILE
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:		CODE:	
VEGETATION TYPE: ASH LOWLAND DECID. FOREST		CODE:	FOD 7-2
INCLUSION		CODE:	
COMPLEX		CODE:	

Notes:

- NO SURFACE H_2O
- MOST CANOPY ASH DEAD/DYING
- INCLUDES SMALL POCKETS MORE CLOSELY RESEMBLING SWD 3-2 BUT FOD 7 OVERALL

LAYERS: **1=**CANOPY>10m **2=**SUB-CANOPY **3=**UNDERSTOREY **4=**GROUND (GRD.) LAYER
ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT **D=**DOMINANT

SPECIES CODE	LAYER 1	LAYER 2	LAYER 3	LAYER 4	COLL.
FRAPENN	A	O	O		
ULMAMER	—	O	O		
CARCARO		R	R		
QUEMACR	R		R		
TILAMER		R	O		
ACESACH	O	O	R		
PRUSERO		R			
BETPAPY		R			
POPTREM			R		
ACESASA	—	R			
RUBIDST			R-O		
CORALTE		R-O			
CORSERI			R		
PARVITA				O	
PRUVIRG			R		
RUBOCCI			R		
ROSMULT			OA		
RHACATH		O	O		
VIBOPUL				R	
LINBENZ			OA		
TOXRADI			A		

SPECIES CODE	LAYER 1	LAYER 2	LAYER 3	LAYER 4	COLL.
CAR CF TENE				R	✓
ARITRIP				O	
CARGRAC				O	
GLYSTRI				R-O	
SYMLATE				O	
CIRCANA				O	
SYMLATE				R	
SOLALTI				R-O	
SYMLANC				R	
POLPUBE				R	

ELC **COMMUNITY DESCRIPTION & CLASSIFICATION**	**PROJECT NAME:** 8133		**POLYGON:** 15
	SURVEYOR(S): JTL	**DATE:** SEPT 11-19	**PHOTO:**
	START:	**END:**	**UTM:**

POLYGON DESCRIPTION

SYSTEM
- ☒ TERRESTRIAL
- ☐ WETLAND
- ☐ AQUATIC

SITE
- ☐ OPEN WATER
- ☐ SHALLOW WATER
- ☒ SURFICIAL DEP.
- ☐ BEDROCK

SUBSTRATE
- ☐ ORGANIC
- ☒ MINERAL SOIL
- ☐ PARENT MIN.
- ☐ ACIDIC BEDRK.
- ☐ BASIC BEDRK.
- ☐ CARB. BEDRK.

TOPOGRAPHIC FEATURE
- ☐ LACUSTRINE
- ☐ RIVERINE
- ☐ BOTTOMLAND
- ☐ TERRACE
- ☐ VALLEY SLOPE
- ☒ TABLELAND
- ☐ ROLL. UPLAND
- ☐ CLIFF
- ☐ TALUS
- ☐ CREVICE / CAVE
- ☐ ALVAR
- ☐ ROCKLAND
- ☐ BEACH / BAR
- ☐ SAND DUNE
- ☐ BLUFF

HISTORY
- ☐ NATURAL
- ☒ CULTURAL

COVER
- ☒ OPEN
- ☐ SHRUB
- ☐ TREED

PLANT FORM
- ☐ PLANKTON
- ☐ SUBMERGED
- ☐ FLOATING-LVD.
- ☒ GRAMINOID
- ☒ FORB
- ☐ LICHEN
- ☐ BRYOPHYTE
- ☐ DECIDUOUS
- ☐ CONIFEROUS
- ☐ MIXED

COMMUNITY
- ☐ LAKE
- ☐ POND
- ☐ RIVER
- ☐ STREAM
- ☐ MARSH
- ☐ SWAMP
- ☐ FEN
- ☐ BOG
- ☐ BARREN
- ☒ MEADOW
- ☐ PRAIRIE
- ☐ THICKET
- ☐ SAVANNAH
- ☐ WOODLAND
- ☐ FOREST
- ☐ PLANTATION

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2-3	1	
2	SUB-CANOPY	—	—	
3	UNDERSTOREY	—	—	
4	GRD. LAYER	4-7	4	

HT CODES: **1=**>25m **2=**10<HT≤25m **3=**2<HT≤10m **4=**1<HT≤2m **5=**0.5<HT≤1m **6=**0.2<HT≤0.5m **7=**HT<0.2m

CVR CODES: **0=**NONE **1=**0%<CVR≤10% **2=**10<CVR≤25% **3=**25<CVR≤60% **4=**CVR>60%

SIZE CLASS ANALYSIS:	R	<10	R-O	10 – 24	N	25 – 50	N	>50
STANDING SNAGS:	R	<10	N	10 – 24	N	25 – 50	N	>50
DEADFALL/LOGS:	N	<10	N	10 – 24	N	25 – 50	N	>50

ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT

WOODLAND MATURITY:		YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	**#1**	**#2**	**#3**	**#4**		**SOIL PROFILE**
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE: MINERAL CULTURAL MEADOW		**CODE:** CUM1
VEGETATION TYPE:		**CODE:**
INCLUSION		**CODE:**
COMPLEX		**CODE:**

Notes:

~60% GRAMINOID, 40% FORB

- 4 MONARCHS

LAYERS: **1=**CANOPY>10m **2=**SUB-CANOPY **3=**UNDERSTOREY **4=**GROUND (GRD.) LAYER

ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT **D=**DOMINANT

SPECIES CODE	LAYER				COLL.
	1	2	3	4	
FRAPENN	R				
JUGNIGR	R			R	
ACCNEGU	O				
ROB PSEU	R				
LON XBEL	R				

SPECIES CODE	LAYER				COLL.
	1	2	3	4	
DAU CARO				O	
SOL ALTI				O	
POA PRAT				A	
PHA ARUN				O	
SYM LANC				O	
CIR ARVE				O	
SYM NOVA				O	
ASC SYRI				O	
EUT GRAM				O	
MEN CANA				R	
LOT CORN				O	
BRO INER				O	
RUM CRIS				R	
ELY REPE				R	
SYM ERIC				R-O	

ELC **COMMUNITY DESCRIPTION & CLASSIFICATION**				
PROJECT NAME: 8133			**POLYGON:** 16	
SURVEYOR(S): JTL		**DATE:** JULY 31-19	**PHOTO:**	
START:	**END:**	~~**UTM:**~~ SEPT 11-19		

POLYGON DESCRIPTION

SYSTEM
- ☒ TERRESTRIAL
- ☐ WETLAND
- ☐ AQUATIC

SITE
- ☐ OPEN WATER
- ☐ SHALLOW WATER
- ☒ SURFICIAL DEP.
- ☐ BEDROCK

SUBSTRATE
- ☐ ORGANIC
- ☒ MINERAL SOIL
- ☐ PARENT MIN.
- ☐ ACIDIC BEDRK.
- ☐ BASIC BEDRK.
- ☐ CARB. BEDRK.

TOPOGRAPHIC FEATURE
- ☐ LACUSTRINE
- ☐ RIVERINE
- ☐ BOTTOMLAND
- ☐ TERRACE
- ☐ VALLEY SLOPE
- ☒ TABLELAND
- ☐ ROLL. UPLAND
- ☐ CLIFF
- ☐ TALUS
- ☐ CREVICE / CAVE
- ☐ ALVAR
- ☐ ROCKLAND
- ☐ BEACH / BAR
- ☐ SAND DUNE
- ☐ BLUFF

HISTORY
- ☒ NATURAL
- ☐ CULTURAL

COVER
- ☐ OPEN
- ☐ SHRUB
- ☒ TREED

PLANT FORM
- ☐ PLANKTON
- ☐ SUBMERGED
- ☐ FLOATING-LVD.
- ☐ GRAMINOID
- ☐ FORB
- ☐ LICHEN
- ☐ BRYOPHYTE
- ☒ DECIDUOUS
- ☐ CONIFEROUS
- ☐ MIXED

COMMUNITY
- ☐ LAKE
- ☐ POND
- ☐ RIVER
- ☐ STREAM
- ☐ MARSH
- ☐ SWAMP
- ☐ FEN
- ☐ BOG
- ☐ BARREN
- ☐ MEADOW
- ☐ PRAIRIE
- ☐ THICKET
- ☐ SAVANNAH
- ☐ WOODLAND
- ☒ FOREST
- ☐ PLANTATION

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	1-2	4	
2	SUB-CANOPY	3	4	
3	UNDERSTOREY	4-5	3	
4	GRD. LAYER	6-7	3	

HT CODES: **1=**>25m **2=**10<HT≤25m **3=**2<HT≤10m **4=**1<HT≤2m **5=**0.5<HT≤1m **6=**0.2<HT≤0.5m **7=**HT<0.2m

CVR CODES: **0=**NONE **1=**0%<CVR≤10% **2=**10<CVR≤25% **3=**25<CVR≤60% **4=**CVR>60%

SIZE CLASS ANALYSIS:	A	<10	O	10 – 24	O	25 – 50	O	>50
STANDING SNAGS:	R	<10	R	10 – 24	R	25 – 50	R	>50
DEADFALL/LOGS:	R	<10	R	10 – 24	R	25 – 50	N	>50

ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT

WOODLAND MATURITY:		YOUNG		MID-AGE	X	MATURE		OLD GROWTH

SOIL ASSESSMENT:	#1	#2	#3	#4		**SOIL PROFILE**
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:		**CODE:**
VEGETATION TYPE: D-F SUGAR MAPLE-BEECH DECID. FOREST		**CODE:** FOD 5-2
INCLUSION		**CODE:**
COMPLEX		**CODE:**

Notes:

- OLD GARBAGE MOUNDS PRESENT
- AMTO ①

LAYERS: **1=**CANOPY>10m **2=**SUB-CANOPY **3=**UNDERSTOREY **4=**GROUND (GRD.) LAYER

ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT **D=**DOMINANT

SPECIES CODE	LAYER				COLL.
	1	2	3	4	
ACESASA	O	O	R		
BETALLE	R	–	–		
OSTVIRG		O	O		
FAGGRAN	A	O	A		
PINSTRO	R	–	–		
PRUSERO	–	R	R		
FRAAMER	O	R	R		
BETPAPY	R	R	–		
PRU VIRG			R		
CRA MACR		R			
COR ALTE			R		
TOX RYDB				R	

SPECIES CODE	LAYER				COLL.
	1	2	3	4	
CIR CANA				R	
SOL FLEX				O	
SYM LATE				R	
SOL ALTI				R	
CAR RADI				R	
EPIF VIRG				O	
POL PUBE				O	
XMAS FERN				R	
GER ROBE				O	
SOL CAES				O	
MAI CANA (CANA)				O	
ARI TRIP				D	

ELC **COMMUNITY DESCRIPTION & CLASSIFICATION**	**PROJECT NAME:** 8133		**POLYGON:** 18
	SURVEYOR(S): JTL	**DATE:** SEPT 11-19	**PHOTO:**
	START: / **END:**	**UTM:**	

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MIN. ☐ ACIDIC BEDRK. ☐ BASIC BEDRK. ☐ CARB. BEDRK.	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLL. UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE / CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH / BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING-LVD. ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☒ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☒ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**		
☐ OPEN WATER ☐ SHALLOW WATER ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☒ TREED		

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	3	3	
2	SUB-CANOPY	—	—	
3	UNDERSTOREY	—	—	
4	GRD. LAYER	4-7	4	

HT CODES: 1=>25m 2=10<HT≤25m 3=2<HT≤10m 4=1<HT≤2m 5=0.5<HT≤1m 6=0.2<HT≤0.5m 7=HT<0.2m

CVR CODES: 0=NONE 1=0%<CVR≤10% 2=10<CVR≤25% 3=25<CVR≤60% 4=CVR>60%

SIZE CLASS ANALYSIS:	A	<10	R	10 – 24	N	25 – 50	N	>50
STANDING SNAGS:	R	<10	N	10 – 24	N	25 – 50	N	>50
DEADFALL/LOGS:	N	<10	N	10 – 24	N	25 – 50	N	>50

ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT

WOODLAND MATURITY: ☒ YOUNG ☐ MID-AGE ☐ MATURE ☐ OLD GROWTH

SOIL ASSESSMENT:	#1	#2	#3	#4	SOIL PROFILE
TEXTURE:					
DEPTH TO MOTTLES (g):					
DEPTH TO GLEY (G):					
DEPTH OF ORGANICS:					
DEPTH TO BEDROCK:					
MOISTURE REGIME:					

COMMUNITY CLASSIFICATION:

ECOSITE: MINERAL CULTURAL WOODLAND		**CODE:** CUW1 c
VEGETATION TYPE:		**CODE:**
INCLUSION		**CODE:**
COMPLEX		**CODE:**

Notes:

- SIMILAR TO PLANTED CUT'S BUT MORE MATURE (HERB LAYER NO DIFFERENT)
- TREE COVER ~50-60%, AVG HEIGHT ~ 3-5m

LAYERS: 1=CANOPY>10m 2=SUB-CANOPY 3=UNDERSTOREY 4=GROUND (GRD.) LAYER

ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT D=DOMINANT

SPECIES CODE	LAYER 1	2	3	4	COLL.	SPECIES CODE	LAYER 1	2	3	4	COLL.
ACESACH	O			R		DAUCARO				O	
PINSTRO	O			O		TRI PRAT				O	
BETPAPY	O			R		SOL ALTI				O	
LAR LARI	O			R		PLA LANC				A	
QUE RUBR	O			O		TAR OFFI				O	
THUOCCI	O			O		TRI REPE				O	
ACESASA	R			O		DACGLOM				O	
MOR ALBA	—			R		ERI CANA				O	
HACKBERRY	R			O		POA PRAT				A	
QUEMACR	R			O		LOB INFL				R	
PICGLAU	R			R		SYMNOVA				R	
JUG NIGR	R			R		BRO INER				R	
						CAR NUTA				R	
						SYM PILO				R-O	
						PHL PRAT				R	
						CIR VULG				R	
						HYP PERF				O	
						SYM LANC				R-O	
RHUTYPH	O										

8133

RUNNING LIST

JULY 31-19

MEADOW TREED THICKET & ADJ. HR & DIST

OENBIEN
VITRIPA
GALAPAR
ROBPSEU
OXASTRI
ECHINOCYSTIS LOBATA
NEPCATA
LACBIEN
ERI CANA
CHEN. ALBU
THL ARVE
PINEAPPLE WEED
SISYMBRIUM ALTI.
PAN DICH
LOL PERE
FRAAMER
PRUSERO
MOTHERWORT
ARTMINU
PODPELT
ASCSYRI
SOL DULC
BROTECT
CROWN VETCH
ROS MULT+
SALX SEPT
ACESACH
JUN VIR G (POLY 1b)
RHAFRANG
SPAR EURY
ACHMILL
BUCANA

DEPTFORD PINK
JUNCUS cf ARTICULATUS (✓)
PRUVULG
PLA MAJO
CAR VULP
JUN DUDL
MEN CANA
SCIRPUS (✓) (PEDICELLATUS)
CAR HYST
BLUE SPRUCE
ERI STRIG
GLEHEDE
PRUAVIU
SEPT SALDISC
DIG. SANG
DIG ISCH
TSU CANA
FES RUBR
APOC. CANN
ARCMINU
CRAT. PRUIN
CIR VULG
POT NORV
PER-HYDROPIPER
SET PUMI

POLYGON 1b

- SIMILAR TO 1a EXCEPT TREES NATURALLY REGEN. AND TALLER (~2-6M)
- MAINLY FRAPENN
- HERBS:

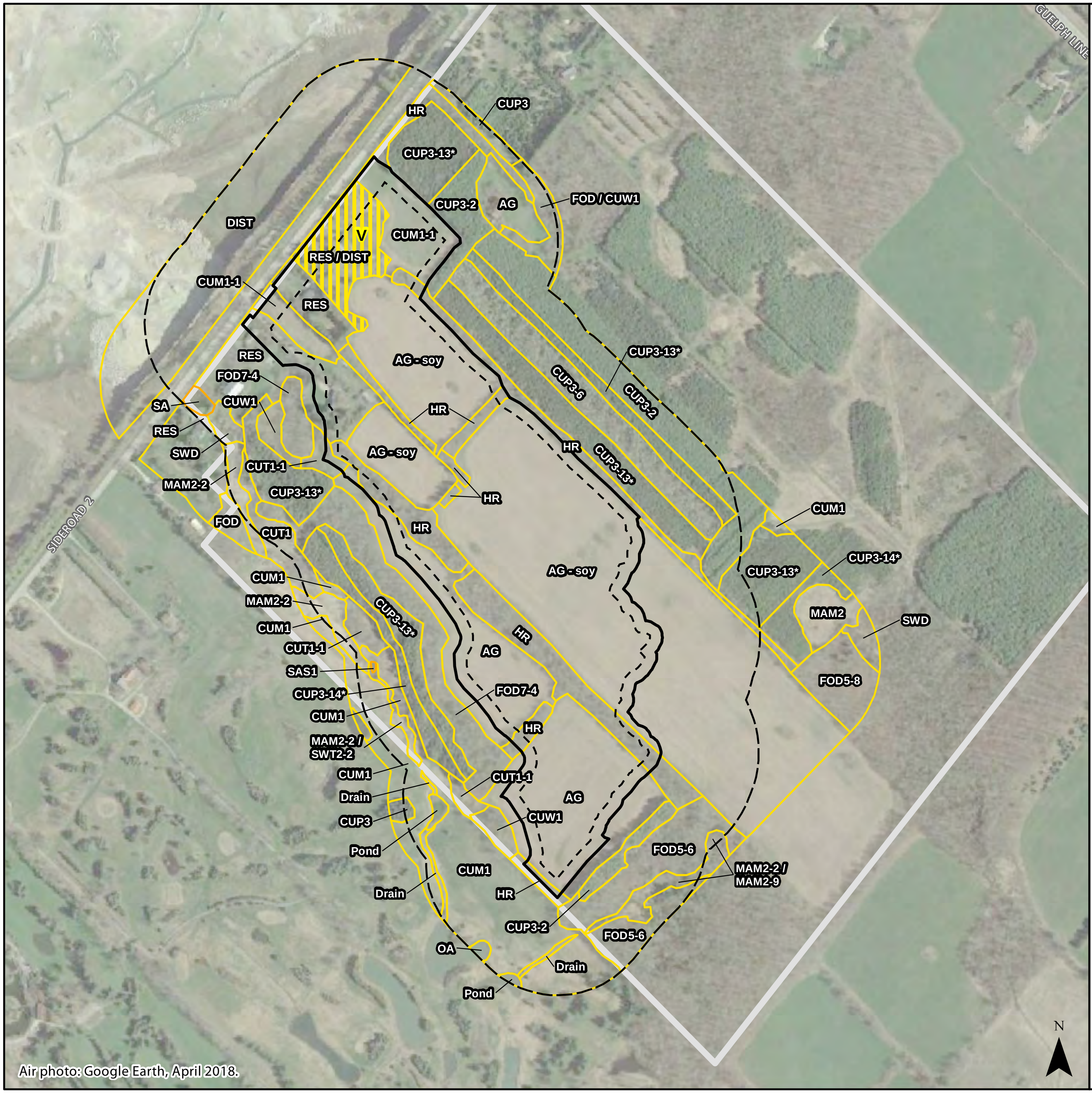
EUTGRAM	O
CARBLAN	O
FES ARUN	A
SYM NOVA	O
SOL NEMO	R
CROWN VETCH	O
LOT CORN	R
PLA LANC	O
POA COMP	O
PAN SPIC	O
O	SYMUROP
O	SOL ALTI
R	SYMLANC
O	SYMLATE
R	SOL RUGO
O	SYM PUNI

POLY 8b

- ACESACH DOMINATED
- NO UPLAND SPECIES
- UNDERSTORY OPEN (NO LINBENZ FEW CANOPY SAPLINGS
- GRN COVER +/- 40% IMPCAPE & 60% EXPOSED
- SURFACE H2O IN SPRING BUT DRY IN JULY & SEPT.

SEPT 11 CONT'D

ECH CRUSG.
PAN DICH
ERAG. PECTIN.
PAN CAPI
CAR BEBB
OEN PARV



ELC Legend

CUM1	Mineral Cultural Meadow
CUM1-1	Dry Moist Old Field Meadow
CUP3	Coniferous Plantation
CUP3-13*	White Spruce Coniferous Plantation
CUP3-14*	White Cedar Coniferous Plantation
CUP3-2	White Pine Coniferous Plantation
CUP3-6	European Larch Coniferous Plantation
CUT1	Mineral Cultural Thicket
CUT1-1	Sumac Cultural Thicket
CUW1	Mineral Cultural Woodland
FOD	Deciduous Forest
FOD5-6	Dry- Fresh Sugar Maple-Basswood Deciduous Forest
FOD7-4	Fresh- Moist Black Walnut Lowland Deciduous Forest
MAM2-2	Reed-canary Grass Mineral Meadow Marsh
MAM2-9	Jewelweed Mineral Meadow Marsh
SA	Shallow Aquatic
SAS1	Submerged Shallow Aquatic
SWD	Deciduous Swamp
SWT2-2	Willow Mineral Thicket Swamp
AG	Agricultural
DIST	Disturbed
Drain	Drain
HR	Hedgerow
OA	Open Aquatic
RES	Residential

*Denotes a type not listed in Southern Ontario ELC Guide.

Licensed Boundary
Limit of Extraction
120 m Adjacent Lands
Subject Lands
Ecological Land Classification
ELC Inclusion
Stem Density

Figure 3b
Ecological Land Classification
SOUTH EXTENSION

0 100 M
1:7,000

SAVANTA
A GEI Company

Path: S:\8133 - Burlington Quarry\figures\report_figures\2020 02 28 figure updates\Figure 3b Ecological Land Classification S-EXT.mxd REVISED: March 3, 2020

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	PROJECT NAME:		POLYGON: 10
	SURVEYOR(S): JTR	DATE: JULY 31-19	PHOTO:
	START:	END:	UTM:

POLYGON DESCRIPTION

SYSTEM
- ☐ TERRESTRIAL
- ☐ WETLAND
- ☐ AQUATIC

SITE
- ☐ OPEN WATER
- ☐ SHALLOW WATER
- ☐ SURFICIAL DEP.
- ☐ BEDROCK

SUBSTRATE
- ☐ ORGANIC
- ☐ MINERAL SOIL
- ☐ PARENT MIN.
- ☐ ACIDIC BEDRK.
- ☐ BASIC BEDRK.
- ☐ CARB. BEDRK.

TOPOGRAPHIC FEATURE
- ☐ LACUSTRINE
- ☐ RIVERINE
- ☐ BOTTOMLAND
- ☐ TERRACE
- ☐ VALLEY SLOPE
- ☐ TABLELAND
- ☐ ROLL. UPLAND
- ☐ CLIFF
- ☐ TALUS
- ☐ CREVICE / CAVE
- ☐ ALVAR
- ☐ ROCKLAND
- ☐ BEACH / BAR
- ☐ SAND DUNE
- ☐ BLUFF

HISTORY
- ☐ NATURAL
- ☐ CULTURAL

COVER
- ☐ OPEN
- ☐ SHRUB
- ☐ TREED

PLANT FORM
- ☐ PLANKTON
- ☐ SUBMERGED
- ☐ FLOATING-LVD.
- ☐ GRAMINOID
- ☐ FORB
- ☐ LICHEN
- ☐ BRYOPHYTE
- ☐ DECIDUOUS
- ☐ CONIFEROUS
- ☐ MIXED

COMMUNITY
- ☐ LAKE
- ☐ POND
- ☐ RIVER
- ☐ STREAM
- ☐ MARSH
- ☐ SWAMP
- ☐ FEN
- ☐ BOG
- ☐ BARREN
- ☐ MEADOW
- ☐ PRAIRIE
- ☐ THICKET
- ☐ SAVANNAH
- ☐ WOODLAND
- ☐ FOREST
- ☐ PLANTATION

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	3	
2	SUB-CANOPY	—		
3	UNDERSTOREY	3-4	4	
4	GRD. LAYER	5-7	4	

HT CODES: 1=>25m 2=10<HT≤25m 3=2<HT≤10m 4=1<HT≤2m 5=0.5<HT≤1m 6=0.2<HT≤0.5m 7=HT<0.2m

CVR CODES: 0=NONE 1=0%<CVR≤10% 2=10<CVR≤25% 3=25<CVR≤60% 4=CVR>60%

SIZE CLASS ANALYSIS:	O	<10	O	10 – 24	R	25 – 50	N	>50
STANDING SNAGS:	R	<10	R	10 – 24	R	25 – 50	N	>50
DEADFALL/LOGS:	O	<10	O	10 – 24	N	25 – 50	N	>50

ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT

WOODLAND MATURITY:		YOUNG	X	MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	#1	#2	#3	#4		SOIL PROFILE
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:		CODE:
VEGETATION TYPE:		CODE: CUW1
INCLUSION		CODE:
COMPLEX		CODE:

Notes:

- MANY LIMESTONE BOULDERS
- CANOPY COVER ~50%

LAYERS: 1=CANOPY>10m 2=SUB-CANOPY 3=UNDERSTOREY 4=GROUND (GRD.) LAYER

ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT D=DOMINANT

SPECIES CODE	LAYER 1	LAYER 2	LAYER 3	LAYER 4	COLL.
ACESASA	O				
TILAMER	O				
PRUSSERO	R				
FRAPENN	R				
JUG NIGR	R				
CRAT-MAC		R			
RUB.OCCI			R		
SAM RACE				R	
VIT RIPA				R	
TOX RYDB				O	
RHACATH		O	R		

SPECIES CODE	LAYER 1	LAYER 2	LAYER 3	LAYER 4	COLL.
CIR CANA				O	
ALL PETI				A	
GER ROBE				A	
GEU CANA				R	
MOTHERWORT				R	

(INCLUSION TO GOLF COURSE ★ WOODLAND "H")

ELC **COMMUNITY DESCRIPTION & CLASSIFICATION**	**PROJECT NAME:** 8133		**POLYGON:** 11
	SURVEYOR(S): JTL	**DATE:** JULY 31-19	**PHOTO:**
	START:	**END:**	**UTM:**

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MIN. ☐ ACIDIC BEDRK. ☐ BASIC BEDRK. ☐ CARB. BEDRK.	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLL. UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE / CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH / BAR ☐ SAND DUNE ☐ BLUFF	☒ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING-LVD. ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☒ FOREST ☐ PLANTATION
SITE			**COVER**		
☐ OPEN WATER ☐ SHALLOW WATER ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☒ TREED		

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	1-2	4	
2	SUB-CANOPY	3	3	
3	UNDERSTOREY	4-5	4	
4	GRD. LAYER	6-4	4	

HT CODES: **1=**>25m **2=**10<HT≤25m **3=**2<HT≤10m **4=**1<HT≤2m **5=**0.5<HT≤1m **6=**0.2<HT≤0.5m **7=**HT<0.2m

CVR CODES: **0=**NONE **1=**0%<CVR≤10% **2=**10<CVR≤25% **3=**25<CVR≤60% **4=**CVR>60%

SIZE CLASS ANALYSIS:	A	<10	O	10 – 24	O	25 – 50	R	>50
STANDING SNAGS:	R	<10	R	10 – 24	R	25 – 50	N	>50
DEADFALL/LOGS:	O	<10	O	10 – 24	R	25 – 50	N	>50

ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT

WOODLAND MATURITY:		YOUNG	X	MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	**#1**	**#2**	**#3**	**#4**		**SOIL PROFILE**
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:		**CODE:**
VEGETATION TYPE:	D-F SUGAR MAPLE DECIDUOUS FOREST	**CODE:** FOD5-1
INCLUSION		**CODE:**
COMPLEX		**CODE:**

Notes:

- LIMESTONE OUTCROP
- A FEW LARGE DBH MAPLES, BUT OVERALL MIDAGE

LAYERS: **1=**CANOPY>10m **2=**SUB-CANOPY **3=**UNDERSTOREY **4=**GROUND (GRD.) LAYER
ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT **D=**DOMINANT

SPECIES CODE	LAYER 1	LAYER 2	LAYER 3	LAYER 4	COLL.
ACESASA	D	A	O	O	
OST VIRG	—	O	O		
PRUSERO	—	R	O		
FRAPENN	R	R	O		
TILAMER	—	R	R		
CARCORD	—	R	R		
RIB CYNO			R		
PAR VITA				O	
PRU VIRG			O		
TOX RYDB				O	
RUB OCCI			R		
VITRIPA				O	

SPECIES CODE	LAYER 1	LAYER 2	LAYER 3	LAYER 4	COLL.
CIR CANA				O	
GER ROBE				O-A	
ALL PETI				O	
THA DIOC				O	
EUDUBOV				O	
ARI TRIP				O	
SOL FLEX				O	
F.S. SEAL				R	
ACT PACH				O	
CAR ROSE				R	
ACTAEA (HYBR)				R	
POD PELT				R	
IMPCAPE				R	

ELC **COMMUNITY DESCRIPTION & CLASSIFICATION**				
PROJECT NAME: 8133			**POLYGON:** 12	
SURVEYOR(S): JTL		**DATE:** JULY 31-19	**PHOTO:**	
START:	**END:**	~~**UTM:**~~ SEPT 11-19		

POLYGON DESCRIPTION

SYSTEM
- ☒ TERRESTRIAL
- ☐ WETLAND
- ☐ AQUATIC

SITE
- ☐ OPEN WATER
- ☐ SHALLOW WATER
- ☒ SURFICIAL DEP.
- ☐ BEDROCK

SUBSTRATE
- ☐ ORGANIC
- ☒ MINERAL SOIL
- ☐ PARENT MIN.
- ☐ ACIDIC BEDRK.
- ☐ BASIC BEDRK.
- ☐ CARB. BEDRK.

TOPOGRAPHIC FEATURE
- ☐ LACUSTRINE
- ☐ RIVERINE
- ☐ BOTTOMLAND
- ☐ TERRACE
- ☐ VALLEY SLOPE
- ☒ TABLELAND
- ☐ ROLL. UPLAND
- ☐ CLIFF
- ☐ TALUS
- ☐ CREVICE / CAVE
- ☐ ALVAR
- ☐ ROCKLAND
- ☐ BEACH / BAR
- ☐ SAND DUNE
- ☐ BLUFF

HISTORY
- ☒ NATURAL
- ☐ CULTURAL

COVER
- ☐ OPEN
- ☐ SHRUB
- ☒ TREED

PLANT FORM
- ☐ PLANKTON
- ☐ SUBMERGED
- ☐ FLOATING-LVD.
- ☐ GRAMINOID
- ☐ FORB
- ☐ LICHEN
- ☐ BRYOPHYTE
- ☒ DECIDUOUS
- ☐ CONIFEROUS
- ☐ MIXED

COMMUNITY
- ☐ LAKE
- ☐ POND
- ☐ RIVER
- ☐ STREAM
- ☐ MARSH
- ☐ SWAMP
- ☐ FEN
- ☐ BOG
- ☐ BARREN
- ☐ MEADOW
- ☐ PRAIRIE
- ☐ THICKET
- ☐ SAVANNAH
- ☐ WOODLAND
- ☒ FOREST
- ☐ PLANTATION

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	3	
2	SUB-CANOPY	3	4	
3	UNDERSTOREY	4	4	
4	GRD. LAYER	5-7	4	

HT CODES: **1=**>25m **2=**10<HT≤25m **3=**2<HT≤10m **4=**1<HT≤2m **5=**0.5<HT≤1m **6=**0.2<HT≤0.5m **7=**HT<0.2m

CVR CODES: **0=**NONE **1=**0%<CVR≤10% **2=**10<CVR≤25% **3=**25<CVR≤60% **4=**CVR>60%

SIZE CLASS ANALYSIS:	A	<10	O	10 – 24	R	25 – 50	N	>50
STANDING SNAGS:	R	<10	O	10 – 24	R	25 – 50	N	>50
DEADFALL/LOGS:	O	<10	O	10 – 24	N	25 – 50	N	>50

ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT

WOODLAND MATURITY:		YOUNG	☒	MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	#1	#2	#3	#4		SOIL PROFILE
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:		**CODE:**	
VEGETATION TYPE: ASH LOWLAND DECID. FOREST		**CODE:**	FOD7-2
INCLUSION		**CODE:**	
COMPLEX		**CODE:**	

Notes:

— NO H2O IN JULY / SEPT

— MODERATE ASH DIEBACK IN CANOPY

LAYERS: **1=**CANOPY>10m **2=**SUB-CANOPY **3=**UNDERSTOREY **4=**GROUND (GRD.) LAYER

ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT **D=**DOMINANT

SPECIES CODE	LAYER				COLL.
	1	2	3	4	
FRAPENN	O	A	OA		
POPTREM	R				
SAL X FRA	R				
JUG NIGR	R-O				
ACESASA	R	R	R		
FRAAMER	R	R			
POPBALS	R				
	—				
RUB PUBE				R	
RHA FRANG			R		
SAL PURP			R		
SAL ERIO			R		
PRUVIRG			O		
LIG VULG				R	
RIB CYNO			R		
PARQUIN			O		
TOX RYDB				O	
LONXBEL			O		
COR ALTE		R	O		
RUBOCCI			OA		
COR RACE			R		
VIT RIPA				O	
PAR VITA				A	
RHACATH		R	O		

SPECIES CODE	LAYER				COLL.
	1	2	3	4	
APOC. ANDR				R	
CIR CANA				O	
POD PELT				R	
GLYSTRI				R	
GEUCANA				O	
SOL ALTI				O	
AGR GRYP				O	
ACT RUBR				R	
CAR GRAC				R-O	
VIO PUBE				R	
OXA STRI				R	
CYN ROSS				R	
CAR CRIST				R	
EUT GRAM				R	
SYM LATE				R	

ELC **COMMUNITY DESCRIPTION & CLASSIFICATION**	**PROJECT NAME:** 8133		**POLYGON:** 13
	SURVEYOR(S): JTL	**DATE:** JULY 31 - 19	**PHOTO:**
	START:	**END:**	**~~UTM~~:** SEPT 11 19

POLYGON DESCRIPTION

SYSTEM
☒ TERRESTRIAL
☐ WETLAND
☐ AQUATIC

SITE
☐ OPEN WATER
☐ SHALLOW WATER
☒ SURFICIAL DEP.
☐ BEDROCK

SUBSTRATE
☐ ORGANIC
☒ MINERAL SOIL
☐ PARENT MIN.
☐ ACIDIC BEDRK.
☐ BASIC BEDRK.
☐ CARB. BEDRK.

TOPOGRAPHIC FEATURE
☐ LACUSTRINE
☐ RIVERINE
☐ BOTTOMLAND
☐ TERRACE
☐ VALLEY SLOPE
☒ TABLELAND
☐ ROLL. UPLAND
☐ CLIFF
☐ TALUS
☐ CREVICE / CAVE
☐ ALVAR
☐ ROCKLAND
☐ BEACH / BAR
☐ SAND DUNE
☐ BLUFF

HISTORY
☒ NATURAL
☐ CULTURAL

COVER
☐ OPEN
☐ SHRUB
☒ TREED

PLANT FORM
☐ PLANKTON
☐ SUBMERGED
☐ FLOATING-LVD.
☐ GRAMINOID
☐ FORB
☐ LICHEN
☐ BRYOPHYTE
☒ DECIDUOUS
☐ CONIFEROUS
☐ MIXED

COMMUNITY
☐ LAKE
☐ POND
☐ RIVER
☐ STREAM
☐ MARSH
☐ SWAMP
☐ FEN
☐ BOG
☐ BARREN
☐ MEADOW
☐ PRAIRIE
☐ THICKET
☐ SAVANNAH
☐ WOODLAND
☒ FOREST
☐ PLANTATION

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	4	
2	SUB-CANOPY	3	3	
3	UNDERSTOREY	4	4	
4	GRD. LAYER	5-7	4	

HT CODES: **1=**>25m **2=**10<HT≤25m **3=**2<HT≤10m **4=**1<HT≤2m **5=**0.5<HT≤1m **6=**0.2<HT≤0.5m **7=**HT<0.2m
CVR CODES: **0=**NONE **1=**0%<CVR≤10% **2=**10<CVR≤25% **3=**25<CVR≤60% **4=**CVR>60%

SIZE CLASS ANALYSIS:	O	<10	O	10 – 24	O	25 – 50	N	>50
STANDING SNAGS:	R	<10	R	10 – 24	R	25 – 50	N	>50
DEADFALL/LOGS:	O	<10	O	10 – 24	N	25 – 50	N	>50

ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT

WOODLAND MATURITY:		YOUNG	X	MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	**#1**	**#2**	**#3**	**#4**		**SOIL PROFILE**
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:		**CODE:**	
VEGETATION TYPE:	BLACK WALNUT LOWLAND DECID. FOREST	**CODE:**	FOD 7-4
INCLUSION		**CODE:**	
COMPLEX		**CODE:**	

Notes:

LAYERS: **1=**CANOPY>10m **2=**SUB-CANOPY **3=**UNDERSTOREY **4=**GROUND (GRD.) LAYER
ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT **D=**DOMINANT

SPECIES CODE	LAYER 1	LAYER 2	LAYER 3	LAYER 4	COLL.
JUG NIGR	A	O	R-O		
FRAPEN	R-O	O	O		
ACESASA	R	R	R		
CORRACE			R		
PAR VITA				O	
VITRIPA				A	
CORALTE		R	R		
LON XBEL			O		
RUB OCCI			A		

SPECIES CODE	LAYER 1	LAYER 2	LAYER 3	LAYER 4	COLL.
ECH LOBA				O	
IMPCAPS				O	
ANE VIRG				R	
ARITRIP				O	
DAC GLOM				R	
SOL ALTI				O	
ACT RUBR				R	
AGR GRYP				R-O	
CYS. TENUIS				R	✓
HESMATR				O	
ALL PET				O	
SMIL. TAMN				R	
LIT OFFI				R	
HAC VIRG				O	
LAL BIEN				R	
SYM UROP				O	

ELC **COMMUNITY DESCRIPTION & CLASSIFICATION**	**PROJECT NAME:** 8133		**POLYGON:** 14	
	SURVEYOR(S): JTL		**DATE:** JULY 31-19	**PHOTO:**
	START:	**END:**	~~**UTM:**~~ SEPT 11-19	

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☒ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MIN. ☐ ACIDIC BEDRK. ☐ BASIC BEDRK. ☐ CARB. BEDRK.	☐ LACUSTRINE ☐ RIVERINE ☒ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLL. UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE / CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH / BAR ☐ SAND DUNE ☐ BLUFF	☒ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING-LVD. ☒ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☒ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**		
☐ OPEN WATER ☐ SHALLOW WATER ☒ SURFICIAL DEP. ☐ BEDROCK			☒ OPEN ☐ SHRUB ☐ TREED		

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY			
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER	4-7	4	

HT CODES: 1=>25m 2=10<HT≤25m 3=2<HT≤10m 4=1<HT≤2m 5=0.5<HT≤1m 6=0.2<HT≤0.5m 7=HT<0.2m

CVR CODES: 0=NONE 1=0%<CVR≤10% 2=10<CVR≤25% 3=25<CVR≤60% 4=CVR>60%

SIZE CLASS ANALYSIS:		<10		10 – 24		25 – 50		>50
STANDING SNAGS:		<10		10 – 24		25 – 50		>50
DEADFALL/LOGS:		<10		10 – 24		25 – 50		>50

ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT

WOODLAND MATURITY:		YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	#1	#2	#3	#4		SOIL PROFILE
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:		**CODE:**
VEGETATION TYPE: REED CANARY GRASS MINERAL MEADOW MARSH		**CODE:** MAM2-2
INCLUSION		**CODE:**
COMPLEX		**CODE:**

Notes:

- H₂O PRESENT IN SPRING, ABSENT IN JULY & SEPT.

LAYERS: 1=CANOPY>10m 2=SUB-CANOPY 3=UNDERSTOREY 4=GROUND (GRD.) LAYER
ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT D=DOMINANT

SPECIES CODE	LAYER				COLL.
	1	2	3	4	
	-				

SPECIES CODE	LAYER				COLL.
	1	2	3	4	
PHAARUN				D	
IMPCAPE				O	
SOL DULC				O	
BID FRON				R	
CAR LUPUL				R	
GAL PALU				R	
SYM LANC				O	
BOE CYLI				R	
EUP PERF				R	
ASC SYRI				R	

ELC **COMMUNITY DESCRIPTION & CLASSIFICATION**	**PROJECT NAME:** 8133			**POLYGON:** 17	
	SURVEYOR(S): JTL		**DATE:** SEPT 11-19		**PHOTO:**
	START:	**END:**	**UTM:**		

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL	☐ ORGANIC	☐ LACUSTRINE	☐ NATURAL	☐ PLANKTON	☐ LAKE
		☐ RIVERINE		☐ SUBMERGED	☐ POND
☐ WETLAND	☒ MINERAL SOIL	☐ BOTTOMLAND	☒ CULTURAL	☐ FLOATING-LVD.	☐ RIVER
		☐ TERRACE		☒ GRAMINOID	☐ STREAM
☐ AQUATIC	☐ PARENT MIN.	☐ VALLEY SLOPE		☒ FORB	☐ MARSH
		☒ TABLELAND		☐ LICHEN	☐ SWAMP
	☐ ACIDIC BEDRK.	☐ ROLL. UPLAND		☐ BRYOPHYTE	☐ FEN
		☐ CLIFF		☐ DECIDUOUS	☐ BOG
	☐ BASIC BEDRK.	☐ TALUS		☐ CONIFEROUS	☐ BARREN
SITE		☐ CREVICE / CAVE	**COVER**	☐ MIXED	☒ MEADOW
☐ OPEN WATER	☐ CARB. BEDRK.	☐ ALVAR	☒ OPEN		☐ PRAIRIE
☐ SHALLOW WATER		☐ ROCKLAND	☐ SHRUB		☐ THICKET
		☐ BEACH / BAR	☐ TREED		☐ SAVANNAH
☒ SURFICIAL DEP.		☐ SAND DUNE			☐ WOODLAND
☐ BEDROCK		☐ BLUFF			☐ FOREST
					☐ PLANTATION

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	4	1	
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER	5-7	4	

HT CODES: **1=**>25m **2=**10<HT≤25m **3=**2<HT≤10m **4=**1<HT≤2m **5=**0.5<HT≤1m **6=**0.2<HT≤0.5m **7=**HT<0.2m

CVR CODES: **0=**NONE **1=**0%<CVR≤10% **2=**10<CVR≤25% **3=**25<CVR≤60% **4=**CVR>60%

SIZE CLASS ANALYSIS:	O	<10	~	10 – 24	~	25 – 50	~	>50
STANDING SNAGS:	R	<10	~	10 – 24	~	25 – 50	~	>50
DEADFALL/LOGS:	~	<10	~	10 – 24	~	25 – 50	~	>50

ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT

WOODLAND MATURITY:		YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	#1	#2	#3	#4		SOIL PROFILE
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:	MINERAL CULTURAL MEADOW	**CODE:** CUM1
VEGETATION TYPE:		**CODE:**
INCLUSION		**CODE:**
COMPLEX		**CODE:**

Notes:

- PLANTED W/ TREES, THOUGH YOUNG & SPARSE (TREE COVER ~5-10%)
- ~65% GRAM., 35% FORB

LAYERS: **1=**CANOPY>10m **2=**SUB-CANOPY **3=**UNDERSTOREY **4=**GROUND (GRD.) LAYER

ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT **D=**DOMINANT

SPECIES CODE	LAYER				COLL.
	1	2	3	4	
JUG NIGR	R			O	
THUOCCI	R-O			O	
PIC GLAU	R			O	
PIN STRO	O			O	
ACESASA	/			R	
FRAPENN	R			R	
HACKBERRY	/			R	
RHU TYPH	R			O	
ELE UMBE	R				

SPECIES CODE	LAYER				COLL.
	1	2	3	4	
LOL ARUN				O	
POA PRAT				A	
DAUCARO				O	
SYM LANC				R	
SYM PILL				O	
SYM NOVA				O	
SOL ALTI				O	
ASCSYRI				R-O	
CIRARVE				R-O	
ELY REPE				R	
CARD. NATANS				R	
SOL NEMO				R	
SYM UROP				R-O	
MEL ALBA				R	
AGRGIGA				R	
DACGLOM				O	
FRAVIRG				R	

ELC COMMUNITY DESCRIPTION & CLASSIFICATION			
PROJECT NAME: 8133		POLYGON: |	
SURVEYOR(S): JTL	DATE: JULY 22-19		PHOTO:
START:	END:	~~UTM:~~ SEPT 13-19	

POLYGON DESCRIPTION

SYSTEM
☐ TERRESTRIAL
☐ WETLAND
☐ AQUATIC

SITE
☐ OPEN WATER
☐ SHALLOW WATER
☐ SURFICIAL DEP.
☐ BEDROCK

SUBSTRATE
☐ ORGANIC
☐ MINERAL SOIL
☐ PARENT MIN.
☐ ACIDIC BEDRK.
☐ BASIC BEDRK.
☐ CARB. BEDRK.

TOPOGRAPHIC FEATURE
☐ LACUSTRINE
☐ RIVERINE
☐ BOTTOMLAND
☐ TERRACE
☐ VALLEY SLOPE
☐ TABLELAND
☐ ROLL. UPLAND
☐ CLIFF
☐ TALUS
☐ CREVICE / CAVE
☐ ALVAR
☐ ROCKLAND
☐ BEACH / BAR
☐ SAND DUNE
☐ BLUFF

HISTORY
☐ NATURAL
☐ CULTURAL

COVER
☐ OPEN
☐ SHRUB
☐ TREED

PLANT FORM
☐ PLANKTON
☐ SUBMERGED
☐ FLOATING-LVD.
☐ GRAMINOID
☐ FORB
☐ LICHEN
☐ BRYOPHYTE
☐ DECIDUOUS
☐ CONIFEROUS
☐ MIXED

COMMUNITY
☐ LAKE
☐ POND
☐ RIVER
☐ STREAM
☐ MARSH
☐ SWAMP
☐ FEN
☐ BOG
☐ BARREN
☐ MEADOW
☐ PRAIRIE
☐ THICKET
☐ SAVANNAH
☐ WOODLAND
☐ FOREST
☐ PLANTATION

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	2	
2	SUB-CANOPY	—	—	
3	UNDERSTOREY	3-4	2	
4	GRD. LAYER	5-7	4	

HT CODES: **1=**>25m **2=**10<HT≤25m **3=**2<HT≤10m **4=**1<HT≤2m **5=**0.5<HT≤1m **6=**0.2<HT≤0.5m **7=**HT<0.2m
CVR CODES: **0=**NONE **1=**0%<CVR≤10% **2=**10<CVR≤25% **3=**25<CVR≤60% **4=**CVR>60%

SIZE CLASS ANALYSIS:	R	<10	O	10 – 24	O	25 – 50	R	>50
STANDING SNAGS:	R	<10	R	10 – 24	R	25 – 50	N	>50
DEADFALL/LOGS:	N	<10	N	10 – 24	N	25 – 50	N	>50

ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT

WOODLAND MATURITY:		YOUNG	X	MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	#1	#2	#3	#4	SOIL PROFILE
TEXTURE:					
DEPTH TO MOTTLES (g):					
DEPTH TO GLEY (G):					
DEPTH OF ORGANICS:					
DEPTH TO BEDROCK:					
MOISTURE REGIME:					

COMMUNITY CLASSIFICATION:

ECOSITE:		CODE:
VEGETATION TYPE:		CODE: DIST/RES
INCLUSION		CODE:
COMPLEX		CODE:

Notes:
- FORMER RES, SINGLE TORN DOWN (FEW SHED STRUCTURE, FOUNDATIONS, DRIVEWAYS REMAIN)
- CANOPY ~ 20% OVERALL

LAYERS: **1=**CANOPY>10m **2=**SUB-CANOPY **3=**UNDERSTOREY **4=**GROUND (GRD.) LAYER
ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT **D=**DOMINANT

SPECIES CODE	LAYER 1	2	3	4	COLL.	SPECIES CODE	LAYER 1	2	3	4	COLL.
ACEPLAT	R			R-O		TAROFFI				O	
MOR ALBA			R			GERROBE				O	
THUOCCI	R					CIRCANA				R	
JUGNIGR	R		R	R		LYSNUMM				R	
BLUE SPRUCE	O					LAPCOMM				R	
PINSYLV	R					SOLDULC				R·O	
POPTREM			R·O	R·O		PLA LANC				O	
PRUSERO	R					GEU URBA				R	
ACENEGU	R		O			SOL ALTI				O-A	
PRU AVIU			R			POA PRAT				A	
ROB PSEUD	R		O			DACGLOM				O	
PIC GLAU	R					FRA VIRG				O	
ABIBALS	R					PHLPRAT				R	
ACESASA	O			R-O		CIRARVE				O	
SAL X FRAG	R					PRUVULG				O	
FRAAMER			R			ERI ANNU				O	
						CON MAJA				R	
						GEU CANA				R	
						CAR SPIC				O	
						CYNROSS				R	
						ALLPETI				R	
						MED LUPU				O	
						ELYVIRG				R·O	
						DEPTFORD P.				R	
						HIER CAESP.				R	
						VIO PUBE				O	
						TRI REPE				O	
						HYPPERF				O	
						TSU FARF				R	
						RUM CRIS				O	
RHUTYPH			R			DIP FULL				R	
PARVITA				R		AGRSTOL				R·O	
SYRVULG			R			LOT CORN				R	
VIT RIPA				O		TRI HYBR				O	
RUB OCCI			O			FEST. ARUN				R	
JUN COMM				R		CIRVULG				R	
VIN MINO				R		CIC INTY				O	
RHACATH			R-O			SON ARVE				R	
SOR AUCU				R		SAN CANA				R	
ROSMULT				R		ORANGE DAYLILY				R	
VIB OPUL				R		MISCAN. SINEN				R	
RUB IDST				O							

SYM UROP -O

SYM PILO -O
SYMNOVA -O

ELC **COMMUNITY DESCRIPTION & CLASSIFICATION**	**PROJECT NAME:** 8133		**POLYGON:** 2
	SURVEYOR(S): JTL	**DATE:** JULY 22-19	**PHOTO:**
	START:	**END:**	**UTM:** SEPT 13-19

POLYGON DESCRIPTION

SYSTEM
☒ TERRESTRIAL
☐ WETLAND
☐ AQUATIC

SITE
☐ OPEN WATER
☐ SHALLOW WATER
☒ SURFICIAL DEP.
☐ BEDROCK

SUBSTRATE
☐ ORGANIC
☒ MINERAL SOIL
☐ PARENT MIN.
☐ ACIDIC BEDRK.
☐ BASIC BEDRK.
☐ CARB. BEDRK.

TOPOGRAPHIC FEATURE
☐ LACUSTRINE
☐ RIVERINE
☐ BOTTOMLAND
☐ TERRACE
☐ VALLEY SLOPE
☒ TABLELAND
☐ ROLL. UPLAND
☐ CLIFF
☐ TALUS
☐ CREVICE / CAVE
☐ ALVAR
☐ ROCKLAND
☐ BEACH / BAR
☐ SAND DUNE
☐ BLUFF

HISTORY
☐ NATURAL
☒ CULTURAL

COVER
☒ OPEN
☐ SHRUB
☐ TREED

PLANT FORM
☐ PLANKTON
☐ SUBMERGED
☐ FLOATING-LVD.
☒ GRAMINOID
☒ FORB
☐ LICHEN
☐ BRYOPHYTE
☐ DECIDUOUS
☐ CONIFEROUS
☐ MIXED

COMMUNITY
☐ LAKE
☐ POND
☐ RIVER
☐ STREAM
☐ MARSH
☐ SWAMP
☐ FEN
☐ BOG
☐ BARREN
☒ MEADOW
☐ PRAIRIE
☐ THICKET
☐ SAVANNAH
☐ WOODLAND
☐ FOREST
☐ PLANTATION

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	3	1	
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER	4-7	4	

HT CODES: **1=**>25m **2=**10<HT≤25m **3=**2<HT≤10m **4=**1<HT≤2m **5=**0.5<HT≤1m **6=**0.2<HT≤0.5m **7=**HT<0.2m
CVR CODES: **0=**NONE **1=**0%<CVR≤10% **2=**10<CVR≤25% **3=**25<CVR≤60% **4=**CVR>60%

SIZE CLASS ANALYSIS:	R	<10	N	10 – 24	N	25 – 50	N	>50
STANDING SNAGS:	N	<10	N	10 – 24	N	25 – 50	N	>50
DEADFALL/LOGS:	N	<10	N	10 – 24	N	25 – 50	N	>50

ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT

WOODLAND MATURITY:		YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	**#1**	**#2**	**#3**	**#4**		**SOIL PROFILE**
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:		**CODE:**
VEGETATION TYPE: OLD FIELD CULTURAL MEADOW		**CODE:** CUM1-1
INCLUSION		**CODE:**
COMPLEX		**CODE:**

Notes:

- GRAMINOIDES DOMINANT IN SOUTH HALF, FORB / GRAM MIX IN NORTH HALF

LAYERS: **1=**CANOPY>10m **2=**SUB-CANOPY **3=**UNDERSTOREY **4=**GROUND (GRD.) LAYER
ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT **D=**DOMINANT

SPECIES CODE	LAYER				COLL.	SPECIES CODE	LAYER				COLL.
	1	2	3	4			1	2	3	4	
ROB PSEUD	R					POA PRAT				A	
ULMPUMI				R		PHL PRAT				O	
JUG NIGR	R					DAC GLOM				A	
						SOL ALTI				R-O	
						SYM LANC				R	
						ASCSYRI				R	
						SYMNOVA				R	
						CIRARVE				R	
						CIRVULG				R-O	
						DAU CARO				R	
						PLA LANC				R	
						HYPPERF				R	
						RUMCRIS				R-O	
						TRAG. PRAT.				R	
						ELY REPE				R	
						CENT. JACE				R	
						VIC CRAC				R	
						BROINER				R-O	
						PHYS HETERO				R	PICS
									↳	~	50
						LIN VULG				O	PLANTS
RHUTYPH	R										

- SOME ENCROACHMENT OF RHUTYPH FROM ADJ. HABITAT

ELC COMMUNITY DESCRIPTION & CLASSIFICATION				
PROJECT NAME: 8137			**POLYGON:** 3	
SURVEYOR(S): JJL		**DATE:** JULY 22-19	**PHOTO:**	
START:	**END:**	**UTM:**		

POLYGON DESCRIPTION

SYSTEM
- ☒ TERRESTRIAL
- ☐ WETLAND
- ☐ AQUATIC

SITE
- ☐ OPEN WATER
- ☐ SHALLOW WATER
- ☒ SURFICIAL DEP.
- ☐ BEDROCK

SUBSTRATE
- ☐ ORGANIC
- ☒ MINERAL SOIL
- ☐ PARENT MIN.
- ☐ ACIDIC BEDRK.
- ☐ BASIC BEDRK.
- ☐ CARB. BEDRK.

TOPOGRAPHIC FEATURE
- ☐ LACUSTRINE
- ☐ RIVERINE
- ☐ BOTTOMLAND
- ☐ TERRACE
- ☐ VALLEY SLOPE
- ☒ TABLELAND
- ☐ ROLL. UPLAND
- ☐ CLIFF
- ☐ TALUS
- ☐ CREVICE / CAVE
- ☐ ALVAR
- ☐ ROCKLAND
- ☐ BEACH / BAR
- ☐ SAND DUNE
- ☐ BLUFF

HISTORY
- ☐ NATURAL
- ☒ CULTURAL

COVER
- ☐ OPEN
- ☐ SHRUB
- ☒ TREED

PLANT FORM
- ☐ PLANKTON
- ☐ SUBMERGED
- ☐ FLOATING-LVD.
- ☐ GRAMINOID
- ☐ FORB
- ☐ LICHEN
- ☐ BRYOPHYTE
- ☐ DECIDUOUS
- ☒ CONIFEROUS
- ☐ MIXED

COMMUNITY
- ☐ LAKE
- ☐ POND
- ☐ RIVER
- ☐ STREAM
- ☐ MARSH
- ☐ SWAMP
- ☐ FEN
- ☐ BOG
- ☐ BARREN
- ☐ MEADOW
- ☐ PRAIRIE
- ☐ THICKET
- ☐ SAVANNAH
- ☐ WOODLAND
- ☐ FOREST
- ☒ PLANTATION

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	4	
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER			

HT CODES: **1=**>25m **2=**10<HT≤25m **3=**2<HT≤10m **4=**1<HT≤2m **5=**0.5<HT≤1m **6=**0.2<HT≤0.5m **7=**HT<0.2m

CVR CODES: **0=**NONE **1=**0%<CVR≤10% **2=**10<CVR≤25% **3=**25<CVR≤60% **4=**CVR>60%

SIZE CLASS ANALYSIS:	N	<10	A	10 – 24	N	25 – 50	N	>50
STANDING SNAGS:	N	<10	R	10 – 24	N	25 – 50	N	>50
DEADFALL/LOGS:	N	<10	R	10 – 24	N	25 – 50	N	>50

ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT

WOODLAND MATURITY:		YOUNG	X	MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	#1	#2	#3	#4		**SOIL PROFILE**
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:		**CODE:**	
VEGETATION TYPE:	WHITE PINE CONIFEROUS PLANTATION	**CODE:**	CUP3-2
INCLUSION		**CODE:**	
COMPLEX		**CODE:**	

Notes:

AVG DBH ~ 15-20cm

HEIGHT ~ 12m

LAYERS: **1=**CANOPY>10m **2=**SUB-CANOPY **3=**UNDERSTOREY **4=**GROUND (GRD.) LAYER

ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT **D=**DOMINANT

SPECIES CODE	LAYER 1	2	3	4	COLL.	SPECIES CODE	LAYER 1	2	3	4	COLL.
PINSTRO	D										
PICGLAU	R										
ACENEGU	R-O										

ELC **COMMUNITY DESCRIPTION & CLASSIFICATION**	**PROJECT NAME:** 8133			**POLYGON:** 5	
	SURVEYOR(S): JR		**DATE:** JULY 22-19		**PHOTO:**
	START:	**END:**	**UTM:**		

POLYGON DESCRIPTION

SYSTEM
- ☒ TERRESTRIAL
- ☐ WETLAND
- ☐ AQUATIC

SITE
- ☐ OPEN WATER
- ☐ SHALLOW WATER
- ☒ SURFICIAL DEP.
- ☐ BEDROCK

SUBSTRATE
- ☐ ORGANIC
- ☒ MINERAL SOIL
- ☐ PARENT MIN.
- ☐ ACIDIC BEDRK.
- ☐ BASIC BEDRK.
- ☐ CARB. BEDRK.

TOPOGRAPHIC FEATURE
- ☐ LACUSTRINE
- ☐ RIVERINE
- ☐ BOTTOMLAND
- ☐ TERRACE
- ☐ VALLEY SLOPE
- ☒ TABLELAND
- ☐ ROLL. UPLAND
- ☐ CLIFF
- ☐ TALUS
- ☐ CREVICE / CAVE
- ☐ ALVAR
- ☐ ROCKLAND
- ☐ BEACH / BAR
- ☐ SAND DUNE
- ☐ BLUFF

HISTORY
- ☐ NATURAL
- ☒ CULTURAL

COVER
- ☐ OPEN
- ☐ SHRUB
- ☒ TREED

PLANT FORM
- ☐ PLANKTON
- ☐ SUBMERGED
- ☐ FLOATING-LVD.
- ☐ GRAMINOID
- ☐ FORB
- ☐ LICHEN
- ☐ BRYOPHYTE
- ☐ DECIDUOUS
- ☒ CONIFEROUS
- ☐ MIXED

COMMUNITY
- ☐ LAKE
- ☐ POND
- ☐ RIVER
- ☐ STREAM
- ☐ MARSH
- ☐ SWAMP
- ☐ FEN
- ☐ BOG
- ☐ BARREN
- ☐ MEADOW
- ☐ PRAIRIE
- ☐ THICKET
- ☐ SAVANNAH
- ☐ WOODLAND
- ☐ FOREST
- ☒ PLANTATION

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2-3	4	
2	SUB-CANOPY			
3	UNDERSTOREY	4	1	
4	GRD. LAYER	5-7	1	

HT CODES: **1=**>25m **2=**10<HT≤25m **3=**2<HT≤10m **4=**1<HT≤2m **5=**0.5<HT≤1m **6=**0.2<HT≤0.5m **7=**HT<0.2m

CVR CODES: **0=**NONE **1=**0%<CVR≤10% **2=**10<CVR≤25% **3=**25<CVR≤60% **4=**CVR>60%

SIZE CLASS ANALYSIS:	O	<10	A	10 – 24	N	25 – 50	N	>50
STANDING SNAGS:	R	<10	R	10 – 24	N	25 – 50	N	>50
DEADFALL/LOGS:	N	<10	N	10 – 24	N	25 – 50	N	>50

ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT

WOODLAND MATURITY:	X	YOUNG	X	MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	#1	#2	#3	#4		**SOIL PROFILE**
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:		**CODE:**
VEGETATION TYPE:	WHITE SPRUCE CONIFEROUS PLANTATION	**CODE:** CUP3-13*
INCLUSION		**CODE:**
COMPLEX		**CODE:**

Notes:
AVG DBH ~ 12 - 15cm
HEIGHT ~ 10M

LAYERS: **1=**CANOPY>10m **2=**SUB-CANOPY **3=**UNDERSTOREY **4=**GROUND (GRD.) LAYER
ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT **D=**DOMINANT

SPECIES CODE	LAYER				COLL.	SPECIES CODE	LAYER				COLL.
	1	2	3	4			1	2	3	4	
PICGLAU	D					GERROBE				R	
FRAPENN			R-O	R							
POPDELT	R										

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	PROJECT NAME: 8133		POLYGON: 6	
	SURVEYOR(S): JTL		DATE: JULY 22-19	PHOTO:
	START:	END:	UTM:	

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL	☐ ORGANIC	☐ LACUSTRINE	☐ NATURAL	☐ PLANKTON	☐ LAKE
		☐ RIVERINE		☐ SUBMERGED	☐ POND
☐ WETLAND	☒ MINERAL SOIL	☐ BOTTOMLAND	☒ CULTURAL	☐ FLOATING-LVD.	☐ RIVER
		☐ TERRACE		☐ GRAMINOID	☐ STREAM
☐ AQUATIC	☐ PARENT MIN.	☐ VALLEY SLOPE		☐ FORB	☐ MARSH
		☒ TABLELAND		☐ LICHEN	☐ SWAMP
	☐ ACIDIC BEDRK.	☐ ROLL. UPLAND		☐ BRYOPHYTE	☐ FEN
		☐ CLIFF		☐ DECIDUOUS	☐ BOG
	☐ BASIC BEDRK.	☐ TALUS		☒ CONIFEROUS	☐ BARREN
SITE		☐ CREVICE / CAVE	**COVER**	☐ MIXED	☐ MEADOW
☐ OPEN WATER	☐ CARB. BEDRK.	☐ ALVAR	☐ OPEN		☐ PRAIRIE
☐ SHALLOW WATER		☐ ROCKLAND	☐ SHRUB		☐ THICKET
		☐ BEACH / BAR	☒ TREED		☐ SAVANNAH
☒ SURFICIAL DEP.		☐ SAND DUNE			☐ WOODLAND
☐ BEDROCK		☐ BLUFF			☐ FOREST
					☒ PLANTATION

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	3·4	
2	SUB-CANOPY	—		
3	UNDERSTOREY	3-4	4	
4	GRD. LAYER	5-7	4	

HT CODES: **1**=>25m **2**=10<HT≤25m **3**=2<HT≤10m **4**=1<HT≤2m **5**=0.5<HT≤1m **6**=0.2<HT≤0.5m **7**=HT<0.2m

CVR CODES: **0**=NONE **1**=0%<CVR≤10% **2**=10<CVR≤25% **3**=25<CVR≤60% **4**=CVR>60%

SIZE CLASS ANALYSIS:	O-A	<10	O-A	10 – 24	N	25 – 50	N	>50
STANDING SNAGS:	R	<10	O	10 – 24	N	25 – 50	N	>50
DEADFALL/LOGS:	O	<10	A	10 – 24	N	25 – 50	N	>50

ABUNDANCE CODES: **N**=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT

WOODLAND MATURITY:		YOUNG	X	MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	#1	#2	#3	#4	SOIL PROFILE
TEXTURE:					
DEPTH TO MOTTLES (g):					
DEPTH TO GLEY (G):					
DEPTH OF ORGANICS:					
DEPTH TO BEDROCK:					
MOISTURE REGIME:					

COMMUNITY CLASSIFICATION:

ECOSITE:		CODE:	
VEGETATION TYPE: EUROPEAN LARCH CONIFEROUS PLANTATION		CODE:	CUP 3-6
INCLUSION		CODE:	
COMPLEX		CODE:	

Notes:

-NUMEROUS FALLEN LARCH CREATING CANOPY OPENINGS

-AVG DBH ~ 8-18CM -CANOPY COVER < 60% IN AREAS

-HEIGHT ~ 15M

LAYERS: 1=CANOPY>10m **2**=SUB-CANOPY **3**=UNDERSTOREY **4**=GROUND (GRD.) LAYER

ABUNDANCE CODES: N=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT **D**=DOMINANT

SPECIES CODE	LAYER 1	LAYER 2	LAYER 3	LAYER 4	COLL.
LAR DECI	A				
ACENEGU	R		O-A		
FRA PENN			O-A		
CORSERI			R-O		
VIT RIPA				O	
LONXBEL			O		
RHACATH			O		
RUBIDSTR			O		
RUB OCCI			O		

SPECIES CODE	LAYER 1	LAYER 2	LAYER 3	LAYER 4	COLL.
SOLALTI				R	
GERROBE				A	
GEU ALEP				A	
WILD CUCUM.				O	
SYM NOVA				R	
CIR CANA				O	
ALL PETI				O	
TAR OFFI				O	
DEPTFORD P.				R	
LAP COMM				O-A	
CIR ARVE				R	
ARCTIUM				R	
ACT PACH				R	
SOL DULL				R-O	
ARI TRIP				R	
DAC GLOM				R	

ELC **COMMUNITY DESCRIPTION & CLASSIFICATION**				
PROJECT NAME: 8133			**POLYGON:** 7	
SURVEYOR(S): JTL		**DATE:** JULY 22-19		**PHOTO:**
START:	**END:**	**UTM:**		

POLYGON DESCRIPTION

SYSTEM
- ☒ TERRESTRIAL
- ☐ WETLAND
- ☐ AQUATIC

SITE
- ☐ OPEN WATER
- ☐ SHALLOW WATER
- ☒ SURFICIAL DEP.
- ☐ BEDROCK

SUBSTRATE
- ☐ ORGANIC
- ☒ MINERAL SOIL
- ☐ PARENT MIN.
- ☐ ACIDIC BEDRK.
- ☐ BASIC BEDRK.
- ☐ CARB. BEDRK.

TOPOGRAPHIC FEATURE
- ☐ LACUSTRINE
- ☐ RIVERINE
- ☐ BOTTOMLAND
- ☐ TERRACE
- ☐ VALLEY SLOPE
- ☒ TABLELAND
- ☐ ROLL. UPLAND
- ☐ CLIFF
- ☐ TALUS
- ☐ CREVICE / CAVE
- ☐ ALVAR
- ☐ ROCKLAND
- ☐ BEACH / BAR
- ☐ SAND DUNE
- ☐ BLUFF

HISTORY
- ☐ NATURAL
- ☒ CULTURAL

COVER
- ☐ OPEN
- ☐ SHRUB
- ☒ TREED

PLANT FORM
- ☐ PLANKTON
- ☐ SUBMERGED
- ☐ FLOATING-LVD.
- ☐ GRAMINOID
- ☐ FORB
- ☐ LICHEN
- ☐ BRYOPHYTE
- ☐ DECIDUOUS
- ☒ CONIFEROUS
- ☐ MIXED

COMMUNITY
- ☐ LAKE
- ☐ POND
- ☐ RIVER
- ☐ STREAM
- ☐ MARSH
- ☐ SWAMP
- ☐ FEN
- ☐ BOG
- ☐ BARREN
- ☐ MEADOW
- ☐ PRAIRIE
- ☐ THICKET
- ☐ SAVANNAH
- ☐ WOODLAND
- ☐ FOREST
- ☒ PLANTATION

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2-3	4	
2	SUB-CANOPY	—	—	
3	UNDERSTOREY	4.5	1	
4	GRD. LAYER	6-7	1	

HT CODES: **1=**>25m **2=**10<HT≤25m **3=**2<HT≤10m **4=**1<HT≤2m **5=**0.5<HT≤1m **6=**0.2<HT≤0.5m **7=**HT<0.2m

CVR CODES: **0=**NONE **1=**0%<CVR≤10% **2=**10<CVR≤25% **3=**25<CVR≤60% **4=**CVR>60%

SIZE CLASS ANALYSIS:	O	<10	A	10 – 24	N	25 – 50	N	>50
STANDING SNAGS:	R	<10	N	10 – 24	N	25 – 50	N	>50
DEADFALL/LOGS:	N	<10	N	10 – 24	N	25 – 50	N	>50

ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT

WOODLAND MATURITY:	X	YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	**#1**	**#2**	**#3**	**#4**		**SOIL PROFILE**
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:		**CODE:**
VEGETATION TYPE: WHITE CEDAR CONIFEROUS PLANTATION		**CODE:** CUPJ-14*
INCLUSION		**CODE:**
COMPLEX		**CODE:**

Notes:

DBH ~10-12CM
HEIGHT ~8M

LAYERS: **1=**CANOPY>10m **2=**SUB-CANOPY **3=**UNDERSTOREY **4=**GROUND (GRD.) LAYER
ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT **D=**DOMINANT

SPECIES CODE	LAYER				COLL.	SPECIES CODE	LAYER				COLL.
	1	2	3	4			1	2	3	4	
THUOCCI	D					TAROFFI				R	
FRAPENN	R		R-O	R-O		HIERACIUM SP.				R	
ULMAMER			R	R							
VITRIPA				R							
CORRACE			R								

ELC COMMUNITY DESCRIPTION & CLASSIFICATION			
PROJECT NAME: 8133		POLYGON: 8	
SURVEYOR(S): JTL		DATE: JULY 22-19	PHOTO:
START:	END:	UTM: SEPT 13 · 19	

POLYGON DESCRIPTION

SYSTEM
- ☐ TERRESTRIAL
- ☒ WETLAND
- ☐ AQUATIC

SITE
- ☐ OPEN WATER
- ☐ SHALLOW WATER
- ☒ SURFICIAL DEP.
- ☐ BEDROCK

SUBSTRATE
- ☐ ORGANIC
- ☒ MINERAL SOIL
- ☐ PARENT MIN.
- ☐ ACIDIC BEDRK.
- ☐ BASIC BEDRK.
- ☐ CARB. BEDRK.

TOPOGRAPHIC FEATURE
- ☐ LACUSTRINE
- ☐ RIVERINE
- ☐ BOTTOMLAND
- ☐ TERRACE
- ☐ VALLEY SLOPE
- ☒ TABLELAND
- ☐ ROLL. UPLAND
- ☐ CLIFF
- ☐ TALUS
- ☐ CREVICE / CAVE
- ☐ ALVAR
- ☐ ROCKLAND
- ☐ BEACH / BAR
- ☐ SAND DUNE
- ☐ BLUFF

HISTORY
- ☒ NATURAL
- ☐ CULTURAL

COVER
- ☒ OPEN
- ☐ SHRUB
- ☐ TREED

PLANT FORM
- ☐ PLANKTON
- ☐ SUBMERGED
- ☐ FLOATING-LVD.
- ☒ GRAMINOID
- ☒ FORB
- ☐ LICHEN
- ☐ BRYOPHYTE
- ☐ DECIDUOUS
- ☐ CONIFEROUS
- ☐ MIXED

COMMUNITY
- ☐ LAKE
- ☐ POND
- ☐ RIVER
- ☐ STREAM
- ☒ MARSH
- ☐ SWAMP
- ☐ FEN
- ☐ BOG
- ☐ BARREN
- ☐ MEADOW
- ☐ PRAIRIE
- ☐ THICKET
- ☐ SAVANNAH
- ☐ WOODLAND
- ☐ FOREST
- ☐ PLANTATION

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	4	1	
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER	5-7	4	

HT CODES: **1=**>25m **2=**10<HT≤25m **3=**2<HT≤10m **4=**1<HT≤2m **5=**0.5<HT≤1m **6=**0.2<HT≤0.5m **7=**HT<0.2m

CVR CODES: **0=**NONE **1=**0%<CVR≤10% **2=**10<CVR≤25% **3=**25<CVR≤60% **4=**CVR>60%

SIZE CLASS ANALYSIS:	R-O	<10	N	10 – 24	N	25 – 50	N	>50
STANDING SNAGS:	N	<10	N	10 – 24	N	25 – 50	N	>50
DEADFALL/LOGS:	N	<10	N	10 – 24	N	25 – 50	N	>50

ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT

WOODLAND MATURITY:		YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	#1	#2	#3	#4		SOIL PROFILE
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:		CODE:
VEGETATION TYPE: REED CANARY GRASS MINERAL MEADOW MARSH		CODE: MAM2-2
INCLUSION		CODE:
COMPLEX		CODE:

Notes:

- NO SURFACE H2O
- AREAS WHERE SYMLANC IS MORE ABUNDANT THAN PHAARUN

LAYERS: **1=**CANOPY>10m **2=**SUB-CANOPY **3=**UNDERSTOREY **4=**GROUND (GRD.) LAYER
ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT **D=**DOMINANT

SPECIES CODE	LAYER				COLL.	SPECIES CODE	LAYER				COLL.
	1	2	3	4			1	2	3	4	
FRAPENN	R			R		PHAARUN				A	
						AGRSTOL				O	
						POA PRAT				O	
						VICCRAC				O	
						HYPPERF				O	
						SYMLANC				O-A	
						GEVALEP				R	
						DAUCARO				R	
						CAR VULP				R	
						LYTSALI				R	
						CIR ARVE				R	
						EPI PARV				R	
						ONOSENS				R	
						CAREX MOLESTA				O	✓
						GEU LACI				R	
						GLY STRI				R	
						ASC SYRI				R	
						JUN DUDL				R-O	
						EUPPERF				R	
						SCI ATRO				R	
						GAL PALU				R	
SAL DISC	R										
SAL PETI	R										
COR RACE	R			O							
COR SERI				R-O							

ELC **COMMUNITY DESCRIPTION & CLASSIFICATION**				
PROJECT NAME: 8133			**POLYGON:** 9	
SURVEYOR(S): JTL		**DATE:** JULY 22-19	**PHOTO:**	
START:	**END:**	**UTM:**		

POLYGON DESCRIPTION

SYSTEM
- ☒ TERRESTRIAL
- ☐ WETLAND
- ☐ AQUATIC

SITE
- ☐ OPEN WATER
- ☐ SHALLOW WATER
- ☒ SURFICIAL DEP.
- ☐ BEDROCK

SUBSTRATE
- ☐ ORGANIC
- ☒ MINERAL SOIL
- ☐ PARENT MIN.
- ☐ ACIDIC BEDRK.
- ☐ BASIC BEDRK.
- ☐ CARB. BEDRK.

TOPOGRAPHIC FEATURE
- ☐ LACUSTRINE
- ☐ RIVERINE
- ☐ BOTTOMLAND
- ☐ TERRACE
- ☐ VALLEY SLOPE
- ☒ TABLELAND
- ☐ ROLL. UPLAND
- ☐ CLIFF
- ☐ TALUS
- ☐ CREVICE / CAVE
- ☐ ALVAR
- ☐ ROCKLAND
- ☐ BEACH / BAR
- ☐ SAND DUNE
- ☐ BLUFF

HISTORY
- ☒ NATURAL
- ☐ CULTURAL

COVER
- ☐ OPEN
- ☐ SHRUB
- ☒ TREED

PLANT FORM
- ☐ PLANKTON
- ☐ SUBMERGED
- ☐ FLOATING-LVD.
- ☐ GRAMINOID
- ☐ FORB
- ☐ LICHEN
- ☐ BRYOPHYTE
- ☒ DECIDUOUS
- ☐ CONIFEROUS
- ☐ MIXED

COMMUNITY
- ☐ LAKE
- ☐ POND
- ☐ RIVER
- ☐ STREAM
- ☐ MARSH
- ☐ SWAMP
- ☐ FEN
- ☐ BOG
- ☐ BARREN
- ☐ MEADOW
- ☐ PRAIRIE
- ☐ THICKET
- ☐ SAVANNAH
- ☐ WOODLAND
- ☒ FOREST
- ☐ PLANTATION

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	4	
2	SUB-CANOPY	—		
3	UNDERSTOREY	3-4	4	
4	GRD. LAYER	5-7	4	

HT CODES: **1=**>25m **2=**10<HT≤25m **3=**2<HT≤10m **4=**1<HT≤2m **5=**0.5<HT≤1m **6=**0.2<HT≤0.5m **7=**HT<0.2m

CVR CODES: **0=**NONE **1=**0%<CVR≤10% **2=**10<CVR≤25% **3=**25<CVR≤60% **4=**CVR>60%

SIZE CLASS ANALYSIS:	A	<10	A	10 – 24	O	25 – 50	R	>50
STANDING SNAGS:	O	<10	O	10 – 24	R	25 – 50	R	>50
DEADFALL/LOGS:	O	<10	O	10 – 24	R	25 – 50	N	>50

ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT

WOODLAND MATURITY:		YOUNG	☒	MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	**#1**	**#2**	**#3**	**#4**		**SOIL PROFILE**
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:		**CODE:**
VEGETATION TYPE: D-F SUGAR MAPLE - WHITE ASH DECID. FOREST		**CODE:** FOD 5-8
INCLUSION		**CODE:**
COMPLEX		**CODE:**

Notes: - YOUNG TO MIDAGE W/ FEW REMNANT MATURE TREES
- SOME DEAD/DYING ASH IN CANOPY

LAYERS: **1=**CANOPY>10m **2=**SUB-CANOPY **3=**UNDERSTOREY **4=**GROUND (GRD.) LAYER
ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT **D=**DOMINANT

SPECIES CODE	LAYER				COLL.	SPECIES CODE	LAYER				COLL.
	1	2	3	4			1	2	3	4	
FRAPENN	R		O	R		SOL ALTI				R-O	
JUG NIGR	R		R	R		GERROBE				O	
ACESASA	A		O			GEU ALEP				R	
FRAAMER	O		OA			IMPCAPE				R	
PRUSERO	O		R			DRY CRIS				R	
JUG CINE	R					POA COMP				R	
						VER OFFI				R	
						OXA STRI				R	
						GEU CANA				O-A	
						ERI ANNU				R	
						AGI GRYP				R	
						ALL PETI				R	
						CAR GRAC				R	
						CAREX SP				R	✓
RUB OCCI			R								
PAR VITA				O							
CORRACE			R								
RUB IDAE			O								
RIB CYNO			R								

ELC **COMMUNITY DESCRIPTION & CLASSIFICATION**	**PROJECT NAME:** 8133		**POLYGON:** 10
	SURVEYOR(S): JTL	**DATE:** JULY 22-19	**PHOTO:**
	START:	**END:**	**~~UTM~~:** SEPT 13-19

POLYGON DESCRIPTION

SYSTEM
- ☒ TERRESTRIAL
- ☐ WETLAND
- ☐ AQUATIC

SITE
- ☐ OPEN WATER
- ☐ SHALLOW WATER
- ☒ SURFICIAL DEP.
- ☐ BEDROCK

SUBSTRATE
- ☐ ORGANIC
- ☒ MINERAL SOIL
- ☐ PARENT MIN.
- ☐ ACIDIC BEDRK.
- ☐ BASIC BEDRK.
- ☐ CARB. BEDRK.

TOPOGRAPHIC FEATURE
- ☐ LACUSTRINE
- ☐ RIVERINE
- ☐ BOTTOMLAND
- ☐ TERRACE
- ☐ VALLEY SLOPE
- ☒ TABLELAND
- ☐ ROLL. UPLAND
- ☐ CLIFF
- ☐ TALUS
- ☐ CREVICE / CAVE
- ☐ ALVAR
- ☐ ROCKLAND
- ☐ BEACH / BAR
- ☐ SAND DUNE
- ☐ BLUFF

HISTORY
- ☒ NATURAL
- ☐ CULTURAL

COVER
- ☐ OPEN
- ☐ SHRUB
- ☒ TREED

PLANT FORM
- ☐ PLANKTON
- ☐ SUBMERGED
- ☐ FLOATING-LVD.
- ☐ GRAMINOID
- ☐ FORB
- ☐ LICHEN
- ☐ BRYOPHYTE
- ☒ DECIDUOUS
- ☐ CONIFEROUS
- ☐ MIXED

COMMUNITY
- ☐ LAKE
- ☐ POND
- ☐ RIVER
- ☐ STREAM
- ☐ MARSH
- ☐ SWAMP
- ☐ FEN
- ☐ BOG
- ☐ BARREN
- ☐ MEADOW
- ☐ PRAIRIE
- ☐ THICKET
- ☐ SAVANNAH
- ☐ WOODLAND
- ☒ FOREST
- ☐ PLANTATION

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	1-2	4	
2	SUB-CANOPY	3	3	
3	UNDERSTOREY	4-5	3	
4	GRD. LAYER	6-7	4	

HT CODES: **1=**>25m **2=**10<HT≤25m **3=**2<HT≤10m **4=**1<HT≤2m **5=**0.5<HT≤1m **6=**0.2<HT≤0.5m **7=**HT<0.2m

CVR CODES: **0=**NONE **1=**0%<CVR≤10% **2=**10<CVR≤25% **3=**25<CVR≤60% **4=**CVR>60%

SIZE CLASS ANALYSIS:	O	<10	A	10 – 24	O	25 – 50	R	>50
STANDING SNAGS:	R	<10	O	10 – 24	R	25 – 50	N	>50
DEADFALL/LOGS:	O	<10	R	10 – 24	R	25 – 50	N	>50

ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT

WOODLAND MATURITY:		YOUNG		MID-AGE	X	MATURE		OLD GROWTH

SOIL ASSESSMENT:	**#1**	**#2**	**#3**	**#4**		**SOIL PROFILE**
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:		**CODE:**
VEGETATION TYPE: D-F SUGAR MAPLE – BASSWOOD DECID. FOREST		**CODE:** FOD 5-6
INCLUSION	RED OSIER MINERAL THICKET SWAMP	**CODE:** SWT 2-5
COMPLEX		**CODE:**

Notes:

LAYERS: **1=**CANOPY>10m **2=**SUB-CANOPY **3=**UNDERSTOREY **4=**GROUND (GRD.) LAYER

ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT **D=**DOMINANT

SPECIES CODE	LAYER				COLL.	SPECIES CODE	LAYER				COLL.
	1	2	3	4			1	2	3	4	
ACESASA	A	A				CIR CANA				A	
PRUSERO	O	O	R			GEU CANA				O	
ULM AMER			R	R		GEU ALEP				R	
PIN STRO	R-O					ACT PACH				R	
TILAMER	O	O				ARI TRIP				R	
CAR CORD	O	R	R-O			POD PELT				O	
FAGGRAN				R		GER ROBE				O	
BET PAPY	R	R:O				DRY CART				R	
						ACT RUBR				O	
						EUOOBOV				R	
						CAR PENS				R	
						CAR LAXF.				R	
						EPI HELL				R	
						SAN CANA				R	
						CAR PEDU				O	
						CAR RADIA				R	
						THA DIOC				R	
						SOL FLEX				R	
						AQU CANA				R	
						BULB. FERN				R	
						SYM LATE				R	
RHA CATH			R								
PAR VITA				O							
BER THUN			R								
VIT RIPA			R								
PRU VIRG			O								
TOX RYDB				O-A							
LIG VULG			R								
TOX RADI			O								
RUB ALLE			R								
RUB IDST			O								

ELC COMMUNITY DESCRIPTION & CLASSIFICATION	PROJECT NAME: 8137		POLYGON: 11	
	SURVEYOR(S): JTL		DATE: JULY 22-19	PHOTO:
	START:	END:	~~UTM:~~ SEPT 13-19	

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☒ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MIN. ☐ ACIDIC BEDRK. ☐ BASIC BEDRK. ☐ CARB. BEDRK.	☐ LACUSTRINE ☐ RIVERINE ☒ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLL. UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE / CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH / BAR ☐ SAND DUNE ☐ BLUFF	☒ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING-LVD. ☒ GRAMINOID ☒ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☒ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**		
☐ OPEN WATER ☐ SHALLOW WATER ☒ SURFICIAL DEP. ☐ BEDROCK			☒ OPEN ☐ SHRUB ☐ TREED		

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	3	1	
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER	4-7	4	

HT CODES: **1**=>25m **2**=10<HT≤25m **3**=2<HT≤10m **4**=1<HT≤2m **5**=0.5<HT≤1m **6**=0.2<HT≤0.5m **7**=HT<0.2m

CVR CODES: **0**=NONE **1**=0%<CVR≤10% **2**=10<CVR≤25% **3**=25<CVR≤60% **4**=CVR>60%

SIZE CLASS ANALYSIS:	O	<10	N	10 – 24	N	25 – 50	N	>50
STANDING SNAGS:	N	<10	N	10 – 24	N	25 – 50	N	>50
DEADFALL/LOGS:	R	<10	R	10 – 24	N	25 – 50	N	>50

ABUNDANCE CODES: **N**=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT

WOODLAND MATURITY:		YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	#1	#2	#3	#4		SOIL PROFILE
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:		CODE:
VEGETATION TYPE: JEWELWEED MINERAL MEADOW MARSH		CODE: MAM 2-9
INCLUSION		CODE:
COMPLEX		CODE: MAM 2-2

Notes:

– NO SURFACE WATER (JULY & SEPT)

LAYERS: **1**=CANOPY>10m **2**=SUB-CANOPY **3**=UNDERSTOREY **4**=GROUND (GRD.) LAYER
ABUNDANCE CODES: **N**=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT **D**=DOMINANT

SPECIES CODE	LAYER				COLL.
	1	2	3	4	
CAR CARO	R				
POPTREM	R				
JUGNIGR	R				
SAL ERIO	R-O				
SAMCANA	R				
COR SERI	O				
SAL DISC	R				

SPECIES CODE	LAYER				COLL.
	1	2	3	4	
IMPCAPE				O-A	
PHAARU				O-A	
SOL PULC				O-A	
EQUARVE				O	
SP. W. HEMLOCK				O	
POA PALU				R	
MYOLAXA				R	
ONOSENS				O	
EUT MACU				O	
GLY STRI				O	
CAR LUPUL				R	
SYM PUNI				O	
BOH CYLIN				R	
LEE ORYZ				R	
CAR CRIN				R	
TYP ANGU				O	
EPILOBIUM HIRS				O	
EUP TERF				O	
SCUT. LATI				R	
–					

ELC **COMMUNITY DESCRIPTION & CLASSIFICATION**				
PROJECT NAME: 8133			**POLYGON:** 19	
SURVEYOR(S): JTL		**DATE:** SEPT 13-19		**PHOTO:**
START:	**END:**	**UTM:**		

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MIN. ☐ ACIDIC BEDRK. ☐ BASIC BEDRK. ☐ CARB. BEDRK.	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLL. UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE / CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH / BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING-LVD. ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☒ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**		
☐ OPEN WATER ☐ SHALLOW WATER ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☒ SHRUB ☐ TREED		

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	1	
2	SUB-CANOPY	3	4	
3	UNDERSTOREY	4	4	
4	GRD. LAYER	5-7	4	

HT CODES: **1=**>25m **2=**10<HT≤25m **3=**2<HT≤10m **4=**1<HT≤2m **5=**0.5<HT≤1m **6=**0.2<HT≤0.5m **7=**HT<0.2m

CVR CODES: **0=**NONE **1=**0%<CVR≤10% **2=**10<CVR≤25% **3=**25<CVR≤60% **4=**CVR>60%

SIZE CLASS ANALYSIS:	R	<10	O	10 – 24	N	25 – 50	N	>50
STANDING SNAGS:	R	<10	N	10 – 24	N	25 – 50	N	>50
DEADFALL/LOGS:	N	<10	N	10 – 24	N	25 – 50	N	>50

ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT

WOODLAND MATURITY:		YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	#1	#2	#3	#4		SOIL PROFILE
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:		**CODE:**	
VEGETATION TYPE:	SUMAC CULTURAL THICKET	**CODE:**	CUT1-1
INCLUSION		**CODE:**	
COMPLEX		**CODE:**	

Notes:

LAYERS: **1=**CANOPY>10m **2=**SUB-CANOPY **3=**UNDERSTOREY **4=**GROUND (GRD.) LAYER
ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT **D=**DOMINANT

SPECIES CODE	LAYER 1	LAYER 2	LAYER 3	LAYER 4	COLL.
JUG NIGR	R				
ACEN EGU	R				
-					
RUB OCCI			O		
VIT RIPA				O	
RUB IDST			O		
RHU TYPH		A	O		

SPECIES CODE	LAYER 1	LAYER 2	LAYER 3	LAYER 4	COLL.
ALL PETI				O-A	
ERI ANNU				O	
SOL ALTI				O	
ECH LOBA				O	
PLA RUGE				O	
GEU CANA				O	
TAR OFFI				O	
POA PRAT				O	

ELC **COMMUNITY DESCRIPTION & CLASSIFICATION**			
PROJECT NAME: 8133			**POLYGON:** 20
SURVEYOR(S): JTL		**DATE:** JULY 22-19	**PHOTO:**
START:	**END:**	**UTM:** SEPT 13-19	

POLYGON DESCRIPTION

SYSTEM
- ☒ TERRESTRIAL
- ☐ WETLAND
- ☐ AQUATIC

SITE
- ☐ OPEN WATER
- ☐ SHALLOW WATER
- ☒ SURFICIAL DEP.
- ☐ BEDROCK

SUBSTRATE
- ☐ ORGANIC
- ☒ MINERAL SOIL
- ☐ PARENT MIN.
- ☐ ACIDIC BEDRK.
- ☐ BASIC BEDRK.
- ☐ CARB. BEDRK.

TOPOGRAPHIC FEATURE
- ☐ LACUSTRINE
- ☐ RIVERINE
- ☐ BOTTOMLAND
- ☐ TERRACE
- ☐ VALLEY SLOPE
- ☒ TABLELAND
- ☐ ROLL. UPLAND
- ☐ CLIFF
- ☐ TALUS
- ☐ CREVICE / CAVE
- ☐ ALVAR
- ☐ ROCKLAND
- ☐ BEACH / BAR
- ☐ SAND DUNE
- ☐ BLUFF

HISTORY
- ☒ NATURAL
- ☐ CULTURAL

COVER
- ☐ OPEN
- ☐ SHRUB
- ☒ TREED

PLANT FORM
- ☐ PLANKTON
- ☐ SUBMERGED
- ☐ FLOATING-LVD.
- ☐ GRAMINOID
- ☐ FORB
- ☐ LICHEN
- ☐ BRYOPHYTE
- ☒ DECIDUOUS
- ☐ CONIFEROUS
- ☐ MIXED

COMMUNITY
- ☐ LAKE
- ☐ POND
- ☐ RIVER
- ☐ STREAM
- ☐ MARSH
- ☐ SWAMP
- ☐ FEN
- ☐ BOG
- ☐ BARREN
- ☐ MEADOW
- ☐ PRAIRIE
- ☐ THICKET
- ☐ SAVANNAH
- ☐ WOODLAND
- ☒ FOREST
- ☐ PLANTATION

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	4	
2	SUB-CANOPY	3	3	
3	UNDERSTOREY	4-5	3	
4	GRD. LAYER	6-7	4	

HT CODES: **1**=>25m **2**=10<HT≤25m **3**=2<HT≤10m **4**=1<HT≤2m **5**=0.5<HT≤1m **6**=0.2<HT≤0.5m **7**=HT<0.2m

CVR CODES: **0**=NONE **1**=0%<CVR≤10% **2**=10<CVR≤25% **3**=25<CVR≤60% **4**=CVR>60%

SIZE CLASS ANALYSIS:	O	<10	A	10 – 24	O	25 – 50	N	>50
STANDING SNAGS:	R	<10	R	10 – 24	N	25 – 50	N	>50
DEADFALL/LOGS:	R	<10	O	10 – 24	N	25 – 50	N	>50

ABUNDANCE CODES: **N**=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT

WOODLAND MATURITY:		YOUNG	X	MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	**#1**	**#2**	**#3**	**#4**	**SOIL PROFILE**
TEXTURE:					
DEPTH TO MOTTLES (g):					
DEPTH TO GLEY (G):					
DEPTH OF ORGANICS:					
DEPTH TO BEDROCK:					
MOISTURE REGIME:					

COMMUNITY CLASSIFICATION:

ECOSITE:	**CODE:**
VEGETATION TYPE: BLACK WALNUT LOWLAND DECID. FOREST	**CODE:** FOD7-4
INCLUSION	**CODE:**
COMPLEX	**CODE:**

Notes:

- NO H_2O
- PARQUIN WELL ESTABLISHED IN CANOPY

LAYERS: **1**=CANOPY>10m **2**=SUB-CANOPY **3**=UNDERSTOREY **4**=GROUND (GRD.) LAYER
ABUNDANCE CODES: **N**=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT **D**=DOMINANT

SPECIES CODE	LAYER 1	LAYER 2	LAYER 3	LAYER 4	COLL.
JUGNIGR	A	O	O		
FRAPENN	O	O	O		
ACESAJA	R	R	/		
PRUSERO	R	—	—		
TILAMER	—	—	R		
LIG VULG			R		
RUB OCCI			A		
ROS MULT			O		
CORALTE		O			
RUB IDST			O		
VITRIPA				O	
RIB RUBR			R		
PRUVIRG			O		
PARQUIN				A	

SPECIES CODE	LAYER 1	LAYER 2	LAYER 3	LAYER 4	COLL.
ALL PETI				O	
SYM UROP				R	
GEU CANA				O	
ALI TRIP				O	
SOL ALTI				O	
DAC GLOM				O	
ERI ANNU				O	
AGR GRYP				R	
GEU ALEP				O	
CIR CANA				O	
PHA ARUN				R-O	
PHL PRAT				R-O	
PSEUDOGNAPHALIUM OBTUS.				R	PICS 4 PLANTS
AGR GIGA				R-O	
ARC LAPP				R-O	
IMP CAPE				R	
ALLIUM SATIVUM				R	
DRY CART				R	
HAC VIRG				R	
POA COMP				O	

ELC **COMMUNITY DESCRIPTION & CLASSIFICATION**	**PROJECT NAME:** 8133		**POLYGON:** 21	
	SURVEYOR(S): JTL		**DATE:** JULY22-19	**PHOTO:**
	START:	**END:**	**UTM:** SEPT 13-19	

POLYGON DESCRIPTION

SYSTEM
- ☐ TERRESTRIAL
- ☐ WETLAND
- ☐ AQUATIC

SITE
- ☐ OPEN WATER
- ☐ SHALLOW WATER
- ☐ SURFICIAL DEP.
- ☐ BEDROCK

SUBSTRATE
- ☐ ORGANIC
- ☐ MINERAL SOIL
- ☐ PARENT MIN.
- ☐ ACIDIC BEDRK.
- ☐ BASIC BEDRK.
- ☐ CARB. BEDRK.

TOPOGRAPHIC FEATURE
- ☐ LACUSTRINE
- ☐ RIVERINE
- ☐ BOTTOMLAND
- ☐ TERRACE
- ☐ VALLEY SLOPE
- ☐ TABLELAND
- ☐ ROLL. UPLAND
- ☐ CLIFF
- ☐ TALUS
- ☐ CREVICE / CAVE
- ☐ ALVAR
- ☐ ROCKLAND
- ☐ BEACH / BAR
- ☐ SAND DUNE
- ☐ BLUFF

HISTORY
- ☐ NATURAL
- ☐ CULTURAL

COVER
- ☐ OPEN
- ☐ SHRUB
- ☐ TREED

PLANT FORM
- ☐ PLANKTON
- ☐ SUBMERGED
- ☐ FLOATING-LVD.
- ☐ GRAMINOID
- ☐ FORB
- ☐ LICHEN
- ☐ BRYOPHYTE
- ☐ DECIDUOUS
- ☐ CONIFEROUS
- ☐ MIXED

COMMUNITY
- ☐ LAKE
- ☐ POND
- ☐ RIVER
- ☐ STREAM
- ☐ MARSH
- ☐ SWAMP
- ☐ FEN
- ☐ BOG
- ☐ BARREN
- ☐ MEADOW
- ☐ PRAIRIE
- ☐ THICKET
- ☐ SAVANNAH
- ☐ WOODLAND
- ☐ FOREST
- ☐ PLANTATION

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY			
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER			

HT CODES: **1**=>25m **2**=10<HT≤25m **3**=2<HT≤10m **4**=1<HT≤2m **5**=0.5<HT≤1m **6**=0.2<HT≤0.5m **7**=HT<0.2m

CVR CODES: **0**=NONE **1**=0%<CVR≤10% **2**=10<CVR≤25% **3**=25<CVR≤60% **4**=CVR>60%

SIZE CLASS ANALYSIS:		<10		10 – 24		25 – 50		>50
STANDING SNAGS:		<10		10 – 24		25 – 50		>50
DEADFALL/LOGS:		<10		10 – 24		25 – 50		>50

ABUNDANCE CODES: **N**=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT

WOODLAND MATURITY:		YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	#1	#2	#3	#4		**SOIL PROFILE**
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:		**CODE:**
VEGETATION TYPE:		**CODE:** SAS
INCLUSION		**CODE:**
COMPLEX		**CODE:**

Notes:

- CORE IS SAS BORDERED BY MAS (PHRAG)
- WATER DEPTH ATLEAST 50cm (SEPT)

LAYERS: **1**=CANOPY>10m **2**=SUB-CANOPY **3**=UNDERSTOREY **4**=GROUND (GRD.) LAYER

ABUNDANCE CODES: **N**=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT **D**=DOMINANT

SPECIES CODE	LAYER 1	LAYER 2	LAYER 3	LAYER 4	COLL.	SPECIES CODE	LAYER 1	LAYER 2	LAYER 3	LAYER 4	COLL.
SAL AMYG	R					POT CRIS				O	
						STUCK. PECT				A	
						LEE ORYZ				R	
						SCH TABER				R	
						PHR AUAU				O	
						SCI ATRO				R	
						EQUHYMA				R	

TREATED AS AN INCLUSION TO MAM/SWT

ELC **COMMUNITY DESCRIPTION & CLASSIFICATION**	**PROJECT NAME:** 8133		**POLYGON:** 22		
	SURVEYOR(S): JTL		**DATE:** JULY 22 – 19		**PHOTO:**
	START:	**END:**	**UTM:** SEPT 13 – 19		

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☒ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MIN. ☐ ACIDIC BEDRK. ☐ BASIC BEDRK. ☐ CARB. BEDRK.	☐ LACUSTRINE ☒ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLL. UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE / CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH / BAR ☐ SAND DUNE ☐ BLUFF	☒ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING-LVD. ☒ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☒ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**		
☐ OPEN WATER ☐ SHALLOW WATER ☒ SURFICIAL DEP. ☐ BEDROCK			☒ OPEN ☒ SHRUB ☐ TREED		

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	3-4	3	
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER	5-7	4	

HT CODES: **1**=>25m **2**=10<HT≤25m **3**=2<HT≤10m **4**=1<HT≤2m **5**=0.5<HT≤1m **6**=0.2<HT≤0.5m **7**=HT<0.2m

CVR CODES: **0**=NONE **1**=0%<CVR≤10% **2**=10<CVR≤25% **3**=25<CVR≤60% **4**=CVR>60%

SIZE CLASS ANALYSIS:	N	<10	R	10 – 24	N	25 – 50	N	>50
STANDING SNAGS:	N	<10	N	10 – 24	N	25 – 50	N	>50
DEADFALL/LOGS:	N	<10	N	10 – 24	N	25 – 50	N	>50

ABUNDANCE CODES: **N**=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT

WOODLAND MATURITY:		YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	#1	#2	#3	#4		SOIL PROFILE
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:		**CODE:**
VEGETATION TYPE: REED CANARY MINERAL MEADOW MARSH		**CODE:** MAM 2-2
INCLUSION		**CODE:**
COMPLEX	SALIX	**CODE:** SWT 2-2

Notes:

– H_2O CONFINED TO STREAM, DEPTH ~25cm

LAYERS: **1**=CANOPY>10m **2**=SUB-CANOPY **3**=UNDERSTOREY **4**=GROUND (GRD.) LAYER
ABUNDANCE CODES: **N**=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT **D**=DOMINANT

SPECIES CODE	LAYER				COLL.
	1	2	3	4	
SAL X FRAG	R				
SAL INTE	O				
SAL PURP	R				
SAL PETI	R				
SAL ERIO	O				

SPECIES CODE	LAYER				COLL.
	1	2	3	4	
PHA ARUN				A	
TYP ANGU				R	
SYM LANC				O	
LYT SALI				O	
IMP CAPE				O	
LYC UNIF				O	
PHR AUAU				R	
TYP X GLA				O	

ELC

COMMUNITY DESCRIPTION & CLASSIFICATION

PROJECT NAME: 8133		**POLYGON:** 23	
SURVEYOR(S): JTL		**DATE:** JULY 22 - 19	**PHOTO:**
START:	**END:**	**UTM:** SEPT 13 - 19	

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☒ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☒ MINERAL SOIL ☐ PARENT MIN. ☐ ACIDIC BEDRK. ☐ BASIC BEDRK. ☐ CARB. BEDRK.	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☒ TABLELAND ☐ ROLL. UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE / CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH / BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☒ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING-LVD. ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☒ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☒ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**		
☐ OPEN WATER ☐ SHALLOW WATER ☒ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☒ TREED		

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY	2	3	
2	SUB-CANOPY	3	4	
3	UNDERSTOREY	4-5	3	
4	GRD. LAYER	6-7	4	MOSTLY VINES

HT CODES: **1=**>25m **2=**10<HT≤25m **3=**2<HT≤10m **4=**1<HT≤2m **5=**0.5<HT≤1m **6=**0.2<HT≤0.5m **7=**HT<0.2m

CVR CODES: **0=**NONE **1=**0%<CVR≤10% **2=**10<CVR≤25% **3=**25<CVR≤60% **4=**CVR>60%

SIZE CLASS ANALYSIS:	O	<10	O	10 – 24	O	25 – 50	R	>50
STANDING SNAGS:	R	<10	O	10 – 24	R	25 – 50	N	>50
DEADFALL/LOGS:	O	<10	O	10 – 24	R	25 – 50	N	>50

ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT

WOODLAND MATURITY:	☐	YOUNG	☒	MID-AGE	☒	MATURE	☐	OLD GROWTH

SOIL ASSESSMENT:	#1	#2	#3	#4	SOIL PROFILE
TEXTURE:					
DEPTH TO MOTTLES (g):					
DEPTH TO GLEY (G):					
DEPTH OF ORGANICS:					
DEPTH TO BEDROCK:					
MOISTURE REGIME:					

COMMUNITY CLASSIFICATION:

ECOSITE:	MINERAL CULTURAL WOODLAND	**CODE:**	CUW1
VEGETATION TYPE:		**CODE:**	
INCLUSION		**CODE:**	
COMPLEX		**CODE:**	

Notes:

- DEAD ASH IN CANOPY
- CANOPY COVER ~ 50%
- LIMESTONE OUTCROP

LAYERS: **1=**CANOPY>10m **2=**SUB-CANOPY **3=**UNDERSTOREY **4=**GROUND (GRD.) LAYER

ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT **D=**DOMINANT

SPECIES CODE	LAYER 1	2	3	4	COLL.
ACESASA	O	O-A	R		
TILAMER	—	R	—		
PRU SERO	O	R	R		
FRAPENN	R	R	O		
JUG NIGR	R	O	R-O		
POPTREM	R	—	—		
RHUTYPH			R		
TOX RYDB				A	
RUBIDST			O-A		
VITRIPA				O	
CRA MACR		R			
COR ALTE		O	O		
PAR QUIN				O	
RIB CYNO			R		
TOX RADI				R	

SPECIES CODE	LAYER 1	2	3	4	COLL.
SAN CANA				R	
ALL PETI				O	
CIR CANA				R	
GER ROBE				O	
SOL ALTI				R-O	
ARI TRIP				R	

RUNNING PLANT LIST — SUMMER 8133

EAST SIDE OF SDRD2

JULY 22-19
JR

LIGVULG
POTRECT
CLIN VULG
CORSERI
AMB ARTE
POA ANNU
SET PUMI
GEU ALLE
RIB RUBR
TILAMER
PRUVIRG
APOCYN. CANN (HR)
CORALTE
QUERUBR
POA COMP
STELLARIA
PLA RUGE
TRI PRAT
LEU VULG
POT NORV
LOL PERE
ELA UMBE
COR RACE
RIB CYNO
ULM AMER
QUEMACR
JUNTENU
TOX RYDB
ACESACH
GNA ULIG
CAR CRIST.
AGR GRYP

LAMB QUART
COM. MULLEIN
PIC ABIE
SEPT
DIC IMPL
CEL ORBIC.
PIL PUMIL.
SET VIRI

ELC **COMMUNITY DESCRIPTION & CLASSIFICATION**	**PROJECT NAME:** NELSON - P.S.		**POLYGON:** ① ~W
	SURVEYOR(S): STL, AG	**DATE:** MAY 27, 19	**PHOTO:**
	START:	**END:**	**UTM:**

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL	☐ ORGANIC	☐ LACUSTRINE	☐ NATURAL	☐ PLANKTON	☐ LAKE
☐ WETLAND	☐ MINERAL SOIL	☐ RIVERINE	☐ CULTURAL	☐ SUBMERGED	☐ POND
☐ AQUATIC	☐ PARENT MIN.	☐ BOTTOMLAND		☐ FLOATING-LVD.	☐ RIVER
	☐ ACIDIC BEDRK.	☐ TERRACE		☐ GRAMINOID	☐ STREAM
	☐ BASIC BEDRK.	☐ VALLEY SLOPE		☐ FORB	☐ MARSH
	☐ CARB. BEDRK.	☐ TABLELAND		☐ LICHEN	☐ SWAMP
		☐ ROLL. UPLAND		☐ BRYOPHYTE	☐ FEN
		☐ CLIFF		☐ DECIDUOUS	☐ BOG
		☐ TALUS		☐ CONIFEROUS	☐ BARREN
SITE		☐ CREVICE / CAVE	**COVER**	☐ MIXED	☐ MEADOW
☐ OPEN WATER		☐ ALVAR	☐ OPEN		☐ PRAIRIE
☐ SHALLOW WATER		☐ ROCKLAND	☐ SHRUB		☐ THICKET
☐ SURFICIAL DEP.		☐ BEACH / BAR	☐ TREED		☐ SAVANNAH
☐ BEDROCK		☐ SAND DUNE			☐ WOODLAND
		☐ BLUFF			☐ FOREST
					☐ PLANTATION

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY			
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER			

HT CODES: 1=>25m 2=10<HT≤25m 3=2<HT≤10m 4=1<HT≤2m 5=0.5<HT≤1m 6=0.2<HT≤0.5m 7=HT<0.2m

CVR CODES: 0=NONE 1=0%<CVR≤10% 2=10<CVR≤25% 3=25<CVR≤60% 4=CVR>60%

SIZE CLASS ANALYSIS:		<10		10 – 24		25 – 50		>50
STANDING SNAGS:		<10		10 – 24		25 – 50		>50
DEADFALL/LOGS:		<10		10 – 24		25 – 50		>50

ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT

WOODLAND MATURITY:		YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	#1	#2	#3	#4	SOIL PROFILE
TEXTURE:					
DEPTH TO MOTTLES (g):					
DEPTH TO GLEY (G):					
DEPTH OF ORGANICS:					
DEPTH TO BEDROCK:					
MOISTURE REGIME:					

COMMUNITY CLASSIFICATION:

ECOSITE:		**CODE:**
VEGETATION TYPE:		**CODE:** FOD
INCLUSION		**CODE:**
COMPLEX		**CODE:**

Notes:

LAYERS: 1=CANOPY>10m 2=SUB-CANOPY 3=UNDERSTOREY 4=GROUND (GRD.) LAYER
ABUNDANCE CODES: N=NONE R=RARE O=OCCASIONAL A=ABUNDANT D=DOMINANT

SPECIES CODE	LAYER 1	2	3	4	COLL.	SPECIES CODE	LAYER 1	2	3	4	COLL.
						RAN ABOR				R	
						VIO SORR				O	
						FRA VIRG				O	
						POLY PUBE				O	
						ALL PETI				O	
						HYD VIRG				R-A	
						VIO PUBE				O	
						SAN CANA				O	
						CIR LUTE				O	
						SOL FLEX				O	
						MAI CA. INT.				R	
						CAR LEPT				R	✓
						TRI GRAN				O	
						VIO ROST				R	
						CAR PENS				R	
						POD PELT				R	
						POL ACRO				R	
						EUP OBOV				R	
						EPI VIRG.				R-A	
						MAI CA. CA				O	
VIB OPOP			R								
RUB OCCI			R								
RIB AMER			R								
TOX RYRY			O-A								
RIB CYNO			O								

May 27 survey represents the spring botanical inventory. Surveys focused on woodlands and treed swamps. Inventory was completed prior to finalization of ELC polygons and therefore these lists are not necessarily tied to specific Vegetation-Type polygons. Data is representative of both the west and south extension properties.

ELC **COMMUNITY DESCRIPTION & CLASSIFICATION**	**PROJECT NAME:** NELSON			**POLYGON:**	
	SURVEYOR(S): JTR; AS		**DATE:** MAY 27-19		**PHOTO:**
	START:	**END:**	**UTM:**		

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☐ MINERAL SOIL ☐ PARENT MIN. ☐ ACIDIC BEDRK. ☐ BASIC BEDRK. ☐ CARB. BEDRK.	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLL. UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE / CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH / BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING-LVD. ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**		
☐ OPEN WATER ☐ SHALLOW WATER ☐ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED		

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY			
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER			

HT CODES: **1**=>25m **2**=10<HT≤25m **3**=2<HT≤10m **4**=1<HT≤2m **5**=0.5<HT≤1m **6**=0.2<HT≤0.5m **7**=HT<0.2m

CVR CODES: **0**=NONE **1**=0%<CVR≤10% **2**=10<CVR≤25% **3**=25<CVR≤60% **4**=CVR>60%

SIZE CLASS ANALYSIS:		<10		10 – 24		25 – 50		>50
STANDING SNAGS:		<10		10 – 24		25 – 50		>50
DEADFALL/LOGS:		<10		10 – 24		25 – 50		>50

ABUNDANCE CODES: **N**=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT

WOODLAND MATURITY:		YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	#1	#2	#3	#4		SOIL PROFILE
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:		**CODE:**
VEGETATION TYPE:		**CODE:** CUW
INCLUSION		**CODE:**
COMPLEX		**CODE:**

Notes:

LAYERS: **1**=CANOPY>10m **2**=SUB-CANOPY **3**=UNDERSTOREY **4**=GROUND (GRD.) LAYER

ABUNDANCE CODES: **N**=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT **D**=DOMINANT

SPECIES CODE	LAYER				COLL.	SPECIES CODE	LAYER				COLL.
	1	2	3	4			1	2	3	4	
						POA PRAT					
						RAN ARBO					
						TAR OFFI					
						MOTHERWORT					
						HYD VIRG					
						POL PUBE					

ELC COMMUNITY DESCRIPTION & CLASSIFICATION				
	PROJECT NAME: NELSON		**POLYGON:** 3	
	SURVEYOR(S): JL, AS		**DATE:** MAY 27-19	**PHOTO:**
	START:	**END:**	**UTM:**	

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL	☐ ORGANIC	☐ LACUSTRINE	☐ NATURAL	☐ PLANKTON	☐ LAKE
		☐ RIVERINE		☐ SUBMERGED	☐ POND
☐ WETLAND	☐ MINERAL SOIL	☐ BOTTOMLAND	☐ CULTURAL	☐ FLOATING-LVD.	☐ RIVER
		☐ TERRACE		☐ GRAMINOID	☐ STREAM
☐ AQUATIC	☐ PARENT MIN.	☐ VALLEY SLOPE		☐ FORB	☐ MARSH
		☐ TABLELAND		☐ LICHEN	☐ SWAMP
	☐ ACIDIC BEDRK.	☐ ROLL. UPLAND		☐ BRYOPHYTE	☐ FEN
		☐ CLIFF		☐ DECIDUOUS	☐ BOG
	☐ BASIC BEDRK.	☐ TALUS		☐ CONIFEROUS	☐ BARREN
SITE		☐ CREVICE / CAVE	**COVER**	☐ MIXED	☐ MEADOW
☐ OPEN WATER	☐ CARB. BEDRK.	☐ ALVAR	☐ OPEN		☐ PRAIRIE
☐ SHALLOW WATER		☐ ROCKLAND	☐ SHRUB		☐ THICKET
		☐ BEACH / BAR	☐ TREED		☐ SAVANNAH
☐ SURFICIAL DEP.		☐ SAND DUNE			☐ WOODLAND
☐ BEDROCK		☐ BLUFF			☐ FOREST
					☐ PLANTATION

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY			
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER			

HT CODES: **1**=>25m **2**=10<HT≤25m **3**=2<HT≤10m **4**=1<HT≤2m **5**=0.5<HT≤1m **6**=0.2<HT≤0.5m **7**=HT<0.2m

CVR CODES: **0**=NONE **1**=0%<CVR≤10% **2**=10<CVR≤25% **3**=25<CVR≤60% **4**=CVR>60%

SIZE CLASS ANALYSIS:		<10		10 – 24		25 – 50		>50
STANDING SNAGS:		<10		10 – 24		25 – 50		>50
DEADFALL/LOGS:		<10		10 – 24		25 – 50		>50

ABUNDANCE CODES: **N**=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT

WOODLAND MATURITY:		YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	**#1**	**#2**	**#3**	**#4**		**SOIL PROFILE**
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:		**CODE:**	
VEGETATION TYPE:		**CODE:**	CUW1
INCLUSION		**CODE:**	
COMPLEX		**CODE:**	

Notes:

LAYERS: **1**=CANOPY>10m **2**=SUB-CANOPY **3**=UNDERSTOREY **4**=GROUND (GRD.) LAYER

ABUNDANCE CODES: **N**=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT **D**=DOMINANT

SPECIES CODE	LAYER				COLL.
	1	2	3	4	
MAL PUMI		R			
PAR VITA				O	
RHA CATH			O		
CRATEGUS cf MARR			R		PICS
RIB RUBR			R		
CON MORR			O		
ROS MULT			O		
RUB OCCI			O		
PAR QUIN				R	
RIB CYNO			O		

SPECIES CODE	LAYER				COLL.
	1	2	3	4	
CLA VIRG				R	
HYD VIRG				O	
CIR LUTE				O	
ARI TRYP				R-O	
VIO SORO				O	
ALL PETI				O-A	
ALO PRAT				R	
VIO PUBE				R	
SAS CANA				R-O	

ELC **COMMUNITY DESCRIPTION & CLASSIFICATION**				
PROJECT NAME: NELSON			**POLYGON:**	
SURVEYOR(S): JTL; AS		**DATE:** MAY 27 - 19		**PHOTO:** 4
START:	**END:**	**UTM:**		

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☐ MINERAL SOIL ☐ PARENT MIN. ☐ ACIDIC BEDRK. ☐ BASIC BEDRK. ☐ CARB. BEDRK.	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLL. UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE / CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH / BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING-LVD. ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**		
☐ OPEN WATER ☐ SHALLOW WATER ☐ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED		

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY			
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER			

HT CODES: **1**=>25m **2**=10<HT≤25m **3**=2<HT≤10m **4**=1<HT≤2m **5**=0.5<HT≤1m **6**=0.2<HT≤0.5m **7**=HT<0.2m

CVR CODES: **0**=NONE **1**=0%<CVR≤10% **2**=10<CVR≤25% **3**=25<CVR≤60% **4**=CVR>60%

SIZE CLASS ANALYSIS:		<10		10 – 24		25 – 50		>50
STANDING SNAGS:		<10		10 – 24		25 – 50		>50
DEADFALL/LOGS:		<10		10 – 24		25 – 50		>50

ABUNDANCE CODES: **N**=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT

WOODLAND MATURITY:		YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	#1	#2	#3	#4		SOIL PROFILE
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:		**CODE:**
VEGETATION TYPE:		**CODE:** FOD & SWD
INCLUSION		**CODE:**
COMPLEX		**CODE:**

Notes:

LAYERS: **1**=CANOPY>10m **2**=SUB-CANOPY **3**=UNDERSTOREY **4**=GROUND (GRD.) LAYER
ABUNDANCE CODES: **N**=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT **D**=DOMINANT

SPECIES CODE	LAYER				COLL.	SPECIES CODE	LAYER				COLL.
	1	2	3	4			1	2	3	4	
						CAR CONC					
						CAR DIPH					
						CARDAMINE MAXIMA					✓
						SAN CANA					
						ONO SENS					
						CAU GIGA					
						OST FERN					
						THA DIOC					
						ARI TRIP					
						POD PELT					
						SOL FLEX					
						CAR ALBU					✓
						VIO PUBE					
						TIA CORD					
						TRI GRAN					
						RAN RECUR					
						ABUNDANCE VARIES					
						BY FOD VS. SWD					
						- OSTRICH FERN					
						ABUNDANT					
						IN SWD					
RIB AMER											
CAR CARO											
SPICEBUSH											
PAR QUIN											
SAM RACE											

ELC **COMMUNITY DESCRIPTION & CLASSIFICATION**	**PROJECT NAME:** NELSON		**POLYGON:** 5	
	SURVEYOR(S): JTLIAS		**DATE:** MAY 27-19	**PHOTO:**
	START:	**END:**	**UTM:**	

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☐ MINERAL SOIL ☐ PARENT MIN. ☐ ACIDIC BEDRK. ☐ BASIC BEDRK. ☐ CARB. BEDRK.	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLL. UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE / CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH / BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING-LVD. ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**		
☐ OPEN WATER ☐ SHALLOW WATER ☐ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED		

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY			
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER			

HT CODES: **1**=>25m **2**=10<HT≤25m **3**=2<HT≤10m **4**=1<HT≤2m **5**=0.5<HT≤1m **6**=0.2<HT≤0.5m **7**=HT<0.2m

CVR CODES: **0**=NONE **1**=0%<CVR≤10% **2**=10<CVR≤25% **3**=25<CVR≤60% **4**=CVR>60%

SIZE CLASS ANALYSIS:		<10		10 – 24		25 – 50		>50
STANDING SNAGS:		<10		10 – 24		25 – 50		>50
DEADFALL/LOGS:		<10		10 – 24		25 – 50		>50

ABUNDANCE CODES: **N**=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT

WOODLAND MATURITY:		YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	**#1**	**#2**	**#3**	**#4**		**SOIL PROFILE**
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:		**CODE:**
VEGETATION TYPE:		**CODE:**
INCLUSION		**CODE:**
COMPLEX		**CODE:**

Notes:

-VERY SHALLOW / SMALL POOLS SURFACE
H2O (<5cm DEEP), SOIL USUALLY SATURATED

LAYERS: **1**=CANOPY>10m **2**=SUB-CANOPY **3**=UNDERSTOREY **4**=GROUND (GRD.) LAYER

ABUNDANCE CODES: **N**=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT **D**=DOMINANT

SPECIES CODE	LAYER				COLL.	SPECIES CODE	LAYER				COLL.
	1	2	3	4			1	2	3	4	
						CARGRAC					
						VIO LABR.					
						FRAVIRG					
						ARI TRYP					
						CAR LEPTO					
PAR VITA											
RIBAMER											
RHA FRAG											
SPICEBUSH											
LIG VULG											

ELC

COMMUNITY DESCRIPTION & CLASSIFICATION

PROJECT NAME: NELSON
POLYGON: 6
SURVEYOR(S): JTL
DATE: MAY 27-19
PHOTO:
START:
END:
UTM:

POLYGON DESCRIPTION

SYSTEM
- ☐ TERRESTRIAL
- ☐ WETLAND
- ☐ AQUATIC

SITE
- ☐ OPEN WATER
- ☐ SHALLOW WATER
- ☐ SURFICIAL DEP.
- ☐ BEDROCK

SUBSTRATE
- ☐ ORGANIC
- ☐ MINERAL SOIL
- ☐ PARENT MIN.
- ☐ ACIDIC BEDRK.
- ☐ BASIC BEDRK.
- ☐ CARB. BEDRK.

TOPOGRAPHIC FEATURE
- ☐ LACUSTRINE
- ☐ RIVERINE
- ☐ BOTTOMLAND
- ☐ TERRACE
- ☐ VALLEY SLOPE
- ☐ TABLELAND
- ☐ ROLL. UPLAND
- ☐ CLIFF
- ☐ TALUS
- ☐ CREVICE / CAVE
- ☐ ALVAR
- ☐ ROCKLAND
- ☐ BEACH / BAR
- ☐ SAND DUNE
- ☐ BLUFF

HISTORY
- ☐ NATURAL
- ☐ CULTURAL

COVER
- ☐ OPEN
- ☐ SHRUB
- ☐ TREED

PLANT FORM
- ☐ PLANKTON
- ☐ SUBMERGED
- ☐ FLOATING-LVD.
- ☐ GRAMINOID
- ☐ FORB
- ☐ LICHEN
- ☐ BRYOPHYTE
- ☐ DECIDUOUS
- ☐ CONIFEROUS
- ☐ MIXED

COMMUNITY
- ☐ LAKE
- ☐ POND
- ☐ RIVER
- ☐ STREAM
- ☐ MARSH
- ☐ SWAMP
- ☐ FEN
- ☐ BOG
- ☐ BARREN
- ☐ MEADOW
- ☐ PRAIRIE
- ☐ THICKET
- ☐ SAVANNAH
- ☐ WOODLAND
- ☐ FOREST
- ☐ PLANTATION

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY			
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER			

HT CODES: **1**=>25m **2**=10<HT≤25m **3**=2<HT≤10m **4**=1<HT≤2m **5**=0.5<HT≤1m **6**=0.2<HT≤0.5m **7**=HT<0.2m

CVR CODES: **0**=NONE **1**=0%<CVR≤10% **2**=10<CVR≤25% **3**=25<CVR≤60% **4**=CVR>60%

SIZE CLASS ANALYSIS:		<10		10 – 24		25 – 50		>50

STANDING SNAGS:		<10		10 – 24		25 – 50		>50
DEADFALL/LOGS:		<10		10 – 24		25 – 50		>50

ABUNDANCE CODES: **N**=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT

WOODLAND MATURITY:		YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	#1	#2	#3	#4		SOIL PROFILE
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:		**CODE:**	FOD/CUW
VEGETATION TYPE:		**CODE:**	
INCLUSION		**CODE:**	
COMPLEX		**CODE:**	

Notes:

- UNDERSTORY MOWED/MAINTAINED BY GOLF COURSE

LAYERS: **1**=CANOPY>10m **2**=SUB-CANOPY **3**=UNDERSTOREY **4**=GROUND (GRD.) LAYER

ABUNDANCE CODES: **N**=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT **D**=DOMINANT

SPECIES CODE	LAYER				COLL.	SPECIES CODE	LAYER				COLL.
	1	2	3	4			1	2	3	4	
						VIO PUBE					
						TRI EREC					
						TRI GRAN					
						SOL FLEX					
						ALL PETI					
						VIO SORO					
						HYD VIRG					
						POD PELT					
						ERYTHRONIUM SP.					
						PLA RUGE					
						RAN ABOR					

ELC COMMUNITY DESCRIPTION & CLASSIFICATION				
	PROJECT NAME: NELSON		**POLYGON:** 7	
	SURVEYOR(S): JTL		**DATE:** MAY27-19	**PHOTO:**
	START:	**END:**	**UTM:**	

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL	☐ ORGANIC	☐ LACUSTRINE	☐ NATURAL	☐ PLANKTON	☐ LAKE
☐ WETLAND	☐ MINERAL SOIL	☐ RIVERINE	☐ CULTURAL	☐ SUBMERGED	☐ POND
☐ AQUATIC	☐ PARENT MIN.	☐ BOTTOMLAND		☐ FLOATING-LVD.	☐ RIVER
	☐ ACIDIC BEDRK.	☐ TERRACE		☐ GRAMINOID	☐ STREAM
	☐ BASIC BEDRK.	☐ VALLEY SLOPE		☐ FORB	☐ MARSH
	☐ CARB. BEDRK.	☐ TABLELAND		☐ LICHEN	☐ SWAMP
		☐ ROLL. UPLAND		☐ BRYOPHYTE	☐ FEN
		☐ CLIFF		☐ DECIDUOUS	☐ BOG
		☐ TALUS		☐ CONIFEROUS	☐ BARREN
SITE		☐ CREVICE / CAVE	**COVER**	☐ MIXED	☐ MEADOW
☐ OPEN WATER		☐ ALVAR	☐ OPEN		☐ PRAIRIE
☐ SHALLOW WATER		☐ ROCKLAND	☐ SHRUB		☐ THICKET
☐ SURFICIAL DEP.		☐ BEACH / BAR	☐ TREED		☐ SAVANNAH
☐ BEDROCK		☐ SAND DUNE			☐ WOODLAND
		☐ BLUFF			☐ FOREST
					☐ PLANTATION

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY			
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER			

HT CODES: **1**=>25m **2**=10<HT≤25m **3**=2<HT≤10m **4**=1<HT≤2m **5**=0.5<HT≤1m **6**=0.2<HT≤0.5m **7**=HT<0.2m

CVR CODES: **0**=NONE **1**=0%<CVR≤10% **2**=10<CVR≤25% **3**=25<CVR≤60% **4**=CVR>60%

SIZE CLASS ANALYSIS:		<10		10 – 24		25 – 50		>50
STANDING SNAGS:		<10		10 – 24		25 – 50		>50
DEADFALL/LOGS:		<10		10 – 24		25 – 50		>50

ABUNDANCE CODES: **N**=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT

WOODLAND MATURITY:		YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	#1	#2	#3	#4	SOIL PROFILE
TEXTURE:					
DEPTH TO MOTTLES (g):					
DEPTH TO GLEY (G):					
DEPTH OF ORGANICS:					
DEPTH TO BEDROCK:					
MOISTURE REGIME:					

COMMUNITY CLASSIFICATION:

ECOSITE:		**CODE:** FOD 7
VEGETATION TYPE:		**CODE:** SWD
INCLUSION		**CODE:**
COMPLEX		**CODE:**

Notes:

LAYERS: **1**=CANOPY>10m **2**=SUB-CANOPY **3**=UNDERSTOREY **4**=GROUND (GRD.) LAYER

ABUNDANCE CODES: **N**=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT **D**=DOMINANT

SPECIES CODE	LAYER				COLL.	SPECIES CODE	LAYER				COLL.
	1	2	3	4			1	2	3	4	
						POD PELT					
						TRIGRAN					
						MAI RACE					
						RAN ABORT					
						VIO PUBE					
						CIR LUTE					
						THA DIOC					
						SAN CANA					
						VIO SORO					
						GER MACU					
						CYP PARV. PAR.				R	
						MAI STEL					
						CAR GRAC					
						HES MATR					
						ERY AMER					
						ALO PRAT					
						CYST. TENUIS					PICS
						CAR PENS					
						MYO LAXA					
						VER SERP					
RUBPUBE											

ELC **COMMUNITY DESCRIPTION & CLASSIFICATION**	**PROJECT NAME:** NELSON		**POLYGON:** 9
	SURVEYOR(S): JTC, AS	**DATE:** MAY27-19	**PHOTO:**
	START:	**END:**	**UTM:**

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☐ MINERAL SOIL ☐ PARENT MIN. ☐ ACIDIC BEDRK. ☐ BASIC BEDRK. ☐ CARB. BEDRK.	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLL. UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE / CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH / BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING-LVD. ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION
SITE			**COVER**		
☐ OPEN WATER ☐ SHALLOW WATER ☐ SURFICIAL DEP. ☐ BEDROCK			☐ OPEN ☐ SHRUB ☐ TREED		

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY			
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER			

HT CODES: **1**=>25m **2**=10<HT≤25m **3**=2<HT≤10m **4**=1<HT≤2m **5**=0.5<HT≤1m **6**=0.2<HT≤0.5m **7**=HT<0.2m

CVR CODES: **0**=NONE **1**=0%<CVR≤10% **2**=10<CVR≤25% **3**=25<CVR≤60% **4**=CVR>60%

SIZE CLASS ANALYSIS:		<10		10 – 24		25 – 50		>50
STANDING SNAGS:		<10		10 – 24		25 – 50		>50
DEADFALL/LOGS:		<10		10 – 24		25 – 50		>50

ABUNDANCE CODES: **N**=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT

WOODLAND MATURITY:		YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	#1	#2	#3	#4		SOIL PROFILE
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:		**CODE:**
VEGETATION TYPE:		**CODE:**
INCLUSION		**CODE:**
COMPLEX		**CODE:**

Notes:

LAYERS: **1**=CANOPY>10m **2**=SUB-CANOPY **3**=UNDERSTOREY **4**=GROUND (GRD.) LAYER

ABUNDANCE CODES: **N**=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT **D**=DOMINANT

SPECIES CODE	LAYER				COLL.	SPECIES CODE	LAYER				COLL.
	1	2	3	4			1	2	3	4	
						ACC PETI					
						RAN ABOR					
						CHE MAJU					
						SAN CANA					
						GAL ASPR					
						CAR GRAC					
						ARI TRIP					
						RAN RECU					
						MAI STEL					
						DRY CART					
						BAR VULG					
						POA ANNU					
						VIO PUBE					
						VIO SORO					
EUO OBOV											
PAR QUIN											

ELC **COMMUNITY DESCRIPTION & CLASSIFICATION**	**PROJECT NAME:** NELSON		**POLYGON:** 8	
	SURVEYOR(S): JILIAS		**DATE:** MAY 27-19	**PHOTO:**
	START:	**END:**	**UTM:**	

POLYGON DESCRIPTION

SYSTEM
- ☐ TERRESTRIAL
- ☐ WETLAND
- ☐ AQUATIC

SITE
- ☐ OPEN WATER
- ☐ SHALLOW WATER
- ☐ SURFICIAL DEP.
- ☐ BEDROCK

SUBSTRATE
- ☐ ORGANIC
- ☐ MINERAL SOIL
- ☐ PARENT MIN.
- ☐ ACIDIC BEDRK.
- ☐ BASIC BEDRK.
- ☐ CARB. BEDRK.

TOPOGRAPHIC FEATURE
- ☐ LACUSTRINE
- ☐ RIVERINE
- ☐ BOTTOMLAND
- ☐ TERRACE
- ☐ VALLEY SLOPE
- ☐ TABLELAND
- ☐ ROLL. UPLAND
- ☐ CLIFF
- ☐ TALUS
- ☐ CREVICE / CAVE
- ☐ ALVAR
- ☐ ROCKLAND
- ☐ BEACH / BAR
- ☐ SAND DUNE
- ☐ BLUFF

HISTORY
- ☐ NATURAL
- ☐ CULTURAL

COVER
- ☐ OPEN
- ☐ SHRUB
- ☐ TREED

PLANT FORM
- ☐ PLANKTON
- ☐ SUBMERGED
- ☐ FLOATING-LVD.
- ☐ GRAMINOID
- ☐ FORB
- ☐ LICHEN
- ☐ BRYOPHYTE
- ☐ DECIDUOUS
- ☐ CONIFEROUS
- ☐ MIXED

COMMUNITY
- ☐ LAKE
- ☐ POND
- ☐ RIVER
- ☐ STREAM
- ☐ MARSH
- ☐ SWAMP
- ☐ FEN
- ☐ BOG
- ☐ BARREN
- ☐ MEADOW
- ☐ PRAIRIE
- ☐ THICKET
- ☐ SAVANNAH
- ☐ WOODLAND
- ☐ FOREST
- ☐ PLANTATION

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY			
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER			

HT CODES: **1**=>25m **2**=10<HT≤25m **3**=2<HT≤10m **4**=1<HT≤2m **5**=0.5<HT≤1m **6**=0.2<HT≤0.5m **7**=HT<0.2m

CVR CODES: **0**=NONE **1**=0%<CVR≤10% **2**=10<CVR≤25% **3**=25<CVR≤60% **4**=CVR>60%

SIZE CLASS ANALYSIS:		<10		10 – 24		25 – 50		>50
STANDING SNAGS:		<10		10 – 24		25 – 50		>50
DEADFALL/LOGS:		<10		10 – 24		25 – 50		>50

ABUNDANCE CODES: **N**=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT

WOODLAND MATURITY:		YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	**#1**	**#2**	**#3**	**#4**		**SOIL PROFILE**
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:		**CODE:**
VEGETATION TYPE:		**CODE:**
INCLUSION		**CODE:**
COMPLEX		**CODE:**

Notes:

LAYERS: **1**=CANOPY>10m **2**=SUB-CANOPY **3**=UNDERSTOREY **4**=GROUND (GRD.) LAYER

ABUNDANCE CODES: **N**=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT **D**=DOMINANT

SPECIES CODE	LAYER				COLL.	SPECIES CODE	LAYER				COLL.
	1	2	3	4			1	2	3	4	
						SAN CANA					
						ERYTHRONIUM					
						MAI STLC					
						TAROFFI					
						GLE HEDE					
CRATAEGUS					PICS						
RIBCYNO											
RIBRUBR											

ELC **COMMUNITY DESCRIPTION & CLASSIFICATION**	**PROJECT NAME:** NELSON		**POLYGON:** 10	
	SURVEYOR(S): JR, AS		**DATE:** MAY 27 -19	**PHOTO:**
	START:	**END:**	**UTM:**	

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL	☐ ORGANIC	☐ LACUSTRINE	☐ NATURAL	☐ PLANKTON	☐ LAKE
☐ WETLAND	☐ MINERAL SOIL	☐ RIVERINE	☐ CULTURAL	☐ SUBMERGED	☐ POND
☐ AQUATIC	☐ PARENT MIN.	☐ BOTTOMLAND		☐ FLOATING-LVD.	☐ RIVER
	☐ ACIDIC BEDRK.	☐ TERRACE		☐ GRAMINOID	☐ STREAM
	☐ BASIC BEDRK.	☐ VALLEY SLOPE		☐ FORB	☐ MARSH
	☐ CARB. BEDRK.	☐ TABLELAND		☐ LICHEN	☐ SWAMP
		☐ ROLL. UPLAND		☐ BRYOPHYTE	☐ FEN
		☐ CLIFF		☐ DECIDUOUS	☐ BOG
		☐ TALUS		☐ CONIFEROUS	☐ BARREN
SITE		☐ CREVICE / CAVE	**COVER**	☐ MIXED	☐ MEADOW
☐ OPEN WATER		☐ ALVAR	☐ OPEN		☐ PRAIRIE
☐ SHALLOW WATER		☐ ROCKLAND	☐ SHRUB		☐ THICKET
☐ SURFICIAL DEP.		☐ BEACH / BAR	☐ TREED		☐ SAVANNAH
☐ BEDROCK		☐ SAND DUNE			☐ WOODLAND
		☐ BLUFF			☐ FOREST
					☐ PLANTATION

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY			
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER			

HT CODES: **1**=>25m **2**=10<HT≤25m **3**=2<HT≤10m **4**=1<HT≤2m **5**=0.5<HT≤1m **6**=0.2<HT≤0.5m **7**=HT<0.2m

CVR CODES: **0**=NONE **1**=0%<CVR≤10% **2**=10<CVR≤25% **3**=25<CVR≤60% **4**=CVR>60%

SIZE CLASS ANALYSIS:		<10		10 – 24		25 – 50		>50
STANDING SNAGS:		<10		10 – 24		25 – 50		>50
DEADFALL/LOGS:		<10		10 – 24		25 – 50		>50

ABUNDANCE CODES: **N**=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT

WOODLAND MATURITY:	YOUNG	MID-AGE	MATURE	OLD GROWTH

SOIL ASSESSMENT:	#1	#2	#3	#4		**SOIL PROFILE**
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:		**CODE:**
VEGETATION TYPE:		**CODE:** FOD
INCLUSION		**CODE:**
COMPLEX		**CODE:**

Notes:

LAYERS: **1**=CANOPY>10m **2**=SUB-CANOPY **3**=UNDERSTOREY **4**=GROUND (GRD.) LAYER
ABUNDANCE CODES: **N**=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT **D**=DOMINANT

SPECIES CODE	LAYER 1	2	3	4	COLL.	SPECIES CODE	LAYER 1	2	3	4	COLL.
						CAR CONC				A	
						ARI TRIP				O	
						AQU CANA				R	
						POD PELT				O-A	
						ERYTHRONIUM				A	
						TRI GRAN				R-O	
						VIO PUBE				R-O	
						HYD VIRG				O	
						ACT RUBR				R	
LIG VULG			R								

ELC **COMMUNITY DESCRIPTION & CLASSIFICATION**	**PROJECT NAME:** NELSON		**POLYGON:** 11
	SURVEYOR(S): JTL	**DATE:** MAY 27-19	**PHOTO:**
	START:	**END:**	**UTM:**

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL	☐ ORGANIC	☐ LACUSTRINE	☐ NATURAL	☐ PLANKTON	☐ LAKE
☐ WETLAND	☐ MINERAL SOIL	☐ RIVERINE	☐ CULTURAL	☐ SUBMERGED	☐ POND
☐ AQUATIC	☐ PARENT MIN.	☐ BOTTOMLAND		☐ FLOATING-LVD.	☐ RIVER
	☐ ACIDIC BEDRK.	☐ TERRACE		☐ GRAMINOID	☐ STREAM
	☐ BASIC BEDRK.	☐ VALLEY SLOPE		☐ FORB	☐ MARSH
	☐ CARB. BEDRK.	☐ TABLELAND		☐ LICHEN	☐ SWAMP
		☐ ROLL. UPLAND		☐ BRYOPHYTE	☐ FEN
		☐ CLIFF		☐ DECIDUOUS	☐ BOG
		☐ TALUS		☐ CONIFEROUS	☐ BARREN
SITE		☐ CREVICE / CAVE	**COVER**	☐ MIXED	☐ MEADOW
☐ OPEN WATER		☐ ALVAR	☐ OPEN		☐ PRAIRIE
☐ SHALLOW WATER		☐ ROCKLAND	☐ SHRUB		☐ THICKET
☐ SURFICIAL DEP.		☐ BEACH / BAR	☐ TREED		☐ SAVANNAH
☐ BEDROCK		☐ SAND DUNE			☐ WOODLAND
		☐ BLUFF			☐ FOREST
					☐ PLANTATION

STAND DESCRIPTION:

	LAYER	HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY			
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER			

HT CODES: **1=**>25m **2=**10<HT≤25m **3=**2<HT≤10m **4=**1<HT≤2m **5=**0.5<HT≤1m **6=**0.2<HT≤0.5m **7=**HT<0.2m

CVR CODES: **0=**NONE **1=**0%<CVR≤10% **2=**10<CVR≤25% **3=**25<CVR≤60% **4=**CVR>60%

SIZE CLASS ANALYSIS:		<10		10 – 24		25 – 50		>50
STANDING SNAGS:		<10		10 – 24		25 – 50		>50
DEADFALL/LOGS:		<10		10 – 24		25 – 50		>50

ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT

WOODLAND MATURITY:		YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	#1	#2	#3	#4		SOIL PROFILE
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:		**CODE:**
VEGETATION TYPE:		**CODE:** FOD
INCLUSION		**CODE:**
COMPLEX		**CODE:**

Notes:

LAYERS: **1=**CANOPY>10m **2=**SUB-CANOPY **3=**UNDERSTOREY **4=**GROUND (GRD.) LAYER
ABUNDANCE CODES: **N=**NONE **R=**RARE **O=**OCCASIONAL **A=**ABUNDANT **D=**DOMINANT

SPECIES CODE	LAYER				COLL.	SPECIES CODE	LAYER				COLL.
	1	2	3	4			1	2	3	4	
						CAR GRAC					
						CIR LUTE					
						ALL PETI					
						CAR RADI					
						RAN RECU					
						VER OFFI					
						VIO SORO					
						ARI TRIP					

ELC COMMUNITY DESCRIPTION & CLASSIFICATION				
	PROJECT NAME:		**POLYGON:** 12	
	SURVEYOR(S): JTL; AS		**DATE:** MAY 27-19	**PHOTO:**
	START:	**END:**	**UTM:**	

POLYGON DESCRIPTION

SYSTEM	SUBSTRATE	TOPOGRAPHIC FEATURE	HISTORY	PLANT FORM	COMMUNITY
☐ TERRESTRIAL ☐ WETLAND ☐ AQUATIC	☐ ORGANIC ☐ MINERAL SOIL ☐ PARENT MIN. ☐ ACIDIC BEDRK. ☐ BASIC BEDRK. ☐ CARB. BEDRK.	☐ LACUSTRINE ☐ RIVERINE ☐ BOTTOMLAND ☐ TERRACE ☐ VALLEY SLOPE ☐ TABLELAND ☐ ROLL. UPLAND ☐ CLIFF ☐ TALUS ☐ CREVICE / CAVE ☐ ALVAR ☐ ROCKLAND ☐ BEACH / BAR ☐ SAND DUNE ☐ BLUFF	☐ NATURAL ☐ CULTURAL	☐ PLANKTON ☐ SUBMERGED ☐ FLOATING-LVD. ☐ GRAMINOID ☐ FORB ☐ LICHEN ☐ BRYOPHYTE ☐ DECIDUOUS ☐ CONIFEROUS ☐ MIXED	☐ LAKE ☐ POND ☐ RIVER ☐ STREAM ☐ MARSH ☐ SWAMP ☐ FEN ☐ BOG ☐ BARREN ☐ MEADOW ☐ PRAIRIE ☐ THICKET ☐ SAVANNAH ☐ WOODLAND ☐ FOREST ☐ PLANTATION

SITE
☐ OPEN WATER ☐ SHALLOW WATER ☐ SURFICIAL DEP. ☐ BEDROCK

COVER
☐ OPEN ☐ SHRUB ☐ TREED

STAND DESCRIPTION:

LAYER		HT	CVR	SPECIES IN ORDER OF DECREASING DOMINANCE (>>MUCH GREATER THAN; >GREATER THAN; = ABOUT EQUAL TO)
1	CANOPY			
2	SUB-CANOPY			
3	UNDERSTOREY			
4	GRD. LAYER			

HT CODES: **1**=>25m **2**=10<HT≤25m **3**=2<HT≤10m **4**=1<HT≤2m **5**=0.5<HT≤1m **6**=0.2<HT≤0.5m **7**=HT<0.2m

CVR CODES: **0**=NONE **1**=0%<CVR≤10% **2**=10<CVR≤25% **3**=25<CVR≤60% **4**=CVR>60%

SIZE CLASS ANALYSIS:		<10		10 – 24		25 – 50		>50
STANDING SNAGS:		<10		10 – 24		25 – 50		>50
DEADFALL/LOGS:		<10		10 – 24		25 – 50		>50

ABUNDANCE CODES: **N**=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT

WOODLAND MATURITY:		YOUNG		MID-AGE		MATURE		OLD GROWTH

SOIL ASSESSMENT:	#1	#2	#3	#4		SOIL PROFILE
TEXTURE:						
DEPTH TO MOTTLES (g):						
DEPTH TO GLEY (G):						
DEPTH OF ORGANICS:						
DEPTH TO BEDROCK:						
MOISTURE REGIME:						

COMMUNITY CLASSIFICATION:

ECOSITE:		**CODE:**
VEGETATION TYPE:		**CODE:**
INCLUSION		**CODE:**
COMPLEX		**CODE:**

Notes:

LAYERS: **1**=CANOPY>10m **2**=SUB-CANOPY **3**=UNDERSTOREY **4**=GROUND (GRD.) LAYER
ABUNDANCE CODES: **N**=NONE **R**=RARE **O**=OCCASIONAL **A**=ABUNDANT **D**=DOMINANT

SPECIES CODE	LAYER				COLL.
	1	2	3	4	
VINCA MIN					
CRATAEGUS					Pics

SPECIES CODE	LAYER				COLL.
	1	2	3	4	
TAROFFI					
POAPRAT					
BERVULG					
FRAVIRG					

Appendix C – Ecological Field Data – Salamanders

VP1

Jefferson Salamander Habitat Suitability Assessment

(Criteria derived from MNR Guelph District, 2014)

Administrative Information

Surveyors LW & EL & AM	Date April 4/19	**Savanta Project Code:** 8133

Site Information

UTM NAD83 ZONE 17: Easting 589737 Northing 4805096	**Pond/Vernal pool identifier on field map** VP1 (trapping pond)	**Photo No.** GPS Kit (P1)
Surrounding ELC FOD7-2 & golf course	**Shape and approx. size of pond/vernal pool** linear / irregular	**Approx. average depth (cm)** ±>100 cm

Site Inventory

Predatory fish

☐ YES ☒ NO

(If yes, please list species) (Note: Sticklebacks and minnows are not considered predatory fish)

List of Species

— none —

Presence of emergent vegetation?

☒ YES ☐ NO

(If yes, please list species)

List of Species

red osier dogwood
small tree/shrub spp. (pussy willow, maple spp)

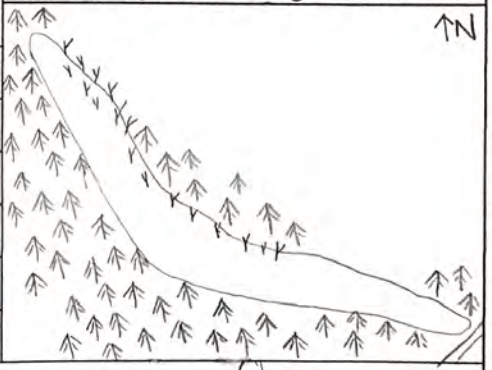
Presence of egg attachment sites?

☒ YES ☐ NO

(If yes, please explain each site: number of attachment sites; type of attachment objects (shrub, fallen tree, submergent/emergent veg, log, branch, etc.); location of each site in the pond (quick sketch)

Egg Site ID	Number of attachments	Description of attachment objects
red osier dogwood		
fallen branches		
leaf litter		

Sketch of pond showing site locations

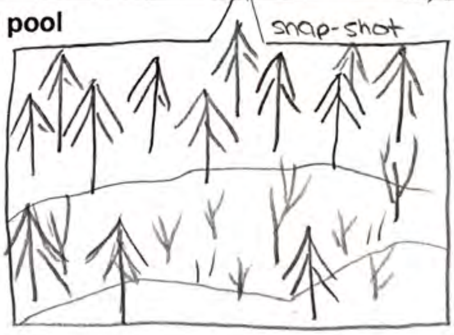


Canopy cover over pond/vernal pool (%)

60%

Incidental observations in and around pond/vernal pool

snap-shot



VFVP2
VI

Jefferson Salamander Habitat Suitability Assessment

(Criteria derived from MNR Guelph District, 2014)

Administrative Information

Surveyors	Date	**Savanta Project Code:**
LW & EL & Am	April 4/19	8133

Site Information

UTM NAD83 ZONE 17:

Easting 589875 Northing 4805056

Pond/Vernal pool identifier on field map: VP2 (trapping pond)

Photo No.: GPS Kit (P2)

Surrounding ELC: FOD7-4, SWD2, MAM2-2 & golf course

Shape and approx. size of pond/vernal pool: square / irregular (mix of woodland & MAM)

Approx. average depth (cm): ± > 30-35cm

Site Inventory

Predatory fish

☐ YES ☒ NO

(If yes, please list species) (Note: Sticklebacks and minnows are not considered predatory fish)

List of Species

— none —

Presence of emergent vegetation?

☒ YES ☐ NO

(If yes, please list species)

List of Species

grey dogwood / red osier dogwood.
tree spp. (manitoba maple)
limited herbs throughout FOD
reed canary grass / red osier (MAM2-2)

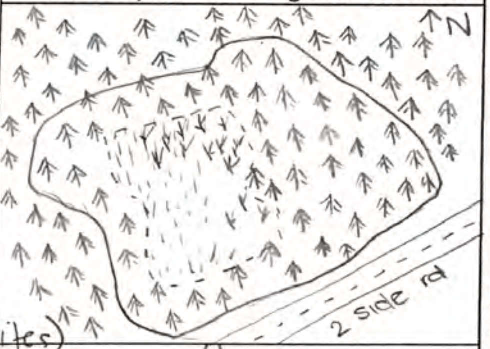
Presence of egg attachment sites?

☒ YES ☐ NO

(If yes, please explain each site: number of attachment sites; type of attachment objects (shrub, fallen tree, submergent/emergent veg, log, branch, etc.); location of each site in the pond (quick sketch)

Egg Site ID	Number of attachments	Description of attachment objects
fallen branches		
fallen trees		
shrubs		
herbs / grasses		
leaf debris		
(large # of		attachment sites)

Sketch of pond showing site locations



Canopy cover over pond/vernal pool (%)

80/ FOD

30%. MAM

Incidental observations in and around pond/vernal pool

snap-shot.

File: S:\6005 - SAV Marketing and Support\TEMPLATES - FIELD COLLECTION FORMS\04_2014_Jefferson_Salamander_Habitat Suitability Assessment

VP3

Jefferson Salamander Habitat Suitability Assessment

(Criteria derived from MNR Guelph District, 2014)

Administrative Information

Surveyors LW 3 EL 3 AM	Date April 4/19	**Savanta Project Code:** 8133

Site Information

UTM NAD83 ZONE 17: Easting 590576 Northing 4805199	**Pond/Vernal pool identifier on field map** VP3 (trapping pond)	**Photo No.** GPS Kit (P3)
Surrounding ELC SA/MAM CUM/CUT/CUP3	**Shape and approx. size of pond/vernal pool** oval * high algae levels - may have poor O2 levels.	**Approx. average depth (cm)** ± >40cm.

Site Inventory

Predatory fish

☐ YES ☒ NO

(If yes, please list species) (Note: Sticklebacks and minnows are not considered predatory fish)

List of Species

— none —

but minnow spp. present

Presence of emergent vegetation?

☒ YES ☐ NO

(If yes, please list species)

List of Species

Phragmites
a few shrub spp.

* pond is largely surrounded by phrag

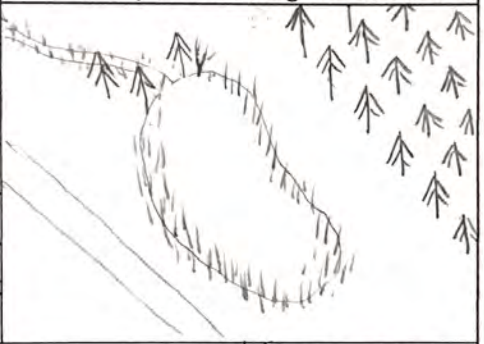
Presence of egg attachment sites?

☒ YES ☐ NO

(If yes, please explain each site: number of attachment sites; type of attachment objects (shrub, fallen tree, submergent/emergent veg, log, branch, etc.); location of each site in the pond (quick sketch)

Egg Site ID	Number of attachments	Description of attachment objects
	phragmites.	
	leaf litter	
- generally	a large #	
of	attachment sites,	
but	conditions are not	
ideal		

Sketch of pond showing site locations

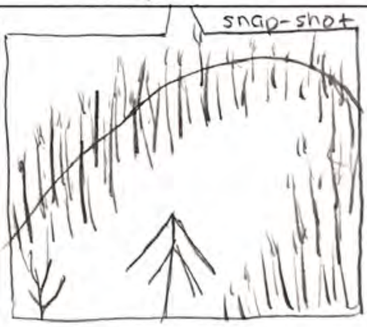


Canopy cover over pond/vernal pool (%)

15%

Incidental observations in and around pond/vernal pool

stickleback ×20



File: S:\6005 - SAV Marketing and Support\TEMPLATES - FIELD COLLECTION FORMS\04_2014_Jefferson_Salamander_Habitat Suitability Assessment

VP4

Jefferson Salamander Habitat Suitability Assessment

(Criteria derived from MNR Guelph District, 2014)

Administrative Information

Surveyors	Date	Savanta Project Code:
LW 3 EL 3 AM	April 4/19	8133

Site Information

UTM NAD83 ZONE 17:	Pond/Vernal pool identifier on field map	Photo No.
Easting 590900 Northing 4804959	VP4 (trapping pond)	GPS Kit (P4)

Surrounding ELC	Shape and approx. size of pond/vernal pool	Approx. average depth (cm)
SWT / CUP / FOD / MAM	oval / circular	± 40cm

Site Inventory

Predatory fish

☐ YES ☒ NO

(If yes, please list species) (Note: Sticklebacks and minnows are not considered predatory fish)

List of Species

— none —

Presence of emergent vegetation?

☒ YES ☐ NO

(If yes, please list species)

List of Species

red osier dogwood
herbs (not many)
trees (manitoba maple)

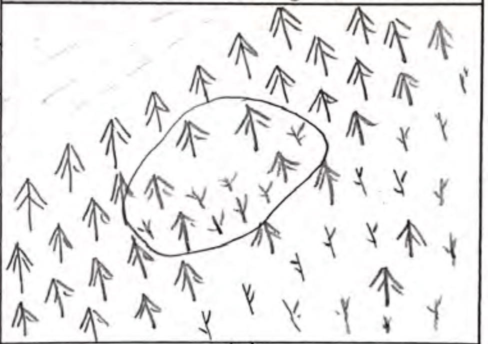
Presence of egg attachment sites?

☒ YES ☐ NO

(If yes, please explain each site: number of attachment sites; type of attachment objects (shrub, fallen tree, submergent/emergent veg, log, branch, etc.); location of each site in the pond (quick sketch)

Egg Site ID	Number of attachments	Description of attachment objects
red osier dogwood		
fallen branches		
leaf litter		

Sketch of pond showing site locations

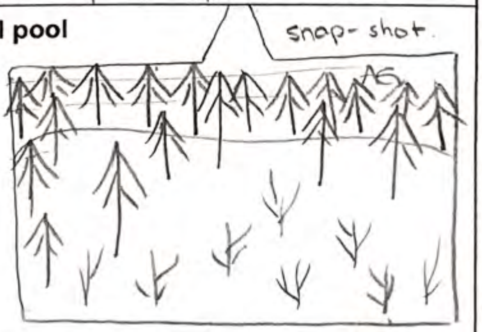


Canopy cover over pond/vernal pool (%)

75%

Incidental observations in and around pond/vernal pool

AMRO x 1



8/24 VP5

Jefferson Salamander Habitat Suitability Assessment

(Criteria derived from MNR Guelph District, 2014)

Administrative Information

Surveyors	Date	**Savanta Project Code:**
LW 3 EL 3 AM	April 4/19	8133

Site Information

UTM NAD83 ZONE 17:	Pond/Vernal pool identifier on field map	Photo No.
Easting 590928 Northing 4804930	VP5 (no trapping b/c no water)	GPS Kit (52)

Surrounding ELC	Shape and approx. size of pond/vernal pool	Approx. average depth (cm)
MAM / SWT FOD	Irregular * small amount of spring runoff water would not suit necessary hydroperiod for sal. breeding	0-2 cm.

Site Inventory

Predatory fish

☐ YES ☒ NO

(If yes, please list species) (Note: Sticklebacks and minnows are not considered predatory fish)

List of Species

- none -

Presence of emergent vegetation?

☒ YES ☐ NO

(If yes, please list species)

List of Species

reed canary grass (taken over feature)
red osier dogwood
cattail (limited)

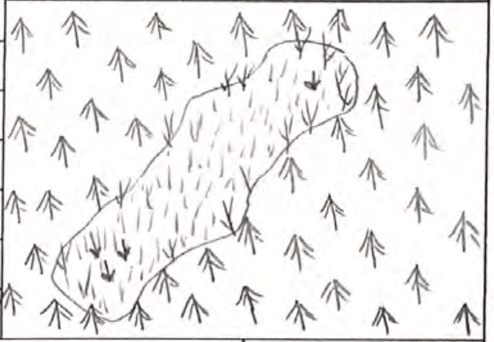
Presence of egg attachment sites?

☒ YES ☐ NO

(If yes, please explain each site: number of attachment sites; type of attachment objects (shrub, fallen tree, submergent/emergent veg, log, branch, etc.); location of each site in the pond (quick sketch)

Egg Site ID	Number of attachments	Description of attachment objects
Shrubs 3 grasses - but		
too densely vegetated w̄		
little to non-existant		
water presence.		

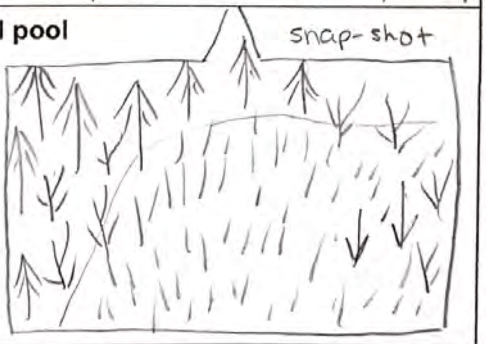
Sketch of pond showing site locations



Canopy cover over pond/vernal pool (%)

5%

Incidental observations in and around pond/vernal pool



~~BA~~VP6

Jefferson Salamander Habitat Suitability Assessment

(Criteria derived from MNR Guelph District, 2014)

Administrative Information

Surveyors LW 3 EL 3 AM

Date April 4/19

Savanta Project Code: 8133

Site Information

UTM NAD83 ZONE 17:

Easting 591124 Northing 4805230

Pond/Vernal pool identifier on field map VP6 (b/c no water) (no trapping)

Photo No. GPS Kit (S1)

Surrounding ELC MAM2 CUP3 / FOD

Shape and approx. size of pond/vernal pool oval / irregular

Approx. average depth (cm) 0cm.

Site Inventory

Predatory fish

☐ YES ☒ NO

(If yes, please list species) (Note: Sticklebacks and minnows are not considered predatory fish)

List of Species

no water presence - ∴ no fish

Presence of emergent vegetation?

☒ YES ☐ NO

(If yes, please list species)

List of Species

red osier dogwood.
willow (pussy willow)
herbs
reed canary grass

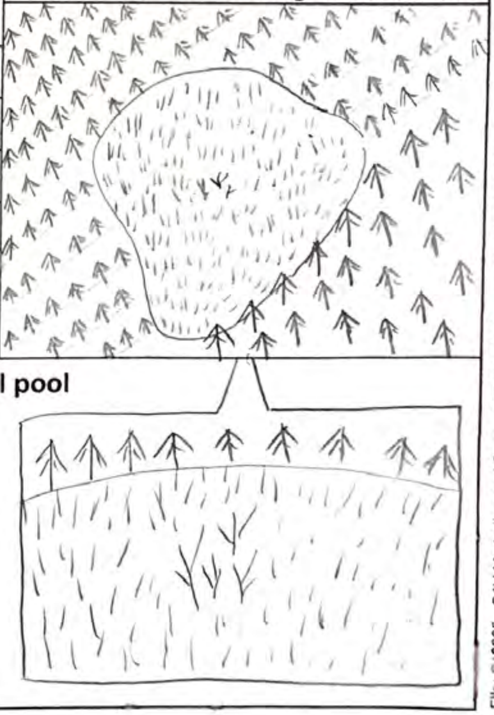
Presence of egg attachment sites?

☒ YES ☐ NO

(If yes, please explain each site: number of attachment sites; type of attachment objects (shrub, fallen tree, submergent/emergent veg, log, branch, etc.); location of each site in the pond (quick sketch)

Egg Site ID	Number of attachments	Description of attachment objects
none -	b/c	there is
no	water	presence

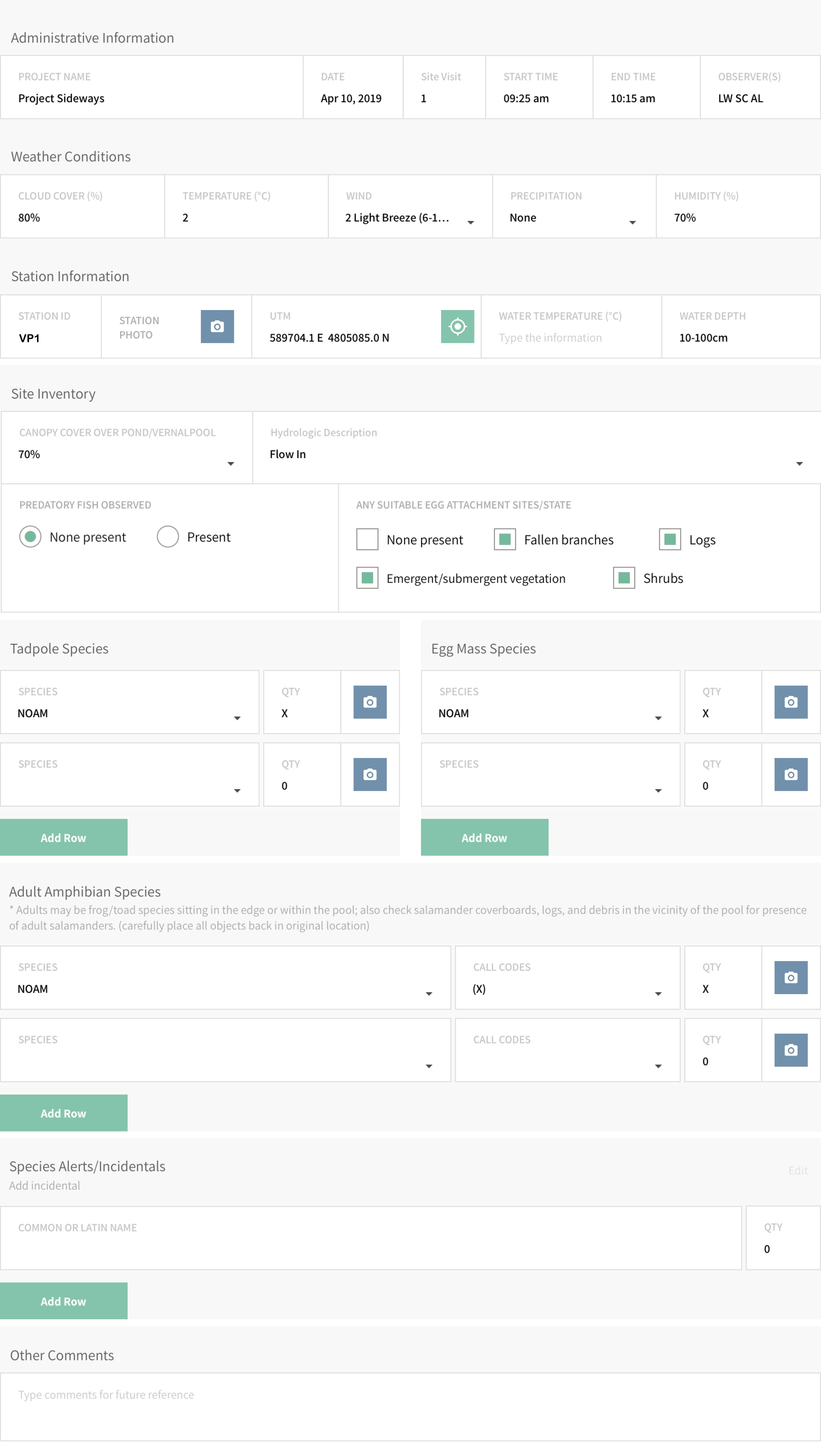
Sketch of pond showing site locations



Canopy cover over pond/vernal pool (%) 5%

Incidental observations in and around pond/vernal pool

KILL x 1



Administrative Information

PROJECT NAME	DATE	Site Visit	START TIME	END TIME	OBSERVER(S)
Project Sideways	Apr 10, 2019	1	09:25 am	10:15 am	LW SC AL

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
80%	2	2 Light Breeze (6-1…	None	70%

Station Information

STATION ID	STATION PHOTO	UTM	WATER TEMPERATURE (°C)	WATER DEPTH
VP1		589704.1 E 4805085.0 N	Type the information	10-100cm

Site Inventory

CANOPY COVER OVER POND/VERNALPOOL	Hydrologic Description
70%	Flow In

PREDATORY FISH OBSERVED

● None present ○ Present

ANY SUITABLE EGG ATTACHMENT SITES/STATE

☐ None present ☑ Fallen branches ☑ Logs

☑ Emergent/submergent vegetation ☑ Shrubs

Tadpole Species

SPECIES	QTY
NOAM	X
SPECIES	QTY
	0

Add Row

Egg Mass Species

SPECIES	QTY
NOAM	X
SPECIES	QTY
	0

Add Row

Adult Amphibian Species

* Adults may be frog/toad species sitting in the edge or within the pool; also check salamander coverboards, logs, and debris in the vicinity of the pool for presence of adult salamanders. (carefully place all objects back in original location)

SPECIES	CALL CODES	QTY
NOAM	(X)	X
SPECIES	CALL CODES	QTY
		0

Add Row

Species Alerts/Incidentals

Add incidental

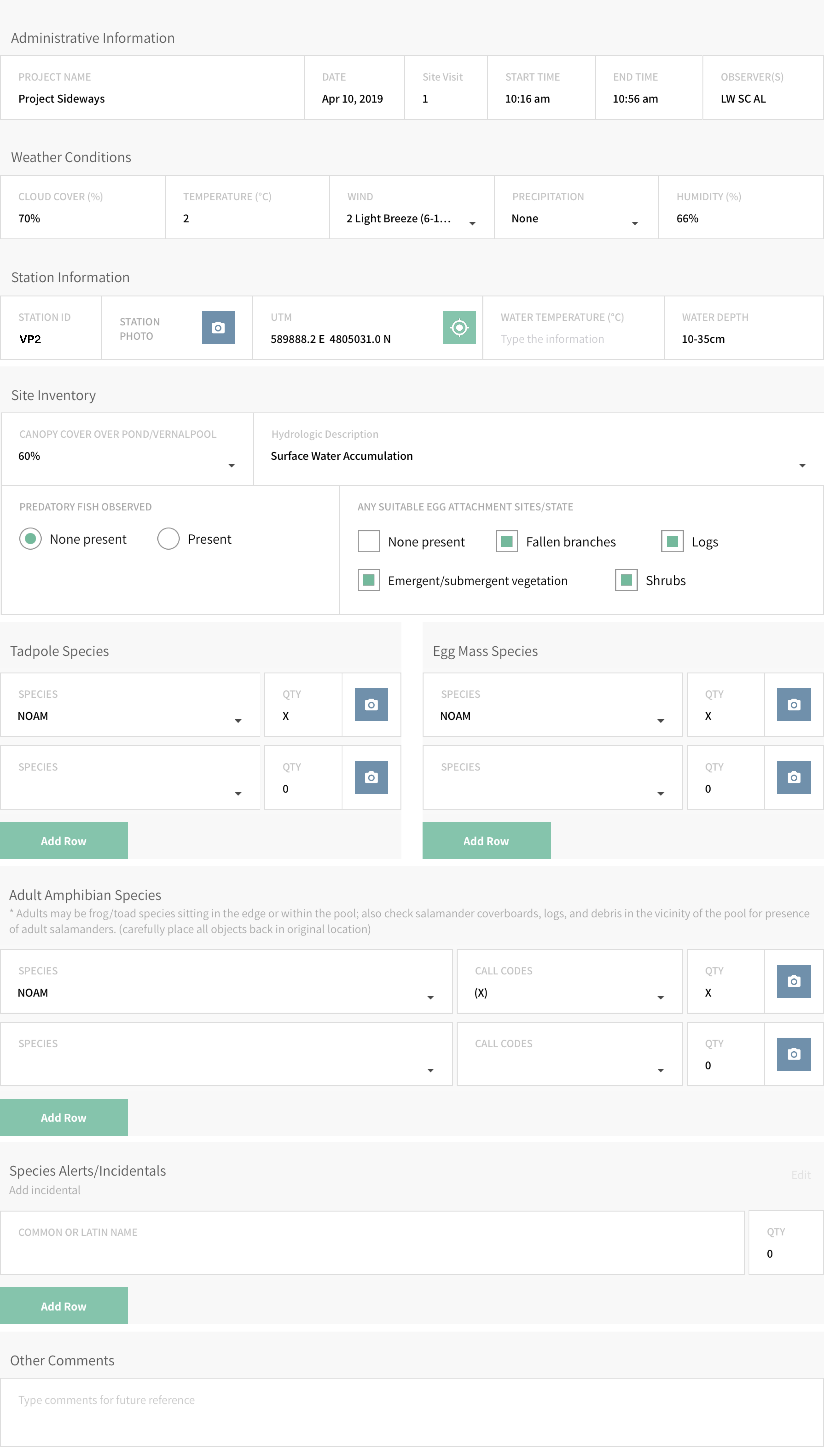
Edit

COMMON OR LATIN NAME	QTY
	0

Add Row

Other Comments

Type comments for future reference



Administrative Information

PROJECT NAME	DATE	Site Visit	START TIME	END TIME	OBSERVER(S)
Project Sideways	Apr 10, 2019	1	10:16 am	10:56 am	LW SC AL

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
70%	2	2 Light Breeze (6-1…	None	66%

Station Information

STATION ID	STATION PHOTO	UTM	WATER TEMPERATURE (°C)	WATER DEPTH
VP2		589888.2 E 4805031.0 N	Type the information	10-35cm

Site Inventory

CANOPY COVER OVER POND/VERNALPOOL	Hydrologic Description
60%	Surface Water Accumulation

PREDATORY FISH OBSERVED

● None present ○ Present

ANY SUITABLE EGG ATTACHMENT SITES/STATE

☐ None present ☑ Fallen branches ☑ Logs

☑ Emergent/submergent vegetation ☑ Shrubs

Tadpole Species

SPECIES	QTY
NOAM	X
SPECIES	QTY
	0

Egg Mass Species

SPECIES	QTY
NOAM	X
SPECIES	QTY
	0

Adult Amphibian Species

* Adults may be frog/toad species sitting in the edge or within the pool; also check salamander coverboards, logs, and debris in the vicinity of the pool for presence of adult salamanders. (carefully place all objects back in original location)

SPECIES	CALL CODES	QTY
NOAM	(X)	X
SPECIES	CALL CODES	QTY
		0

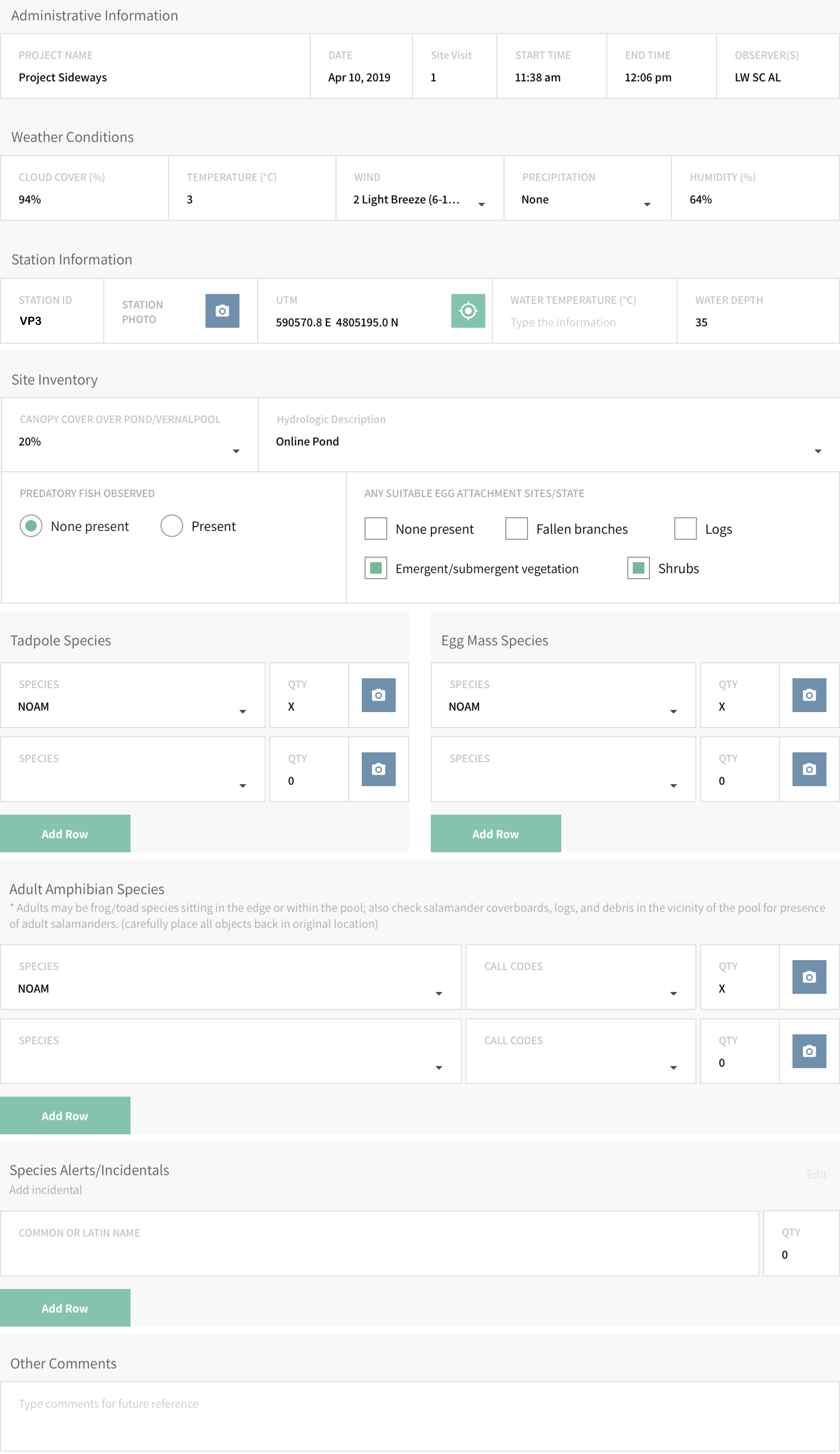
Species Alerts/Incidentals

Add incidental

COMMON OR LATIN NAME	QTY
	0

Other Comments

Type comments for future reference



Administrative Information

PROJECT NAME	DATE	Site Visit	START TIME	END TIME	OBSERVER(S)
Project Sideways	Apr 10, 2019	1	11:38 am	12:06 pm	LW SC AL

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
94%	3	2 Light Breeze (6-1…	None	64%

Station Information

STATION ID	STATION PHOTO	UTM	WATER TEMPERATURE (°C)	WATER DEPTH
VP3		590570.8 E 4805195.0 N	Type the information	35

Site Inventory

CANOPY COVER OVER POND/VERNALPOOL	Hydrologic Description
20%	Online Pond

PREDATORY FISH OBSERVED

● None present ○ Present

ANY SUITABLE EGG ATTACHMENT SITES/STATE

☐ None present ☐ Fallen branches ☐ Logs

☑ Emergent/submergent vegetation ☑ Shrubs

Tadpole Species

SPECIES	QTY
NOAM	X
	0

Egg Mass Species

SPECIES	QTY
NOAM	X
	0

Adult Amphibian Species

* Adults may be frog/toad species sitting in the edge or within the pool; also check salamander coverboards, logs, and debris in the vicinity of the pool for presence of adult salamanders. (carefully place all objects back in original location)

SPECIES	CALL CODES	QTY
NOAM		X
		0

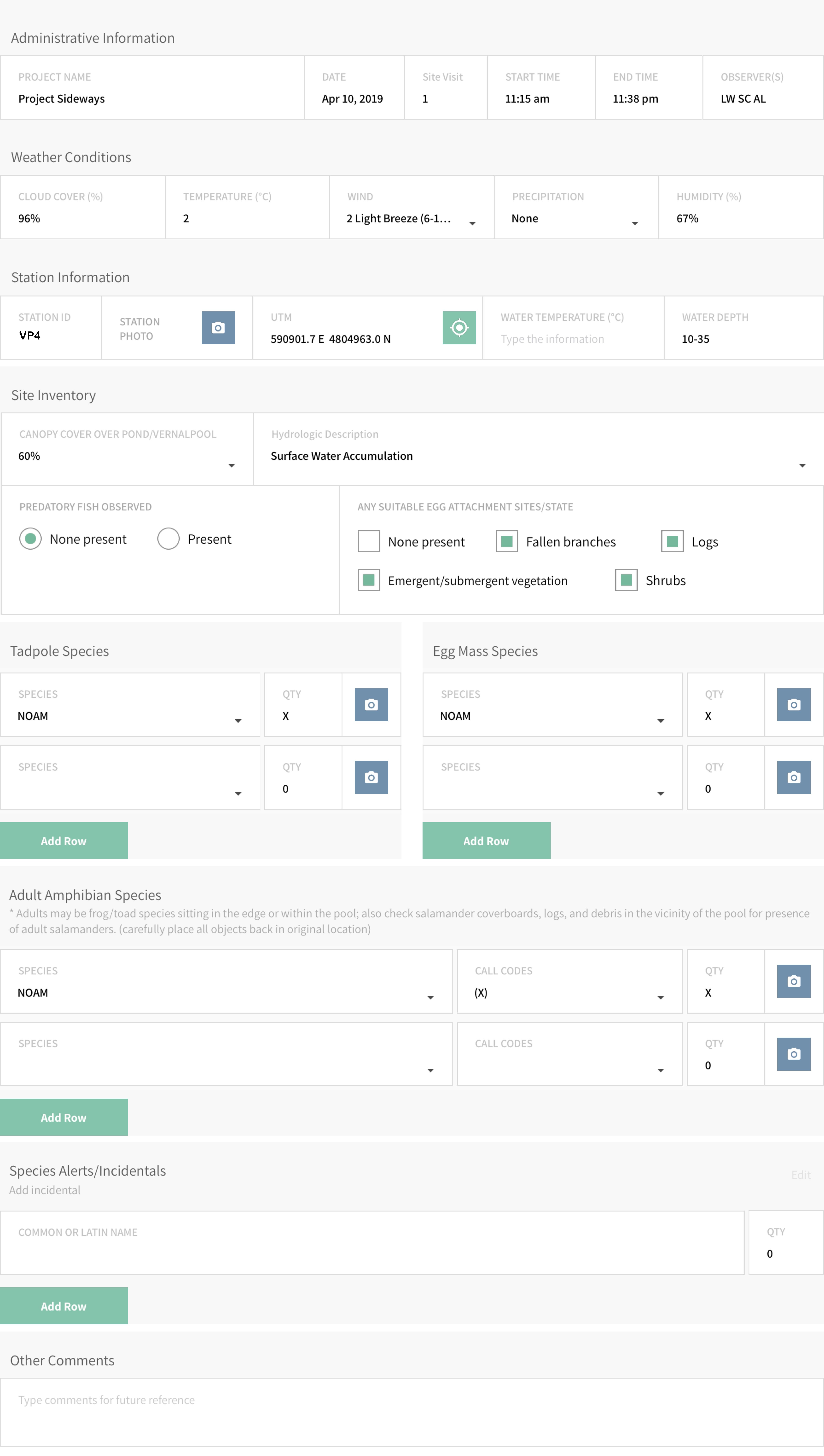
Species Alerts/Incidentals

Add incidental

COMMON OR LATIN NAME	QTY
	0

Other Comments

Type comments for future reference



Administrative Information

PROJECT NAME	DATE	Site Visit	START TIME	END TIME	OBSERVER(S)
Project Sideways	Apr 10, 2019	1	11:15 am	11:38 pm	LW SC AL

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
96%	2	2 Light Breeze (6-1…	None	67%

Station Information

STATION ID	STATION PHOTO	UTM	WATER TEMPERATURE (°C)	WATER DEPTH
VP4		590901.7 E 4804963.0 N	Type the information	10-35

Site Inventory

CANOPY COVER OVER POND/VERNALPOOL	Hydrologic Description
60%	Surface Water Accumulation

PREDATORY FISH OBSERVED

● None present ○ Present

ANY SUITABLE EGG ATTACHMENT SITES/STATE

☐ None present ☑ Fallen branches ☑ Logs

☑ Emergent/submergent vegetation ☑ Shrubs

Tadpole Species

SPECIES	QTY
NOAM	X
	0

Add Row

Egg Mass Species

SPECIES	QTY
NOAM	X
	0

Add Row

Adult Amphibian Species

* Adults may be frog/toad species sitting in the edge or within the pool; also check salamander coverboards, logs, and debris in the vicinity of the pool for presence of adult salamanders. (carefully place all objects back in original location)

SPECIES	CALL CODES	QTY
NOAM	(X)	X
		0

Add Row

Species Alerts/Incidentals

Add incidental

Edit

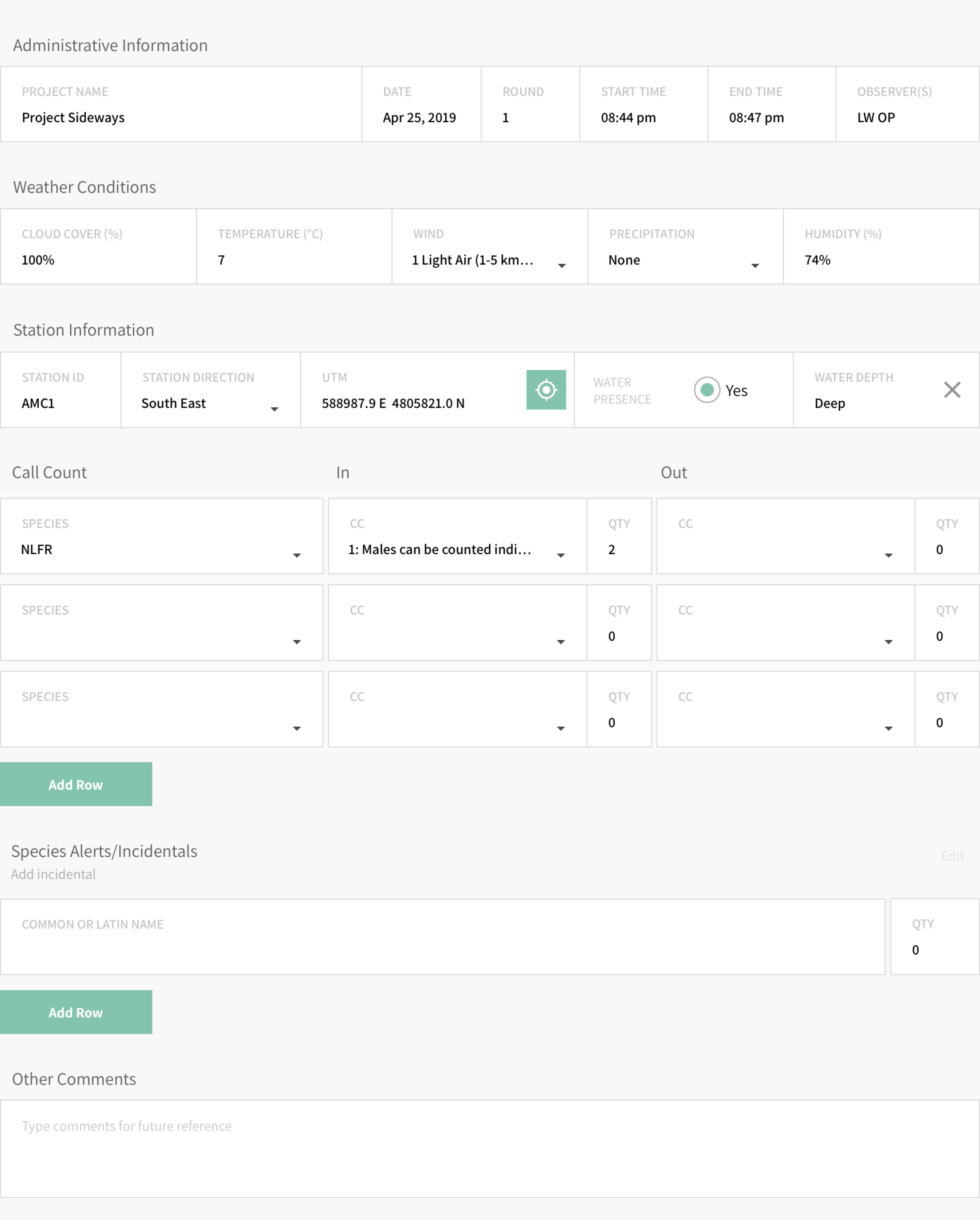
COMMON OR LATIN NAME	QTY
	0

Add Row

Other Comments

Type comments for future reference

Appendix C – Ecological Field Data – Frogs



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	Apr 25, 2019	1	08:44 pm	08:47 pm	LW OP

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
100%	7	1 Light Air (1-5 km…	None	74%

Station Information

STATION ID	STATION DIRECTION	UTM	WATER PRESENCE	WATER DEPTH
AMC1	South East	588987.9 E 4805821.0 N	● Yes	Deep

Call Count

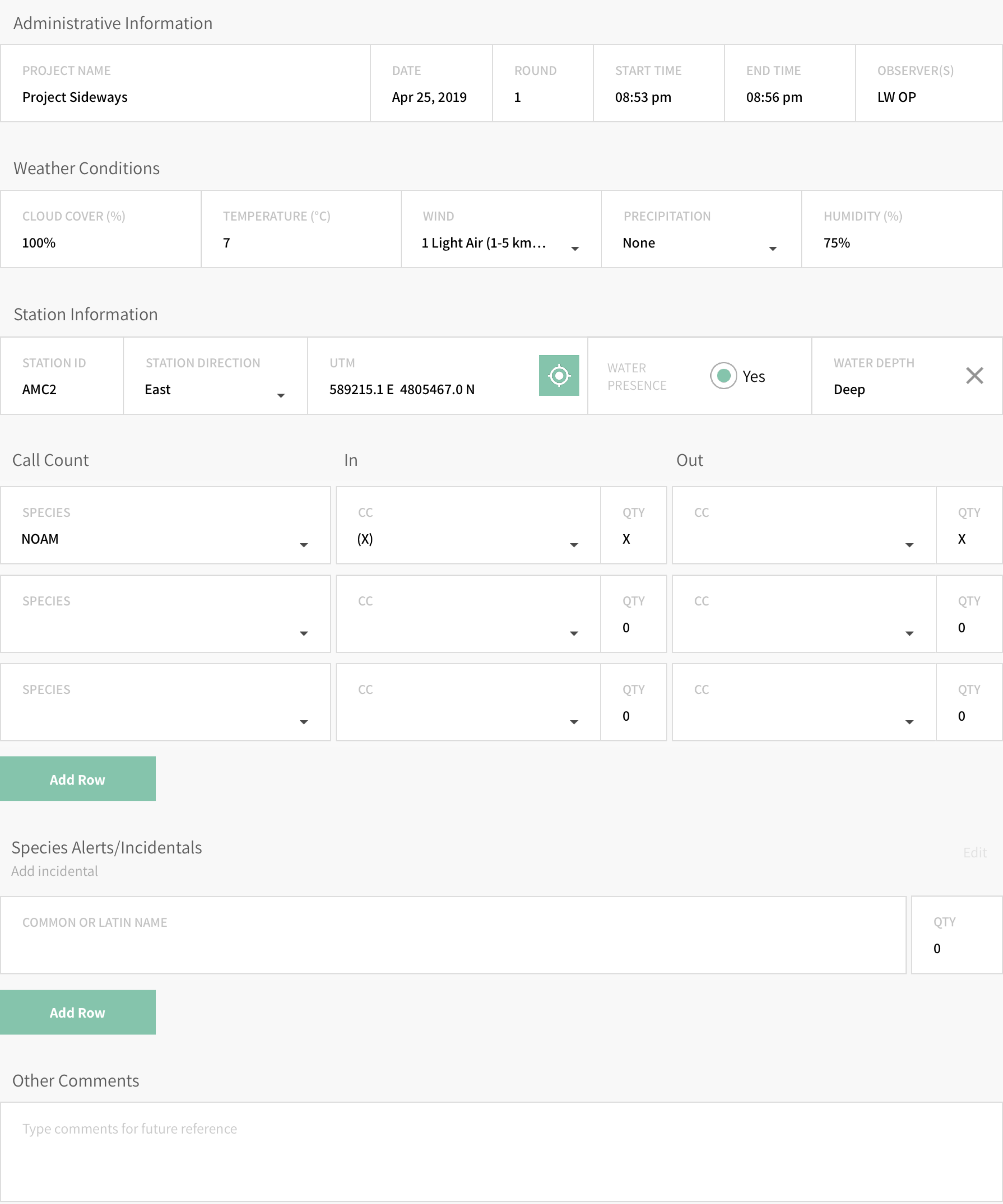
	In		Out	
SPECIES	CC	QTY	CC	QTY
NLFR	1: Males can be counted indi…	2		0
		0		0
		0		0

Species Alerts/Incidentals

COMMON OR LATIN NAME	QTY
	0

Other Comments

Type comments for future reference



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	Apr 25, 2019	1	08:53 pm	08:56 pm	LW OP

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
100%	7	1 Light Air (1-5 km…	None	75%

Station Information

STATION ID	STATION DIRECTION	UTM	WATER PRESENCE	WATER DEPTH
AMC2	East	589215.1 E 4805467.0 N	● Yes	Deep

Call Count

	In		Out	
SPECIES	CC	QTY	CC	QTY
NOAM	(X)	X		X
		0		0
		0		0

Add Row

Species Alerts/Incidentals

Add incidental

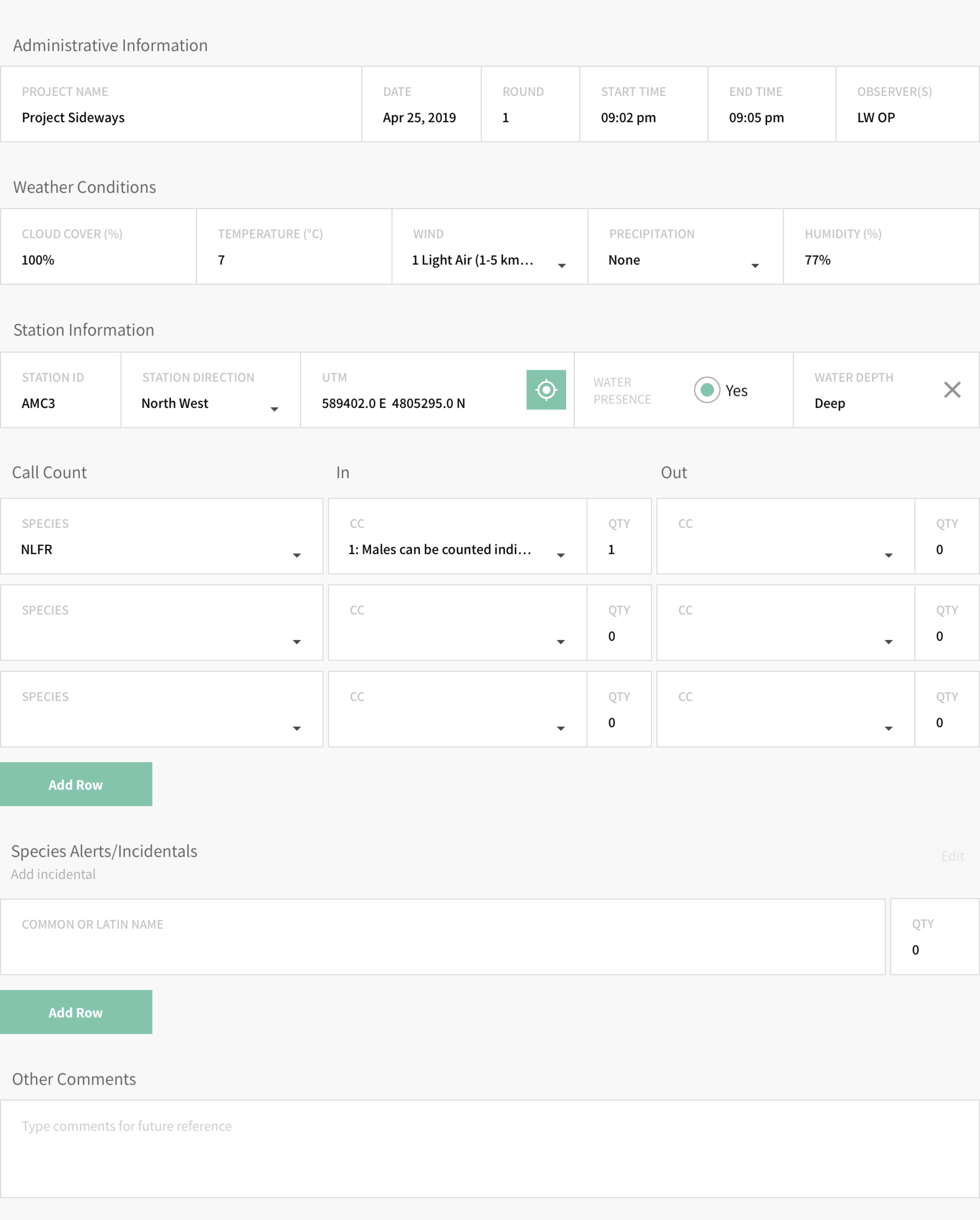
Edit

COMMON OR LATIN NAME	QTY
	0

Add Row

Other Comments

Type comments for future reference



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	Apr 25, 2019	1	09:02 pm	09:05 pm	LW OP

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
100%	7	1 Light Air (1-5 km…	None	77%

Station Information

STATION ID	STATION DIRECTION	UTM	WATER PRESENCE	WATER DEPTH
AMC3	North West	589402.0 E 4805295.0 N	● Yes	Deep

Call Count

	In		Out	
SPECIES	CC	QTY	CC	QTY
NLFR	1: Males can be counted indi…	1		0
		0		0
		0		0

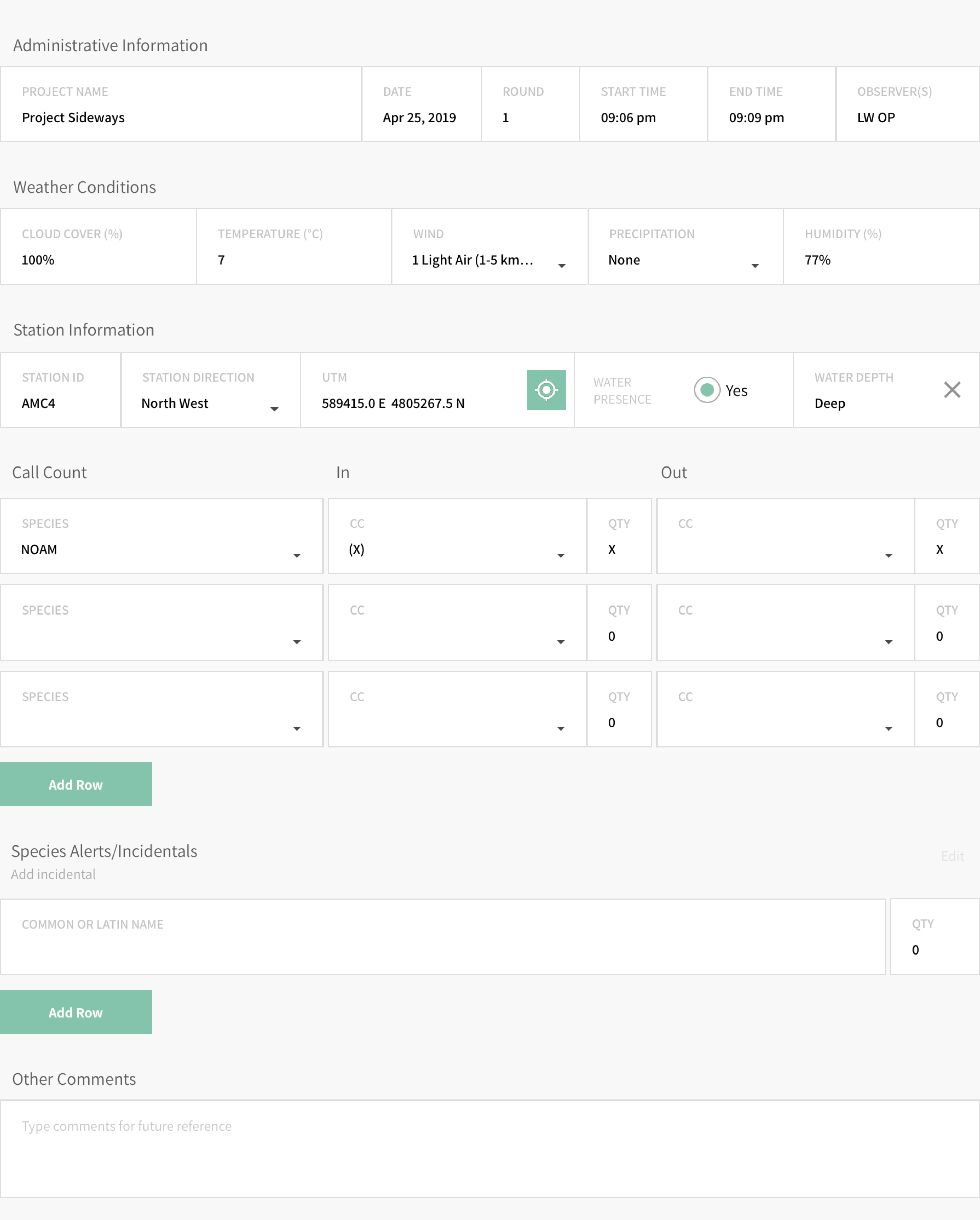
Species Alerts/Incidentals

Add incidental

COMMON OR LATIN NAME	QTY
	0

Other Comments

Type comments for future reference



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	Apr 25, 2019	1	09:06 pm	09:09 pm	LW OP

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
100%	7	1 Light Air (1-5 km…	None	77%

Station Information

STATION ID	STATION DIRECTION	UTM	WATER PRESENCE	WATER DEPTH
AMC4	North West	589415.0 E 4805267.5 N	● Yes	Deep

Call Count

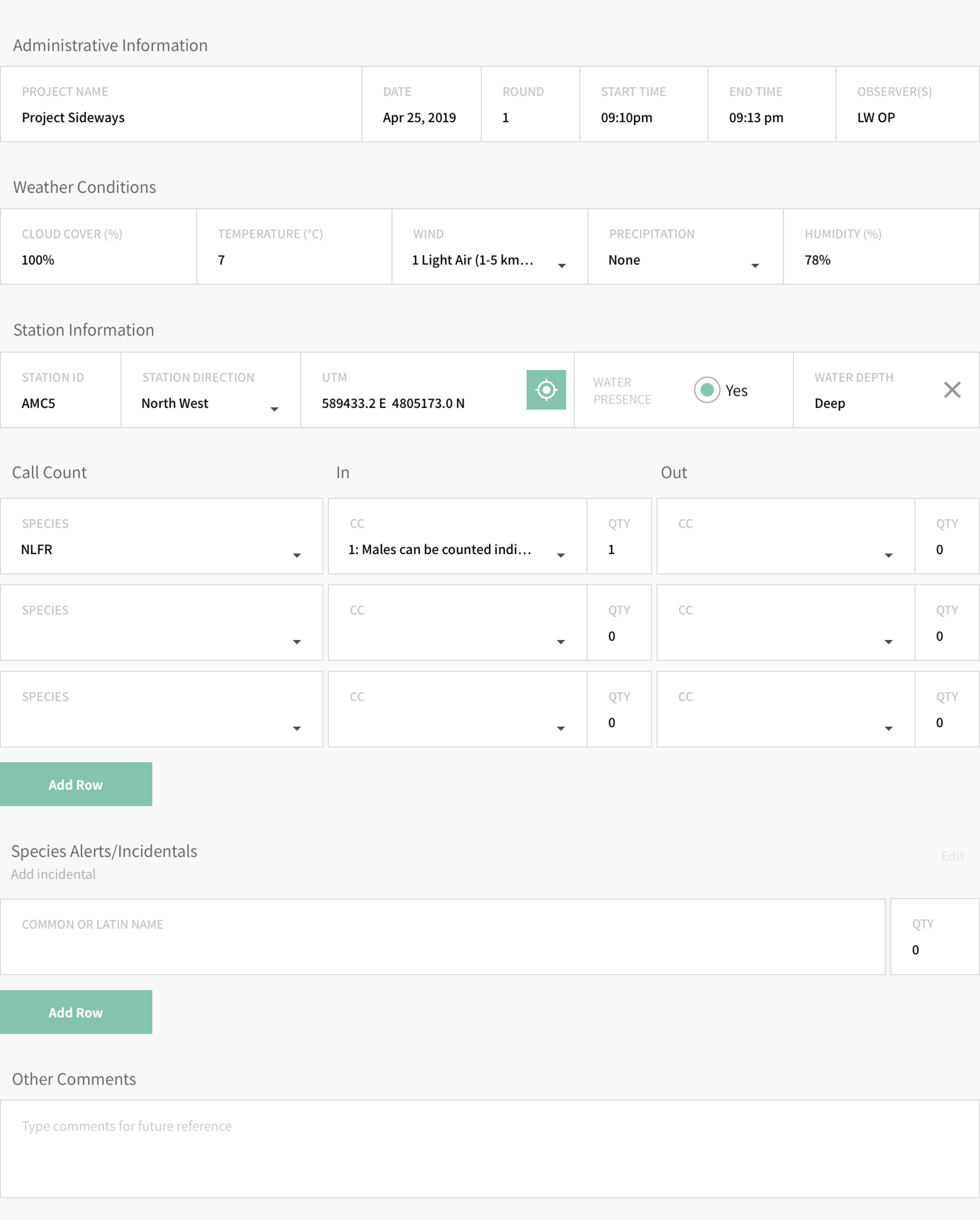
	In		Out	
SPECIES	CC	QTY	CC	QTY
NOAM	(X)	X		X
		0		0
		0		0

Species Alerts/Incidentals

Add incidental

COMMON OR LATIN NAME	QTY
	0

Other Comments



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	Apr 25, 2019	1	09:10pm	09:13 pm	LW OP

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
100%	7	1 Light Air (1-5 km…	None	78%

Station Information

STATION ID	STATION DIRECTION	UTM	WATER PRESENCE	WATER DEPTH
AMC5	North West	589433.2 E 4805173.0 N	● Yes	Deep

Call Count

	In		Out	
SPECIES	CC	QTY	CC	QTY
NLFR	1: Males can be counted indi…	1		0
		0		0
		0		0

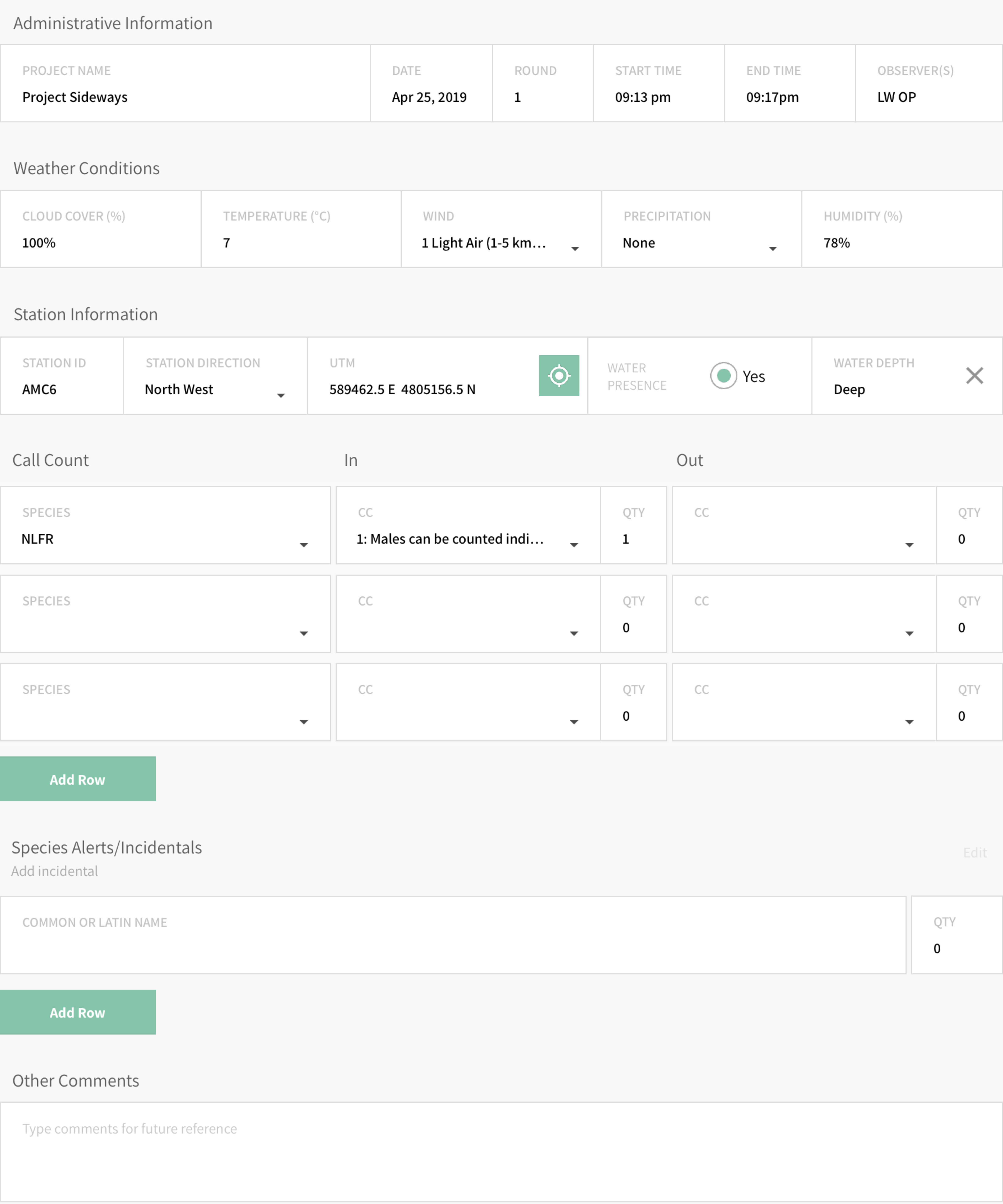
Species Alerts/Incidentals

Add incidental

COMMON OR LATIN NAME	QTY
	0

Other Comments

Type comments for future reference



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	Apr 25, 2019	1	09:13 pm	09:17pm	LW OP

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
100%	7	1 Light Air (1-5 km…	None	78%

Station Information

STATION ID	STATION DIRECTION	UTM	WATER PRESENCE	WATER DEPTH
AMC6	North West	589462.5 E 4805156.5 N	● Yes	Deep

Call Count

	In		Out	
SPECIES	CC	QTY	CC	QTY
NLFR	1: Males can be counted indi…	1		0
		0		0
		0		0

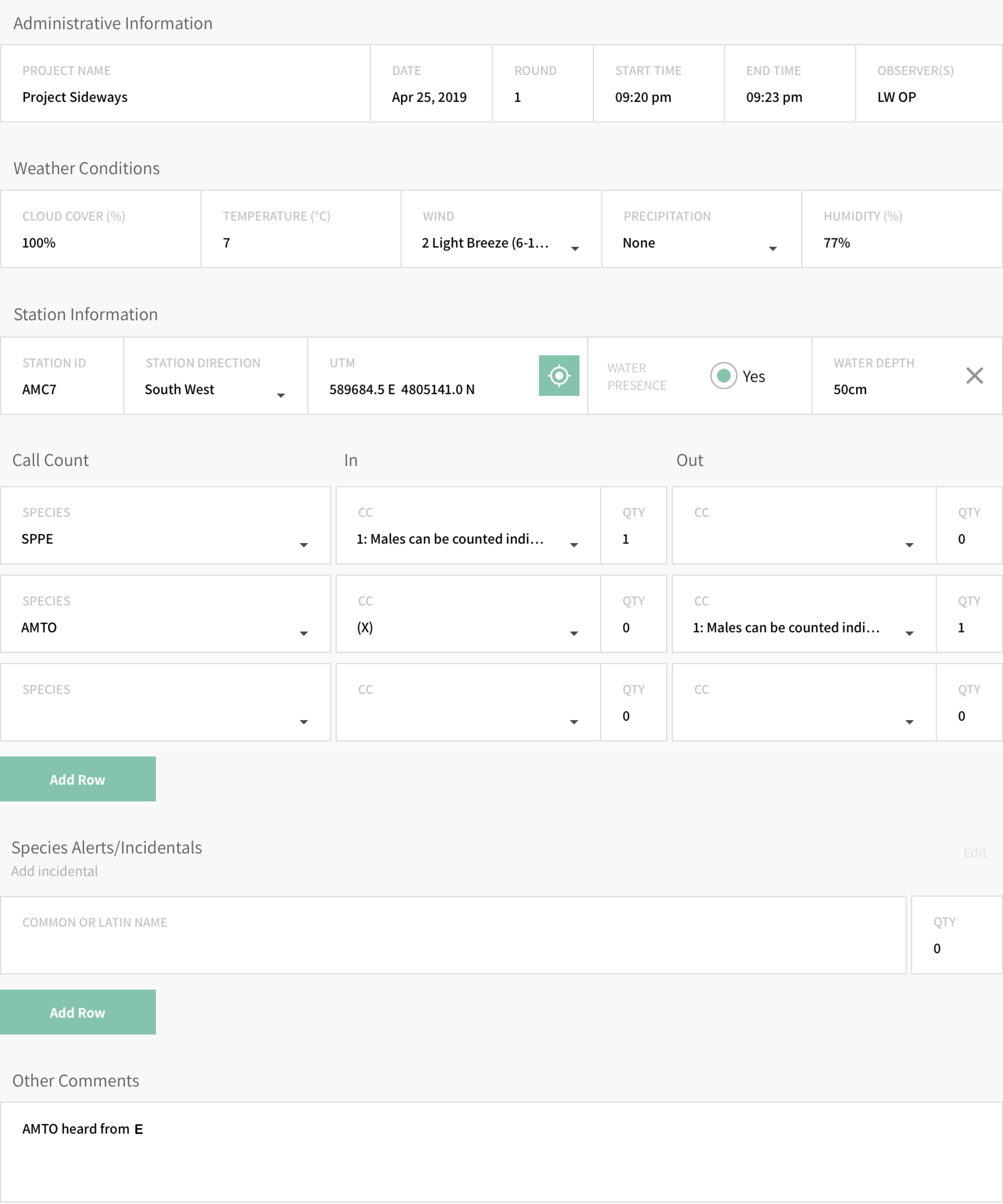
Species Alerts/Incidentals

Add incidental

COMMON OR LATIN NAME	QTY
	0

Other Comments

Type comments for future reference



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	Apr 25, 2019	1	09:20 pm	09:23 pm	LW OP

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
100%	7	2 Light Breeze (6-1…	None	77%

Station Information

STATION ID	STATION DIRECTION	UTM	WATER PRESENCE	WATER DEPTH
AMC7	South West	589684.5 E 4805141.0 N	● Yes	50cm

Call Count

	In		Out	
SPECIES	CC	QTY	CC	QTY
SPPE	1: Males can be counted indi…	1		0
AMTO	(X)	0	1: Males can be counted indi…	1
		0		0

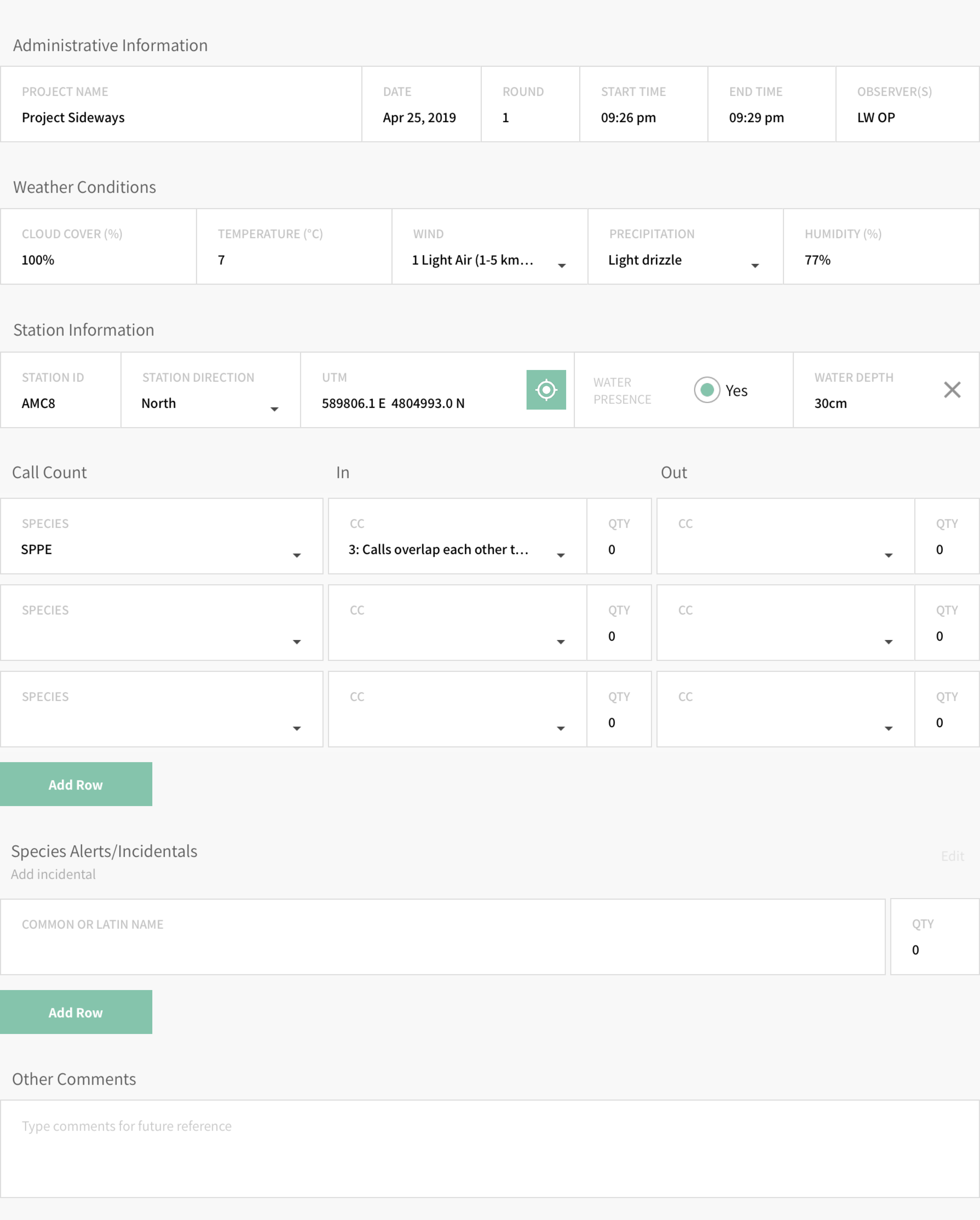
Species Alerts/Incidentals

Add incidental

COMMON OR LATIN NAME	QTY
	0

Other Comments

AMTO heard from E



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	Apr 25, 2019	1	09:26 pm	09:29 pm	LW OP

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
100%	7	1 Light Air (1-5 km…	Light drizzle	77%

Station Information

STATION ID	STATION DIRECTION	UTM	WATER PRESENCE	WATER DEPTH
AMC8	North	589806.1 E 4804993.0 N	● Yes	30cm

Call Count

	In		Out	
SPECIES	CC	QTY	CC	QTY
SPPE	3: Calls overlap each other t…	0		0
		0		0
		0		0

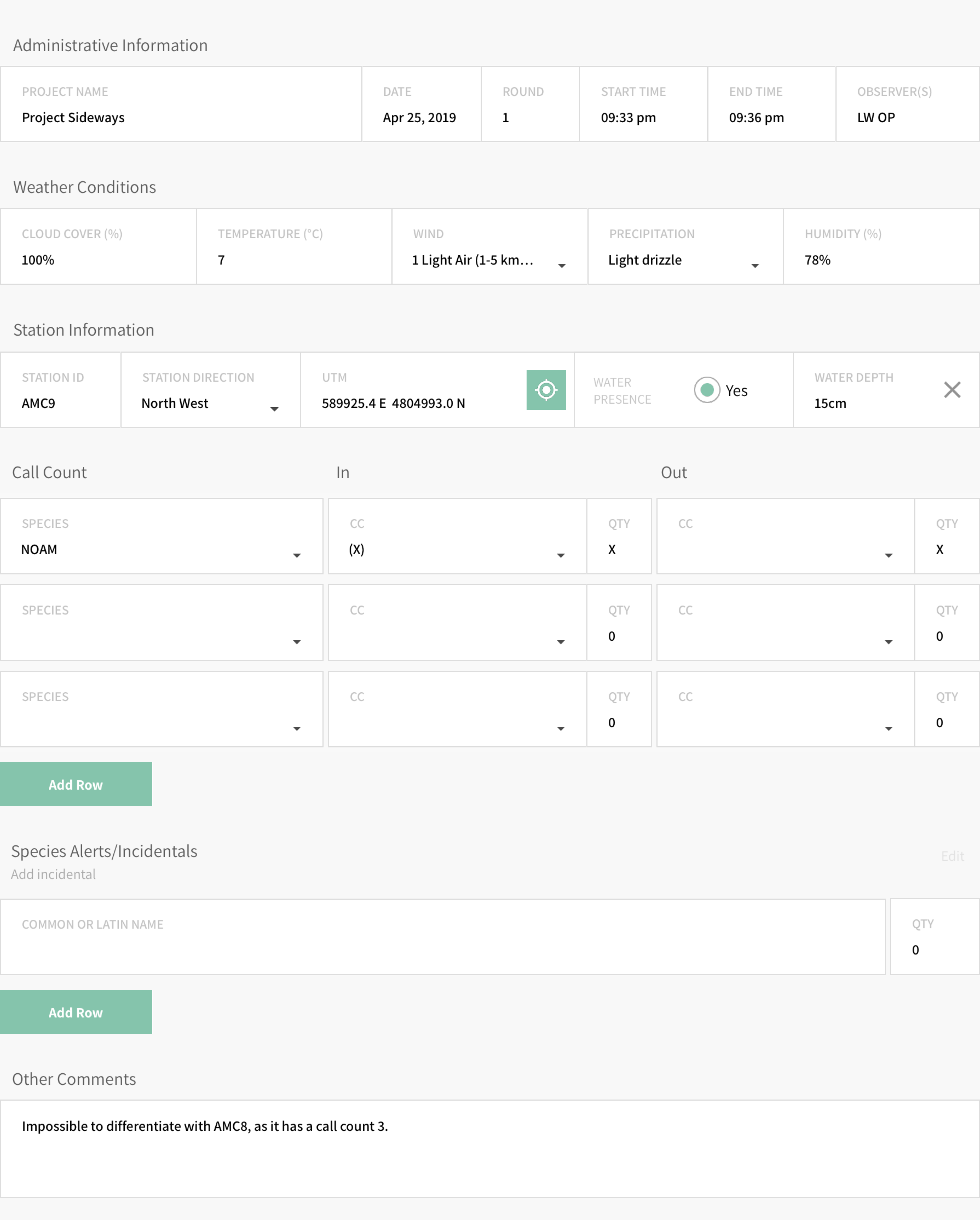
Species Alerts/Incidentals

Add incidental

COMMON OR LATIN NAME	QTY
	0

Other Comments

Type comments for future reference



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	Apr 25, 2019	1	09:33 pm	09:36 pm	LW OP

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
100%	7	1 Light Air (1-5 km…	Light drizzle	78%

Station Information

STATION ID	STATION DIRECTION	UTM	WATER PRESENCE	WATER DEPTH
AMC9	North West	589925.4 E 4804993.0 N	● Yes	15cm

Call Count

	In		Out	
SPECIES	CC	QTY	CC	QTY
NOAM	(X)	X		X
		0		0
		0		0

Add Row

Species Alerts/Incidentals

Add incidental

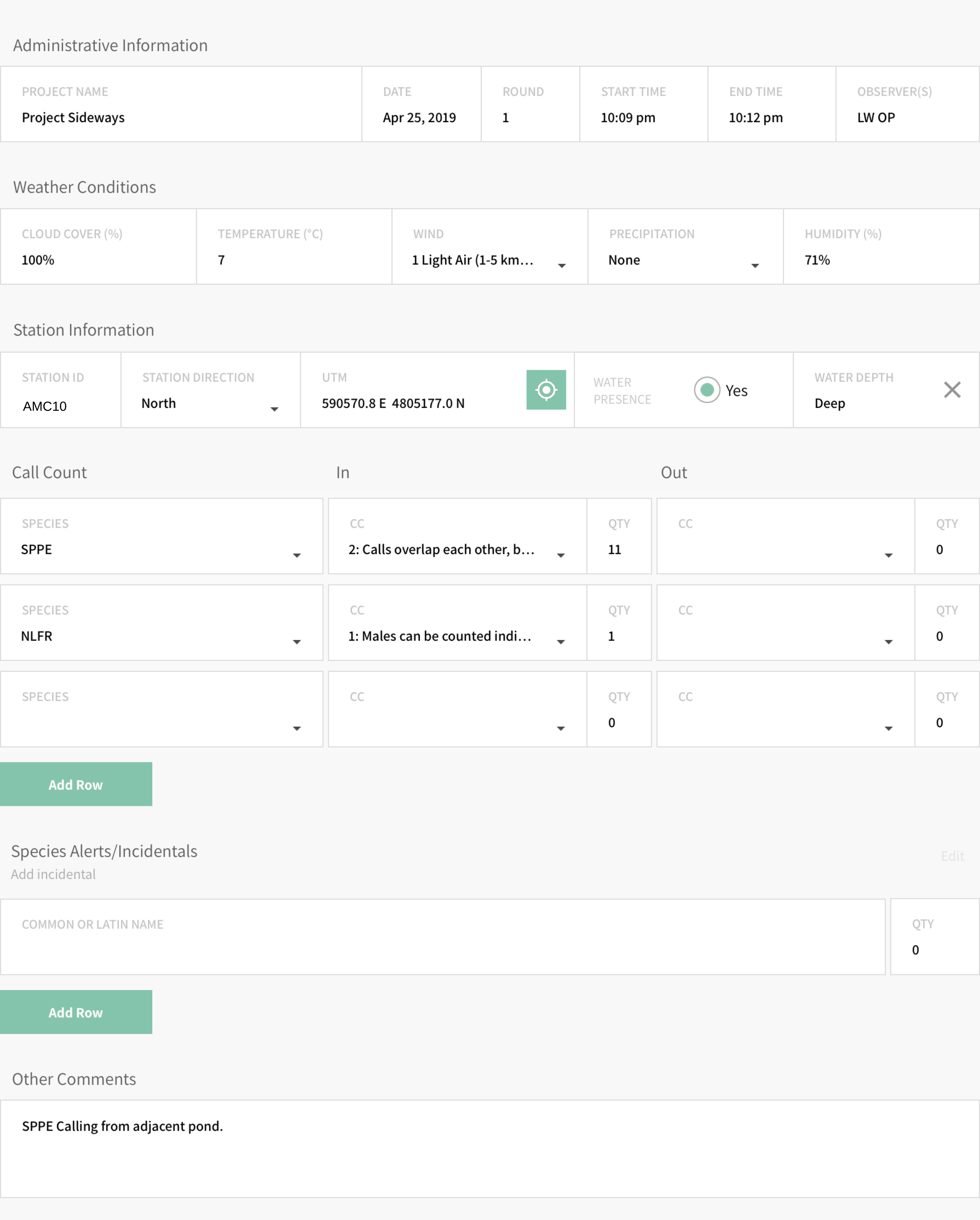
Edit

COMMON OR LATIN NAME	QTY
	0

Add Row

Other Comments

Impossible to differentiate with AMC8, as it has a call count 3.



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	Apr 25, 2019	1	10:09 pm	10:12 pm	LW OP

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
100%	7	1 Light Air (1-5 km…	None	71%

Station Information

STATION ID	STATION DIRECTION	UTM	WATER PRESENCE	WATER DEPTH
AMC10	North	590570.8 E 4805177.0 N	● Yes	Deep

Call Count

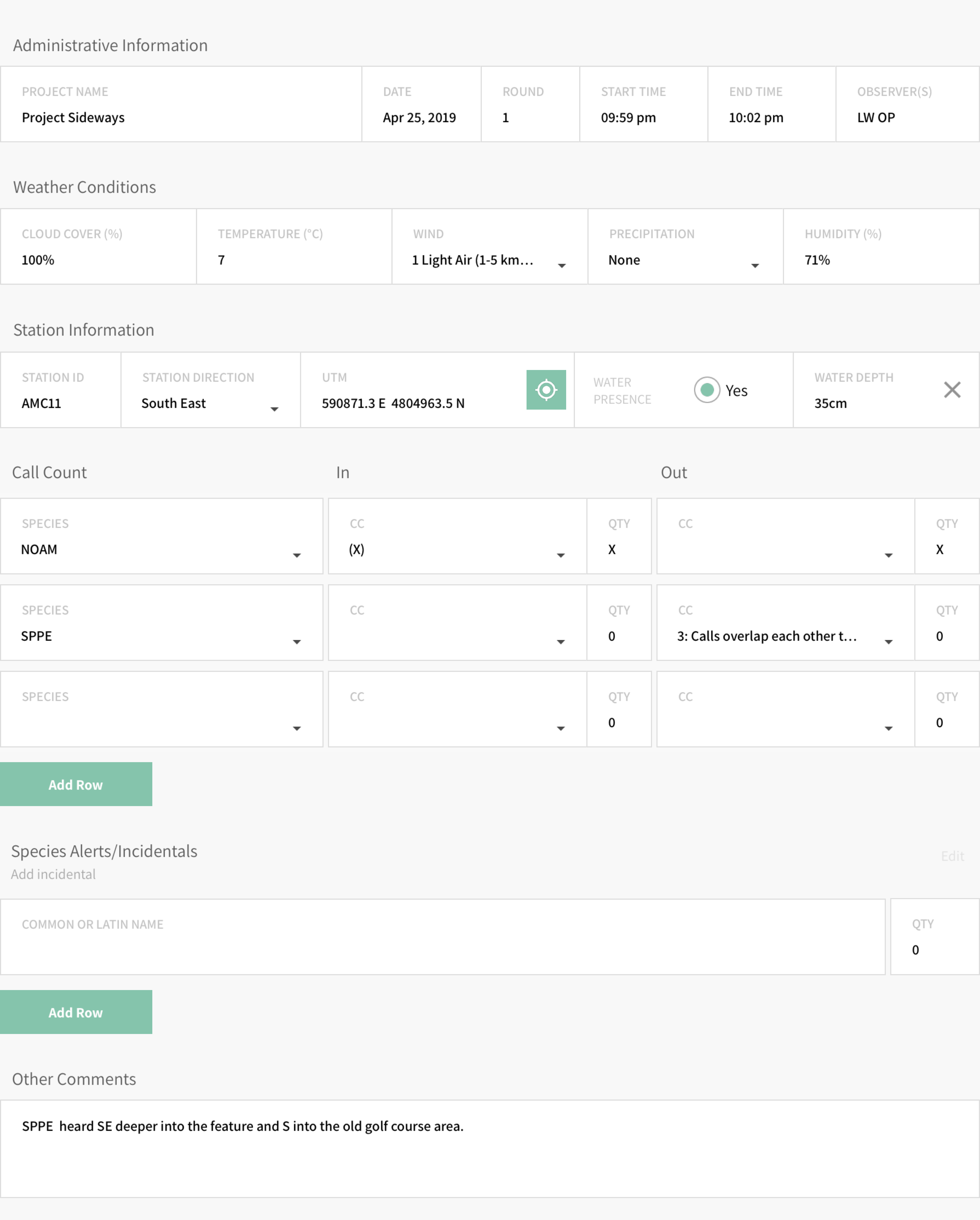
	In		Out	
SPECIES	CC	QTY	CC	QTY
SPPE	2: Calls overlap each other, b…	11		0
NLFR	1: Males can be counted indi…	1		0
		0		0

Species Alerts/Incidentals

COMMON OR LATIN NAME	QTY
	0

Other Comments

SPPE Calling from adjacent pond.



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	Apr 25, 2019	1	09:59 pm	10:02 pm	LW OP

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
100%	7	1 Light Air (1-5 km…	None	71%

Station Information

STATION ID	STATION DIRECTION	UTM	WATER PRESENCE	WATER DEPTH
AMC11	South East	590871.3 E 4804963.5 N	● Yes	35cm

Call Count

	In		Out	
SPECIES	CC	QTY	CC	QTY
NOAM	(X)	X		X
SPPE		0	3: Calls overlap each other t…	0
		0		0

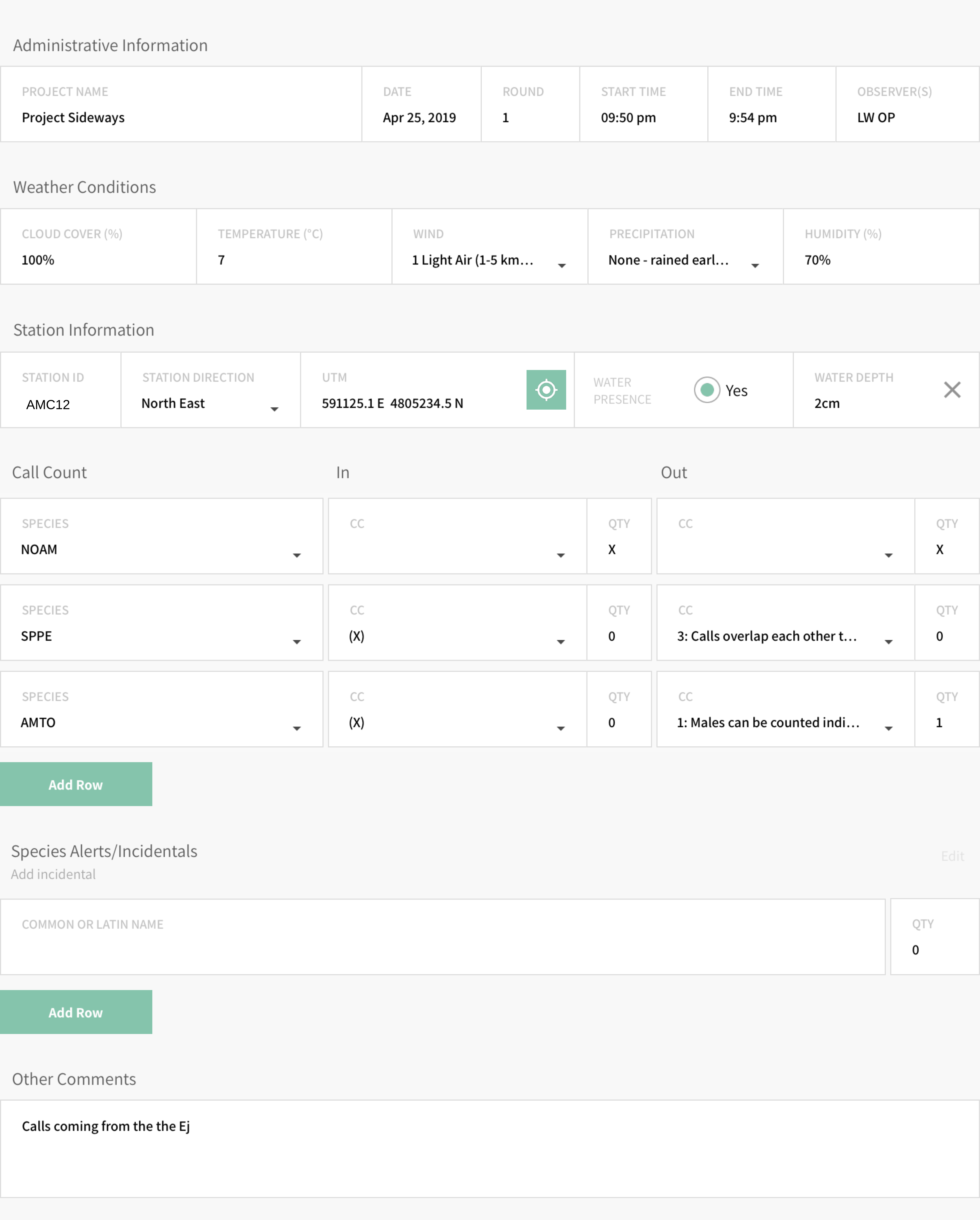
Species Alerts/Incidentals

Add incidental

COMMON OR LATIN NAME	QTY
	0

Other Comments

SPPE heard SE deeper into the feature and S into the old golf course area.



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	Apr 25, 2019	1	09:50 pm	9:54 pm	LW OP

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
100%	7	1 Light Air (1-5 km…	None - rained earl…	70%

Station Information

STATION ID	STATION DIRECTION	UTM	WATER PRESENCE	WATER DEPTH
AMC12	North East	591125.1 E 4805234.5 N	● Yes	2cm

Call Count

	In		Out	
SPECIES	CC	QTY	CC	QTY
NOAM		X		X
SPECIES	CC	QTY	CC	QTY
SPPE	(X)	0	3: Calls overlap each other t…	0
SPECIES	CC	QTY	CC	QTY
AMTO	(X)	0	1: Males can be counted indi…	1

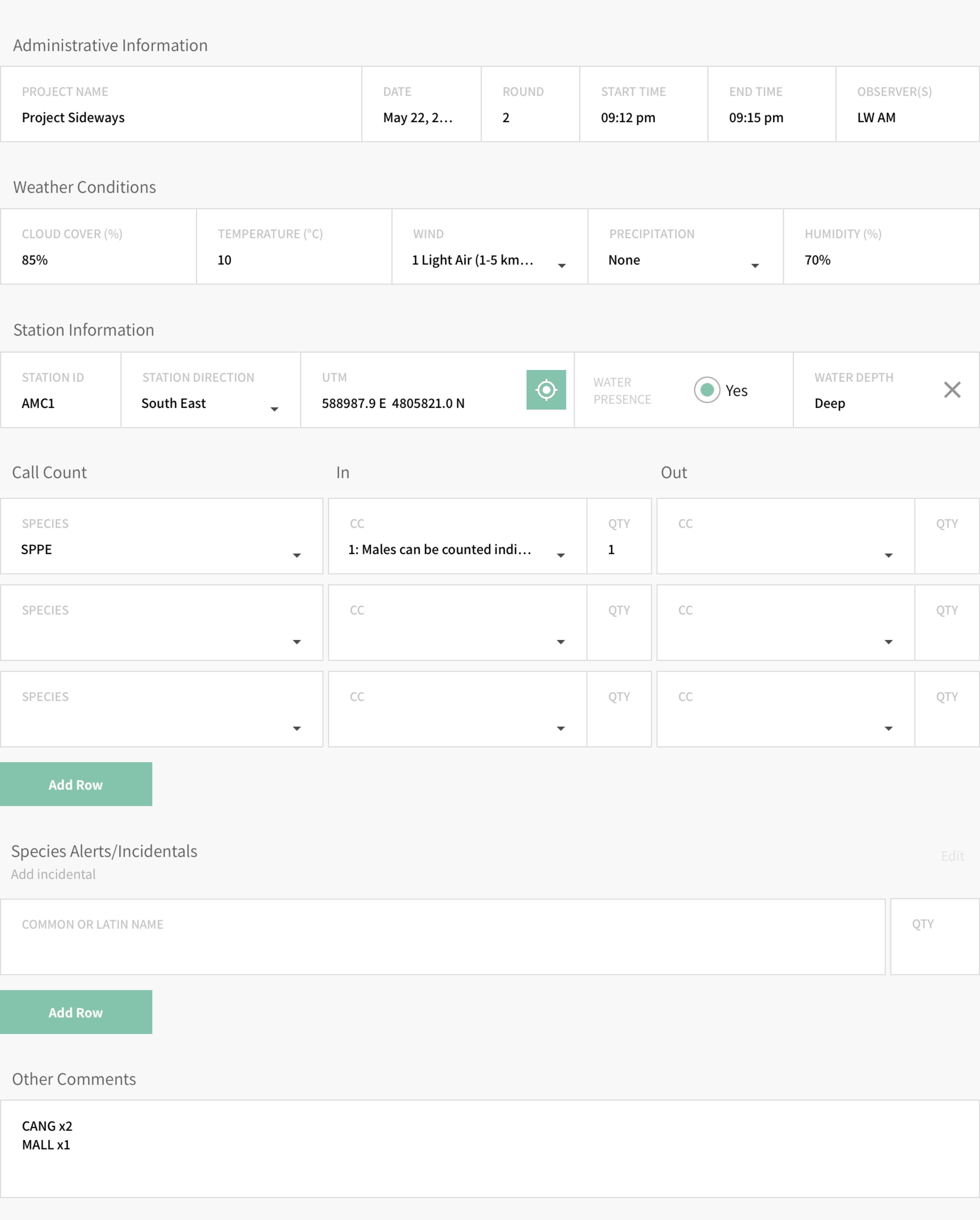
Species Alerts/Incidentals

Add incidental

COMMON OR LATIN NAME	QTY
	0

Other Comments

Calls coming from the the Ej



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	May 22, 2…	2	09:12 pm	09:15 pm	LW AM

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
85%	10	1 Light Air (1-5 km…	None	70%

Station Information

STATION ID	STATION DIRECTION	UTM	WATER PRESENCE	WATER DEPTH
AMC1	South East	588987.9 E 4805821.0 N	● Yes	Deep

Call Count	In		Out	
SPECIES	CC	QTY	CC	QTY
SPPE	1: Males can be counted indi…	1		

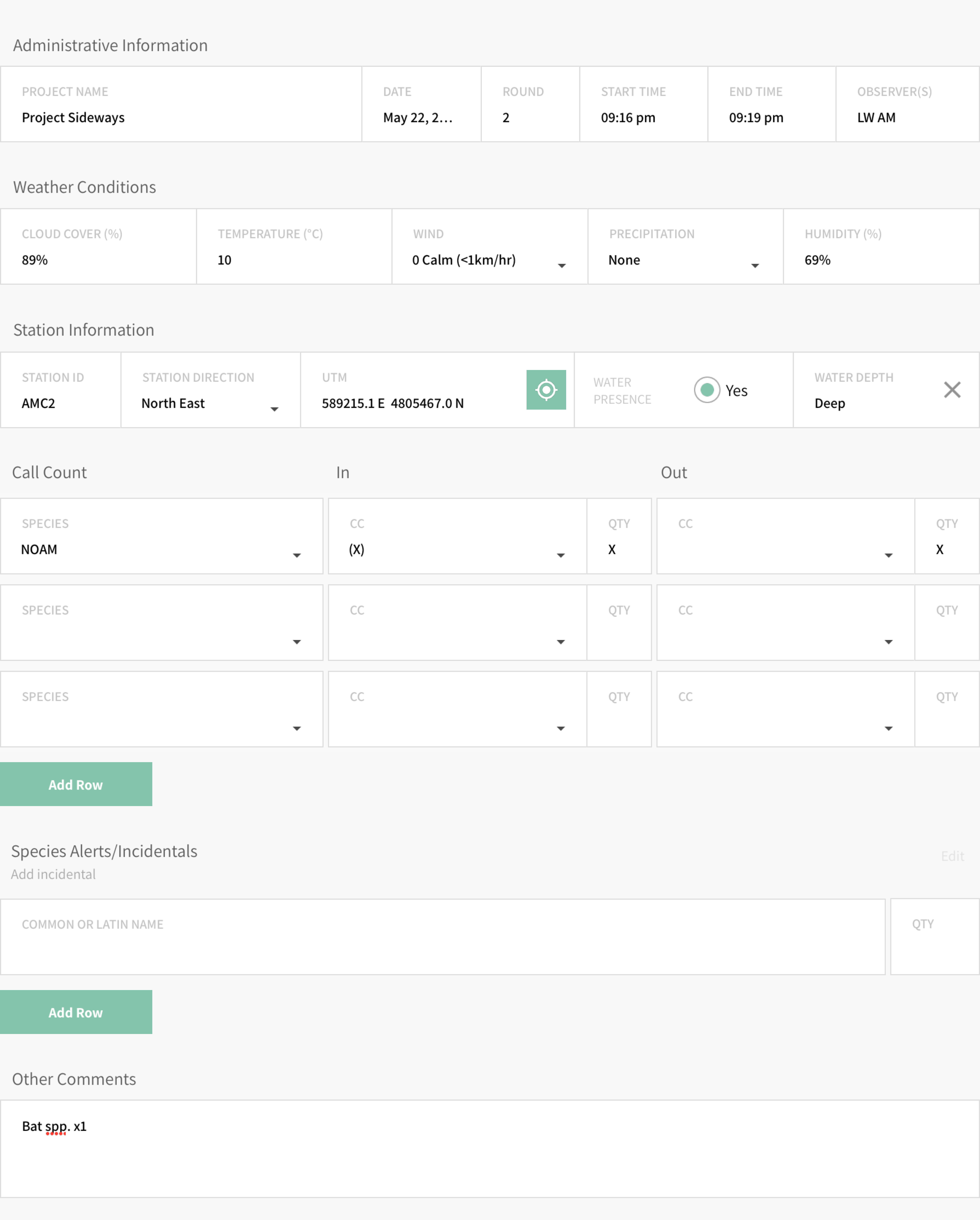
Species Alerts/Incidentals

Add incidental

COMMON OR LATIN NAME	QTY

Other Comments

CANG x2
MALL x1



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	May 22, 2…	2	09:16 pm	09:19 pm	LW AM

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
89%	10	0 Calm (<1km/hr) ▾	None ▾	69%

Station Information

STATION ID	STATION DIRECTION	UTM	WATER PRESENCE	WATER DEPTH
AMC2	North East ▾	589215.1 E 4805467.0 N	● Yes	Deep ✕

Call Count

	In		Out	
SPECIES	CC	QTY	CC	QTY
NOAM ▾	(X) ▾	X	▾	X
SPECIES ▾	CC ▾	QTY	CC ▾	QTY
SPECIES ▾	CC ▾	QTY	CC ▾	QTY

Add Row

Species Alerts/Incidentals

Add incidental

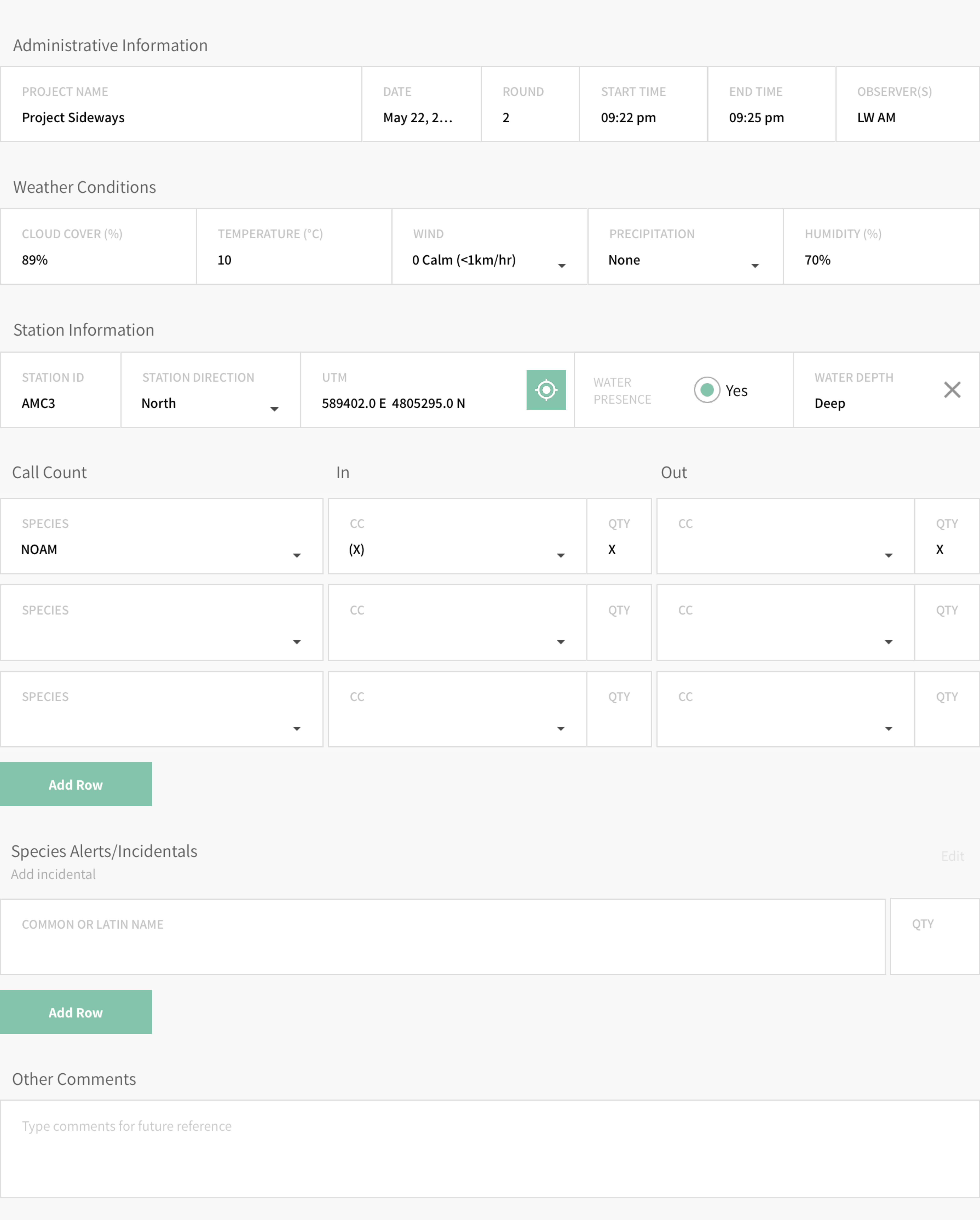
Edit

COMMON OR LATIN NAME	QTY

Add Row

Other Comments

Bat spp. x1



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	May 22, 2…	2	09:22 pm	09:25 pm	LW AM

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
89%	10	0 Calm (<1km/hr)	None	70%

Station Information

STATION ID	STATION DIRECTION	UTM	WATER PRESENCE	WATER DEPTH
AMC3	North	589402.0 E 4805295.0 N	● Yes	Deep

Call Count

	In		Out	
SPECIES	CC	QTY	CC	QTY
NOAM	(X)	X		X

Add Row

Species Alerts/Incidentals

Add incidental

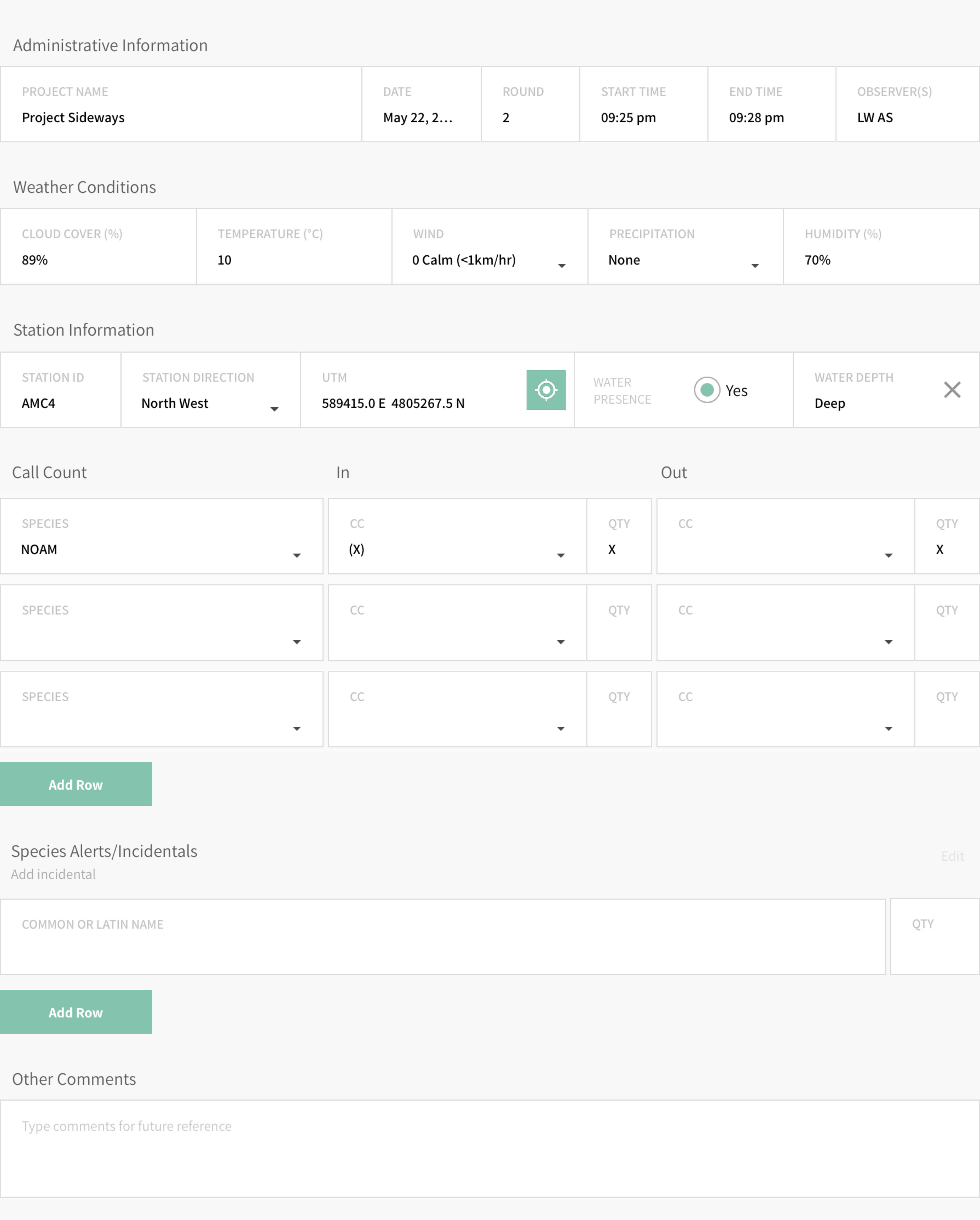
Edit

COMMON OR LATIN NAME	QTY

Add Row

Other Comments

Type comments for future reference



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	May 22, 2…	2	09:25 pm	09:28 pm	LW AS

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
89%	10	0 Calm (<1km/hr)	None	70%

Station Information

STATION ID	STATION DIRECTION	UTM	WATER PRESENCE	WATER DEPTH
AMC4	North West	589415.0 E 4805267.5 N	● Yes	Deep

Call Count

	In		Out	
SPECIES	CC	QTY	CC	QTY
NOAM	(X)	X		X

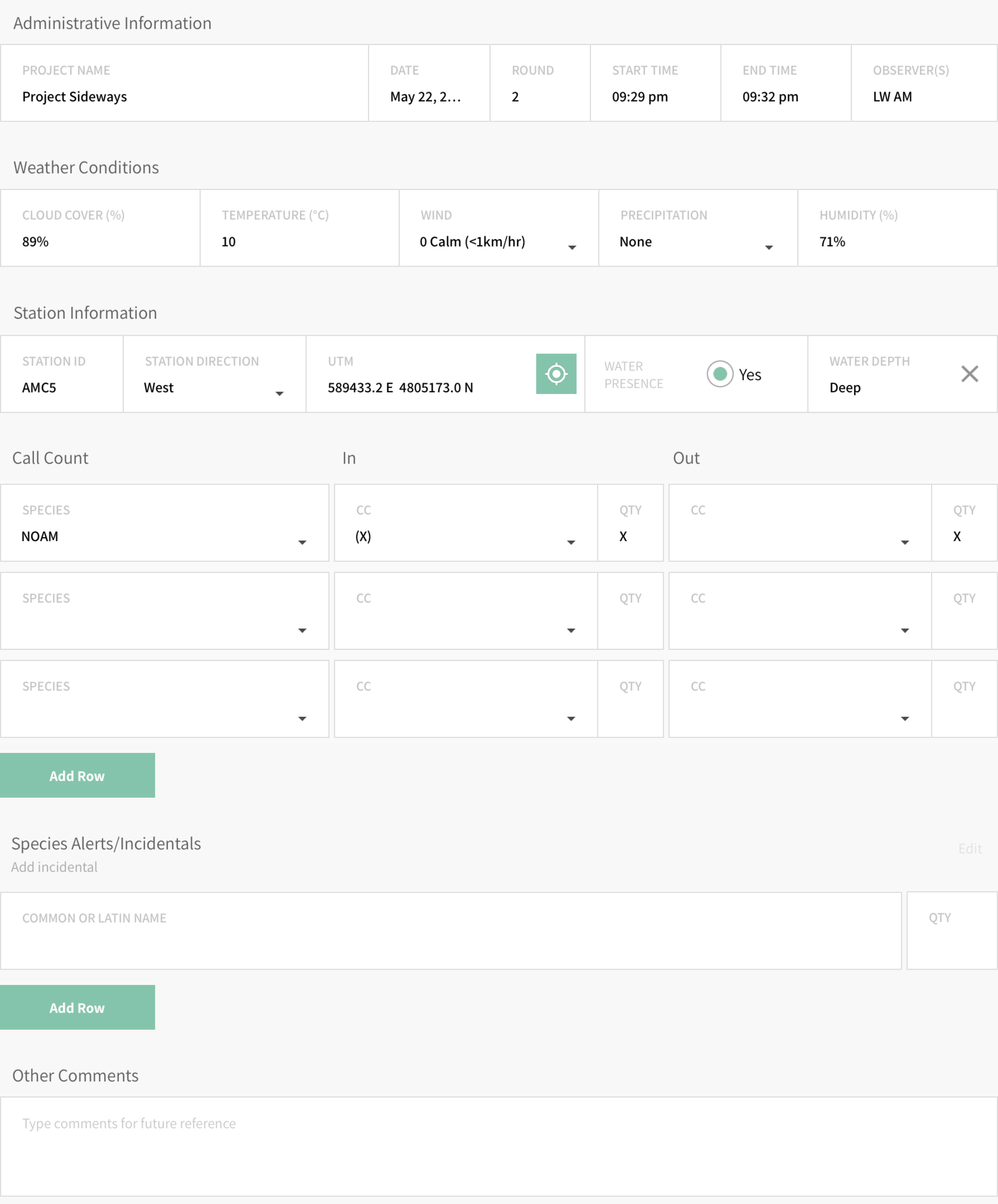
Species Alerts/Incidentals

Add incidental

COMMON OR LATIN NAME	QTY

Other Comments

Type comments for future reference



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	May 22, 2…	2	09:29 pm	09:32 pm	LW AM

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
89%	10	0 Calm (<1km/hr)	None	71%

Station Information

STATION ID	STATION DIRECTION	UTM	WATER PRESENCE	WATER DEPTH
AMC5	West	589433.2 E 4805173.0 N	● Yes	Deep

Call Count

	In		Out	
SPECIES	CC	QTY	CC	QTY
NOAM	(X)	X		X
SPECIES	CC	QTY	CC	QTY
SPECIES	CC	QTY	CC	QTY

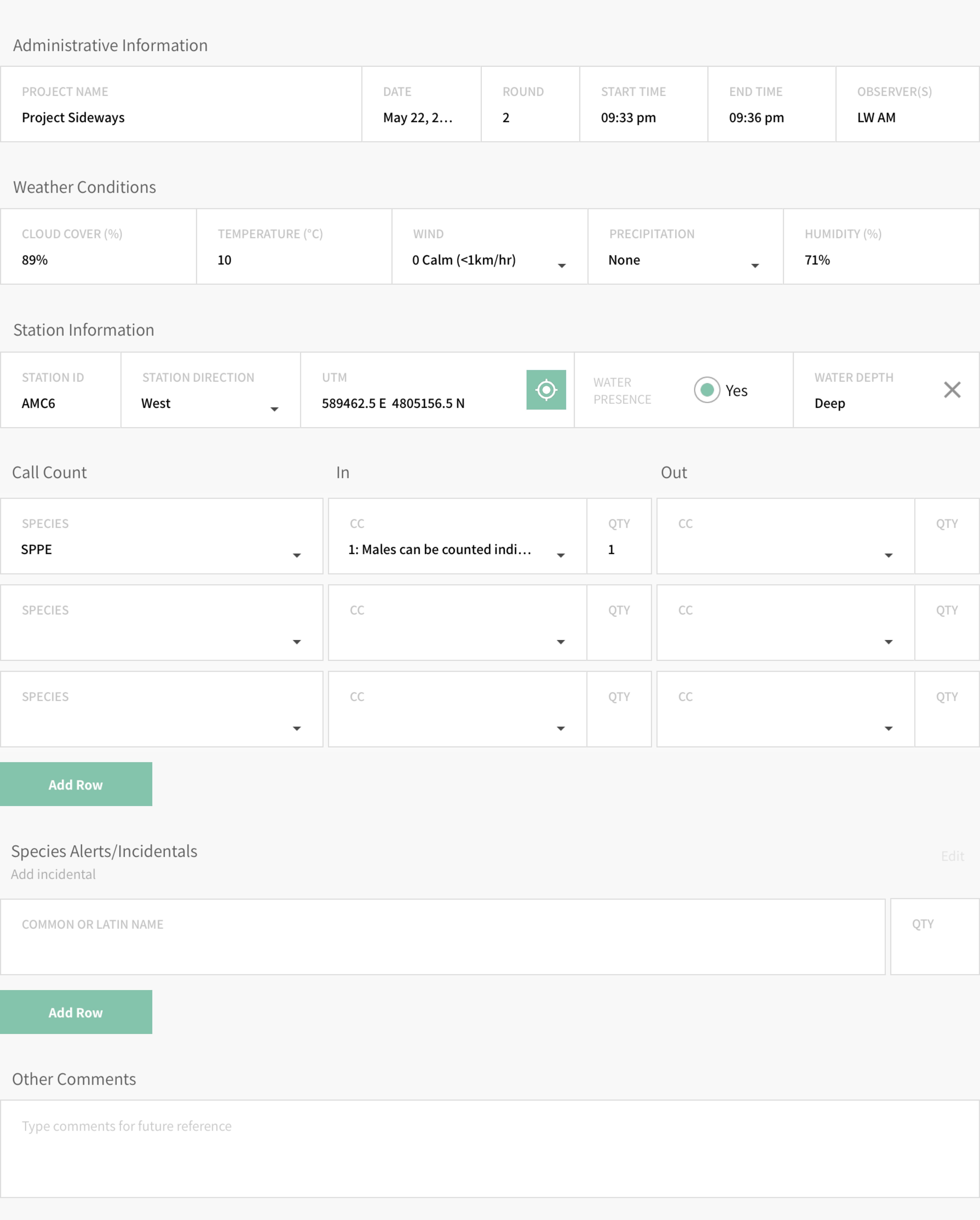
Species Alerts/Incidentals

Add incidental

COMMON OR LATIN NAME	QTY

Other Comments

Type comments for future reference



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	May 22, 2…	2	09:33 pm	09:36 pm	LW AM

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
89%	10	0 Calm (<1km/hr)	None	71%

Station Information

STATION ID	STATION DIRECTION	UTM	WATER PRESENCE	WATER DEPTH
AMC6	West	589462.5 E 4805156.5 N	● Yes	Deep

Call Count

	In		Out	
SPECIES	CC	QTY	CC	QTY
SPPE	1: Males can be counted indi…	1		
SPECIES	CC	QTY	CC	QTY
SPECIES	CC	QTY	CC	QTY

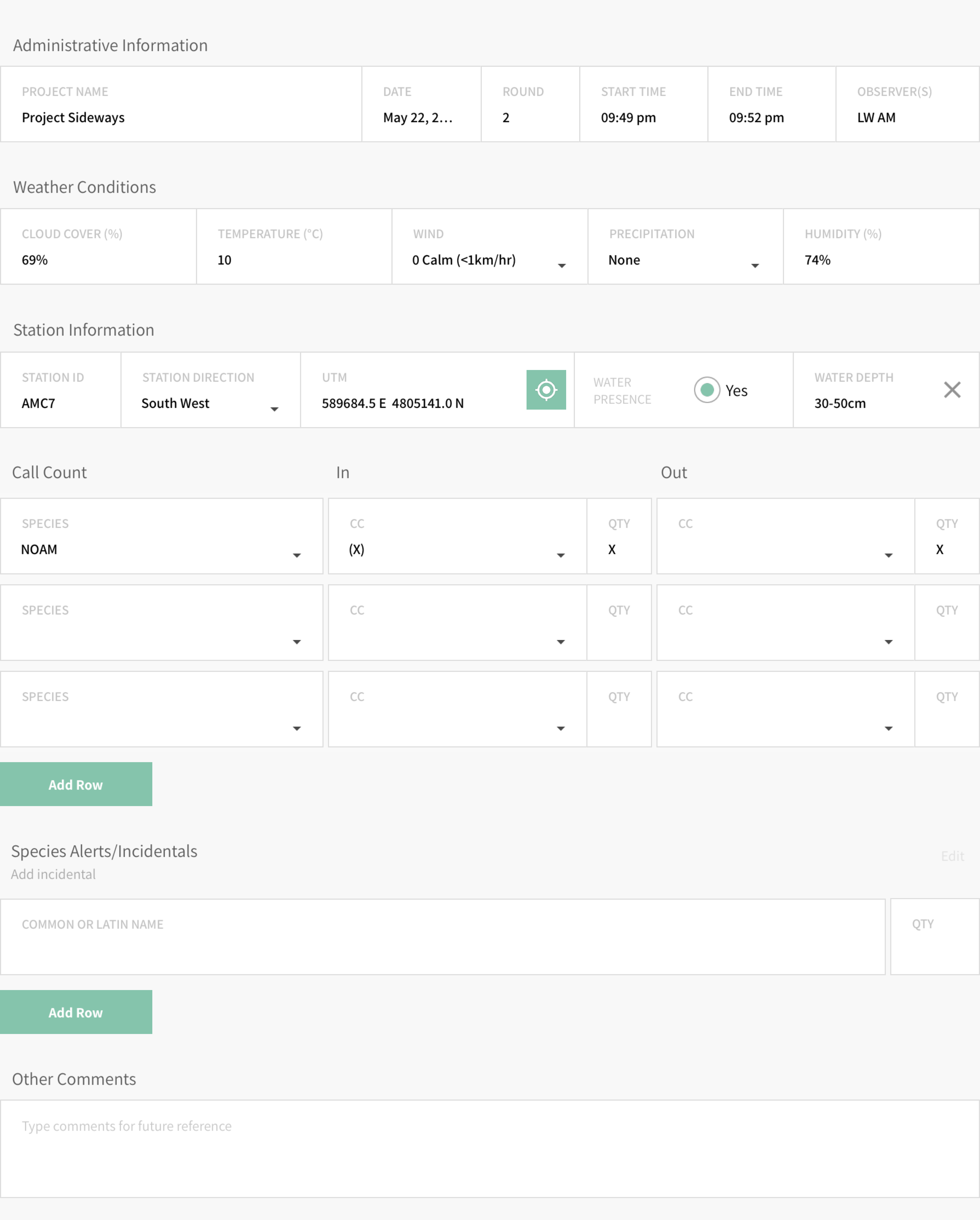
Species Alerts/Incidentals

Add incidental

COMMON OR LATIN NAME	QTY

Other Comments

Type comments for future reference



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	May 22, 2…	2	09:49 pm	09:52 pm	LW AM

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
69%	10	0 Calm (<1km/hr)	None	74%

Station Information

STATION ID	STATION DIRECTION	UTM	WATER PRESENCE	WATER DEPTH
AMC7	South West	589684.5 E 4805141.0 N	● Yes	30-50cm

Call Count

	In		Out	
SPECIES	CC	QTY	CC	QTY
NOAM	(X)	X		X
SPECIES	CC	QTY	CC	QTY
SPECIES	CC	QTY	CC	QTY

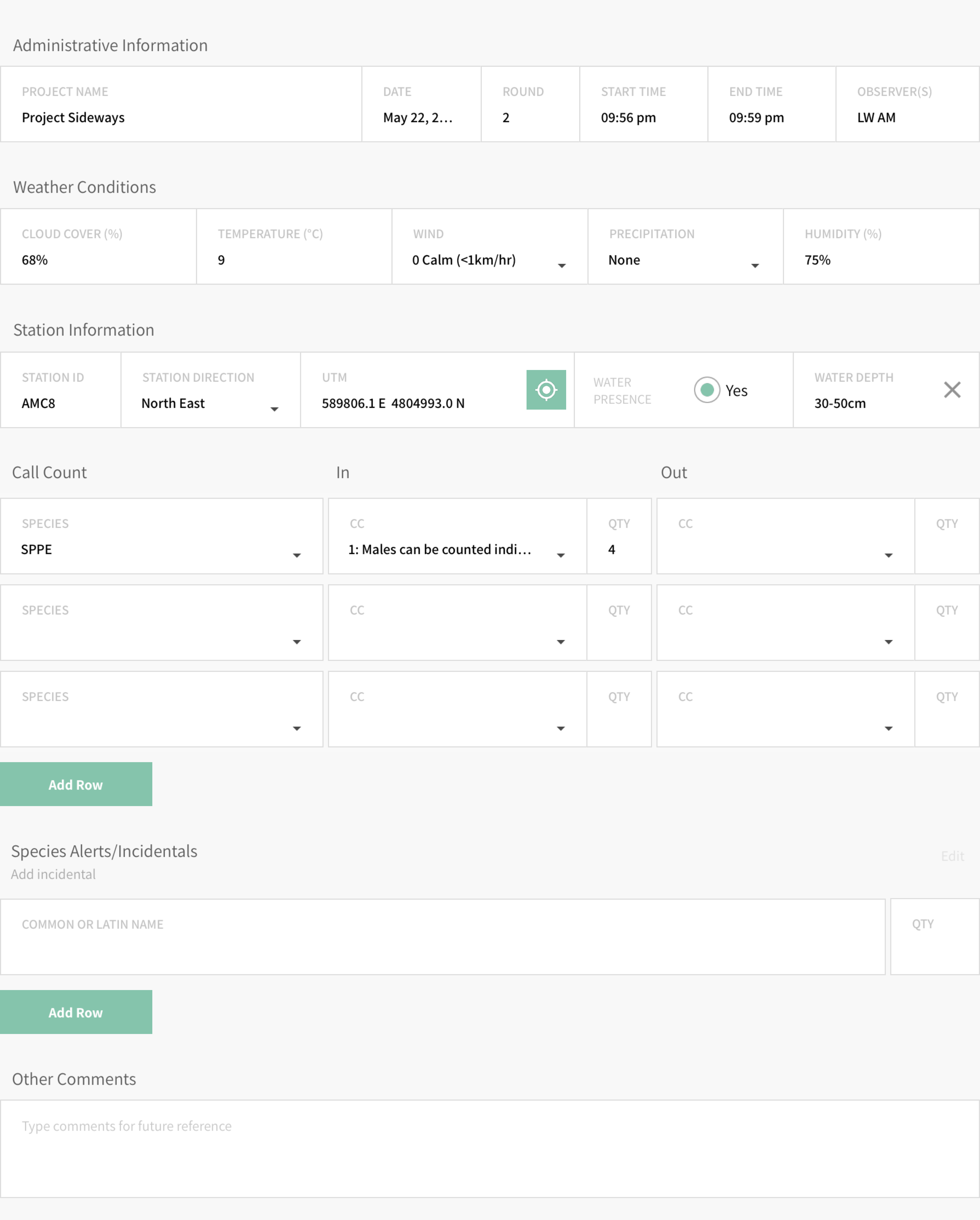
Species Alerts/Incidentals

Add incidental

COMMON OR LATIN NAME	QTY

Other Comments

Type comments for future reference



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	May 22, 2…	2	09:56 pm	09:59 pm	LW AM

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
68%	9	0 Calm (<1km/hr)	None	75%

Station Information

STATION ID	STATION DIRECTION	UTM	WATER PRESENCE	WATER DEPTH
AMC8	North East	589806.1 E 4804993.0 N	● Yes	30-50cm

Call Count

	In		Out	
SPECIES	CC	QTY	CC	QTY
SPPE	1: Males can be counted indi…	4		
SPECIES	CC	QTY	CC	QTY
SPECIES	CC	QTY	CC	QTY

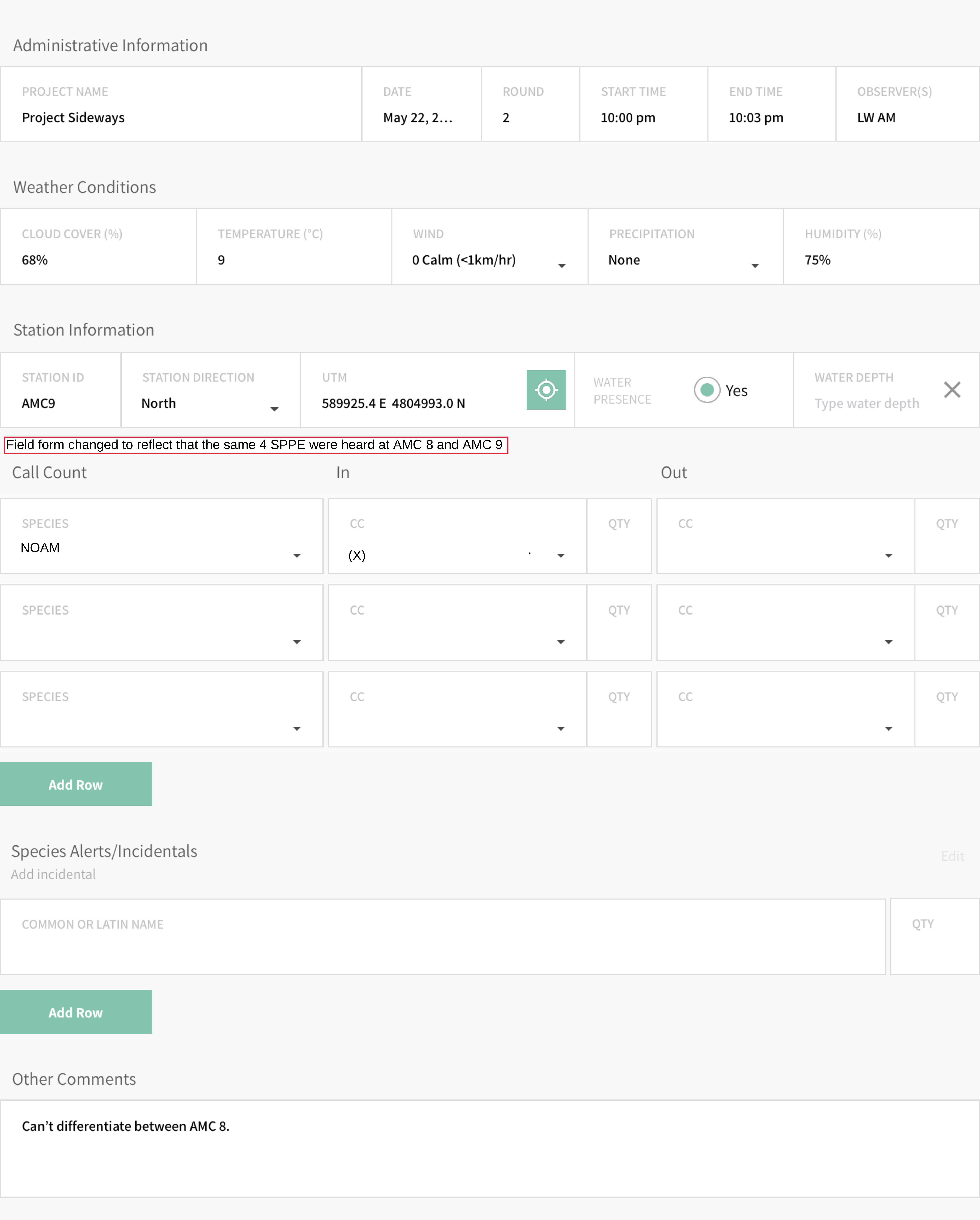
Species Alerts/Incidentals

Add incidental

COMMON OR LATIN NAME	QTY

Other Comments

Type comments for future reference



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	May 22, 2…	2	10:00 pm	10:03 pm	LW AM

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
68%	9	0 Calm (<1km/hr)	None	75%

Station Information

STATION ID	STATION DIRECTION	UTM	WATER PRESENCE	WATER DEPTH
AMC9	North	589925.4 E 4804993.0 N	● Yes	Type water depth

Field form changed to reflect that the same 4 SPPE were heard at AMC 8 and AMC 9

Call Count

	In		Out	
SPECIES	CC	QTY	CC	QTY
NOAM	(X)			
SPECIES	CC	QTY	CC	QTY
SPECIES	CC	QTY	CC	QTY

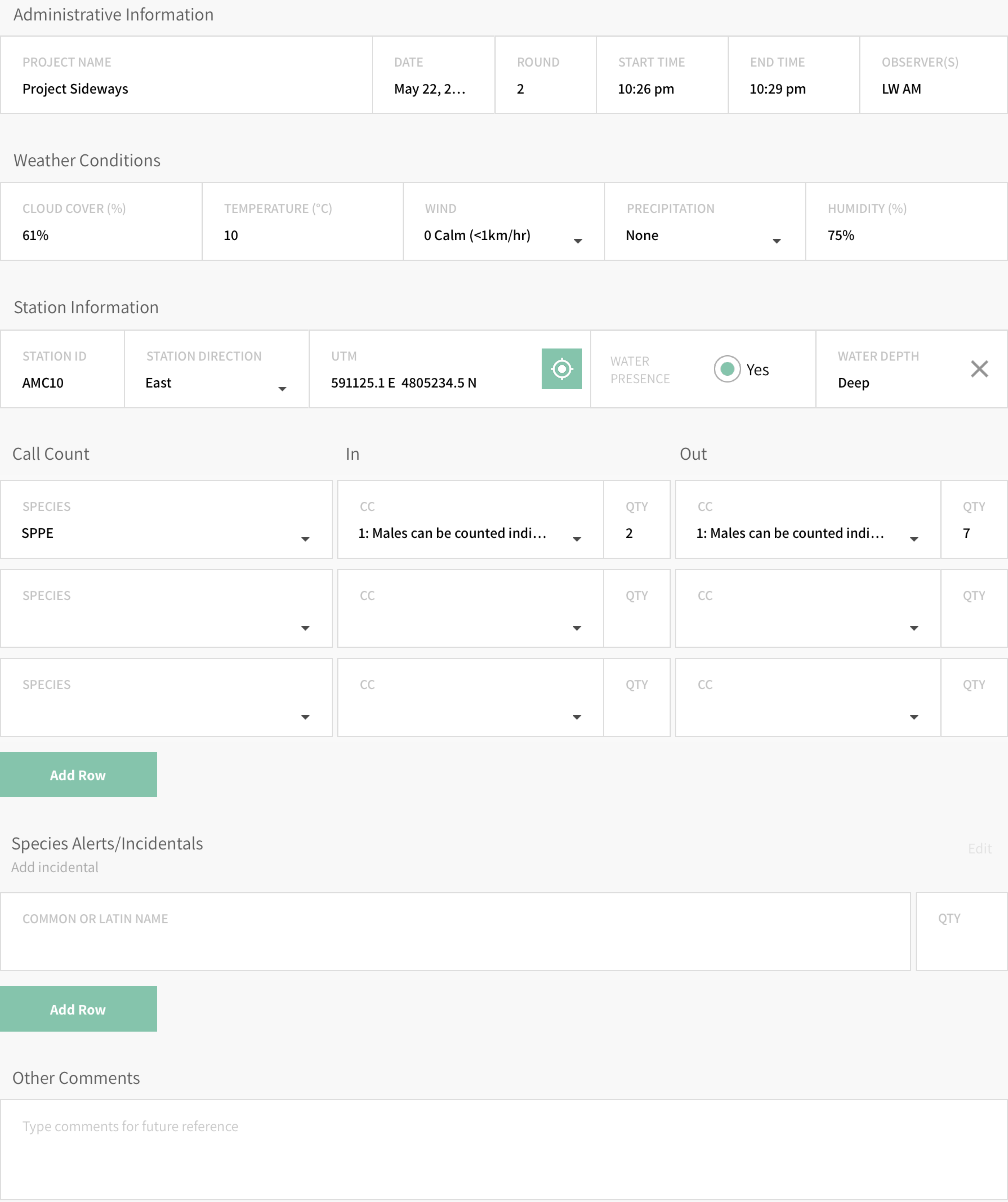
Species Alerts/Incidentals

Add incidental

COMMON OR LATIN NAME	QTY

Other Comments

Can't differentiate between AMC 8.



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	May 22, 2…	2	10:26 pm	10:29 pm	LW AM

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
61%	10	0 Calm (<1km/hr)	None	75%

Station Information

STATION ID	STATION DIRECTION	UTM	WATER PRESENCE	WATER DEPTH
AMC10	East	591125.1 E 4805234.5 N	● Yes	Deep

Call Count

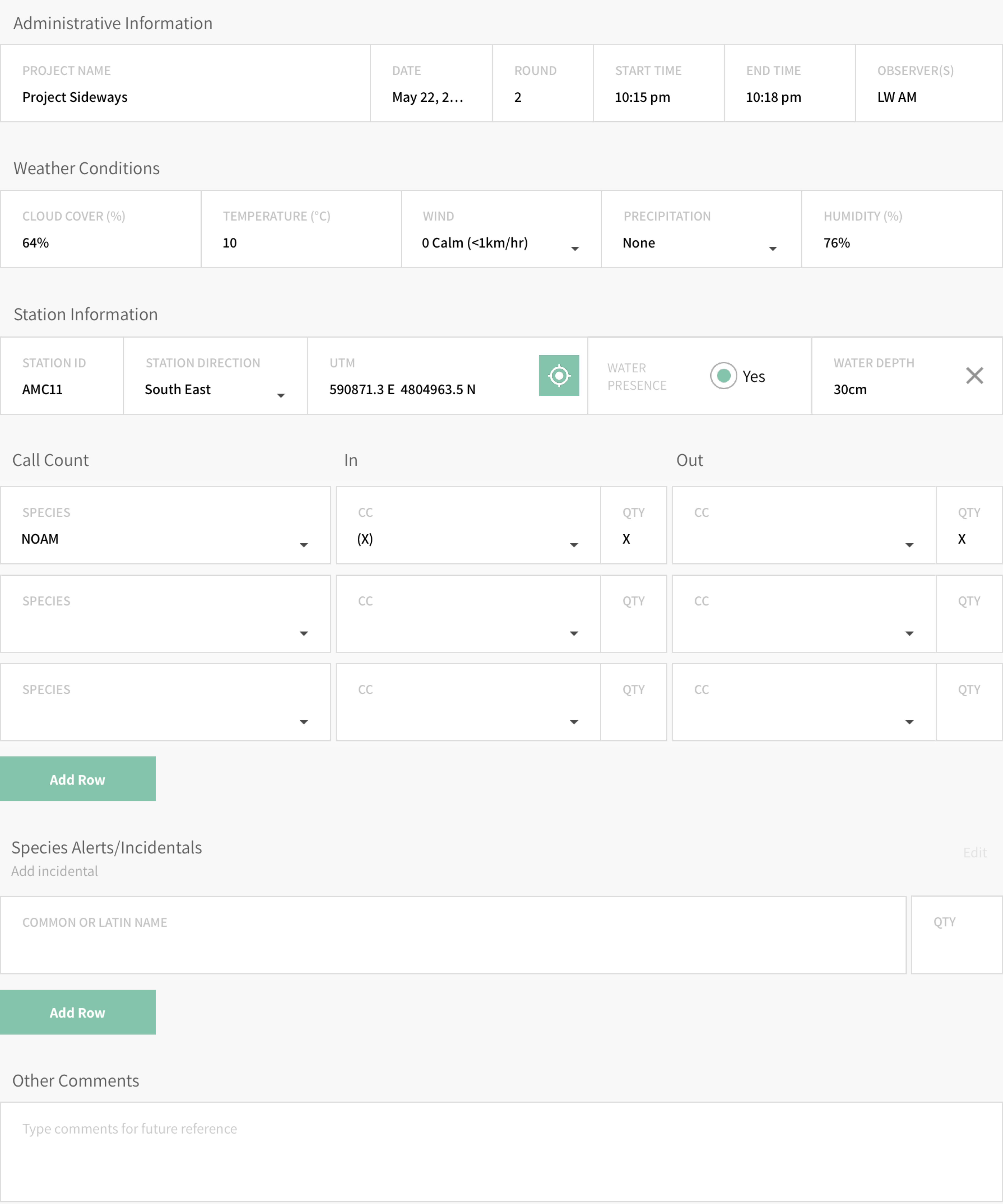
	In		Out	
SPECIES	CC	QTY	CC	QTY
SPPE	1: Males can be counted indi…	2	1: Males can be counted indi…	7
SPECIES	CC	QTY	CC	QTY
SPECIES	CC	QTY	CC	QTY

Species Alerts/Incidentals

Add incidental

COMMON OR LATIN NAME	QTY

Other Comments



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	May 22, 2…	2	10:15 pm	10:18 pm	LW AM

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
64%	10	0 Calm (<1km/hr)	None	76%

Station Information

STATION ID	STATION DIRECTION	UTM	WATER PRESENCE	WATER DEPTH
AMC11	South East	590871.3 E 4804963.5 N	● Yes	30cm

Call Count

	In		Out	
SPECIES	CC	QTY	CC	QTY
NOAM	(X)	X		X
SPECIES	CC	QTY	CC	QTY
SPECIES	CC	QTY	CC	QTY

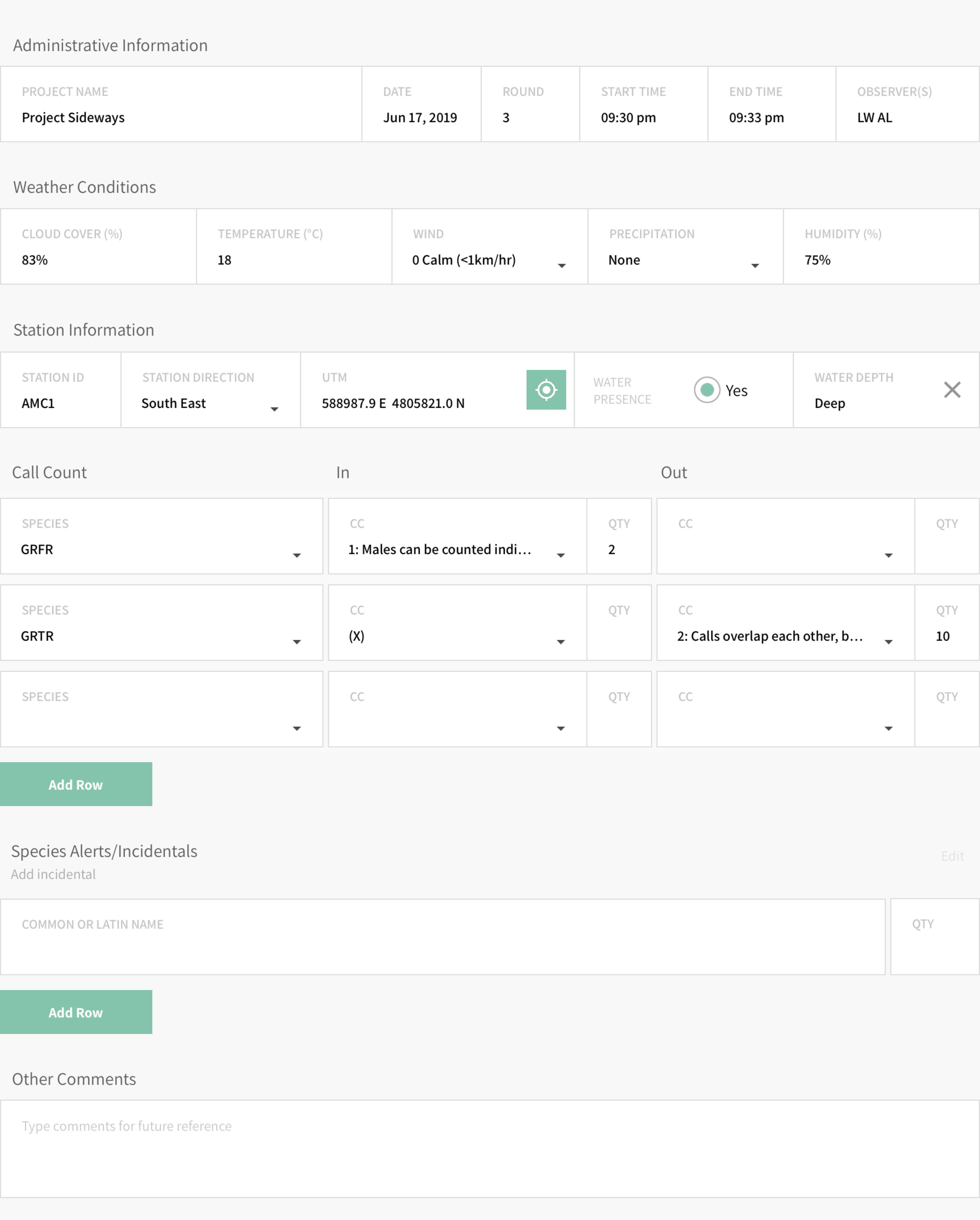
Species Alerts/Incidentals

Add incidental

COMMON OR LATIN NAME	QTY

Other Comments

Type comments for future reference



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	Jun 17, 2019	3	09:30 pm	09:33 pm	LW AL

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
83%	18	0 Calm (<1km/hr)	None	75%

Station Information

STATION ID	STATION DIRECTION	UTM	WATER PRESENCE	WATER DEPTH
AMC1	South East	588987.9 E 4805821.0 N	● Yes	Deep

Call Count

	In		Out	
SPECIES	CC	QTY	CC	QTY
GRFR	1: Males can be counted indi…	2		
GRTR	(X)		2: Calls overlap each other, b…	10

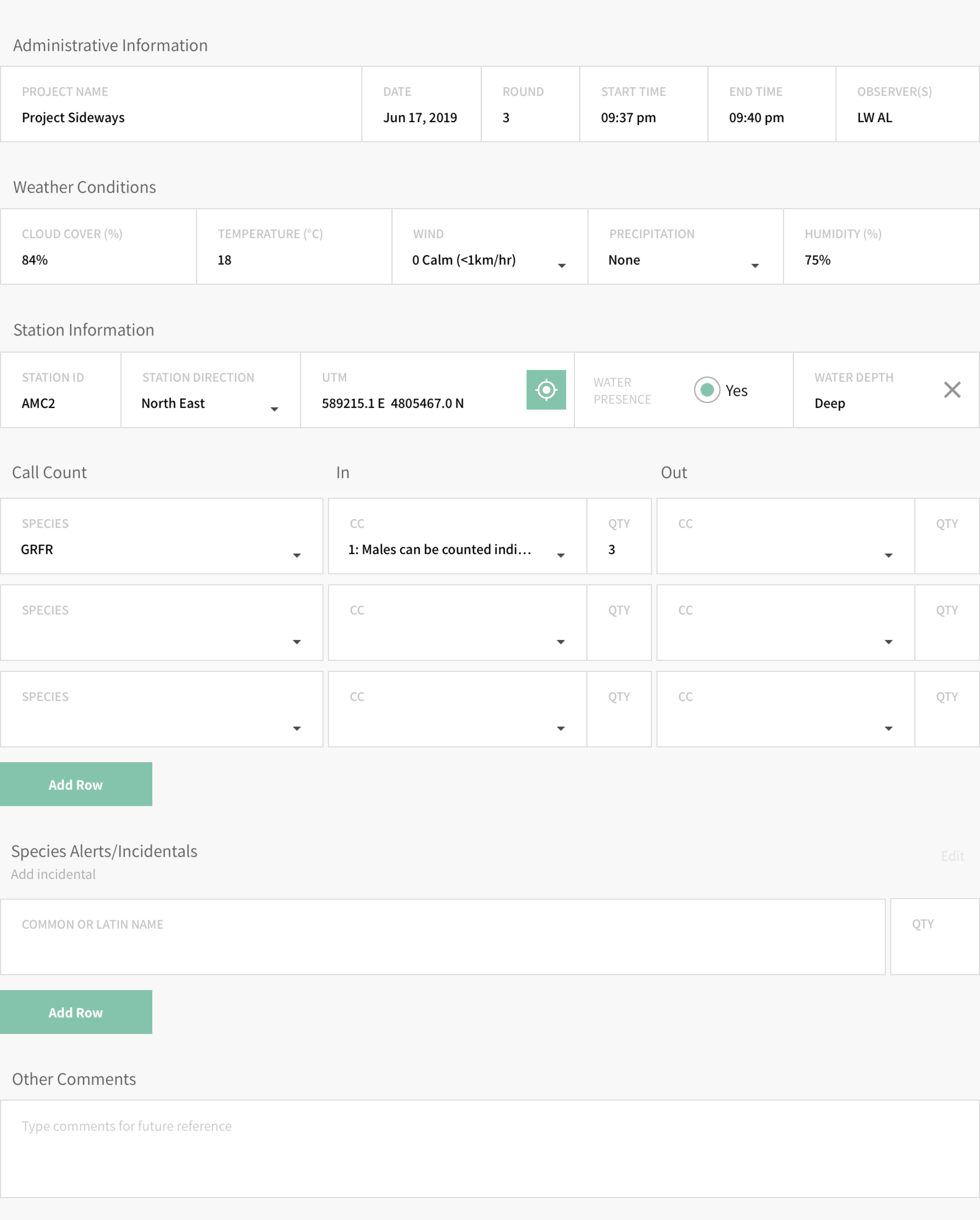
Species Alerts/Incidentals

Add incidental

COMMON OR LATIN NAME	QTY

Other Comments

Type comments for future reference



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	Jun 17, 2019	3	09:37 pm	09:40 pm	LW AL

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
84%	18	0 Calm (<1km/hr) ▾	None ▾	75%

Station Information

STATION ID	STATION DIRECTION	UTM	WATER PRESENCE	WATER DEPTH
AMC2	North East ▾	589215.1 E 4805467.0 N	● Yes	Deep ✕

Call Count

	In		Out	
SPECIES	CC	QTY	CC	QTY
GRFR ▾	1: Males can be counted indi… ▾	3	▾	
SPECIES ▾	CC ▾	QTY	CC ▾	QTY
SPECIES ▾	CC ▾	QTY	CC ▾	QTY

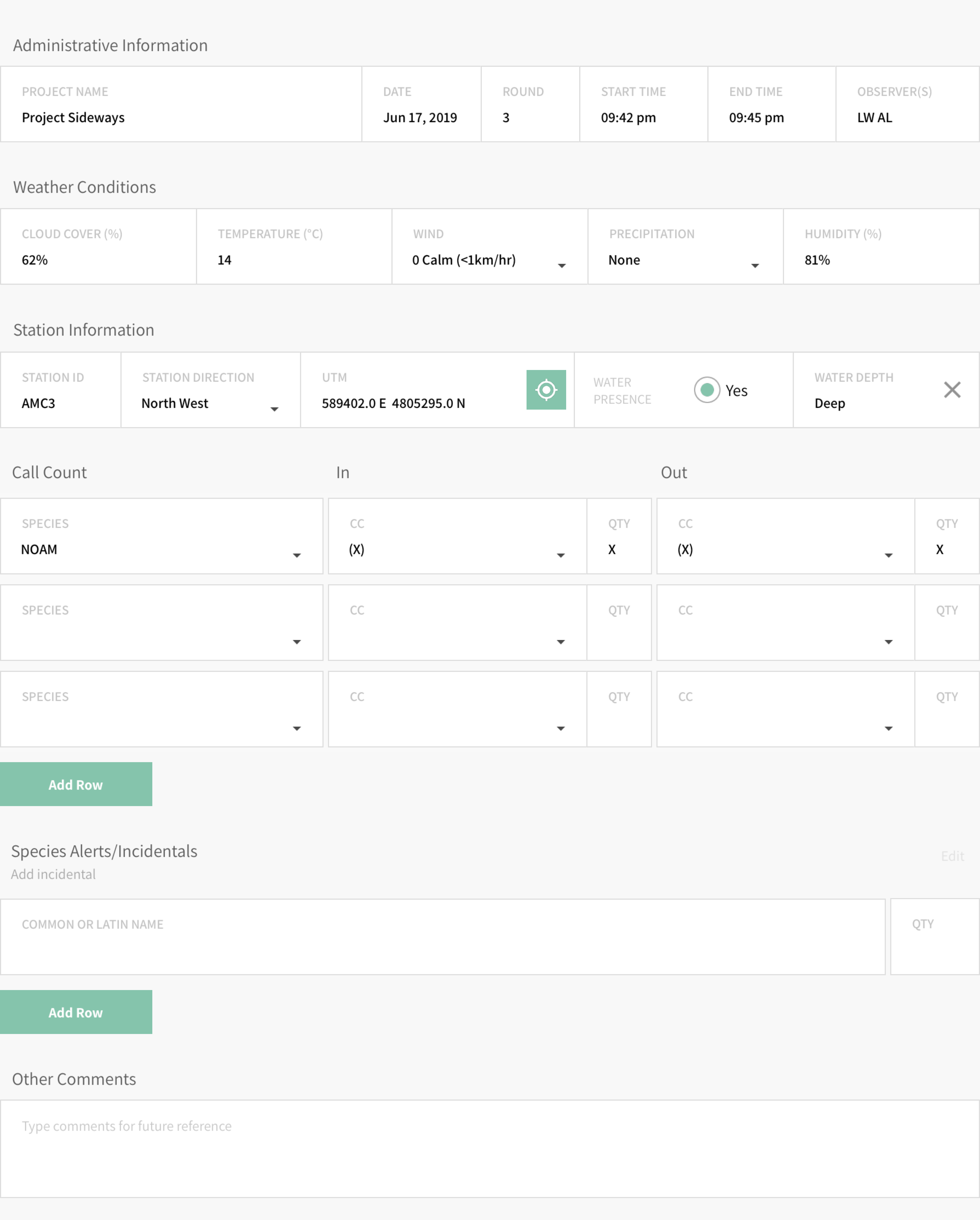
Species Alerts/Incidentals

Add incidental

COMMON OR LATIN NAME	QTY

Other Comments

Type comments for future reference



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	Jun 17, 2019	3	09:42 pm	09:45 pm	LW AL

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
62%	14	0 Calm (<1km/hr)	None	81%

Station Information

STATION ID	STATION DIRECTION	UTM	WATER PRESENCE	WATER DEPTH
AMC3	North West	589402.0 E 4805295.0 N	● Yes	Deep

Call Count

	In		Out	
SPECIES	CC	QTY	CC	QTY
NOAM	(X)	X	(X)	X
SPECIES	CC	QTY	CC	QTY
SPECIES	CC	QTY	CC	QTY

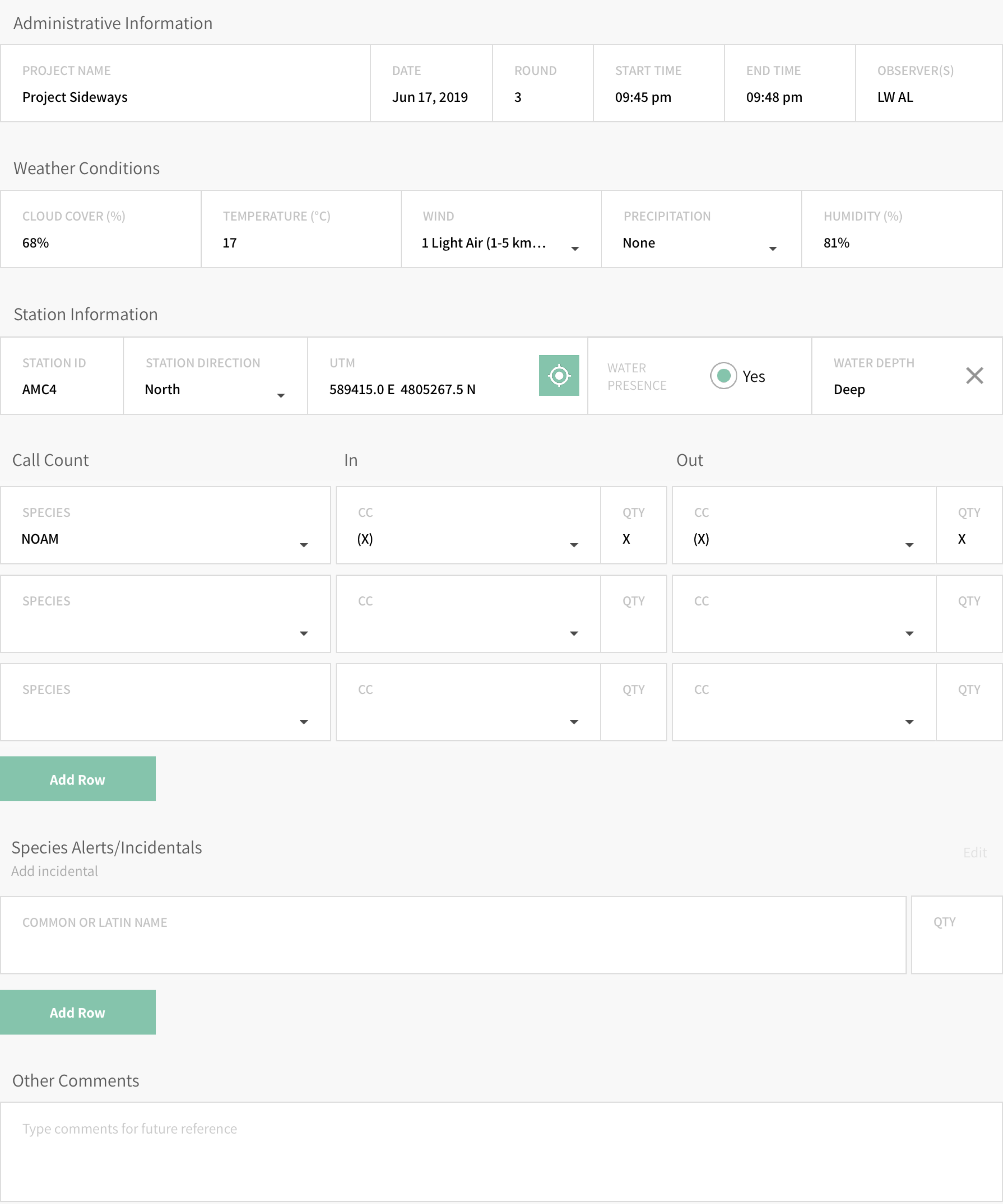
Species Alerts/Incidentals

Add incidental

COMMON OR LATIN NAME	QTY

Other Comments

Type comments for future reference



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	Jun 17, 2019	3	09:45 pm	09:48 pm	LW AL

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
68%	17	1 Light Air (1-5 km…	None	81%

Station Information

STATION ID	STATION DIRECTION	UTM	WATER PRESENCE	WATER DEPTH
AMC4	North	589415.0 E 4805267.5 N	● Yes	Deep

Call Count

	In		Out	
SPECIES	CC	QTY	CC	QTY
NOAM	(X)	X	(X)	X
SPECIES	CC	QTY	CC	QTY
SPECIES	CC	QTY	CC	QTY

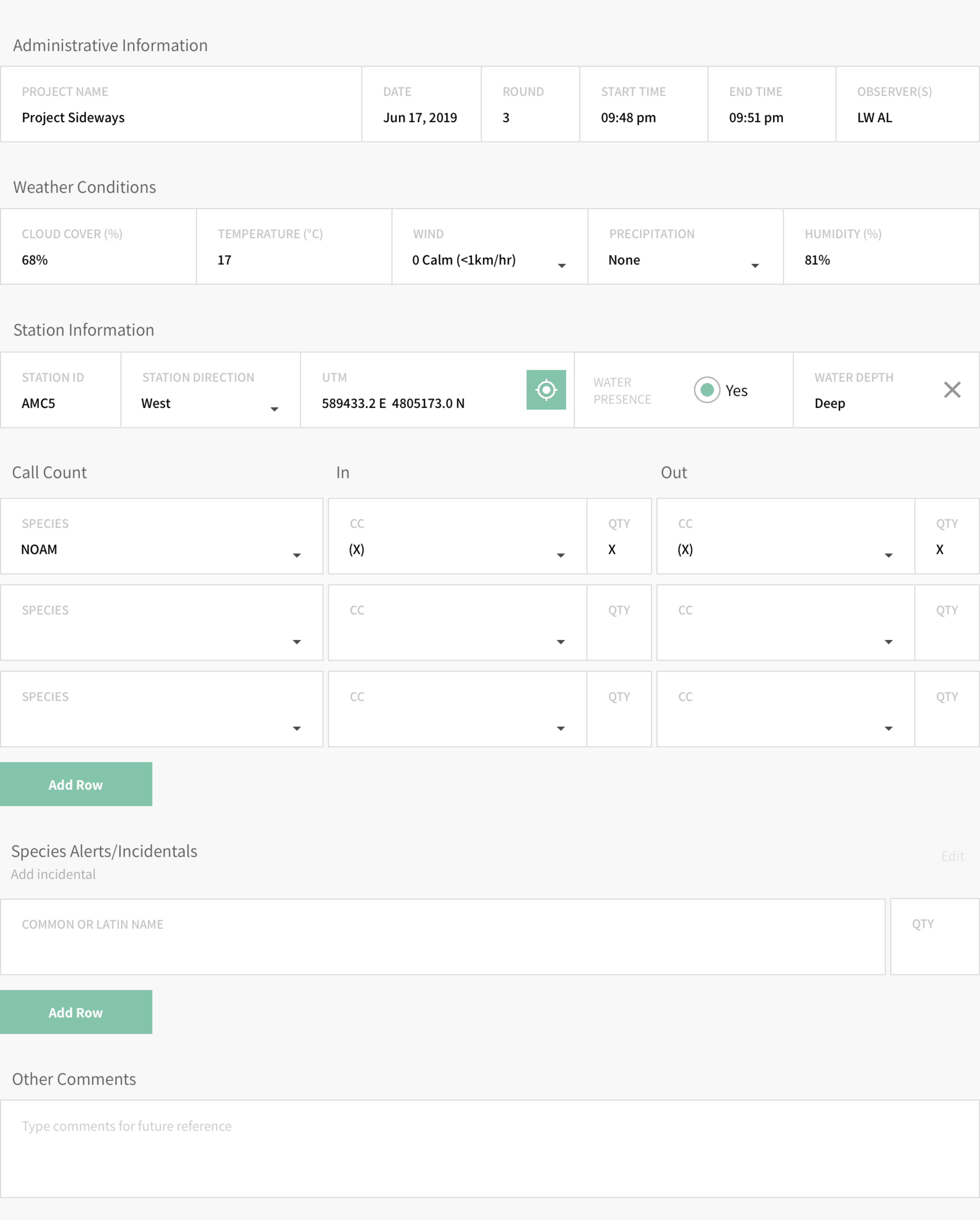
Species Alerts/Incidentals

Add incidental

COMMON OR LATIN NAME	QTY

Other Comments

Type comments for future reference



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	Jun 17, 2019	3	09:48 pm	09:51 pm	LW AL

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
68%	17	0 Calm (<1km/hr)	None	81%

Station Information

STATION ID	STATION DIRECTION	UTM	WATER PRESENCE	WATER DEPTH
AMC5	West	589433.2 E 4805173.0 N	● Yes	Deep

Call Count

	In		Out	
SPECIES	CC	QTY	CC	QTY
NOAM	(X)	X	(X)	X

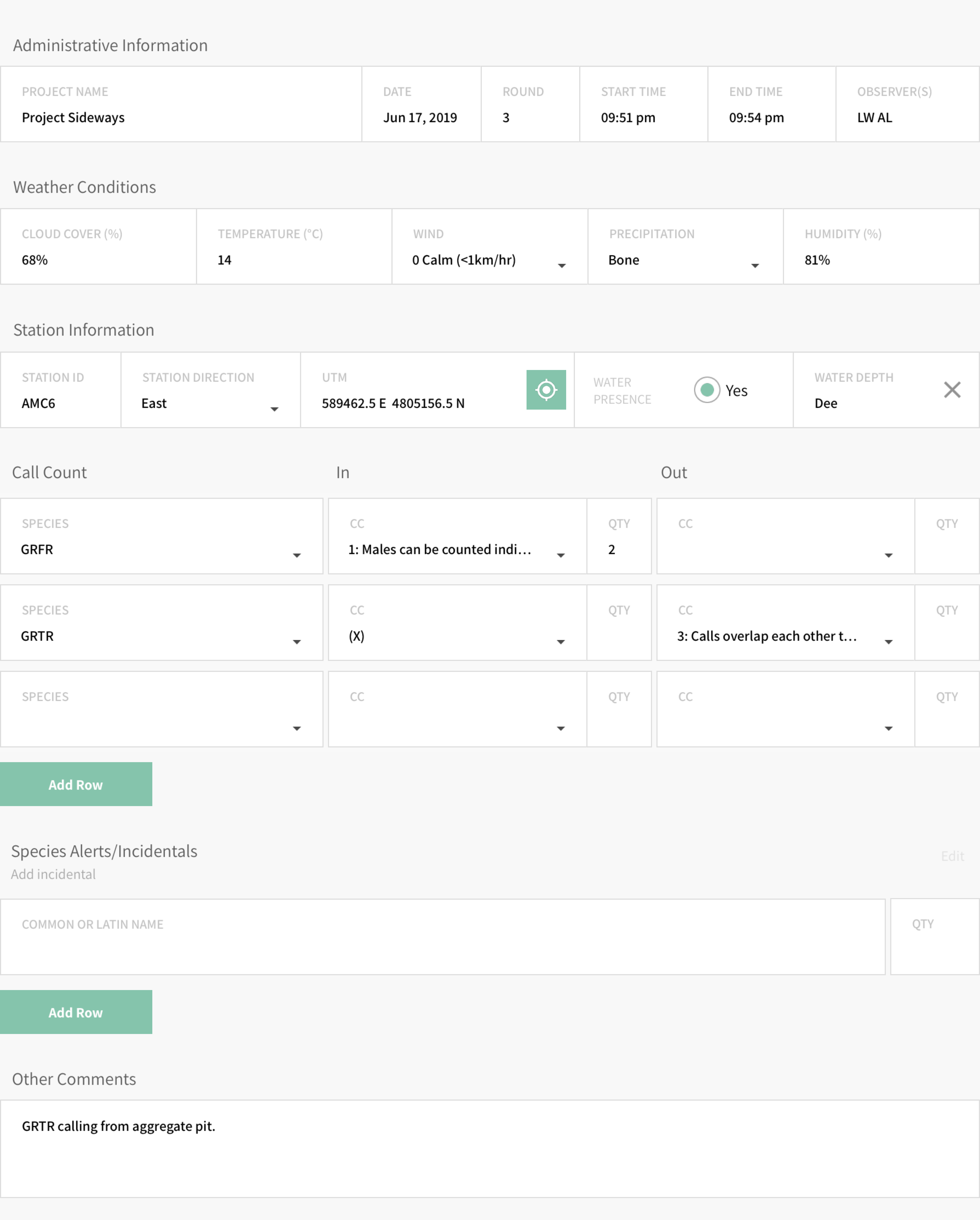
Species Alerts/Incidentals

Add incidental

COMMON OR LATIN NAME	QTY

Other Comments

Type comments for future reference



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	Jun 17, 2019	3	09:51 pm	09:54 pm	LW AL

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
68%	14	0 Calm (<1km/hr)	Bone	81%

Station Information

STATION ID	STATION DIRECTION	UTM	WATER PRESENCE	WATER DEPTH
AMC6	East	589462.5 E 4805156.5 N	● Yes	Dee

Call Count

	In		Out	
SPECIES	CC	QTY	CC	QTY
GRFR	1: Males can be counted indi…	2		
GRTR	(X)		3: Calls overlap each other t…	

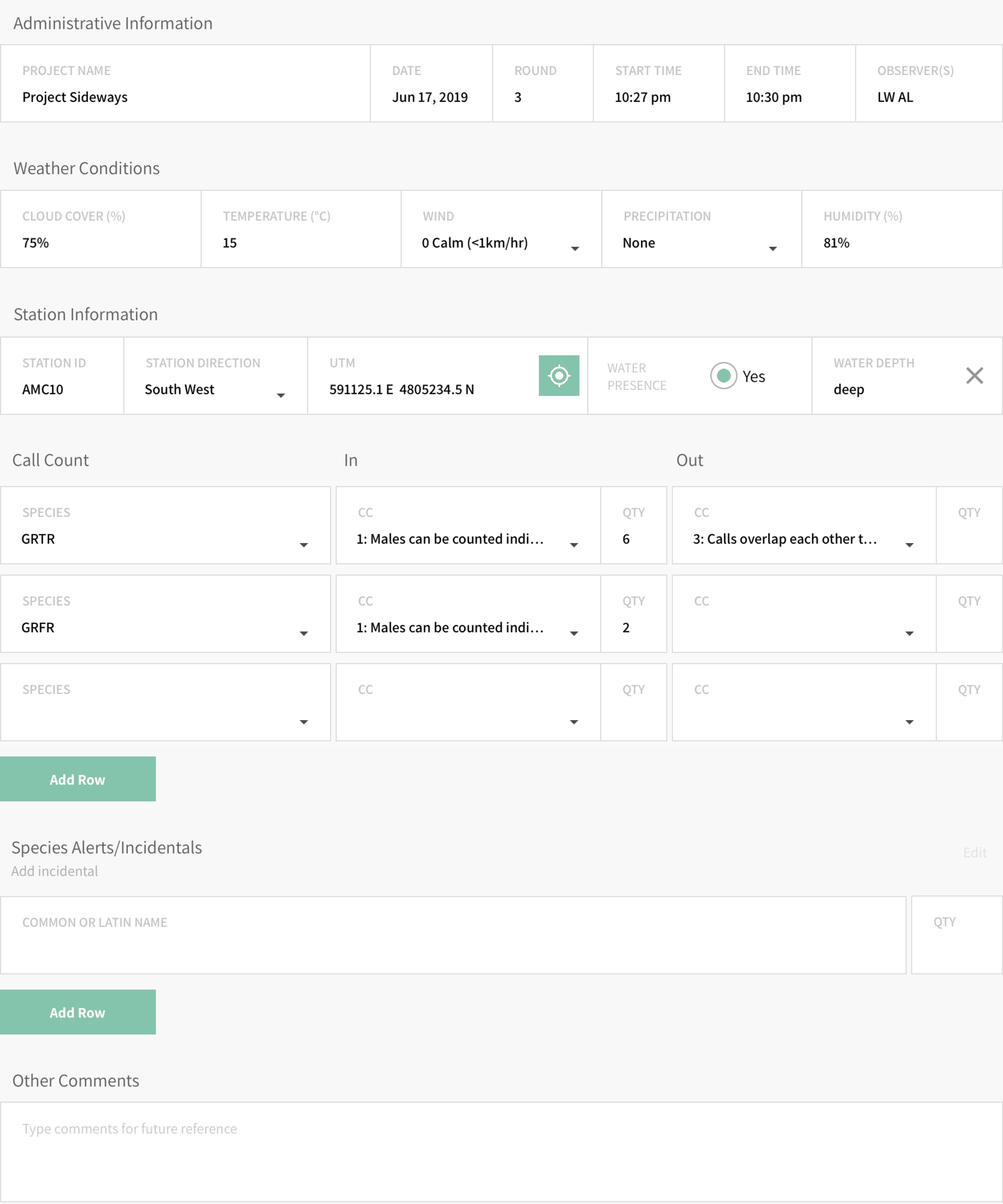
Species Alerts/Incidentals

Add incidental

COMMON OR LATIN NAME	QTY

Other Comments

GRTR calling from aggregate pit.



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	Jun 17, 2019	3	10:27 pm	10:30 pm	LW AL

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
75%	15	0 Calm (<1km/hr)	None	81%

Station Information

STATION ID	STATION DIRECTION	UTM	WATER PRESENCE	WATER DEPTH
AMC10	South West	591125.1 E 4805234.5 N	● Yes	deep

Call Count

	In		Out	
SPECIES	CC	QTY	CC	QTY
GRTR	1: Males can be counted indi…	6	3: Calls overlap each other t…	
GRFR	1: Males can be counted indi…	2		

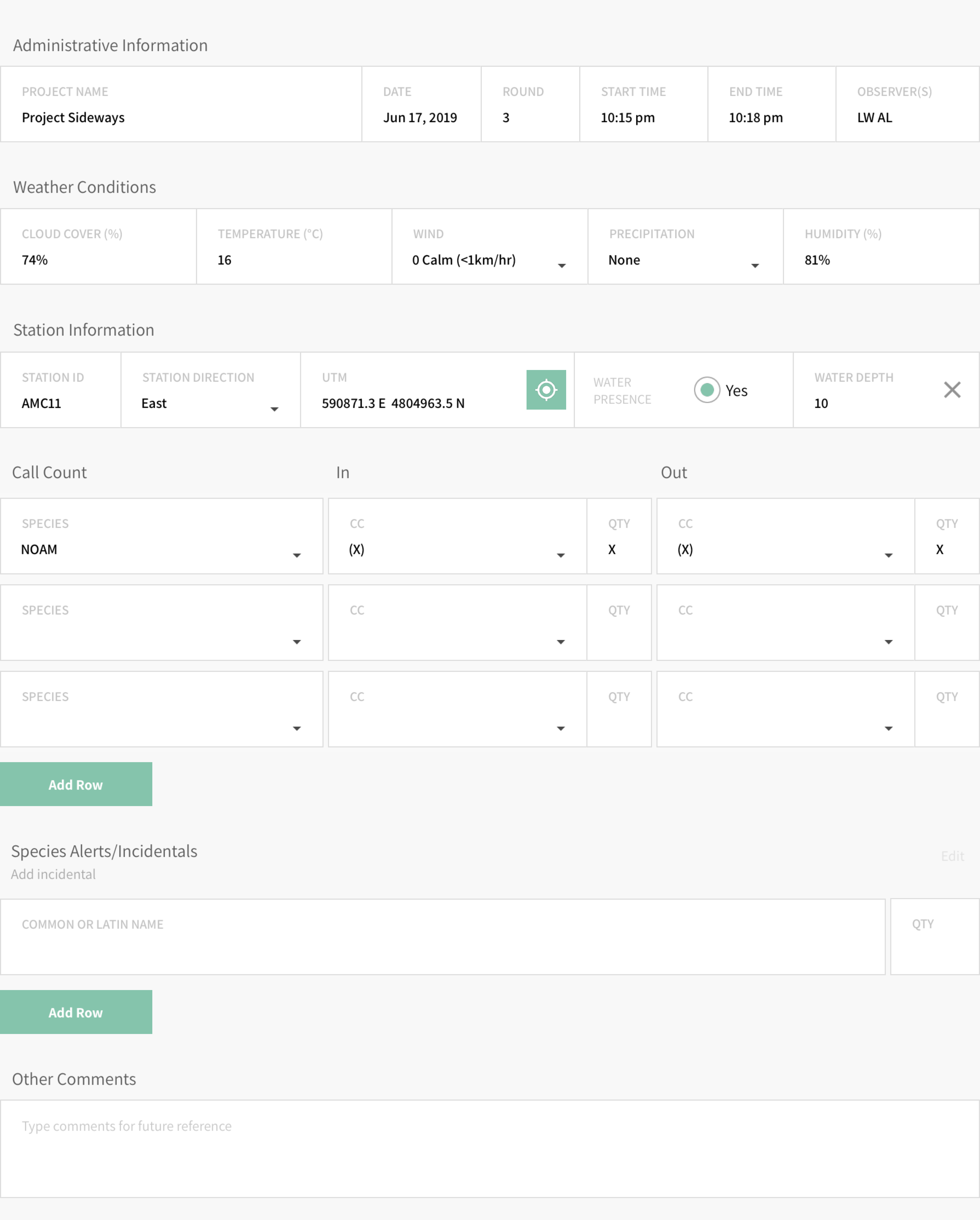
Species Alerts/Incidentals

Add incidental

COMMON OR LATIN NAME	QTY

Other Comments

Type comments for future reference



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	Jun 17, 2019	3	10:15 pm	10:18 pm	LW AL

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
74%	16	0 Calm (<1km/hr)	None	81%

Station Information

STATION ID	STATION DIRECTION	UTM	WATER PRESENCE	WATER DEPTH
AMC11	East	590871.3 E 4804963.5 N	● Yes	10

Call Count

	In		Out	
SPECIES	CC	QTY	CC	QTY
NOAM	(X)	X	(X)	X
SPECIES	CC	QTY	CC	QTY
SPECIES	CC	QTY	CC	QTY

Species Alerts/Incidentals

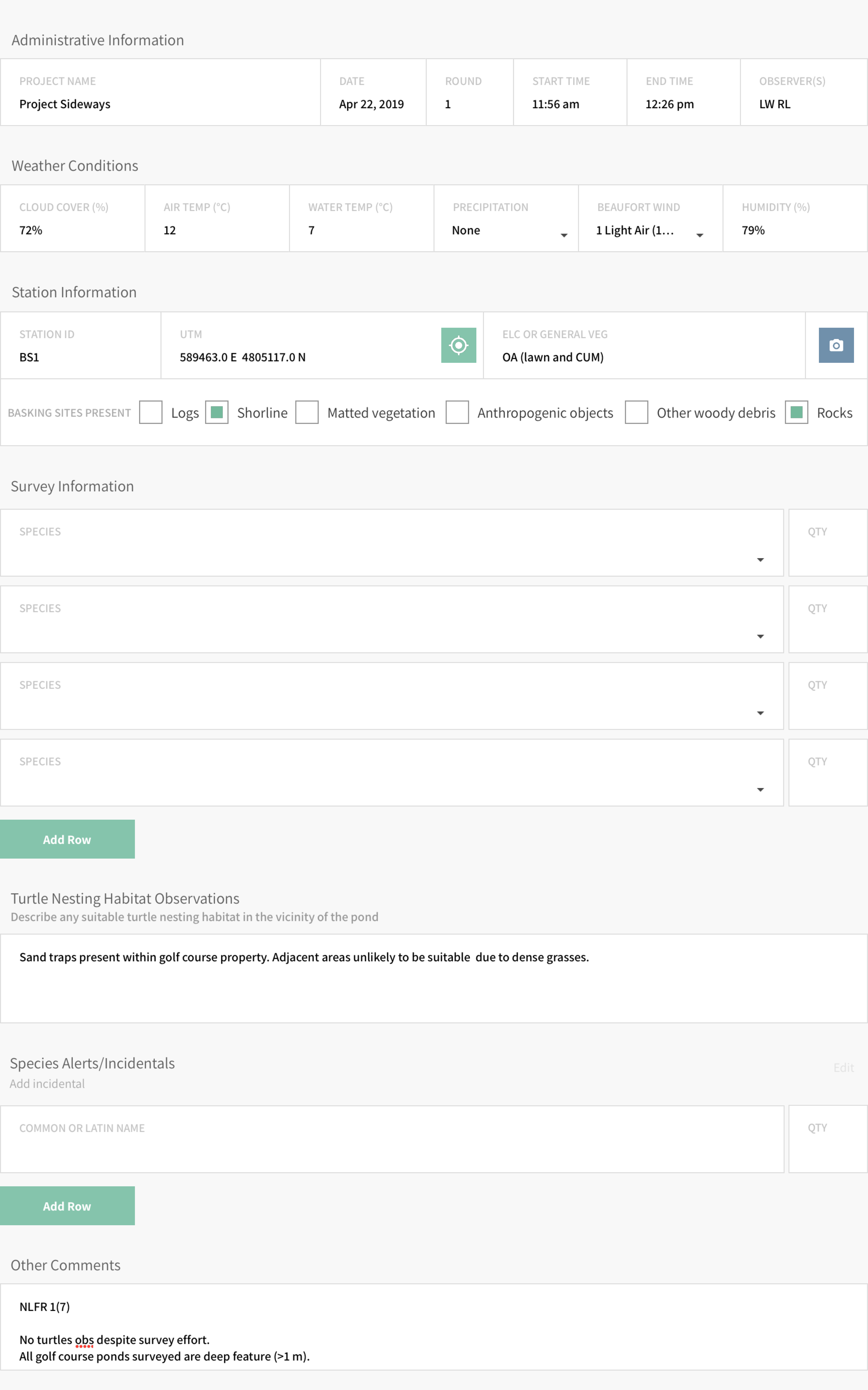
Add incidental

COMMON OR LATIN NAME	QTY

Other Comments

Type comments for future reference

Appendix C – Ecological Field Data – Turtles



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	Apr 22, 2019	1	11:56 am	12:26 pm	LW RL

Weather Conditions

CLOUD COVER (%)	AIR TEMP (°C)	WATER TEMP (°C)	PRECIPITATION	BEAUFORT WIND	HUMIDITY (%)
72%	12	7	None	1 Light Air (1…	79%

Station Information

STATION ID	UTM	ELC OR GENERAL VEG
BS1	589463.0 E 4805117.0 N	OA (lawn and CUM)

BASKING SITES PRESENT ☐ Logs ☑ Shorline ☐ Matted vegetation ☐ Anthropogenic objects ☐ Other woody debris ☑ Rocks

Survey Information

SPECIES	QTY

Add Row

Turtle Nesting Habitat Observations

Describe any suitable turtle nesting habitat in the vicinity of the pond

Sand traps present within golf course property. Adjacent areas unlikely to be suitable due to dense grasses.

Species Alerts/Incidentals

Add incidental

Edit

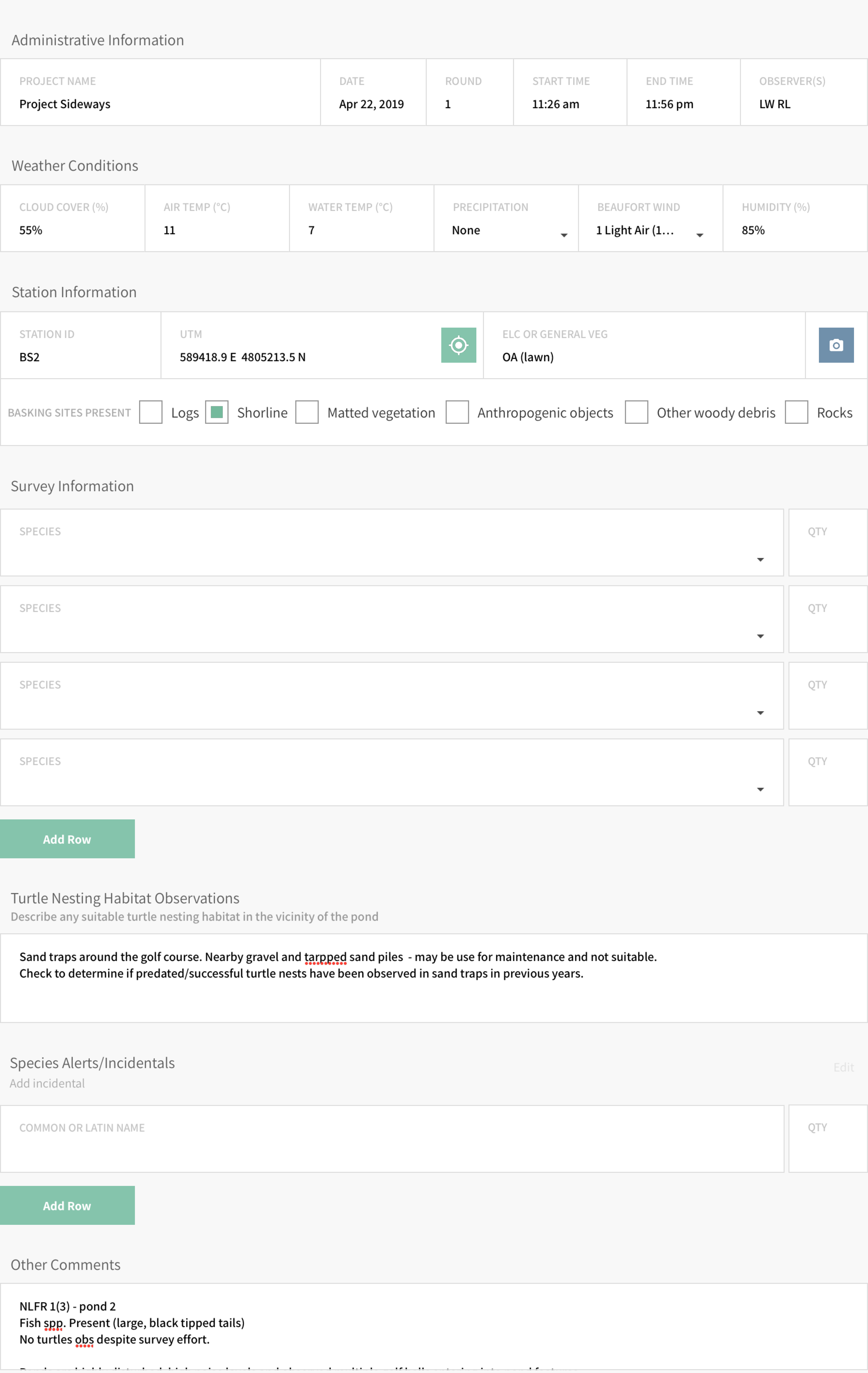
COMMON OR LATIN NAME	QTY

Add Row

Other Comments

NLFR 1(7)

No turtles obs despite survey effort.
All golf course ponds surveyed are deep feature (>1 m).



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	Apr 22, 2019	1	11:26 am	11:56 pm	LW RL

Weather Conditions

CLOUD COVER (%)	AIR TEMP (°C)	WATER TEMP (°C)	PRECIPITATION	BEAUFORT WIND	HUMIDITY (%)
55%	11	7	None	1 Light Air (1…	85%

Station Information

STATION ID	UTM	ELC OR GENERAL VEG
BS2	589418.9 E 4805213.5 N	OA (lawn)

BASKING SITES PRESENT ☐ Logs ☑ Shorline ☐ Matted vegetation ☐ Anthropogenic objects ☐ Other woody debris ☐ Rocks

Survey Information

SPECIES	QTY

Turtle Nesting Habitat Observations

Describe any suitable turtle nesting habitat in the vicinity of the pond

Sand traps around the golf course. Nearby gravel and tarpped sand piles - may be use for maintenance and not suitable.
Check to determine if predated/successful turtle nests have been observed in sand traps in previous years.

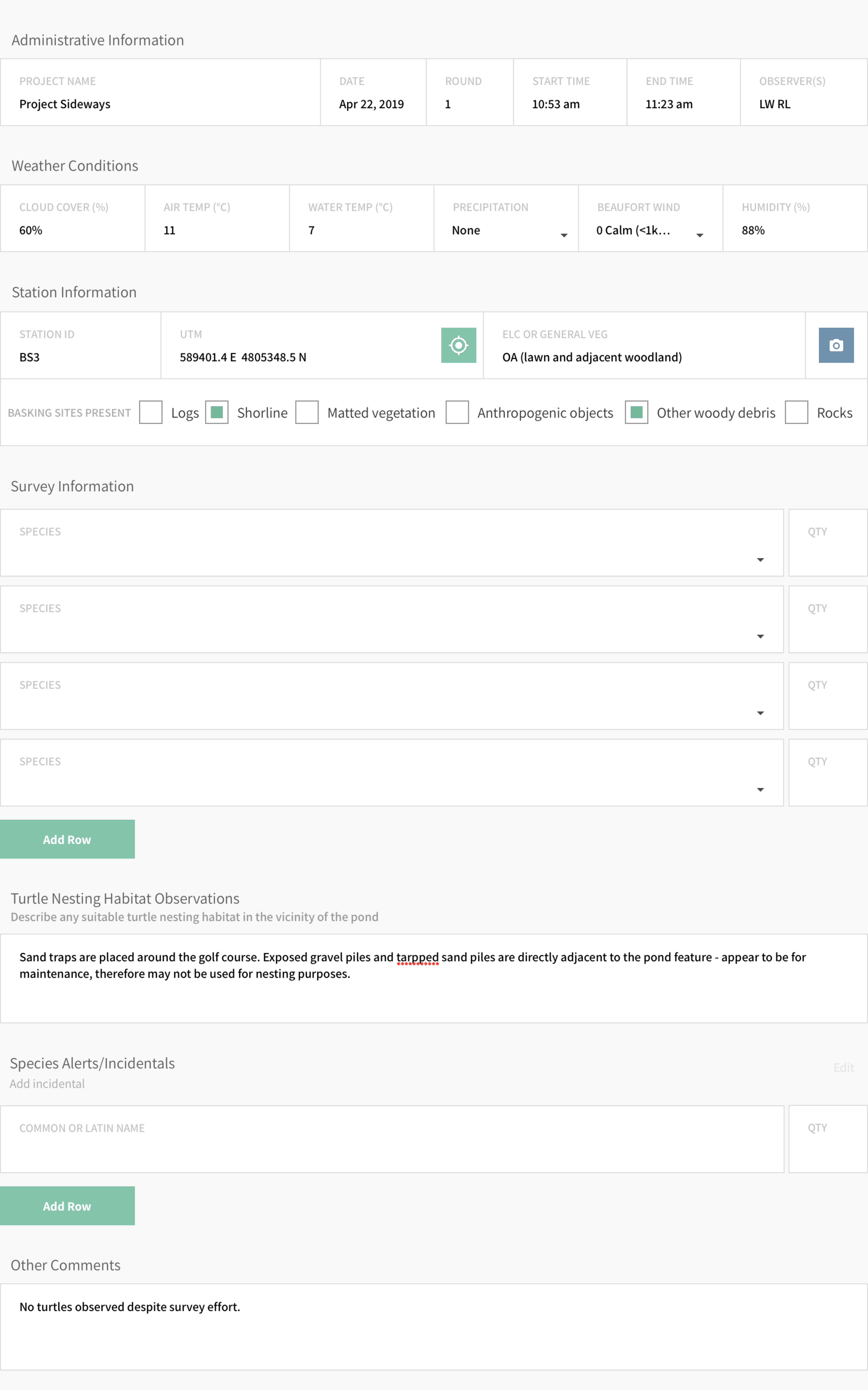
Species Alerts/Incidentals

Add incidental

COMMON OR LATIN NAME	QTY

Other Comments

NLFR 1(3) - pond 2
Fish spp. Present (large, black tipped tails)
No turtles obs despite survey effort.



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	Apr 22, 2019	1	10:53 am	11:23 am	LW RL

Weather Conditions

CLOUD COVER (%)	AIR TEMP (°C)	WATER TEMP (°C)	PRECIPITATION	BEAUFORT WIND	HUMIDITY (%)
60%	11	7	None	0 Calm (<1k...	88%

Station Information

STATION ID	UTM	ELC OR GENERAL VEG
BS3	589401.4 E 4805348.5 N	OA (lawn and adjacent woodland)

BASKING SITES PRESENT ☐ Logs ☑ Shorline ☐ Matted vegetation ☐ Anthropogenic objects ☑ Other woody debris ☐ Rocks

Survey Information

SPECIES	QTY

Add Row

Turtle Nesting Habitat Observations

Describe any suitable turtle nesting habitat in the vicinity of the pond

Sand traps are placed around the golf course. Exposed gravel piles and tarpped sand piles are directly adjacent to the pond feature - appear to be for maintenance, therefore may not be used for nesting purposes.

Species Alerts/Incidentals

Add incidental

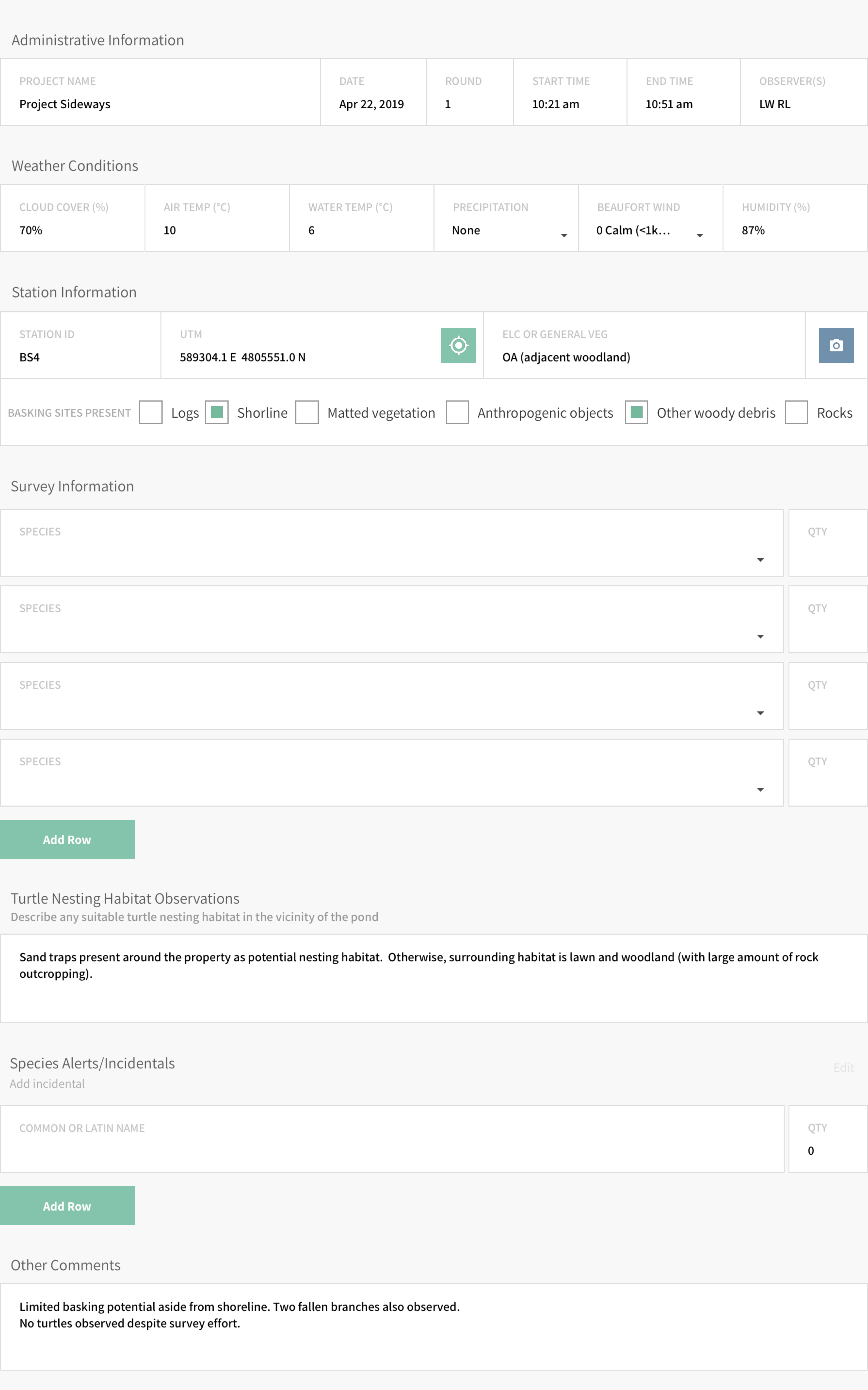
Edit

COMMON OR LATIN NAME	QTY

Add Row

Other Comments

No turtles observed despite survey effort.



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	Apr 22, 2019	1	10:21 am	10:51 am	LW RL

Weather Conditions

CLOUD COVER (%)	AIR TEMP (°C)	WATER TEMP (°C)	PRECIPITATION	BEAUFORT WIND	HUMIDITY (%)
70%	10	6	None	0 Calm (<1k…	87%

Station Information

STATION ID	UTM	ELC OR GENERAL VEG
BS4	589304.1 E 4805551.0 N	OA (adjacent woodland)

BASKING SITES PRESENT ☐ Logs ☑ Shorline ☐ Matted vegetation ☐ Anthropogenic objects ☑ Other woody debris ☐ Rocks

Survey Information

SPECIES	QTY
SPECIES	QTY
SPECIES	QTY
SPECIES	QTY

Turtle Nesting Habitat Observations

Describe any suitable turtle nesting habitat in the vicinity of the pond

Sand traps present around the property as potential nesting habitat. Otherwise, surrounding habitat is lawn and woodland (with large amount of rock outcropping).

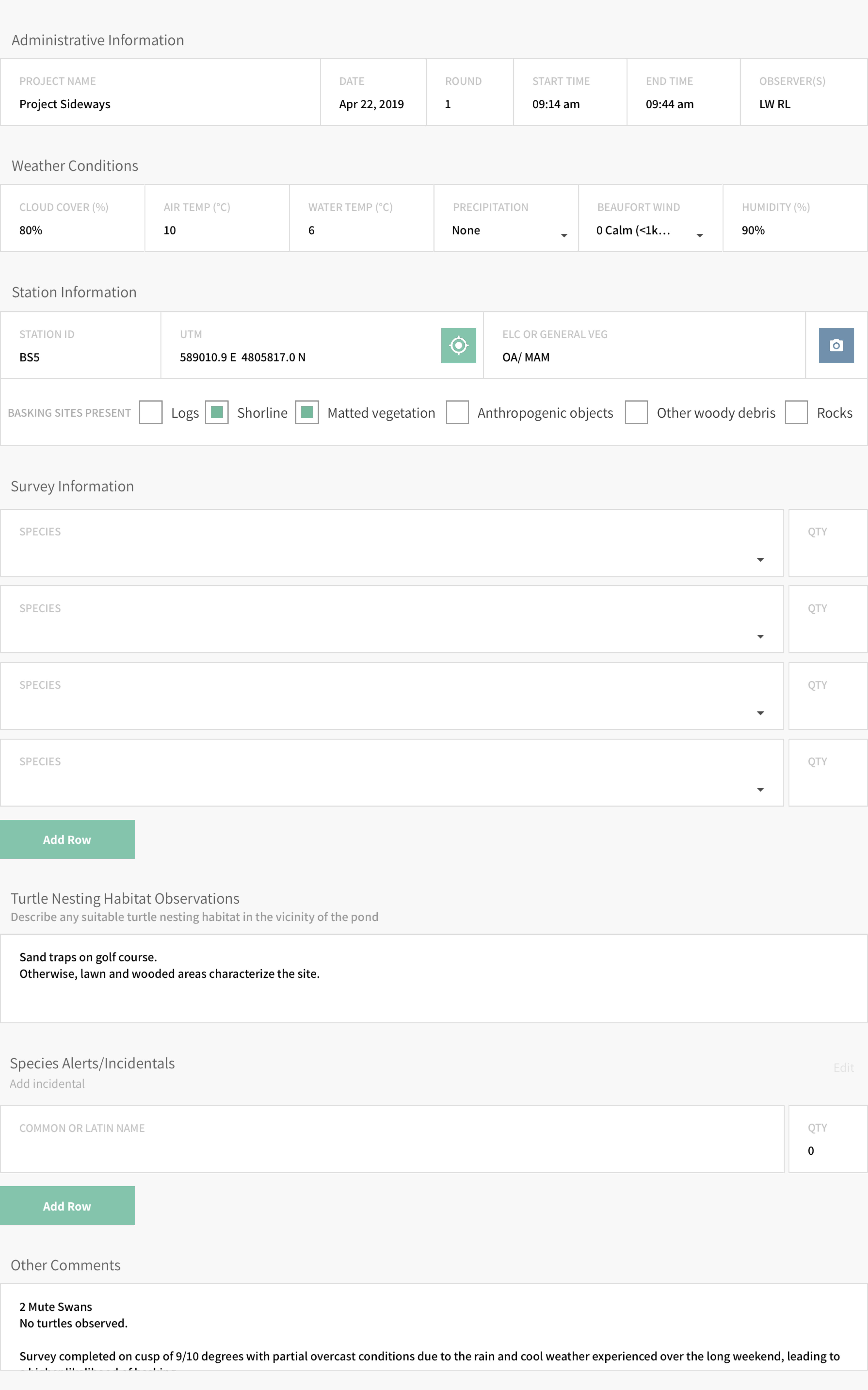
Species Alerts/Incidentals

Add incidental

COMMON OR LATIN NAME	QTY
	0

Other Comments

Limited basking potential aside from shoreline. Two fallen branches also observed.
No turtles observed despite survey effort.



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	Apr 22, 2019	1	09:14 am	09:44 am	LW RL

Weather Conditions

CLOUD COVER (%)	AIR TEMP (°C)	WATER TEMP (°C)	PRECIPITATION	BEAUFORT WIND	HUMIDITY (%)
80%	10	6	None	0 Calm (<1k…	90%

Station Information

STATION ID	UTM	ELC OR GENERAL VEG
BS5	589010.9 E 4805817.0 N	OA/ MAM

BASKING SITES PRESENT ☐ Logs ☑ Shorline ☑ Matted vegetation ☐ Anthropogenic objects ☐ Other woody debris ☐ Rocks

Survey Information

SPECIES	QTY

Turtle Nesting Habitat Observations

Describe any suitable turtle nesting habitat in the vicinity of the pond

Sand traps on golf course.
Otherwise, lawn and wooded areas characterize the site.

Species Alerts/Incidentals

Add incidental

COMMON OR LATIN NAME	QTY
	0

Other Comments

2 Mute Swans
No turtles observed.

Survey completed on cusp of 9/10 degrees with partial overcast conditions due to the rain and cool weather experienced over the long weekend, leading to

Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	Apr 22, 2019	1	02:51 pm	03:21 pm	LW RL

Weather Conditions

CLOUD COVER (%)	AIR TEMP (°C)	WATER TEMP (°C)	PRECIPITATION	BEAUFORT WIND	HUMIDITY (%)
5%	14	10	None	0 Calm (<1k…	77%

Station Information

STATION ID	UTM	ELC OR GENERAL VEG
BS6	590575.7 E 4805196.0 N	OA/MAS

BASKING SITES PRESENT ☐ Logs ☑ Shorline ☑ Matted vegetation ☐ Anthropogenic objects ☐ Other woody debris ☐ Rocks

Survey Information

SPECIES	QTY
Midland Painted Turtle	1

Add Row

Turtle Nesting Habitat Observations

Describe any suitable turtle nesting habitat in the vicinity of the pond

AG in close proximity, and there may be abandoned sand traps in the vicinity.

Species Alerts/Incidentals

Add incidental

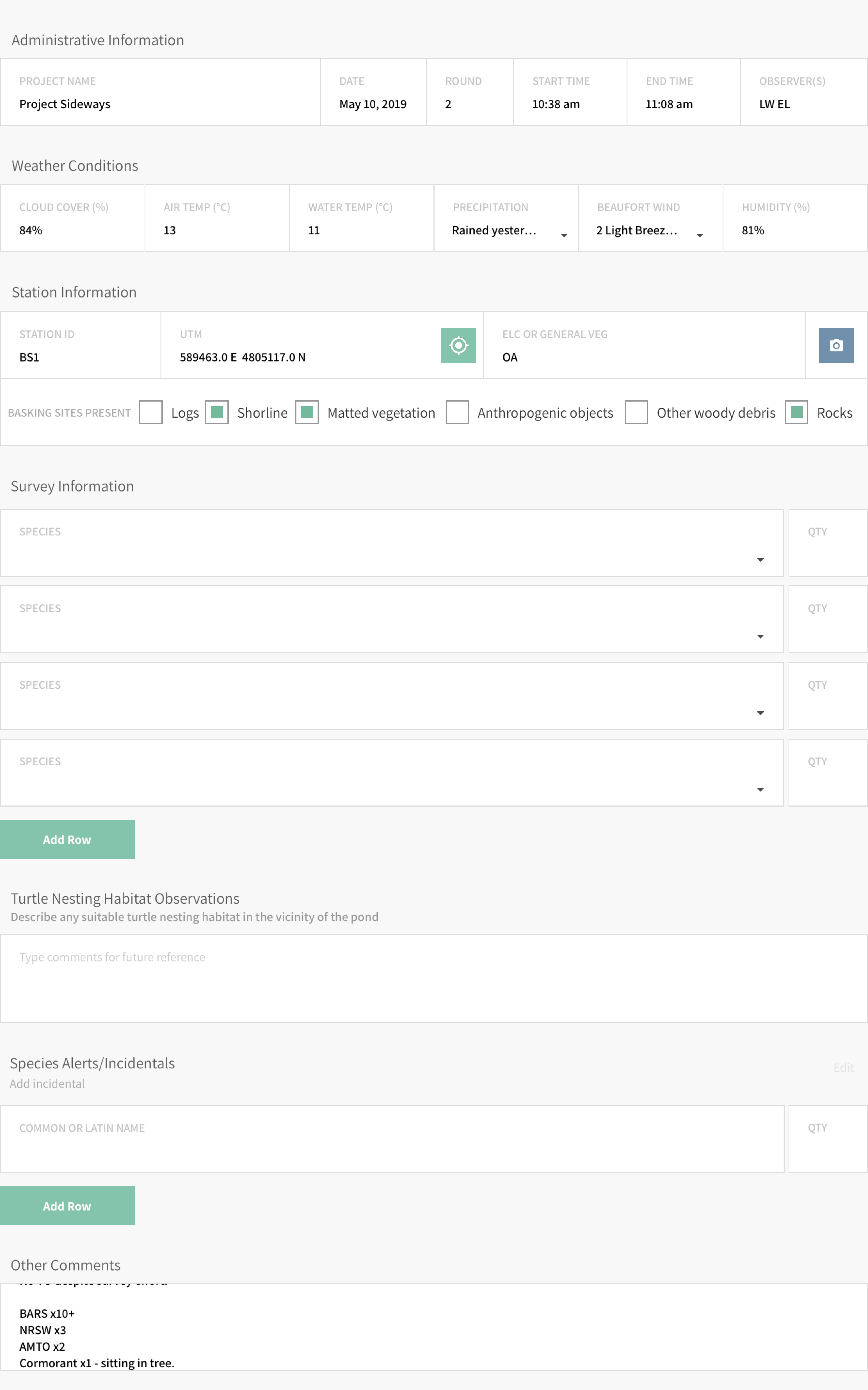
Edit

COMMON OR LATIN NAME	QTY

Add Row

Other Comments

NLFR 1(2)
SPPE 1(1)
SPPE 3(-) heard off property to the W.
Poor conditions to meet overwintering needed do high levels of algae presence. Water depth appears to be 50 cm - 100 cm.



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	May 10, 2019	2	10:38 am	11:08 am	LW EL

Weather Conditions

CLOUD COVER (%)	AIR TEMP (°C)	WATER TEMP (°C)	PRECIPITATION	BEAUFORT WIND	HUMIDITY (%)
84%	13	11	Rained yester… ▾	2 Light Breez… ▾	81%

Station Information

STATION ID	UTM	ELC OR GENERAL VEG
BS1	589463.0 E 4805117.0 N	OA

BASKING SITES PRESENT ☐ Logs ☑ Shorline ☑ Matted vegetation ☐ Anthropogenic objects ☐ Other woody debris ☑ Rocks

Survey Information

SPECIES	QTY
▾	
▾	
▾	
▾	

Add Row

Turtle Nesting Habitat Observations

Describe any suitable turtle nesting habitat in the vicinity of the pond

Type comments for future reference

Species Alerts/Incidentals

Edit

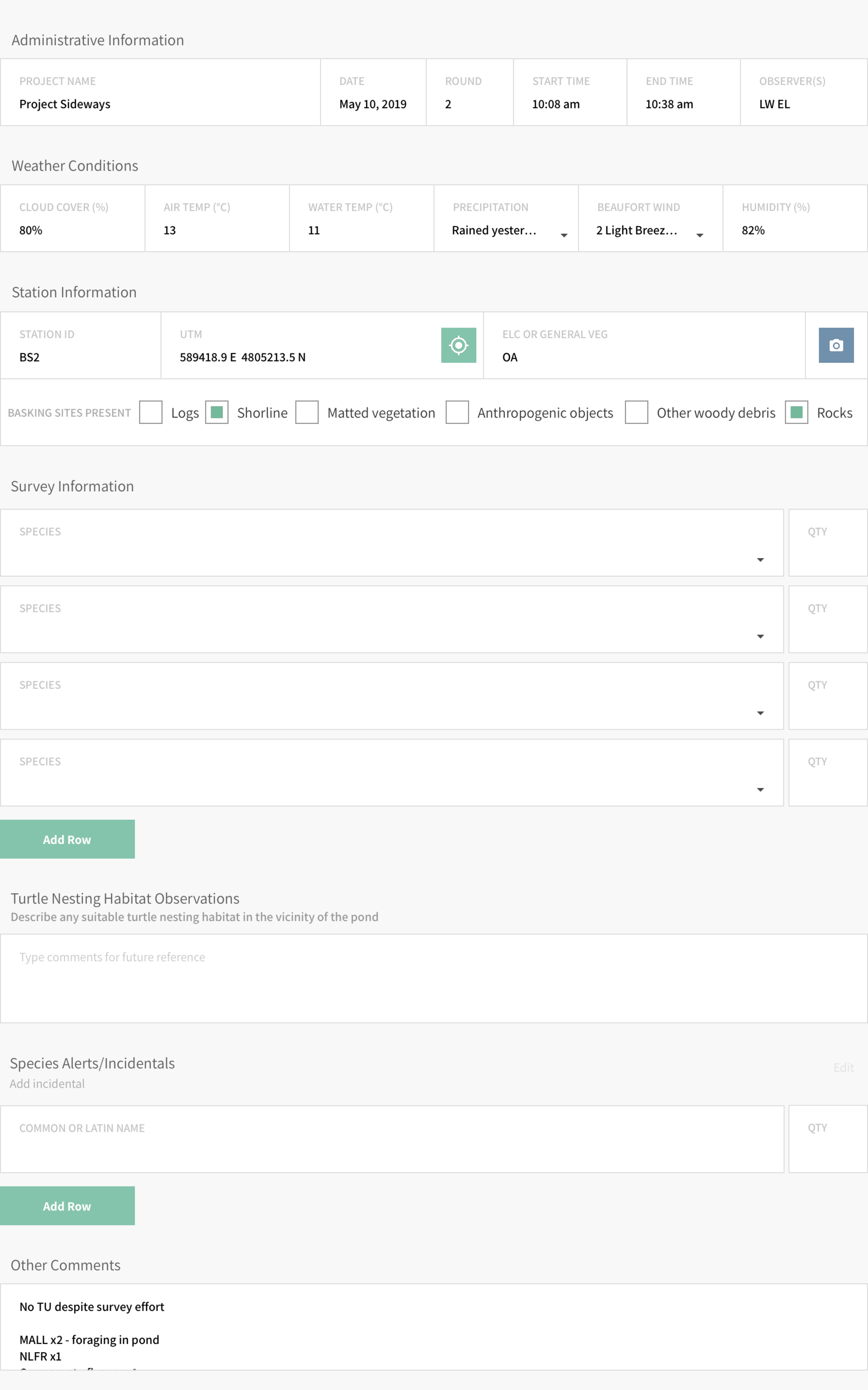
Add incidental

COMMON OR LATIN NAME	QTY

Add Row

Other Comments

BARS x10+
NRSW x3
AMTO x2
Cormorant x1 - sitting in tree.



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	May 10, 2019	2	10:08 am	10:38 am	LW EL

Weather Conditions

CLOUD COVER (%)	AIR TEMP (°C)	WATER TEMP (°C)	PRECIPITATION	BEAUFORT WIND	HUMIDITY (%)
80%	13	11	Rained yester...	2 Light Breez...	82%

Station Information

STATION ID	UTM	ELC OR GENERAL VEG
BS2	589418.9 E 4805213.5 N	OA

BASKING SITES PRESENT ☐ Logs ☑ Shorline ☐ Matted vegetation ☐ Anthropogenic objects ☐ Other woody debris ☑ Rocks

Survey Information

SPECIES	QTY
SPECIES	QTY
SPECIES	QTY
SPECIES	QTY

Add Row

Turtle Nesting Habitat Observations

Describe any suitable turtle nesting habitat in the vicinity of the pond

Type comments for future reference

Species Alerts/Incidentals

Edit

Add incidental

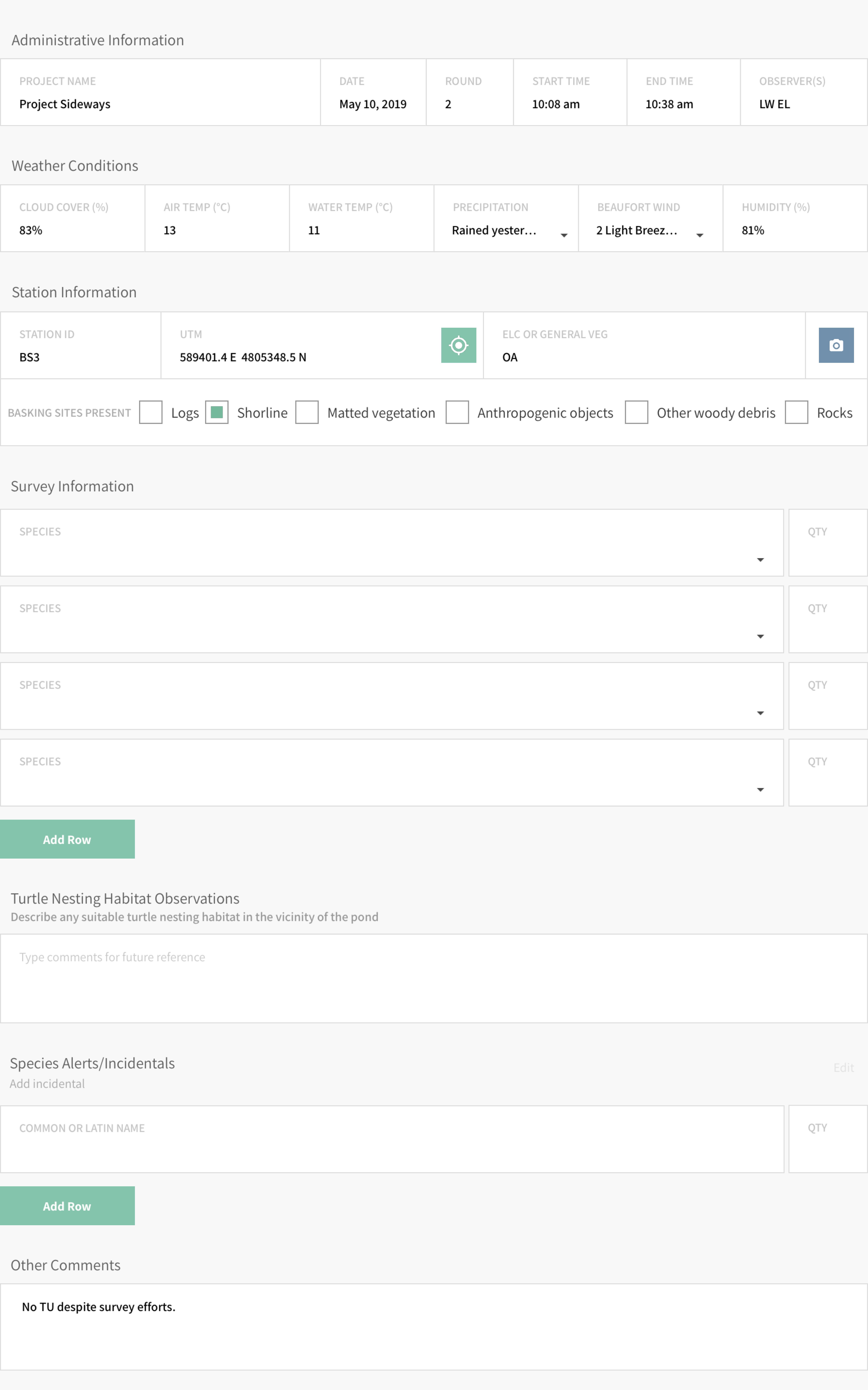
COMMON OR LATIN NAME	QTY

Add Row

Other Comments

No TU despite survey effort

MALL x2 - foraging in pond
NLFR x1



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	May 10, 2019	2	10:08 am	10:38 am	LW EL

Weather Conditions

CLOUD COVER (%)	AIR TEMP (°C)	WATER TEMP (°C)	PRECIPITATION	BEAUFORT WIND	HUMIDITY (%)
83%	13	11	Rained yester…	2 Light Breez…	81%

Station Information

STATION ID	UTM	ELC OR GENERAL VEG
BS3	589401.4 E 4805348.5 N	OA

BASKING SITES PRESENT ☐ Logs ☑ Shorline ☐ Matted vegetation ☐ Anthropogenic objects ☐ Other woody debris ☐ Rocks

Survey Information

SPECIES	QTY

Turtle Nesting Habitat Observations

Describe any suitable turtle nesting habitat in the vicinity of the pond

Type comments for future reference

Species Alerts/Incidentals

Add incidental

COMMON OR LATIN NAME	QTY

Other Comments

No TU despite survey efforts.

Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	May 10, 2019	2	09:37 am	10:07 am	LW EL

Weather Conditions

CLOUD COVER (%)	AIR TEMP (°C)	WATER TEMP (°C)	PRECIPITATION	BEAUFORT WIND	HUMIDITY (%)
91%	14	11	Rained yester... ▾	1 Light Air (1... ▾	82%

Station Information

STATION ID	UTM	ELC OR GENERAL VEG
BS4	589304.1 E 4805551.0 N	OA

BASKING SITES PRESENT ☐ Logs ☑ Shorline ☐ Matted vegetation ☐ Anthropogenic objects ☑ Other woody debris ☐ Rocks

Survey Information

SPECIES ▾	QTY
SPECIES ▾	QTY
SPECIES ▾	QTY
SPECIES ▾	QTY

Add Row

Turtle Nesting Habitat Observations

Describe any suitable turtle nesting habitat in the vicinity of the pond

Type comments for future reference

Species Alerts/Incidentals

Add incidental

Edit

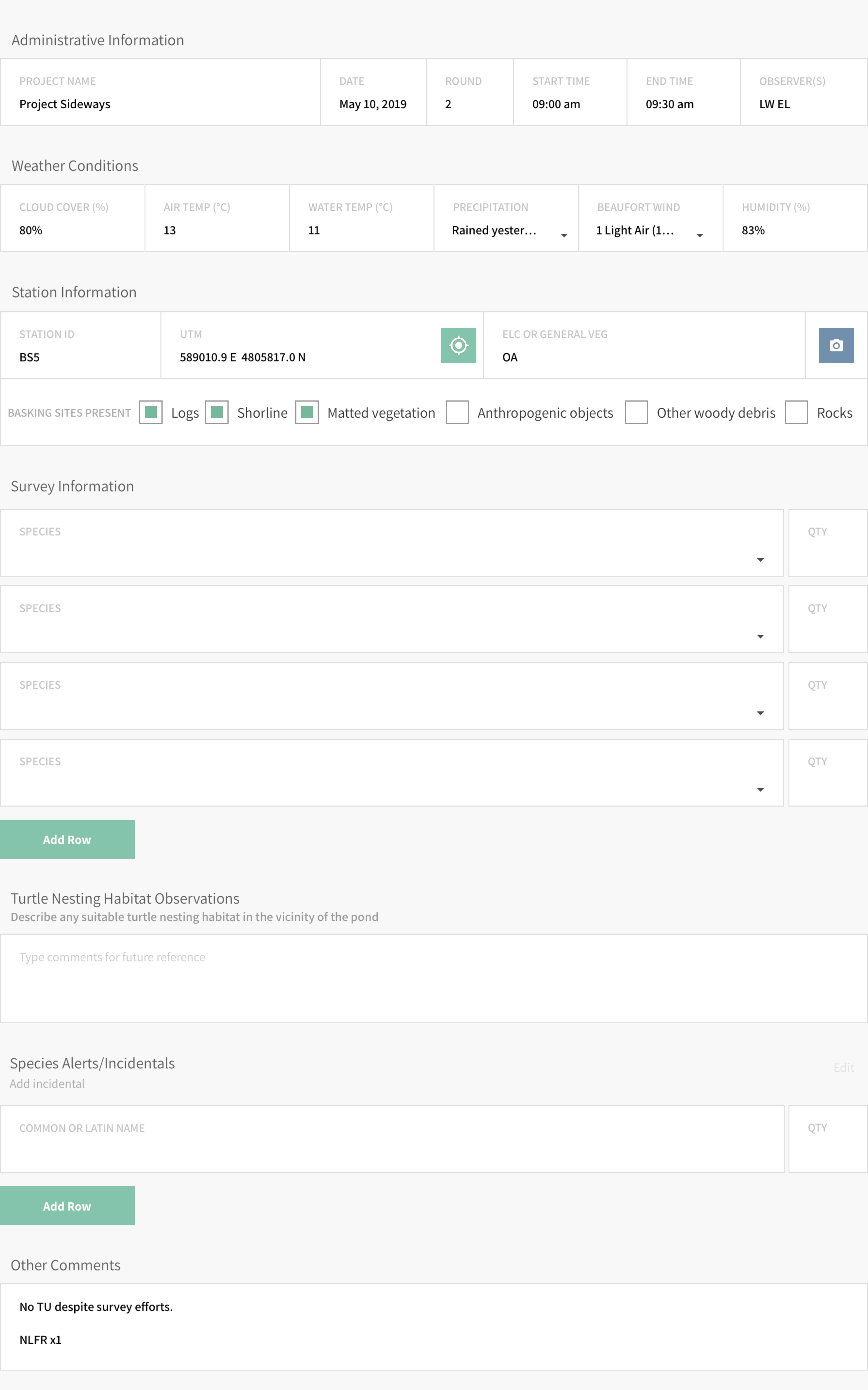
COMMON OR LATIN NAME	QTY

Add Row

Other Comments

No TU despite survey efforts.

Mute Swan x1
TUVU x1
BARS x2



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	May 10, 2019	2	09:00 am	09:30 am	LW EL

Weather Conditions

CLOUD COVER (%)	AIR TEMP (°C)	WATER TEMP (°C)	PRECIPITATION	BEAUFORT WIND	HUMIDITY (%)
80%	13	11	Rained yester…	1 Light Air (1…	83%

Station Information

STATION ID	UTM	ELC OR GENERAL VEG
BS5	589010.9 E 4805817.0 N	OA

BASKING SITES PRESENT ☑ Logs ☑ Shorline ☑ Matted vegetation ☐ Anthropogenic objects ☐ Other woody debris ☐ Rocks

Survey Information

SPECIES	QTY

Turtle Nesting Habitat Observations

Describe any suitable turtle nesting habitat in the vicinity of the pond

Species Alerts/Incidentals

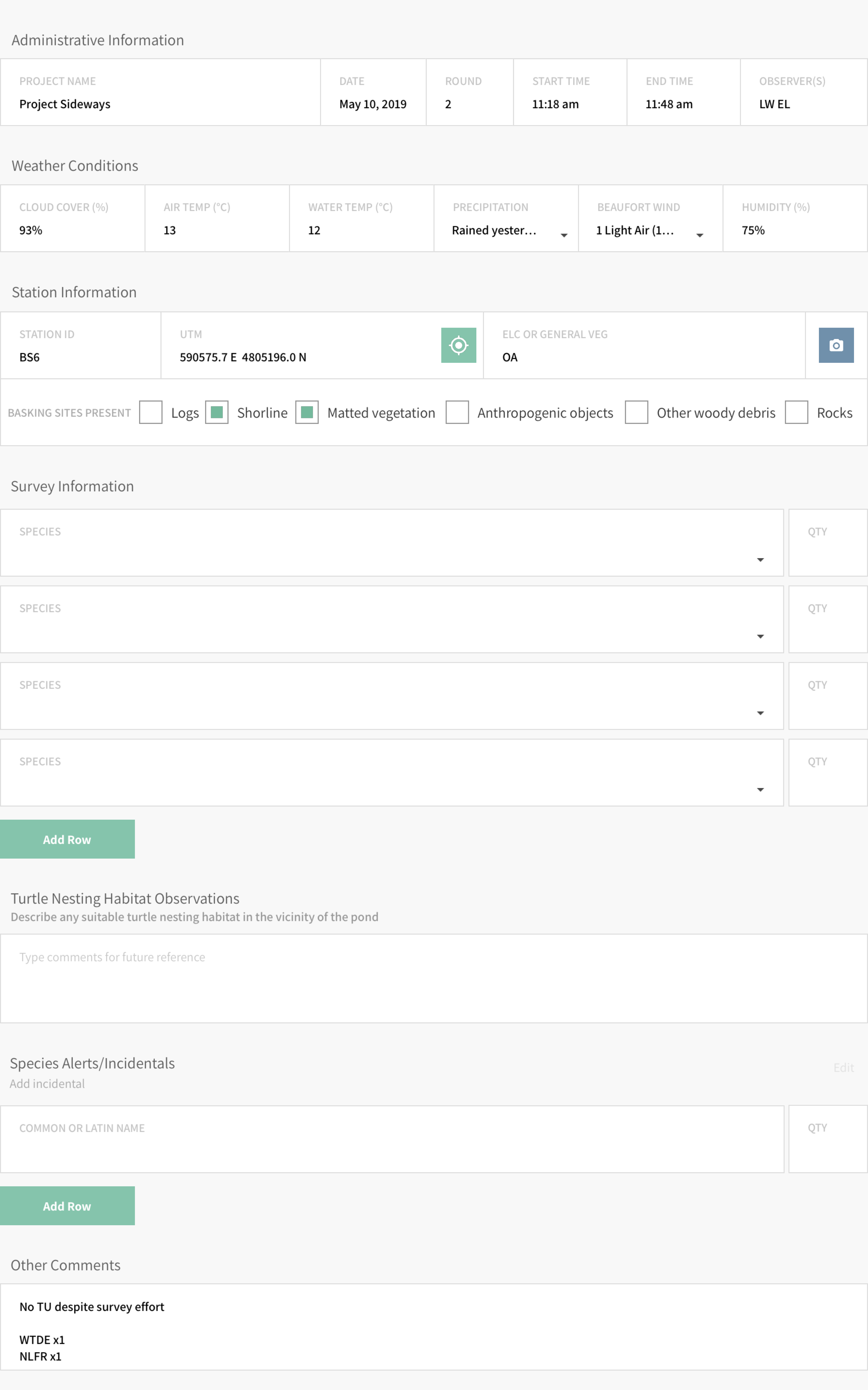
Add incidental

COMMON OR LATIN NAME	QTY

Other Comments

No TU despite survey efforts.

NLFR x1



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	May 10, 2019	2	11:18 am	11:48 am	LW EL

Weather Conditions

CLOUD COVER (%)	AIR TEMP (°C)	WATER TEMP (°C)	PRECIPITATION	BEAUFORT WIND	HUMIDITY (%)
93%	13	12	Rained yester…	1 Light Air (1…	75%

Station Information

STATION ID	UTM	ELC OR GENERAL VEG
BS6	590575.7 E 4805196.0 N	OA

BASKING SITES PRESENT ☐ Logs ☑ Shorline ☑ Matted vegetation ☐ Anthropogenic objects ☐ Other woody debris ☐ Rocks

Survey Information

SPECIES	QTY

Turtle Nesting Habitat Observations

Describe any suitable turtle nesting habitat in the vicinity of the pond

Type comments for future reference

Species Alerts/Incidentals

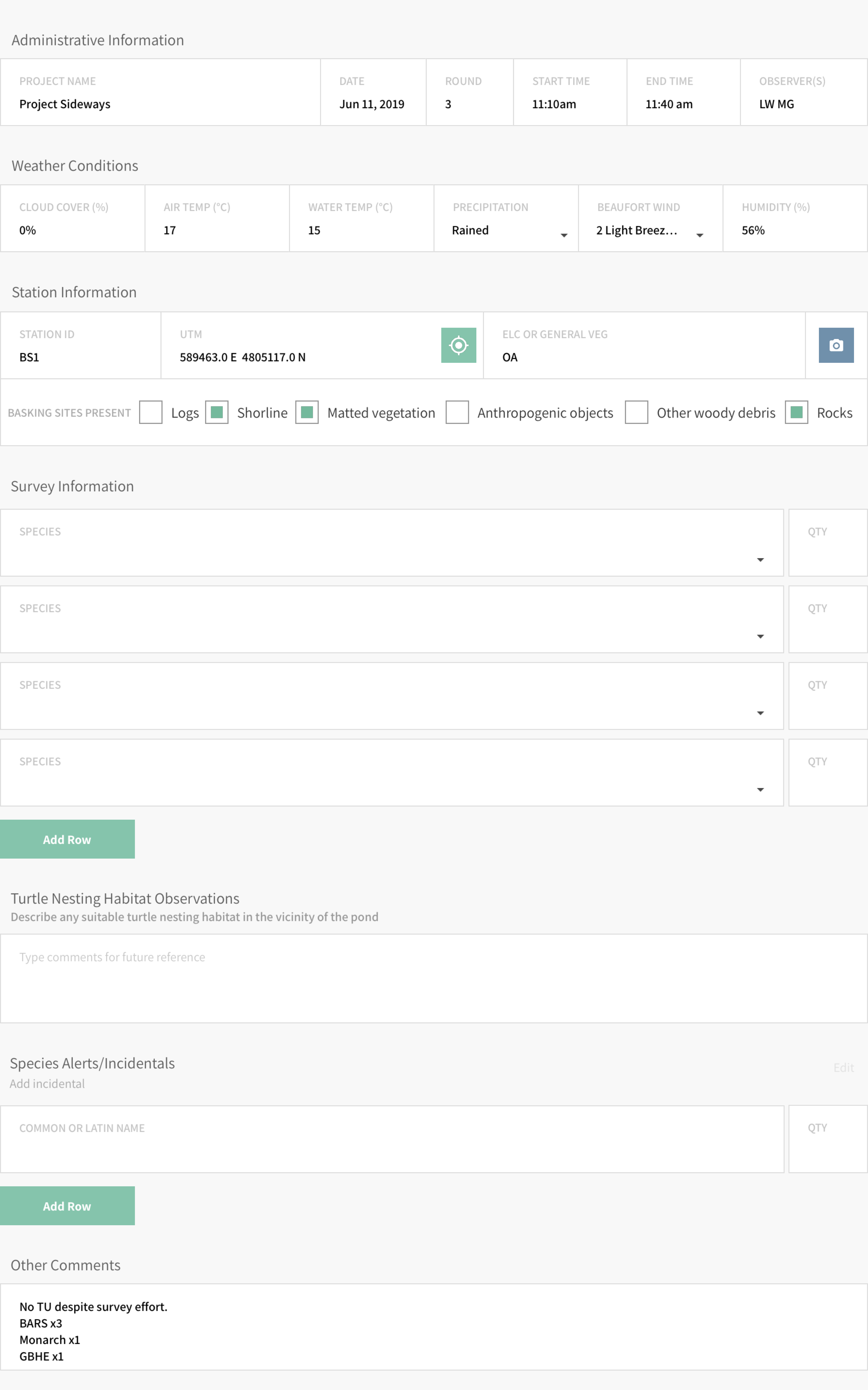
Add incidental

COMMON OR LATIN NAME	QTY

Other Comments

No TU despite survey effort

WTDE x1
NLFR x1



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	Jun 11, 2019	3	11:10am	11:40 am	LW MG

Weather Conditions

CLOUD COVER (%)	AIR TEMP (°C)	WATER TEMP (°C)	PRECIPITATION	BEAUFORT WIND	HUMIDITY (%)
0%	17	15	Rained	2 Light Breez…	56%

Station Information

STATION ID	UTM	ELC OR GENERAL VEG
BS1	589463.0 E 4805117.0 N	OA

BASKING SITES PRESENT ☐ Logs ☑ Shorline ☑ Matted vegetation ☐ Anthropogenic objects ☐ Other woody debris ☑ Rocks

Survey Information

SPECIES	QTY
SPECIES	QTY
SPECIES	QTY
SPECIES	QTY

Turtle Nesting Habitat Observations

Describe any suitable turtle nesting habitat in the vicinity of the pond

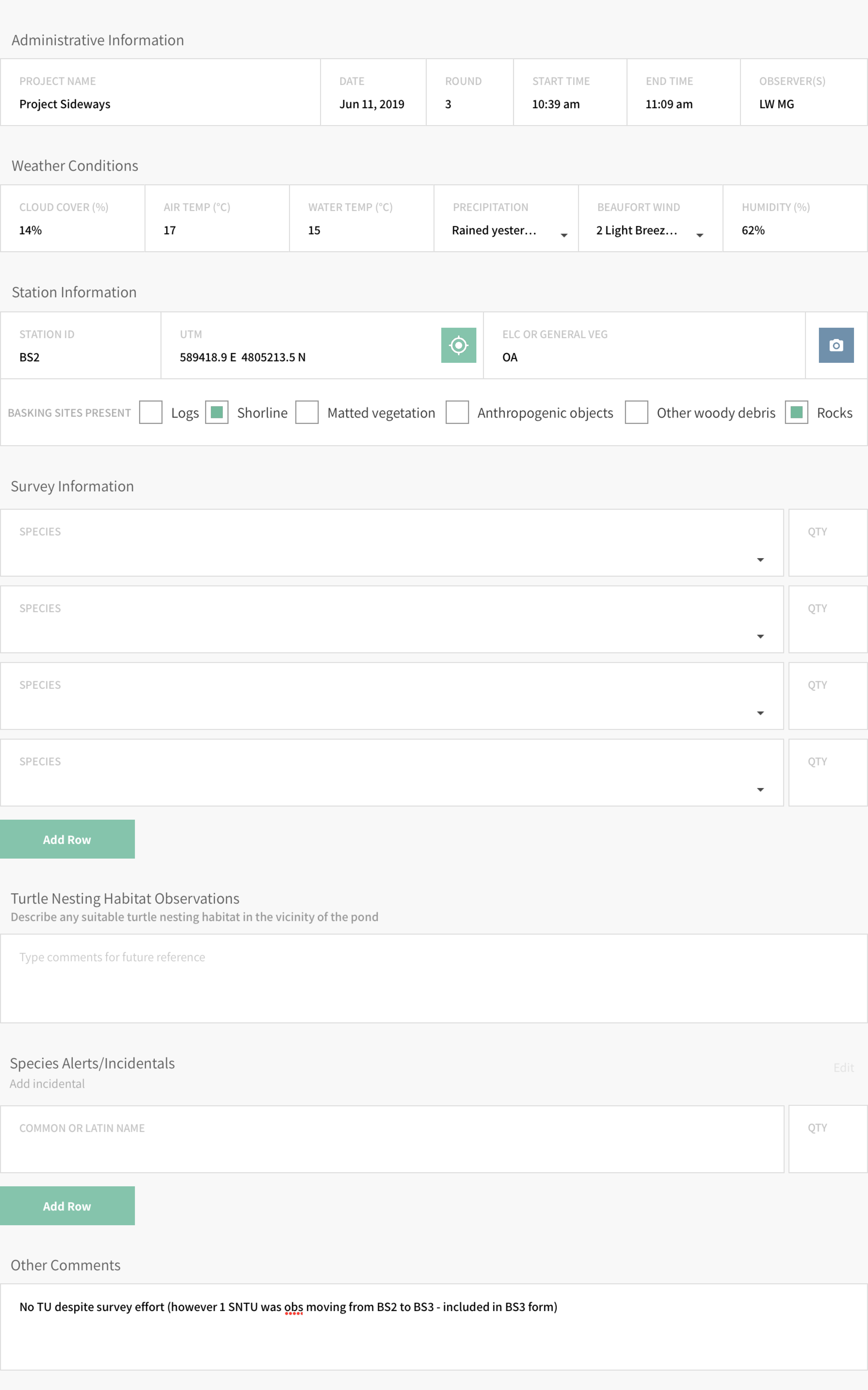
Species Alerts/Incidentals

Add incidental

COMMON OR LATIN NAME	QTY

Other Comments

No TU despite survey effort.
BARS x3
Monarch x1
GBHE x1



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	Jun 11, 2019	3	10:39 am	11:09 am	LW MG

Weather Conditions

CLOUD COVER (%)	AIR TEMP (°C)	WATER TEMP (°C)	PRECIPITATION	BEAUFORT WIND	HUMIDITY (%)
14%	17	15	Rained yester...	2 Light Breez...	62%

Station Information

STATION ID	UTM	ELC OR GENERAL VEG
BS2	589418.9 E 4805213.5 N	OA

BASKING SITES PRESENT ☐ Logs ☑ Shorline ☐ Matted vegetation ☐ Anthropogenic objects ☐ Other woody debris ☑ Rocks

Survey Information

SPECIES	QTY
SPECIES	QTY
SPECIES	QTY
SPECIES	QTY

Turtle Nesting Habitat Observations

Describe any suitable turtle nesting habitat in the vicinity of the pond

Type comments for future reference

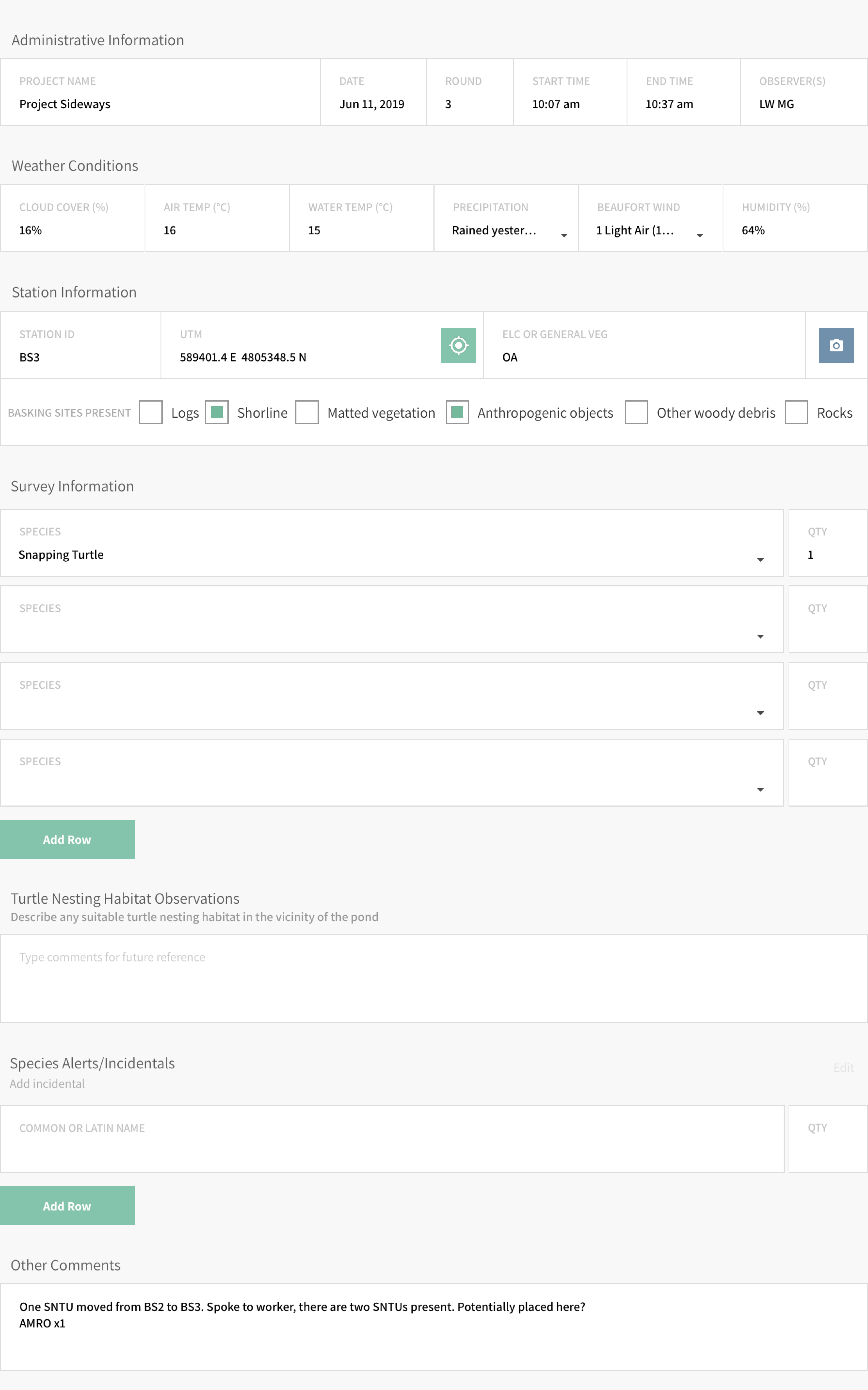
Species Alerts/Incidentals

Add incidental

COMMON OR LATIN NAME	QTY

Other Comments

No TU despite survey effort (however 1 SNTU was obs moving from BS2 to BS3 - included in BS3 form)



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	Jun 11, 2019	3	10:07 am	10:37 am	LW MG

Weather Conditions

CLOUD COVER (%)	AIR TEMP (°C)	WATER TEMP (°C)	PRECIPITATION	BEAUFORT WIND	HUMIDITY (%)
16%	16	15	Rained yester…	1 Light Air (1…	64%

Station Information

STATION ID	UTM	ELC OR GENERAL VEG
BS3	589401.4 E 4805348.5 N	OA

BASKING SITES PRESENT ☐ Logs ☑ Shorline ☐ Matted vegetation ☑ Anthropogenic objects ☐ Other woody debris ☐ Rocks

Survey Information

SPECIES	QTY
Snapping Turtle	1
SPECIES	QTY
SPECIES	QTY
SPECIES	QTY

Add Row

Turtle Nesting Habitat Observations

Describe any suitable turtle nesting habitat in the vicinity of the pond

Type comments for future reference

Species Alerts/Incidentals

Edit

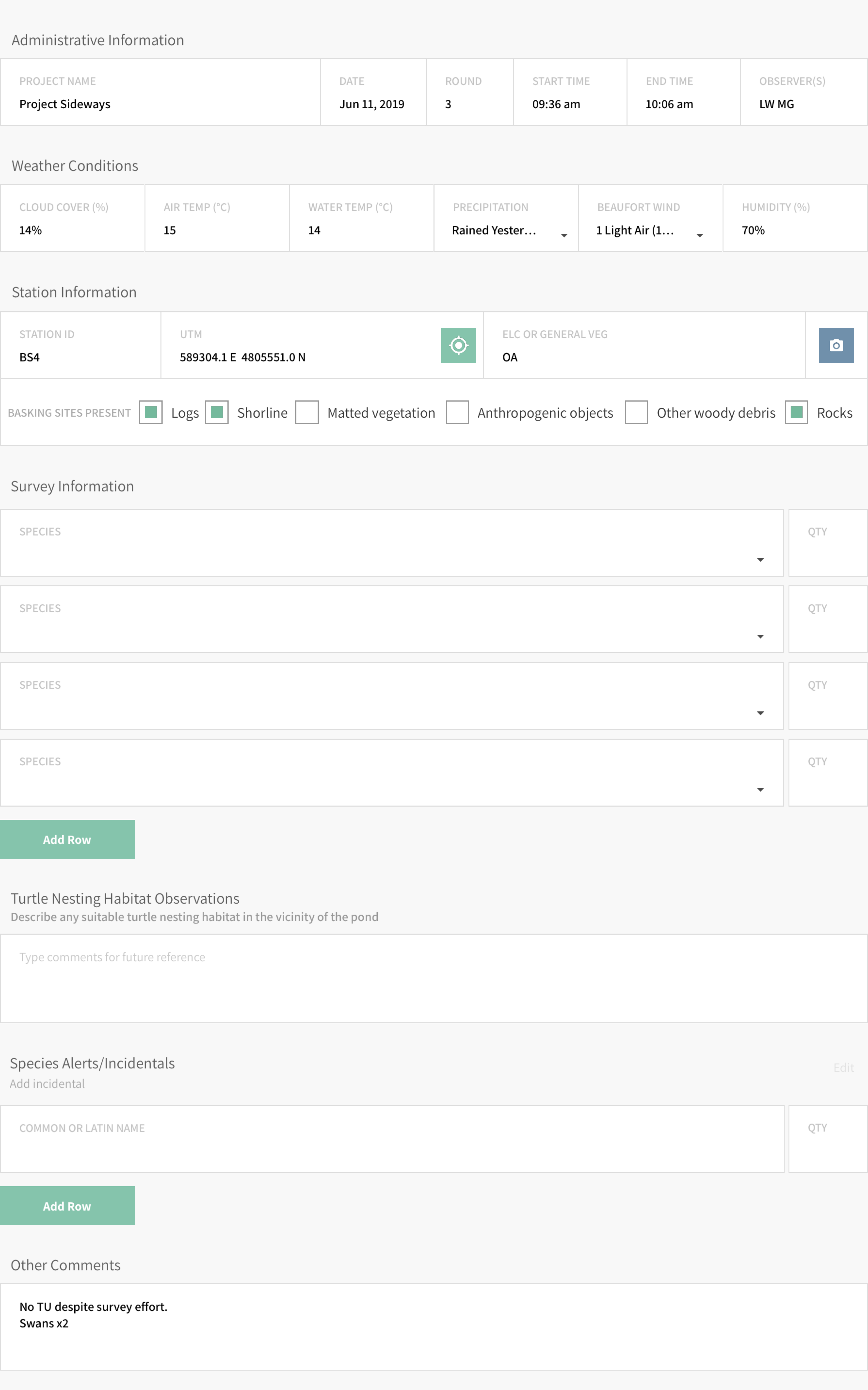
Add incidental

COMMON OR LATIN NAME	QTY

Add Row

Other Comments

One SNTU moved from BS2 to BS3. Spoke to worker, there are two SNTUs present. Potentially placed here?
AMRO x1



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	Jun 11, 2019	3	09:36 am	10:06 am	LW MG

Weather Conditions

CLOUD COVER (%)	AIR TEMP (°C)	WATER TEMP (°C)	PRECIPITATION	BEAUFORT WIND	HUMIDITY (%)
14%	15	14	Rained Yester…	1 Light Air (1…	70%

Station Information

STATION ID	UTM	ELC OR GENERAL VEG
BS4	589304.1 E 4805551.0 N	OA

BASKING SITES PRESENT ☑ Logs ☑ Shorline ☐ Matted vegetation ☐ Anthropogenic objects ☐ Other woody debris ☑ Rocks

Survey Information

SPECIES	QTY
SPECIES	QTY
SPECIES	QTY
SPECIES	QTY

Turtle Nesting Habitat Observations

Describe any suitable turtle nesting habitat in the vicinity of the pond

Type comments for future reference

Species Alerts/Incidentals

Add incidental

COMMON OR LATIN NAME	QTY

Other Comments

No TU despite survey effort.
Swans x2

Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	Jun 11, 2019	3	09:04 am	09:34 am	LW MG

Weather Conditions

CLOUD COVER (%)	AIR TEMP (°C)	WATER TEMP (°C)	PRECIPITATION	BEAUFORT WIND	HUMIDITY (%)
15%	14	13	Rained yester...	1 Light Air (1...	69%

Station Information

STATION ID	UTM	ELC OR GENERAL VEG
BS5	589010.9 E 4805817.0 N	OA/MAM

BASKING SITES PRESENT ☐ Logs ☑ Shorline ☑ Matted vegetation ☐ Anthropogenic objects ☐ Other woody debris ☐ Rocks

Survey Information

SPECIES	QTY

Add Row

Turtle Nesting Habitat Observations

Describe any suitable turtle nesting habitat in the vicinity of the pond

Type comments for future reference

Species Alerts/Incidentals

Add incidental

Edit

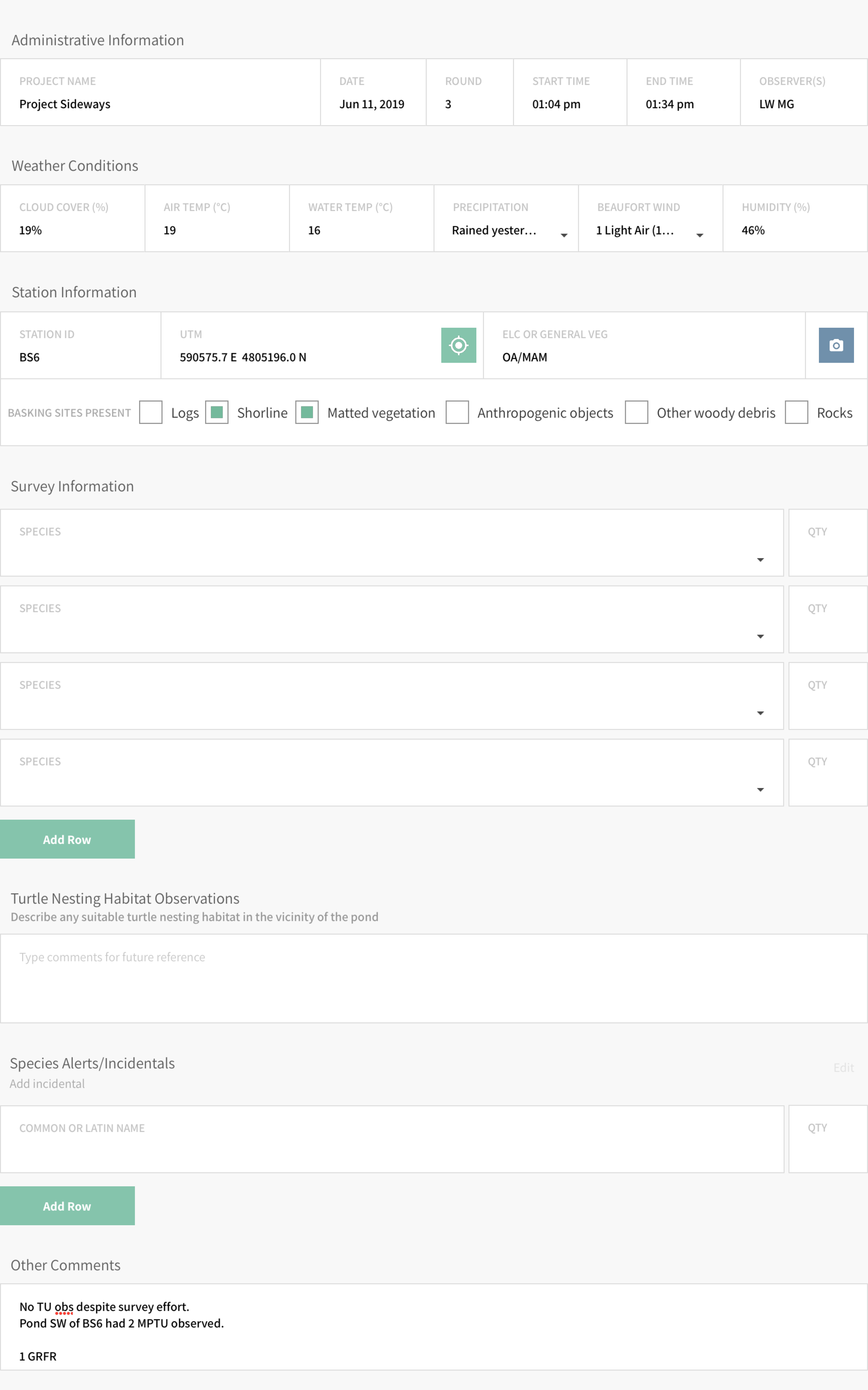
COMMON OR LATIN NAME	QTY

Add Row

Other Comments

No TU despite survey effort.

1 GRFR
2 MALL



Administrative Information

PROJECT NAME	DATE	ROUND	START TIME	END TIME	OBSERVER(S)
Project Sideways	Jun 11, 2019	3	01:04 pm	01:34 pm	LW MG

Weather Conditions

CLOUD COVER (%)	AIR TEMP (°C)	WATER TEMP (°C)	PRECIPITATION	BEAUFORT WIND	HUMIDITY (%)
19%	19	16	Rained yester…	1 Light Air (1…	46%

Station Information

STATION ID	UTM	ELC OR GENERAL VEG
BS6	590575.7 E 4805196.0 N	OA/MAM

BASKING SITES PRESENT ☐ Logs ☑ Shorline ☑ Matted vegetation ☐ Anthropogenic objects ☐ Other woody debris ☐ Rocks

Survey Information

SPECIES	QTY
SPECIES	QTY
SPECIES	QTY
SPECIES	QTY

Turtle Nesting Habitat Observations

Describe any suitable turtle nesting habitat in the vicinity of the pond

Type comments for future reference

Species Alerts/Incidentals

Add incidental

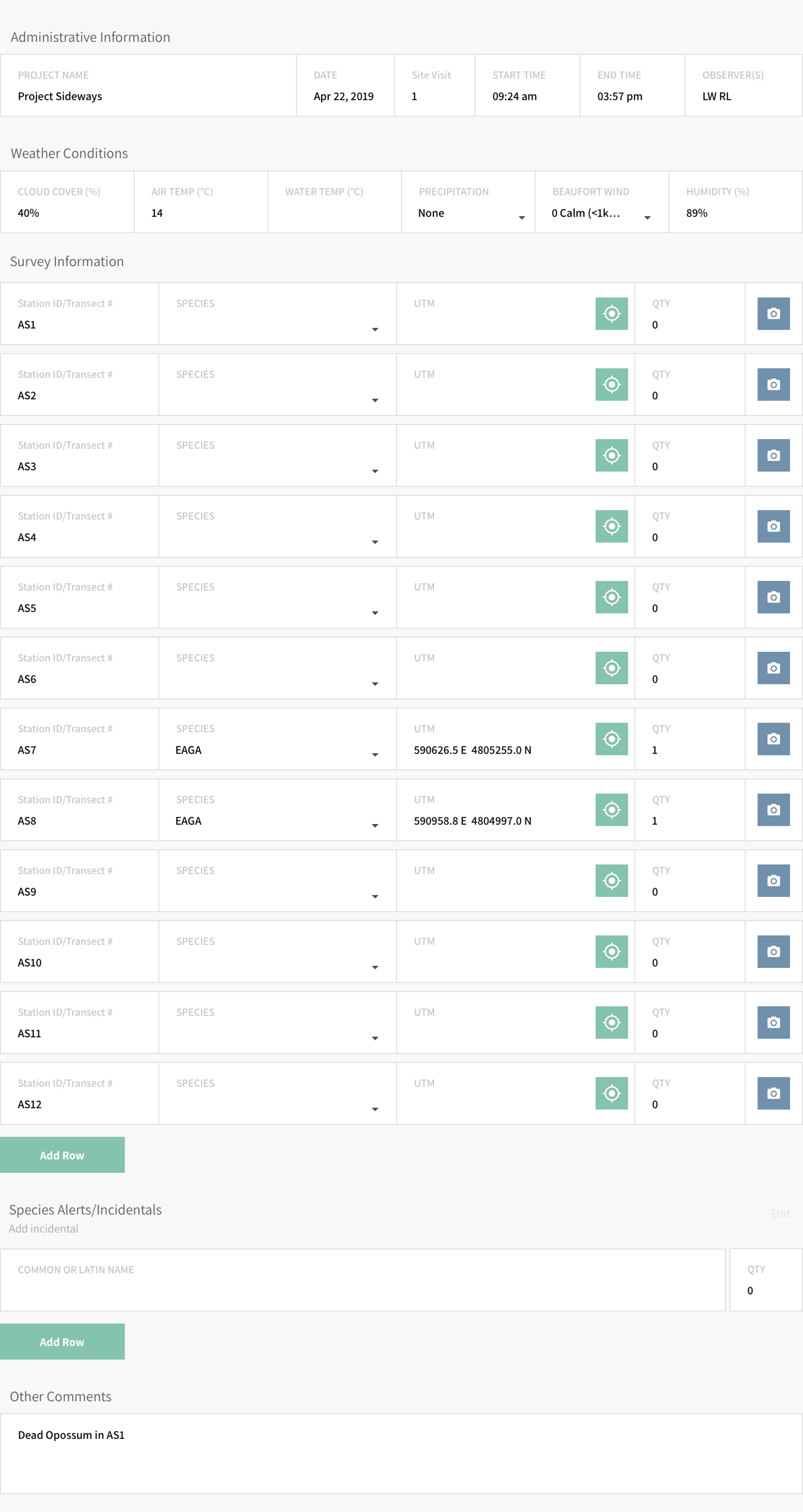
COMMON OR LATIN NAME	QTY

Other Comments

No TU obs despite survey effort.
Pond SW of BS6 had 2 MPTU observed.

1 GRFR

Appendix C – Ecological Field Data – Snakes



Administrative Information

PROJECT NAME	DATE	Site Visit	START TIME	END TIME	OBSERVER(S)
Project Sideways	Apr 22, 2019	1	09:24 am	03:57 pm	LW RL

Weather Conditions

CLOUD COVER (%)	AIR TEMP (°C)	WATER TEMP (°C)	PRECIPITATION	BEAUFORT WIND	HUMIDITY (%)
40%	14		None	0 Calm (<1k…	89%

Survey Information

Station ID/Transect #	SPECIES	UTM	QTY
AS1			0
AS2			0
AS3			0
AS4			0
AS5			0
AS6			0
AS7	EAGA	590626.5 E 4805255.0 N	1
AS8	EAGA	590958.8 E 4804997.0 N	1
AS9			0
AS10			0
AS11			0
AS12			0

Species Alerts/Incidentals

Add incidental

COMMON OR LATIN NAME	QTY
	0

Other Comments

Dead Opossum in AS1

Administrative Information

PROJECT NAME	DATE	Site Visit	START TIME	END TIME	OBSERVER(S)
Project Sideways	May 16, 2019	2	12:13 pm	03:56 pm	LW

Weather Conditions

CLOUD COVER (%)	AIR TEMP (°C)	WATER TEMP (°C)	PRECIPITATION	BEAUFORT WIND	HUMIDITY (%)
51%	14		None	1 Light Air (1…	72%

Survey Information

Station ID/Transect #	SPECIES	UTM	QTY
AS1			
AS2			
AS3			
AS4			
AS5			
AS6			
AS7			
AS8	EAGA	590870.1 E 4804885.0 N	1
AS9			
AS10			
AS11			
AS12			
AS13			

Add Row

Species Alerts/Incidentals

Add incidental

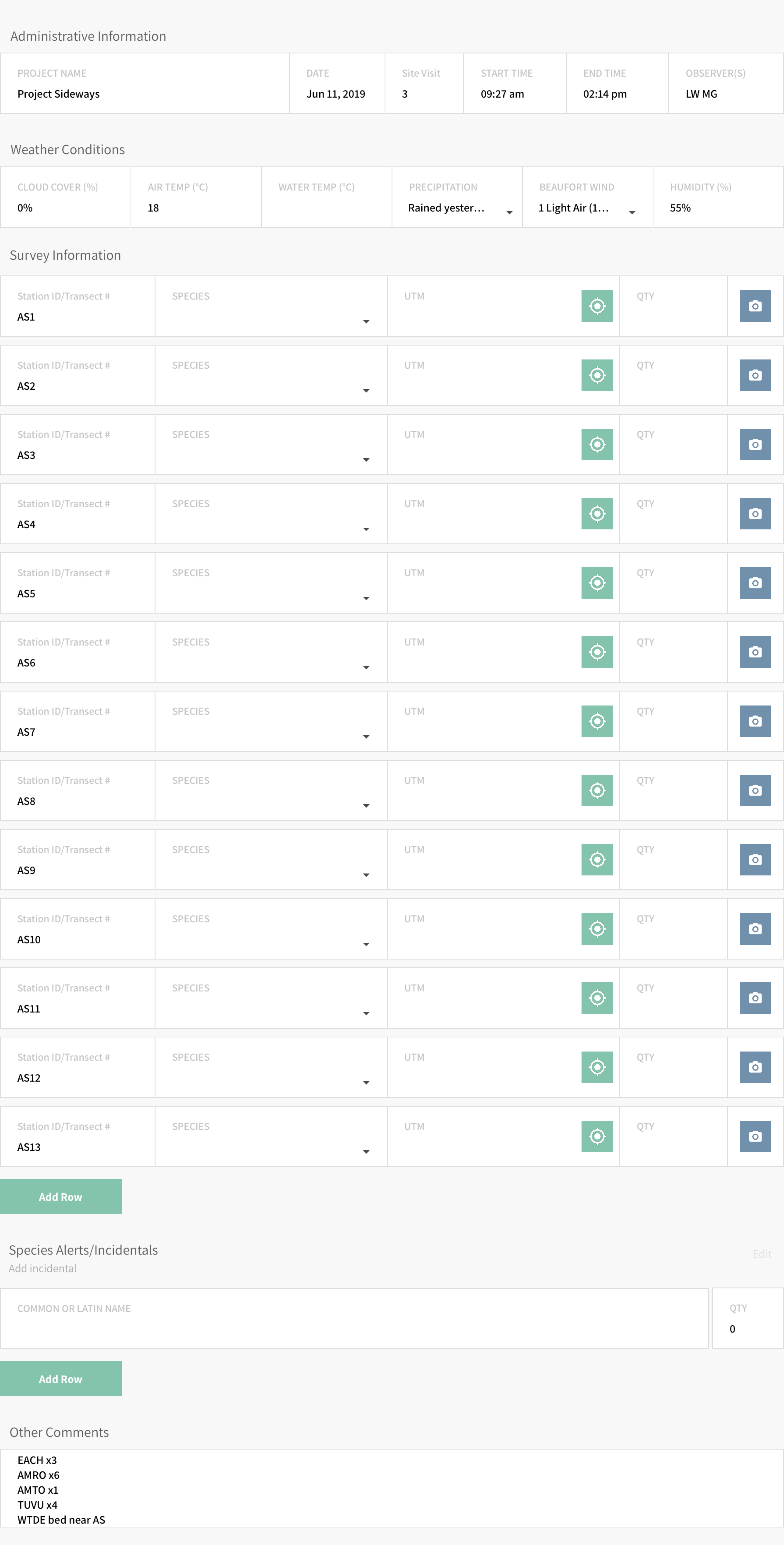
Edit

COMMON OR LATIN NAME	QTY

Add Row

Other Comments

Eastern Cottontail x1
White breasted Nuthatch x2
Baltimore Oriole x2
RTHA x1



Administrative Information

PROJECT NAME	DATE	Site Visit	START TIME	END TIME	OBSERVER(S)
Project Sideways	Jun 11, 2019	3	09:27 am	02:14 pm	LW MG

Weather Conditions

CLOUD COVER (%)	AIR TEMP (°C)	WATER TEMP (°C)	PRECIPITATION	BEAUFORT WIND	HUMIDITY (%)
0%	18		Rained yester… ▾	1 Light Air (1… ▾	55%

Survey Information

Station ID/Transect #	SPECIES	UTM		QTY	
AS1	▾		⌖		📷
AS2	▾		⌖		📷
AS3	▾		⌖		📷
AS4	▾		⌖		📷
AS5	▾		⌖		📷
AS6	▾		⌖		📷
AS7	▾		⌖		📷
AS8	▾		⌖		📷
AS9	▾		⌖		📷
AS10	▾		⌖		📷
AS11	▾		⌖		📷
AS12	▾		⌖		📷
AS13	▾		⌖		📷

Species Alerts/Incidentals

Add incidental

COMMON OR LATIN NAME	QTY
	0

Other Comments

EACH x3
AMRO x6
AMTO x1
TUVU x4
WTDE bed near AS

Appendix C – Ecological Field Data – Birds

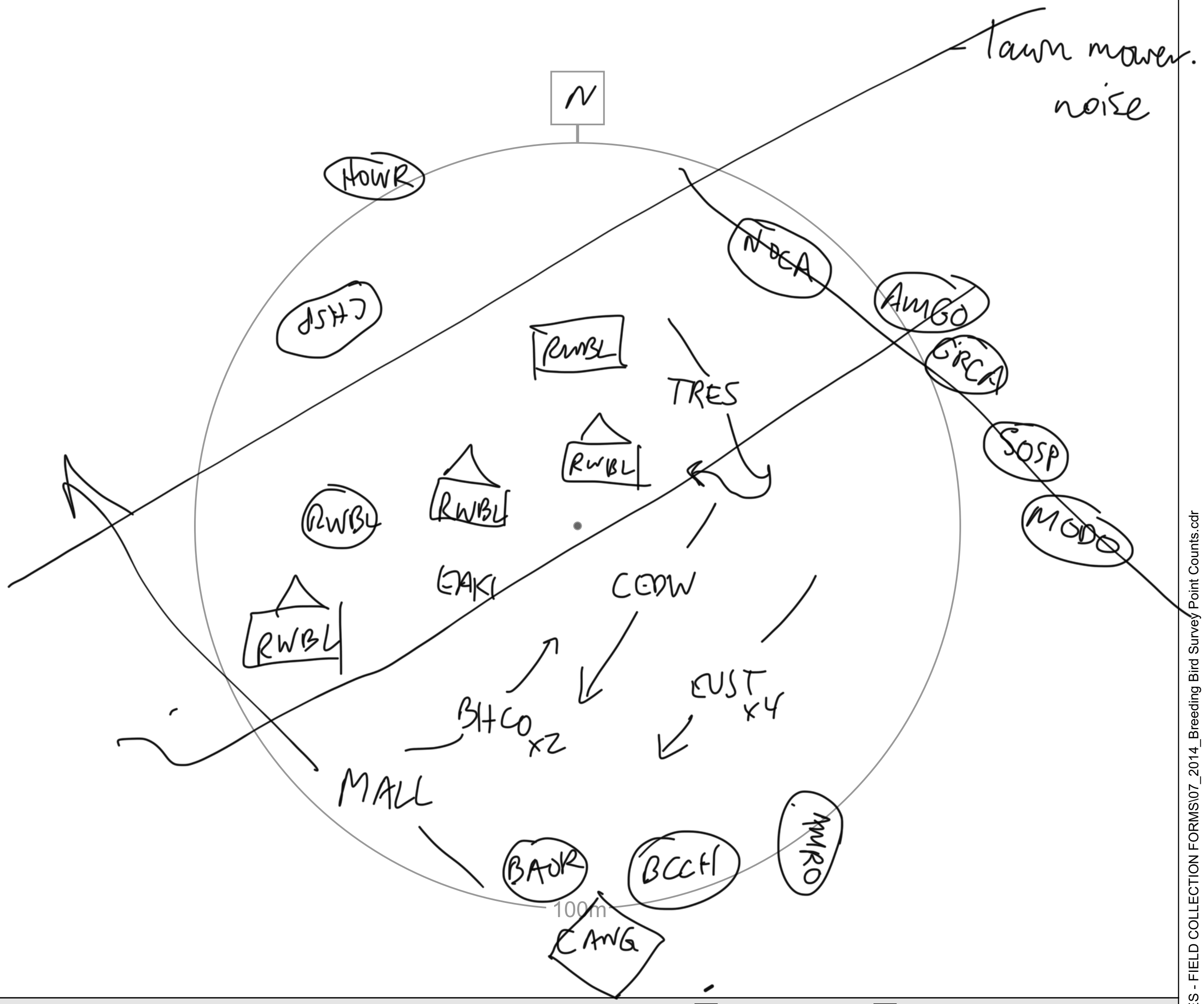
Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code:	BBS Station	Survey Type	Date	Time	Site visit #	Observer(s)
8133	1	BBS	10 JUN	0521	1	BURKE

Site Information

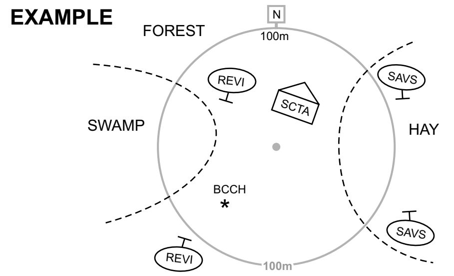
Point Count UTM		% Cloud Cover	Temp (°C)	Precipitation	Beaufort wind & direction
E 589068	N 4805870	100	17	YES [✓ NO]	SE 2



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unsexed)	REVI	Pair	REVI REVI	Two different males singing
REVI	Singing male	REVI	Calling		
REVI	Observed male	REVI*	Nest		
REVI	Observed female	REVI$_{Fy}$	Fledged young		

File: S:\6005 - SAV Marketing and Support\TEMPLATES - FIELD COLLECTION FORMS\07_2014_Breeding Bird Survey Point Counts.cdr

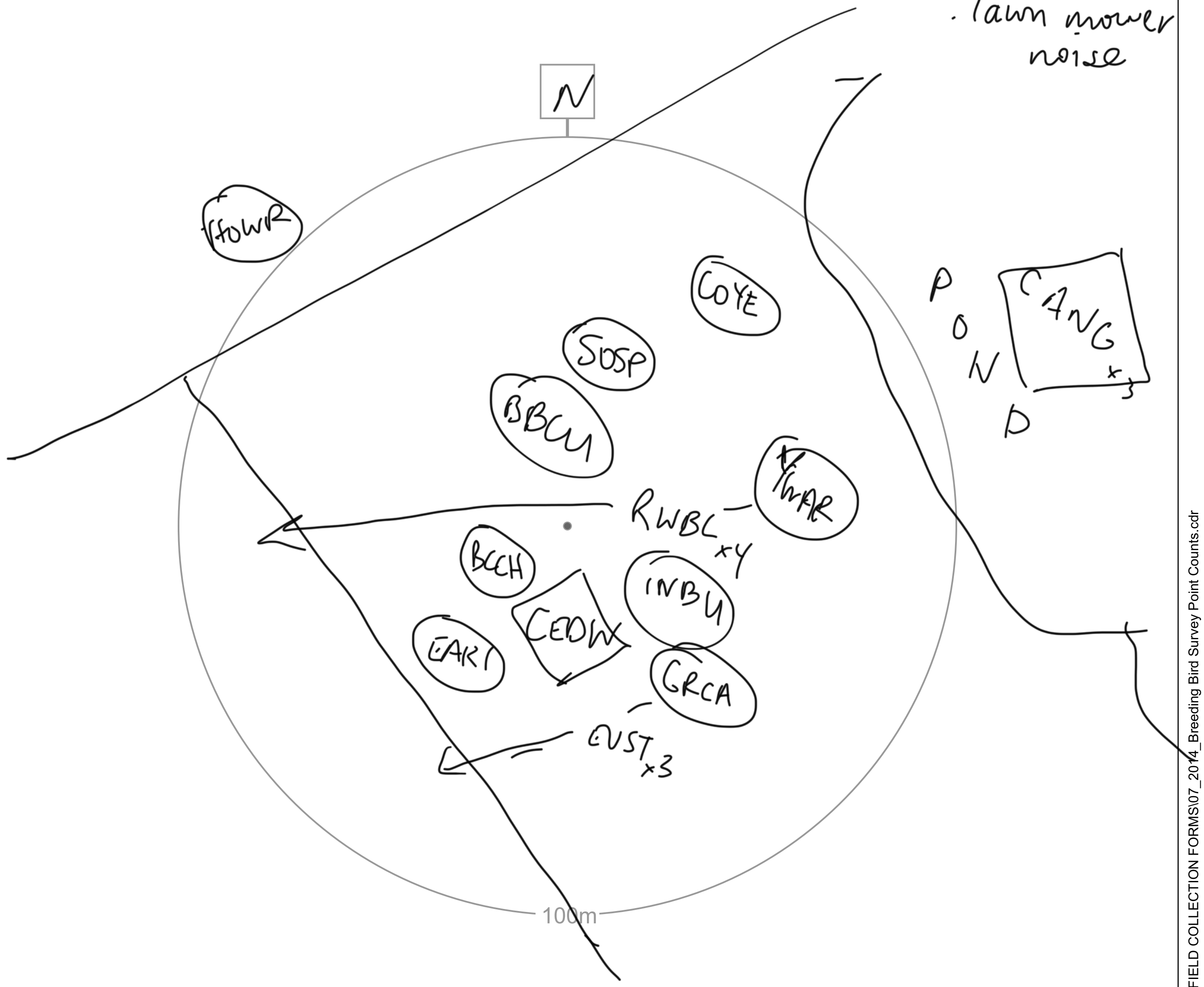
Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code:	BBS Station	Survey Type	Date	Time	Site visit #	Observer(s)
S133	2	BBS	10 JUN	0544	1	BURKE

Site Information

Point Count UTM		% Cloud Cover	Temp (°C)	Precipitation	Beaufort wind & direction
E 589151	N 4805886	100	17	YES [✓ NO]	SE 1

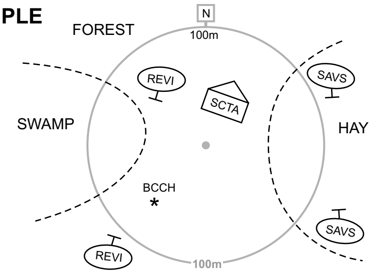


· lawn mower noise

Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unsexed)	REVI	Pair	REVI REVI	Two different males singing
REVI	Singing male	<REVI>	Calling		
REVI	Observed male	REVI*	Nest		
REVI	Observed female	REVI_{Fy}	Fledged young		

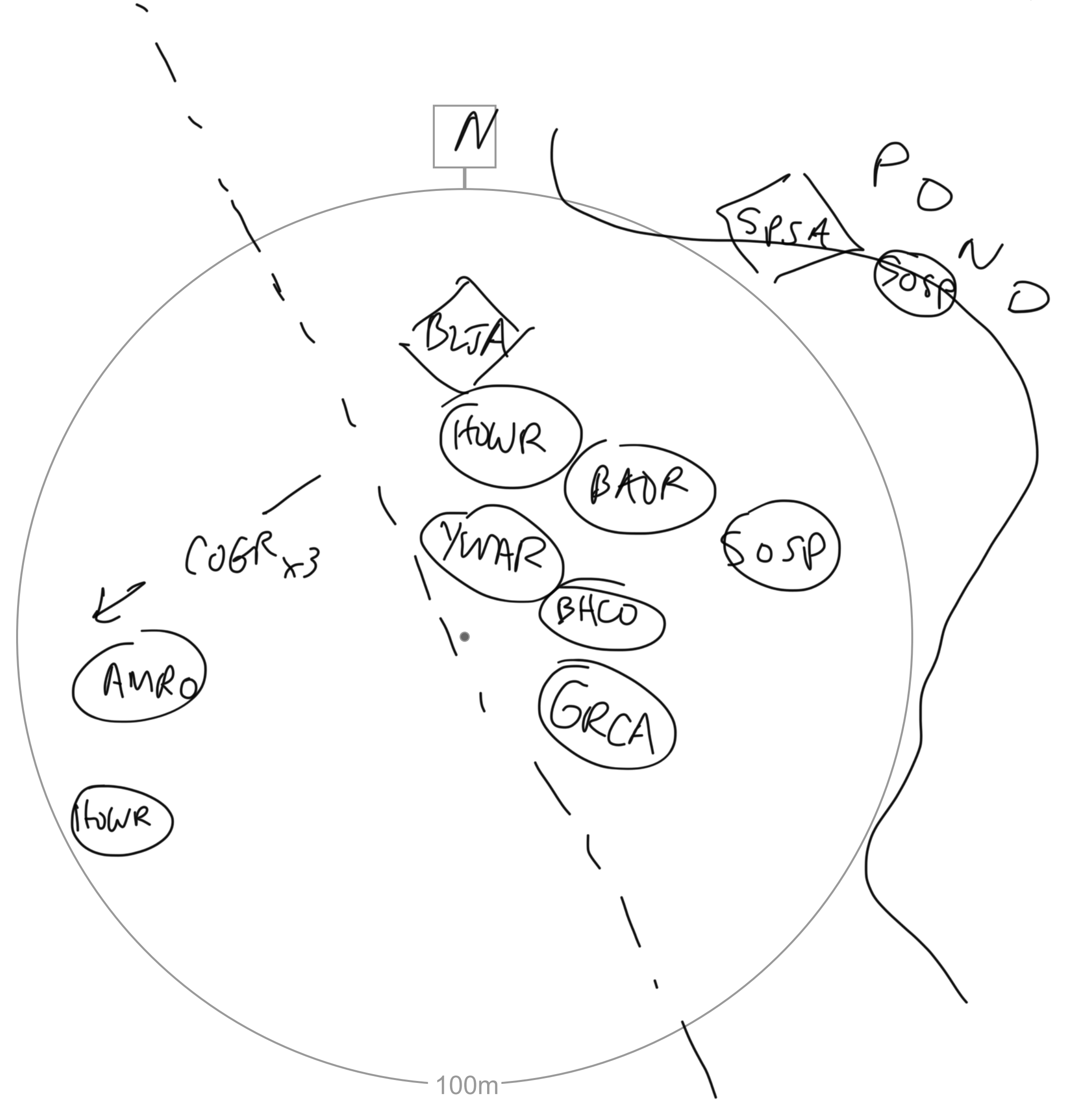
Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code: 8133	BBS Station 3	Survey Type BBS	Date 10JUN	Time 0601	Site visit # 1	Observer(s) BURKE

Site Information

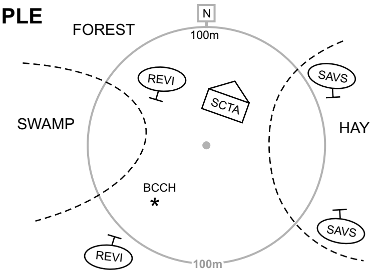
Point Count UTM E 589310 N 4805730	% Cloud Cover 100	Temp (°C) 17	Precipitation YES [✓ NO]	Beaufort wind & direction SE 1



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI Observed (unsexed)

REVI Singing male

REVI Observed male

REVI Observed female

REVI Pair

REVI Calling

REVI* Nest

REVI_{Fy} Fledged young

REVI REVI Two different males singing

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Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

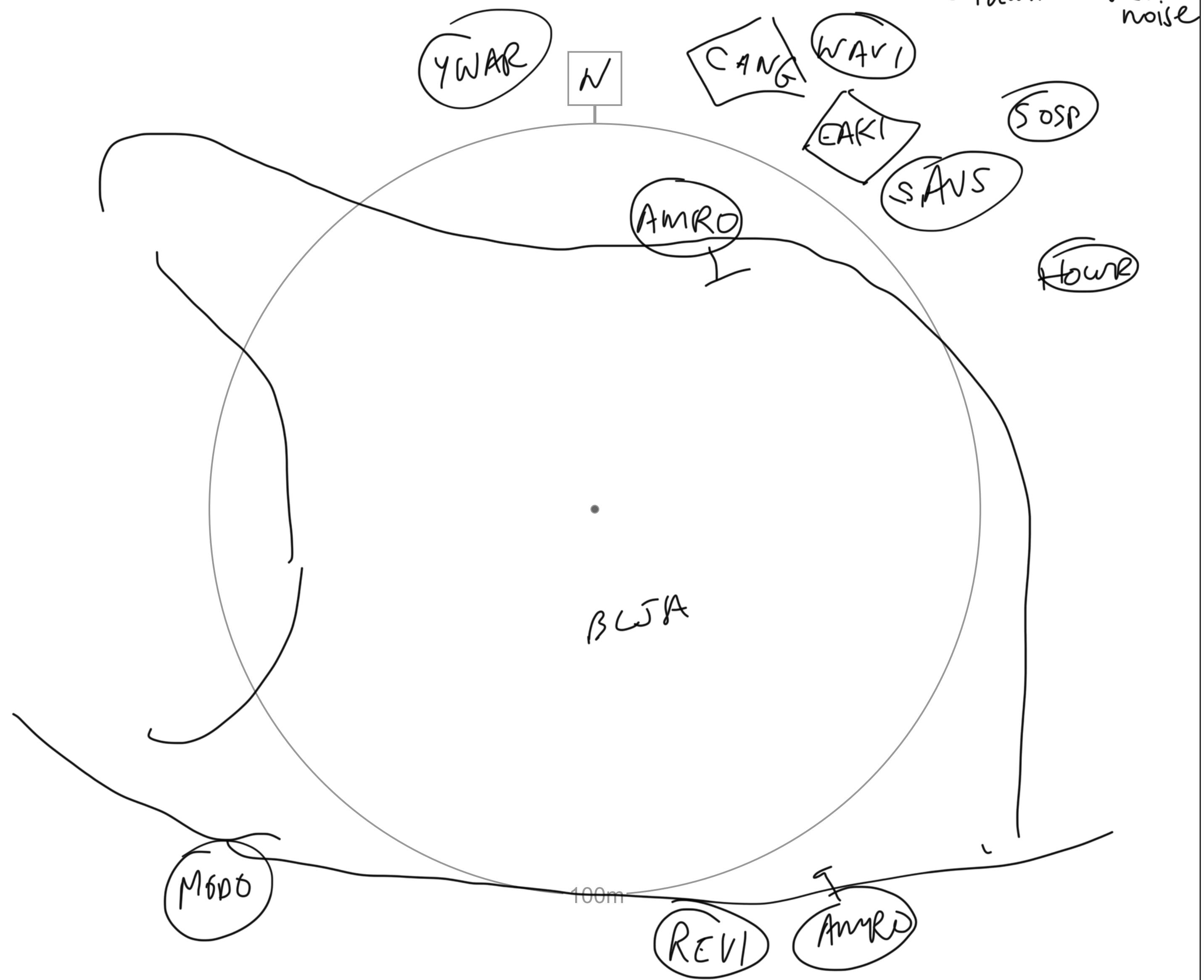
Administrative Information

Project Code:	BBS Station	Survey Type	Date	Time	Site visit #	Observer(s)
8133	4	BBS	10 JUN	0626	1	BURKE

Site Information

Point Count UTM	% Cloud Cover	Temp (°C)	Precipitation	Beaufort wind & direction
E 589429 N 4804917	100	17	YES [✓ NO]	SE 1

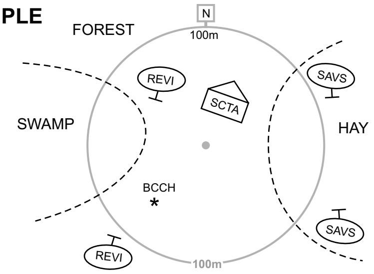
- lawn mower noise



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unsexed)	REVI	Pair	REVI REVI	Two different males singing
REVI	Singing male	REVI	Calling		
REVI	Observed male	REVI*	Nest		
REVI	Observed female	$REVI_{Fy}$	Fledged young		

Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code:	BBS Station	Survey Type	Date	Time	Site visit #	Observer(s)
8133	5	BBS	10 JUN	0647	1	BURKE

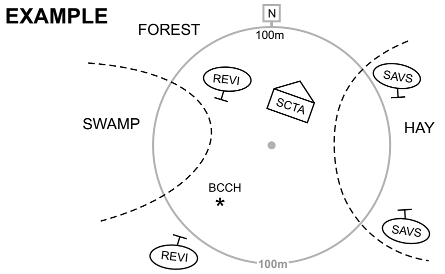
Site Information

Point Count UTM	% Cloud Cover	Temp (°C)	Precipitation	Beaufort wind & direction
E 589825 N 4805011	100	18	YES [✓ NO]	SE 1

Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unsexed)
(REVI)	Singing male
REVI	Observed male
REVI	Observed female
REVI	Pair
<REVI>	Calling
REVI*	Nest
REVI_{Fy}	Fledged young
(REVI) (REVI)	Two different males singing

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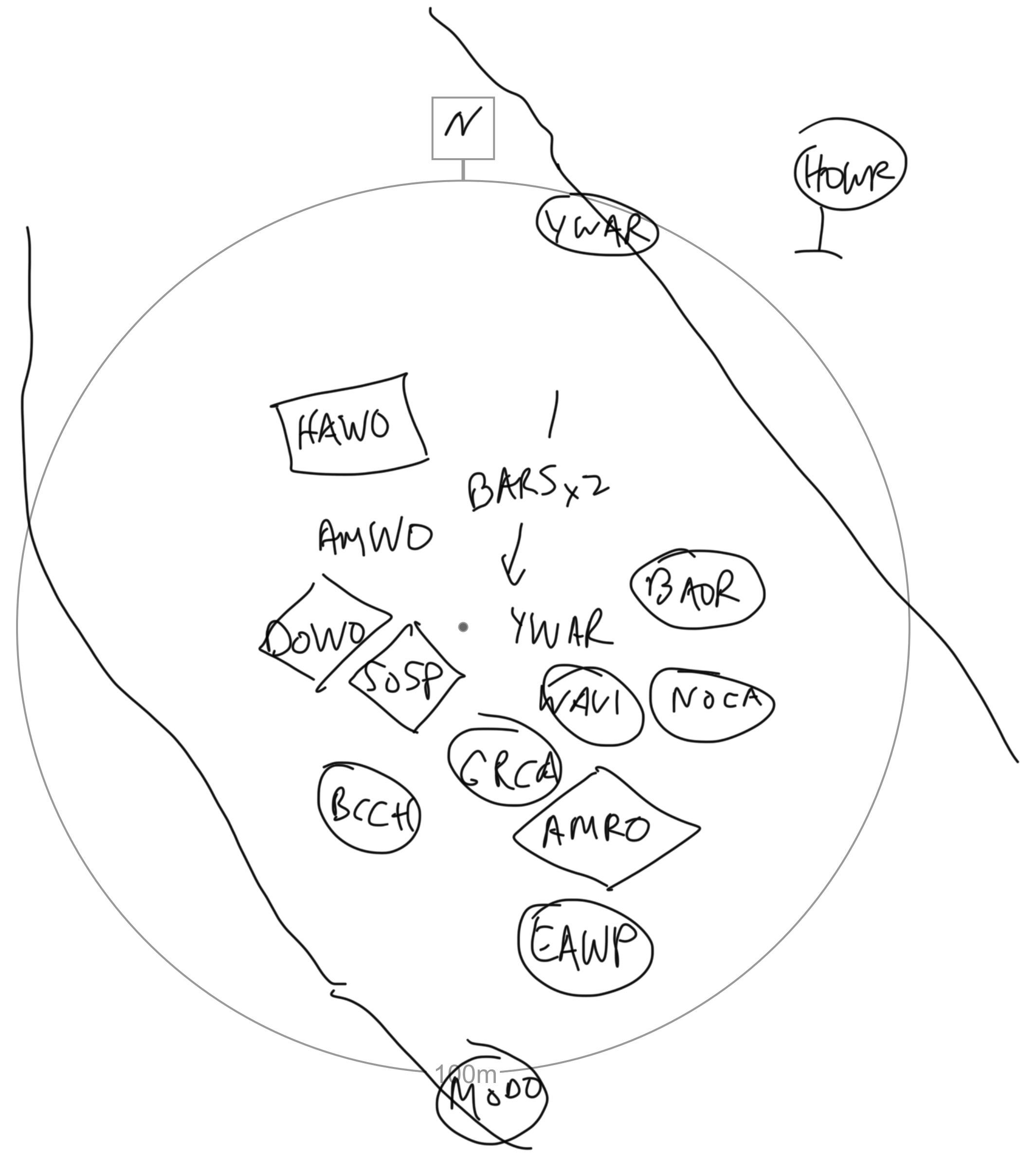
Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code: 8133	BBS Station 6	Survey Type BBS	Date 10 JUN	Time 0716	Site visit # 1	Observer(s) BURKE

Site Information

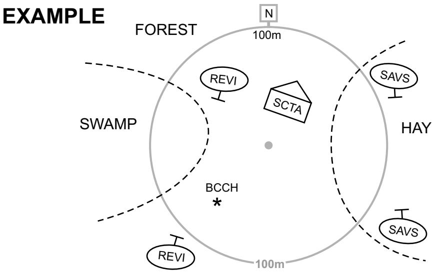
Point Count UTM E 589657 N 4805095	% Cloud Cover 100	Temp (°C) 17	Precipitation [✓ YES] NO	Beaufort wind & direction SE 1



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unsexed)	REVI	Pair	REVI REVI	Two different males singing
REVI	Singing male	REVI	Calling		
REVI	Observed male	REVI*	Nest		
REVI	Observed female	REVI$_{Fy}$	Fledged young		

File: S:\6005 - SAV Marketing and Support\TEMPLATES - FIELD COLLECTION FORMS\07_2014_Breeding Bird Survey Point Counts.cdr

Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

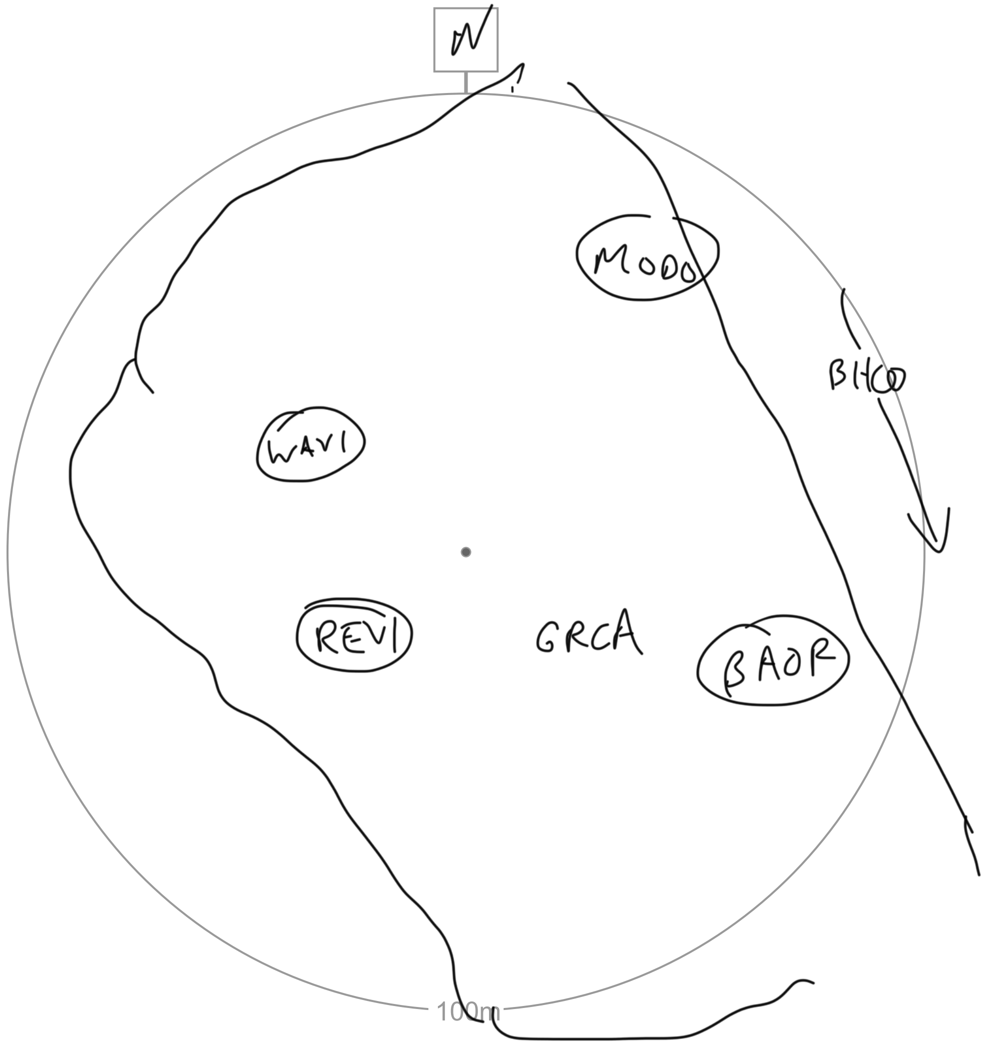
Project Code: 8133	BBS Station 7	Survey Type BBS	Date 10 JUN	Time 0742	Site visit # 1	Observer(s) BURKE

Site Information

Point Count UTM E 589508	N 4805246	% Cloud Cover 100	Temp (°C) 18	Precipitation [✓ YES] NO	Beaufort wind & direction SE 1

drizzle

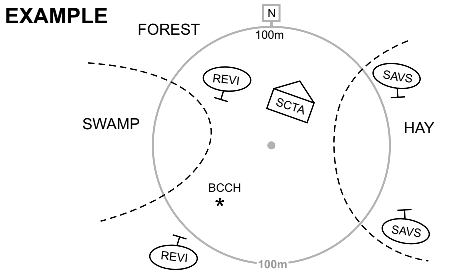
lawn mower noise



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unsexed)	REVI	Pair	REVI REVI	Two different males singing
REVI	Singing male	REVI	Calling		
REVI	Observed male	REVI*	Nest		
REVI	Observed female	$REVI_{Fy}$	Fledged young		

File: S:\6005 - SAV Marketing and Support\TEMPLATES - FIELD COLLECTION FORMS\07_2014_Breeding Bird Survey Point Counts.cdr

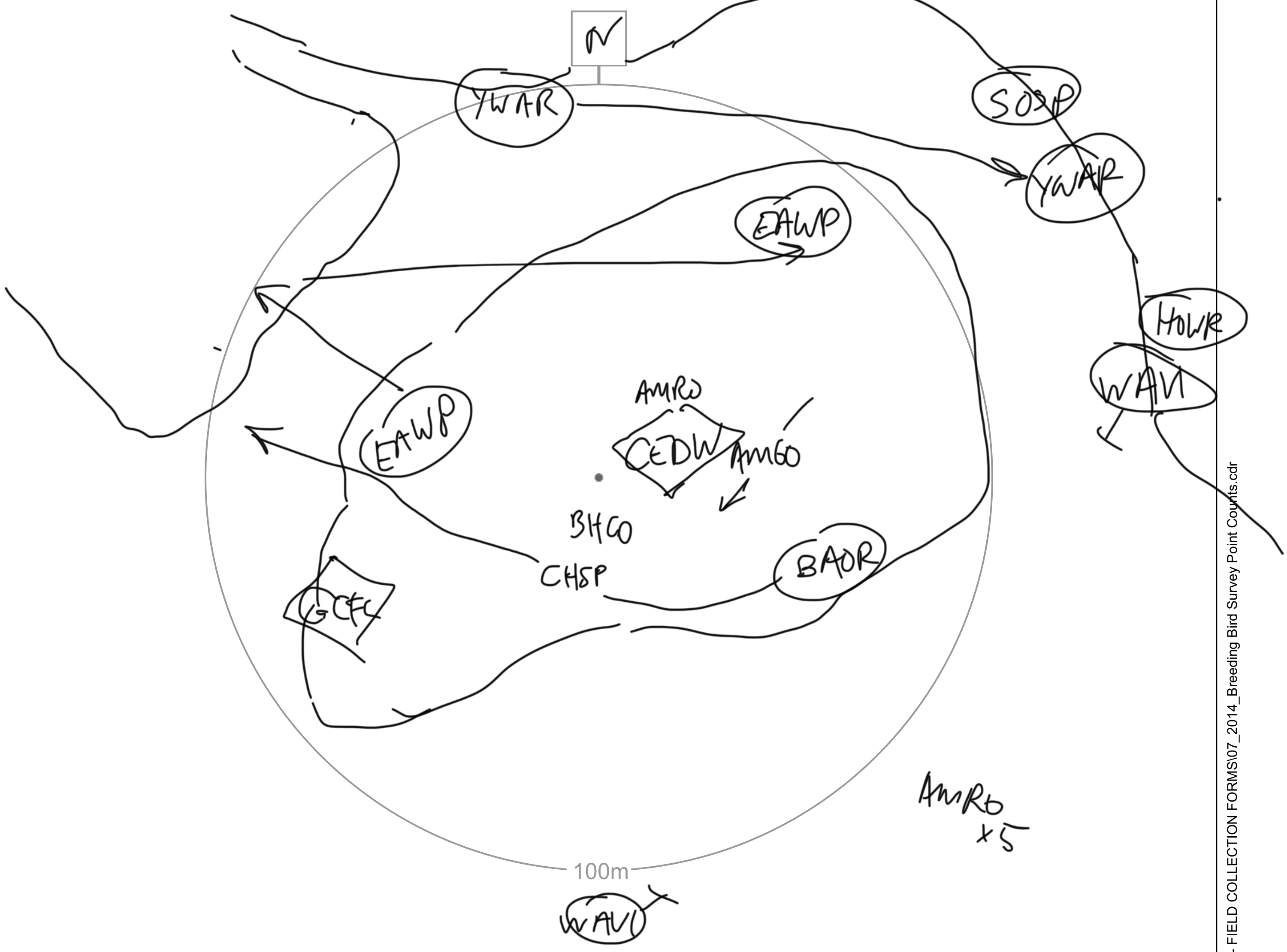
Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code:	BBS Station	Survey Type	Date	Time	Site visit #	Observer(s)
8133	8	BBS	10 JUN	0753	1	BURKE

Site Information

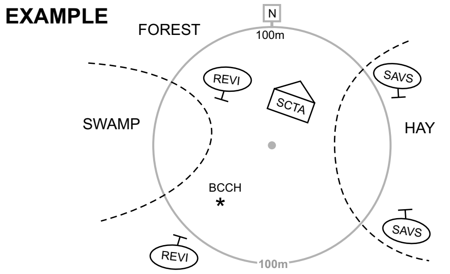
Point Count UTM	% Cloud Cover	Temp (°C)	Precipitation	Beaufort wind & direction
E 5895 N 48053	100	17	YES [✓ NO]	SE 1



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unsexed)
(REVI)	Singing male
REVI	Observed male
REVI	Observed female
REVI	Pair
‹REVI›	Calling
REVI*	Nest
REVI_{Fy}	Fledged young
(REVI) (REVI)	Two different males singing

File: S:\6005 - SAV Marketing and Support\TEMPLATES - FIELD COLLECTION FORMS\07_2014_Breeding Bird Survey Point Counts.cdr

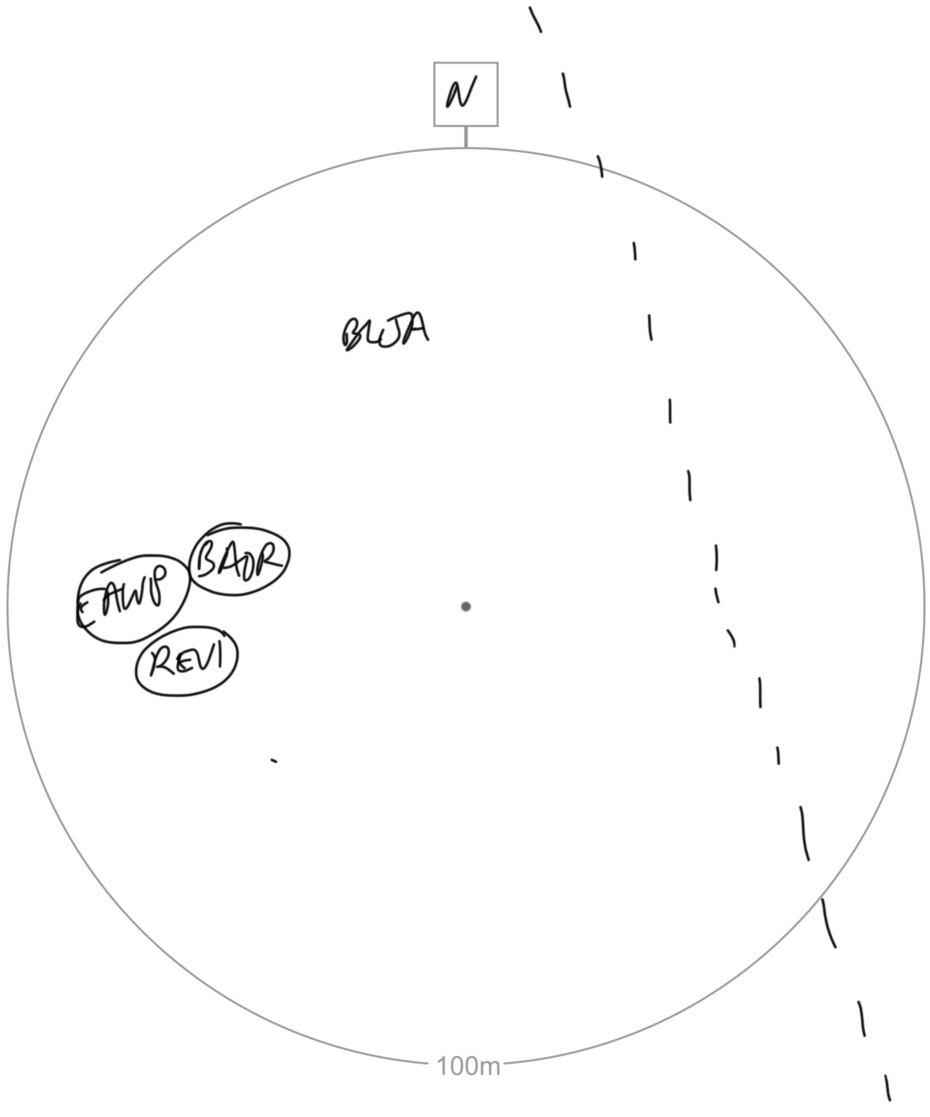
Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code: 8133	BBS Station 9	Survey Type BBS	Date 16 JUN	Time 0811	Site visit # 1	Observer(s) BURKE

Site Information

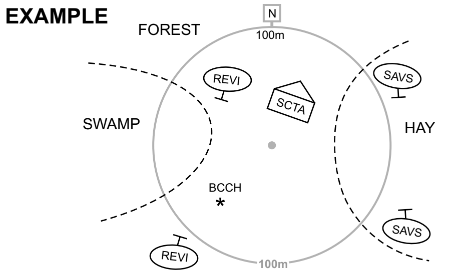
Point Count UTM E 589487 N 4805531	% Cloud Cover 100	Temp (°C) 18	Precipitation [✓ YES] NO drizzle	Beaufort wind & direction SE 1



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unsexed)	REVI	Pair	REVI REVI	Two different males singing
REVI	Singing male	‹REVI›	Calling		
REVI	Observed male	REVI*	Nest		
REVI	Observed female	REVI_{Fy}	Fledged young		

File: S:\6005 - SAV Marketing and Support\TEMPLATES - FIELD COLLECTION FORMS\07_2014_Breeding Bird Survey Point Counts.cdr

Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

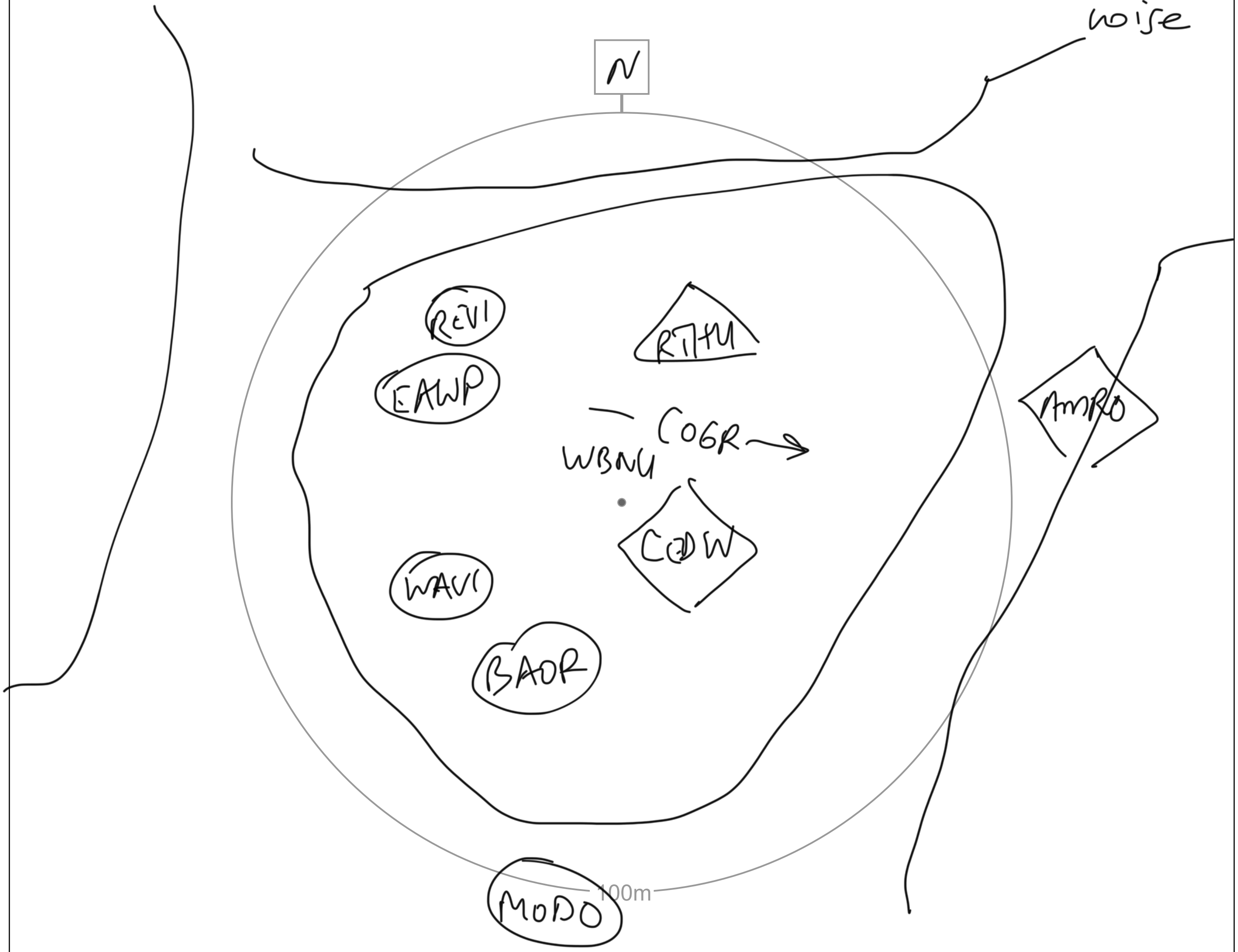
Administrative Information

Project Code:	BBS Station	Survey Type	Date	Time	Site visit #	Observer(s)
8133	10	BBS	10 JUN	0833	1	BURKE

Site Information

Point Count UTM	% Cloud Cover	Temp (°C)	Precipitation	Beaufort wind & direction
E 589448 N 4805402	100	17	[✓ YES] NO drizzle	SE 1

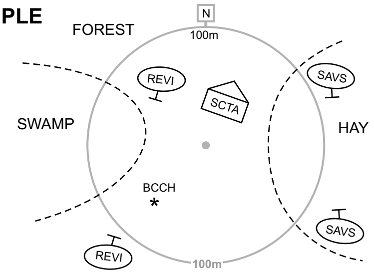
lawn mower noise



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unsexed)
(REVI)	Singing male
⌂REVI	Observed male
[REVI]	Observed female
⌂[REVI]	Pair
◇REVI◇	Calling
REVI*	Nest
$REVI_{Fy}$	Fledged young
(REVI) ⊥ ⊤ (REVI)	Two different males singing

File: S:\6005 - SAV Marketing and Support\TEMPLATES - FIELD COLLECTION FORMS\07_2014_Breeding Bird Survey Point Counts.cdr

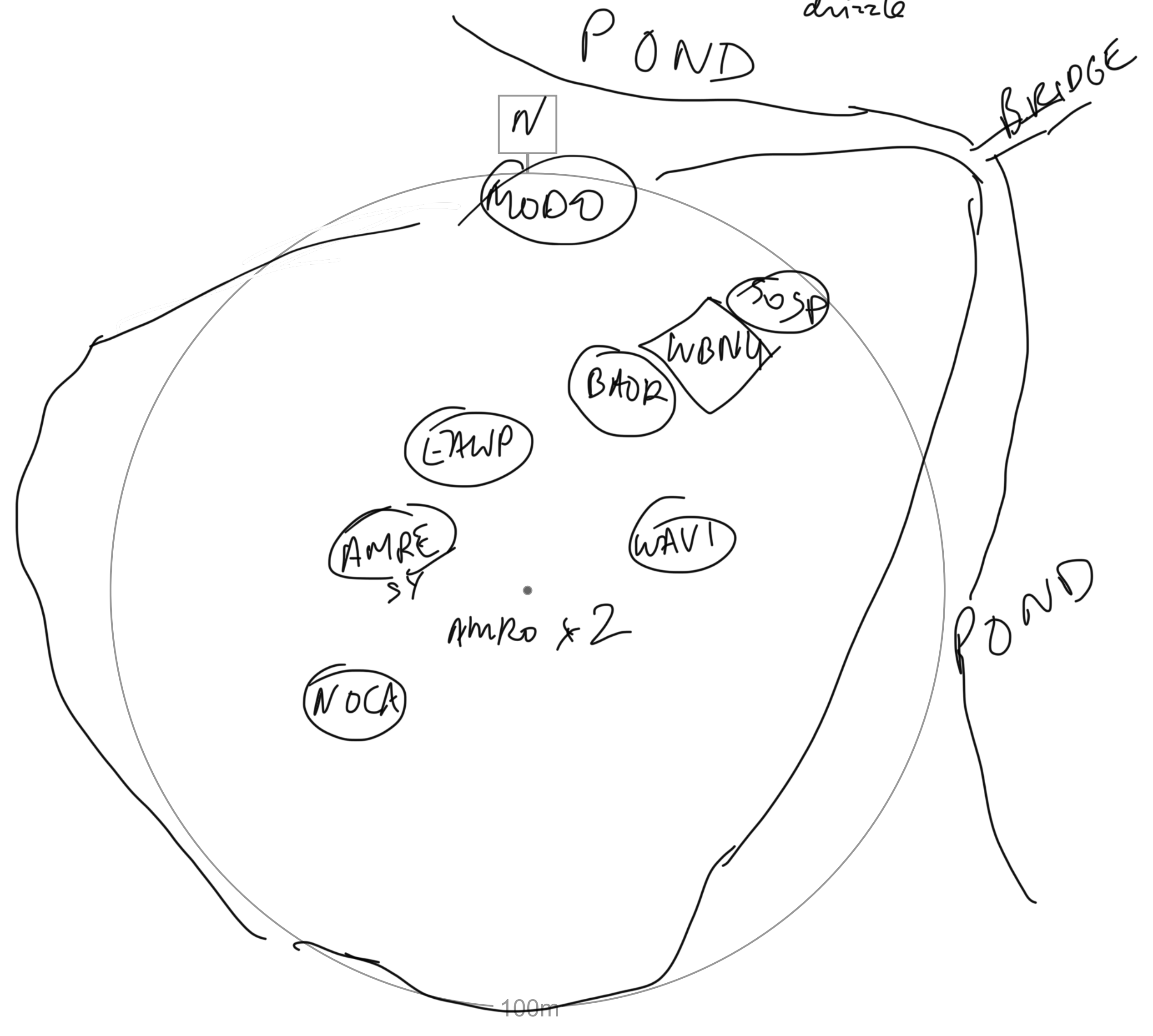
Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code:	BBS Station	Survey Type	Date	Time	Site visit #	Observer(s)
8133	11	BBS	10 JUN	0859	- 1	BURKE

Site Information

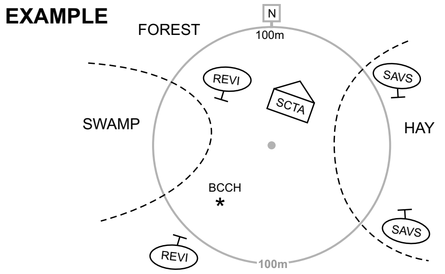
Point Count UTM	% Cloud Cover	Temp (°C)	Precipitation	Beaufort wind & direction
E 589341 N 4805307	100	17	[✓ YES] NO drizzle	SE 1



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unsexed)
(REVI)	Singing male
REVI	Observed male
[REVI]	Observed female
REVI	Pair
<REVI>	Calling
REVI*	Nest
REVI_{Fy}	Fledged young
(REVI) (REVI)	Two different males singing

File: S:\6005 - SAV Marketing and Support\TEMPLATES - FIELD COLLECTION FORMS\07_2014_Breeding Bird Survey Point Counts.cdr

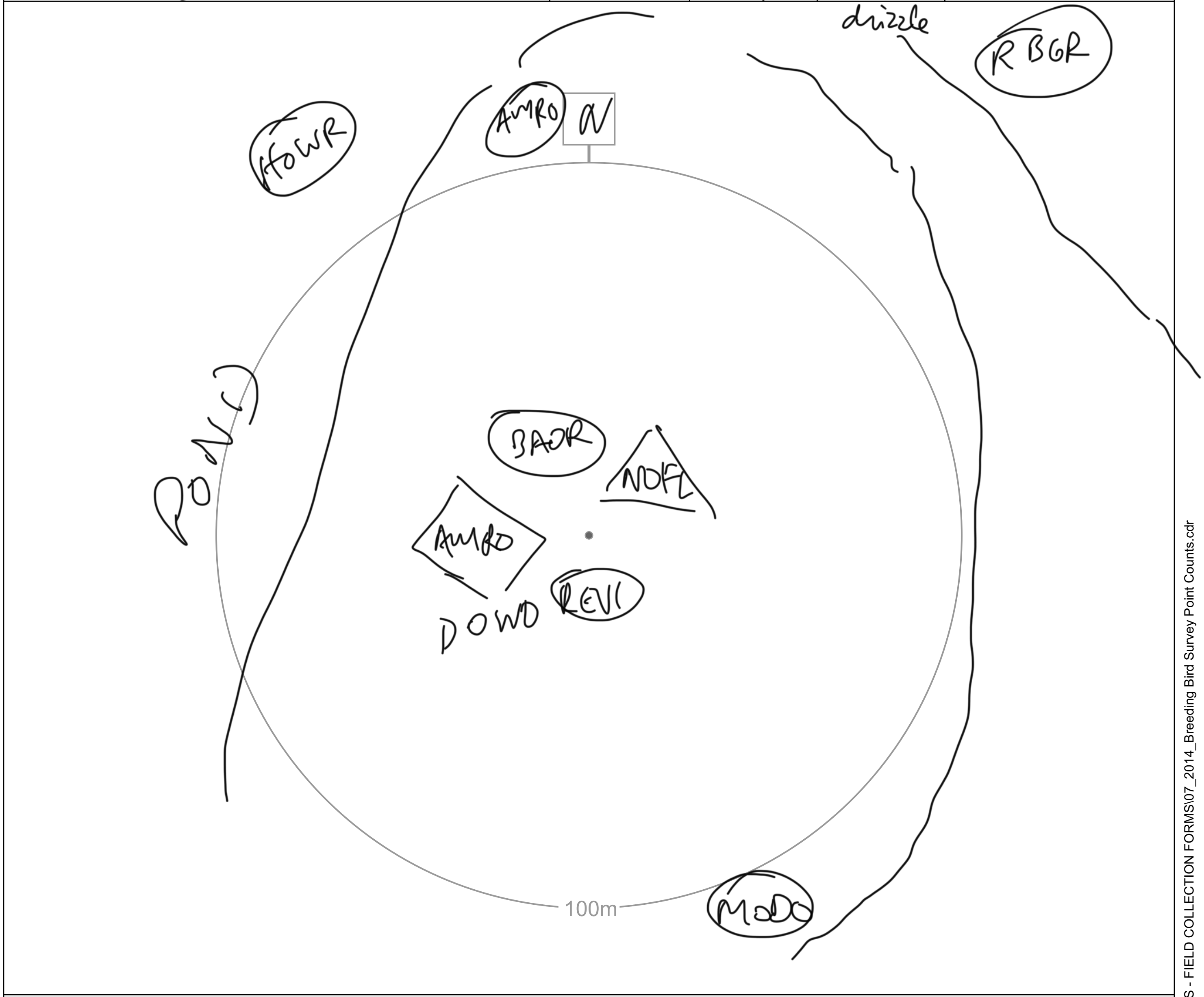
Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code:	BBS Station	Survey Type	Date	Time	Site visit #	Observer(s)
8133	12	BBS	10 JUN	0923	1	BURKE

Site Information

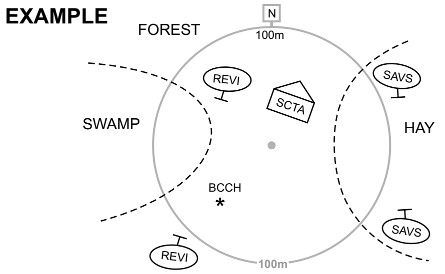
Point Count UTM	% Cloud Cover	Temp (°C)	Precipitation	Beaufort wind & direction
E 589330 N 4805524	100	17	[✓ YES] NO drizzle	SE 1



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unsexed)
(REVI)	Singing male
REVI	Observed male
REVI	Observed female
REVI	Pair
<REVI>	Calling
REVI*	Nest
REVI_{Fy}	Fledged young
(REVI) (REVI)	Two different males singing

File: S:\6005 - SAV Marketing and Support\TEMPLATES - FIELD COLLECTION FORMS\07_2014_Breeding Bird Survey Point Counts.cdr

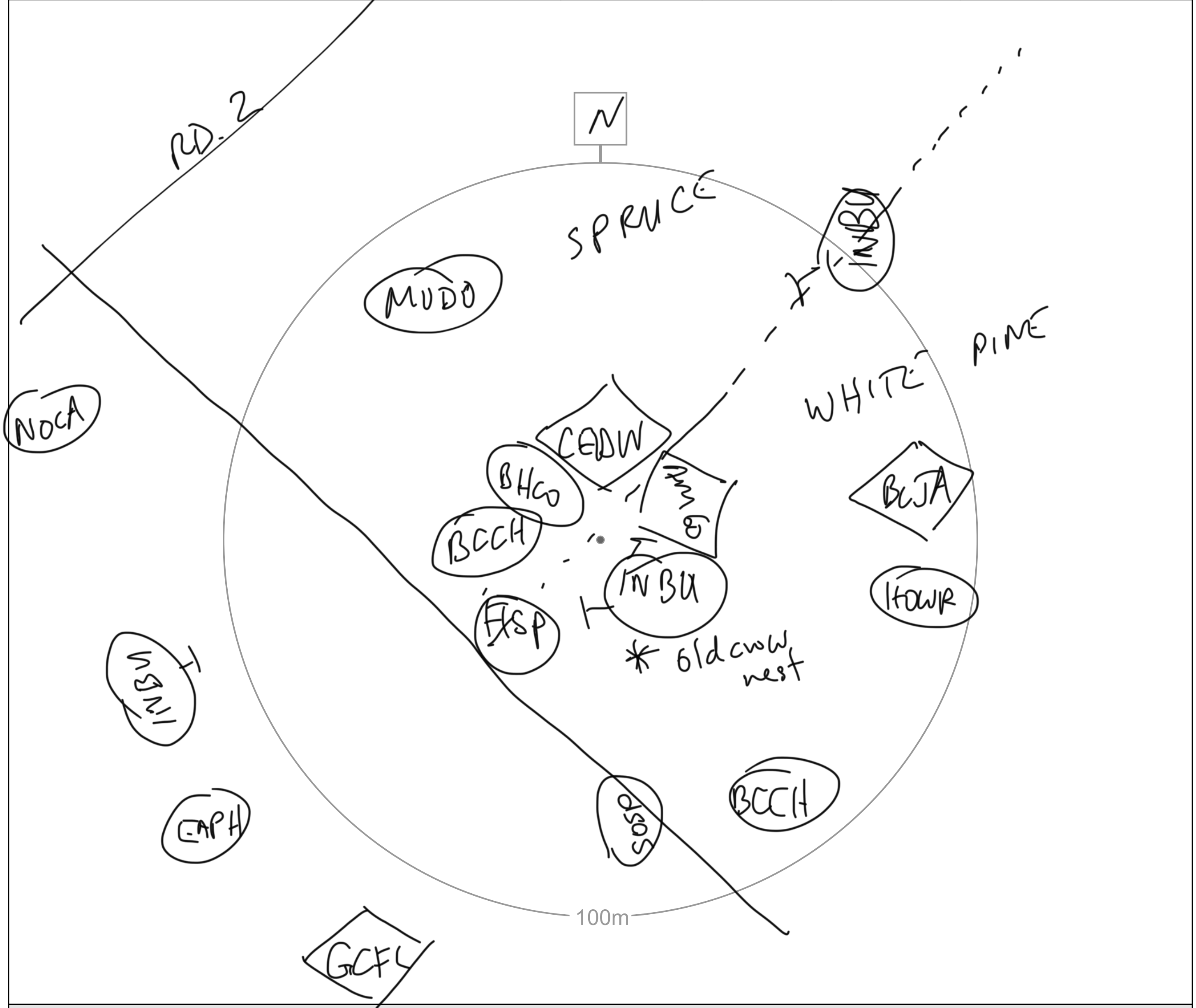
Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code:	BBS Station	Survey Type	Date	Time	Site visit #	Observer(s)
8133	13	BBS	11 JUN	0545	1	BURKE

Site Information

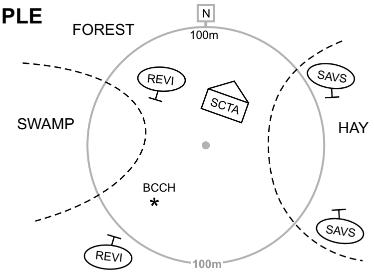
Point Count UTM	% Cloud Cover	Temp (°C)	Precipitation	Beaufort wind & direction
E 590662 N 4805764	0	12	YES [✓ NO]	NW 1



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI Observed (unsexed)

REVI Singing male

REVI Observed male

REVI Observed female

REVI Pair

<REVI> Calling

REVI* Nest

REVI_{Fy} Fledged young

REVI REVI Two different males singing

File: S:\6005 - SAV Marketing and Support\TEMPLATES - FIELD COLLECTION FORMS\07_2014_Breeding Bird Survey Point Counts.cdr

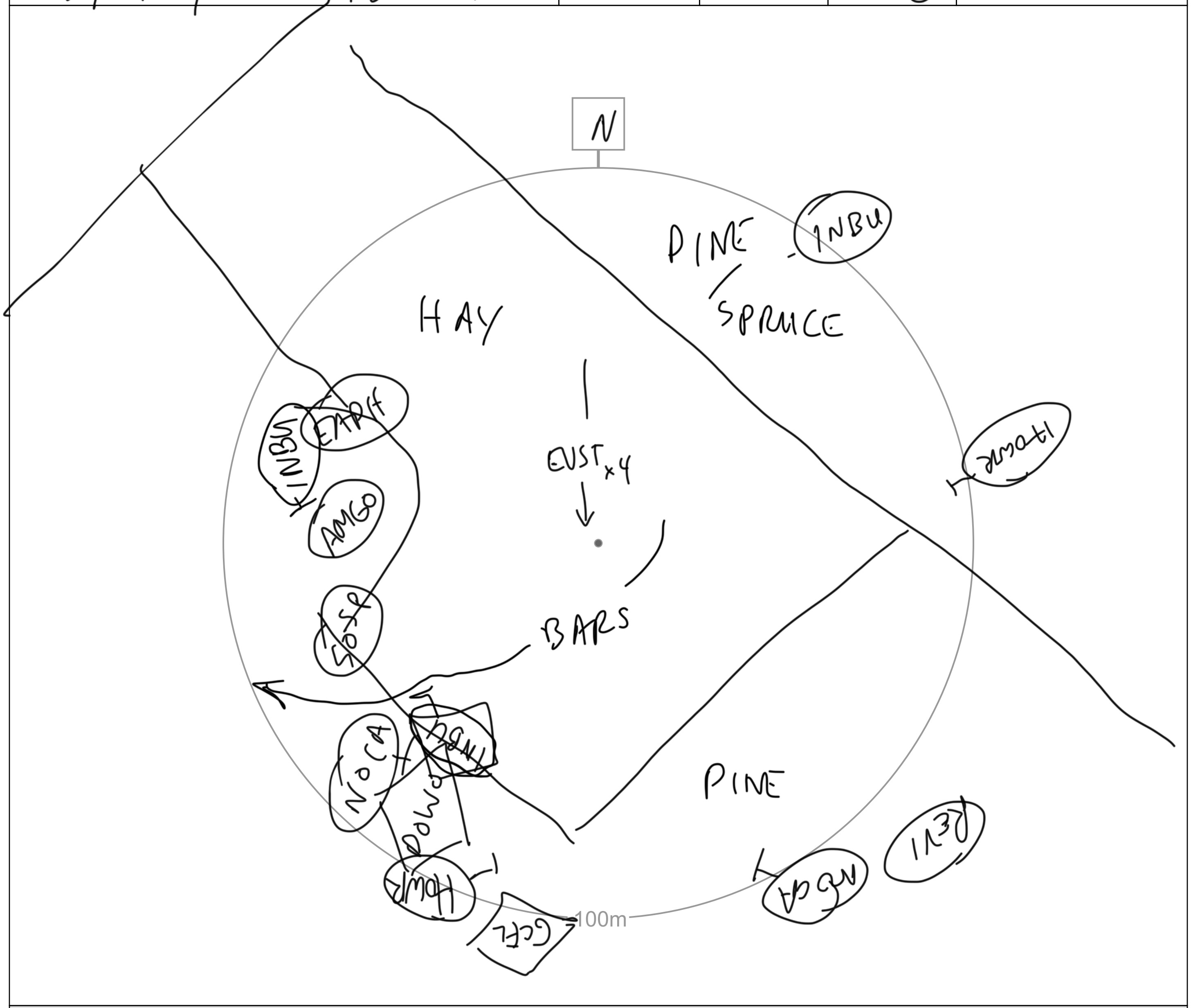
Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code:	BBS Station	Survey Type	Date	Time	Site visit #	Observer(s)
8133	14	BBS	11 JUN	0548	1	BURKE

Site Information

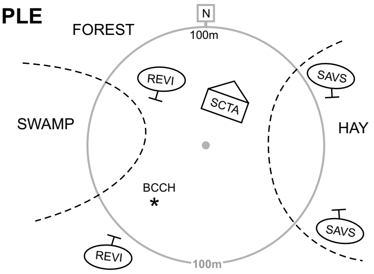
Point Count UTM	% Cloud Cover	Temp (°C)	Precipitation	Beaufort wind & direction
E 590619 N 4805712	0	12	YES [✓ NO]	NW 1



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unsexed)
(REVI)	Singing male
REVI	Observed male
REVI	Observed female
REVI	Pair
‹REVI›	Calling
REVI*	Nest
REVI_{Fy}	Fledged young
(REVI) (REVI)	Two different males singing

File: S:\6005 - SAV Marketing and Support\TEMPLATES - FIELD COLLECTION FORMS\07_2014_Breeding Bird Survey Point Counts.cdr

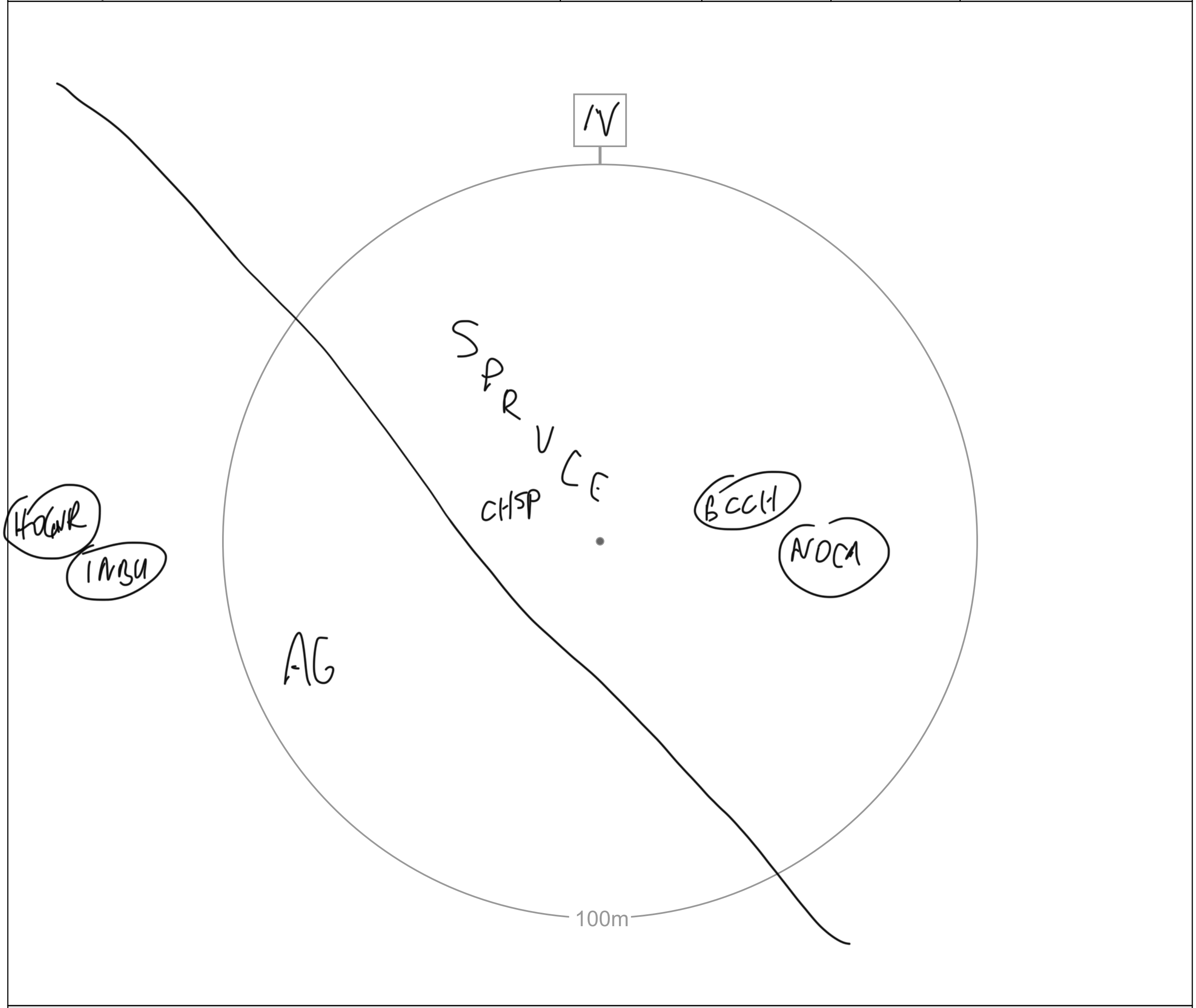
Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code:	BBS Station	Survey Type	Date	Time	Site visit #	Observer(s)
8133	15	BBS	11 JUN	0622	1	BURKE

Site Information

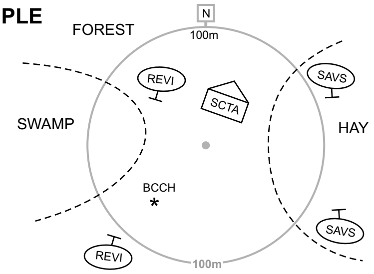
Point Count UTM	% Cloud Cover	Temp (°C)	Precipitation	Beaufort wind & direction
E 590814 N 4805469	6	12	YES [✓ NO]	NW 1



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unsexed)
REVI	Singing male
REVI	Observed male
REVI	Observed female
REVI	Pair
‹REVI›	Calling
REVI*	Nest
REVI_{Fy}	Fledged young
REVI REVI	Two different males singing

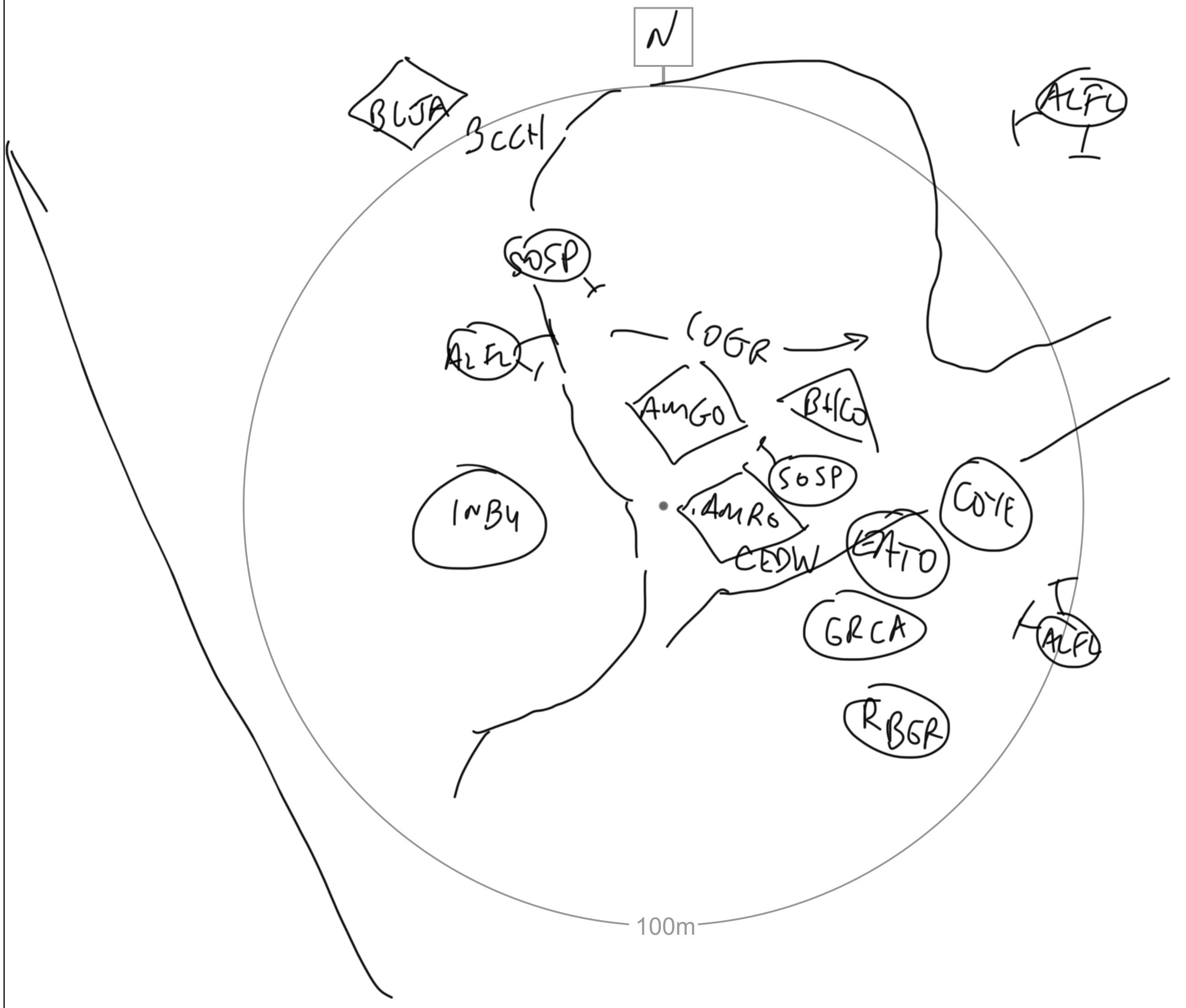
Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code:	BBS Station	Survey Type	Date	Time	Site visit #	Observer(s)
8133	16	BBS	11 JUN	0659	1	BURKE

Site Information

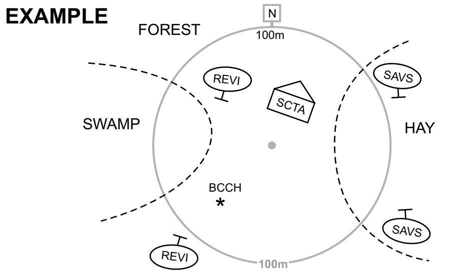
Point Count UTM	% Cloud Cover	Temp (°C)	Precipitation	Beaufort wind & direction
E 591135 N 4805203	0	14	YES [✓ NO]	NW 1



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unsexed)	REVI	Pair	REVI REVI	Two different males singing
REVI	Singing male	<REVI>	Calling		
REVI	Observed male	REVI*	Nest		
REVI	Observed female	REVI_{Fy}	Fledged young		

File: S:\6005 - SAV Marketing and Support\TEMPLATES - FIELD COLLECTION FORMS\07_2014_Breeding Bird Survey Point Counts.cdr

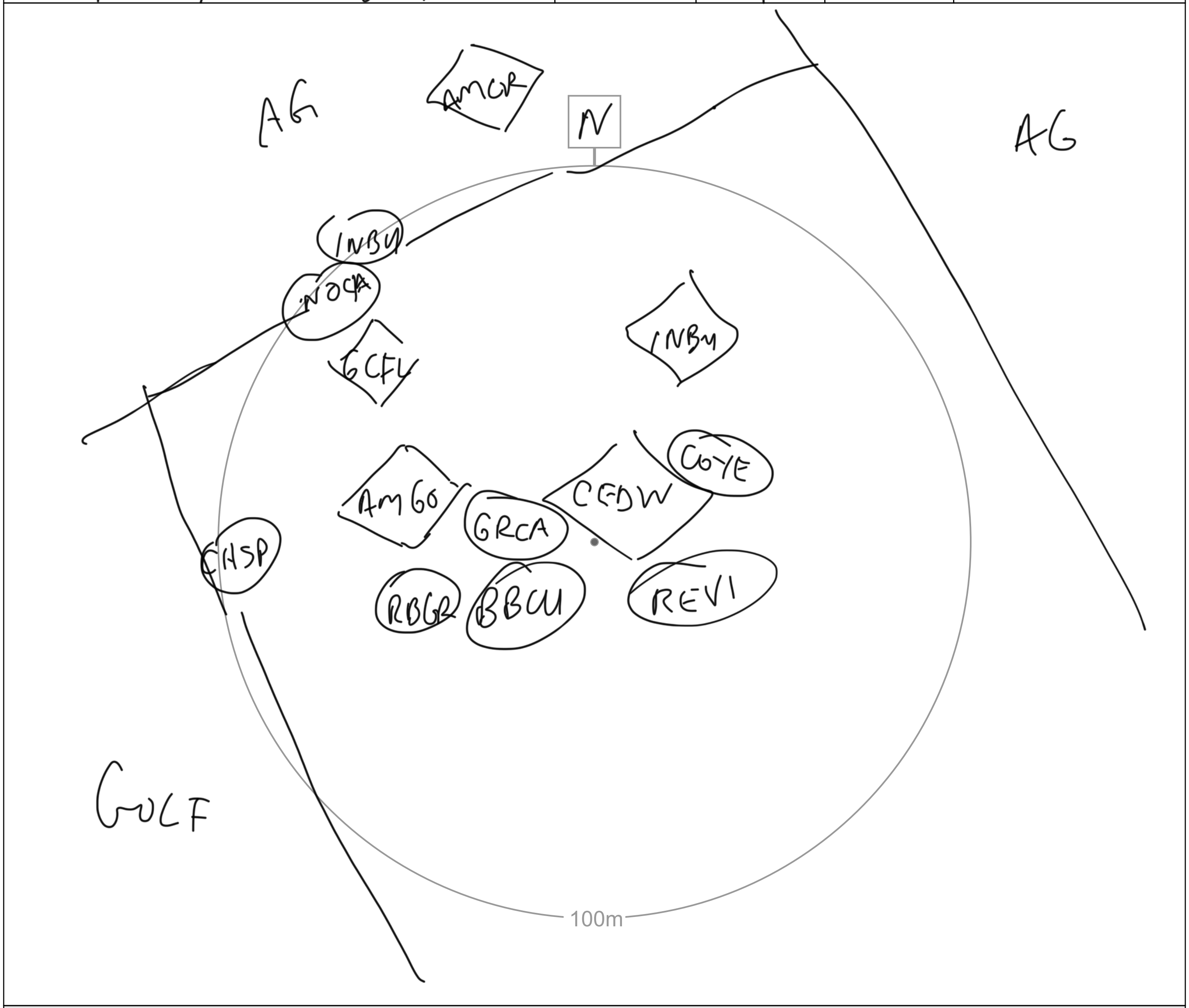
Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code:	BBS Station	Survey Type	Date	Time	Site visit #	Observer(s)
8133	17	BBS	11 JUN	0730	1	BURKE

Site Information

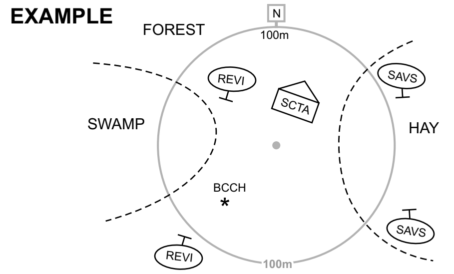
Point Count UTM	% Cloud Cover	Temp (°C)	Precipitation	Beaufort wind & direction
E 590897 N 4804912	0	14	YES [✓ NO]	NW 2



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unsexed)
(REVI)	Singing male
REVI	Observed male
[REVI]	Observed female
REVI	Pair
<REVI>	Calling
REVI*	Nest
REVI$_{Fy}$	Fledged young
REVI / REVI	Two different males singing

File: S:\6005 - SAV Marketing and Support\TEMPLATES - FIELD COLLECTION FORMS\07_2014_Breeding Bird Survey Point Counts.cdr

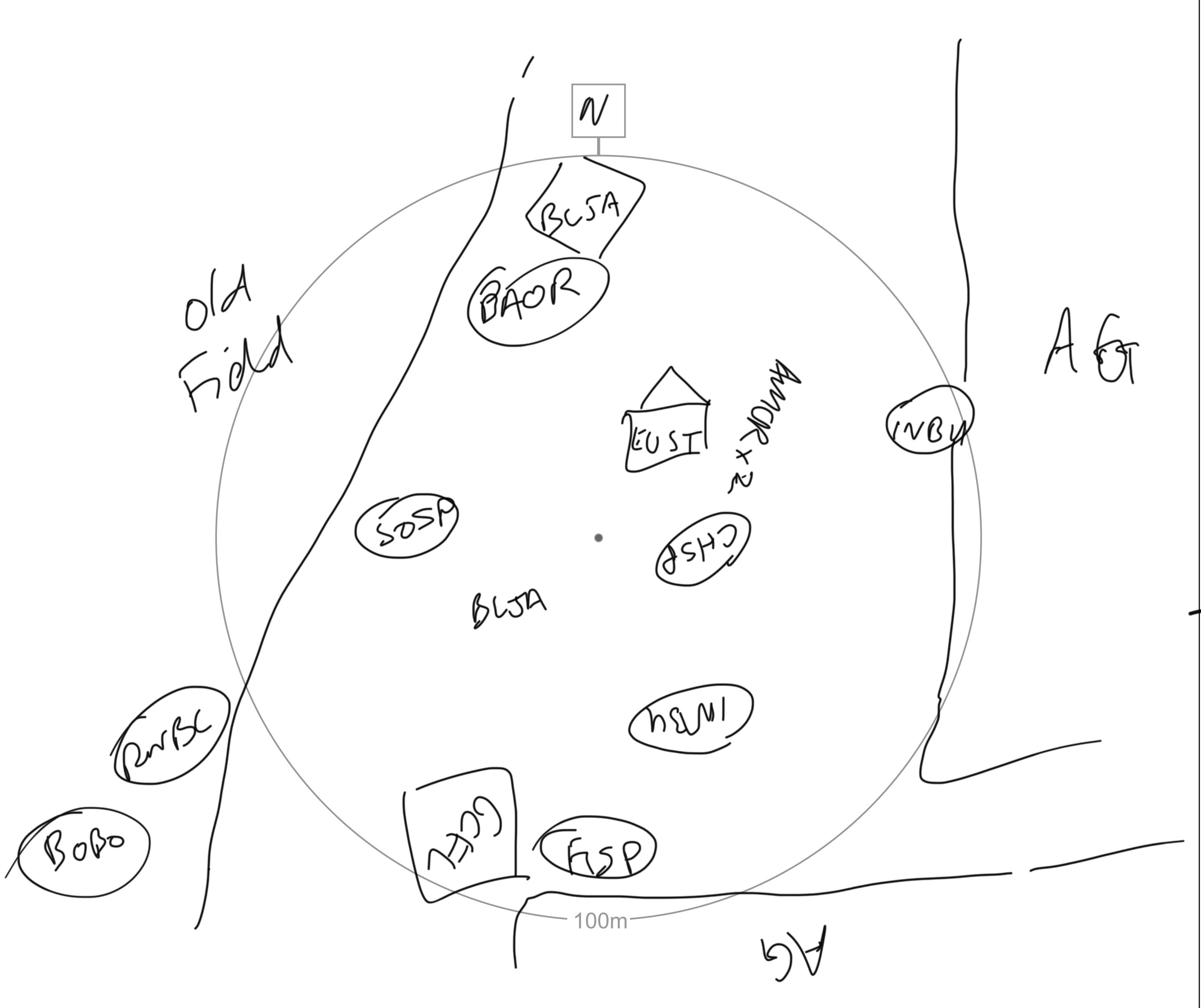
Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code:	BBS Station	Survey Type	Date	Time	Site visit #	Observer(s)
8133	18	BBS	11 JUN	0815	1	BURKE

Site Information

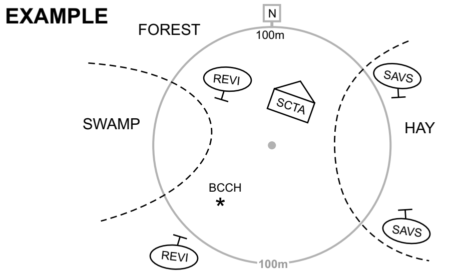
Point Count UTM	% Cloud Cover	Temp (°C)	Precipitation	Beaufort wind & direction
E 590690 N 4805107	0	14	YES [✓ NO]	NW 2



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unsexed)	REVI	Pair	REVI REVI	Two different males singing
REVI	Singing male	<REVI>	Calling		
REVI	Observed male	REVI*	Nest		
REVI	Observed female	REVI$_{Fy}$	Fledged young		

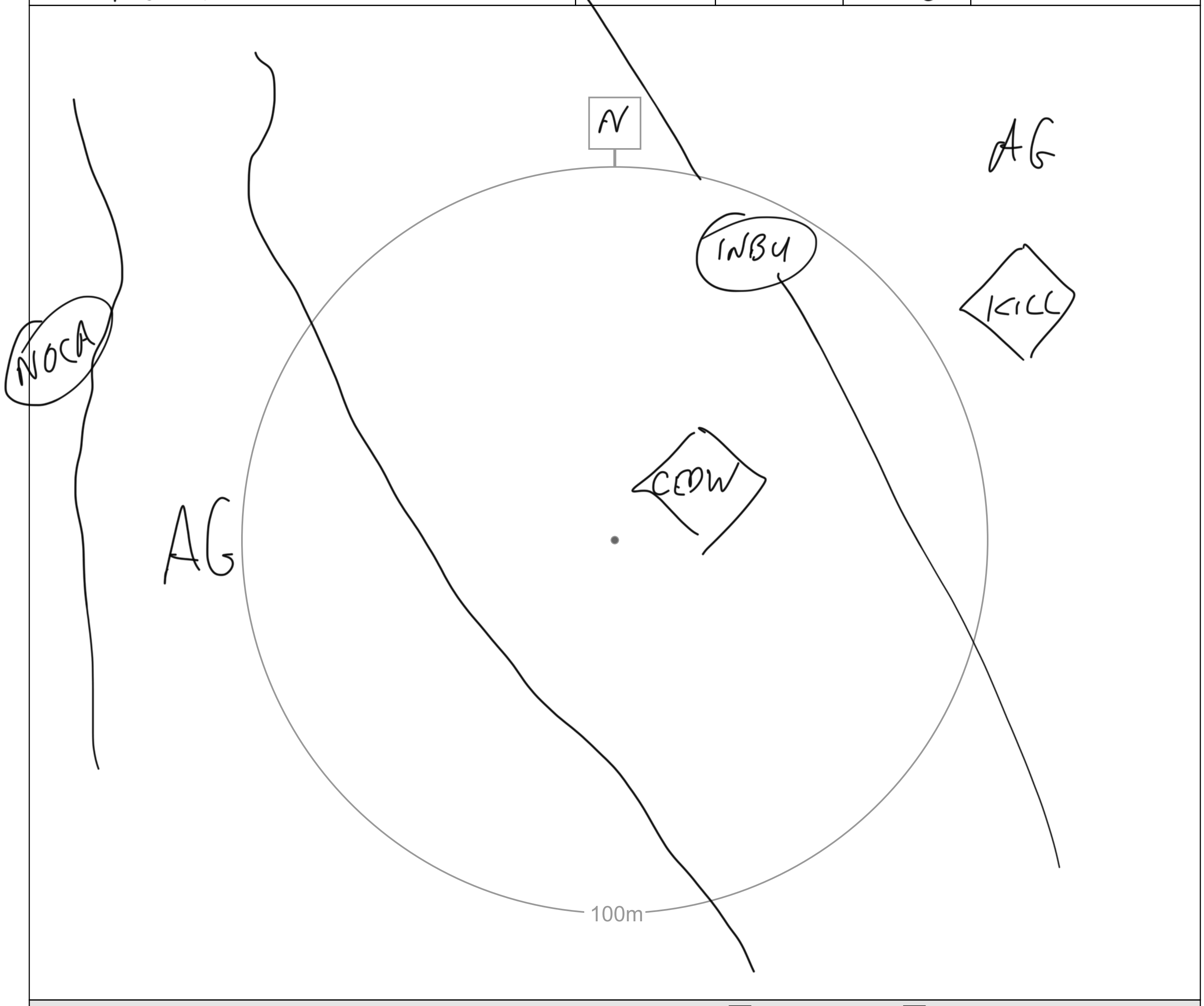
Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code:	BBS Station	Survey Type	Date	Time	Site visit #	Observer(s)
8133	19	BBS	11JUN	0831	1	BV KLC

Site Information

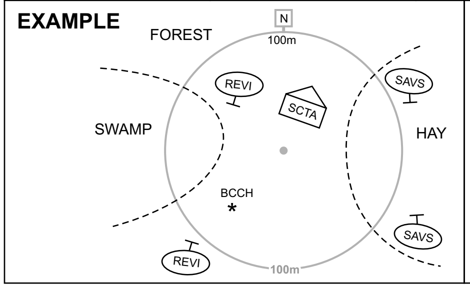
Point Count UTM	% Cloud Cover	Temp (°C)	Precipitation	Beaufort wind & direction
E 590713 N 4805264	0	15	YES [✓ NO]	NW 2



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unsexed)	REVI	Pair	REVI REVI	Two different males singing
REVI	Singing male	REVI	Calling		
REVI	Observed male	REVI*	Nest		
REVI	Observed female	REVI$_{Fy}$	Fledged young		

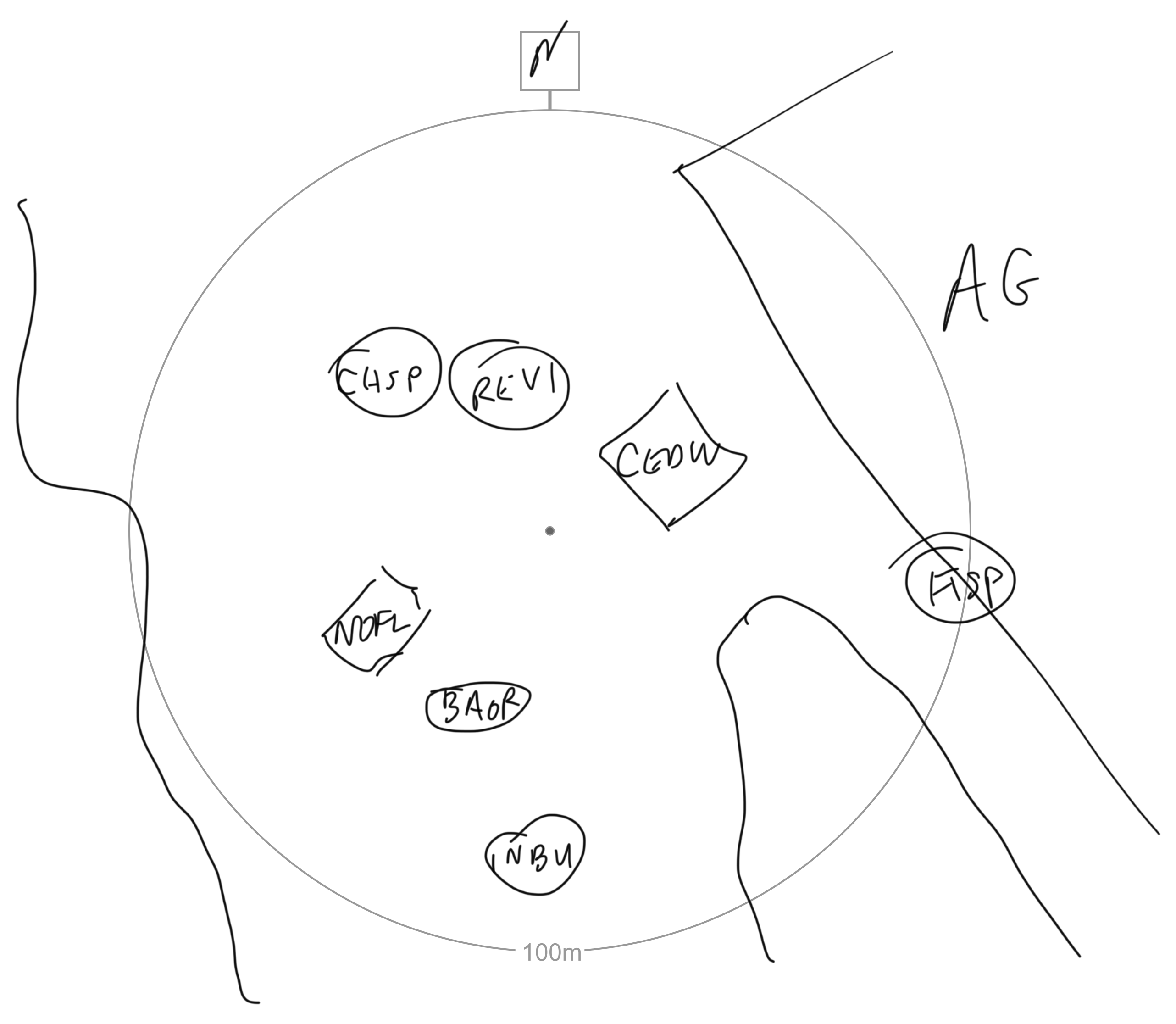
Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code: 8133	BBS Station 20	Survey Type BBS	Date 11 JUN	Time 0853	Site visit # 1	Observer(s) BURKE

Site Information

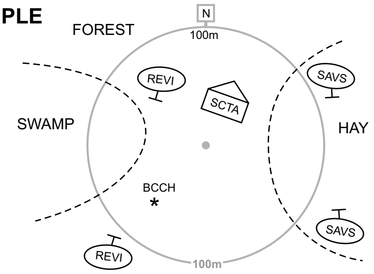
Point Count UTM E 590498 N 4805436	% Cloud Cover 0	Temp (°C) 15	Precipitation YES [✓ NO]	Beaufort wind & direction NW 2



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unsexed)
(REVI)	Singing male
REVI	Observed male
REVI	Observed female
REVI	Pair
<REVI>	Calling
REVI*	Nest
REVI$_{Fy}$	Fledged young
(REVI) (REVI)	Two different males singing

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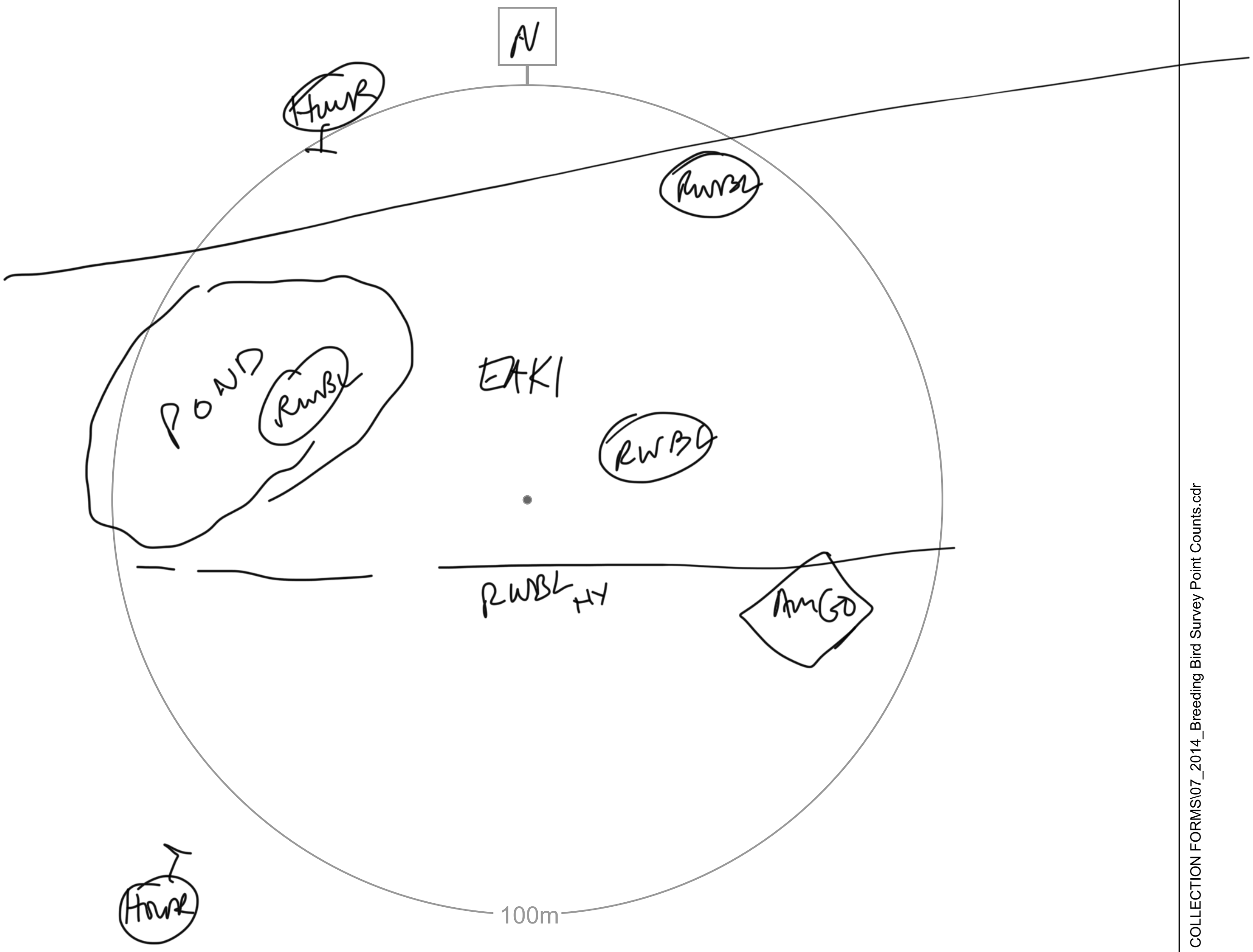
Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code: 8133	BBS Station 1	Survey Type BBS	Date 25 JUN	Time 0752	Site visit # 2	Observer(s) BURKE

Site Information

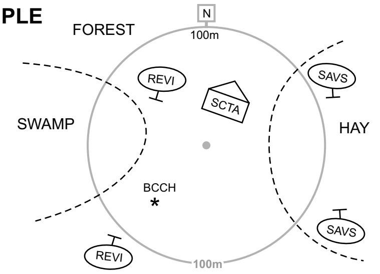
Point Count UTM E N	% Cloud Cover 70	Temp (°C) 20	Precipitation YES [✓ NO]	Beaufort wind & direction NW 1



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unsexed)	REVI	Pair	(REVI) / (REVI)	Two different males singing
(REVI)	Singing male	‹REVI›	Calling		
REVI	Observed male	REVI*	Nest		
[REVI]	Observed female	REVI$_{Fy}$	Fledged young		

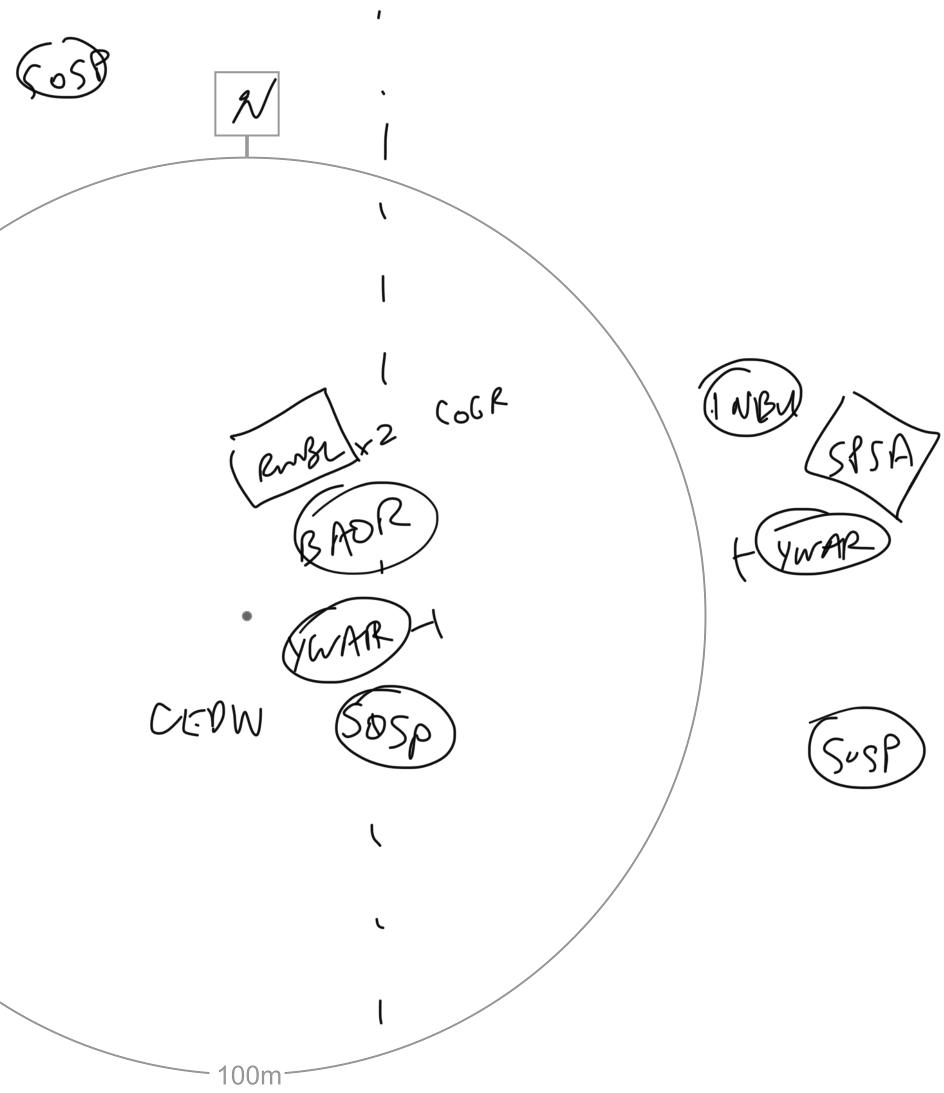
Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code:	BBS Station	Survey Type	Date	Time	Site visit #	Observer(s)
8133	2	BBS	25 JUN	0748	2	BURKE

Site Information

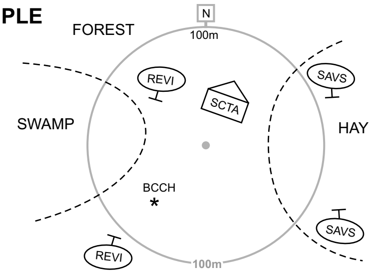
Point Count UTM	% Cloud Cover	Temp (°C)	Precipitation	Beaufort wind & direction
E N	40	19	YES [✓ NO]	NW 2



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI Observed (unexsexed)

REVI Singing male

REVI Observed male

REVI Observed female

REVI Pair

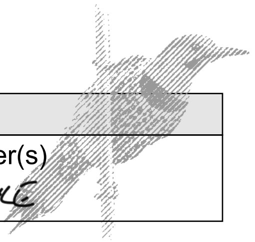
<REVI> Calling

REVI* Nest

REVI_{Fy} Fledged young

REVI / REVI Two different males singing

Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

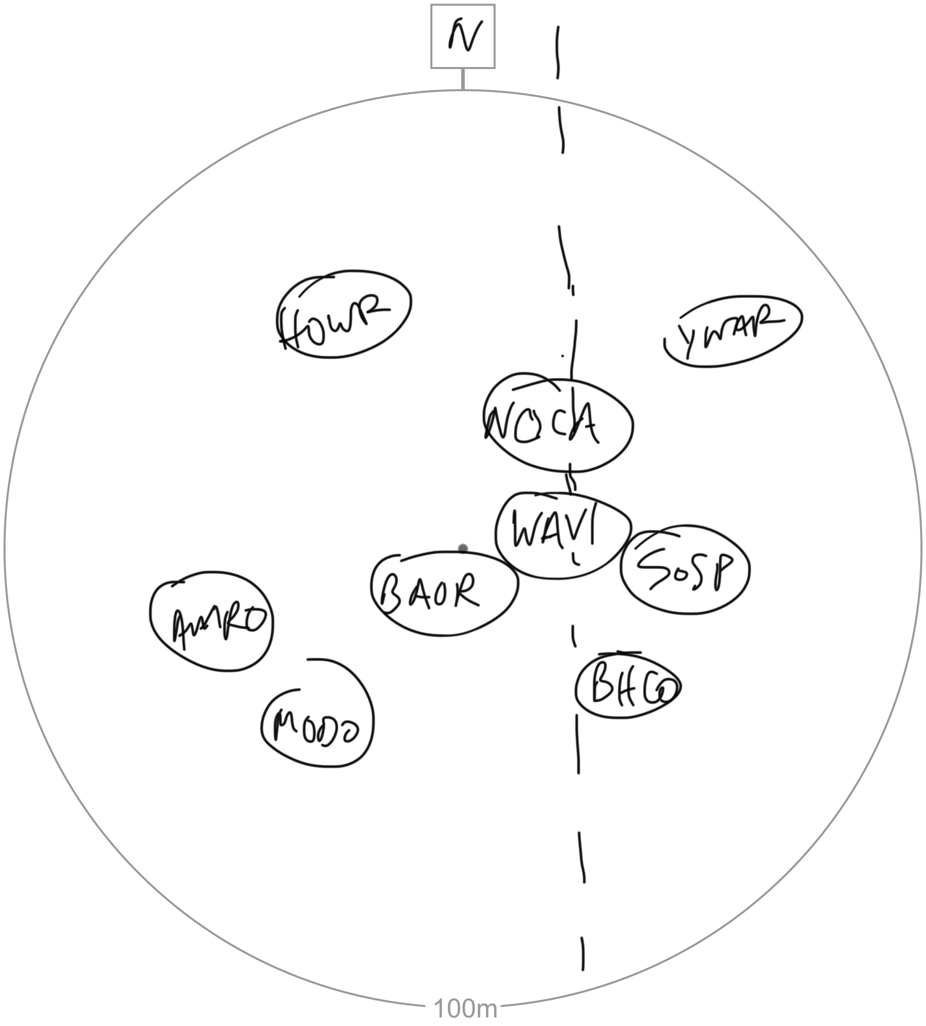


Administrative Information

Project Code:	BBS Station	Survey Type	Date	Time	Site visit #	Observer(s)
8133	3	BBS	25 JUN	0730	2	BURKE

Site Information

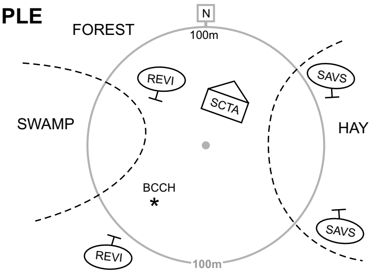
Point Count UTM	% Cloud Cover	Temp (°C)	Precipitation	Beaufort wind & direction
E N	40	19	YES [✓ NO]	NW 1



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unsexed)	REVI	Pair	REVI REVI	Two different males singing
REVI	Singing male	REVI	Calling		
REVI	Observed male	REVI*	Nest		
REVI	Observed female	REVI$_{Fy}$	Fledged young		

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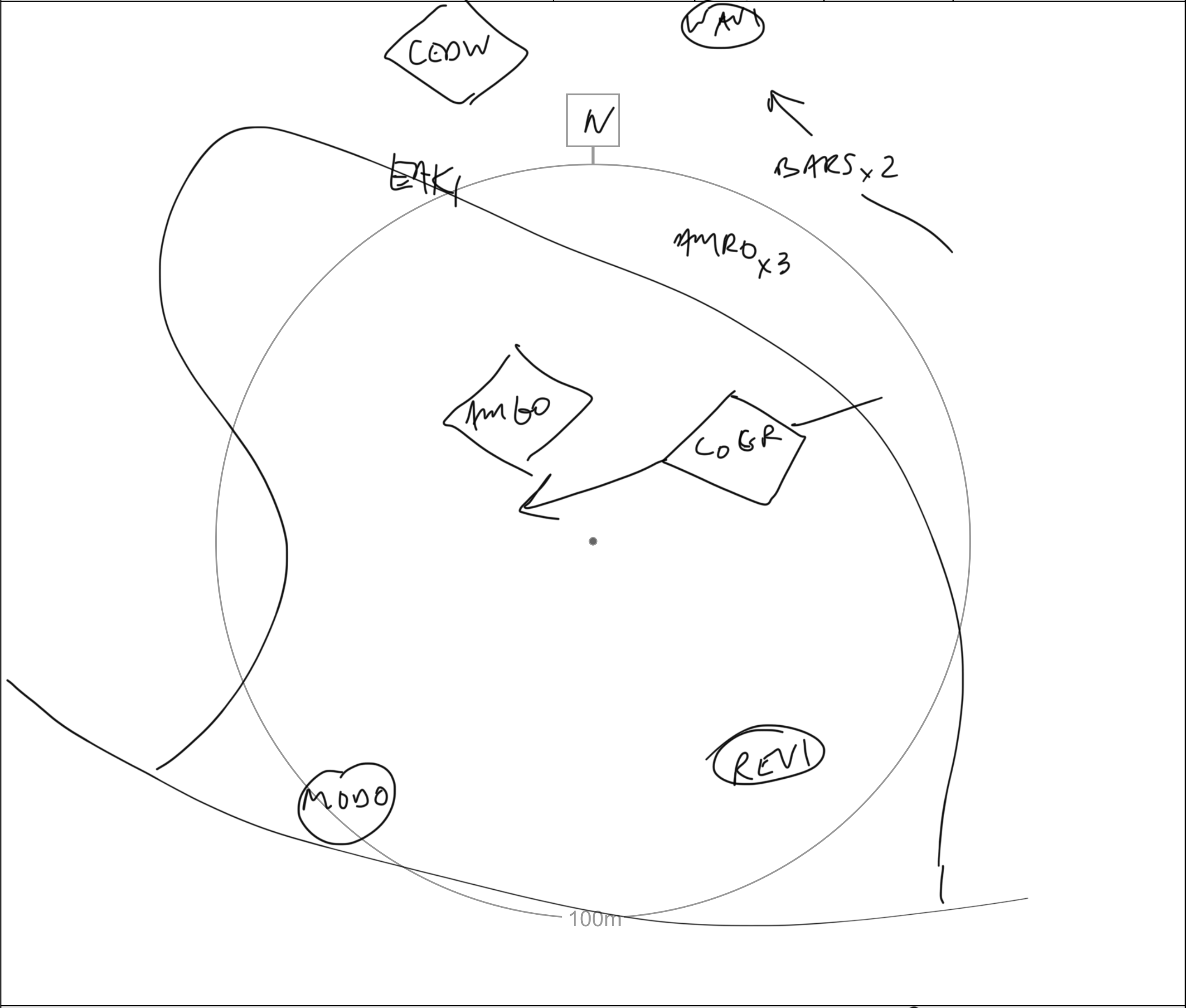
Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code:	BBS Station	Survey Type	Date	Time	Site visit #	Observer(s)
8133	4	BBS	25 JUN	0944	2	BURKE

Site Information

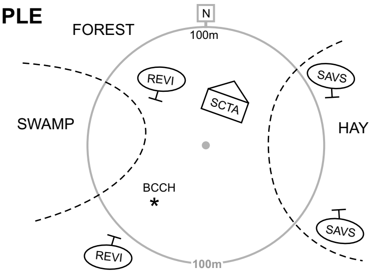
Point Count UTM	% Cloud Cover	Temp (°C)	Precipitation	Beaufort wind & direction
E N	50	22	YES [✓ NO]	NW 1



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☒ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unsexed)
REVI	Singing male
REVI	Observed male
REVI	Observed female
REVI	Pair
<REVI>	Calling
REVI *	Nest
REVI_{Fy}	Fledged young
REVI REVI	Two different males singing

File: S:\6005 - SAV Marketing and Support\TEMPLATES - FIELD COLLECTION FORMS\07_2014_Breeding Bird Survey Point Counts.cdr

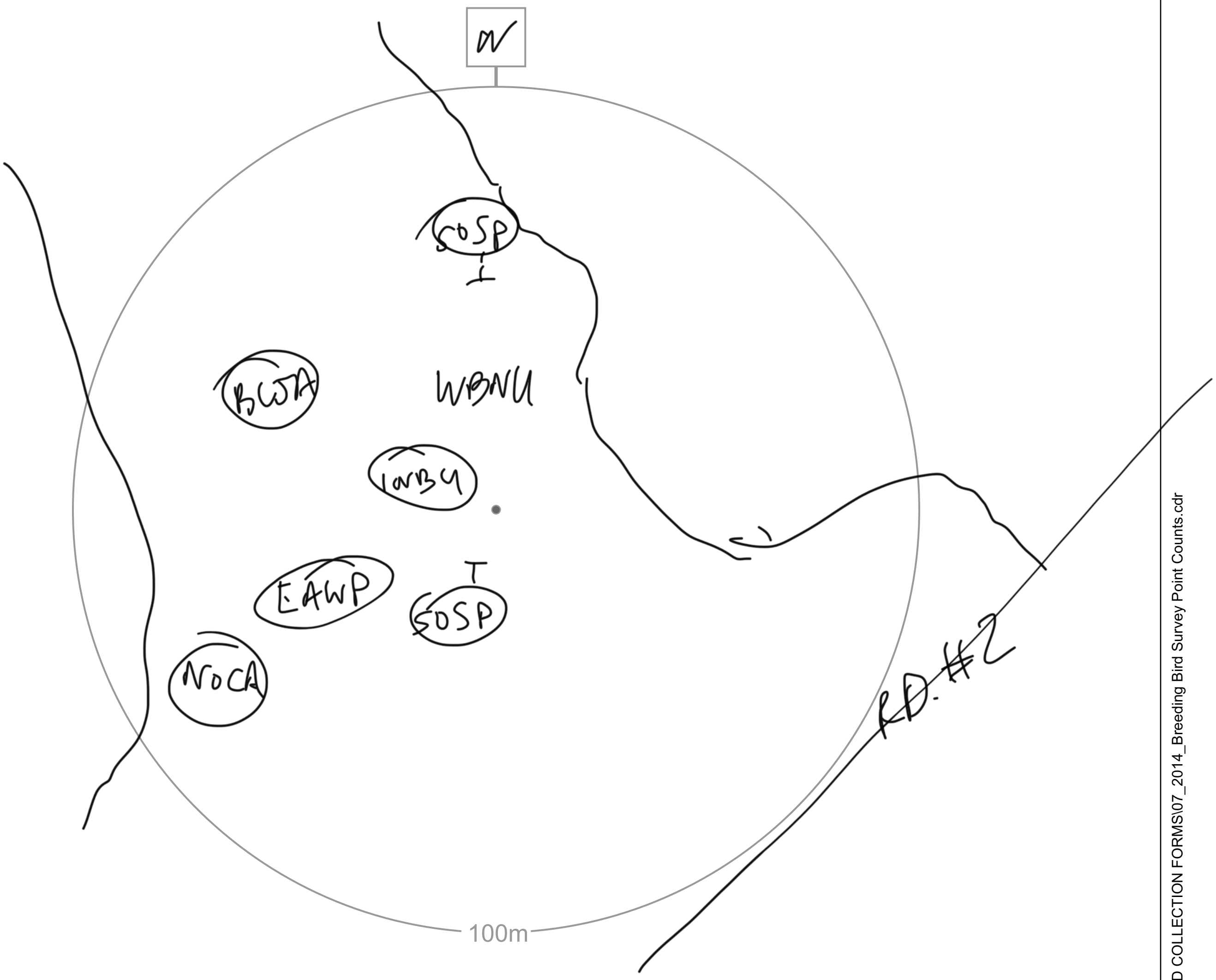
Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code:	BBS Station	Survey Type	Date	Time	Site visit #	Observer(s)
8133	5	BBS	25 JUN	0922	2	BURKE

Site Information

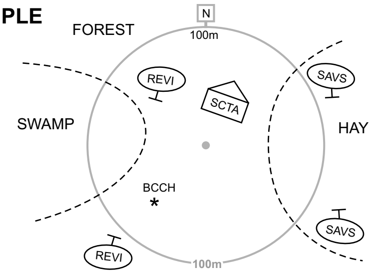
Point Count UTM	% Cloud Cover	Temp (°C)	Precipitation	Beaufort wind & direction
E N	40	22	YES [✓ NO]	NW 2



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unsexed)
(REVI)	Singing male
REVI	Observed male
REVI	Observed female
REVI	Pair
‹REVI›	Calling
REVI*	Nest
REVI_{Fy}	Fledged young
(REVI) (REVI)	Two different males singing

File: S:\6005 - SAV Marketing and Support\TEMPLATES - FIELD COLLECTION FORMS\07_2014_Breeding Bird Survey Point Counts.cdr

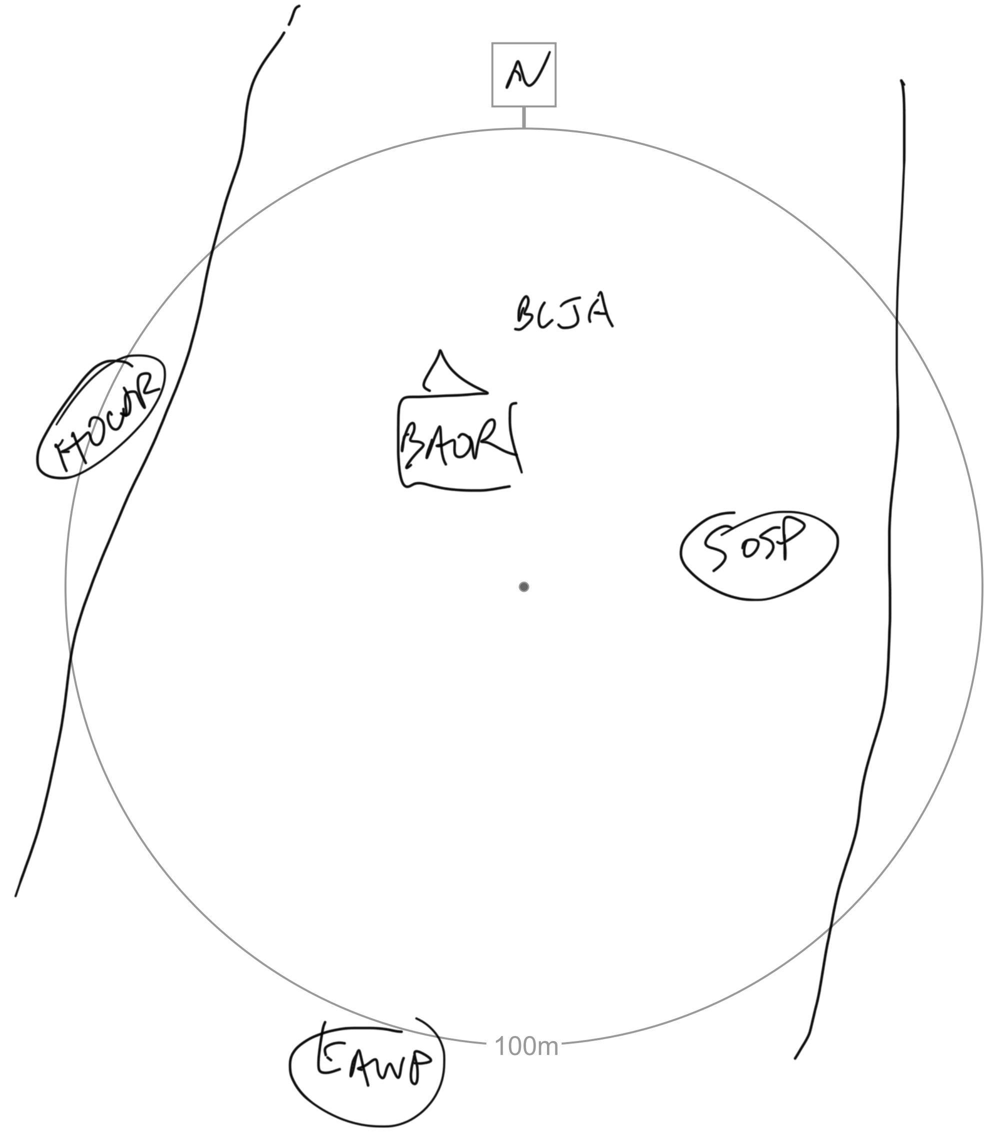
Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code:	BBS Station	Survey Type	Date	Time	Site visit #	Observer(s)
8133	6	BBS	25JUN	0987	2	BURKE

Site Information

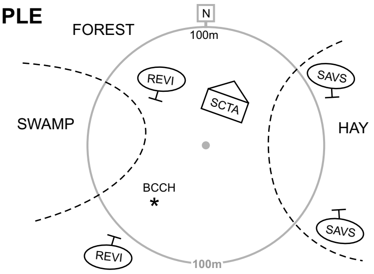
Point Count UTM	% Cloud Cover	Temp (°C)	Precipitation	Beaufort wind & direction
E N	10	21	YES [✓ NO]	NW 1



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unsexed)
REVI	Singing male
REVI	Observed male
REVI	Observed female
REVI	Pair
<REVI>	Calling
REVI*	Nest
REVI_{Fy}	Fledged young
REVI REVI	Two different males singing

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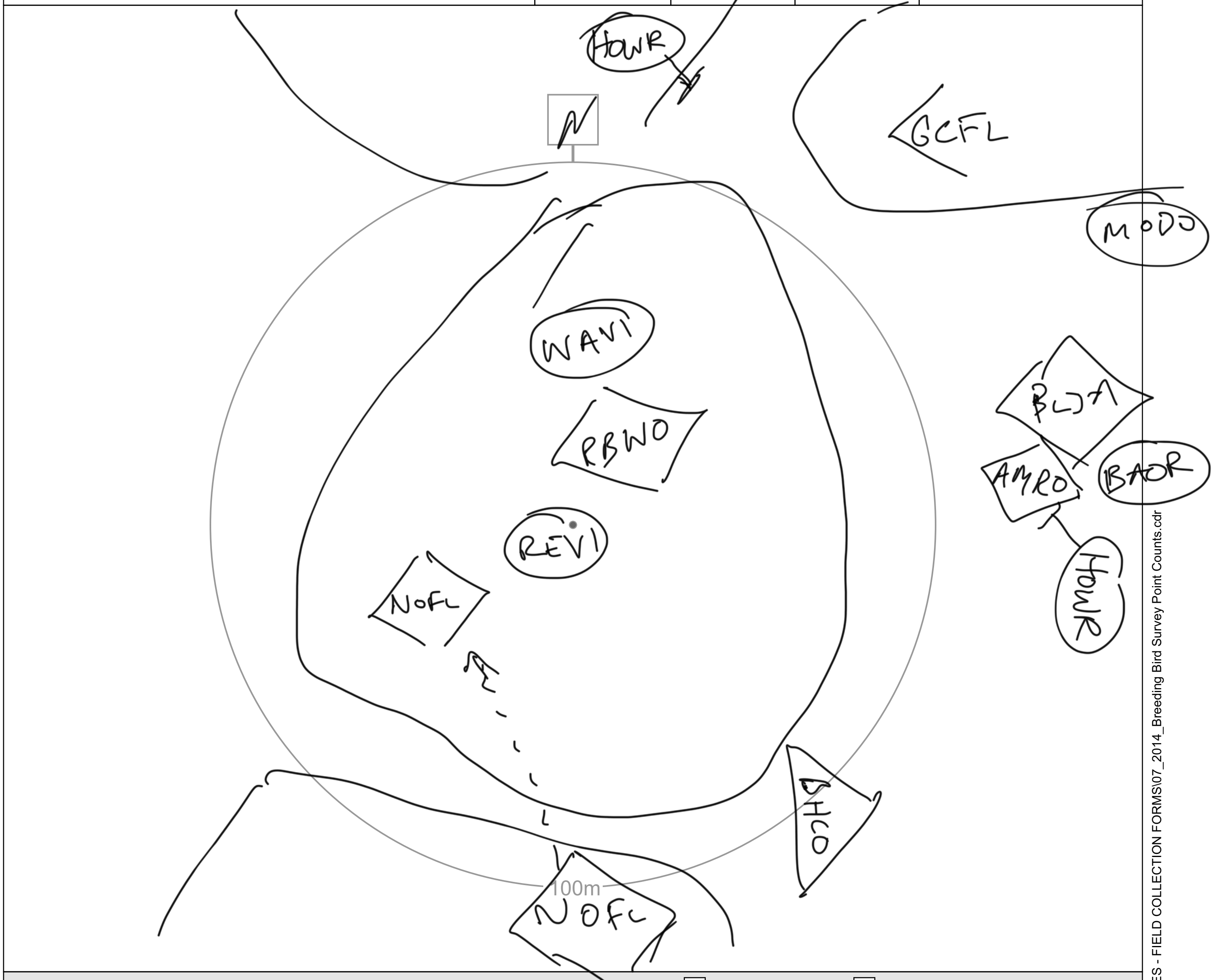
Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code:	BBS Station	Survey Type	Date	Time	Site visit #	Observer(s)
8133	7	BBS	25 JUN	0553	2	BURKE

Site Information

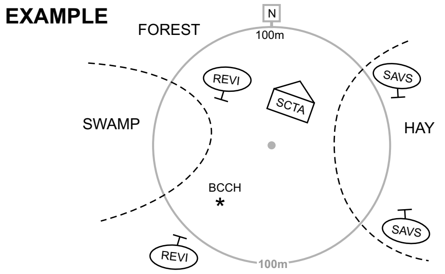
Point Count UTM	% Cloud Cover	Temp (°C)	Precipitation	Beaufort wind & direction
E N	80	19	YES [✓ NO]	NW 1



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unexsexed)
REVI	Singing male
REVI	Observed male
REVI	Observed female
REVI	Pair
<REVI>	Calling
REVI*	Nest
REVI_{Fy}	Fledged young
REVI REVI	Two different males singing

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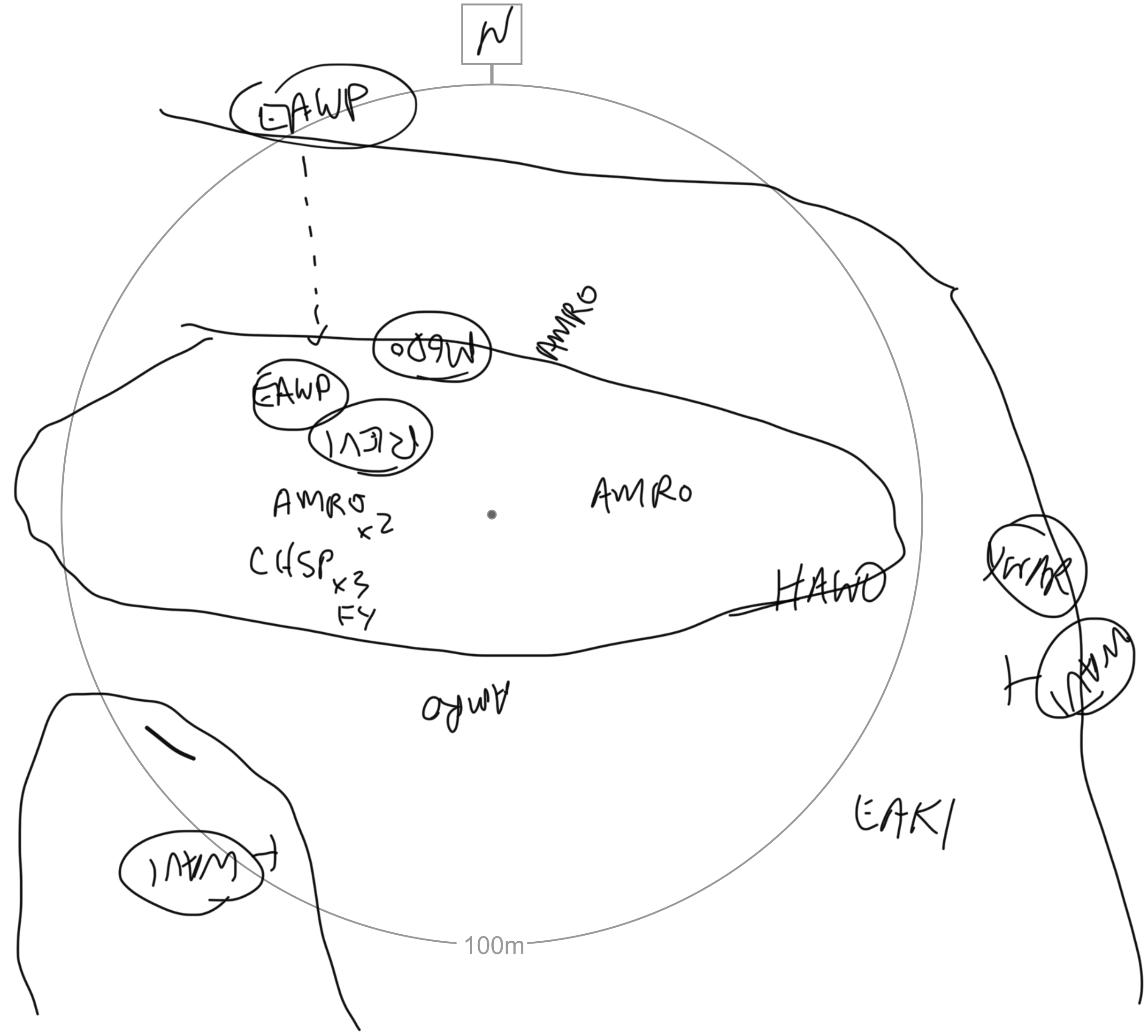
Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code:	BBS Station	Survey Type	Date	Time	Site visit #	Observer(s)
8133	8	BBS	25 JUN	0606	2	DURKE

Site Information

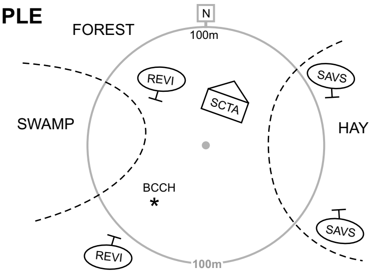
Point Count UTM	% Cloud Cover	Temp (°C)	Precipitation	Beaufort wind & direction
E N	60	19	YES [✓ NO]	NW 1



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unsexed)
(REVI)	Singing male
REVI	Observed male
REVI	Observed female
REVI	Pair
<REVI>	Calling
REVI*	Nest
REVI_{Fy}	Fledged young
(REVI) (REVI)	Two different males singing

File: S:\6005 - SAV Marketing and Support\TEMPLATES - FIELD COLLECTION FORMS\07_2014_Breeding Bird Survey Point Counts.cdr

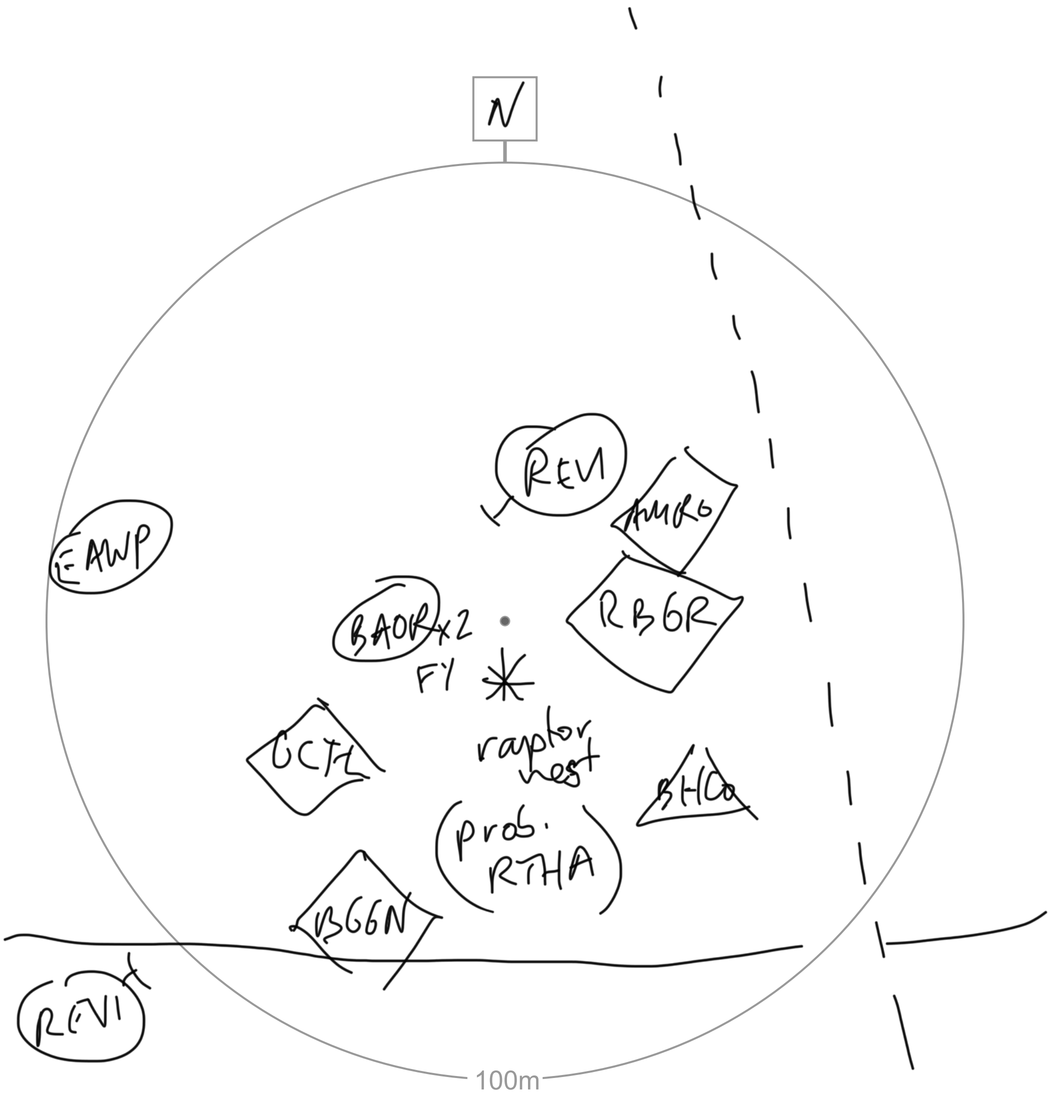
Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code:	BBS Station	Survey Type	Date	Time	Site visit #	Observer(s)
8133	9	BBS	25 JUN	0648	2	BURKE

Site Information

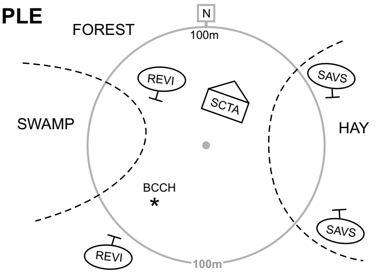
Point Count UTM	% Cloud Cover	Temp (°C)	Precipitation	Beaufort wind & direction
E N	50	19	YES [✓ NO]	NW 1



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unsexed)
REVI	Singing male
REVI	Observed male
REVI	Observed female
REVI	Pair
REVI	Calling
REVI*	Nest
REVI$_{\text{Fy}}$	Fledged young
REVI REVI	Two different males singing

File: S:\6005 - SAV Marketing and Support\TEMPLATES - FIELD COLLECTION FORMS\07_2014_Breeding Bird Survey Point Counts.cdr

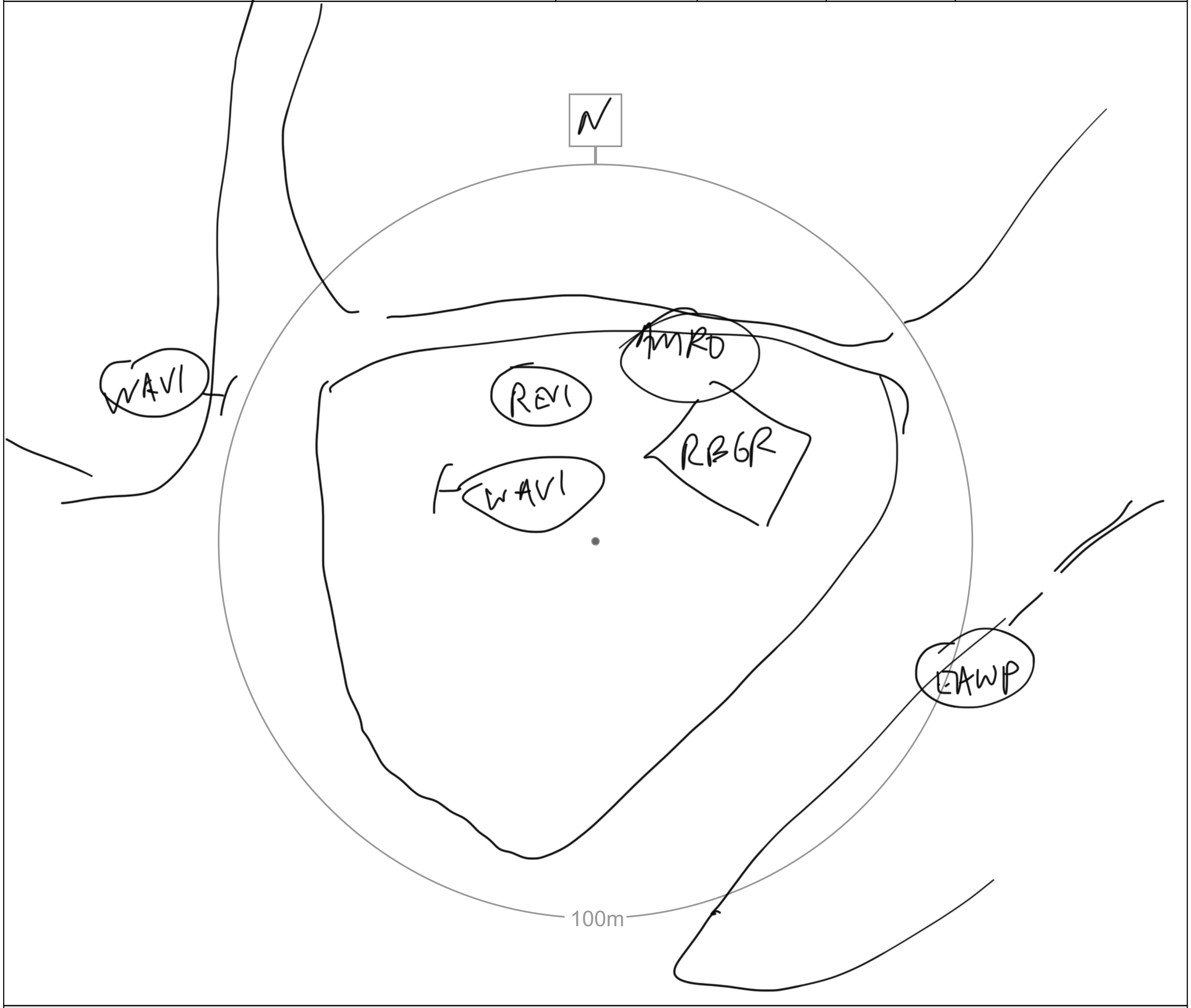
Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code:	BBS Station	Survey Type	Date	Time	Site visit #	Observer(s)
8133	15	BBS	25 JUN	0629	2	BURKE

Site Information

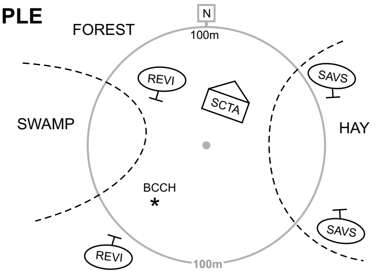
Point Count UTM E N	% Cloud Cover	Temp (°C)	Precipitation	Beaufort wind & direction
	60	20	YES [✓ NO]	NW 1



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unsexed)
REVI	Singing male
REVI	Observed male
REVI	Observed female
REVI	Pair
REVI	Calling
REVI*	Nest
REVI_{Fy}	Fledged young
REVI REVI	Two different males singing

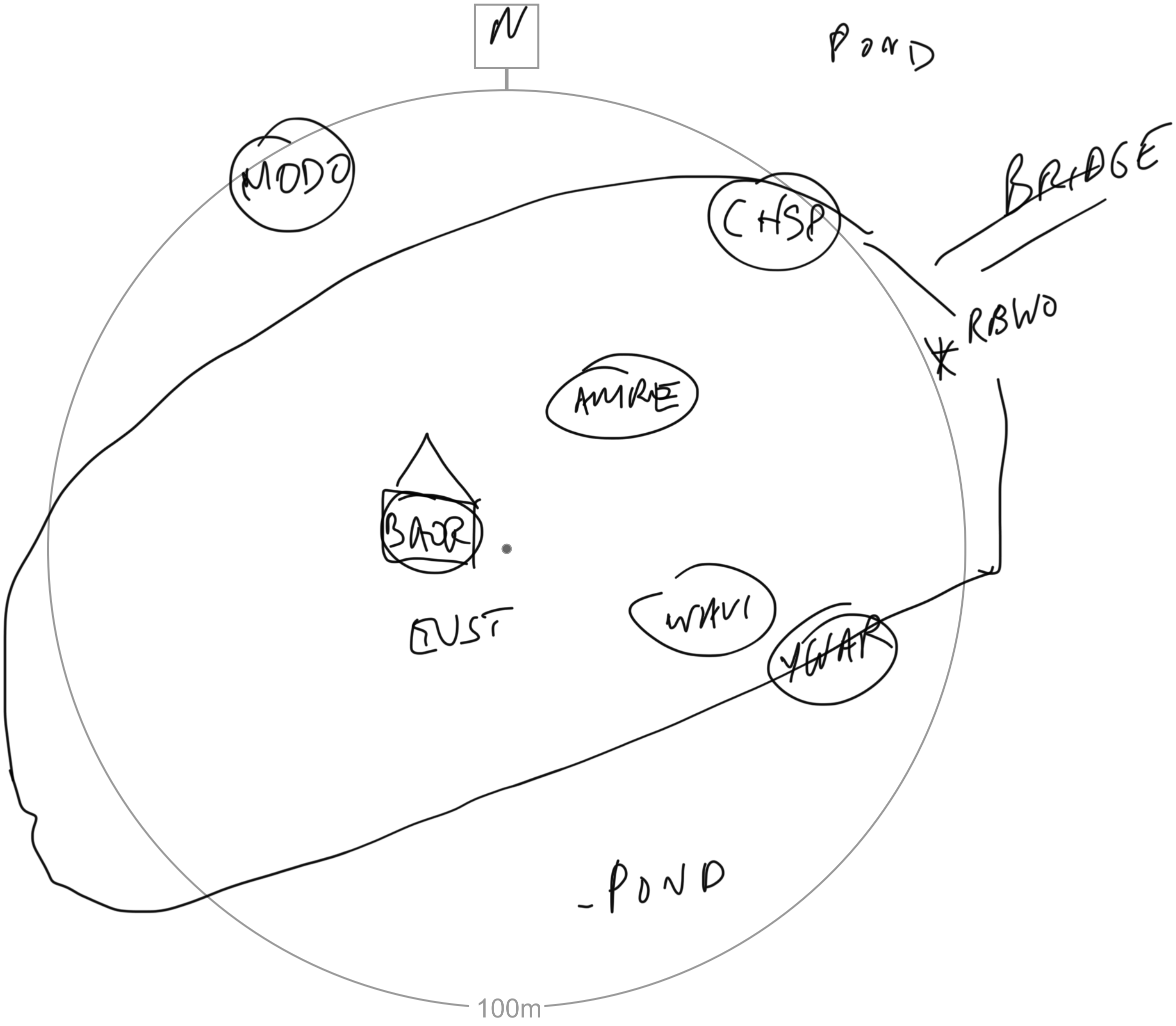
Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code:	BBS Station	Survey Type	Date	Time	Site visit #	Observer(s)
8133	11	BBS	25 JUN	0825	2	BURKE

Site Information

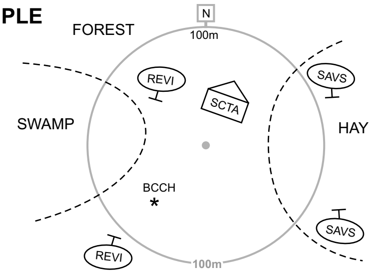
Point Count UTM	% Cloud Cover	Temp (°C)	Precipitation	Beaufort wind & direction
E N	10	24	YES [✓ NO]	NW 2



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unsexed)
REVI	Singing male
REVI	Observed male
REVI	Observed female
REVI	Pair
REVI	Calling
REVI*	Nest
REVI$_{Fy}$	Fledged young
REVI REVI	Two different males singing

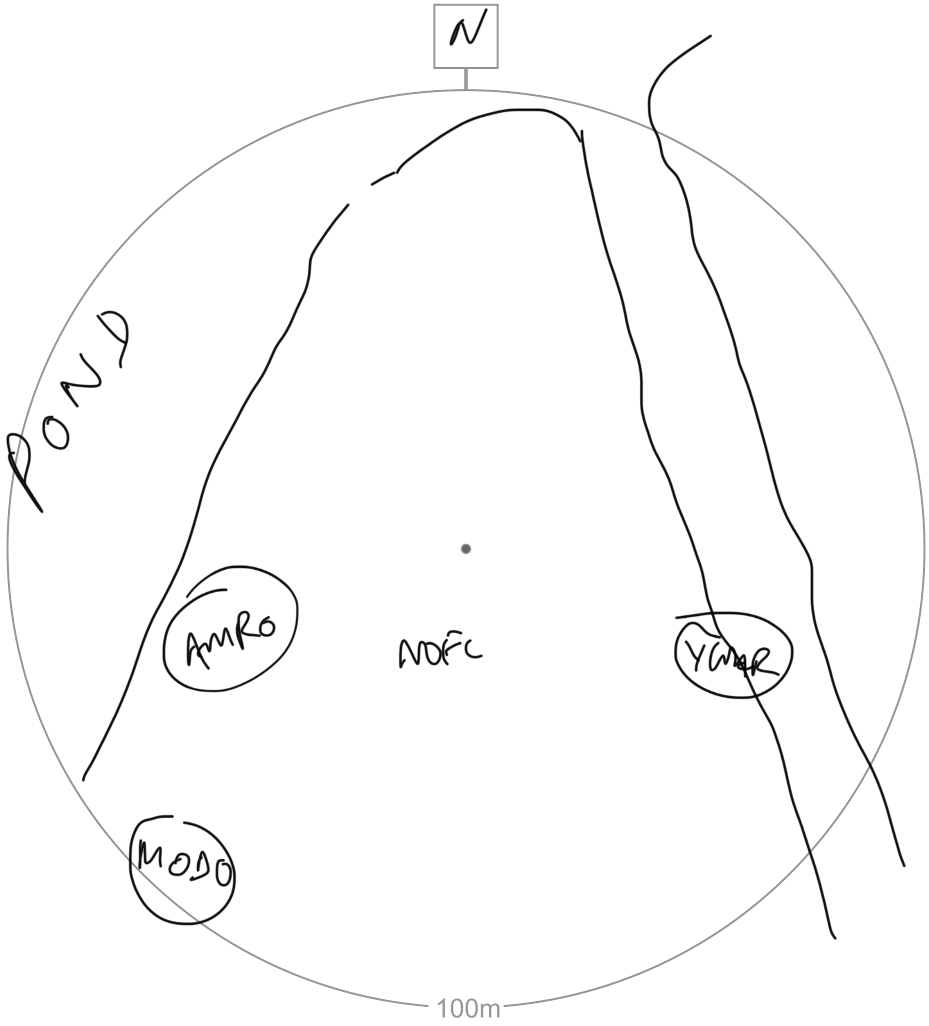
Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code:	BBS Station	Survey Type	Date	Time	Site visit #	Observer(s)
8133	12	BBS	25 JUN	0714	2	BURKE

Site Information

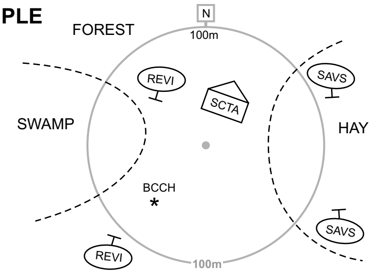
Point Count UTM	% Cloud Cover	Temp (°C)	Precipitation	Beaufort wind & direction
E N	40	19	YES [✓ NO]	NW 1



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unsexed)	REVI	Pair	REVI REVI	Two different males singing
REVI	Singing male	REVI	Calling		
REVI	Observed male	REVI*	Nest		
REVI	Observed female	REVI_{Fy}	Fledged young		

File: S:\6005 - SAV Marketing and Support\TEMPLATES - FIELD COLLECTION FORMS\07_2014_Breeding Bird Survey Point Counts.cdr

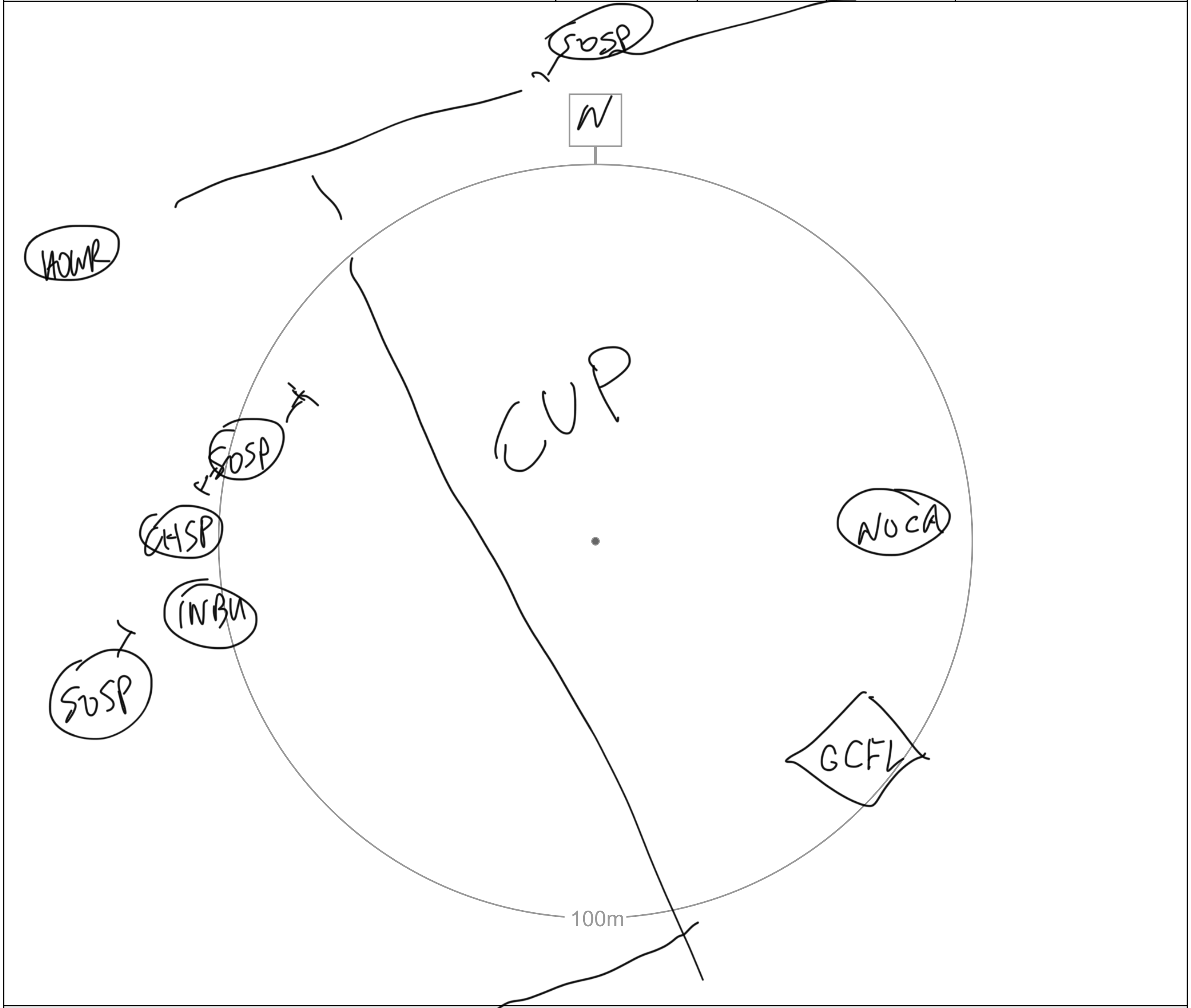
Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code:	BBS Station	Survey Type	Date	Time	Site visit #	Observer(s)
8133	13	BBS	26 JUN	0931	2	BURKE

Site Information

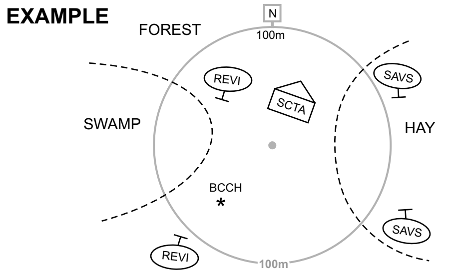
Point Count UTM	% Cloud Cover	Temp (°C)	Precipitation	Beaufort wind & direction
E N	0	22	YES [✓ NO]	SW 1



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unsexed)
REVI	Singing male
REVI	Observed male
REVI	Observed female
REVI	Pair
REVI	Calling
REVI*	Nest
REVI$_{Fy}$	Fledged young
REVI REVI	Two different males singing

File: S:\6005 - SAV Marketing and Support\TEMPLATES - FIELD COLLECTION FORMS\07_2014_Breeding Bird Survey Point Counts.cdr

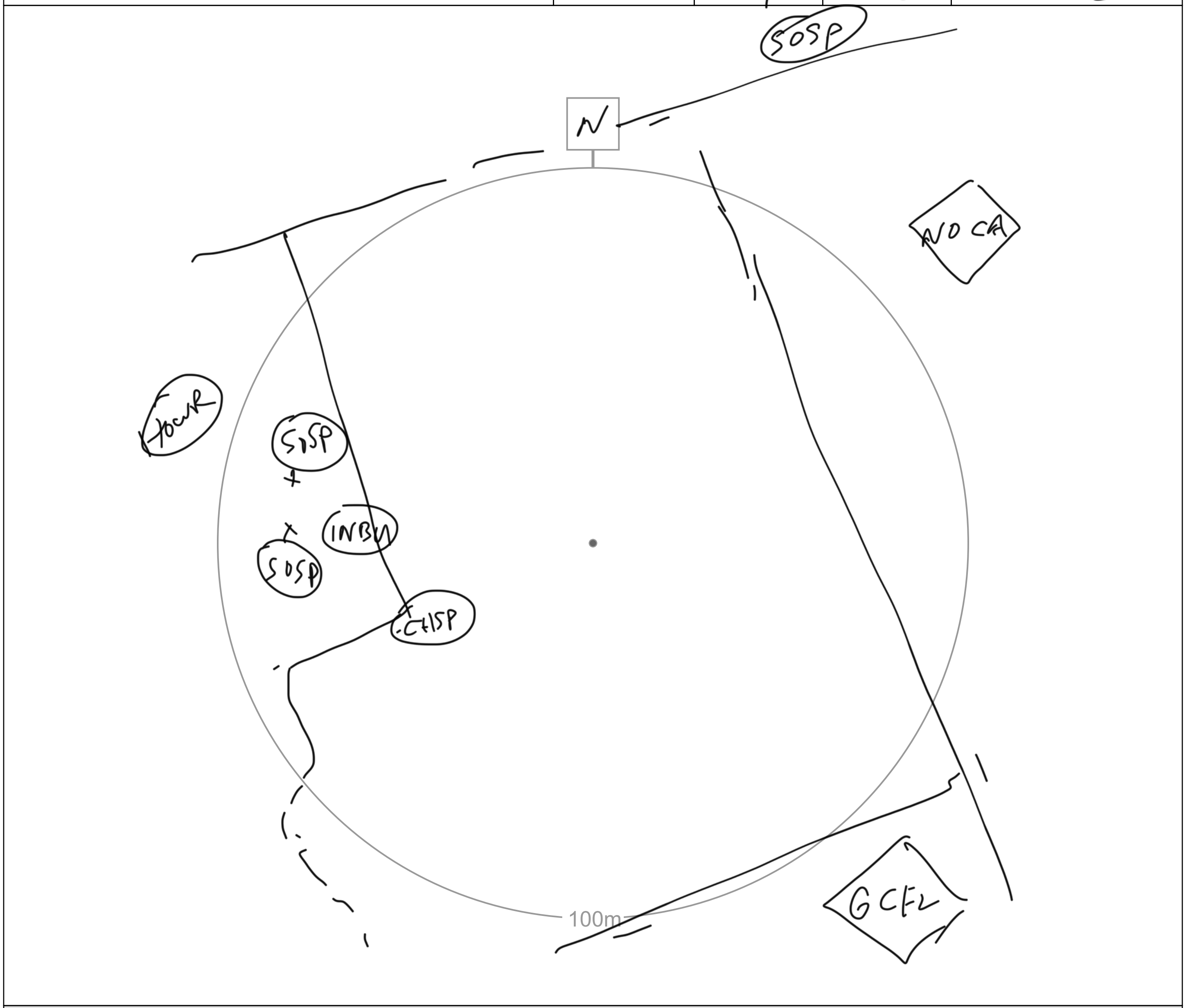
Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code:	BBS Station	Survey Type	Date	Time	Site visit #	Observer(s)
8133	14	BBS	26 JUN	0951	2	BURKE

Site Information

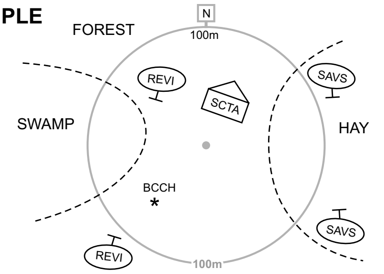
Point Count UTM	% Cloud Cover	Temp (°C)	Precipitation	Beaufort wind & direction
E N	10	24	YES [✓ NO]	SW 2



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unsexed)
REVI	Singing male
REVI	Observed male
REVI	Observed female
REVI	Pair
REVI	Calling
REVI *	Nest
REVI_{Fy}	Fledged young
REVI REVI	Two different males singing

File: S:\6005 - SAV Marketing and Support\TEMPLATES - FIELD COLLECTION FORMS\07_2014_Breeding Bird Survey Point Counts.cdr

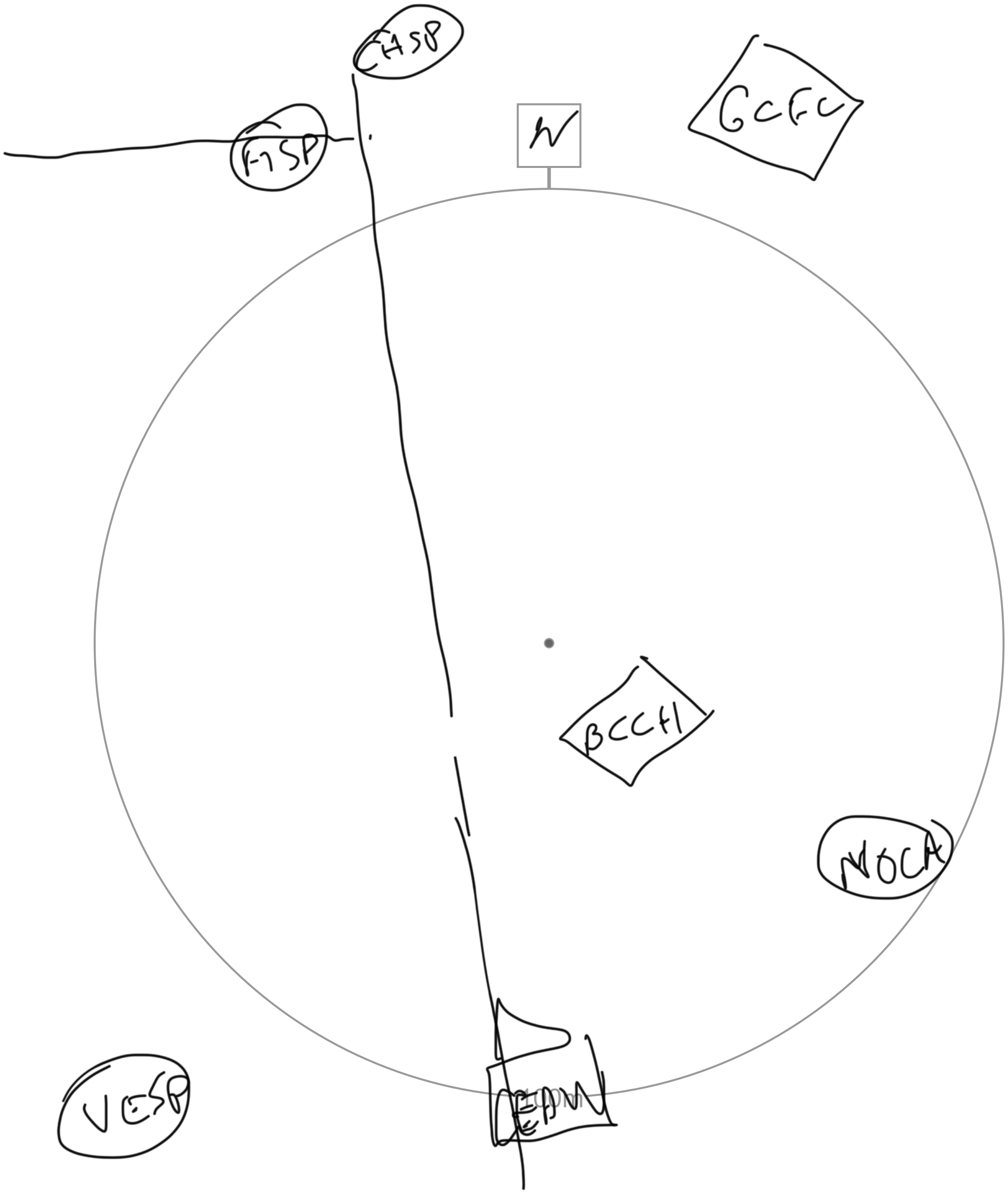
Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code: 8133	BBS Station 15	Survey Type BBS	Date 26 JUN	Time 0855	Site visit # 2	Observer(s) BURKE

Site Information

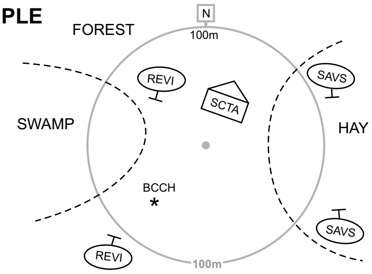
Point Count UTM E N	% Cloud Cover 20	Temp (°C) 25	Precipitation YES [✓ NO]	Beaufort wind & direction SW 2



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unsexed)
REVI (in oval)	Singing male
REVI (under peak)	Observed male
REVI (in box)	Observed female
REVI (in house)	Pair
‹REVI›	Calling
REVI*	Nest
REVI_{Fy}	Fledged young
REVI / REVI	Two different males singing

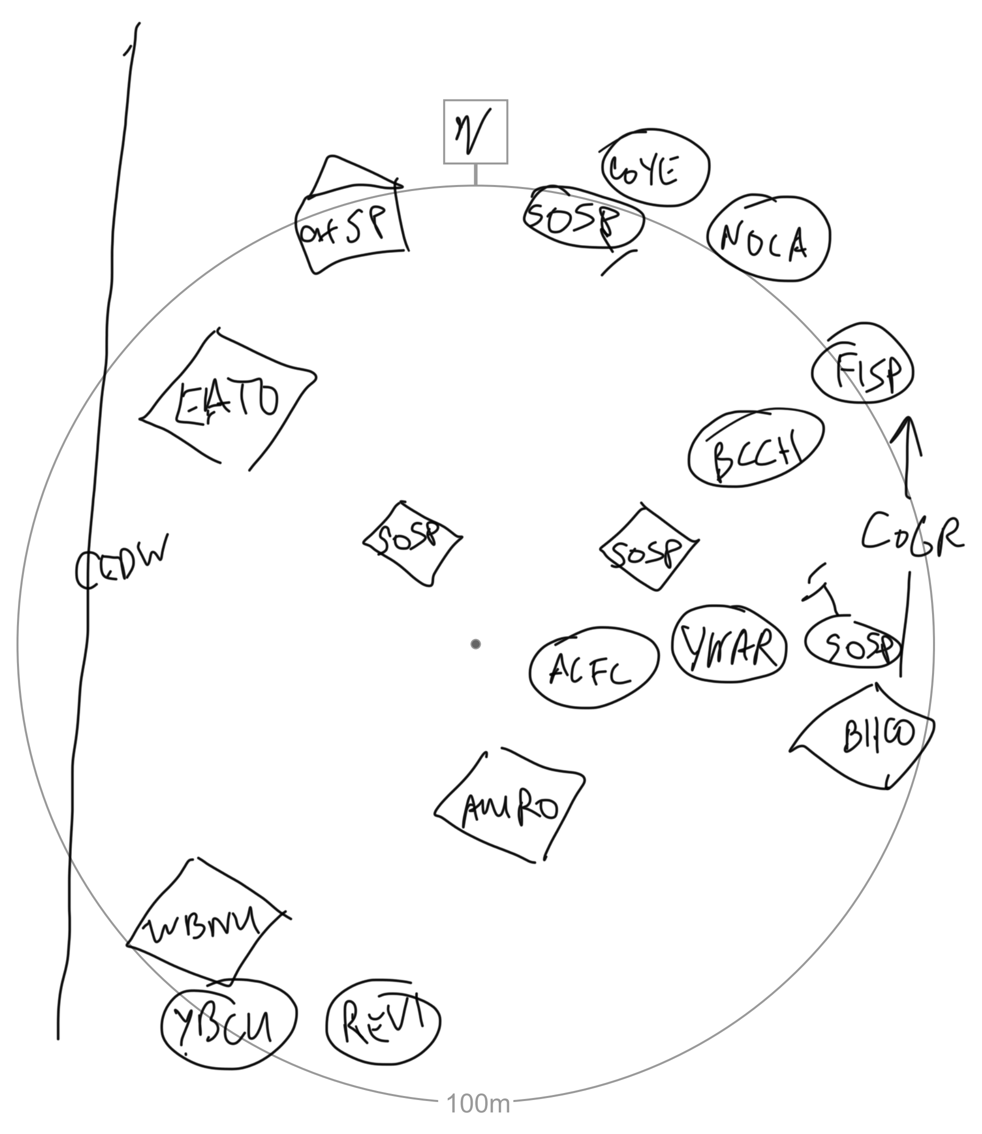
Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code:	BBS Station	Survey Type	Date	Time	Site visit #	Observer(s)
8133	16	BBS	26 JUN	0855	2	BURKE

Site Information

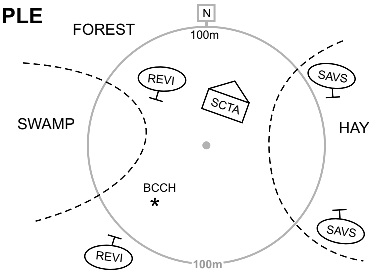
Point Count UTM	% Cloud Cover	Temp (°C)	Precipitation	Beaufort wind & direction
E N	20	25	YES [✓ NO]	SW 1



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unsexed)
(REVI)	Singing male
REVI	Observed male
REVI	Observed female
REVI	Pair
‹REVI›	Calling
REVI*	Nest
REVI$_{Fy}$	Fledged young
(REVI) (REVI)	Two different males singing

File: S:\6005 - SAV Marketing and Support\TEMPLATES - FIELD COLLECTION FORMS\07_2014_Breeding Bird Survey Point Counts.cdr

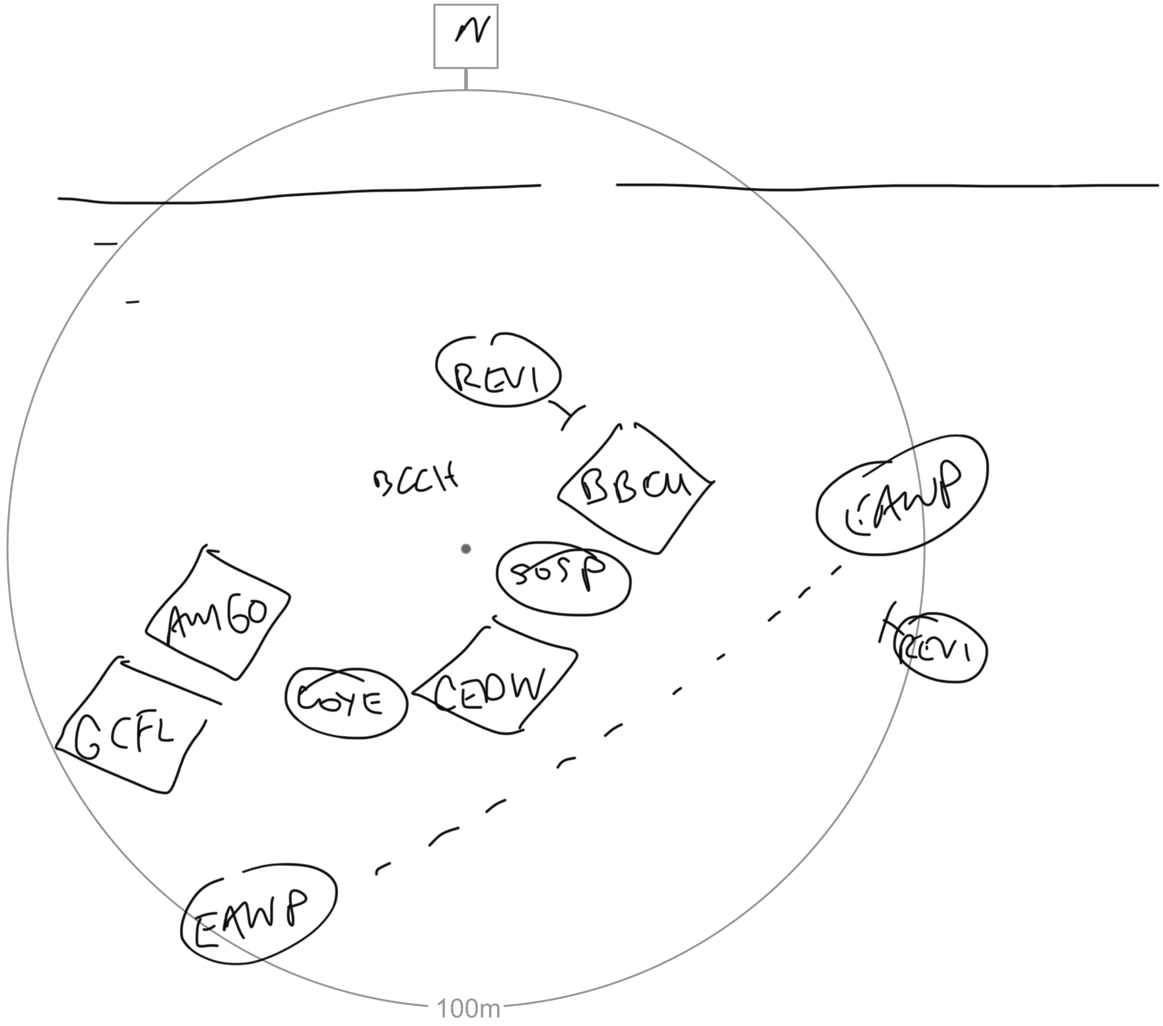
Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code:	BBS Station	Survey Type	Date	Time	Site visit #	Observer(s)
8133	17	BBS	26 JUN	0731	2	BURKE

Site Information

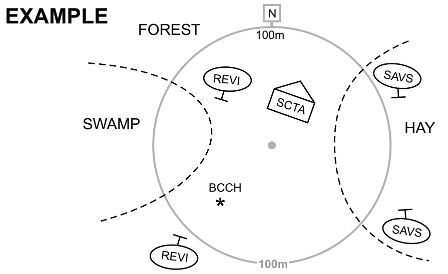
Point Count UTM	% Cloud Cover	Temp (°C)	Precipitation	Beaufort wind & direction
E N	20	24	YES [✓ NO]	SW 1



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unsexed)
REVI	Singing male
REVI	Observed male
REVI	Observed female
REVI	Pair
REVI	Calling
REVI*	Nest
REVI_{Fy}	Fledged young
REVI REVI	Two different males singing

File: S:\6005 - SAV Marketing and Support\TEMPLATES - FIELD COLLECTION FORMS\07_2014_Breeding Bird Survey Point Counts.cdr

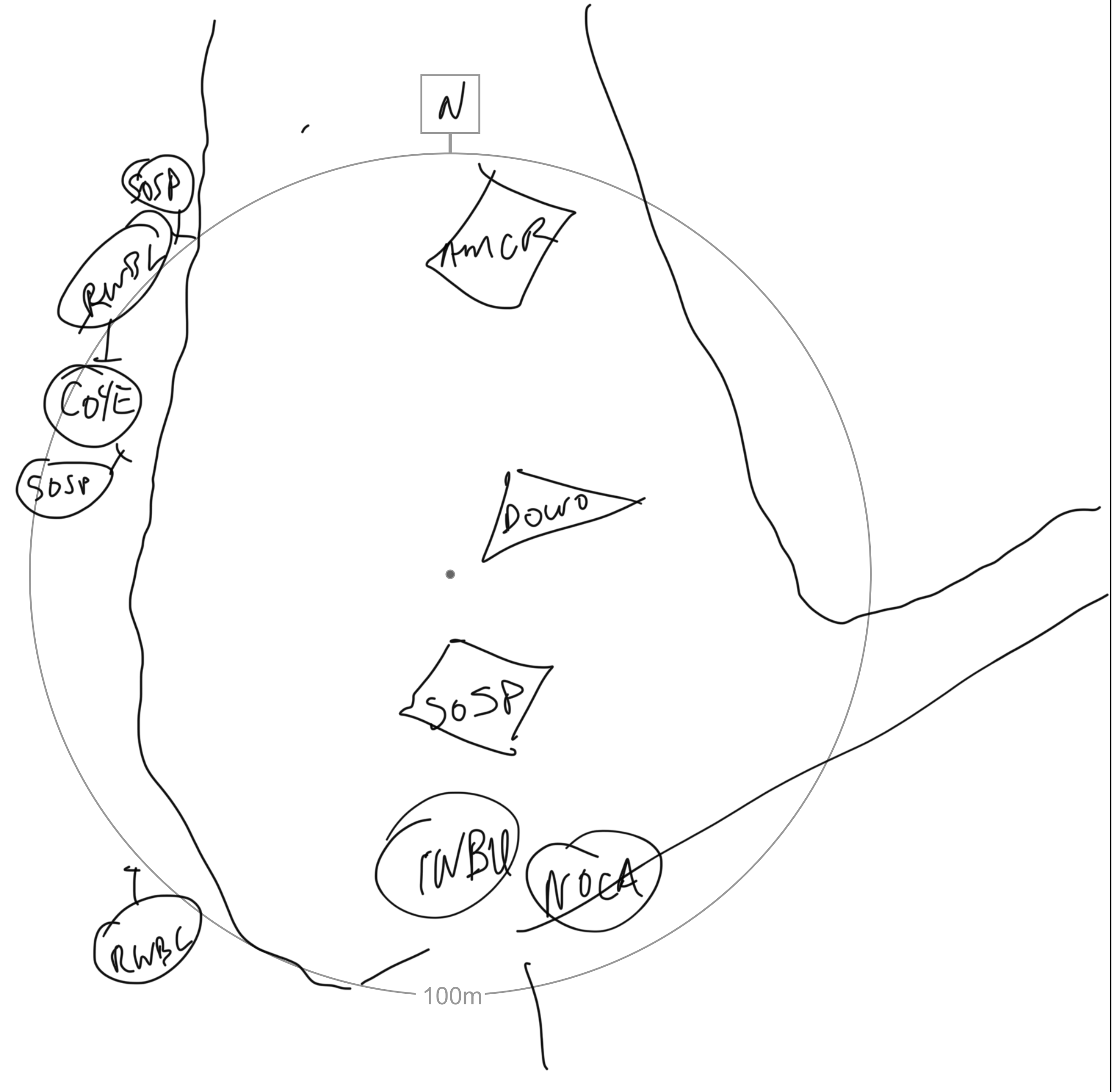
Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code:	BBS Station	Survey Type	Date	Time	Site visit #	Observer(s)
8133	18	BBS	26 JUN	0711	2	BURKE

Site Information

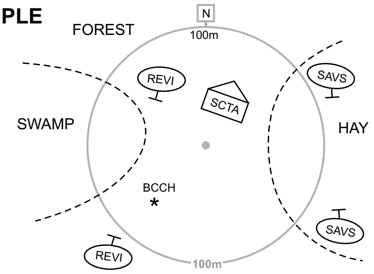
Point Count UTM	% Cloud Cover	Temp (°C)	Precipitation	Beaufort wind & direction
E N	25	23	YES [✓ NO]	SW 1



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unsexed)
REVI	Singing male
REVI	Observed male
REVI	Observed female
REVI	Pair
<REVI>	Calling
REVI*	Nest
REVI_{Fy}	Fledged young
REVI REVI	Two different males singing

File: S:\6005 - SAV Marketing and Support\TEMPLATES - FIELD COLLECTION FORMS\07_2014_Breeding Bird Survey Point Counts.cdr

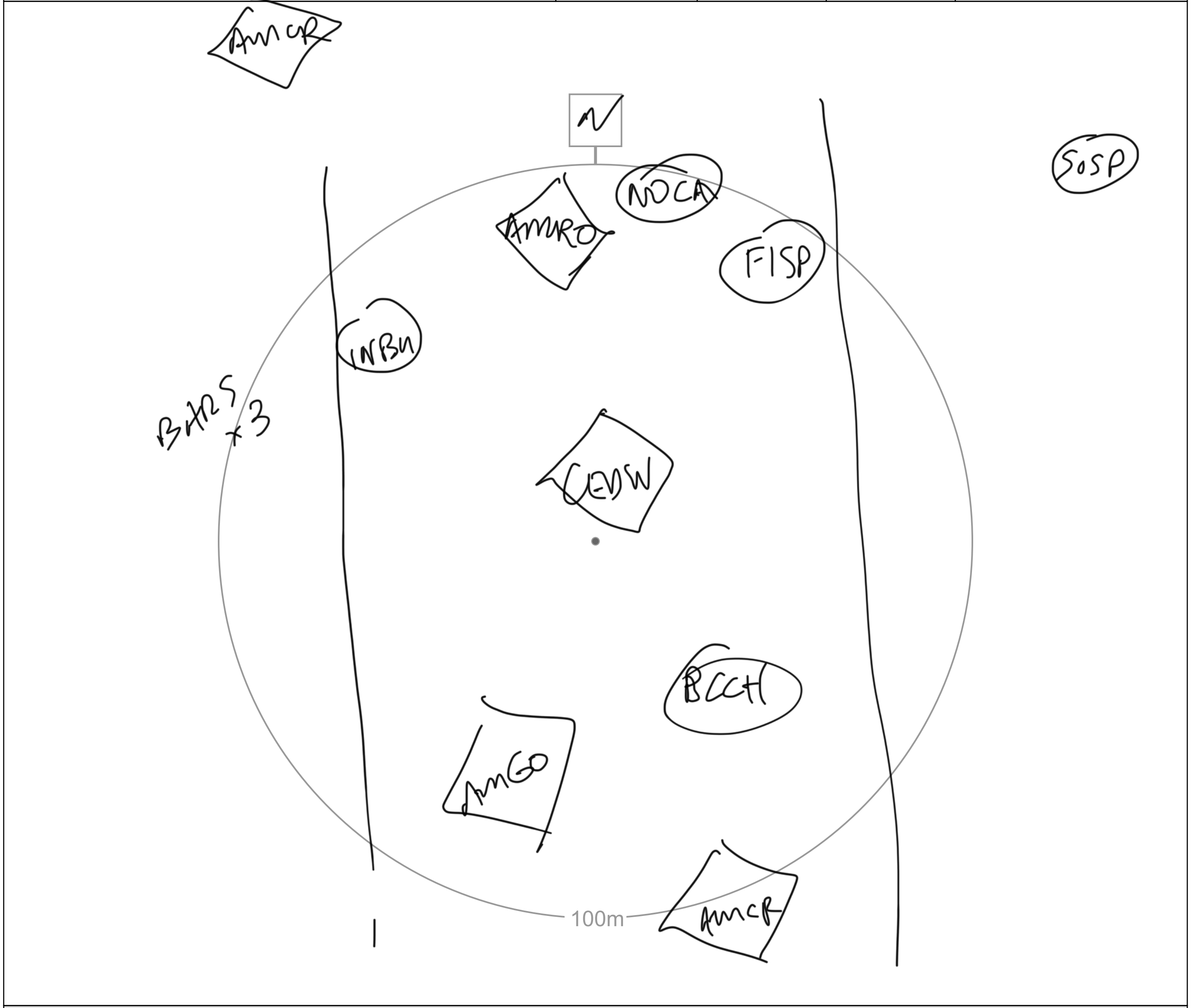
Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code:	BBS Station	Survey Type	Date	Time	Site visit #	Observer(s)
8133	19	BBS	26 JUN	0647	2	BURKE

Site Information

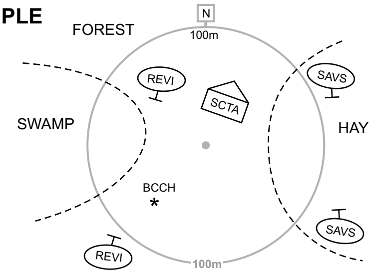
Point Count UTM	% Cloud Cover	Temp (°C)	Precipitation	Beaufort wind & direction
E N	10	22	YES [✓ NO]	SW 1



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



CODES

REVI	Observed (unsexed)
REVI	Singing male
REVI	Observed male
REVI	Observed female
REVI	Pair
REVI	Calling
REVI*	Nest
REVI_{Fy}	Fledged young
REVI / REVI	Two different males singing

File: S:\6005 - SAV Marketing and Support\TEMPLATES - FIELD COLLECTION FORMS\07_2014_Breeding Bird Survey Point Counts.cdr

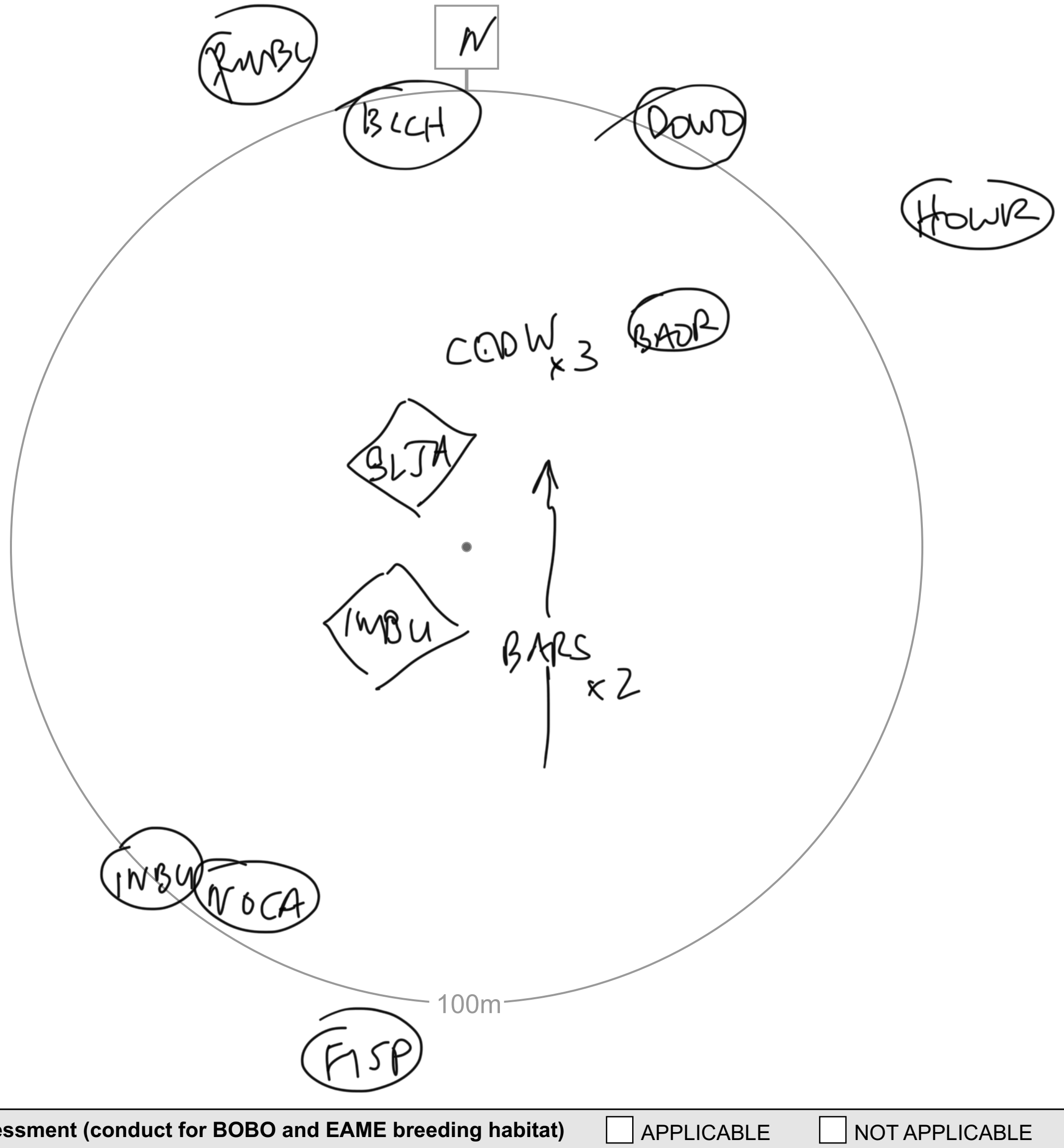
Savanta Inc. Breeding Bird Survey Point Counts - Field Use Only

Administrative Information

Project Code:	BBS Station	Survey Type	Date	Time	Site visit #	Observer(s)
8133	20	BBS	26 JUN	0635	2	BURKE

Site Information

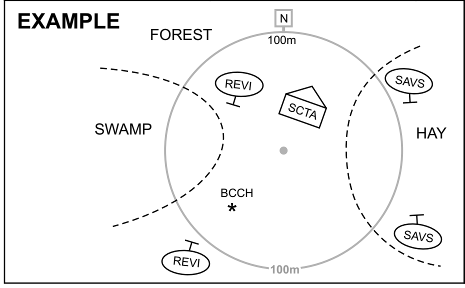
Point Count UTM	% Cloud Cover	Temp (°C)	Precipitation	Beaufort wind & direction
E N	5	22	YES [✓ NO]	SW 1



Grassland Habitat Assessment (conduct for BOBO and EAME breeding habitat) ☐ APPLICABLE ☐ NOT APPLICABLE

VEG HEIGHT	THATCH HEIGHT	MOISTURE	% COVER BARE	% COVER GRASS	% COVER FORBES	% COVER SHRUB

EXAMPLE



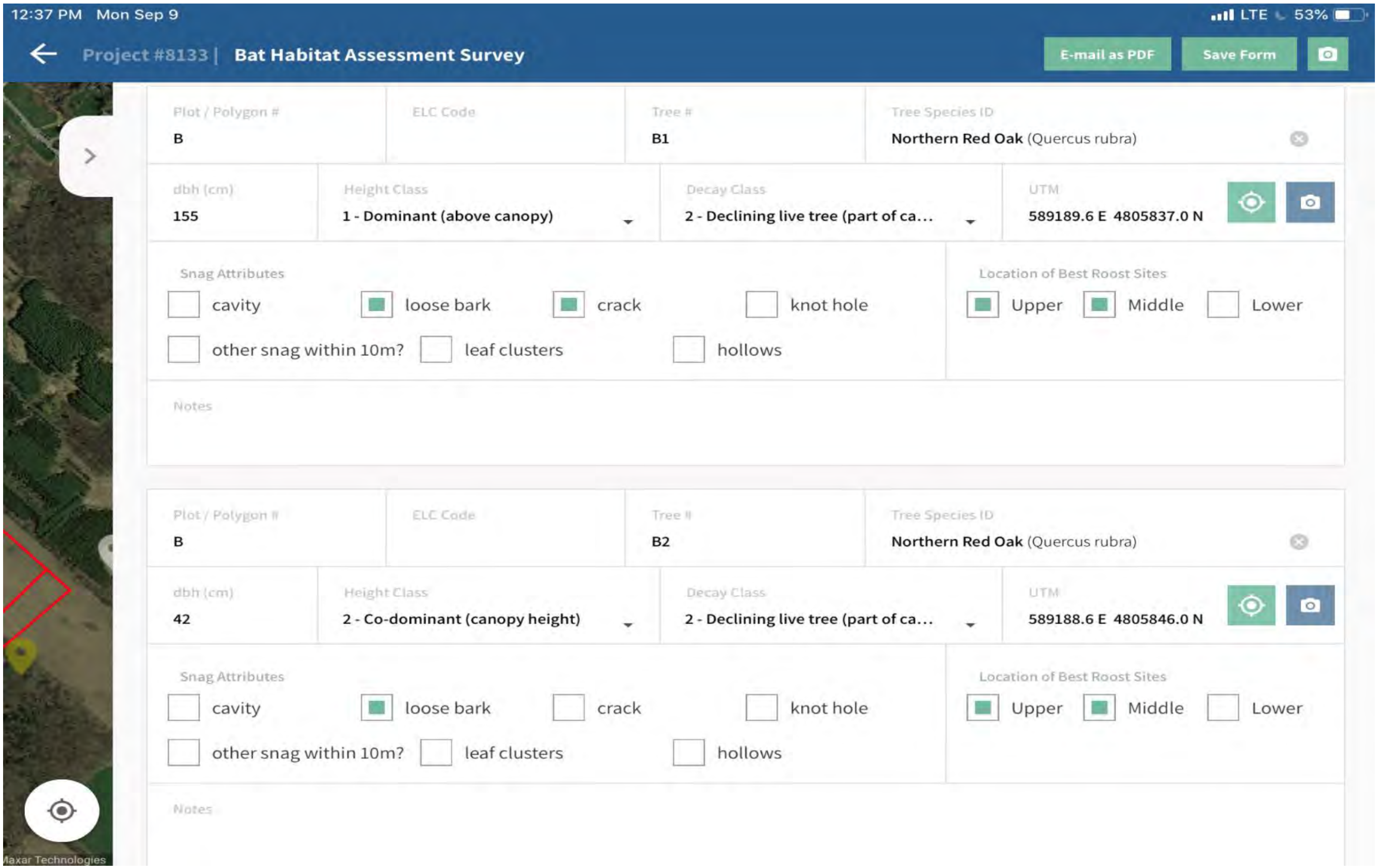
CODES

REVI	Observed (unsexed)	REVI	Pair
REVI	Singing male	REVI	Calling
REVI	Observed male	REVI*	Nest
REVI	Observed female	REVI$_{Fy}$	Fledged young

REVI / REVI — Two different males singing

File: S:\6005 - SAV Marketing and Support\TEMPLATES - FIELD COLLECTION FORMS\07_2014_Breeding Bird Survey Point Counts.cdr

Appendix C – Ecological Field Data – Bats



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #
B

ELC Code

Tree #
B1

Tree Species ID
Northern Red Oak (Quercus rubra)

dbh (cm)
155

Height Class
1 - Dominant (above canopy)

Decay Class
2 - Declining live tree (part of ca…

UTM
589189.6 E 4805837.0 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes

Plot / Polygon #
B

ELC Code

Tree #
B2

Tree Species ID
Northern Red Oak (Quercus rubra)

dbh (cm)
42

Height Class
2 - Co-dominant (canopy height)

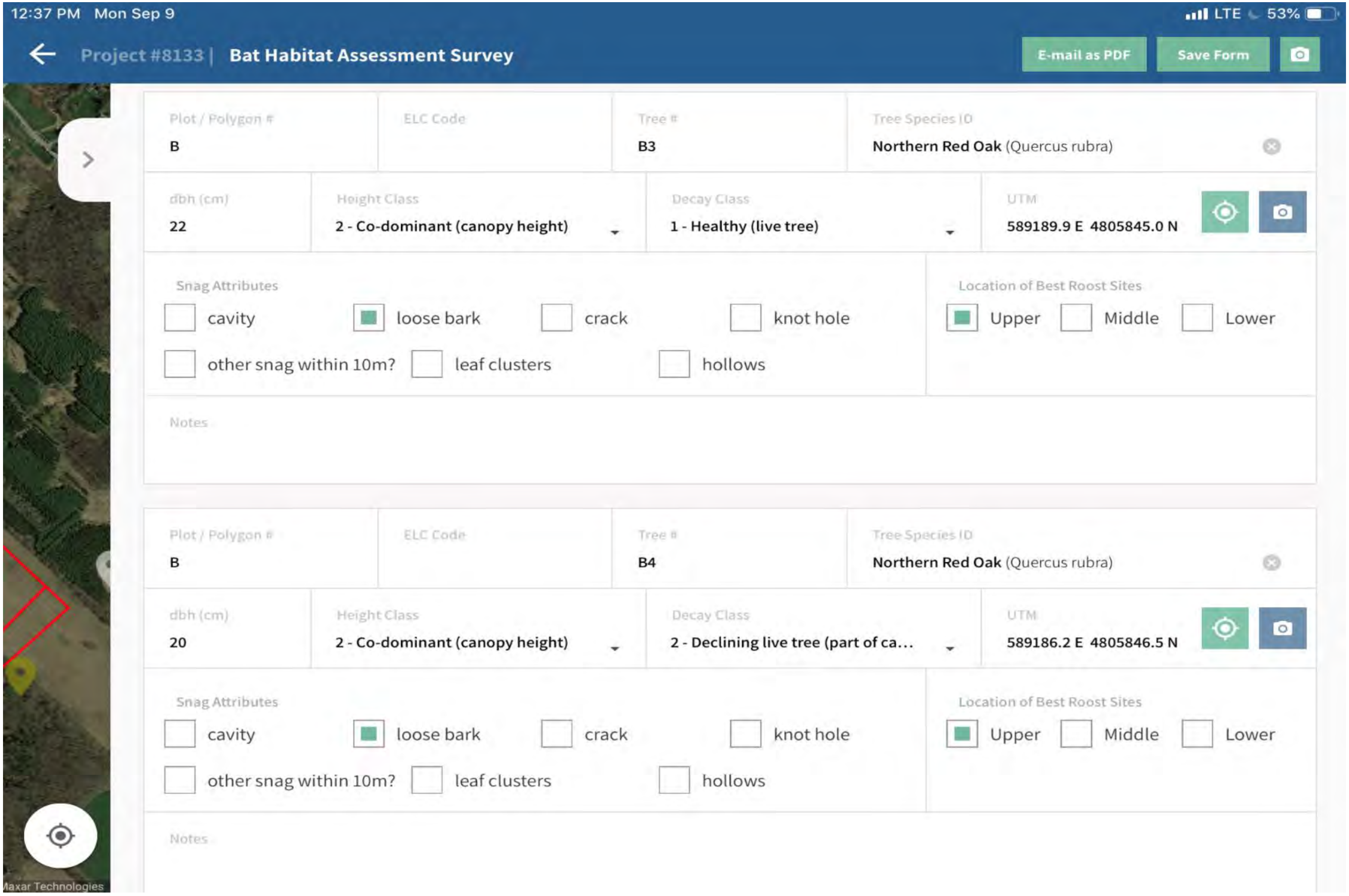
Decay Class
2 - Declining live tree (part of ca…

UTM
589188.6 E 4805846.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #
B

ELC Code

Tree #
B3

Tree Species ID
Northern Red Oak (Quercus rubra)

dbh (cm)
22

Height Class
2 - Co-dominant (canopy height)

Decay Class
1 - Healthy (live tree)

UTM
589189.9 E 4805845.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes

Plot / Polygon #
B

ELC Code

Tree #
B4

Tree Species ID
Northern Red Oak (Quercus rubra)

dbh (cm)
20

Height Class
2 - Co-dominant (canopy height)

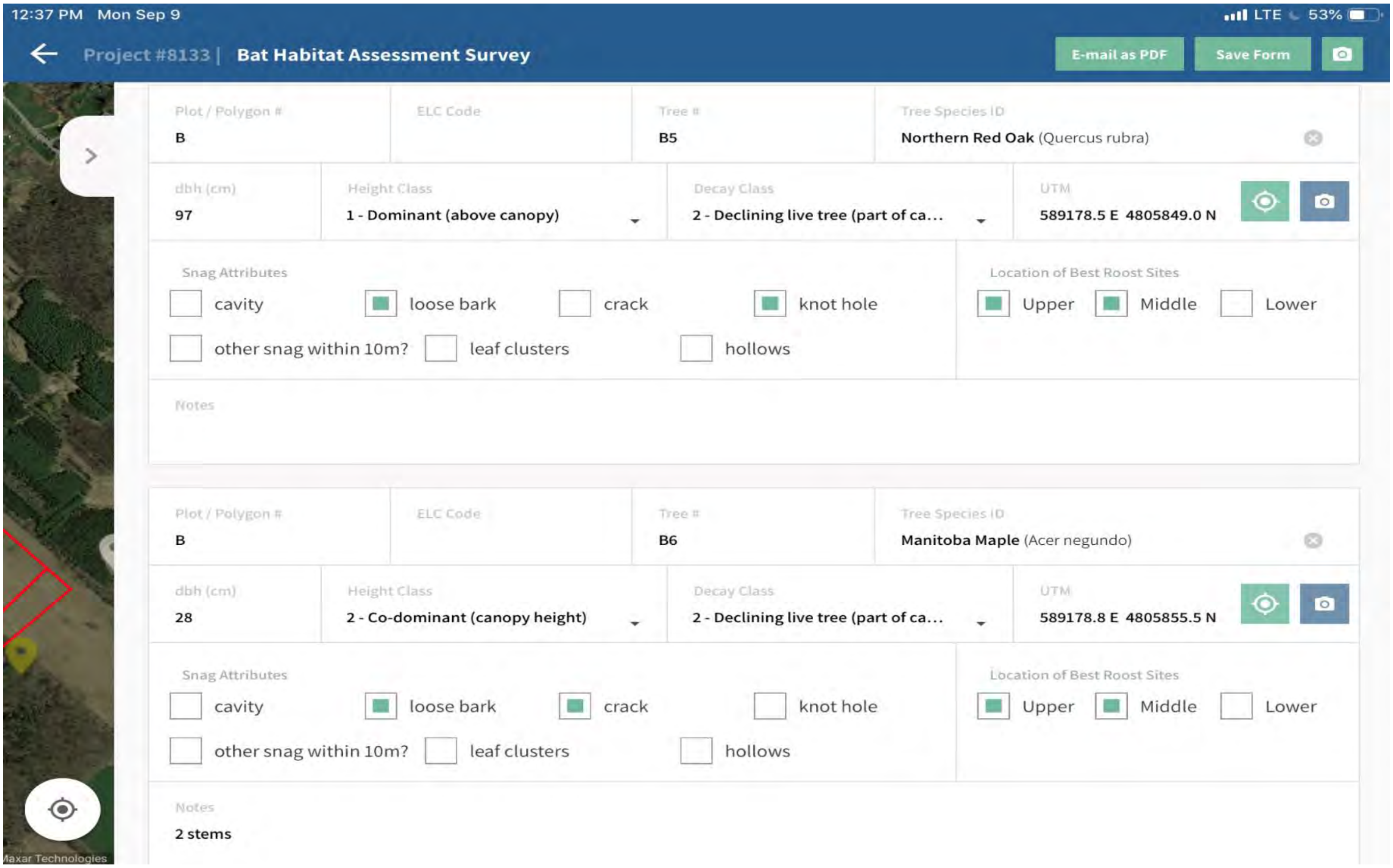
Decay Class
2 - Declining live tree (part of ca…

UTM
589186.2 E 4805846.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



Bat Habitat Assessment Survey

Plot / Polygon #: B
ELC Code:
Tree #: B5
Tree Species ID: **Northern Red Oak** (Quercus rubra)

dbh (cm): 97
Height Class: 1 - Dominant (above canopy)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589178.5 E 4805849.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes

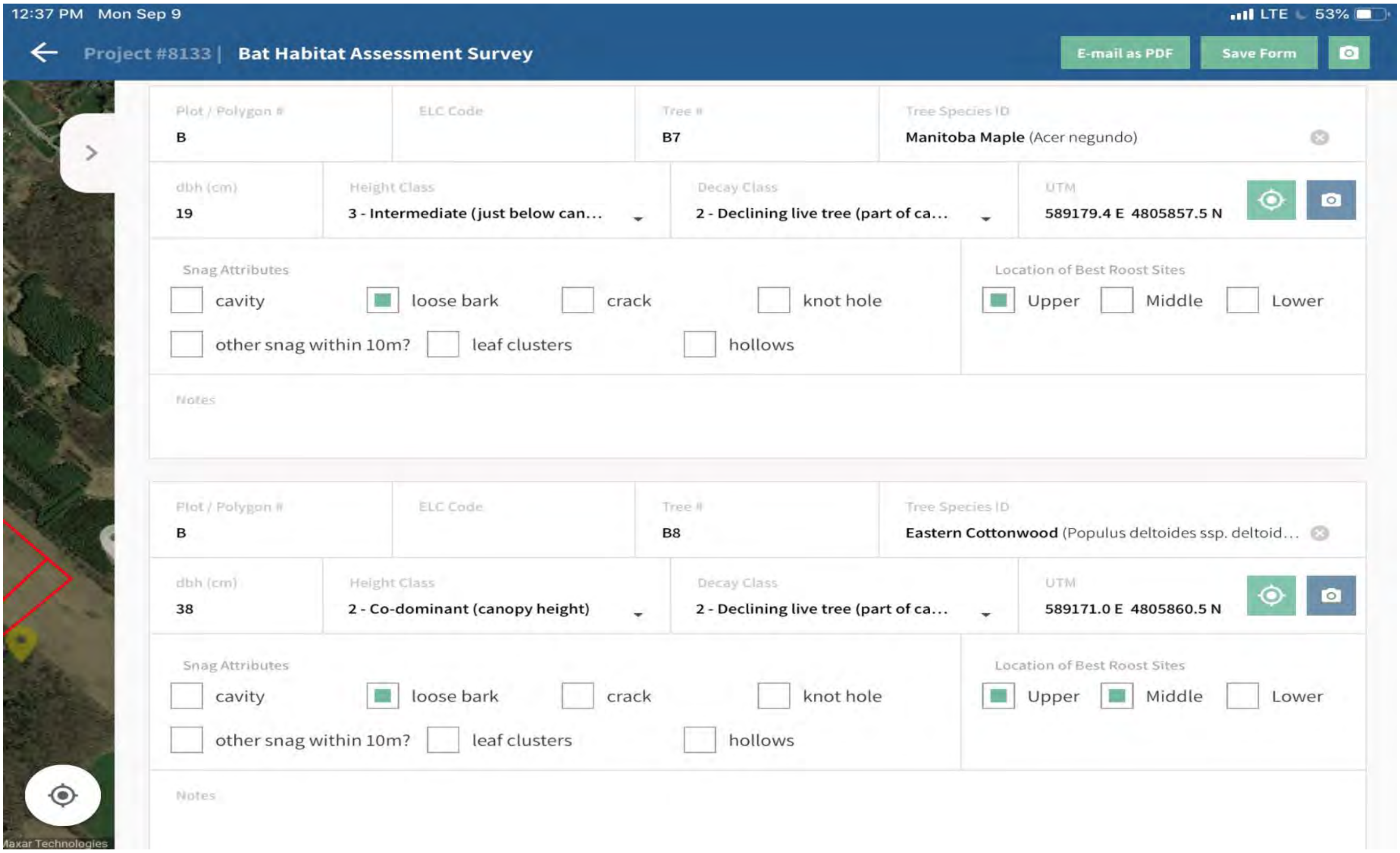
Plot / Polygon #: B
ELC Code:
Tree #: B6
Tree Species ID: **Manitoba Maple** (Acer negundo)

dbh (cm): 28
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589178.8 E 4805855.5 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes
2 stems



Bat Habitat Assessment Survey

Plot / Polygon #: B
ELC Code:
Tree #: B7
Tree Species ID: **Manitoba Maple** (Acer negundo)

dbh (cm): 19
Height Class: 3 - Intermediate (just below can...
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589179.4 E 4805857.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes

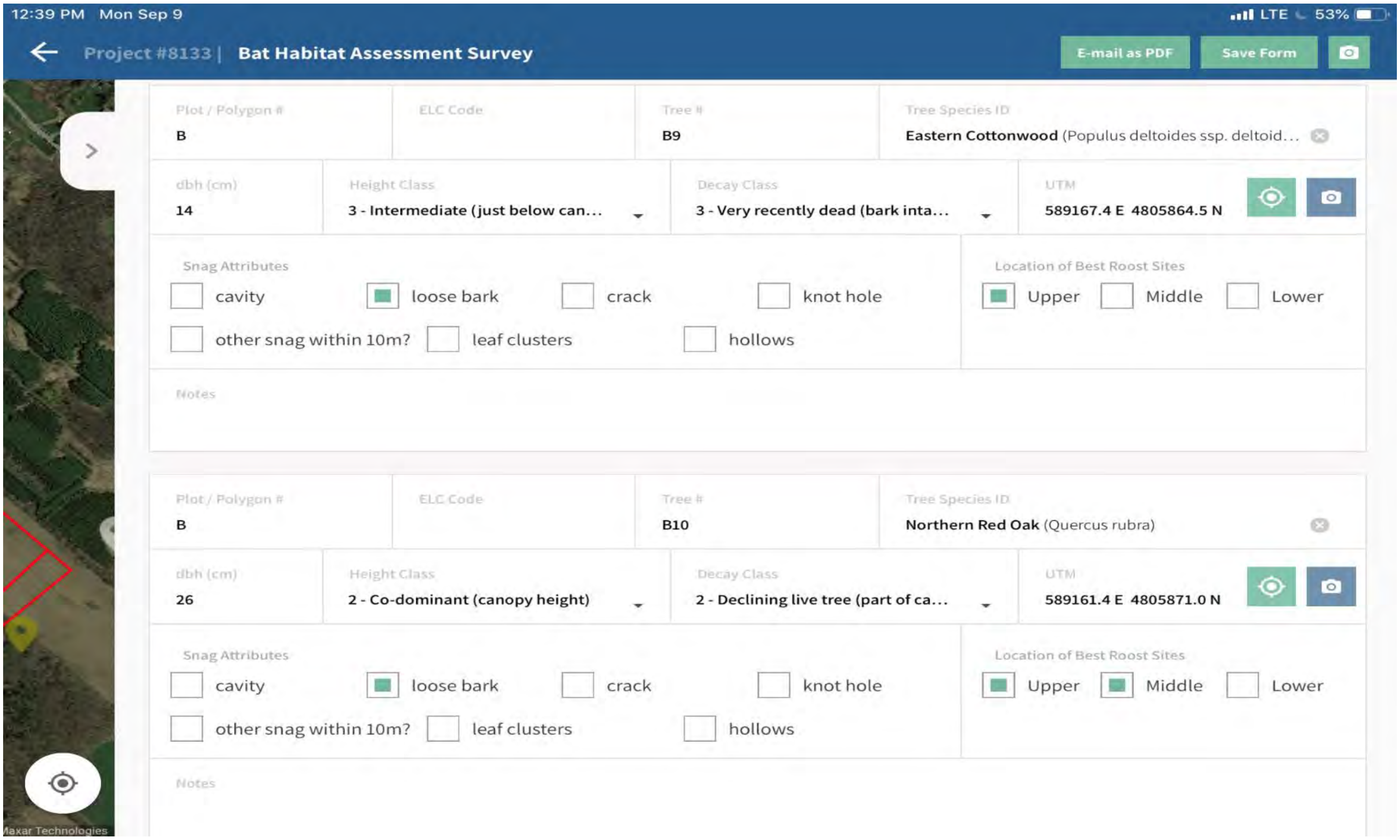
Plot / Polygon #: B
ELC Code:
Tree #: B8
Tree Species ID: **Eastern Cottonwood** (Populus deltoides ssp. deltoid...

dbh (cm): 38
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589171.0 E 4805860.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
B		B9	**Eastern Cottonwood** (Populus deltoides ssp. deltoid...
dbh (cm)	Height Class	Decay Class	UTM
14	3 - Intermediate (just below can...	3 - Very recently dead (bark inta...	589167.4 E 4805864.5 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
B		B10	**Northern Red Oak** (Quercus rubra)
dbh (cm)	Height Class	Decay Class	UTM
26	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589161.4 E 4805871.0 N

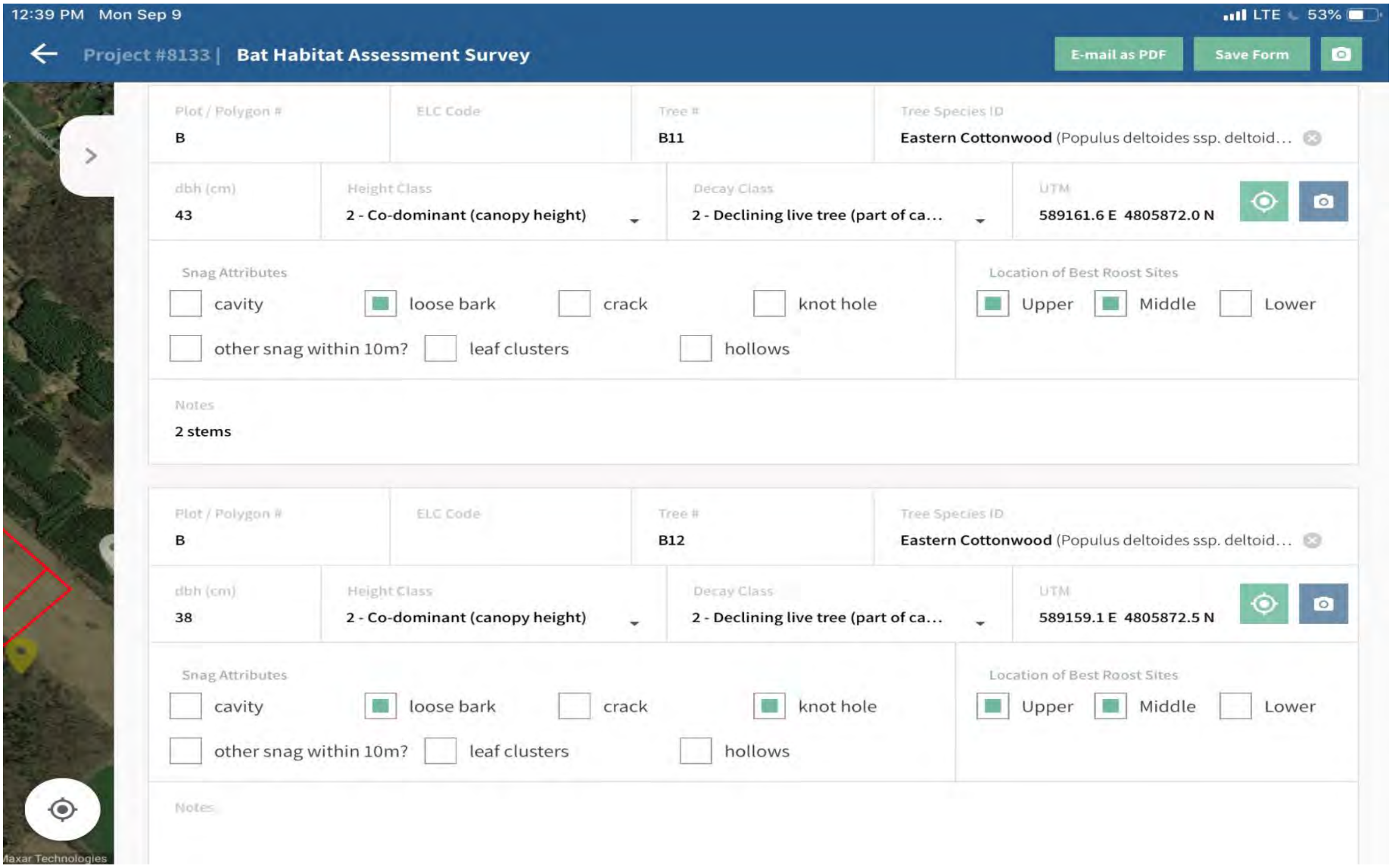
Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
B		B11	**Eastern Cottonwood** (Populus deltoides ssp. deltoid...
dbh (cm)	Height Class	Decay Class	UTM
43	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589161.6 E 4805872.0 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes

2 stems

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
B		B12	**Eastern Cottonwood** (Populus deltoides ssp. deltoid...
dbh (cm)	Height Class	Decay Class	UTM
38	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589159.1 E 4805872.5 N

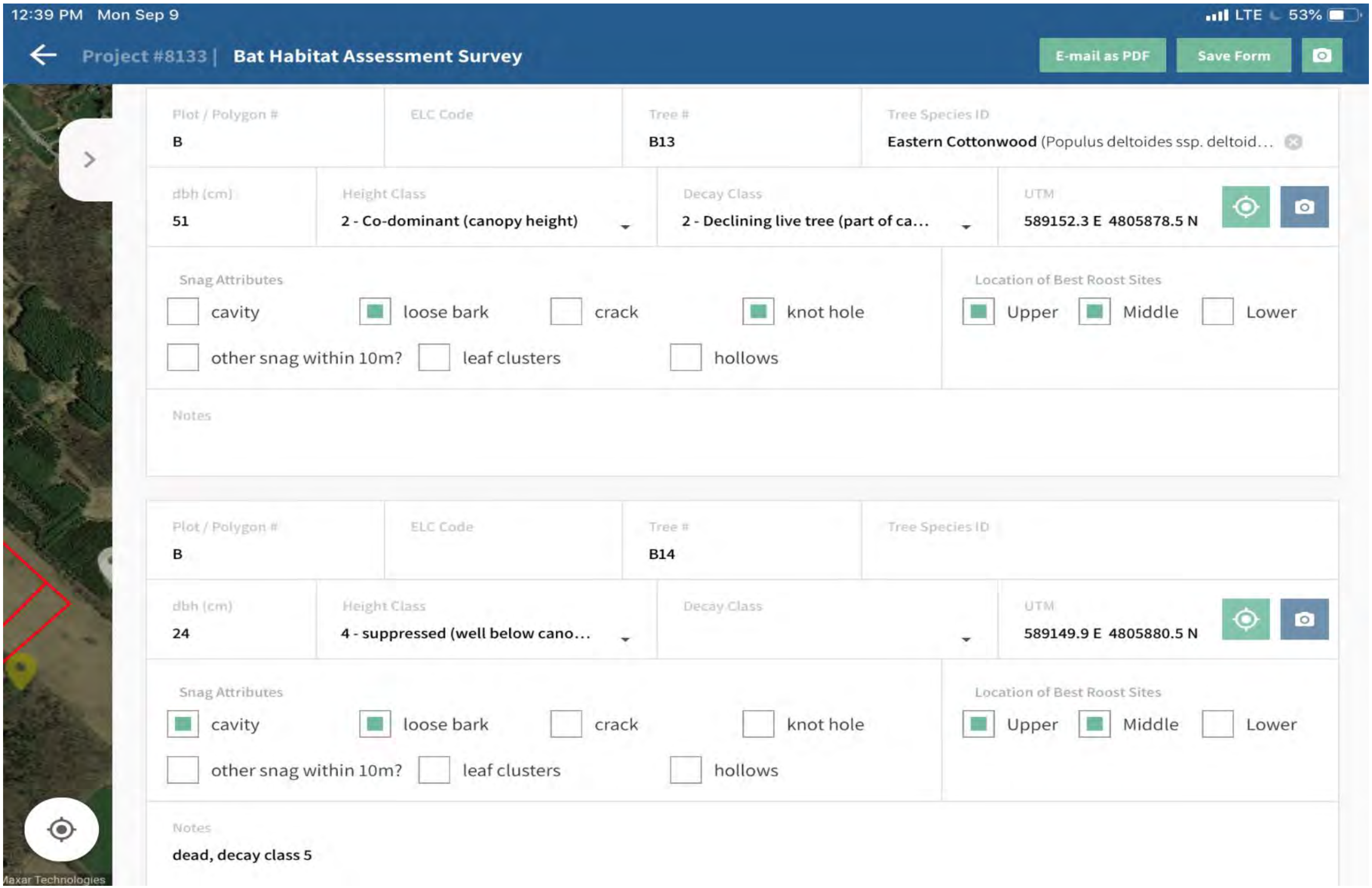
Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: B
ELC Code:
Tree #: B13
Tree Species ID: **Eastern Cottonwood** (Populus deltoides ssp. deltoid...

dbh (cm): 51
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589152.3 E 4805878.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes:

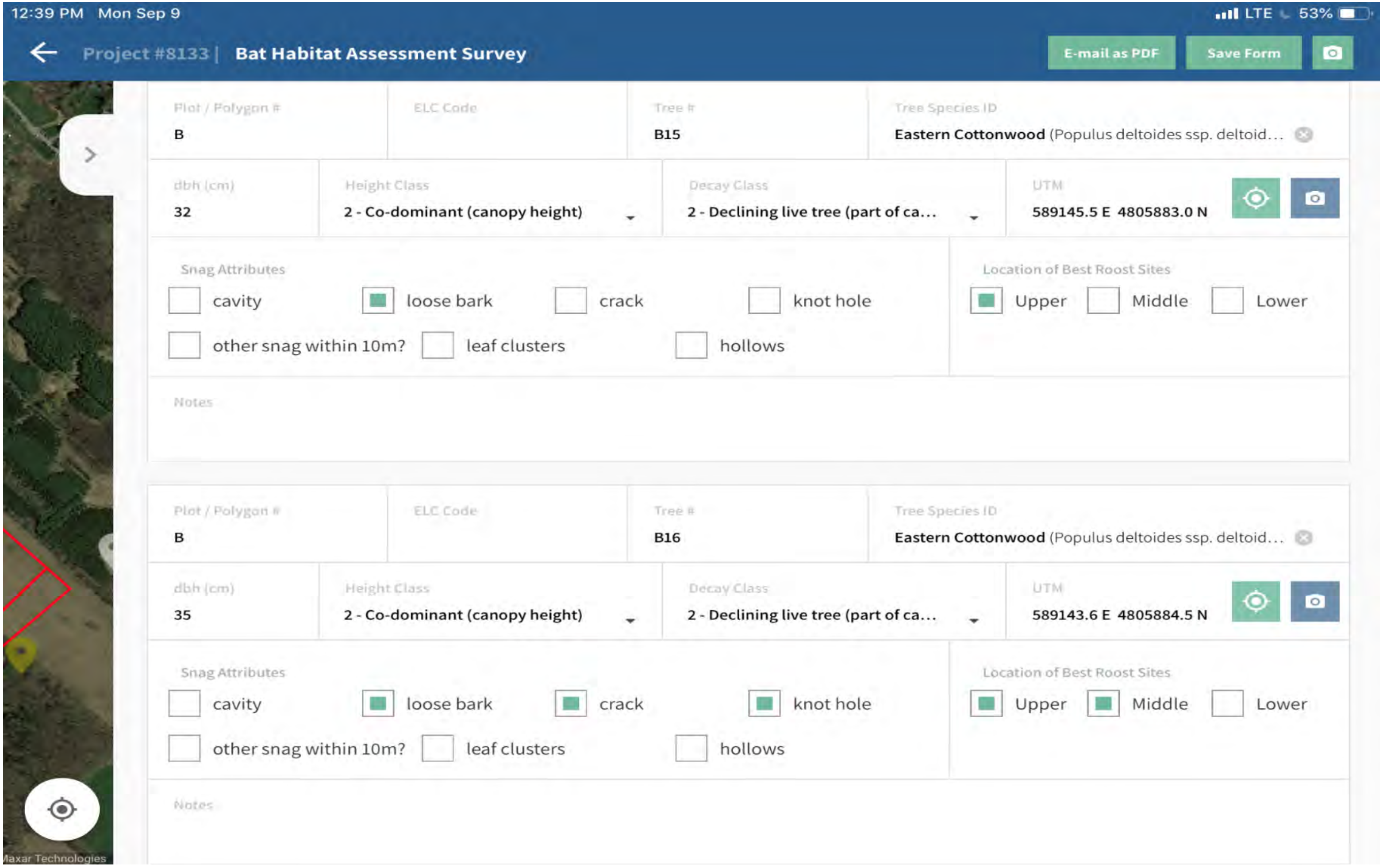
Plot / Polygon #: B
ELC Code:
Tree #: B14
Tree Species ID:

dbh (cm): 24
Height Class: 4 - suppressed (well below cano...
Decay Class:
UTM: 589149.9 E 4805880.5 N

Snag Attributes
☑ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes: dead, decay class 5



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: B
ELC Code:
Tree #: B15
Tree Species ID: **Eastern Cottonwood** (Populus deltoides ssp. deltoid...

dbh (cm): 32
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589145.5 E 4805883.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes:

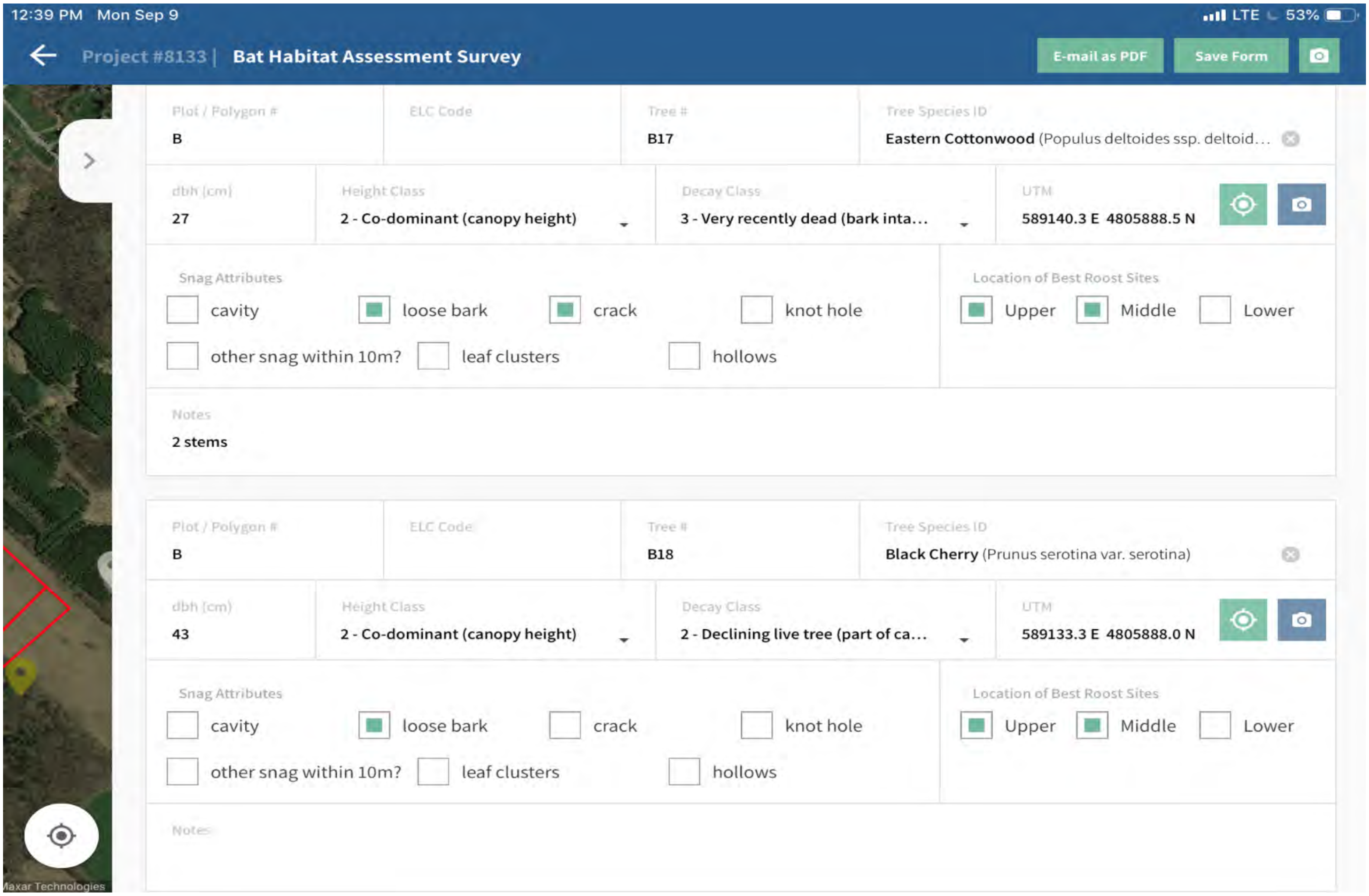
Plot / Polygon #: B
ELC Code:
Tree #: B16
Tree Species ID: **Eastern Cottonwood** (Populus deltoides ssp. deltoid...

dbh (cm): 35
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589143.6 E 4805884.5 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes:



Bat Habitat Assessment Survey

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
B		B17	**Eastern Cottonwood** (Populus deltoides ssp. deltoid…

dbh (cm)	Height Class	Decay Class	UTM
27	2 - Co-dominant (canopy height)	3 - Very recently dead (bark inta…	589140.3 E 4805888.5 N

Snag Attributes

☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes

2 stems

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
B		B18	**Black Cherry** (Prunus serotina var. serotina)

dbh (cm)	Height Class	Decay Class	UTM
43	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca…	589133.3 E 4805888.0 N

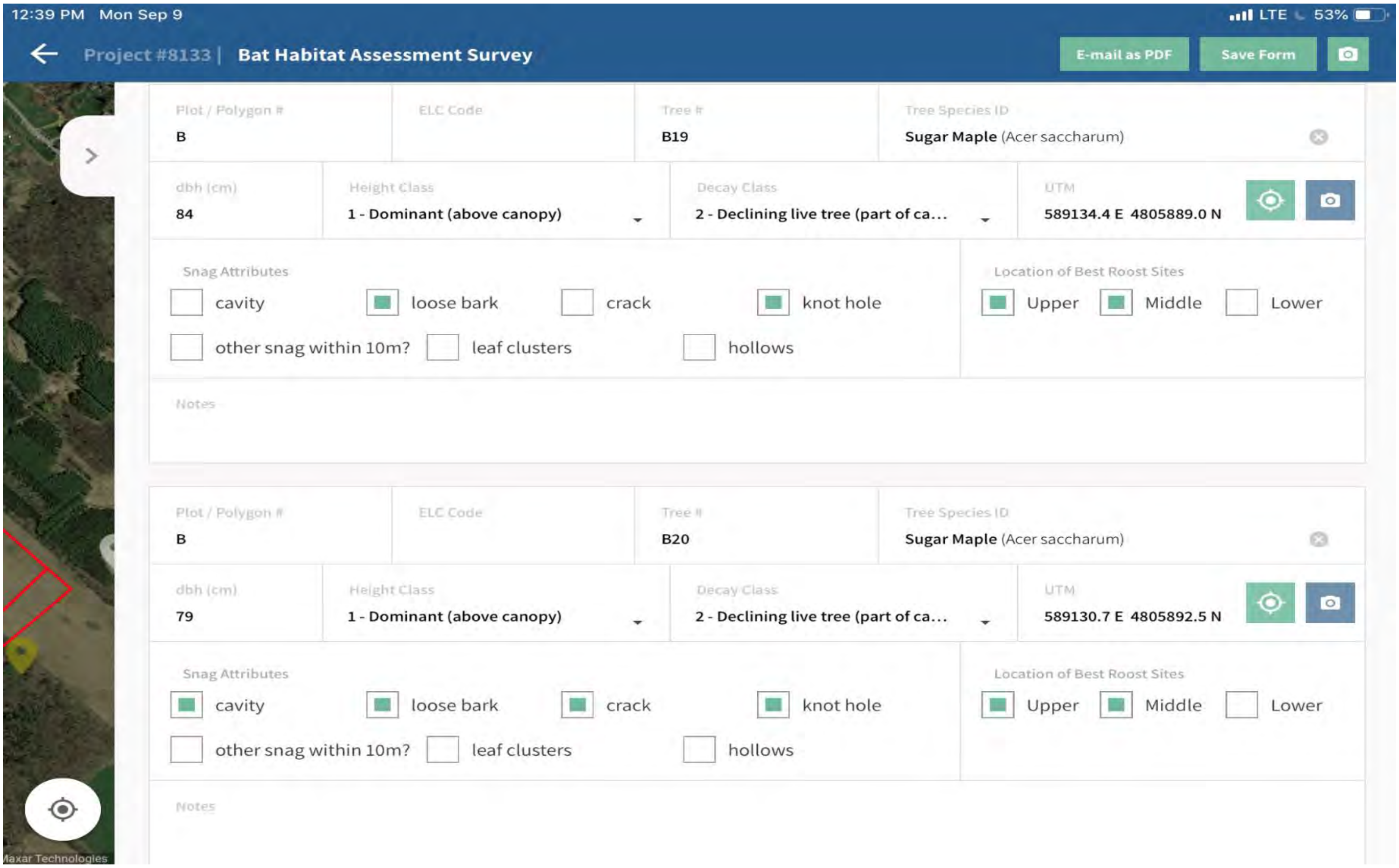
Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes



Bat Habitat Assessment Survey

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
B		B19	**Sugar Maple** (Acer saccharum)

dbh (cm)	Height Class	Decay Class	UTM
84	1 - Dominant (above canopy)	2 - Declining live tree (part of ca…	589134.4 E 4805889.0 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
B		B20	**Sugar Maple** (Acer saccharum)

dbh (cm)	Height Class	Decay Class	UTM
79	1 - Dominant (above canopy)	2 - Declining live tree (part of ca…	589130.7 E 4805892.5 N

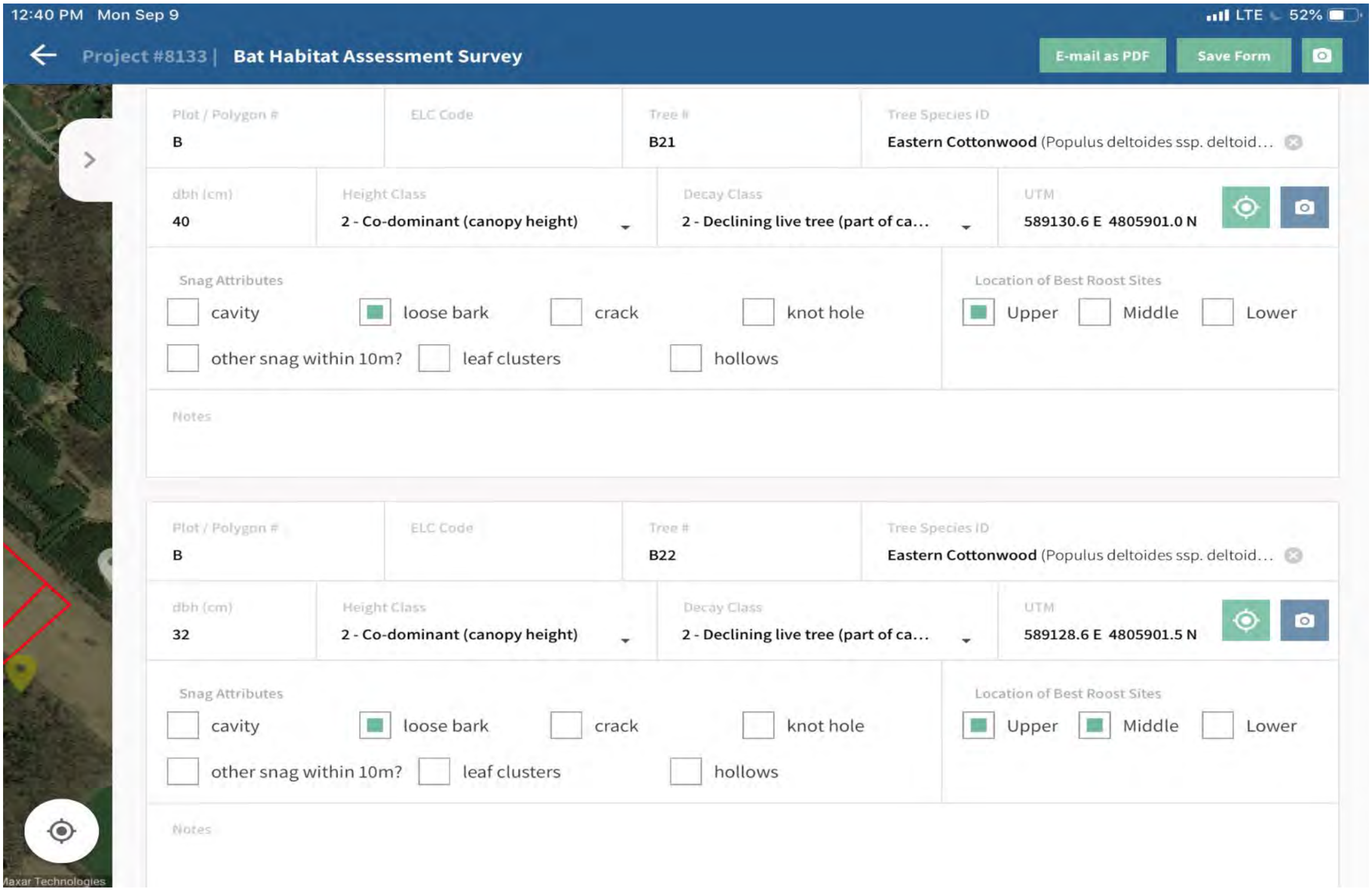
Snag Attributes

☑ cavity ☑ loose bark ☑ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes



Bat Habitat Assessment Survey

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
B		B21	**Eastern Cottonwood** (Populus deltoides ssp. deltoid…

dbh (cm)	Height Class	Decay Class	UTM
40	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca…	589130.6 E 4805901.0 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
B		B22	**Eastern Cottonwood** (Populus deltoides ssp. deltoid…

dbh (cm)	Height Class	Decay Class	UTM
32	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca…	589128.6 E 4805901.5 N

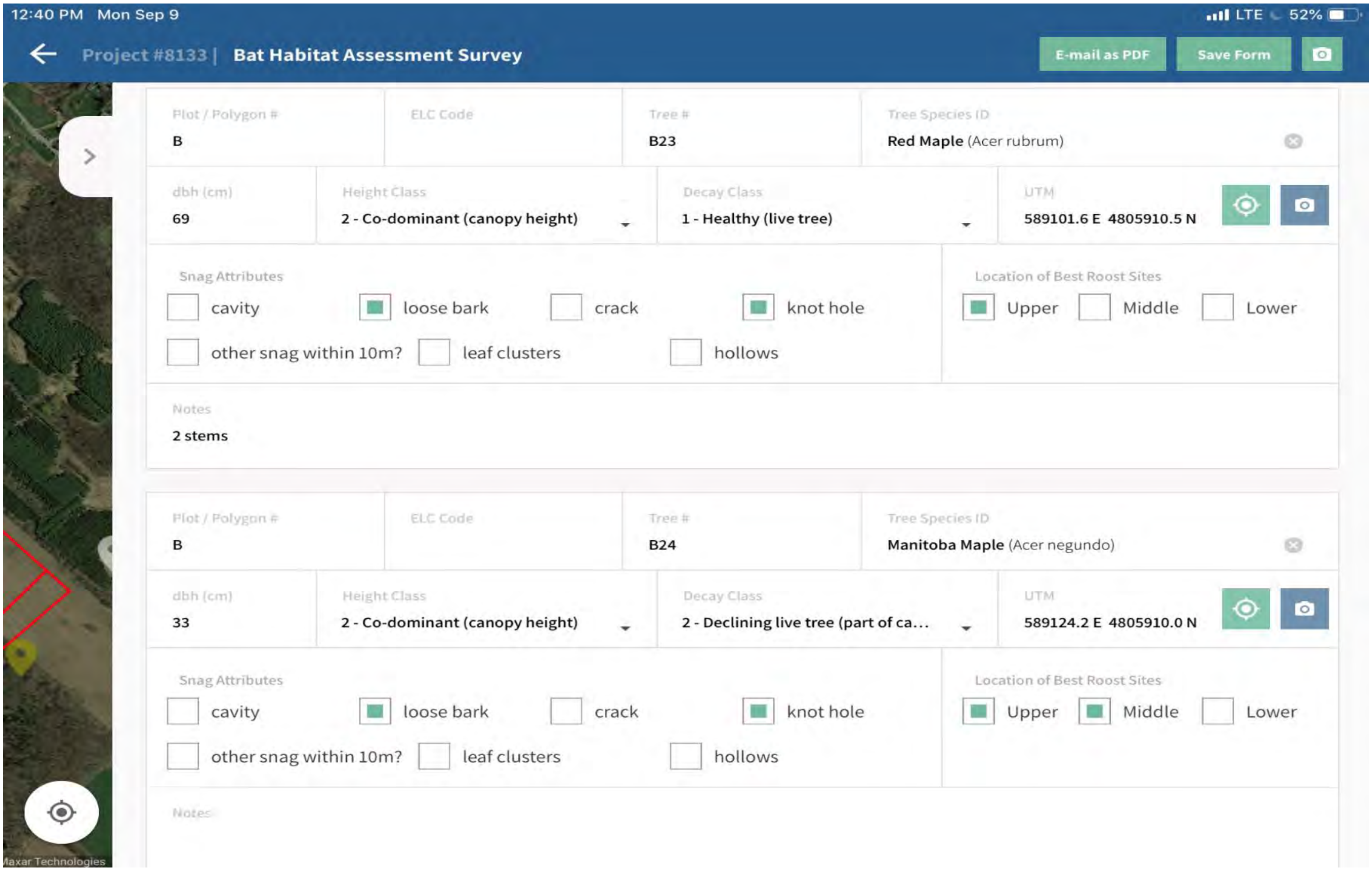
Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes



Bat Habitat Assessment Survey

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
B		B23	**Red Maple** (Acer rubrum)

dbh (cm)	Height Class	Decay Class	UTM
69	2 - Co-dominant (canopy height)	1 - Healthy (live tree)	589101.6 E 4805910.5 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes

2 stems

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
B		B24	**Manitoba Maple** (Acer negundo)

dbh (cm)	Height Class	Decay Class	UTM
33	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca…	589124.2 E 4805910.0 N

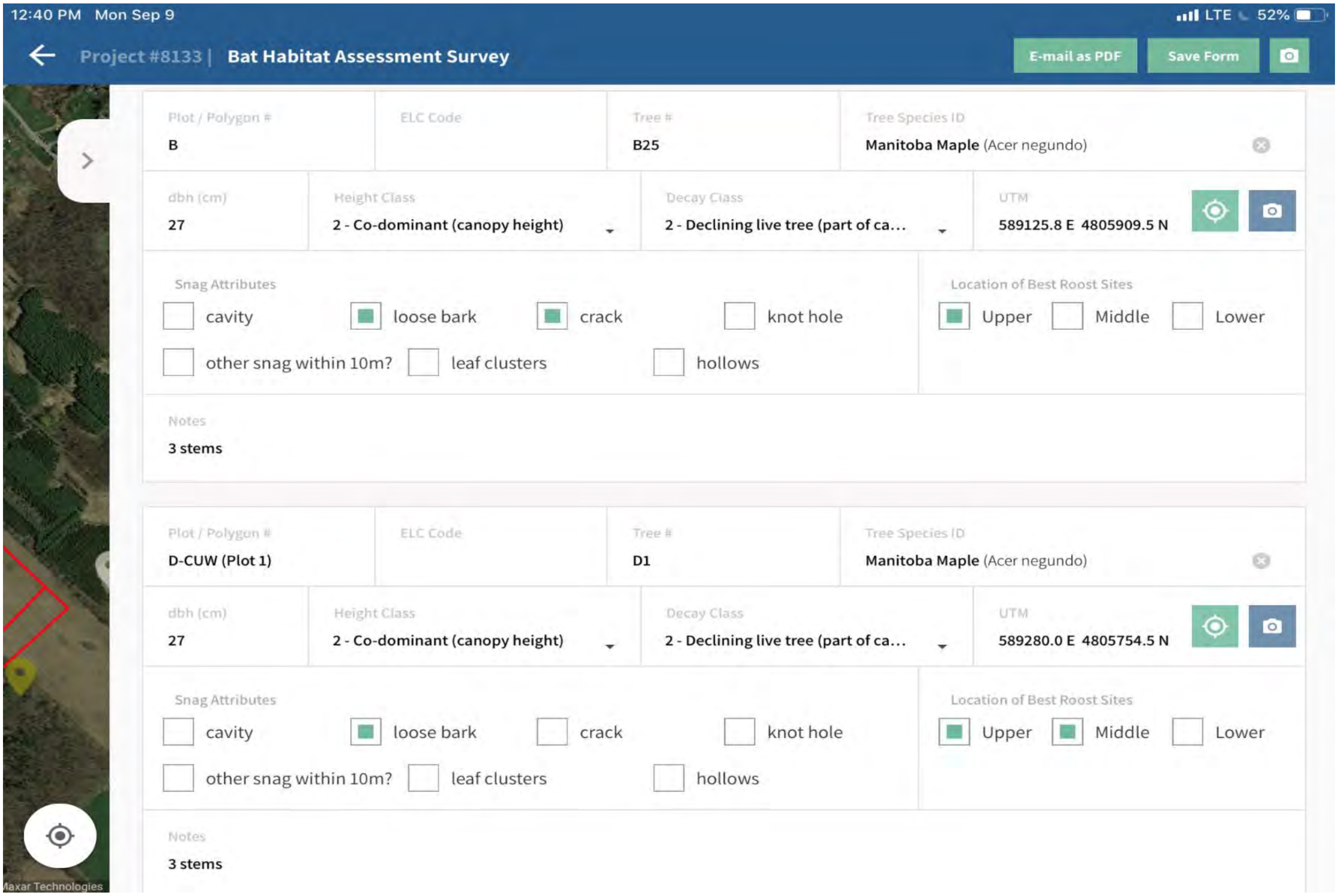
Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | Bat Habitat Assessment Survey

Plot / Polygon #: B
ELC Code:
Tree #: B25
Tree Species ID: **Manitoba Maple** (Acer negundo)
dbh (cm): 27
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589125.8 E 4805909.5 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

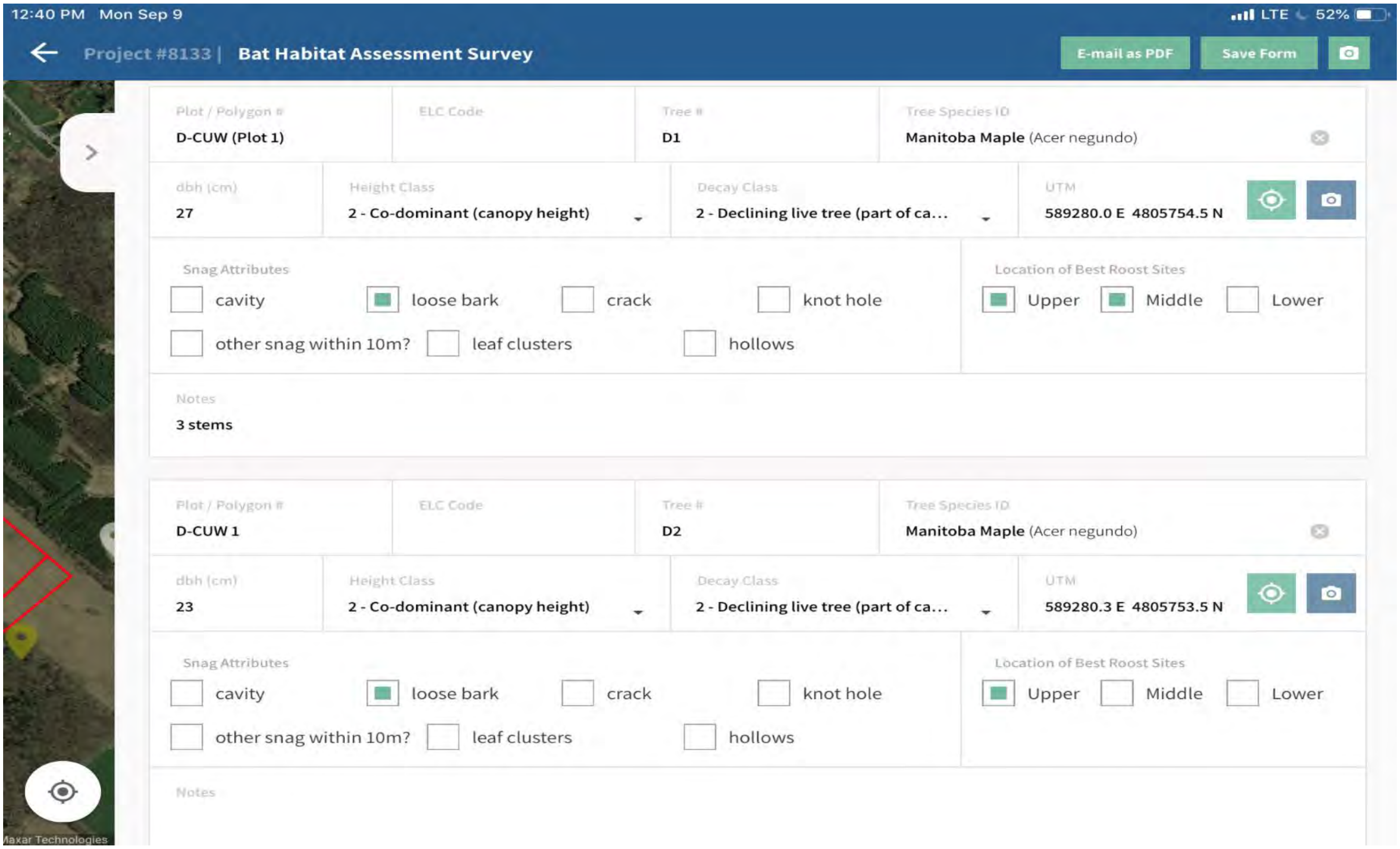
Notes: 3 stems

Plot / Polygon #: D-CUW (Plot 1)
ELC Code:
Tree #: D1
Tree Species ID: **Manitoba Maple** (Acer negundo)
dbh (cm): 27
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589280.0 E 4805754.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes: 3 stems



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon # D-CUW (Plot 1)	ELC Code	Tree # D1	Tree Species ID **Manitoba Maple** (Acer negundo)
dbh (cm) 27	Height Class 2 - Co-dominant (canopy height)	Decay Class 2 - Declining live tree (part of ca...	UTM 589280.0 E 4805754.5 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes

3 stems

Plot / Polygon # D-CUW 1	ELC Code	Tree # D2	Tree Species ID **Manitoba Maple** (Acer negundo)
dbh (cm) 23	Height Class 2 - Co-dominant (canopy height)	Decay Class 2 - Declining live tree (part of ca...	UTM 589280.3 E 4805753.5 N

Snag Attributes

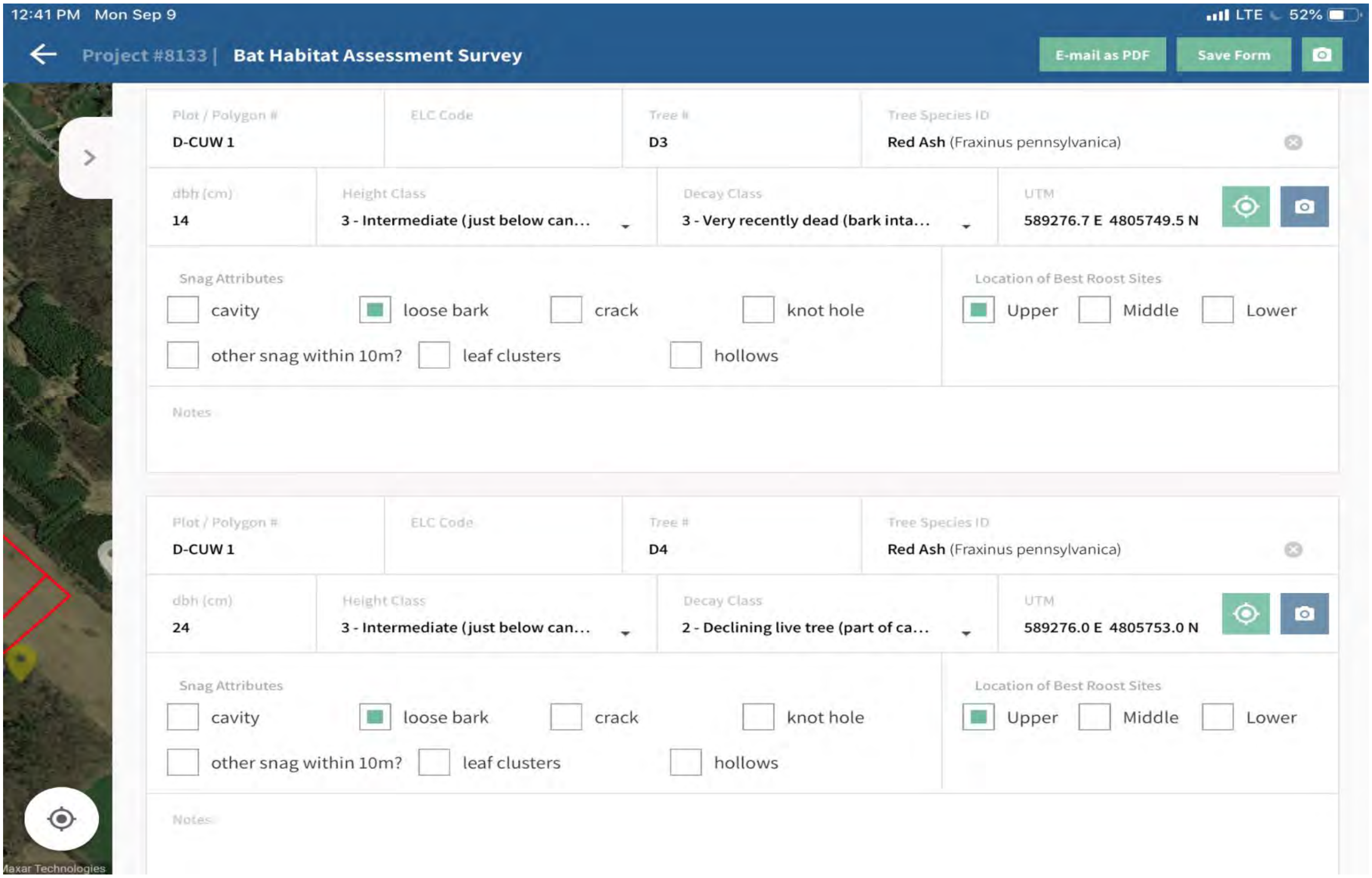
☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon # D-CUW 1	ELC Code	Tree # D3	Tree Species ID **Red Ash** (Fraxinus pennsylvanica)
dbh (cm) 14	Height Class 3 - Intermediate (just below can...	Decay Class 3 - Very recently dead (bark inta...	UTM 589276.7 E 4805749.5 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes

Plot / Polygon # D-CUW 1	ELC Code	Tree # D4	Tree Species ID **Red Ash** (Fraxinus pennsylvanica)
dbh (cm) 24	Height Class 3 - Intermediate (just below can...	Decay Class 2 - Declining live tree (part of ca...	UTM 589276.0 E 4805753.0 N

Snag Attributes

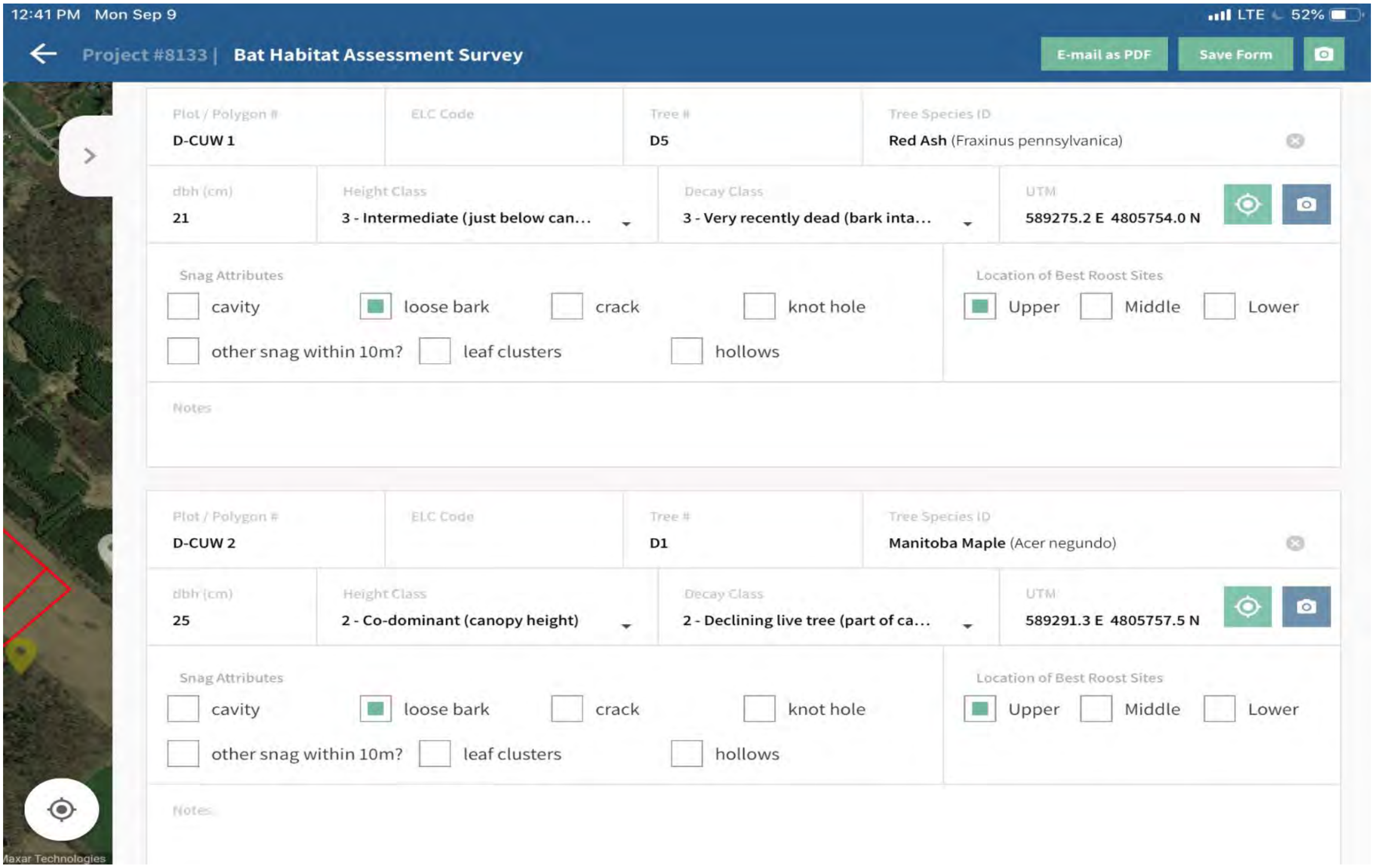
☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes



Bat Habitat Assessment Survey

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-CUW 1		D5	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
21	3 - Intermediate (just below can...	3 - Very recently dead (bark inta...	589275.2 E 4805754.0 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-CUW 2		D1	**Manitoba Maple** (Acer negundo)

dbh (cm)	Height Class	Decay Class	UTM
25	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589291.3 E 4805757.5 N

Snag Attributes

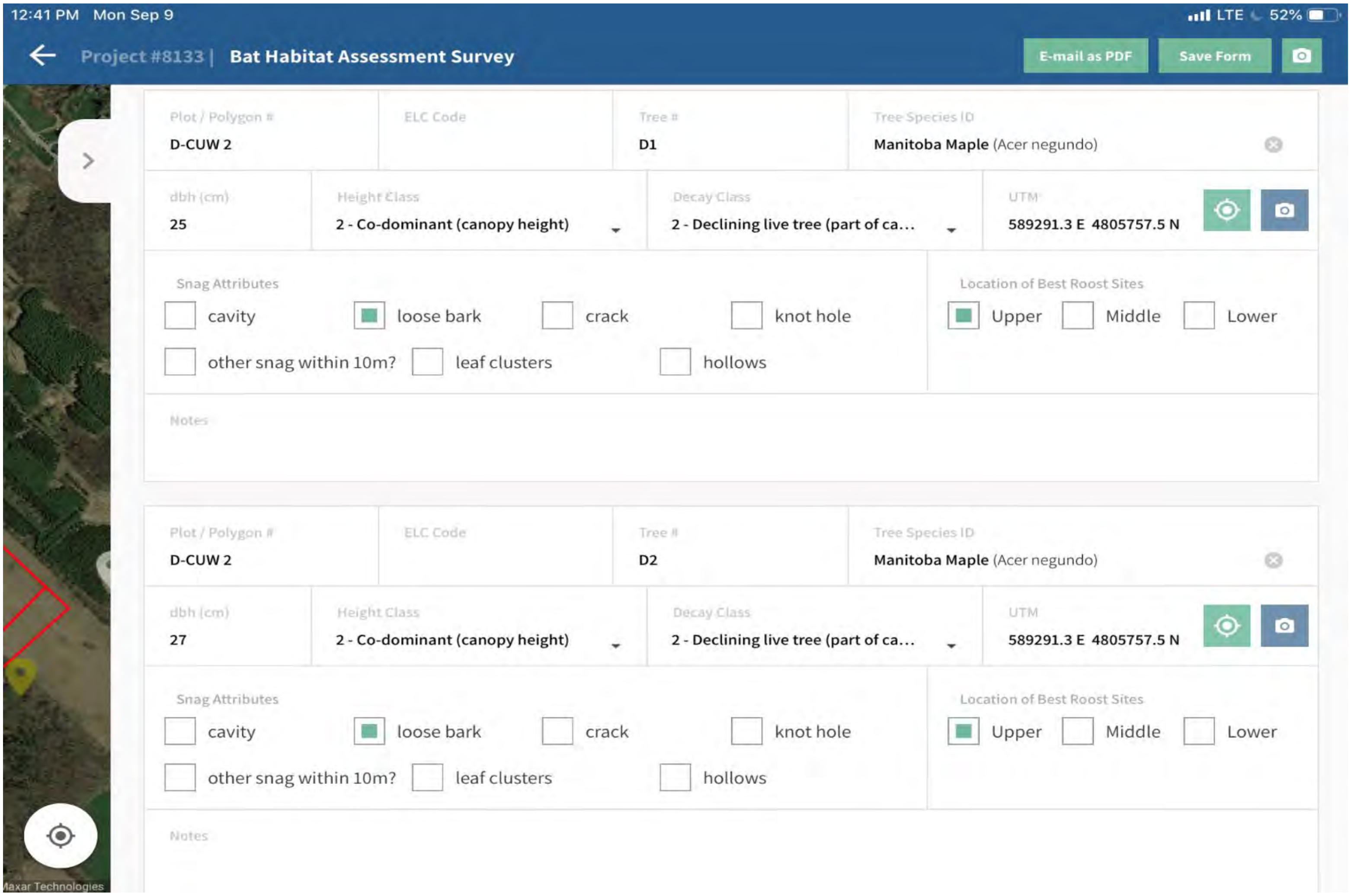
☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes



Bat Habitat Assessment Survey

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-CUW 2		D1	**Manitoba Maple** (Acer negundo)

dbh (cm)	Height Class	Decay Class	UTM
25	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589291.3 E 4805757.5 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-CUW 2		D2	**Manitoba Maple** (Acer negundo)

dbh (cm)	Height Class	Decay Class	UTM
27	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589291.3 E 4805757.5 N

Snag Attributes

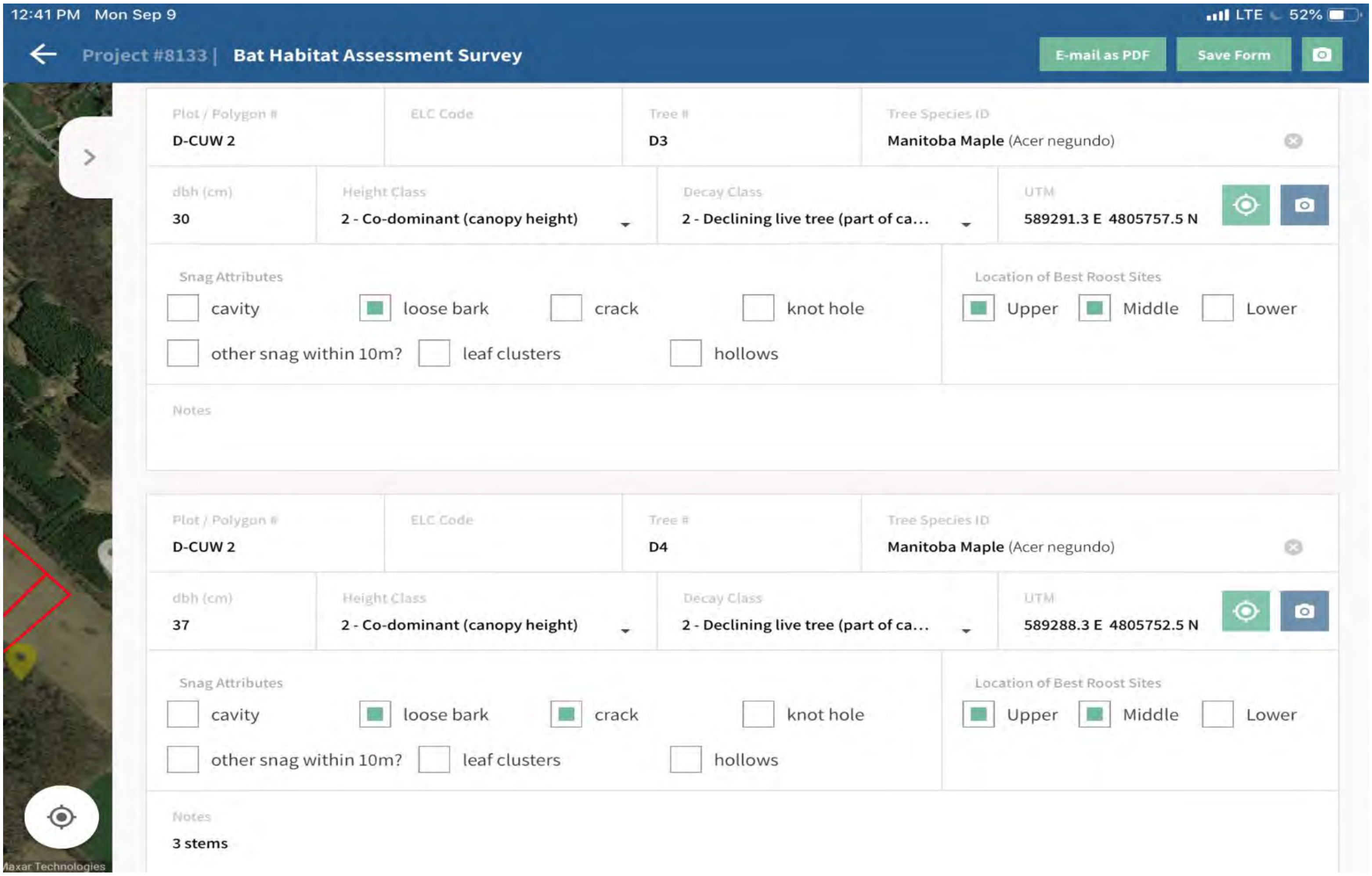
☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes



Bat Habitat Assessment Survey

Plot / Polygon #: D-CUW 2
ELC Code:
Tree #: D3
Tree Species ID: **Manitoba Maple** (Acer negundo)
dbh (cm): 30
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589291.3 E 4805757.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

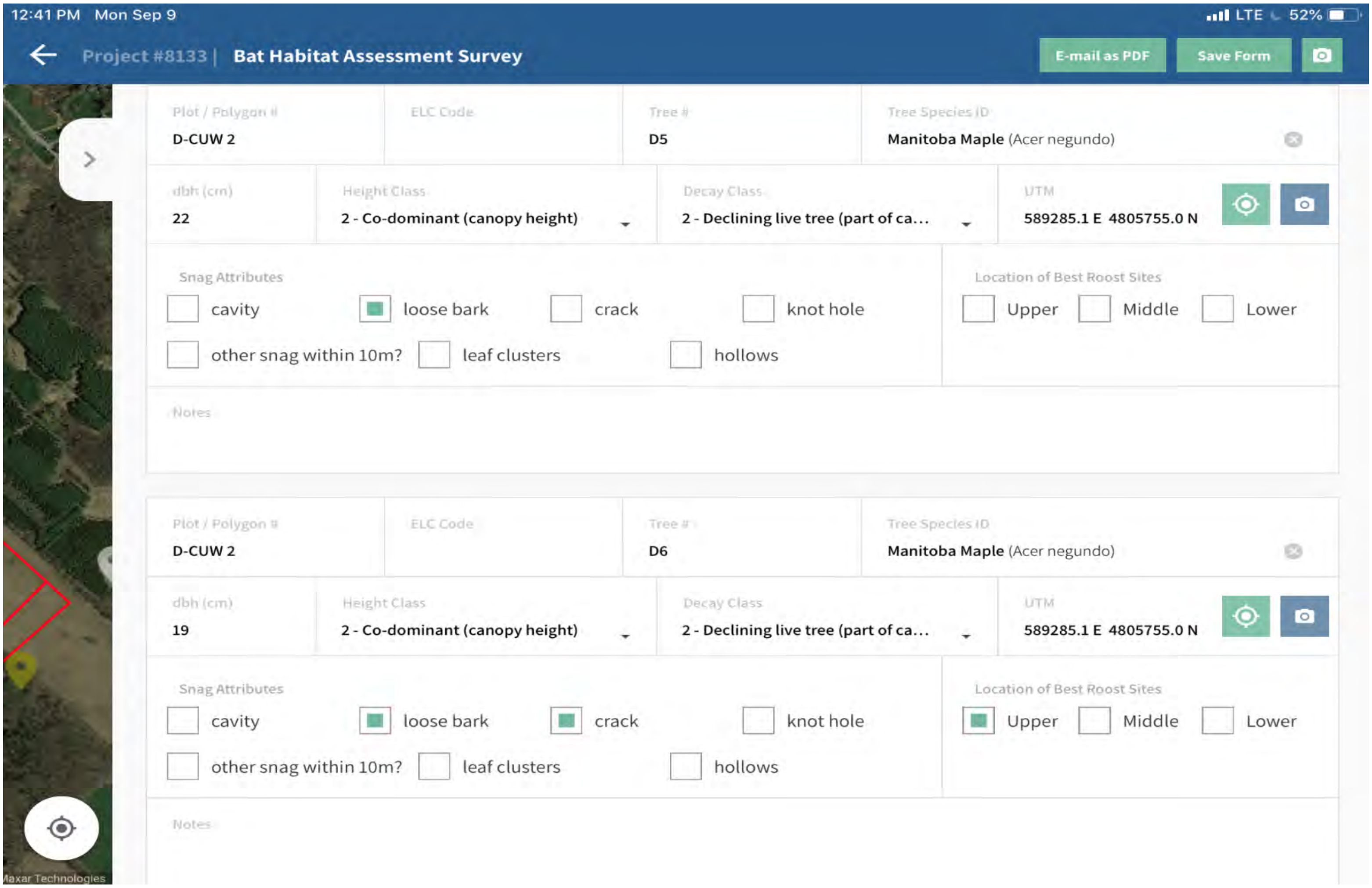
Notes:

Plot / Polygon #: D-CUW 2
ELC Code:
Tree #: D4
Tree Species ID: **Manitoba Maple** (Acer negundo)
dbh (cm): 37
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589288.3 E 4805752.5 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes: 3 stems



Bat Habitat Assessment Survey

Plot / Polygon #: D-CUW 2
ELC Code:
Tree #: D5
Tree Species ID: **Manitoba Maple** (Acer negundo)
dbh (cm): 22
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589285.1 E 4805755.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☐ Middle ☐ Lower

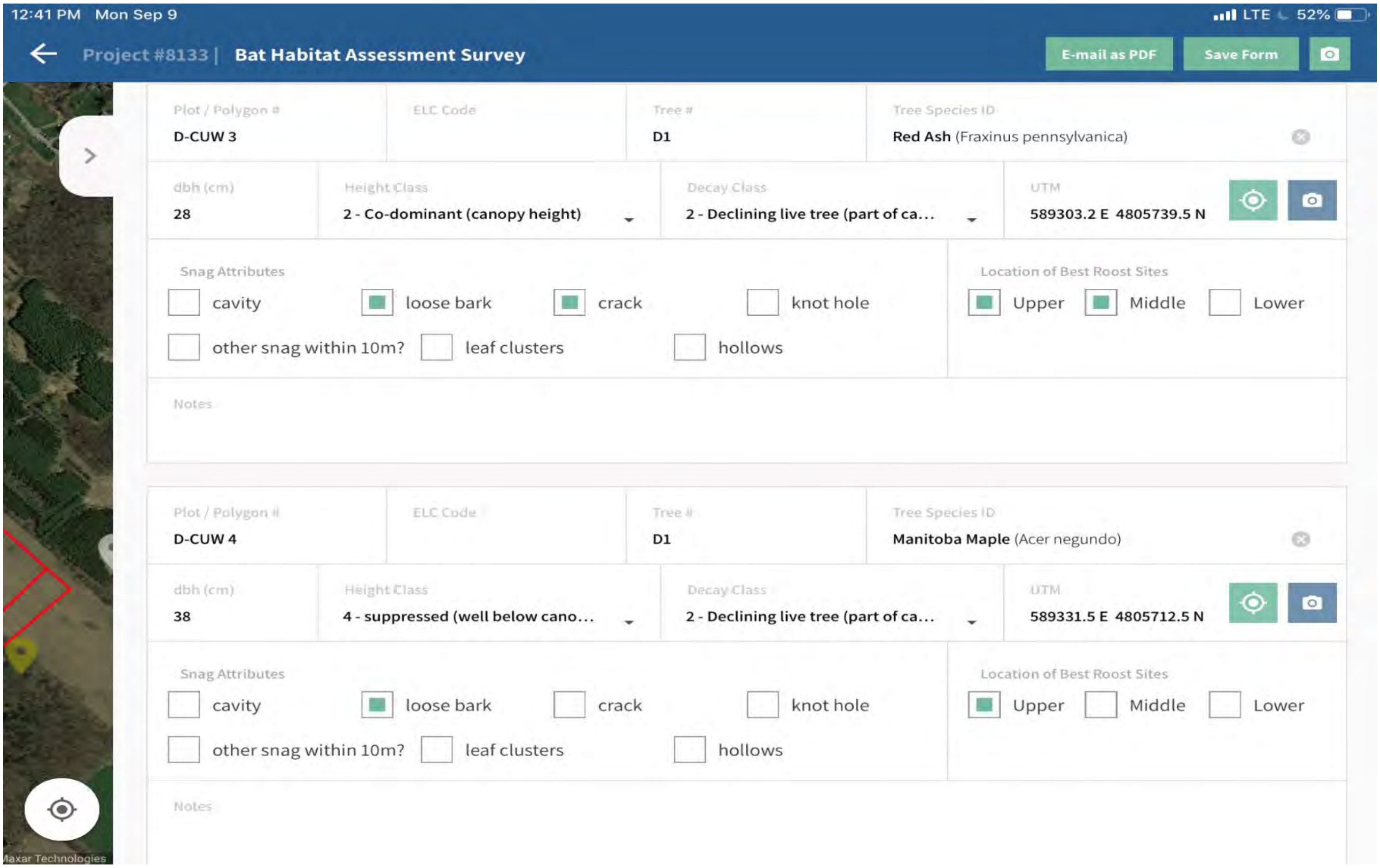
Notes:

Plot / Polygon #: D-CUW 2
ELC Code:
Tree #: D6
Tree Species ID: **Manitoba Maple** (Acer negundo)
dbh (cm): 19
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589285.1 E 4805755.0 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes:



Bat Habitat Assessment Survey

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-CUW 3		D1	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
28	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca…	589303.2 E 4805739.5 N

Snag Attributes

☐ cavity ☑ loose bark ☑ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-CUW 4		D1	**Manitoba Maple** (Acer negundo)

dbh (cm)	Height Class	Decay Class	UTM
38	4 - suppressed (well below cano…	2 - Declining live tree (part of ca…	589331.5 E 4805712.5 N

Snag Attributes

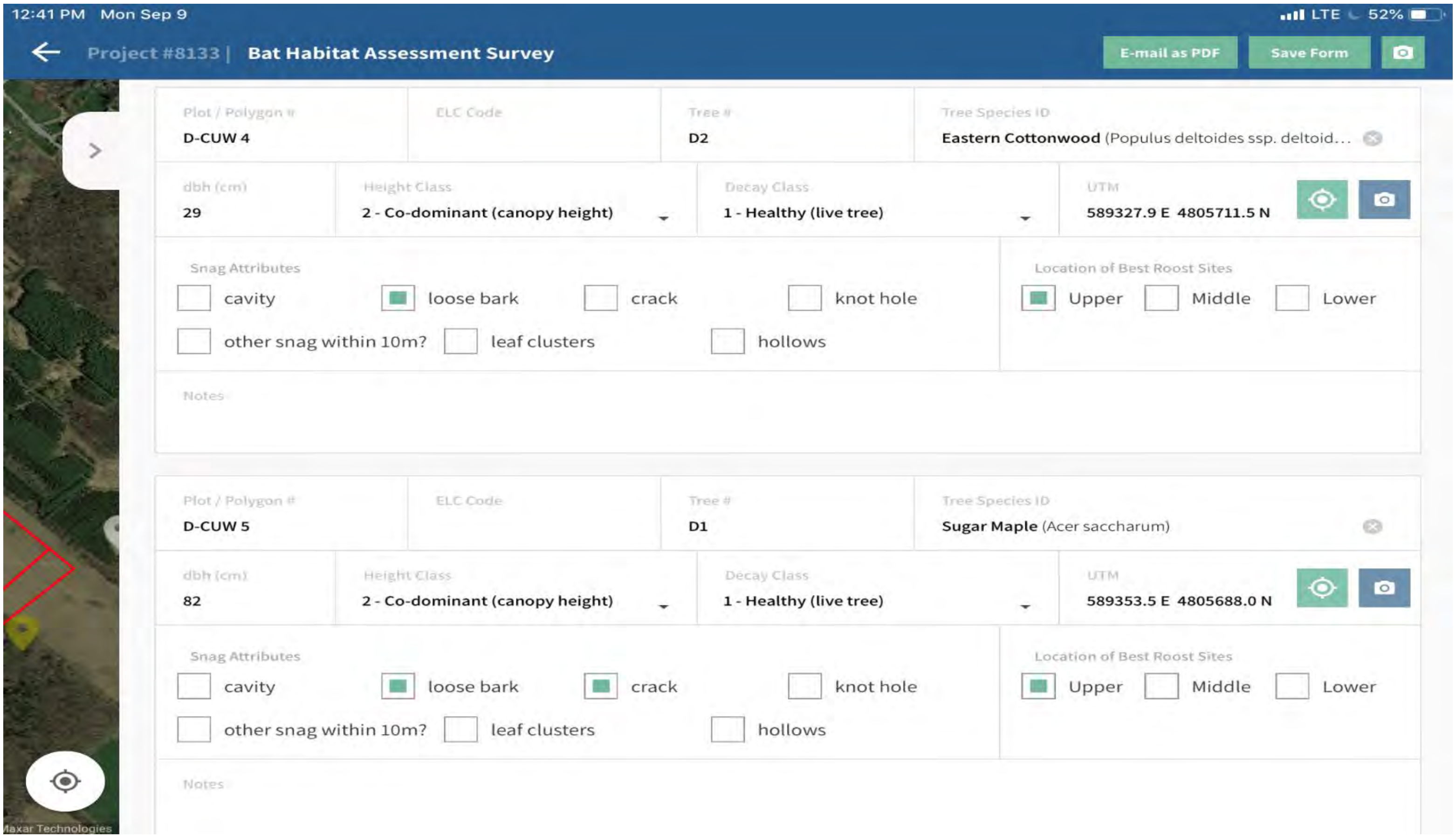
☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes



Bat Habitat Assessment Survey

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-CUW 4		D2	**Eastern Cottonwood** (Populus deltoides ssp. deltoid…

dbh (cm)	Height Class	Decay Class	UTM
29	2 - Co-dominant (canopy height)	1 - Healthy (live tree)	589327.9 E 4805711.5 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-CUW 5		D1	**Sugar Maple** (Acer saccharum)

dbh (cm)	Height Class	Decay Class	UTM
82	2 - Co-dominant (canopy height)	1 - Healthy (live tree)	589353.5 E 4805688.0 N

Snag Attributes

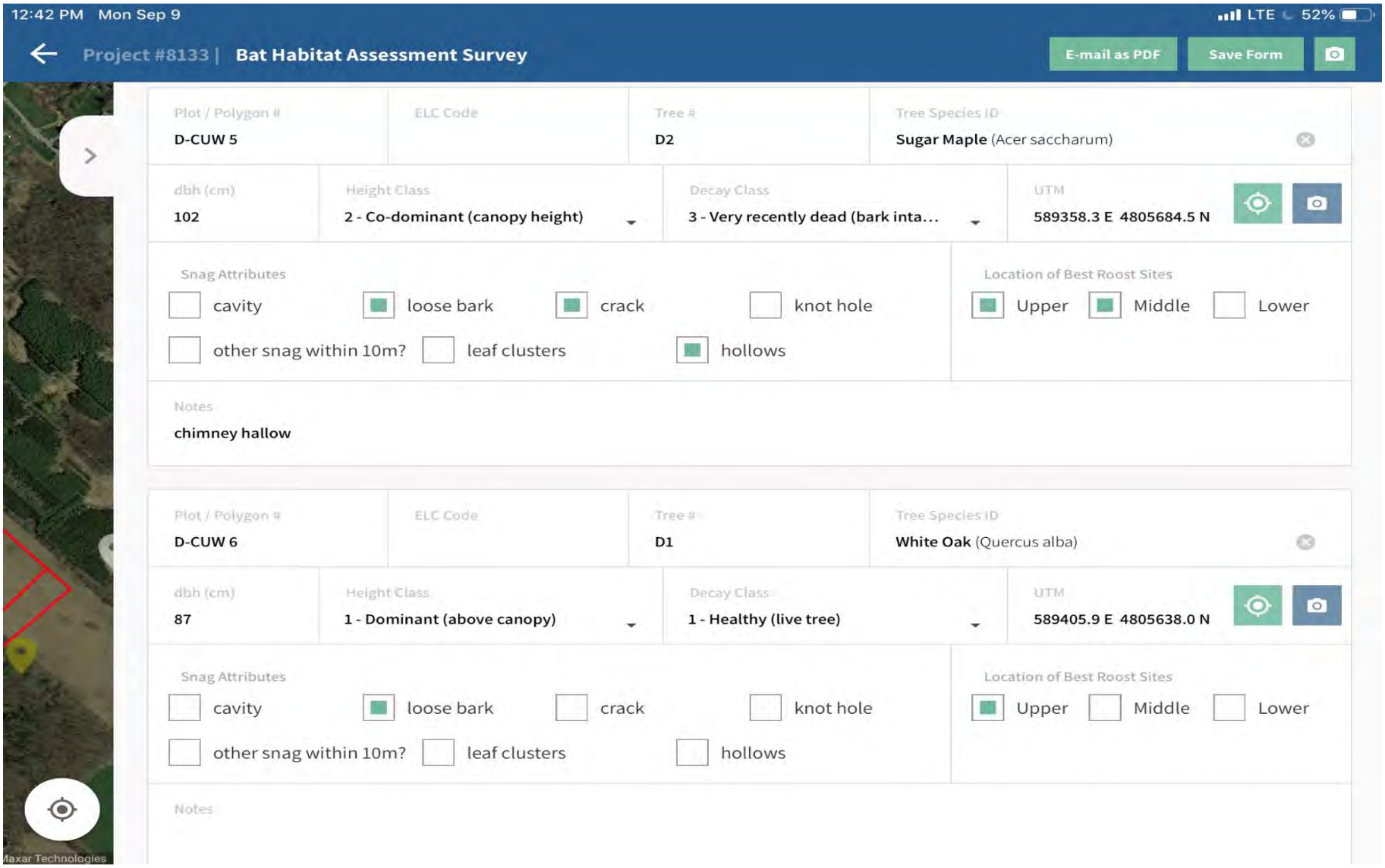
☐ cavity ☑ loose bark ☑ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes



Bat Habitat Assessment Survey

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-CUW 5		D2	**Sugar Maple** (Acer saccharum)
dbh (cm)	Height Class	Decay Class	UTM
102	2 - Co-dominant (canopy height)	3 - Very recently dead (bark inta...	589358.3 E 4805684.5 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☑ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

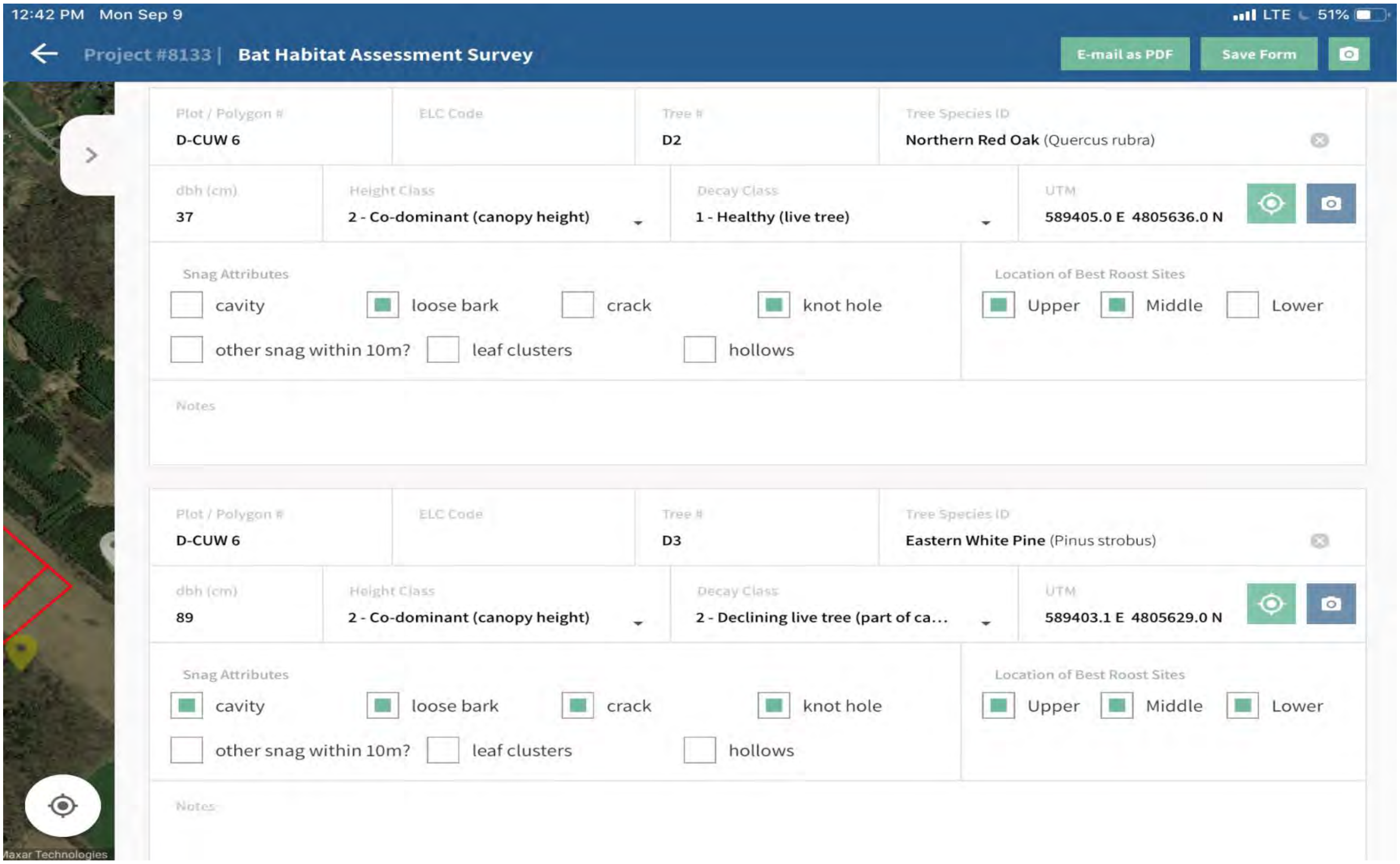
Notes
chimney hallow

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-CUW 6		D1	**White Oak** (Quercus alba)
dbh (cm)	Height Class	Decay Class	UTM
87	1 - Dominant (above canopy)	1 - Healthy (live tree)	589405.9 E 4805638.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



Bat Habitat Assessment Survey

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-CUW 6		D2	**Northern Red Oak** (Quercus rubra)
dbh (cm)	Height Class	Decay Class	UTM
37	2 - Co-dominant (canopy height)	1 - Healthy (live tree)	589405.0 E 4805636.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

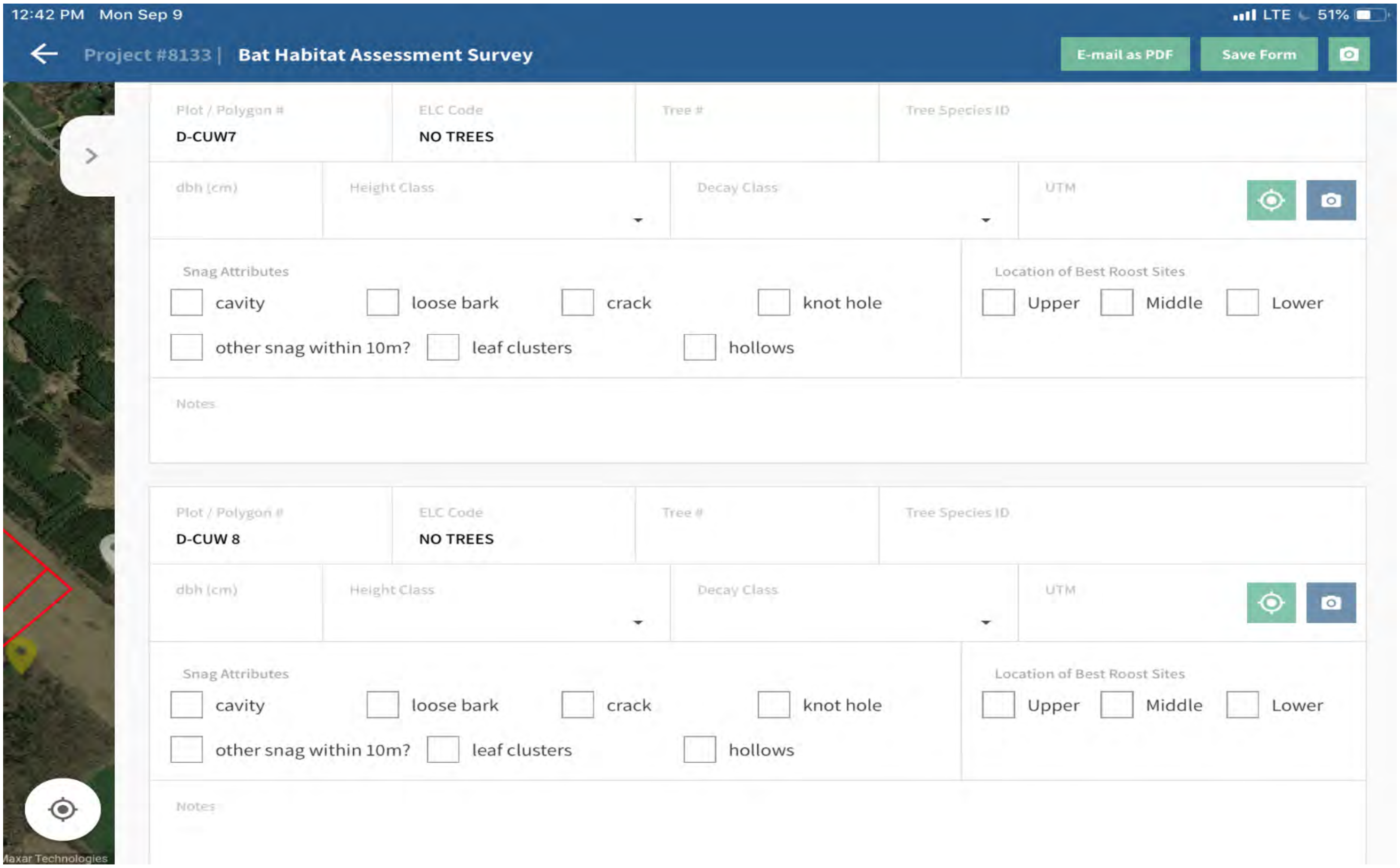
Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-CUW 6		D3	**Eastern White Pine** (Pinus strobus)
dbh (cm)	Height Class	Decay Class	UTM
89	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589403.1 E 4805629.0 N

Snag Attributes
☑ cavity ☑ loose bark ☑ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☑ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: D-CUW7
ELC Code: NO TREES
Tree #:
Tree Species ID:
dbh (cm):
Height Class:
Decay Class:
UTM:

Snag Attributes
☐ cavity ☐ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☐ Middle ☐ Lower

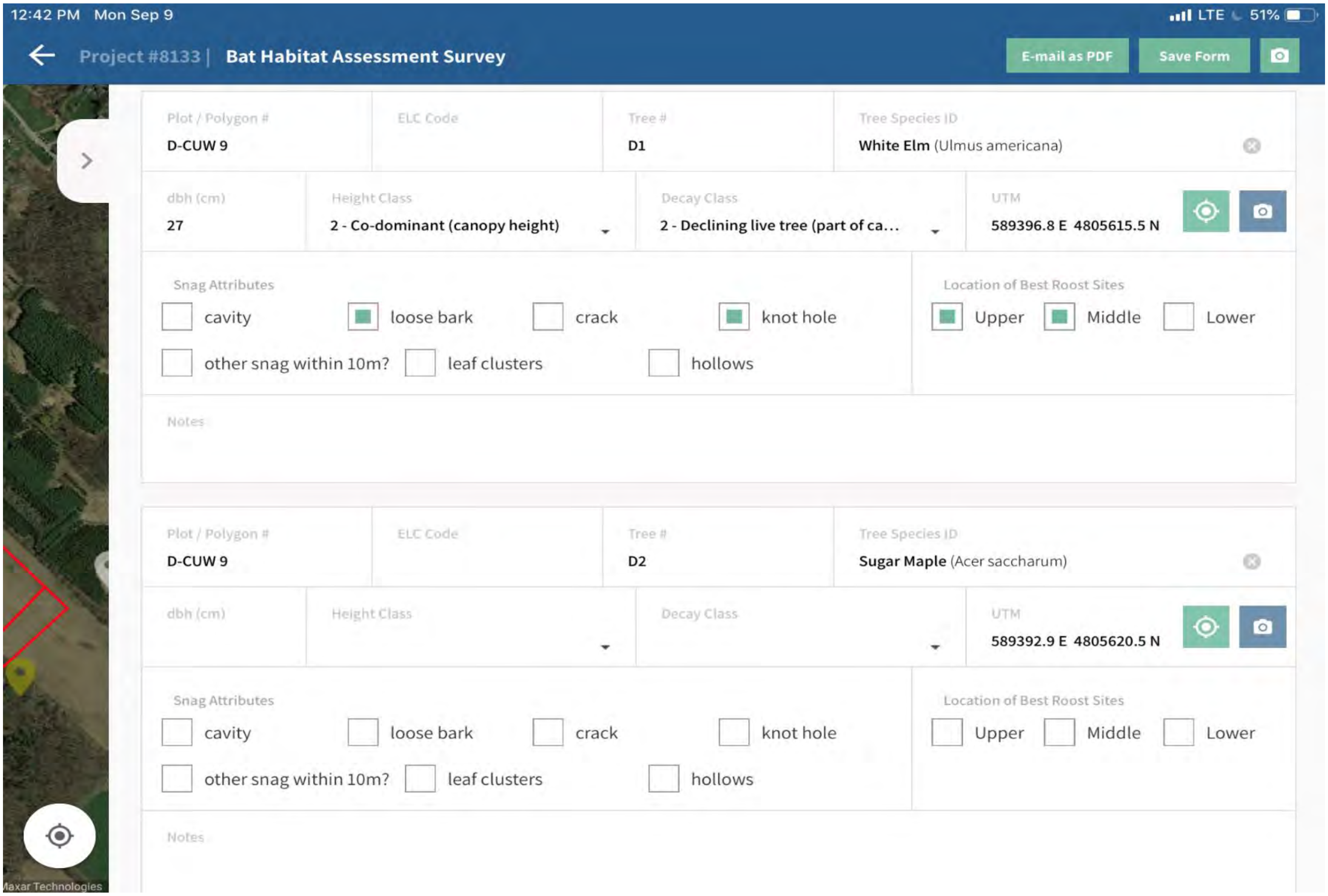
Notes

Plot / Polygon #: D-CUW 8
ELC Code: NO TREES
Tree #:
Tree Species ID:
dbh (cm):
Height Class:
Decay Class:
UTM:

Snag Attributes
☐ cavity ☐ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: D-CUW 9
ELC Code:
Tree #: D1
Tree Species ID: **White Elm** (Ulmus americana)
dbh (cm): 27
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589396.8 E 4805615.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

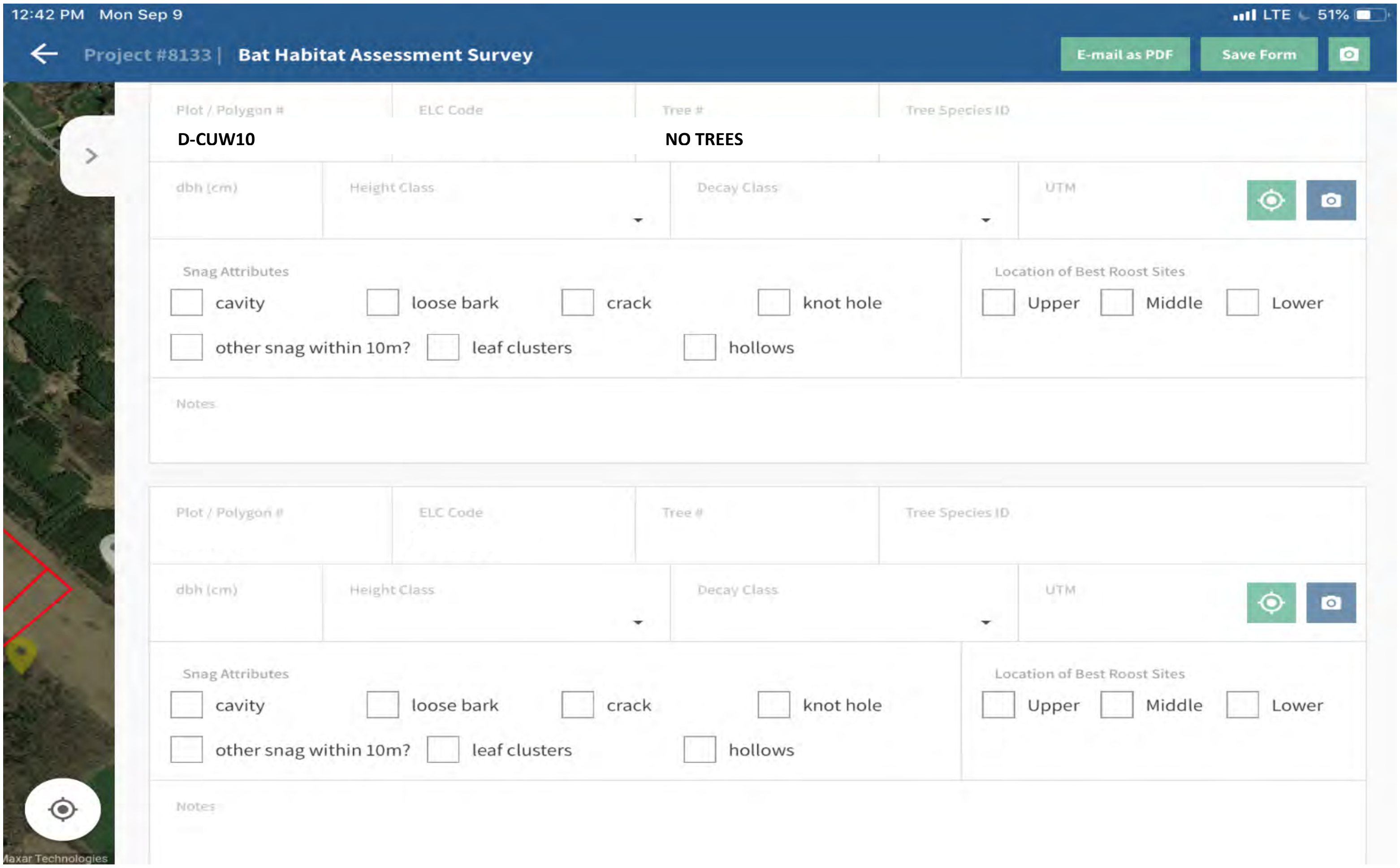
Notes

Plot / Polygon #: D-CUW 9
ELC Code:
Tree #: D2
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm):
Height Class:
Decay Class:
UTM: 589392.9 E 4805620.5 N

Snag Attributes
☐ cavity ☐ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon # **D-CUW10**	ELC Code	Tree # **NO TREES**	Tree Species ID

dbh (cm)	Height Class	Decay Class	UTM

Snag Attributes
☐ cavity ☐ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☐ Middle ☐ Lower

Notes

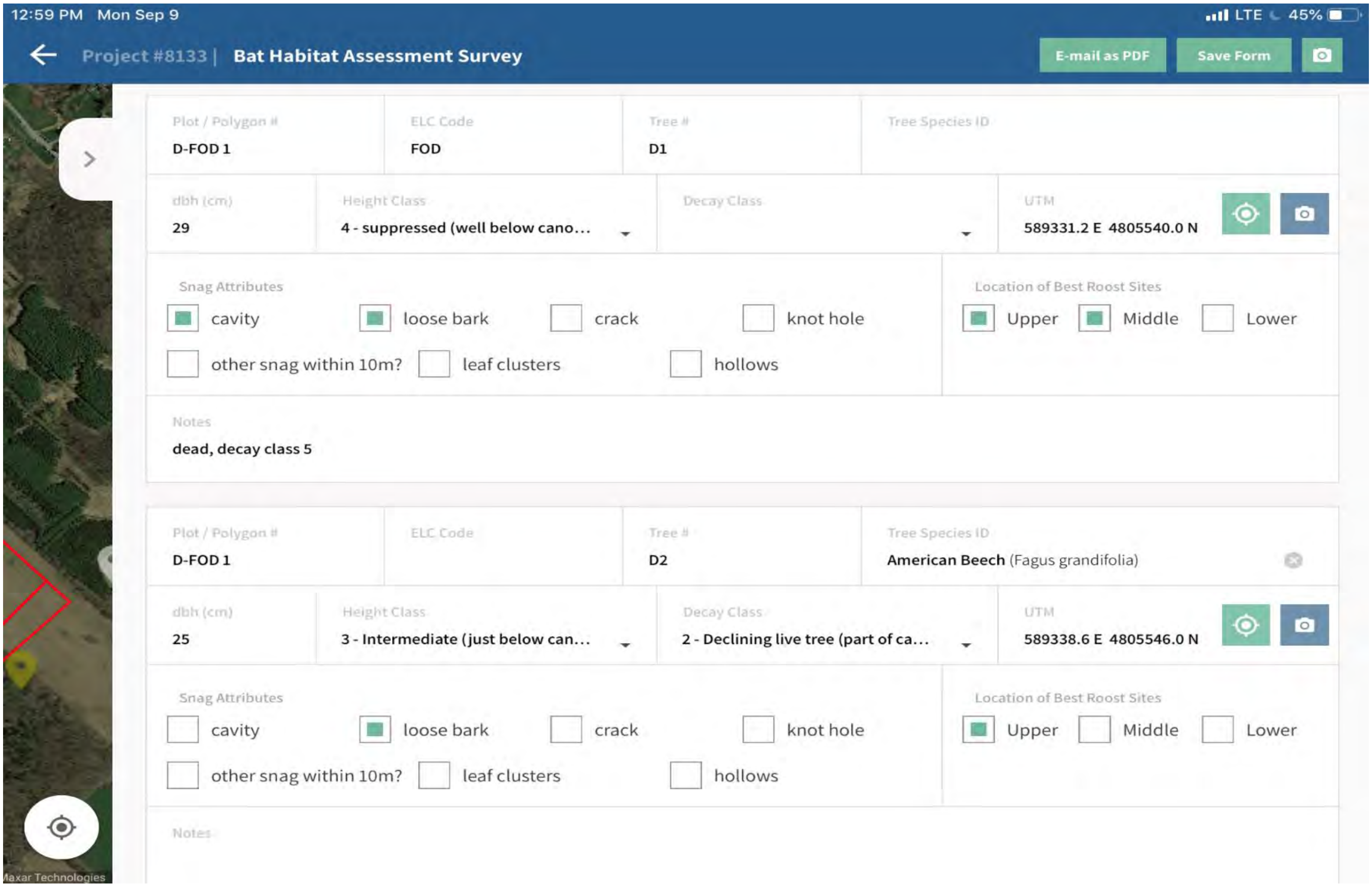
Plot / Polygon #	ELC Code	Tree #	Tree Species ID

dbh (cm)	Height Class	Decay Class	UTM

Snag Attributes
☐ cavity ☐ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☐ Middle ☐ Lower

Notes



Bat Habitat Assessment Survey

Plot / Polygon #: D-FOD 1
ELC Code: FOD
Tree #: D1
Tree Species ID:
dbh (cm): 29
Height Class: 4 - suppressed (well below cano…
Decay Class:
UTM: 589331.2 E 4805540.0 N

Snag Attributes
☑ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

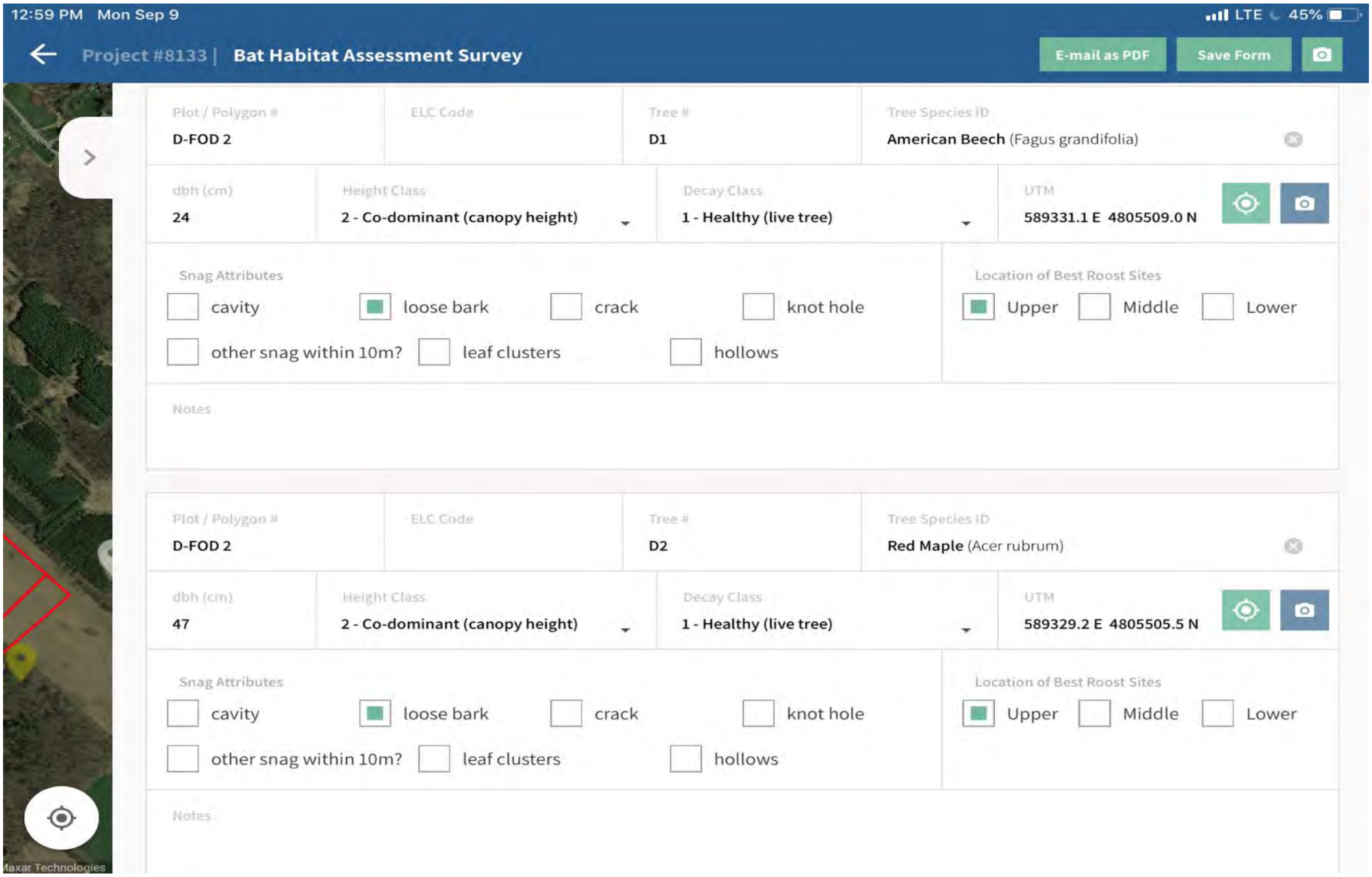
Notes: dead, decay class 5

Plot / Polygon #: D-FOD 1
ELC Code:
Tree #: D2
Tree Species ID: American Beech (Fagus grandifolia)
dbh (cm): 25
Height Class: 3 - Intermediate (just below can…
Decay Class: 2 - Declining live tree (part of ca…
UTM: 589338.6 E 4805546.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes:



Bat Habitat Assessment Survey

Plot / Polygon #: D-FOD 2
ELC Code:
Tree #: D1
Tree Species ID: American Beech (Fagus grandifolia)
dbh (cm): 24
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 1 - Healthy (live tree)
UTM: 589331.1 E 4805509.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

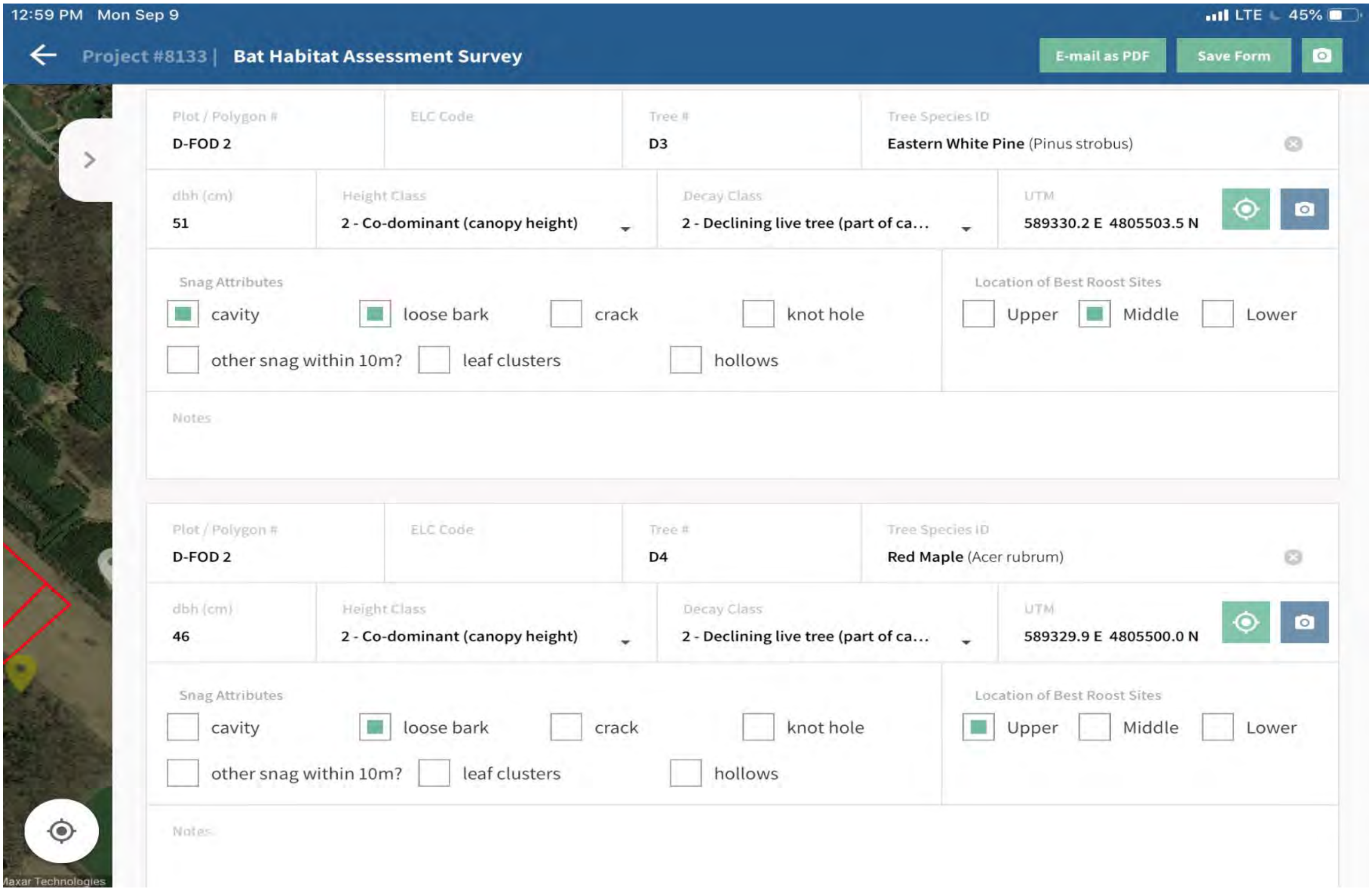
Notes:

Plot / Polygon #: D-FOD 2
ELC Code:
Tree #: D2
Tree Species ID: Red Maple (Acer rubrum)
dbh (cm): 47
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 1 - Healthy (live tree)
UTM: 589329.2 E 4805505.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes:



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-FOD 2		D3	**Eastern White Pine** (Pinus strobus)

dbh (cm)	Height Class	Decay Class	UTM
51	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589330.2 E 4805503.5 N

Snag Attributes

☑ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☐ Upper ☑ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-FOD 2		D4	**Red Maple** (Acer rubrum)

dbh (cm)	Height Class	Decay Class	UTM
46	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589329.9 E 4805500.0 N

Snag Attributes

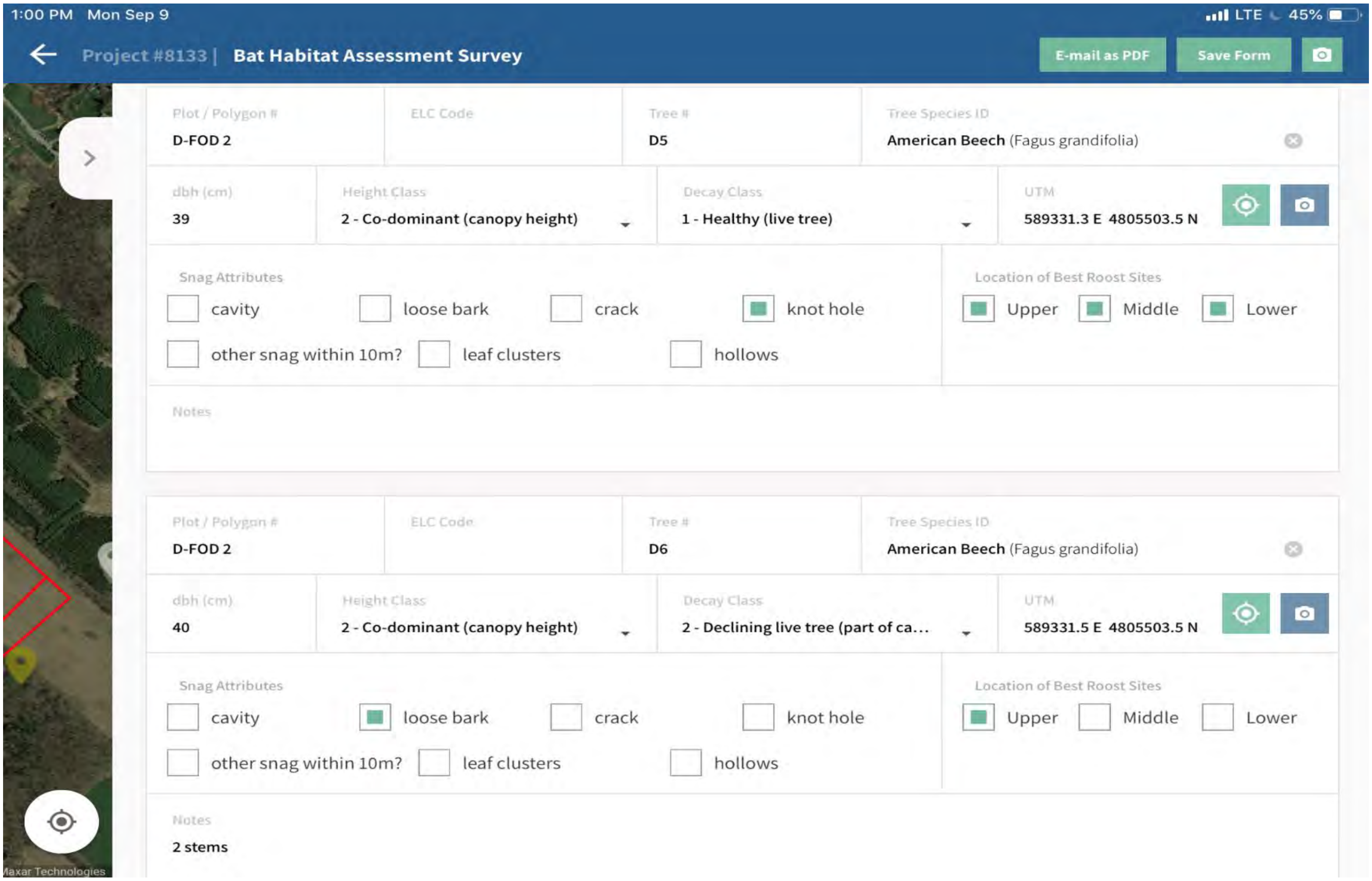
☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-FOD 2		D5	**American Beech** (Fagus grandifolia)

dbh (cm)	Height Class	Decay Class	UTM
39	2 - Co-dominant (canopy height)	1 - Healthy (live tree)	589331.3 E 4805503.5 N

Snag Attributes

☐ cavity ☐ loose bark ☐ crack ☑ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☑ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-FOD 2		D6	**American Beech** (Fagus grandifolia)

dbh (cm)	Height Class	Decay Class	UTM
40	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589331.5 E 4805503.5 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole

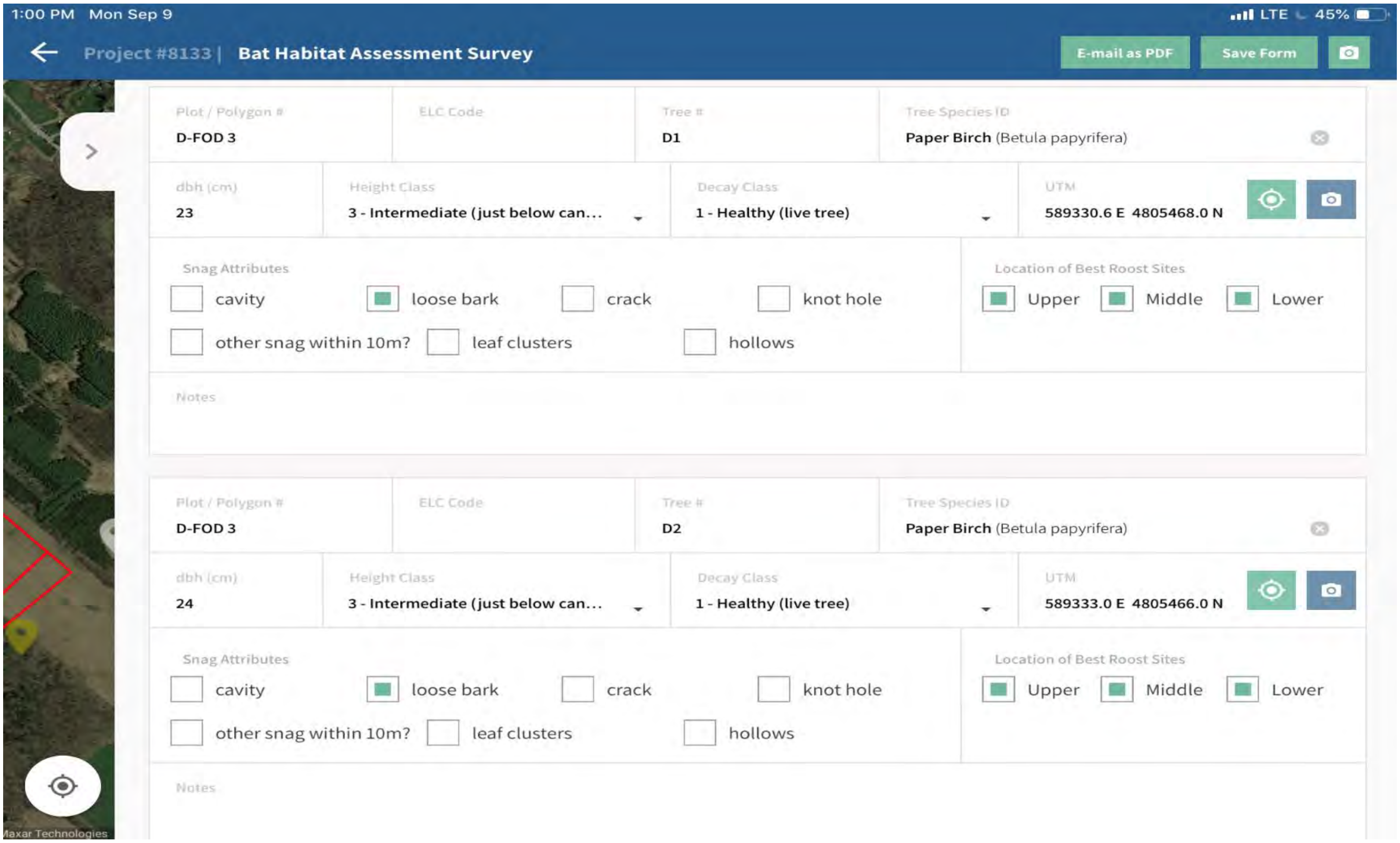
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes

2 stems



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-FOD 3		D1	**Paper Birch** (Betula papyrifera)
dbh (cm)	Height Class	Decay Class	UTM
23	3 - Intermediate (just below can...	1 - Healthy (live tree)	589330.6 E 4805468.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☑ Lower

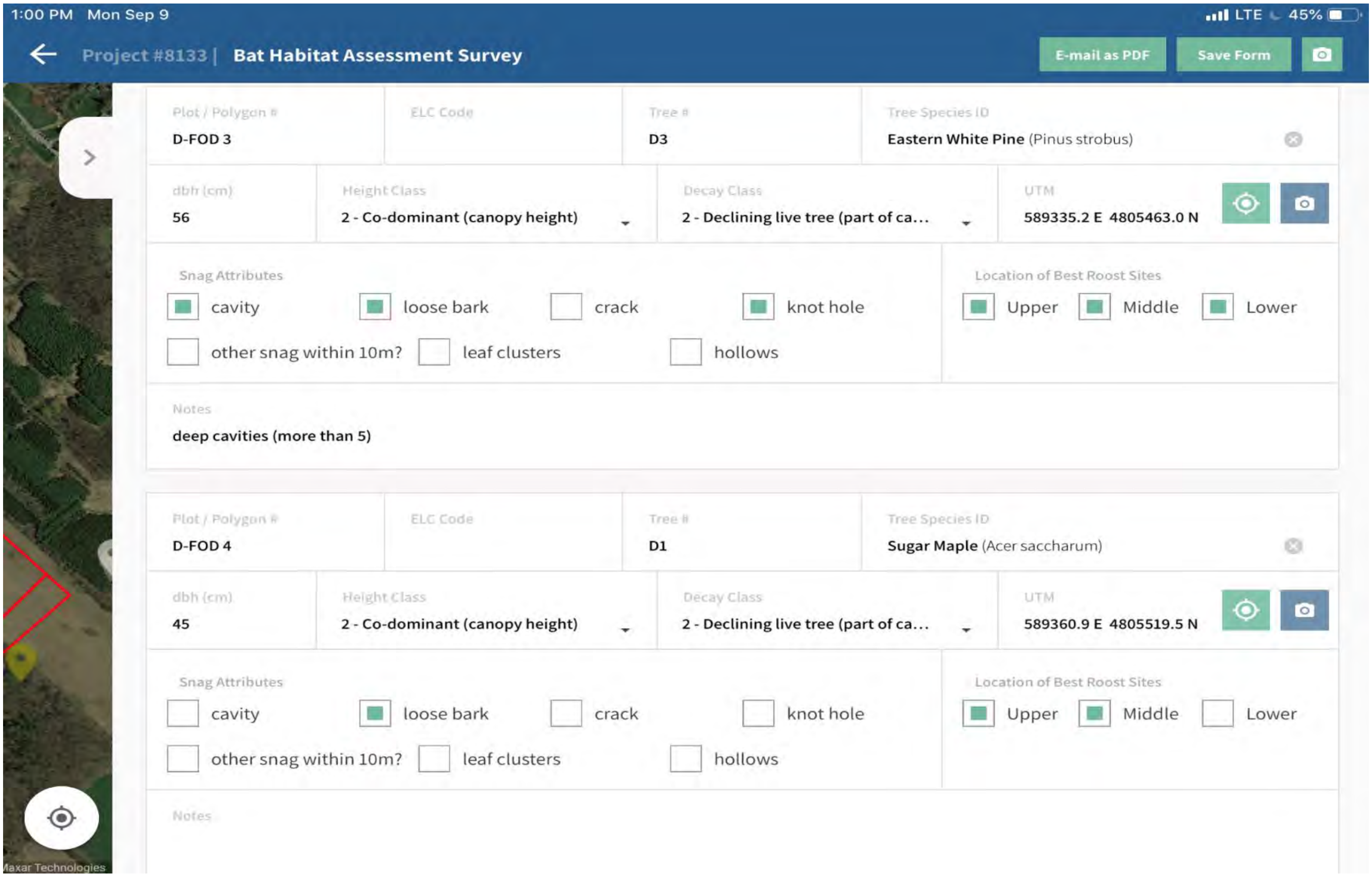
Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-FOD 3		D2	**Paper Birch** (Betula papyrifera)
dbh (cm)	Height Class	Decay Class	UTM
24	3 - Intermediate (just below can...	1 - Healthy (live tree)	589333.0 E 4805466.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☑ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-FOD 3		D3	**Eastern White Pine** (Pinus strobus)
dbh (cm)	Height Class	Decay Class	UTM
56	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589335.2 E 4805463.0 N

Snag Attributes
☑ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☑ Lower

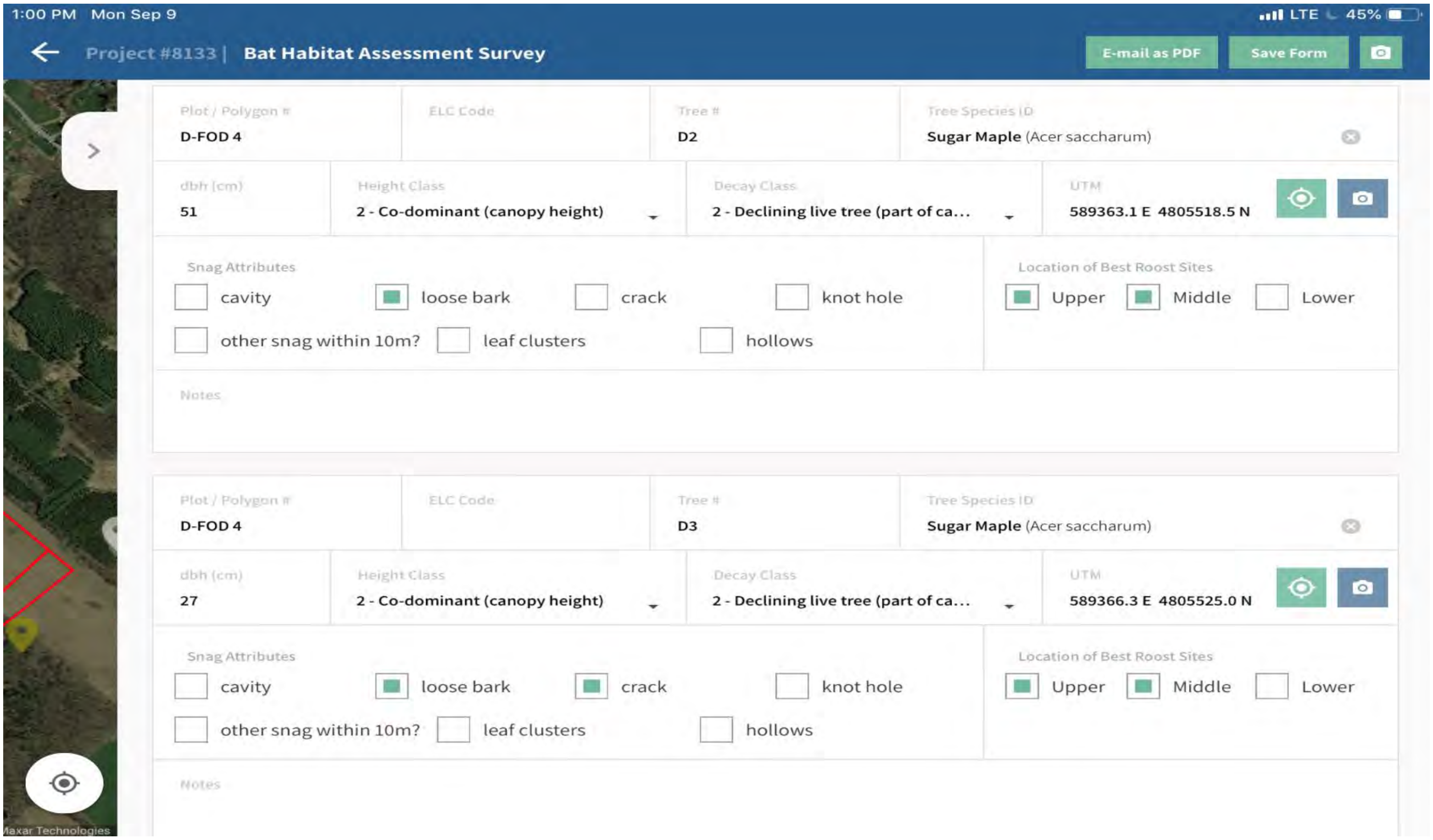
Notes
deep cavities (more than 5)

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-FOD 4		D1	**Sugar Maple** (Acer saccharum)
dbh (cm)	Height Class	Decay Class	UTM
45	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589360.9 E 4805519.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes



Bat Habitat Assessment Survey

Plot / Polygon #: D-FOD 4
ELC Code:
Tree #: D2
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 51
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589363.1 E 4805518.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

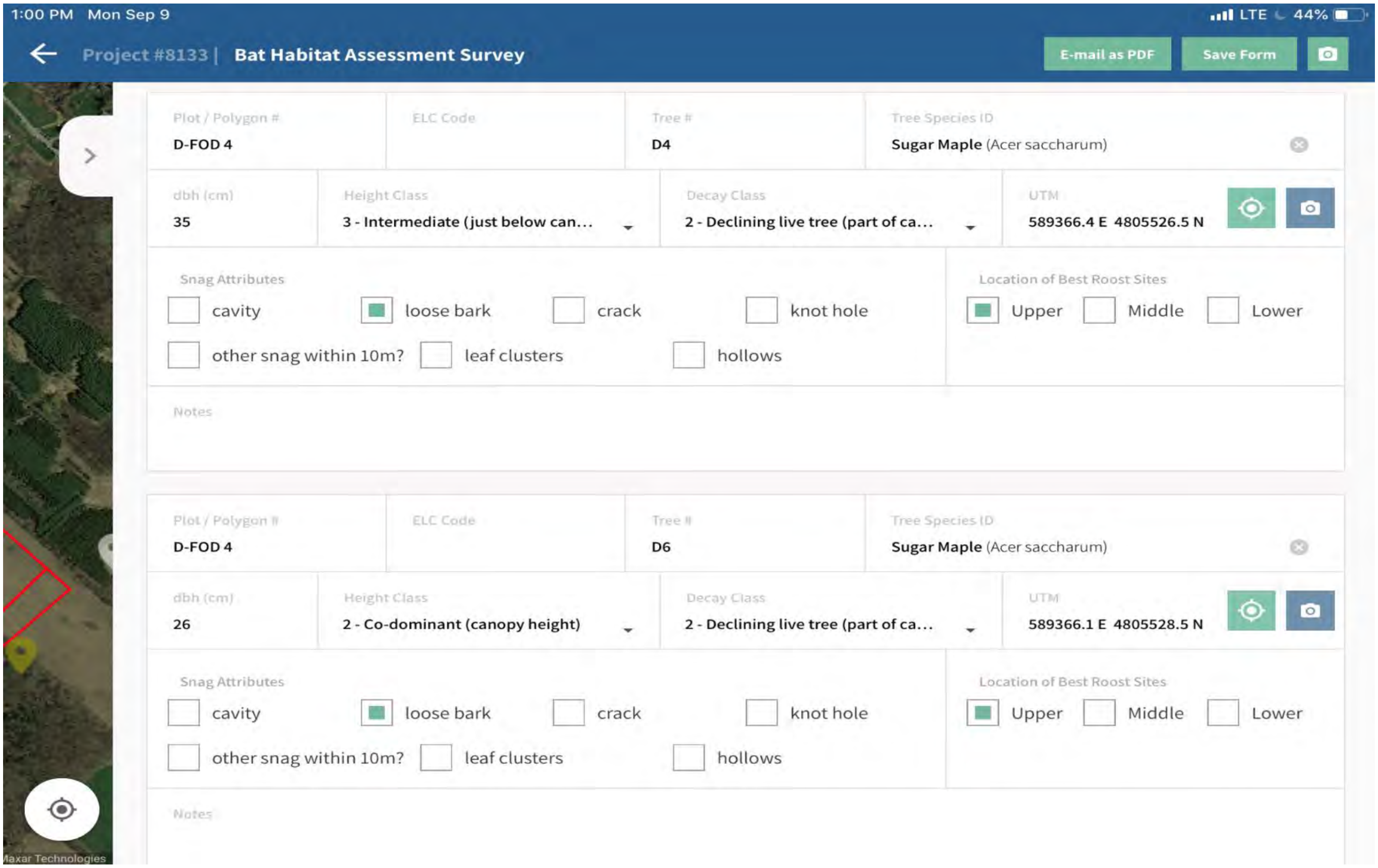
Notes

Plot / Polygon #: D-FOD 4
ELC Code:
Tree #: D3
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 27
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589366.3 E 4805525.0 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes



Bat Habitat Assessment Survey

Plot / Polygon #: D-FOD 4
ELC Code:
Tree #: D4
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 35
Height Class: 3 - Intermediate (just below can...
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589366.4 E 4805526.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

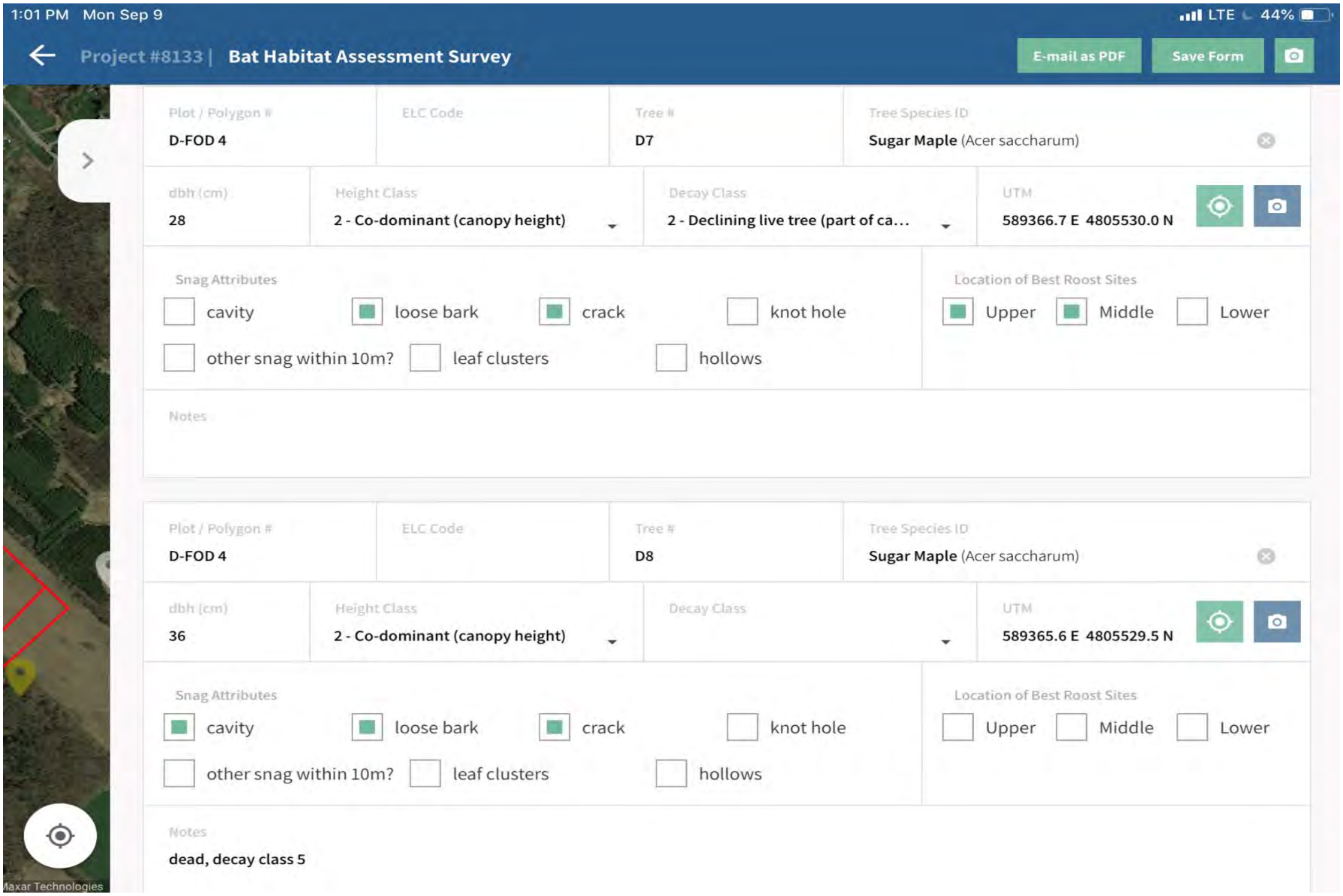
Notes

Plot / Polygon #: D-FOD 4
ELC Code:
Tree #: D6
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 26
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589366.1 E 4805528.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: D-FOD 4
ELC Code:
Tree #: D7
Tree Species ID: **Sugar Maple** (Acer saccharum)

dbh (cm): 28
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589366.7 E 4805530.0 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes

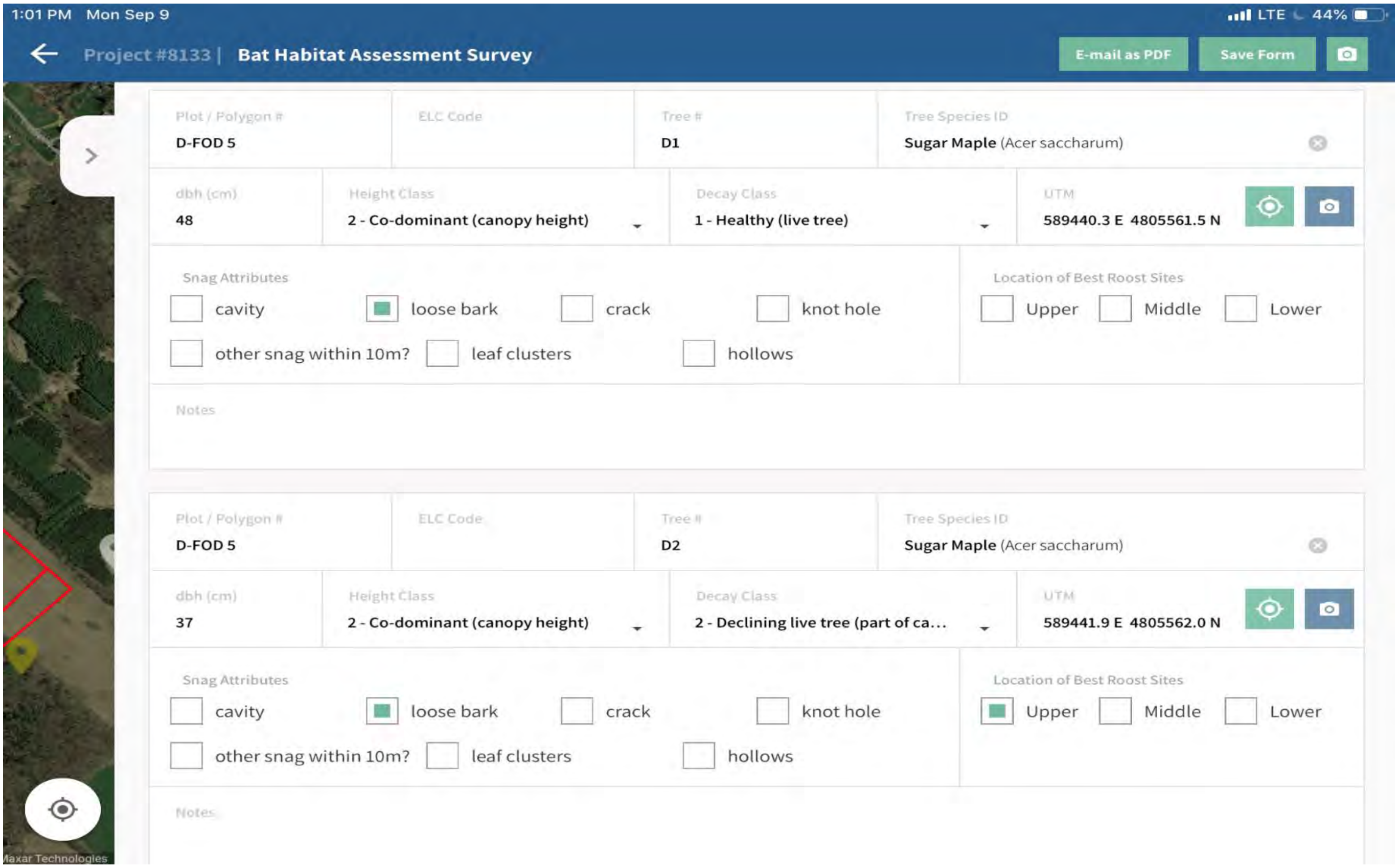
Plot / Polygon #: D-FOD 4
ELC Code:
Tree #: D8
Tree Species ID: **Sugar Maple** (Acer saccharum)

dbh (cm): 36
Height Class: 2 - Co-dominant (canopy height)
Decay Class:
UTM: 589365.6 E 4805529.5 N

Snag Attributes
☑ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☐ Middle ☐ Lower

Notes: dead, decay class 5



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: D-FOD 5
ELC Code:
Tree #: D1
Tree Species ID: **Sugar Maple** (Acer saccharum)

dbh (cm): 48
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 1 - Healthy (live tree)
UTM: 589440.3 E 4805561.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☐ Middle ☐ Lower

Notes

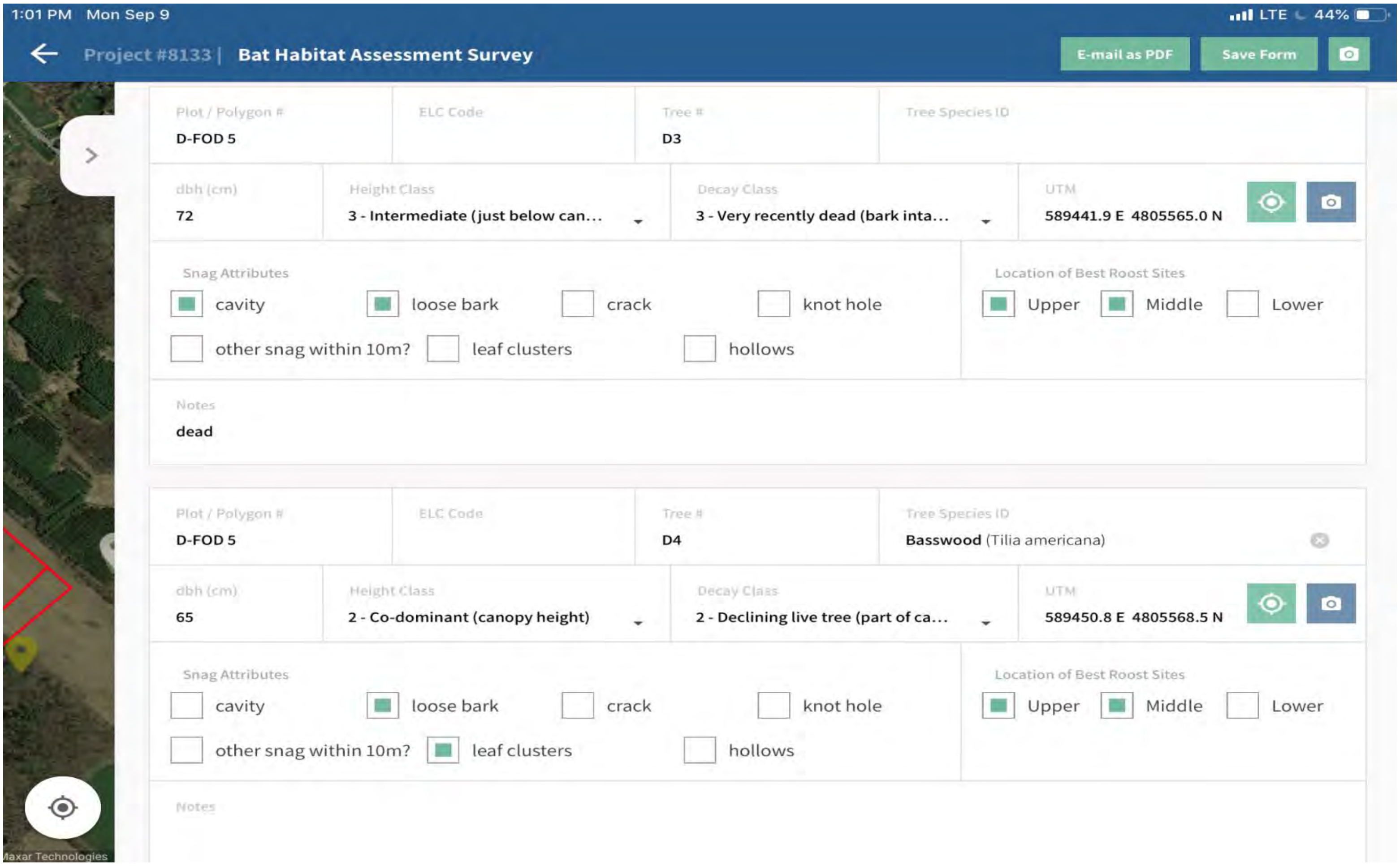
Plot / Polygon #: D-FOD 5
ELC Code:
Tree #: D2
Tree Species ID: **Sugar Maple** (Acer saccharum)

dbh (cm): 37
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589441.9 E 4805562.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-FOD 5		D3	

dbh (cm)	Height Class	Decay Class	UTM
72	3 - Intermediate (just below can...	3 - Very recently dead (bark inta...	589441.9 E 4805565.0 N

Snag Attributes

☑ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes

dead

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-FOD 5		D4	**Basswood** (Tilia americana)

dbh (cm)	Height Class	Decay Class	UTM
65	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589450.8 E 4805568.5 N

Snag Attributes

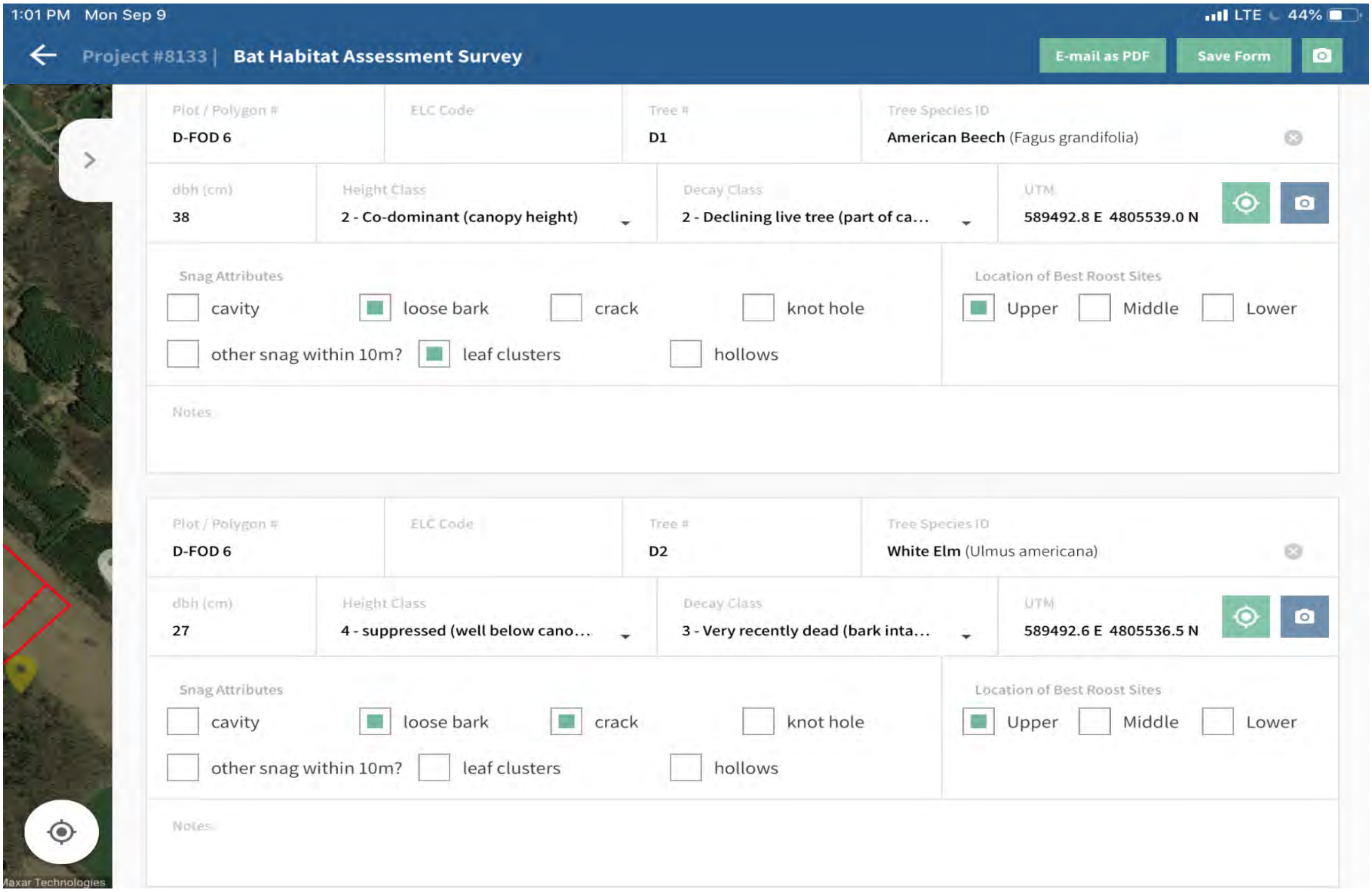
☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☑ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-FOD 6		D1	**American Beech** (Fagus grandifolia)

dbh (cm)	Height Class	Decay Class	UTM
38	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589492.8 E 4805539.0 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☑ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-FOD 6		D2	**White Elm** (Ulmus americana)

dbh (cm)	Height Class	Decay Class	UTM
27	4 - suppressed (well below cano...	3 - Very recently dead (bark inta...	589492.6 E 4805536.5 N

Snag Attributes

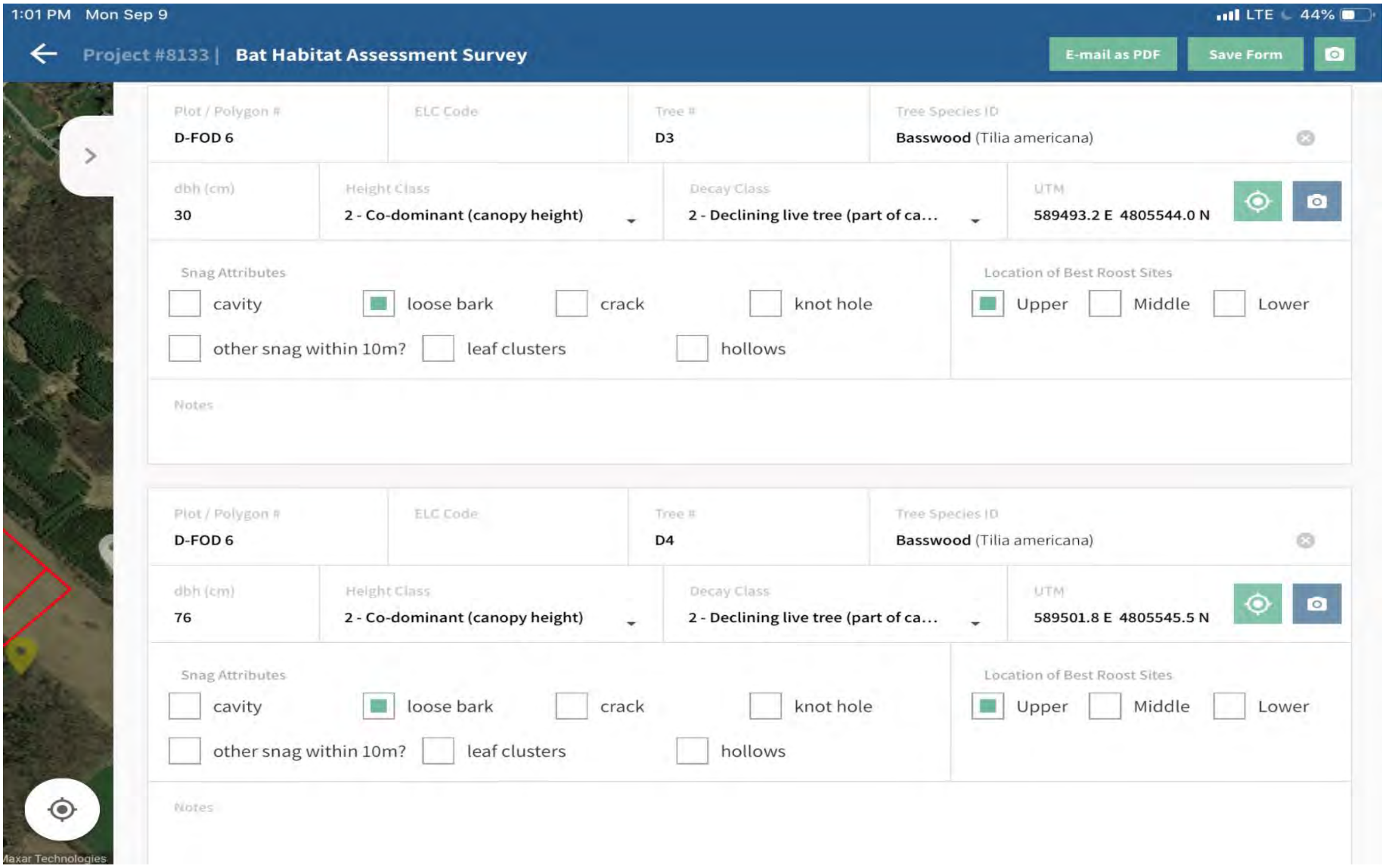
☐ cavity ☑ loose bark ☑ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: D-FOD 6
ELC Code:
Tree #: D3
Tree Species ID: **Basswood** (Tilia americana)
dbh (cm): 30
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589493.2 E 4805544.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

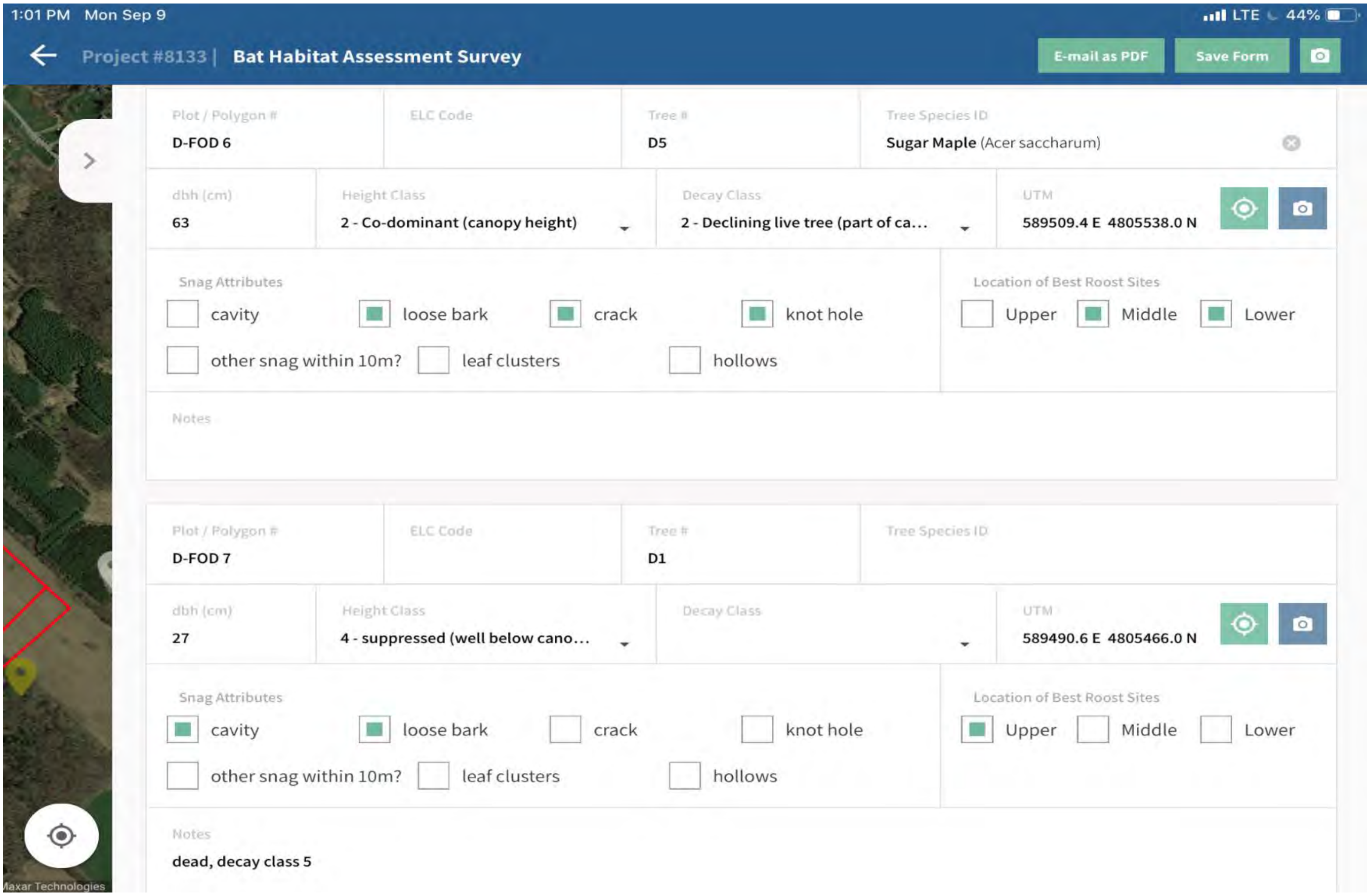
Notes

Plot / Polygon #: D-FOD 6
ELC Code:
Tree #: D4
Tree Species ID: **Basswood** (Tilia americana)
dbh (cm): 76
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589501.8 E 4805545.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: D-FOD 6
ELC Code:
Tree #: D5
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 63
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589509.4 E 4805538.0 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☑ Middle ☑ Lower

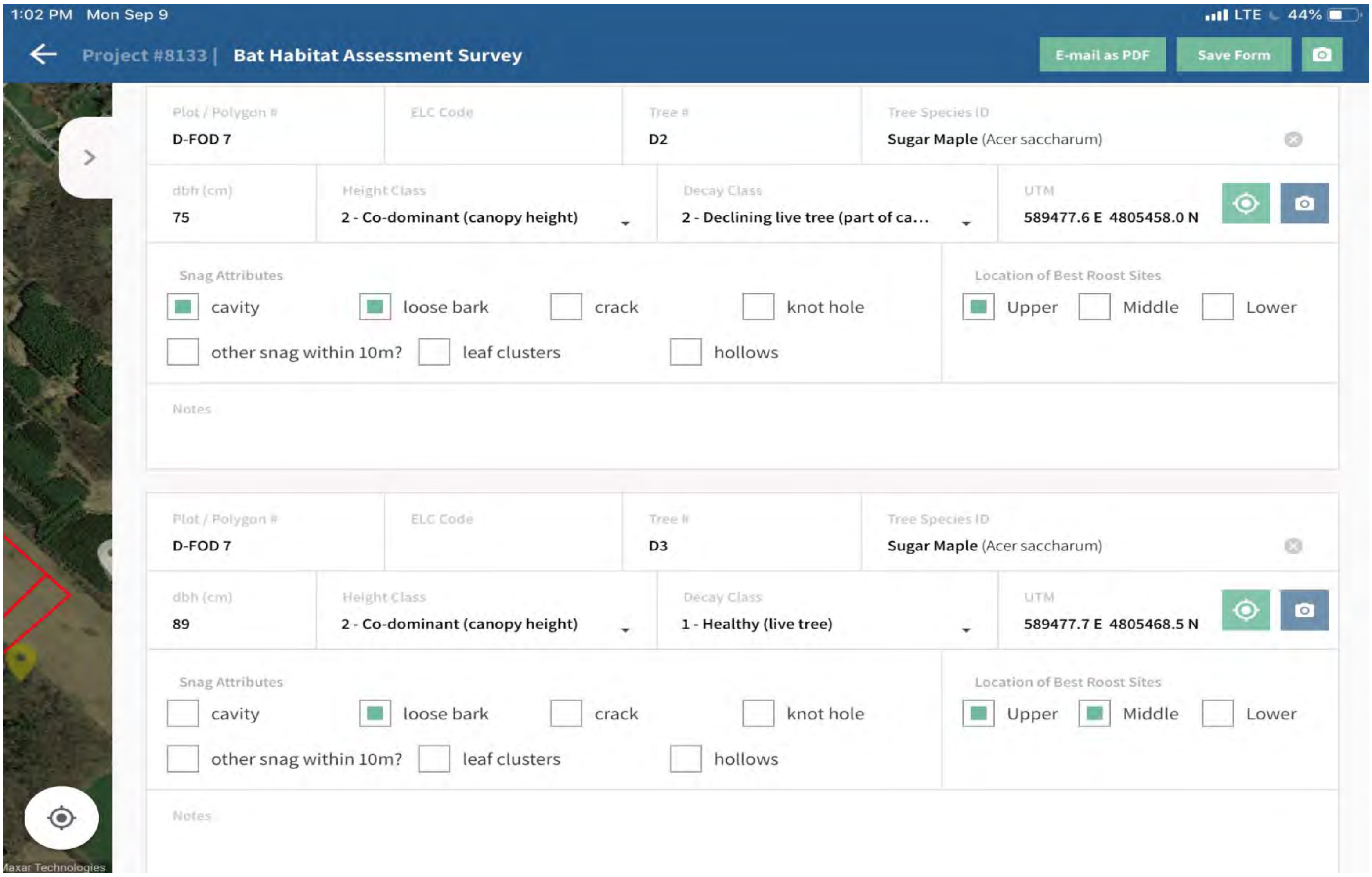
Notes

Plot / Polygon #: D-FOD 7
ELC Code:
Tree #: D1
Tree Species ID:
dbh (cm): 27
Height Class: 4 - suppressed (well below cano...
Decay Class:
UTM: 589490.6 E 4805466.0 N

Snag Attributes
☑ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes
dead, decay class 5



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon # D-FOD 7	ELC Code	Tree # D2	Tree Species ID **Sugar Maple** (Acer saccharum)
dbh (cm) 75	Height Class 2 - Co-dominant (canopy height)	Decay Class 2 - Declining live tree (part of ca…	UTM 589477.6 E 4805458.0 N

Snag Attributes
☑ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

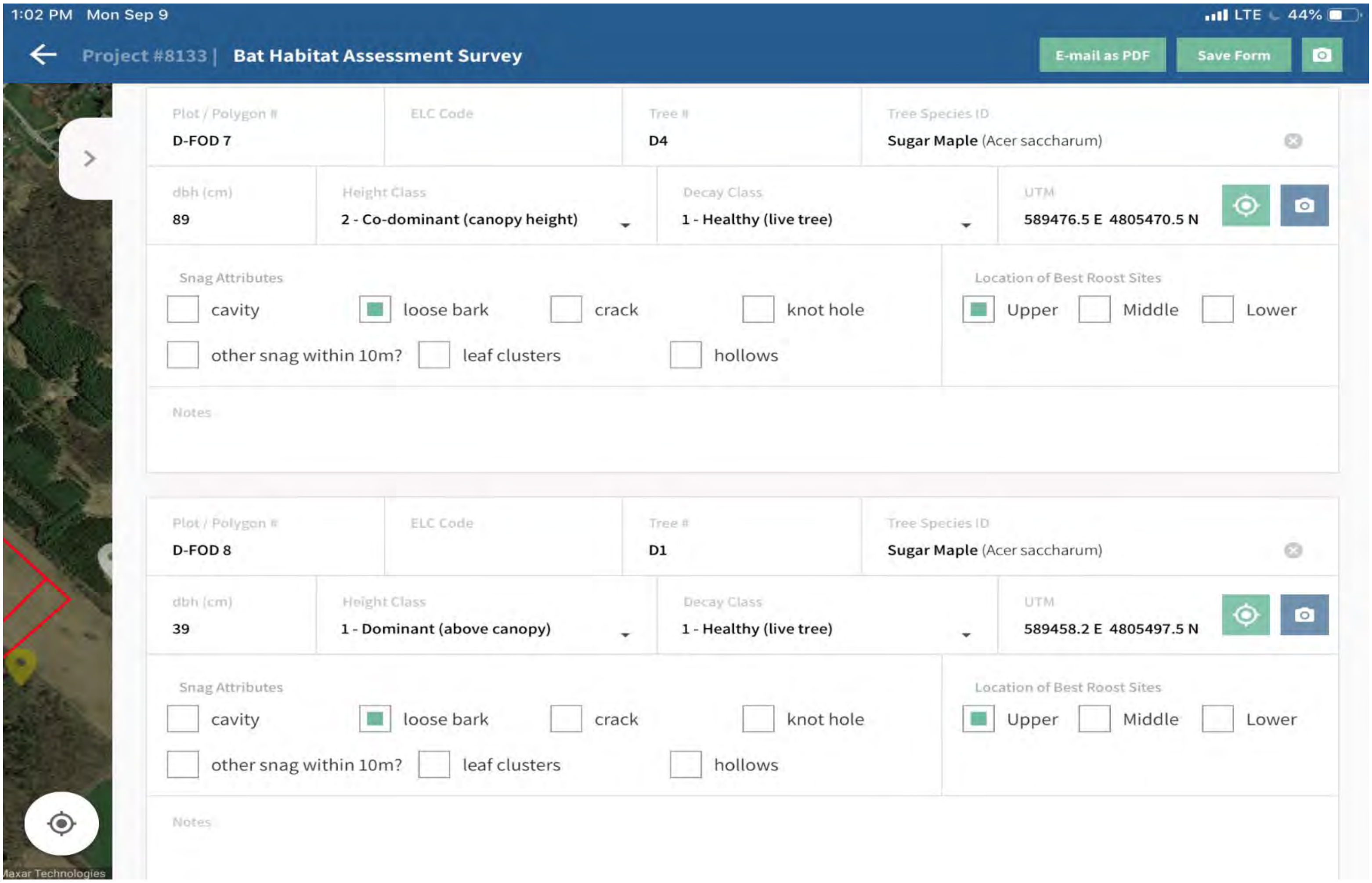
Notes

Plot / Polygon # D-FOD 7	ELC Code	Tree # D3	Tree Species ID **Sugar Maple** (Acer saccharum)
dbh (cm) 89	Height Class 2 - Co-dominant (canopy height)	Decay Class 1 - Healthy (live tree)	UTM 589477.7 E 4805468.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon # D-FOD 7	ELC Code	Tree # D4	Tree Species ID **Sugar Maple** (Acer saccharum)
dbh (cm) 89	Height Class 2 - Co-dominant (canopy height)	Decay Class 1 - Healthy (live tree)	UTM 589476.5 E 4805470.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

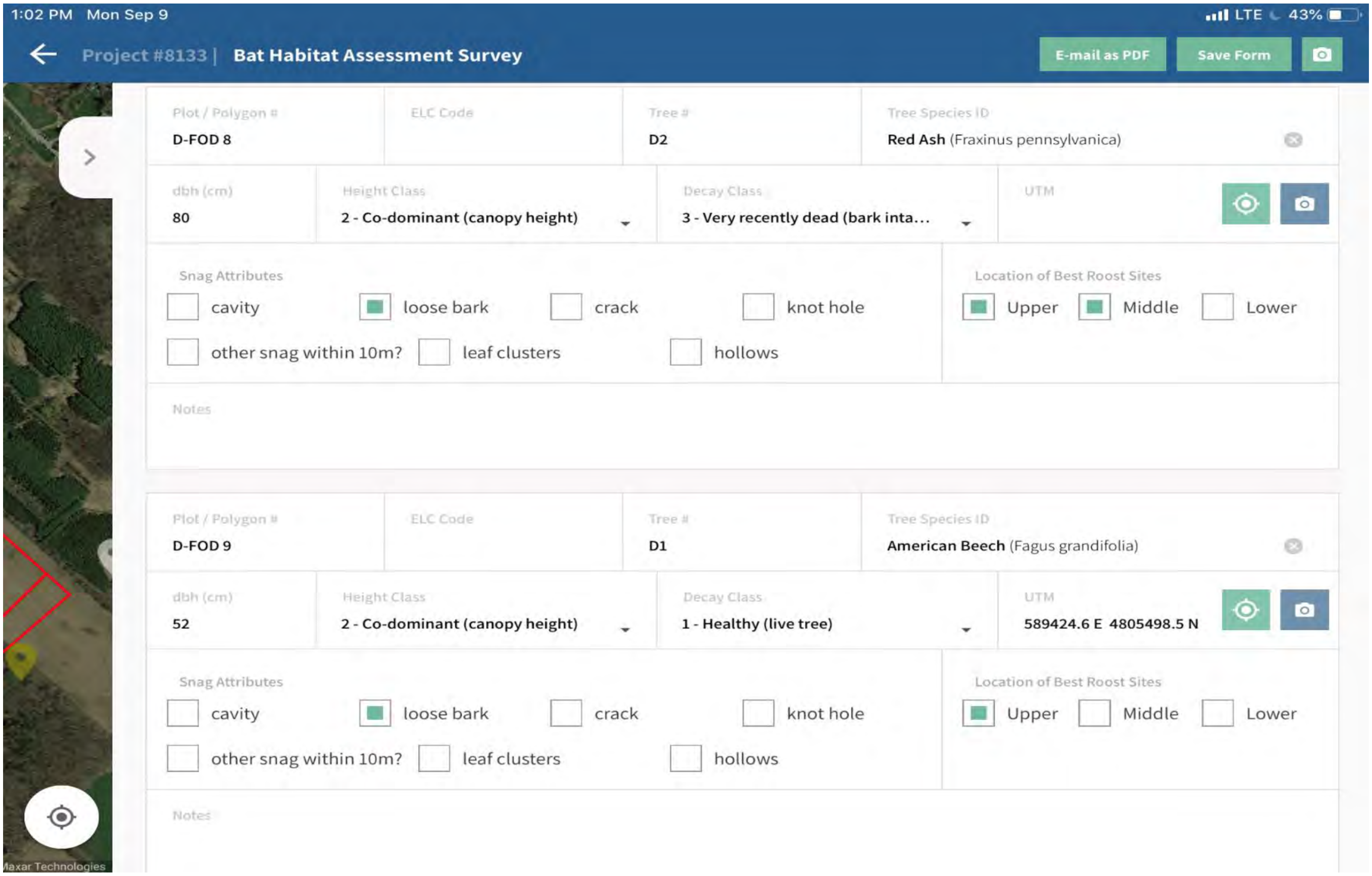
Notes

Plot / Polygon # D-FOD 8	ELC Code	Tree # D1	Tree Species ID **Sugar Maple** (Acer saccharum)
dbh (cm) 39	Height Class 1 - Dominant (above canopy)	Decay Class 1 - Healthy (live tree)	UTM 589458.2 E 4805497.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

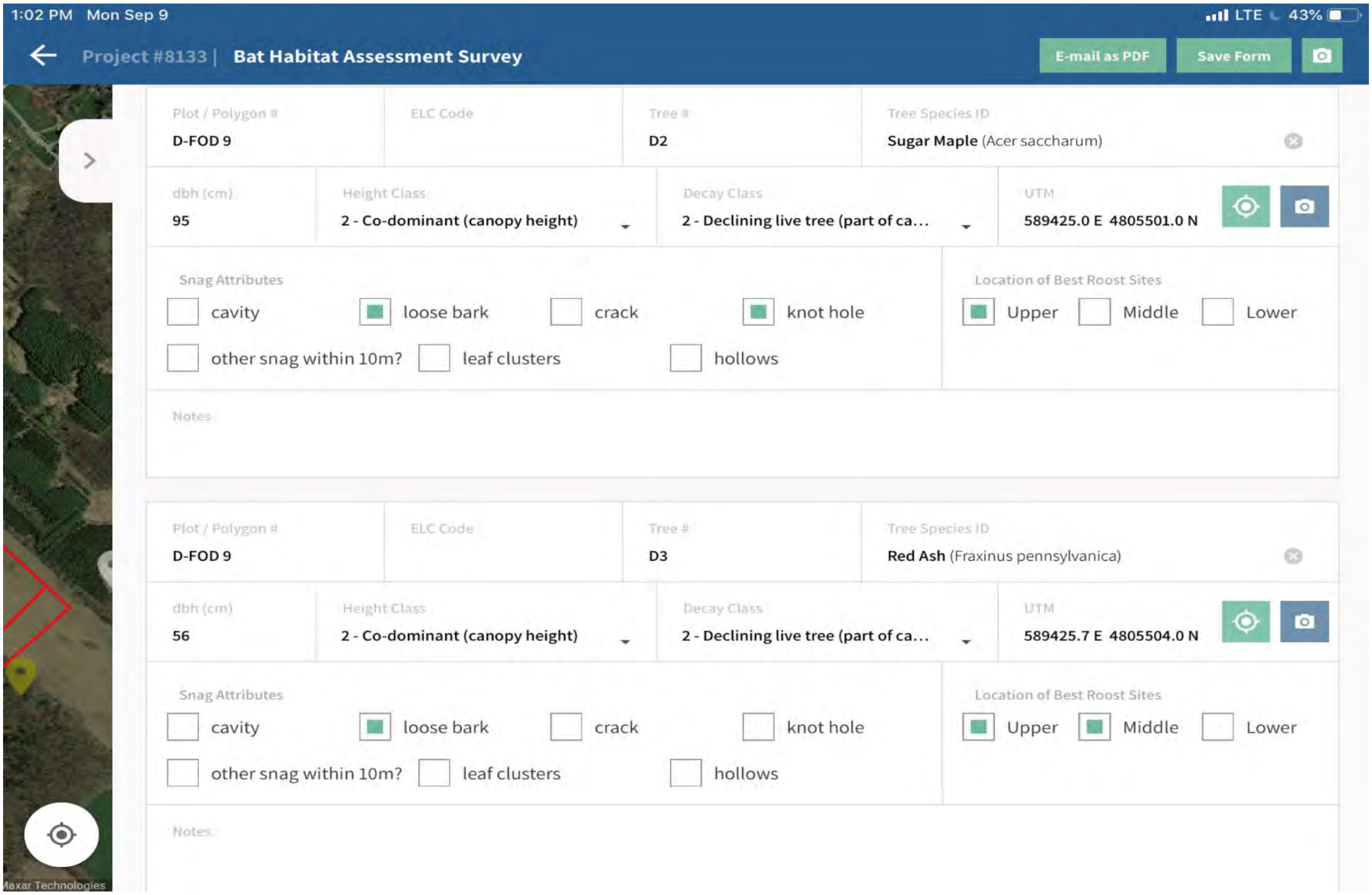
Notes



Bat Habitat Assessment Survey

Plot / Polygon #: D-FOD 8
ELC Code:
Tree #: D2
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)
dbh (cm): 80
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 3 - Very recently dead (bark inta...
UTM:
Snag Attributes: ☐ cavity ☑ loose bark ☐ crack ☐ knot hole ☐ other snag within 10m? ☐ leaf clusters ☐ hollows
Location of Best Roost Sites: ☑ Upper ☑ Middle ☐ Lower
Notes:

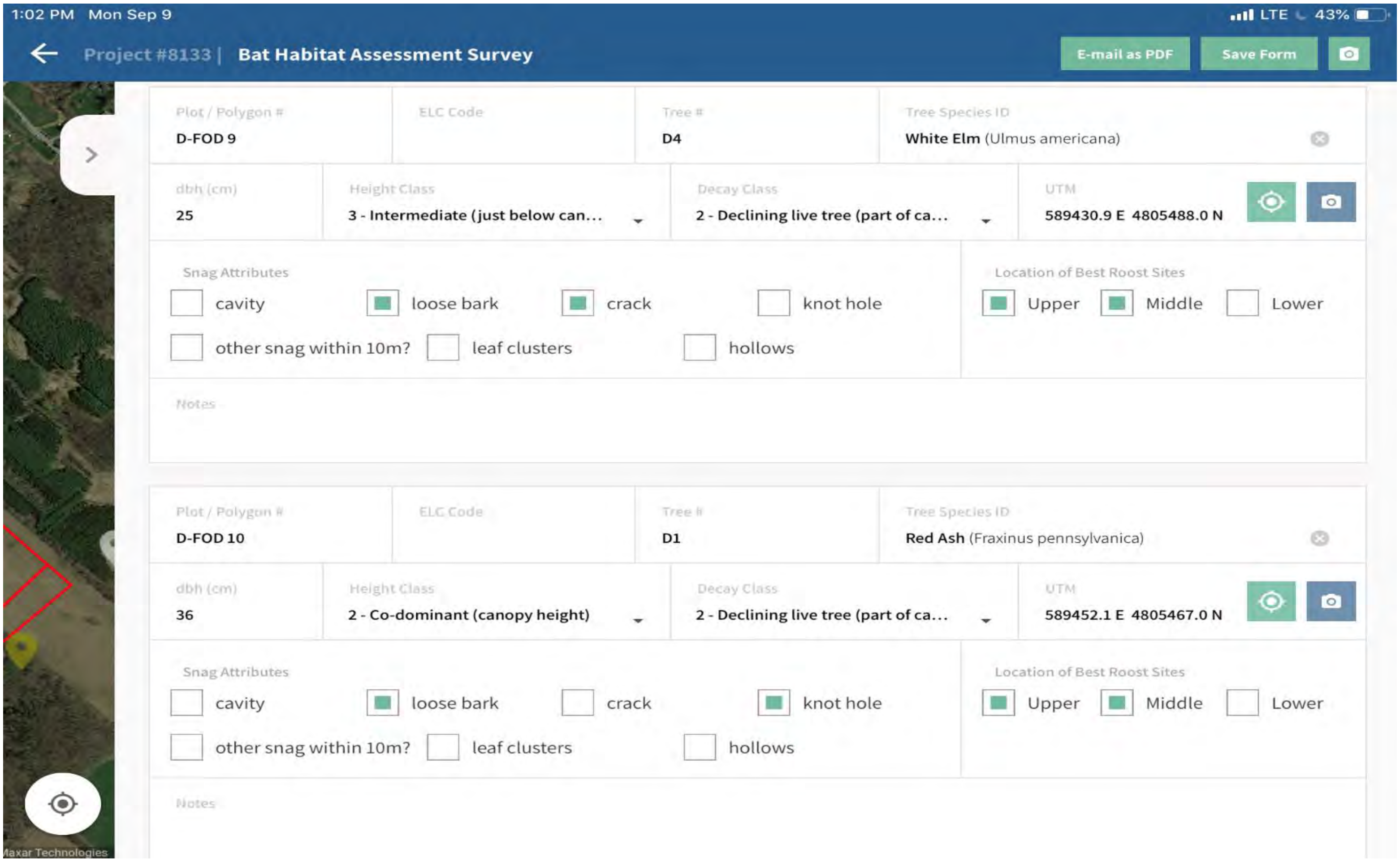
Plot / Polygon #: D-FOD 9
ELC Code:
Tree #: D1
Tree Species ID: **American Beech** (Fagus grandifolia)
dbh (cm): 52
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 1 - Healthy (live tree)
UTM: 589424.6 E 4805498.5 N
Snag Attributes: ☐ cavity ☑ loose bark ☐ crack ☐ knot hole ☐ other snag within 10m? ☐ leaf clusters ☐ hollows
Location of Best Roost Sites: ☑ Upper ☐ Middle ☐ Lower
Notes:



Bat Habitat Assessment Survey

Plot / Polygon #: D-FOD 9
ELC Code:
Tree #: D2
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 95
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589425.0 E 4805501.0 N
Snag Attributes: ☐ cavity ☑ loose bark ☐ crack ☑ knot hole ☐ other snag within 10m? ☐ leaf clusters ☐ hollows
Location of Best Roost Sites: ☑ Upper ☐ Middle ☐ Lower
Notes:

Plot / Polygon #: D-FOD 9
ELC Code:
Tree #: D3
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)
dbh (cm): 56
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589425.7 E 4805504.0 N
Snag Attributes: ☐ cavity ☑ loose bark ☐ crack ☐ knot hole ☐ other snag within 10m? ☐ leaf clusters ☐ hollows
Location of Best Roost Sites: ☑ Upper ☑ Middle ☐ Lower
Notes:



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: D-FOD 9
ELC Code:
Tree #: D4
Tree Species ID: **White Elm** (Ulmus americana)
dbh (cm): 25
Height Class: 3 - Intermediate (just below can...
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589430.9 E 4805488.0 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

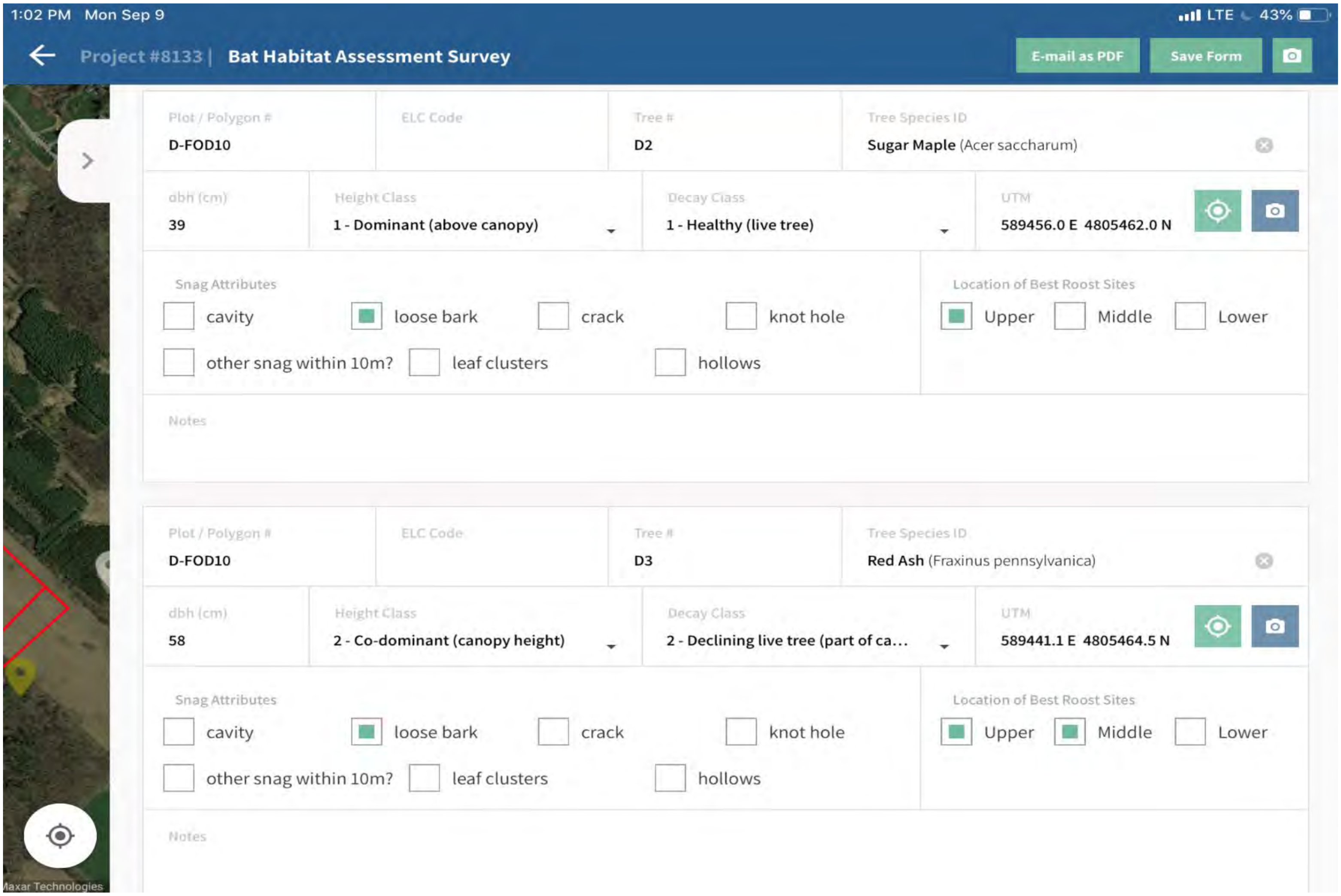
Notes

Plot / Polygon #: D-FOD 10
ELC Code:
Tree #: D1
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)
dbh (cm): 36
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589452.1 E 4805467.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: D-FOD10
ELC Code:
Tree #: D2
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 39
Height Class: 1 - Dominant (above canopy)
Decay Class: 1 - Healthy (live tree)
UTM: 589456.0 E 4805462.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

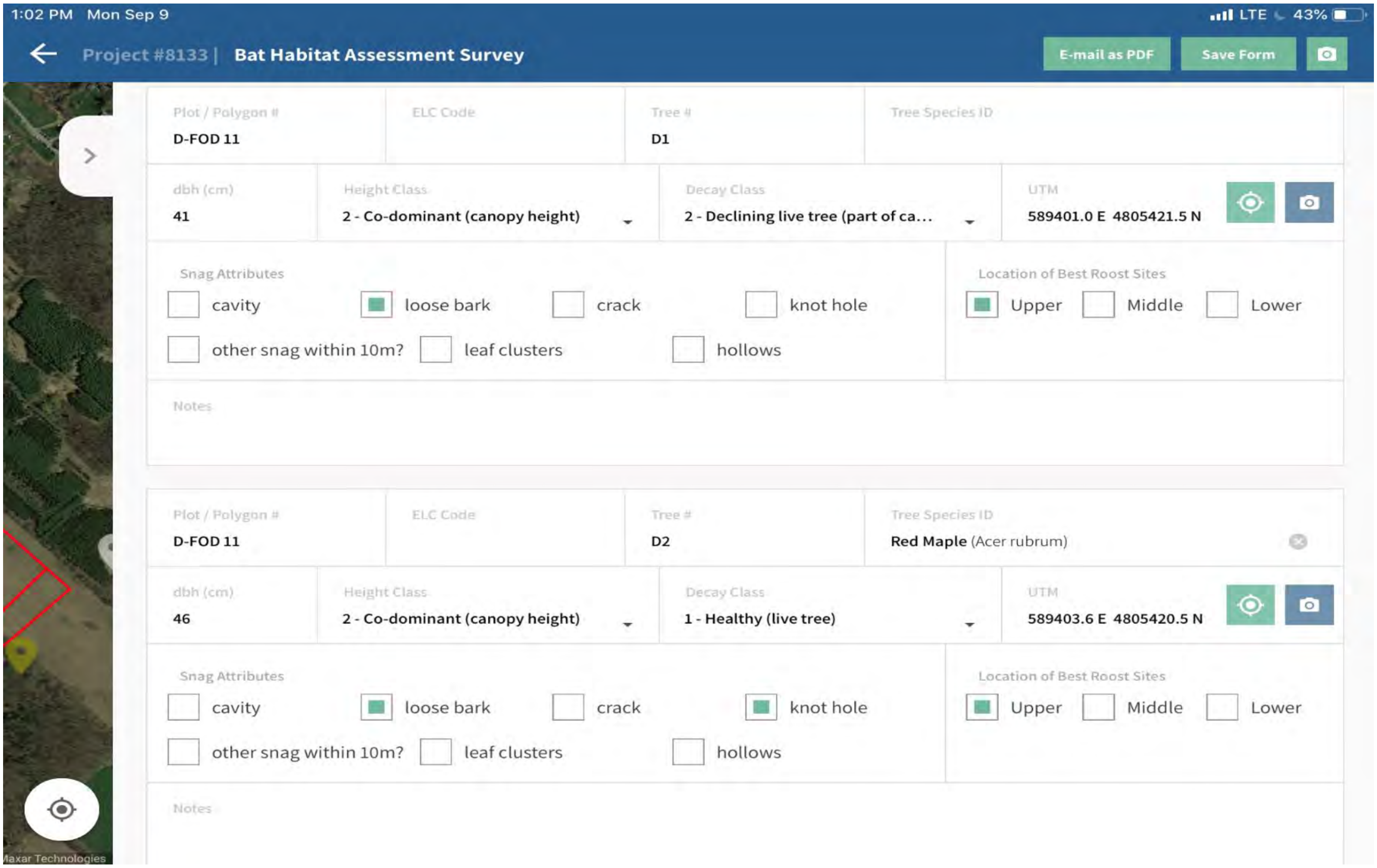
Notes

Plot / Polygon #: D-FOD10
ELC Code:
Tree #: D3
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)
dbh (cm): 58
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589441.1 E 4805464.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes



Bat Habitat Assessment Survey

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-FOD 11		D1	

dbh (cm)	Height Class	Decay Class	UTM
41	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589401.0 E 4805421.5 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-FOD 11		D2	**Red Maple** (Acer rubrum)

dbh (cm)	Height Class	Decay Class	UTM
46	2 - Co-dominant (canopy height)	1 - Healthy (live tree)	589403.6 E 4805420.5 N

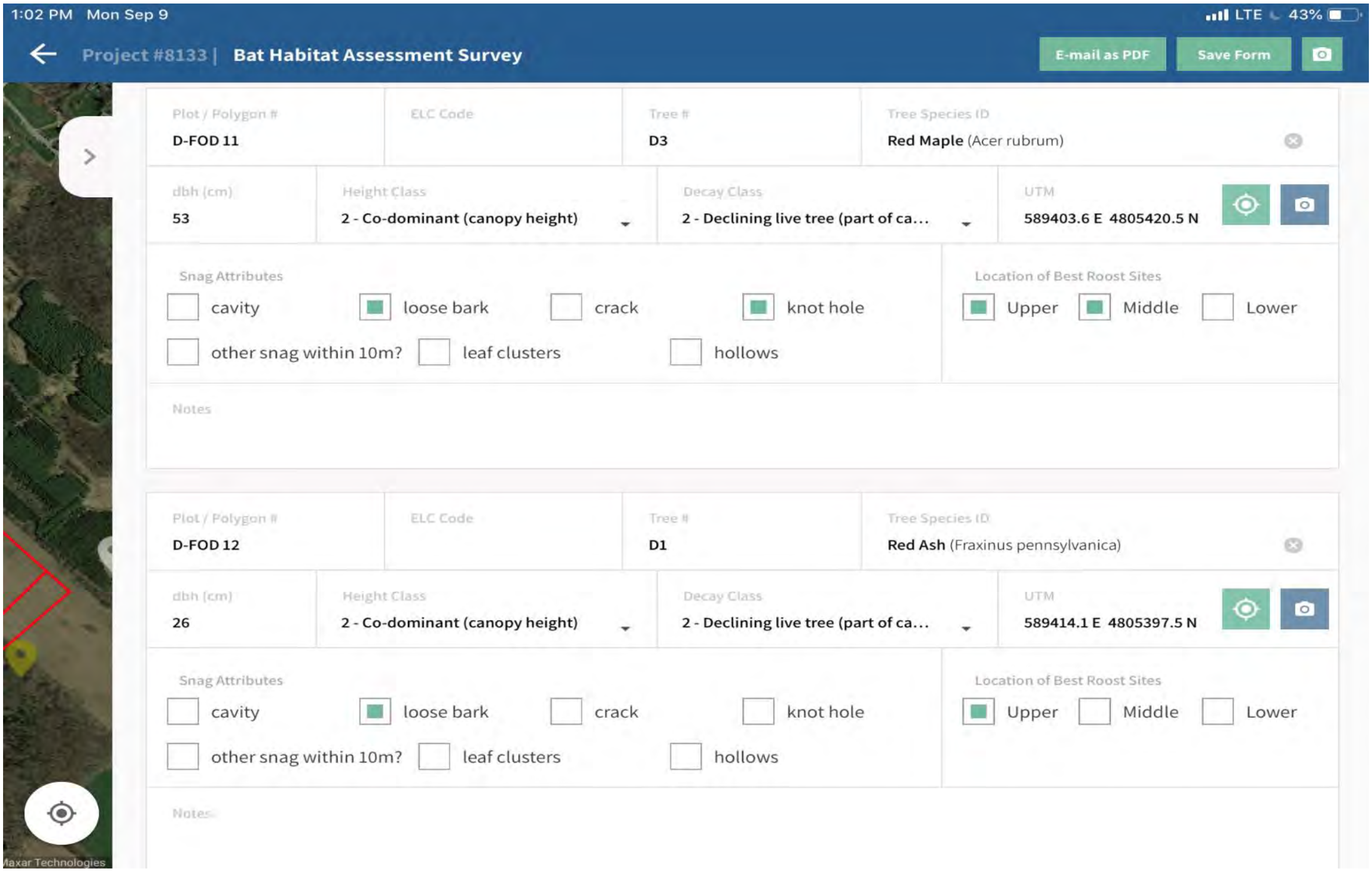
Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes



Bat Habitat Assessment Survey

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-FOD 11		D3	**Red Maple** (Acer rubrum)

dbh (cm)	Height Class	Decay Class	UTM
53	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589403.6 E 4805420.5 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-FOD 12		D1	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
26	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589414.1 E 4805397.5 N

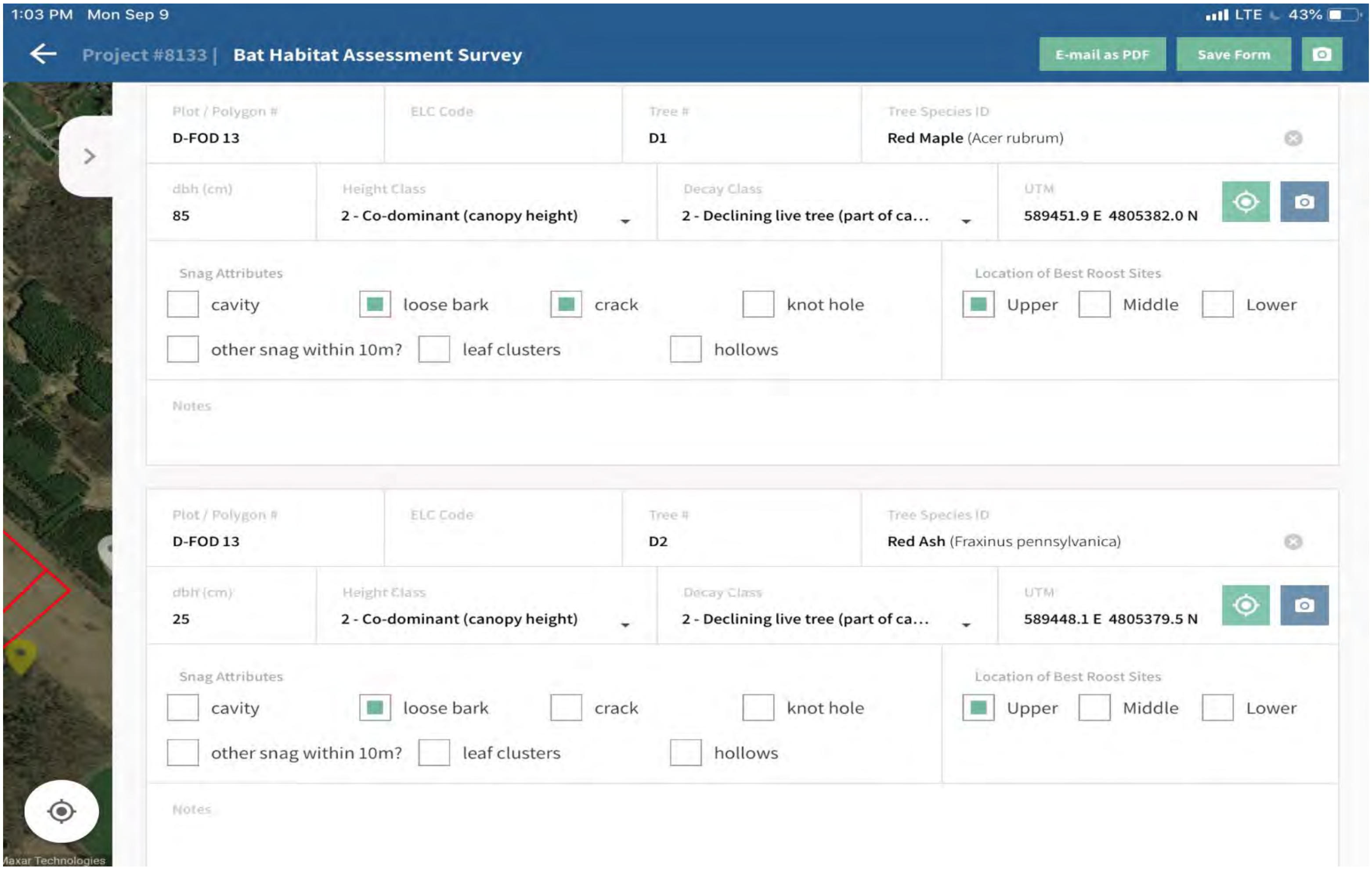
Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | Bat Habitat Assessment Survey

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-FOD 13		D1	**Red Maple** (Acer rubrum)

dbh (cm)	Height Class	Decay Class	UTM
85	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589451.9 E 4805382.0 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes

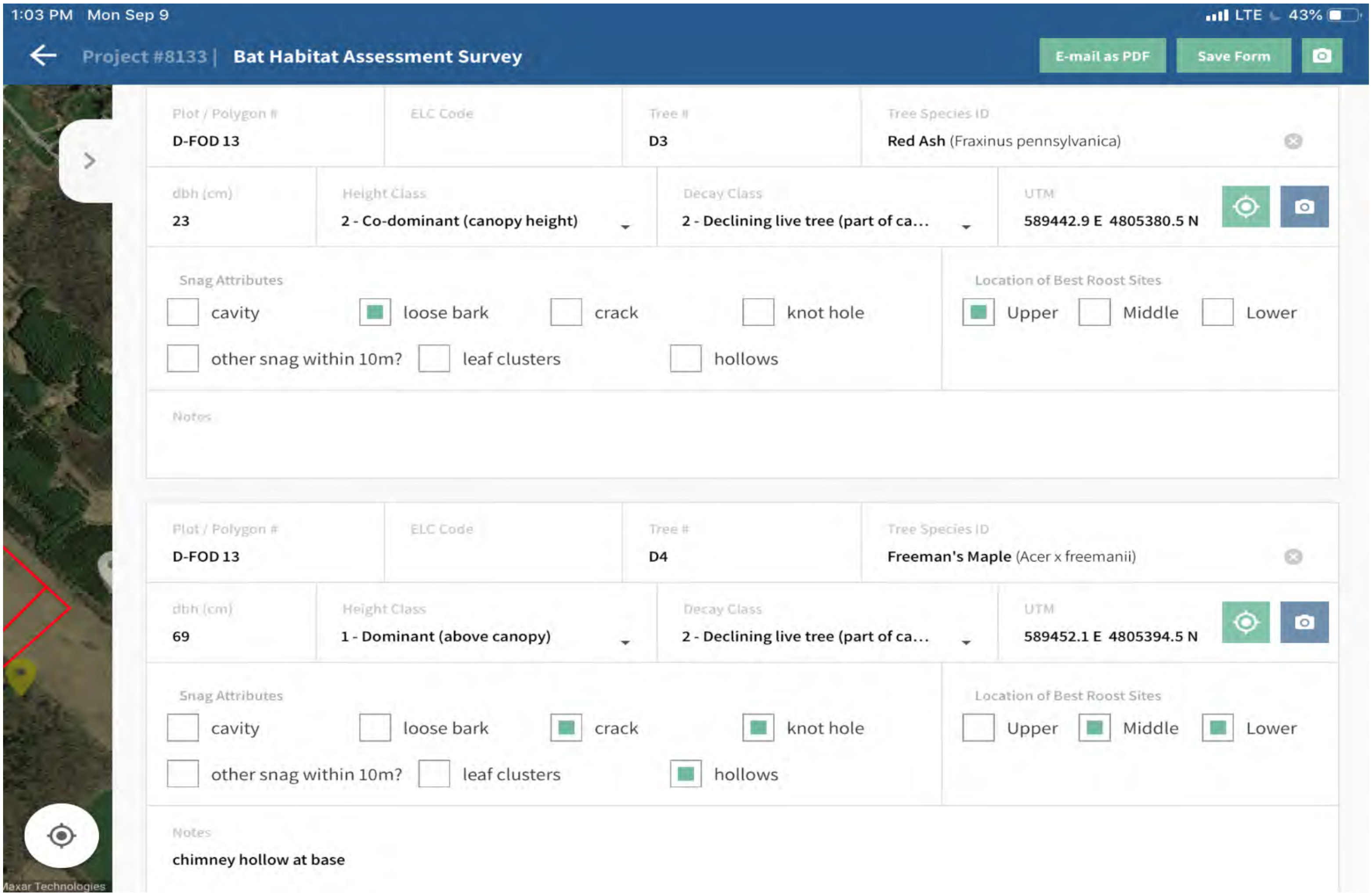
Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-FOD 13		D2	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
25	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589448.1 E 4805379.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | Bat Habitat Assessment Survey

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-FOD 13		D3	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
23	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589442.9 E 4805380.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes

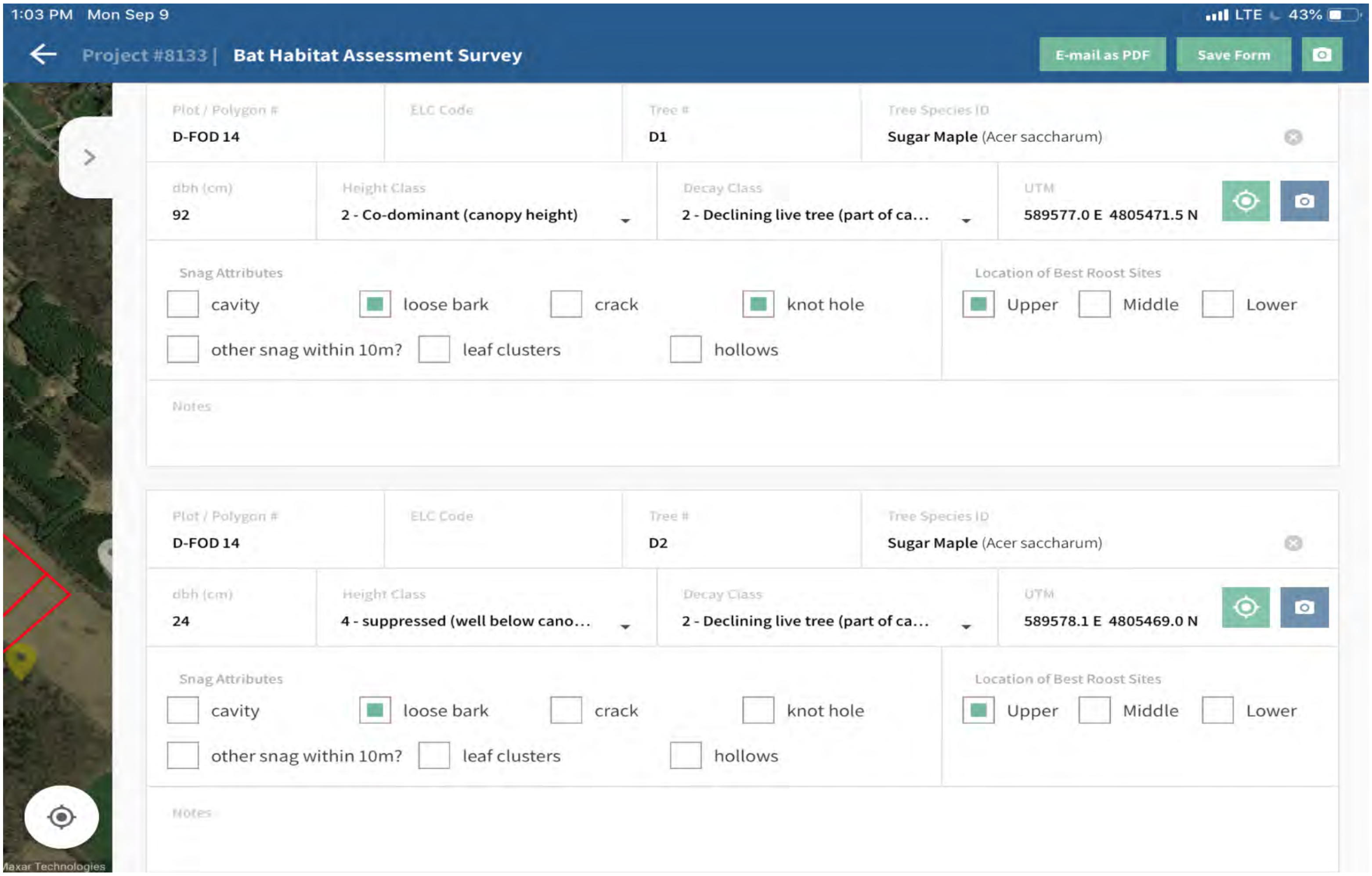
Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-FOD 13		D4	**Freeman's Maple** (Acer x freemanii)

dbh (cm)	Height Class	Decay Class	UTM
69	1 - Dominant (above canopy)	2 - Declining live tree (part of ca...	589452.1 E 4805394.5 N

Snag Attributes
☐ cavity ☐ loose bark ☑ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☑ hollows

Location of Best Roost Sites
☐ Upper ☑ Middle ☑ Lower

Notes
chimney hollow at base



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-FOD 14		**D1**	**Sugar Maple** (Acer saccharum)

dbh (cm)	Height Class	Decay Class	UTM
92	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589577.0 E 4805471.5 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-FOD 14		**D2**	**Sugar Maple** (Acer saccharum)

dbh (cm)	Height Class	Decay Class	UTM
24	4 - suppressed (well below cano...	2 - Declining live tree (part of ca...	589578.1 E 4805469.0 N

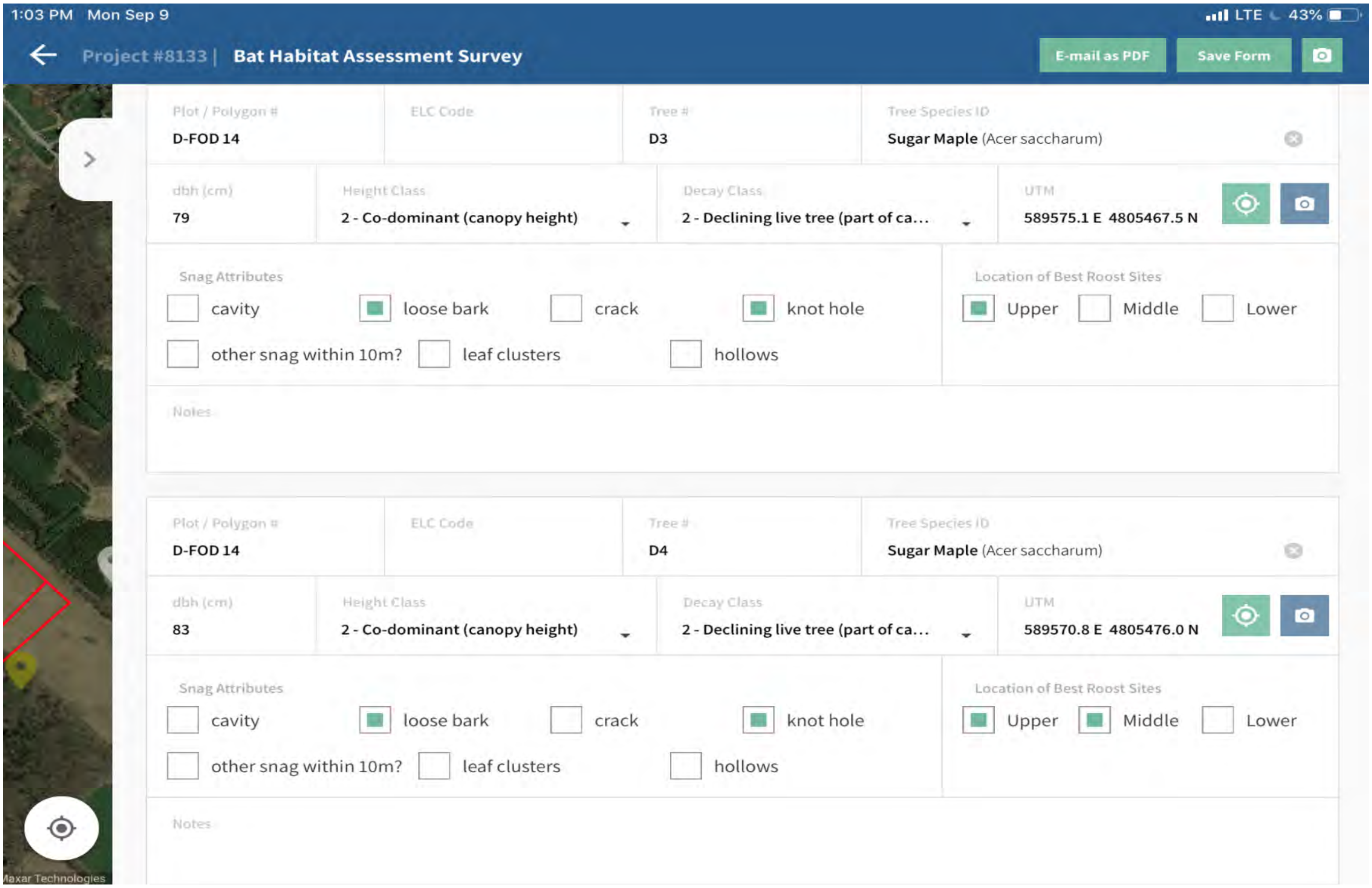
Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-FOD 14		**D3**	**Sugar Maple** (Acer saccharum)

dbh (cm)	Height Class	Decay Class	UTM
79	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589575.1 E 4805467.5 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-FOD 14		**D4**	**Sugar Maple** (Acer saccharum)

dbh (cm)	Height Class	Decay Class	UTM
83	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589570.8 E 4805476.0 N

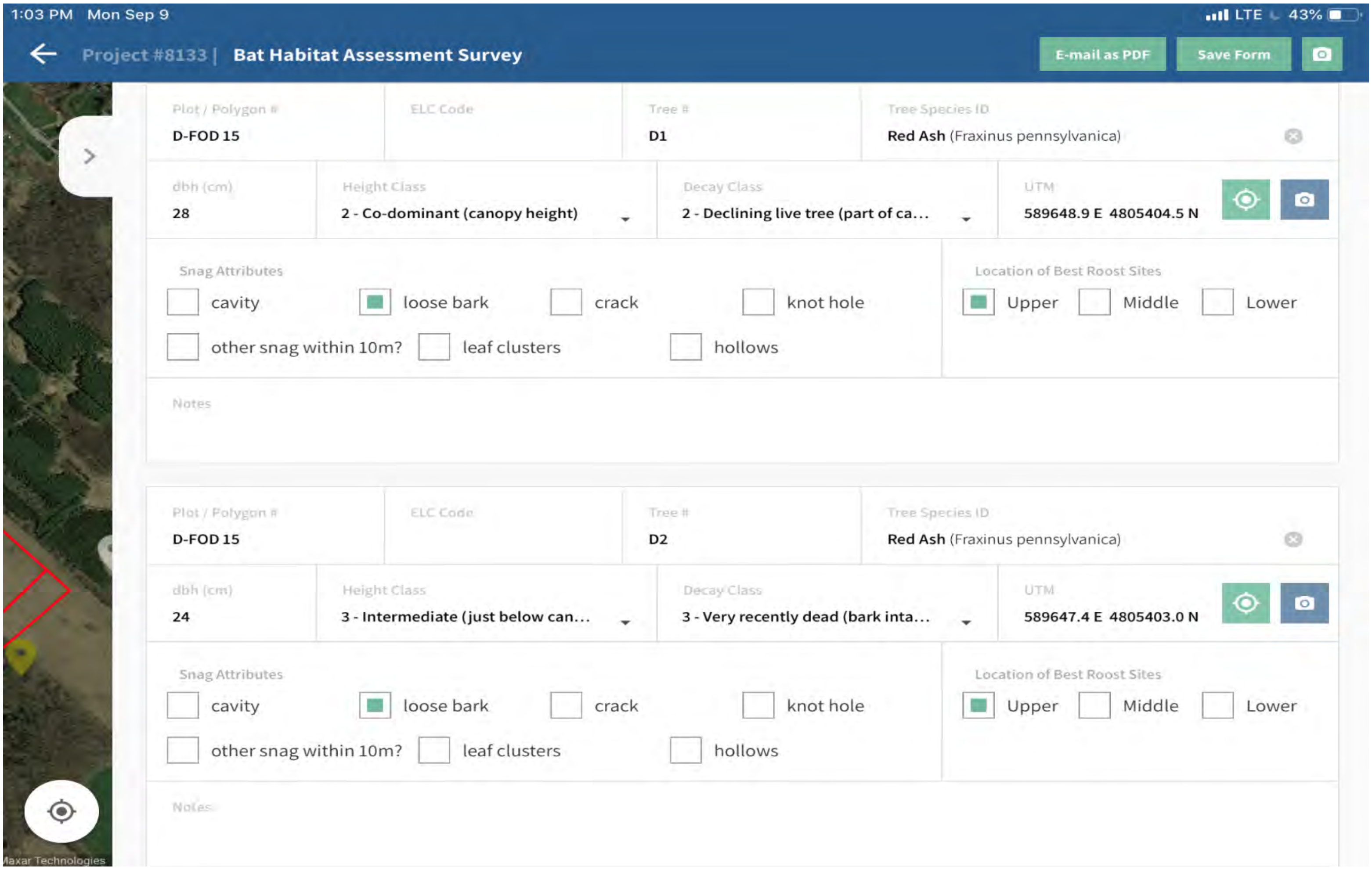
Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: D-FOD 15
ELC Code:
Tree #: D1
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)

dbh (cm): 28
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589648.9 E 4805404.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes

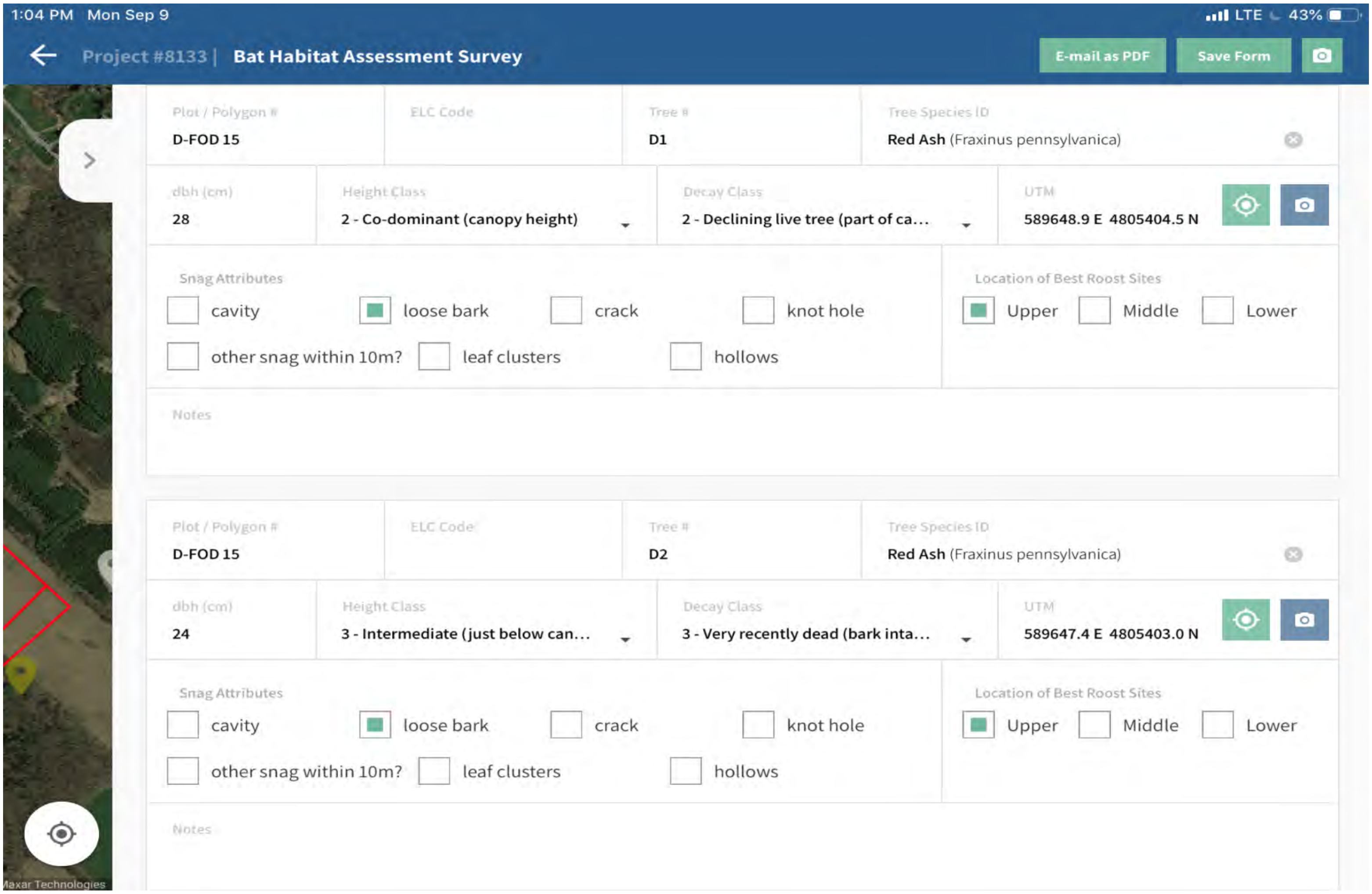
Plot / Polygon #: D-FOD 15
ELC Code:
Tree #: D2
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)

dbh (cm): 24
Height Class: 3 - Intermediate (just below can...
Decay Class: 3 - Very recently dead (bark inta...
UTM: 589647.4 E 4805403.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: D-FOD 15
ELC Code:
Tree #: D1
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)

dbh (cm): 28
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589648.9 E 4805404.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes

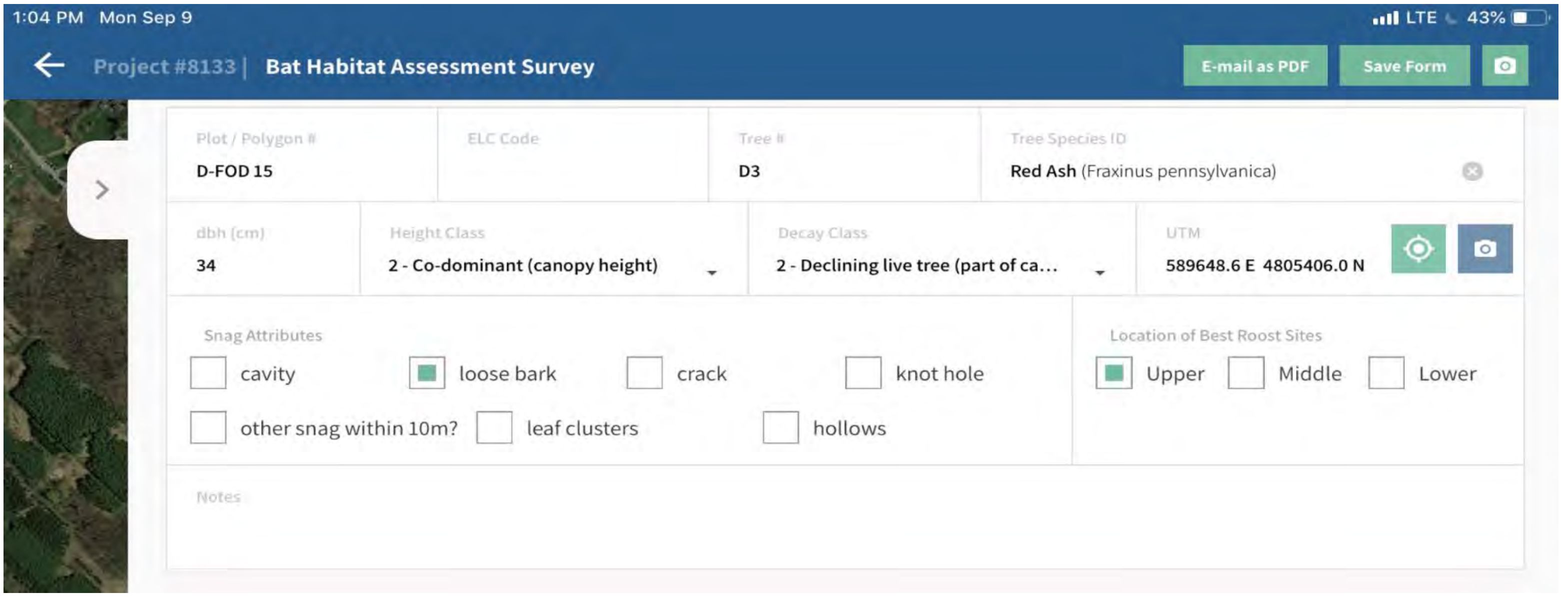
Plot / Polygon #: D-FOD 15
ELC Code:
Tree #: D2
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)

dbh (cm): 24
Height Class: 3 - Intermediate (just below can...
Decay Class: 3 - Very recently dead (bark inta...
UTM: 589647.4 E 4805403.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



Bat Habitat Assessment Survey

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
D-FOD 15		D3	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
34	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589648.6 E 4805406.0 N

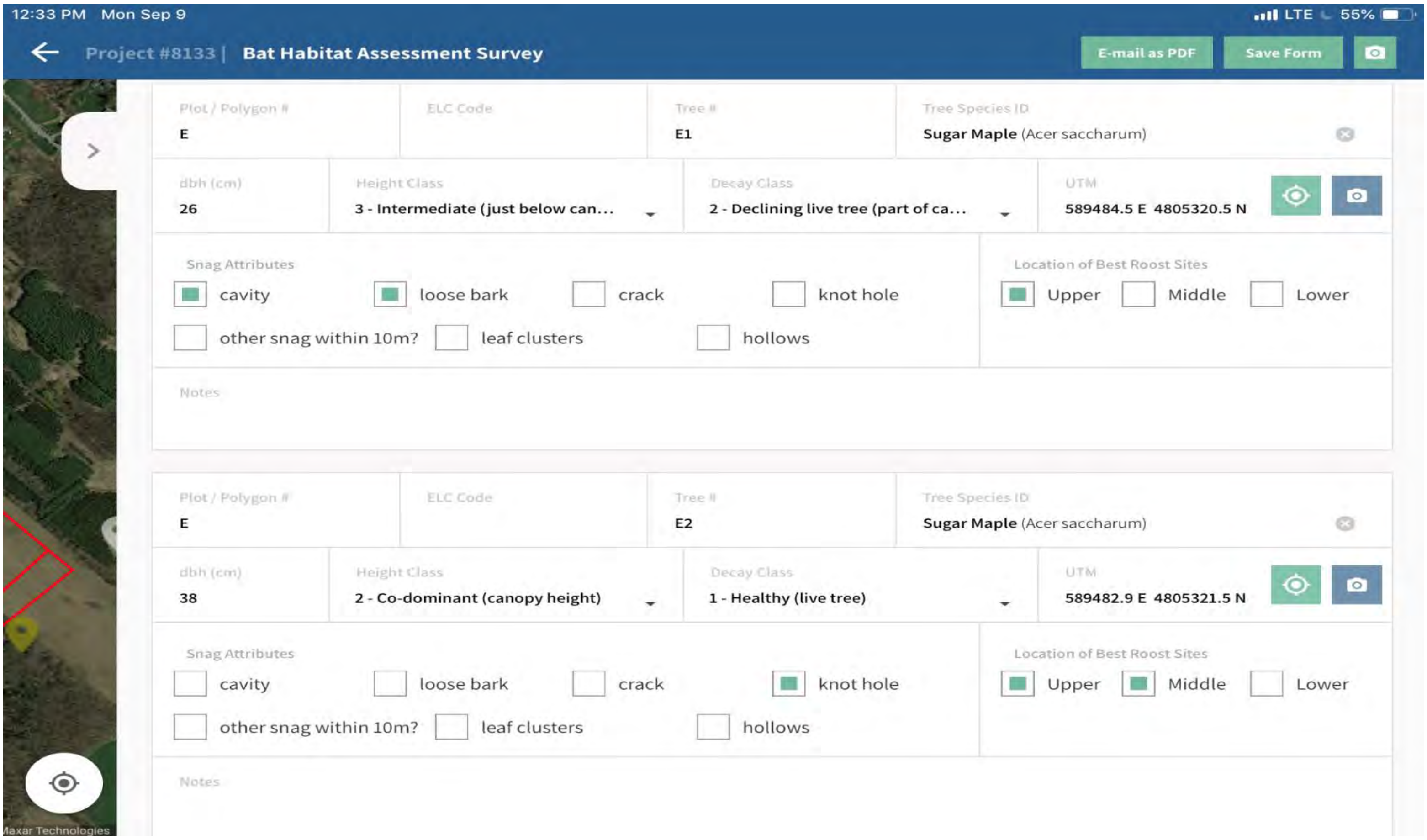
Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: E
ELC Code:
Tree #: E1
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 26
Height Class: 3 - Intermediate (just below can...
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589484.5 E 4805320.5 N

Snag Attributes
☑ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

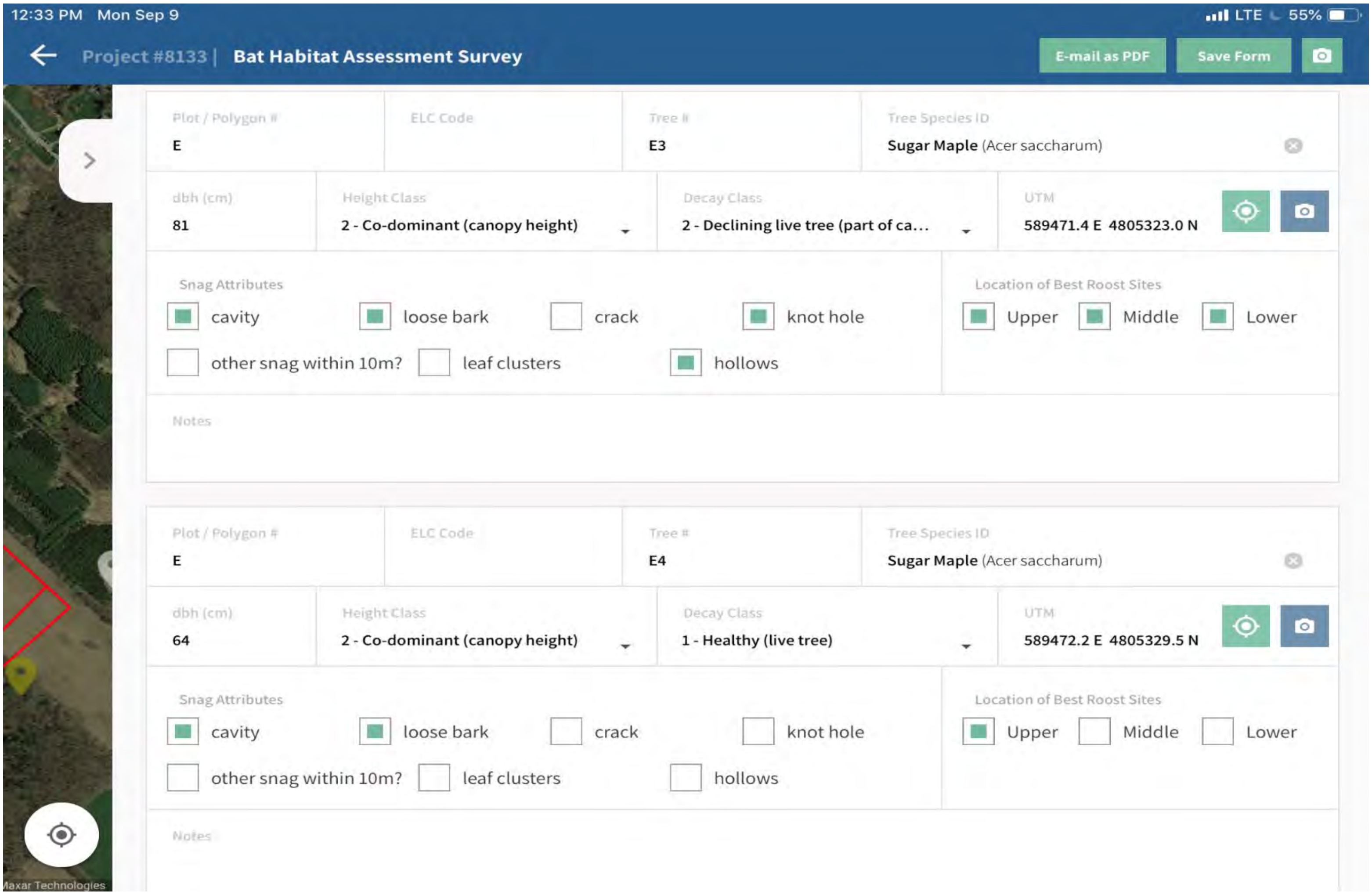
Notes

Plot / Polygon #: E
ELC Code:
Tree #: E2
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 38
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 1 - Healthy (live tree)
UTM: 589482.9 E 4805321.5 N

Snag Attributes
☐ cavity ☐ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: E
ELC Code:
Tree #: E3
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 81
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589471.4 E 4805323.0 N

Snag Attributes
☑ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☑ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☑ Lower

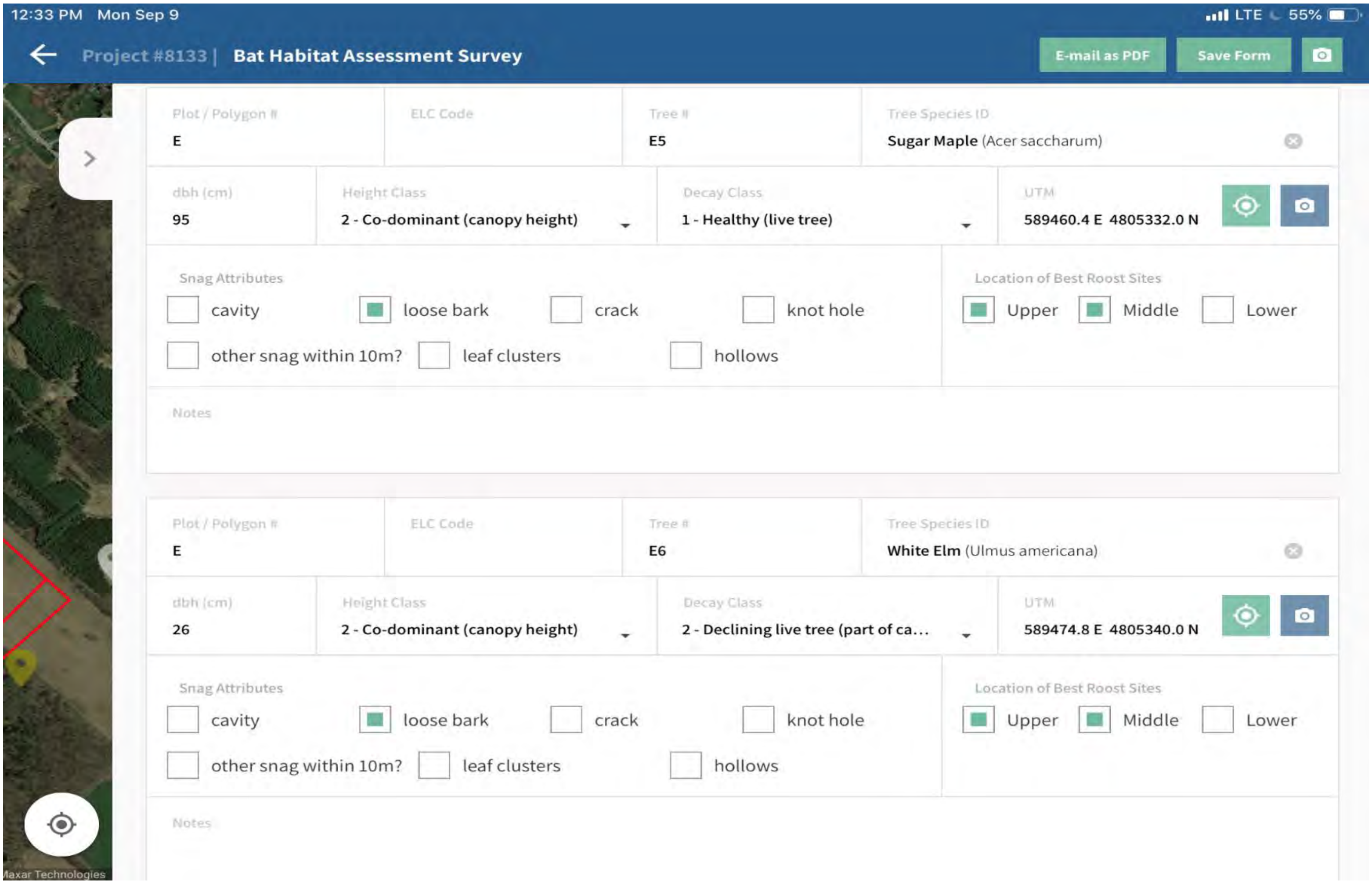
Notes

Plot / Polygon #: E
ELC Code:
Tree #: E4
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 64
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 1 - Healthy (live tree)
UTM: 589472.2 E 4805329.5 N

Snag Attributes
☑ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
E		E5	**Sugar Maple** (Acer saccharum)

dbh (cm)	Height Class	Decay Class	UTM
95	2 - Co-dominant (canopy height)	1 - Healthy (live tree)	589460.4 E 4805332.0 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
E		E6	**White Elm** (Ulmus americana)

dbh (cm)	Height Class	Decay Class	UTM
26	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589474.8 E 4805340.0 N

Snag Attributes

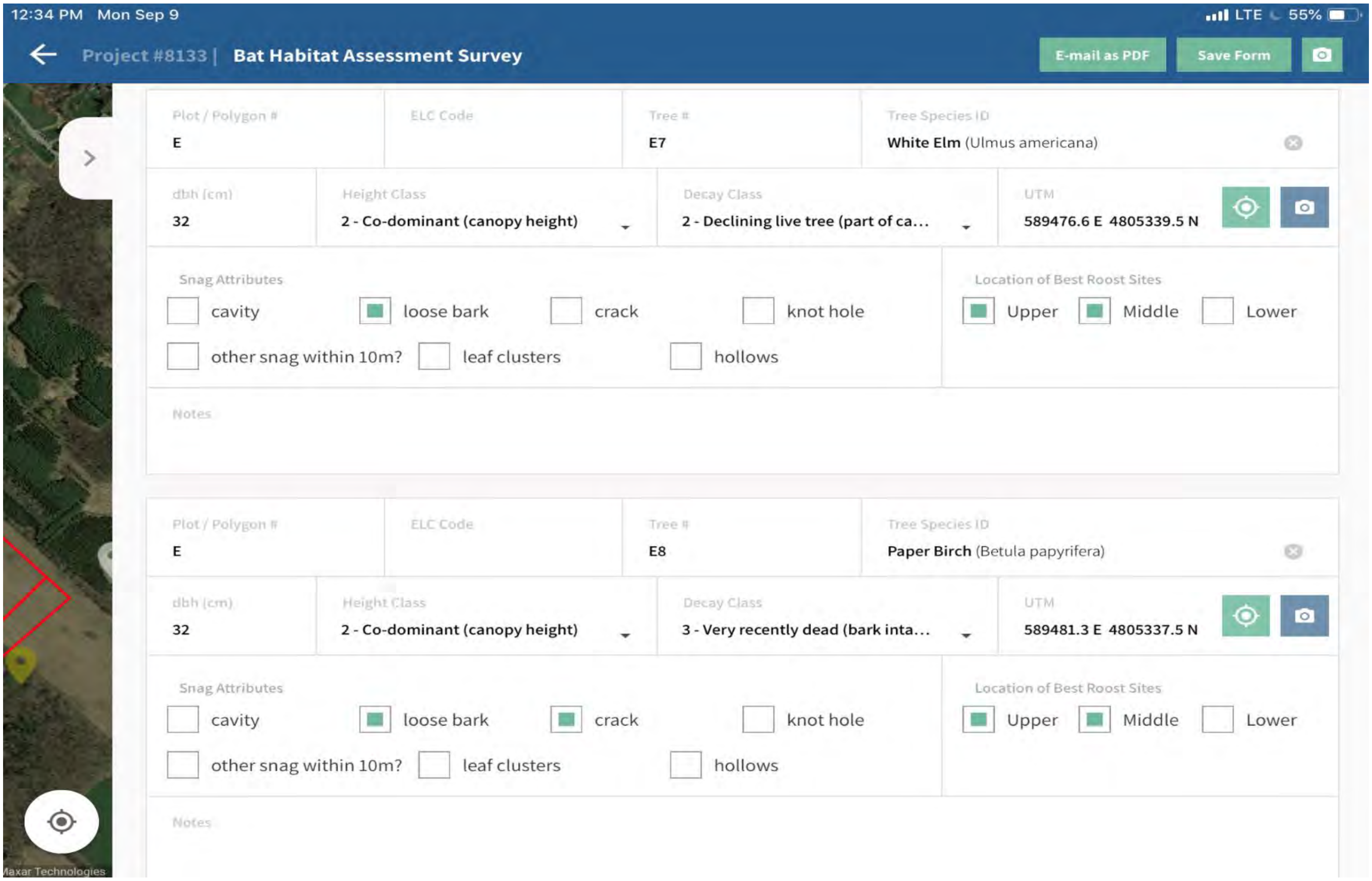
☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
E		E7	**White Elm** (Ulmus americana)

dbh (cm)	Height Class	Decay Class	UTM
32	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589476.6 E 4805339.5 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
E		E8	**Paper Birch** (Betula papyrifera)

dbh (cm)	Height Class	Decay Class	UTM
32	2 - Co-dominant (canopy height)	3 - Very recently dead (bark inta...	589481.3 E 4805337.5 N

Snag Attributes

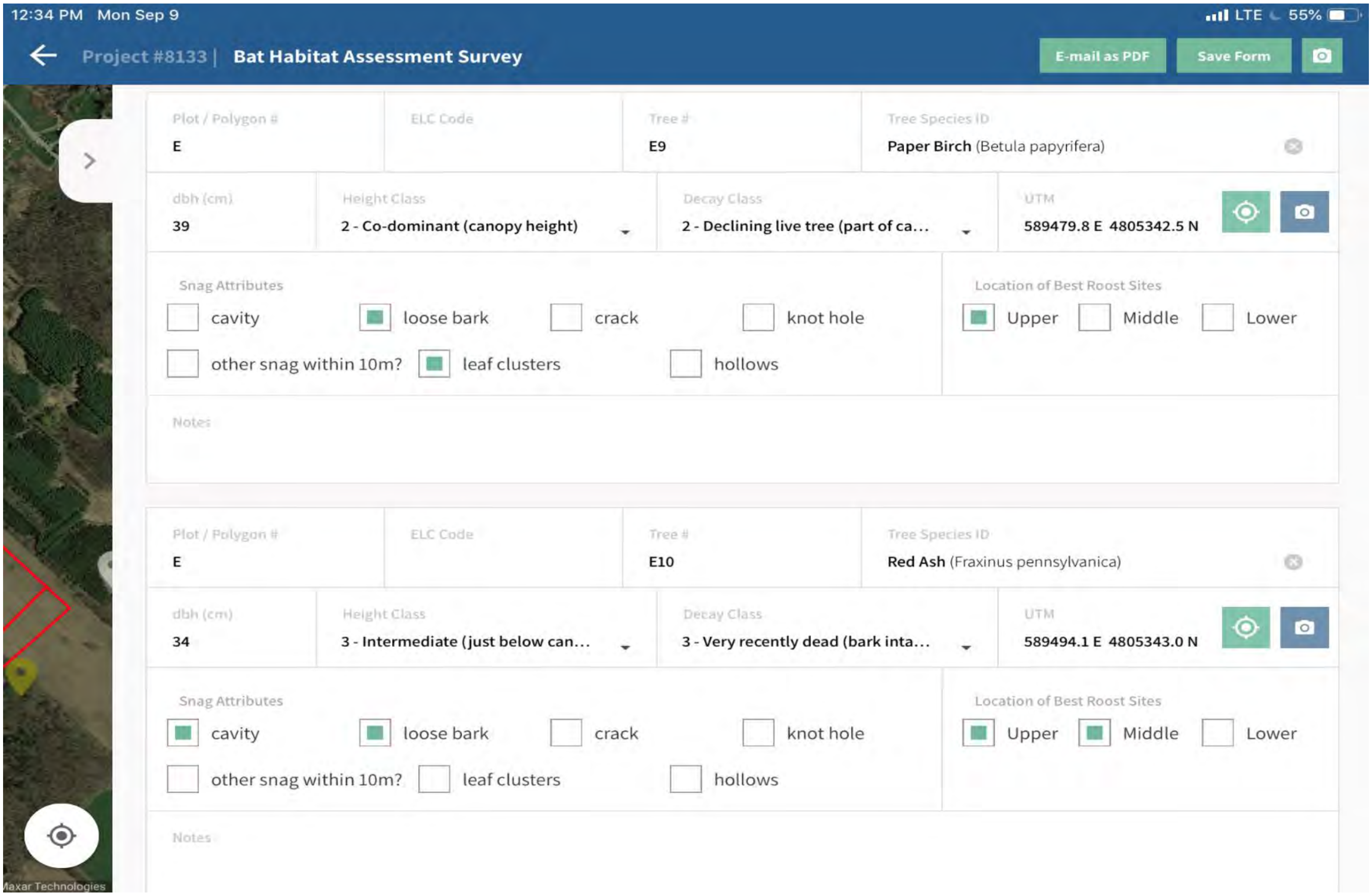
☐ cavity ☑ loose bark ☑ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: E
ELC Code:
Tree #: E9
Tree Species ID: **Paper Birch** (Betula papyrifera)
dbh (cm): 39
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca…
UTM: 589479.8 E 4805342.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☑ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

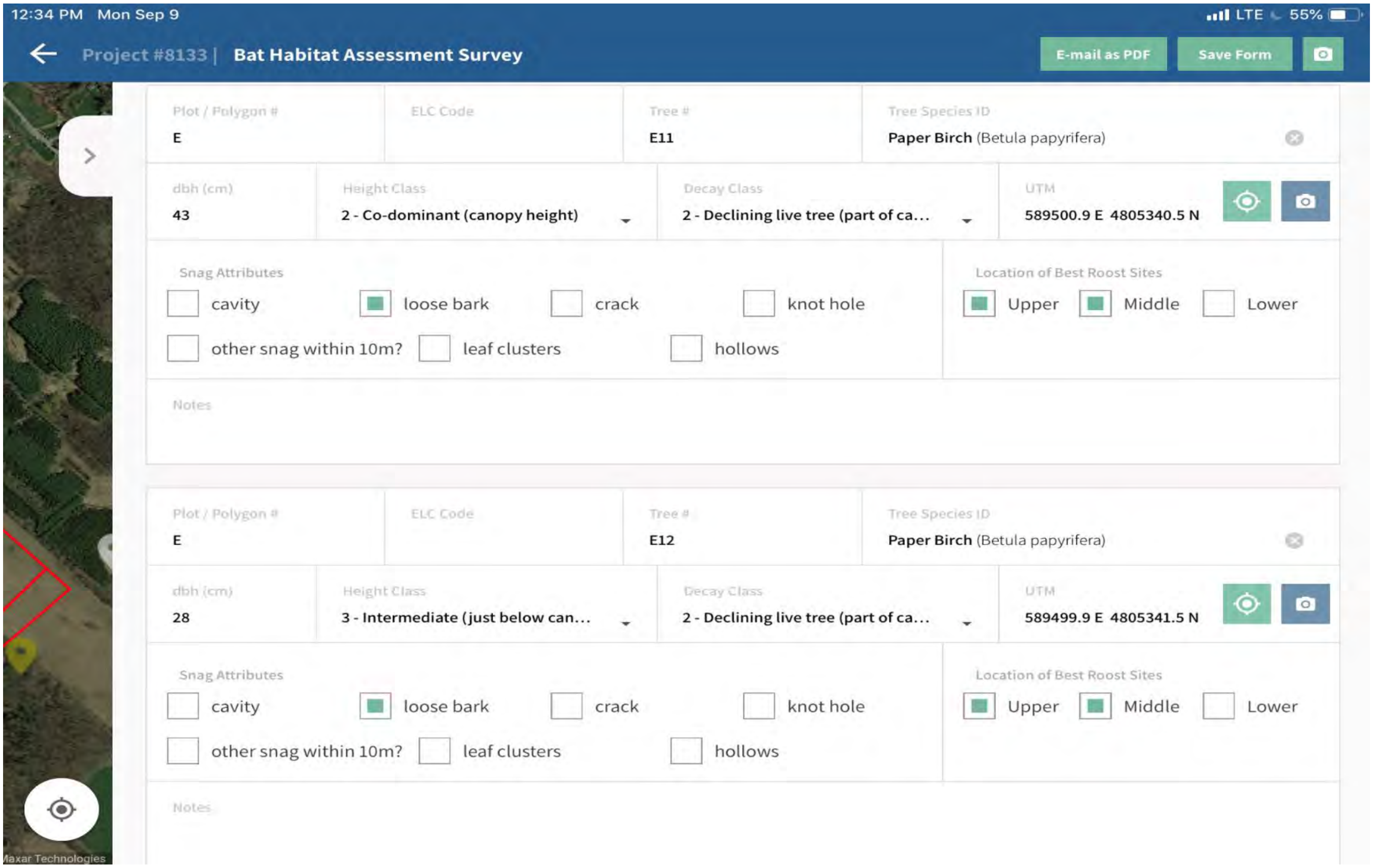
Notes:

Plot / Polygon #: E
ELC Code:
Tree #: E10
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)
dbh (cm): 34
Height Class: 3 - Intermediate (just below can…
Decay Class: 3 - Very recently dead (bark inta…
UTM: 589494.1 E 4805343.0 N

Snag Attributes
☑ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes:



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: E
ELC Code:
Tree #: E11
Tree Species ID: **Paper Birch** (Betula papyrifera)
dbh (cm): 43
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca…
UTM: 589500.9 E 4805340.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

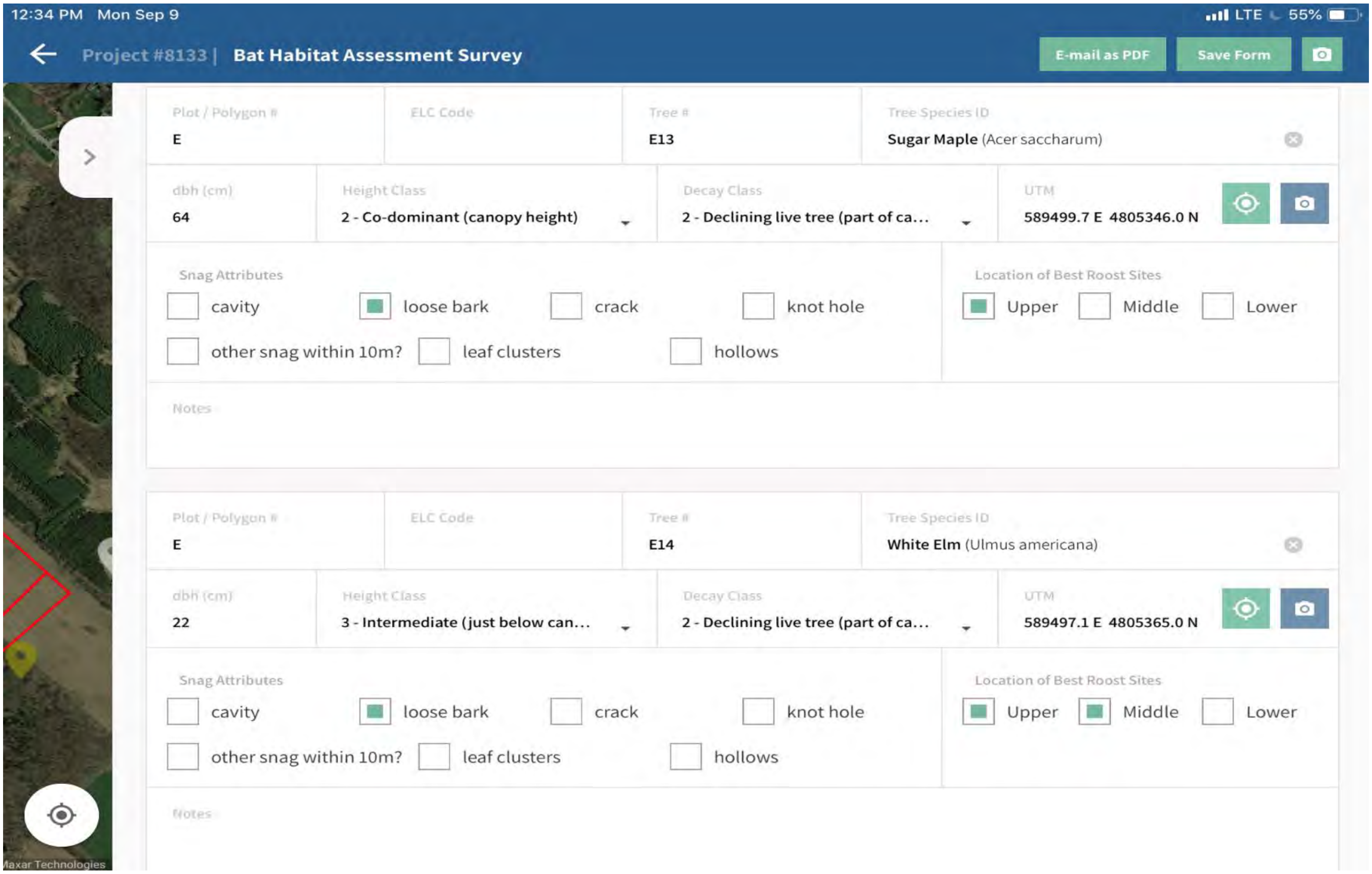
Notes:

Plot / Polygon #: E
ELC Code:
Tree #: E12
Tree Species ID: **Paper Birch** (Betula papyrifera)
dbh (cm): 28
Height Class: 3 - Intermediate (just below can…
Decay Class: 2 - Declining live tree (part of ca…
UTM: 589499.9 E 4805341.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes:



Plot / Polygon #: E
ELC Code:
Tree #: E13
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 64
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589499.7 E 4805346.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

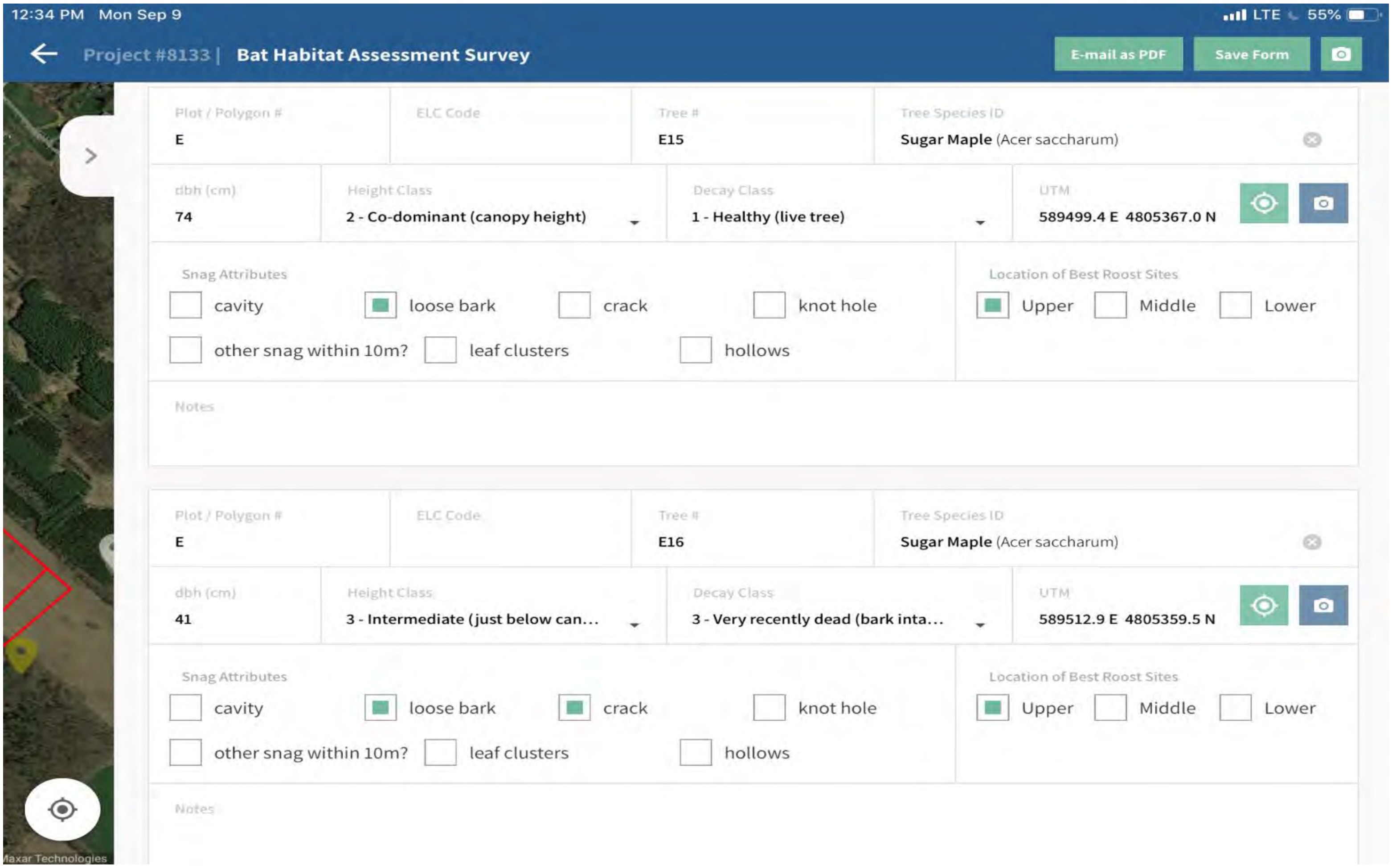
Notes

Plot / Polygon #: E
ELC Code:
Tree #: E14
Tree Species ID: **White Elm** (Ulmus americana)
dbh (cm): 22
Height Class: 3 - Intermediate (just below can...
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589497.1 E 4805365.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes



Plot / Polygon #: E
ELC Code:
Tree #: E15
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 74
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 1 - Healthy (live tree)
UTM: 589499.4 E 4805367.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

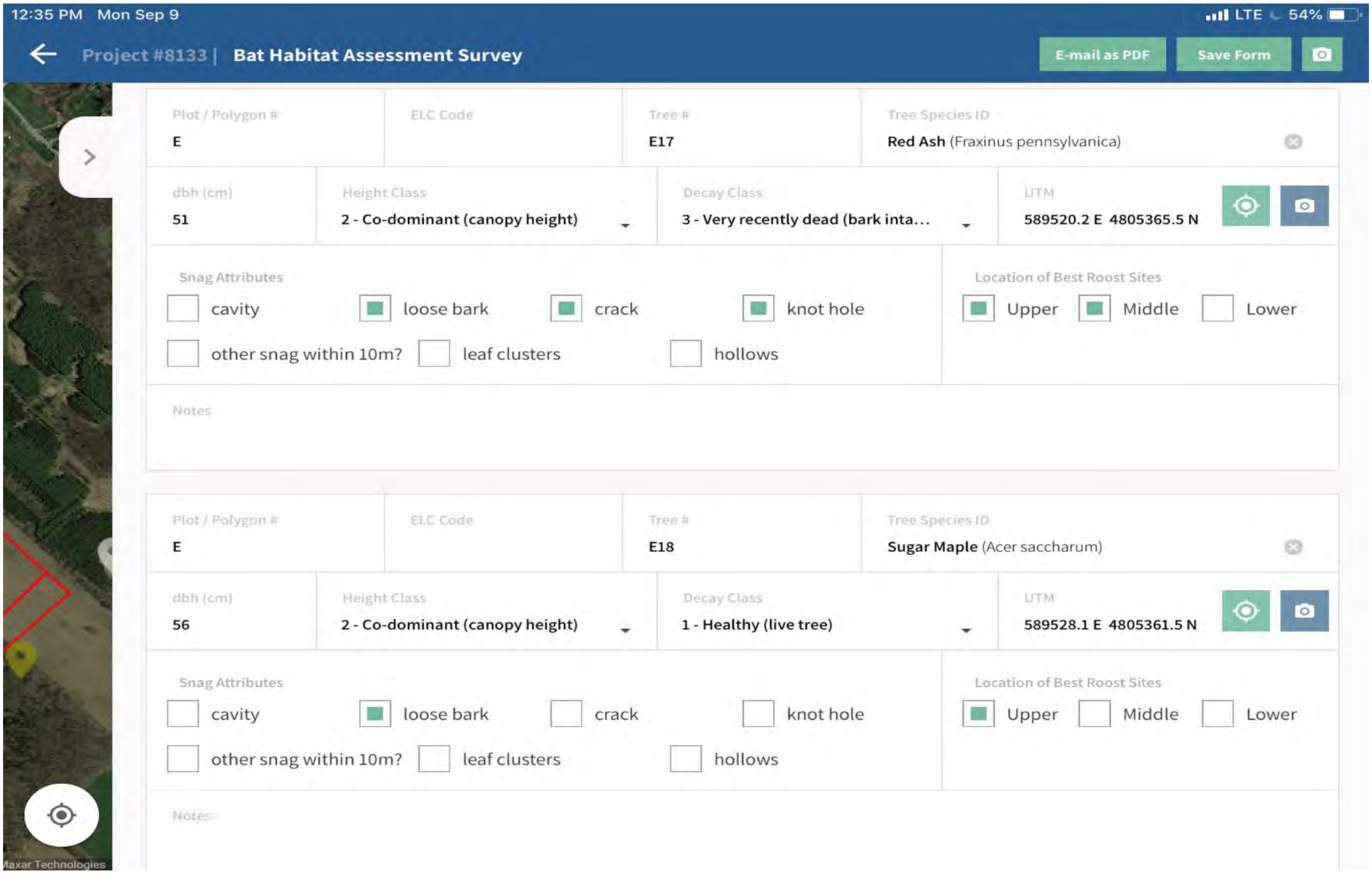
Notes

Plot / Polygon #: E
ELC Code:
Tree #: E16
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 41
Height Class: 3 - Intermediate (just below can...
Decay Class: 3 - Very recently dead (bark inta...
UTM: 589512.9 E 4805359.5 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



Bat Habitat Assessment Survey

Plot / Polygon #: E
ELC Code:
Tree #: E17
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)
dbh (cm): 51
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 3 - Very recently dead (bark inta...
UTM: 589520.2 E 4805365.5 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

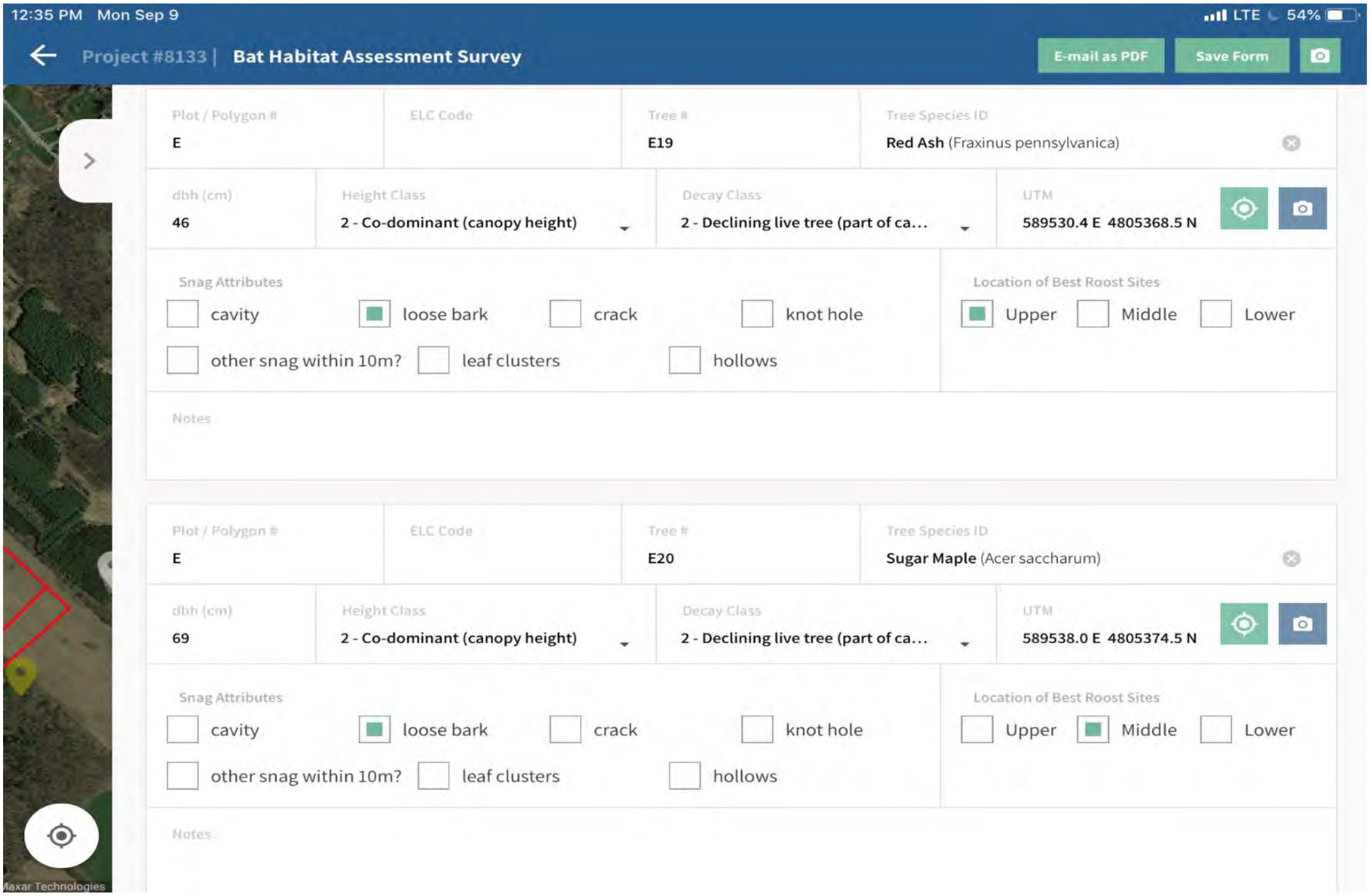
Notes

Plot / Polygon #: E
ELC Code:
Tree #: E18
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 56
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 1 - Healthy (live tree)
UTM: 589528.1 E 4805361.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



Bat Habitat Assessment Survey

Plot / Polygon #: E
ELC Code:
Tree #: E19
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)
dbh (cm): 46
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589530.4 E 4805368.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

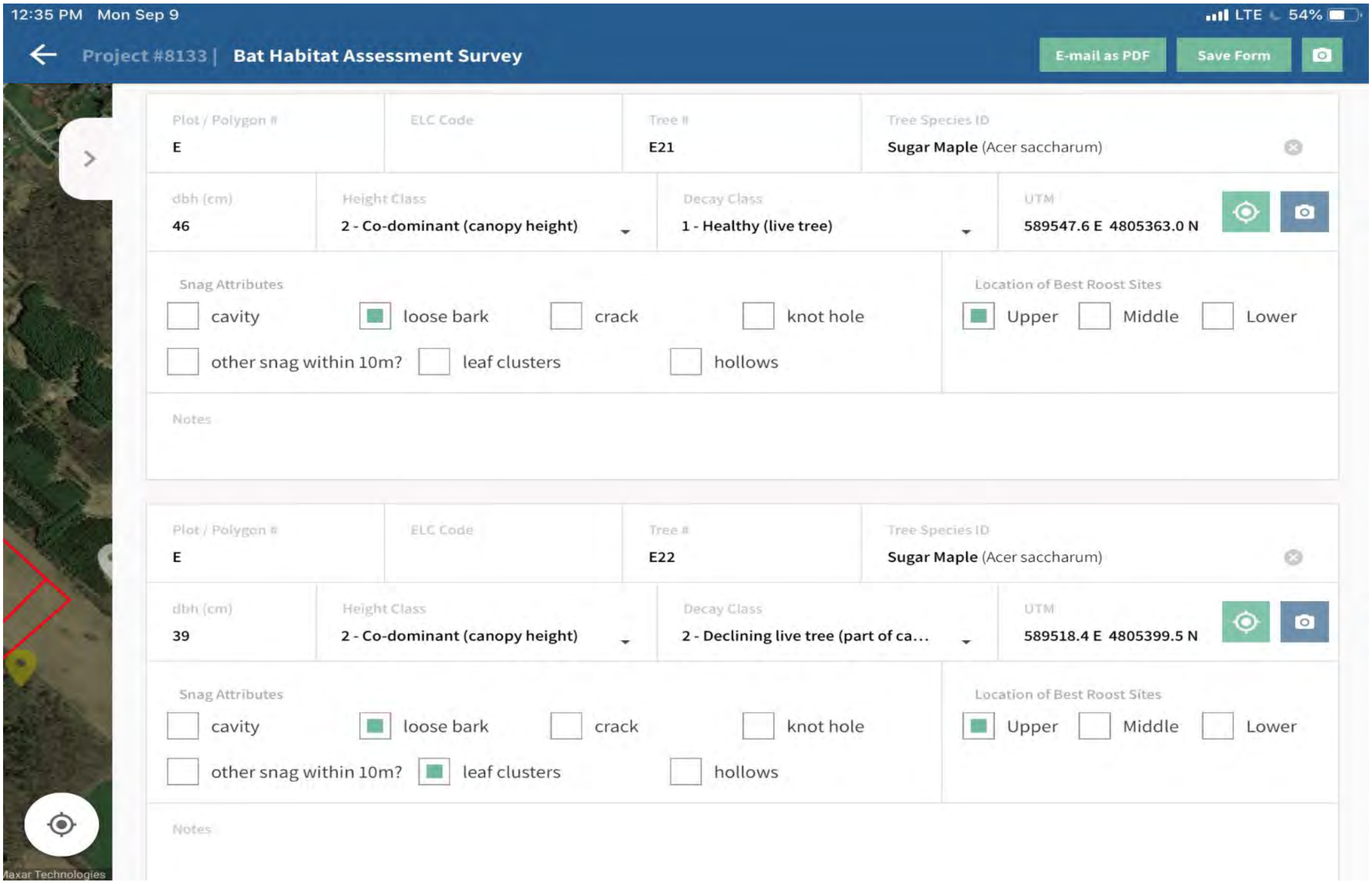
Notes

Plot / Polygon #: E
ELC Code:
Tree #: E20
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 69
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589538.0 E 4805374.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
E		E21	**Sugar Maple** (Acer saccharum)

dbh (cm)	Height Class	Decay Class	UTM
46	2 - Co-dominant (canopy height)	1 - Healthy (live tree)	589547.6 E 4805363.0 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
E		E22	**Sugar Maple** (Acer saccharum)

dbh (cm)	Height Class	Decay Class	UTM
39	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589518.4 E 4805399.5 N

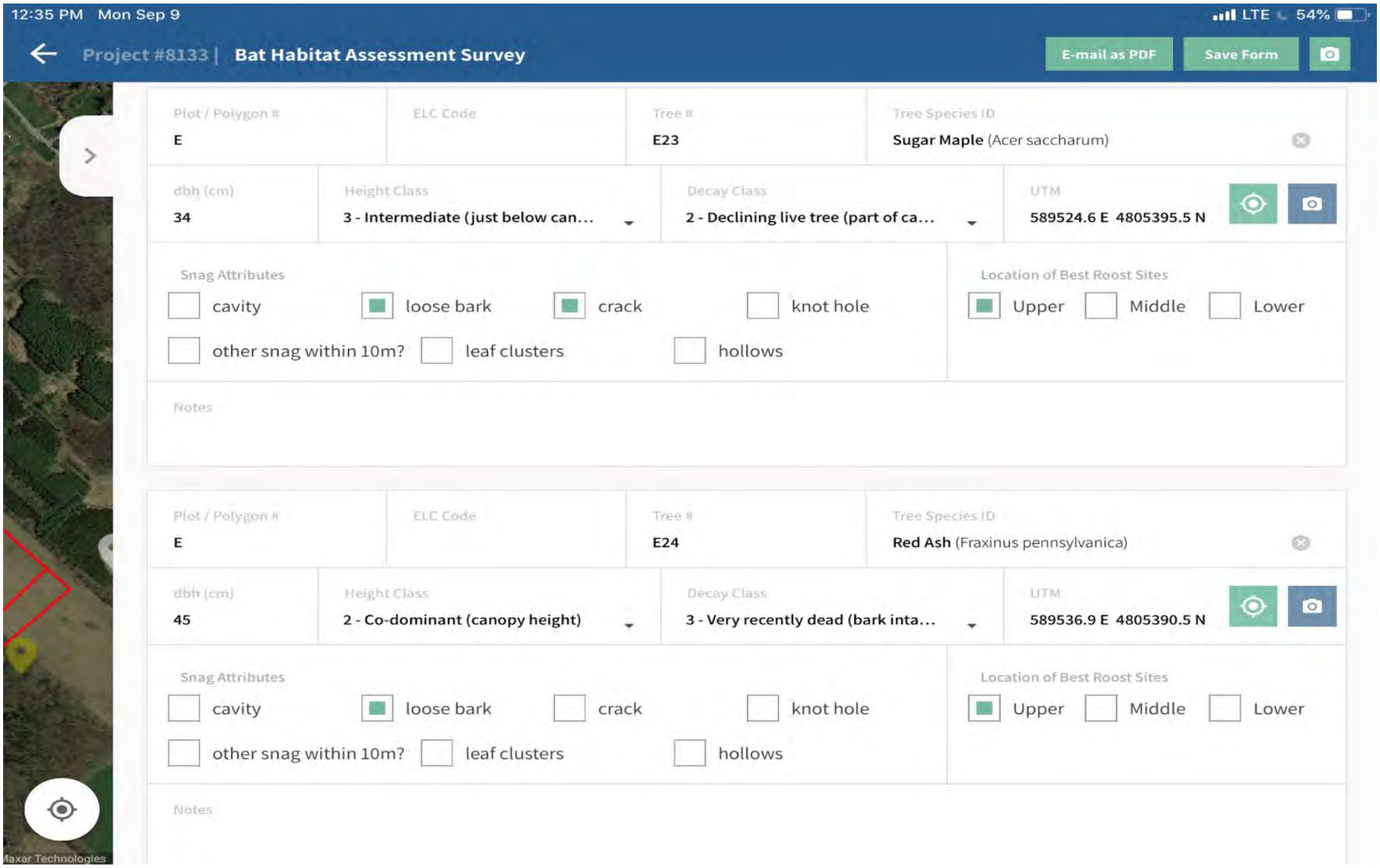
Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☑ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
E		E23	**Sugar Maple** (Acer saccharum)

dbh (cm)	Height Class	Decay Class	UTM
34	3 - Intermediate (just below can...	2 - Declining live tree (part of ca...	589524.6 E 4805395.5 N

Snag Attributes

☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
E		E24	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
45	2 - Co-dominant (canopy height)	3 - Very recently dead (bark inta...	589536.9 E 4805390.5 N

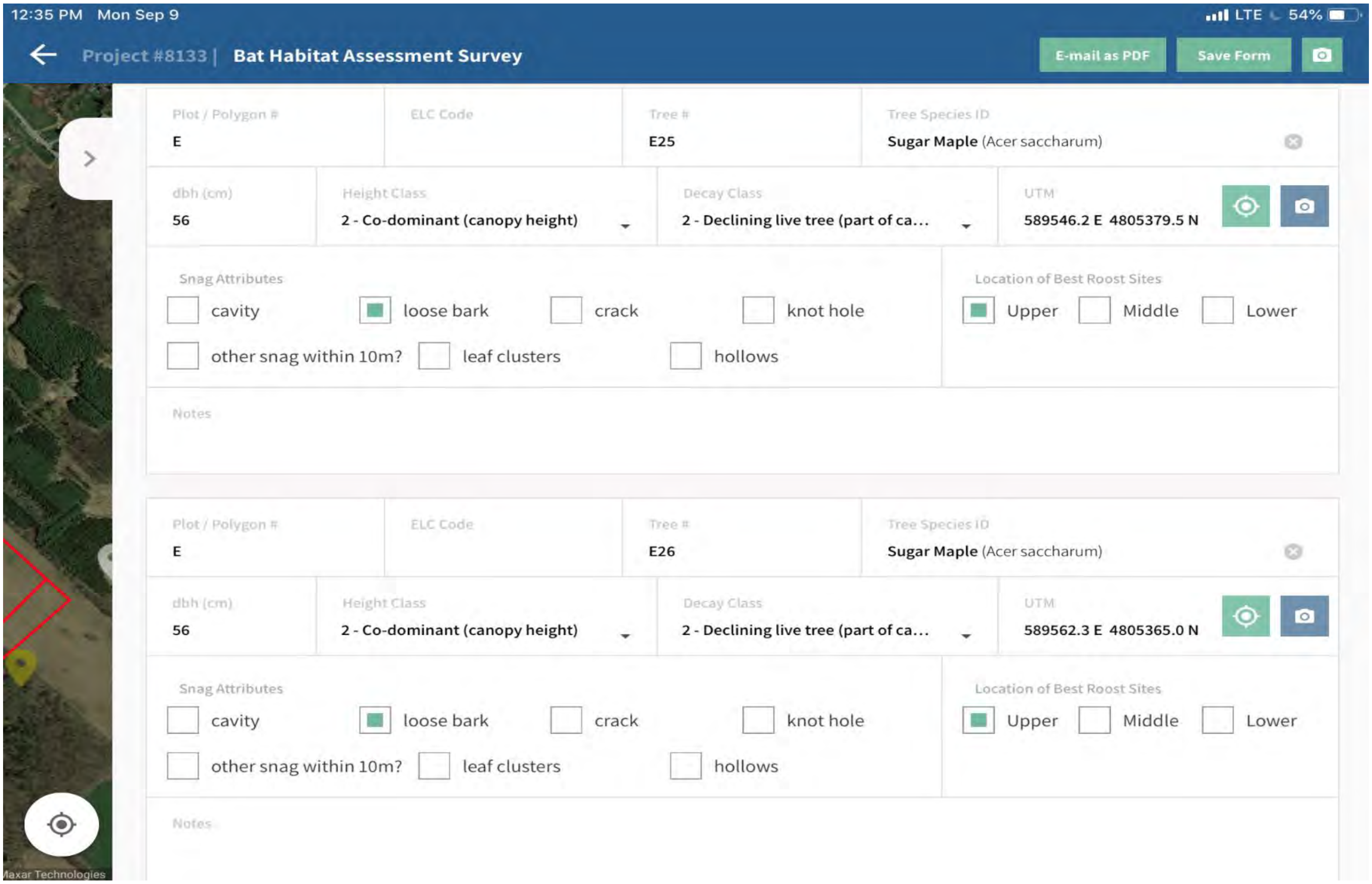
Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: E
ELC Code:
Tree #: E25
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 56
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589546.2 E 4805379.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

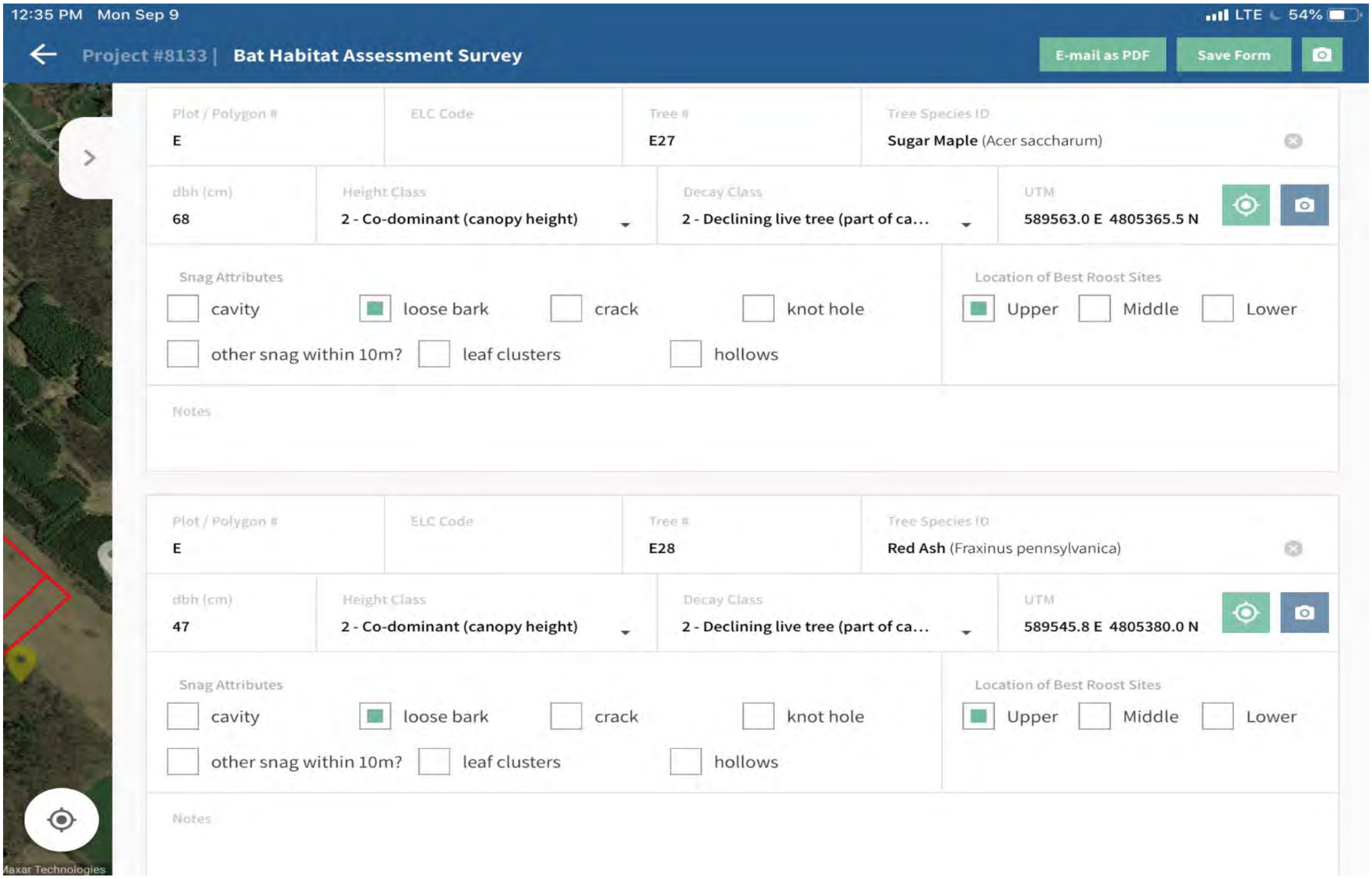
Notes

Plot / Polygon #: E
ELC Code:
Tree #: E26
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 56
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589562.3 E 4805365.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: E
ELC Code:
Tree #: E27
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 68
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589563.0 E 4805365.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

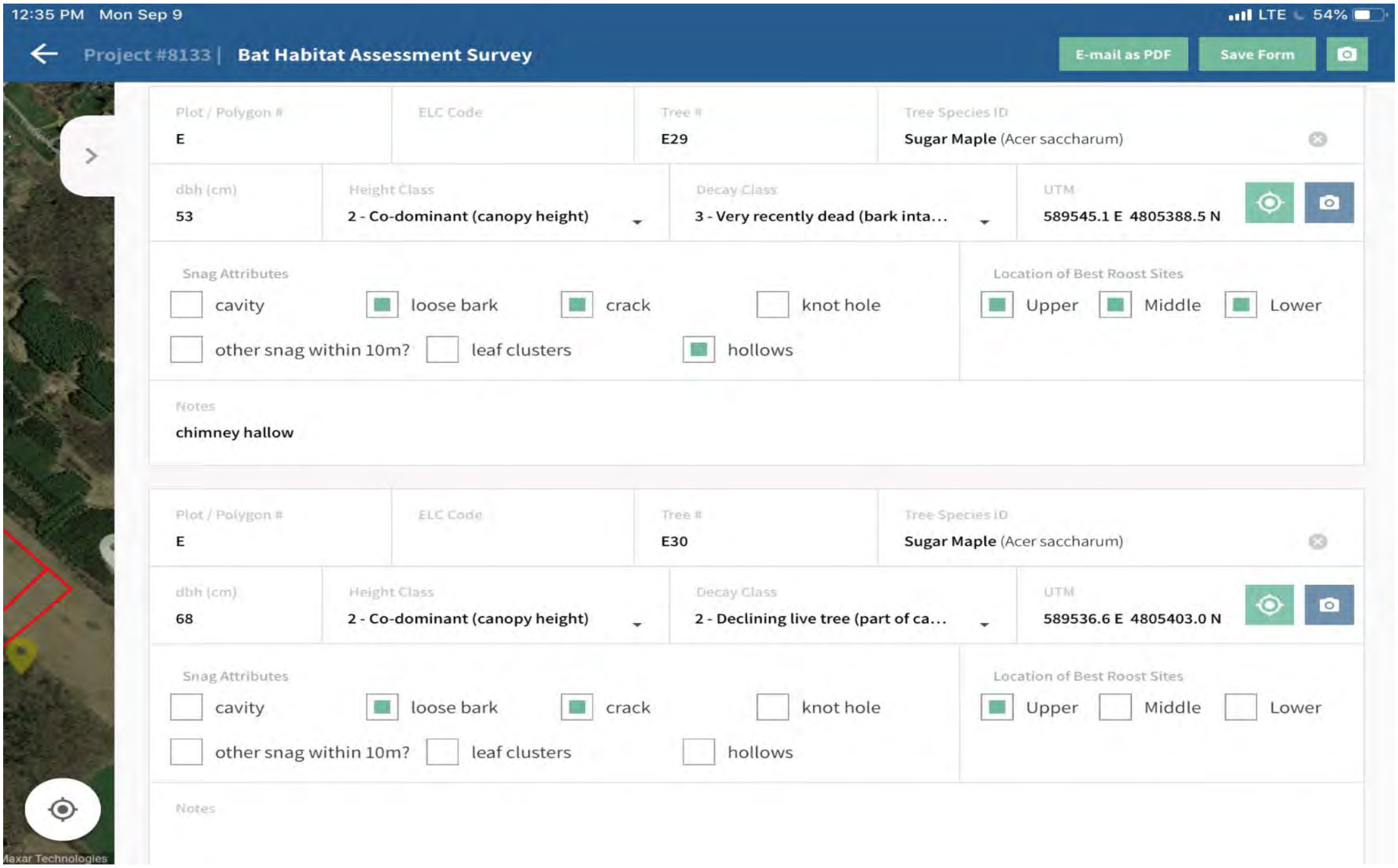
Notes

Plot / Polygon #: E
ELC Code:
Tree #: E28
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)
dbh (cm): 47
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589545.8 E 4805380.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: E
ELC Code:
Tree #: E29
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 53
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 3 - Very recently dead (bark inta...
UTM: 589545.1 E 4805388.5 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☑ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☑ Lower

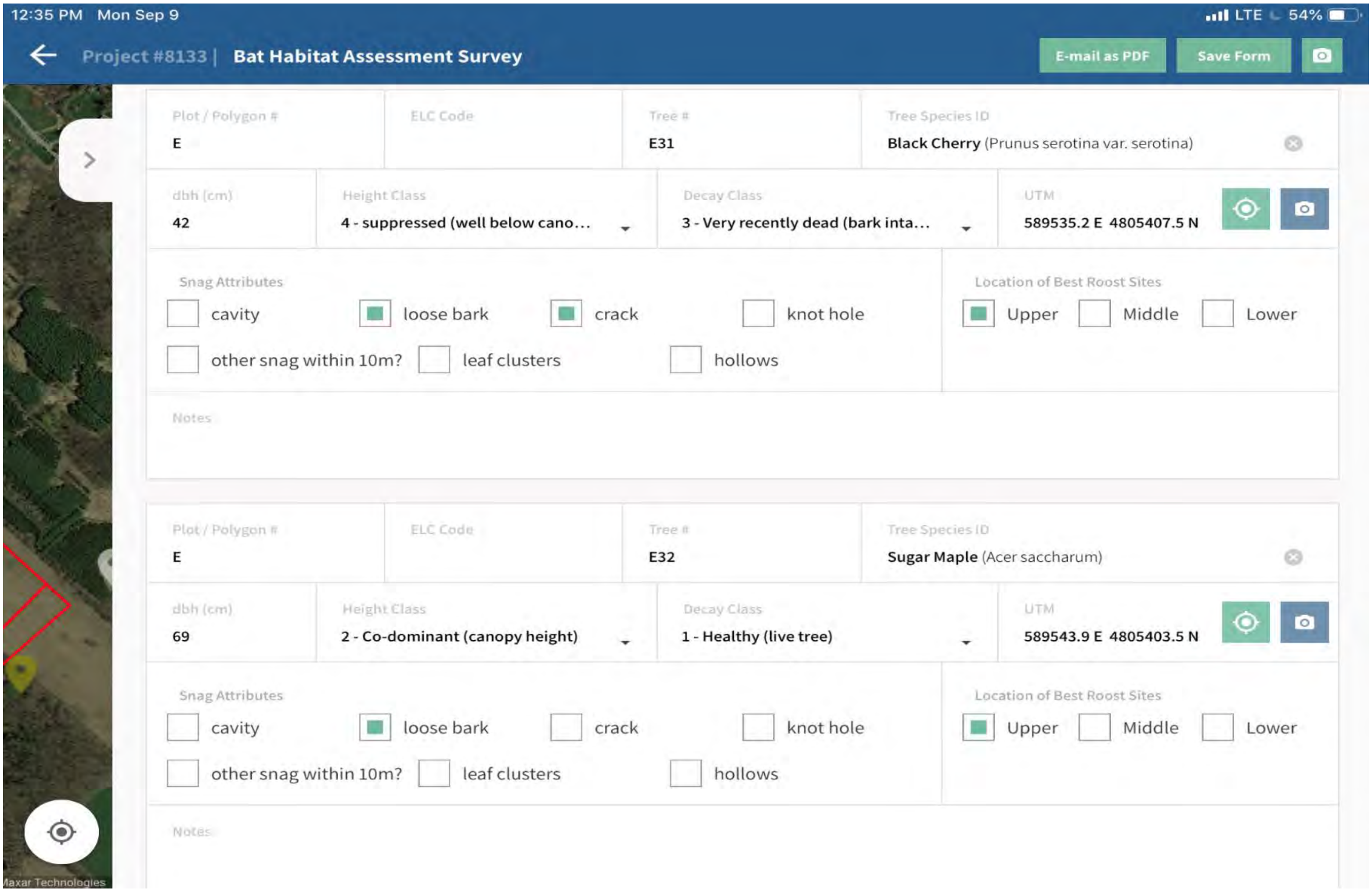
Notes: chimney hallow

Plot / Polygon #: E
ELC Code:
Tree #: E30
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 68
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589536.6 E 4805403.0 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes:



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: E
ELC Code:
Tree #: E31
Tree Species ID: **Black Cherry** (Prunus serotina var. serotina)
dbh (cm): 42
Height Class: 4 - suppressed (well below cano...
Decay Class: 3 - Very recently dead (bark inta...
UTM: 589535.2 E 4805407.5 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

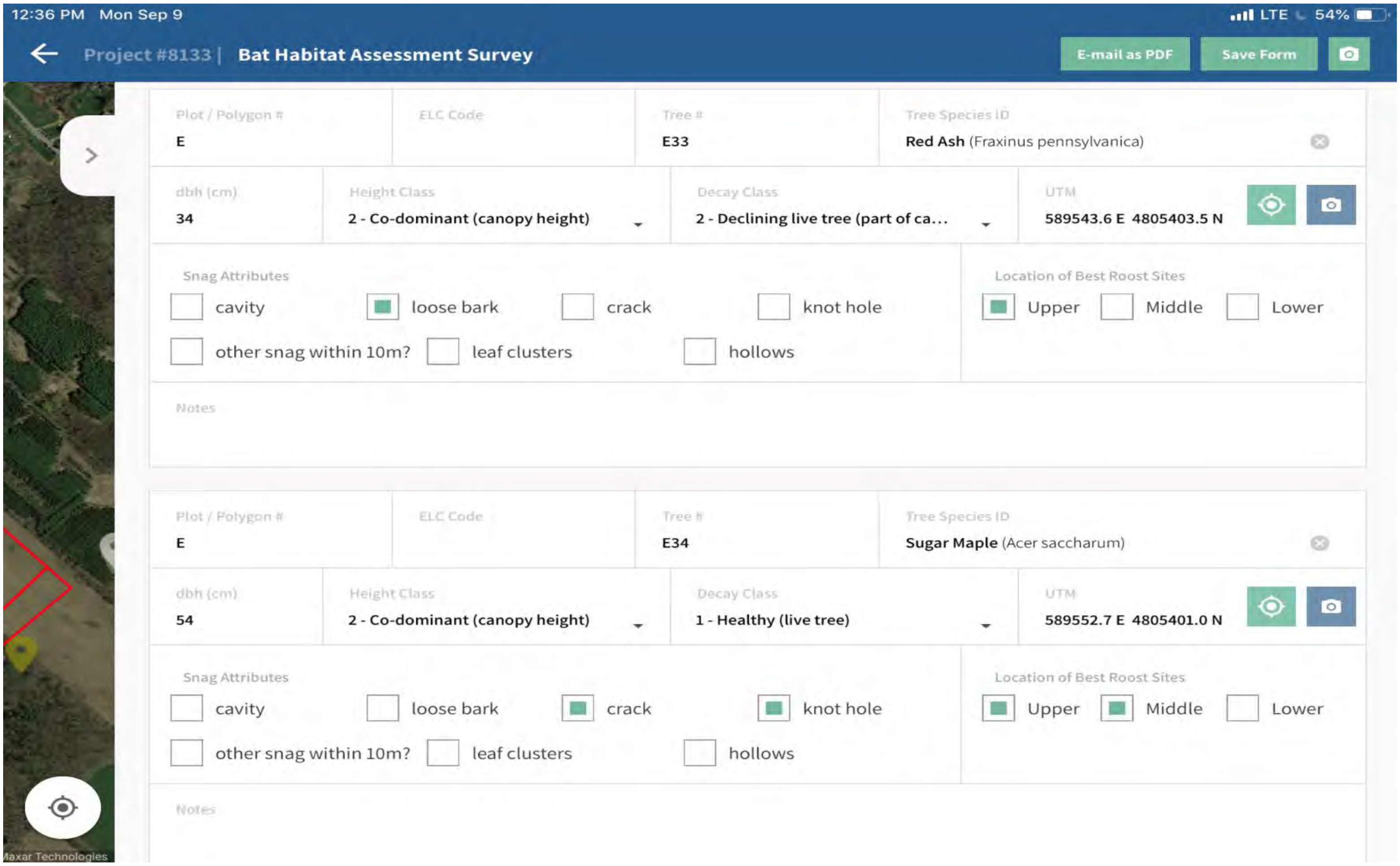
Notes:

Plot / Polygon #: E
ELC Code:
Tree #: E32
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 69
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 1 - Healthy (live tree)
UTM: 589543.9 E 4805403.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes:



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: E
ELC Code:
Tree #: E33
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)

dbh (cm): 34
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589543.6 E 4805403.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes

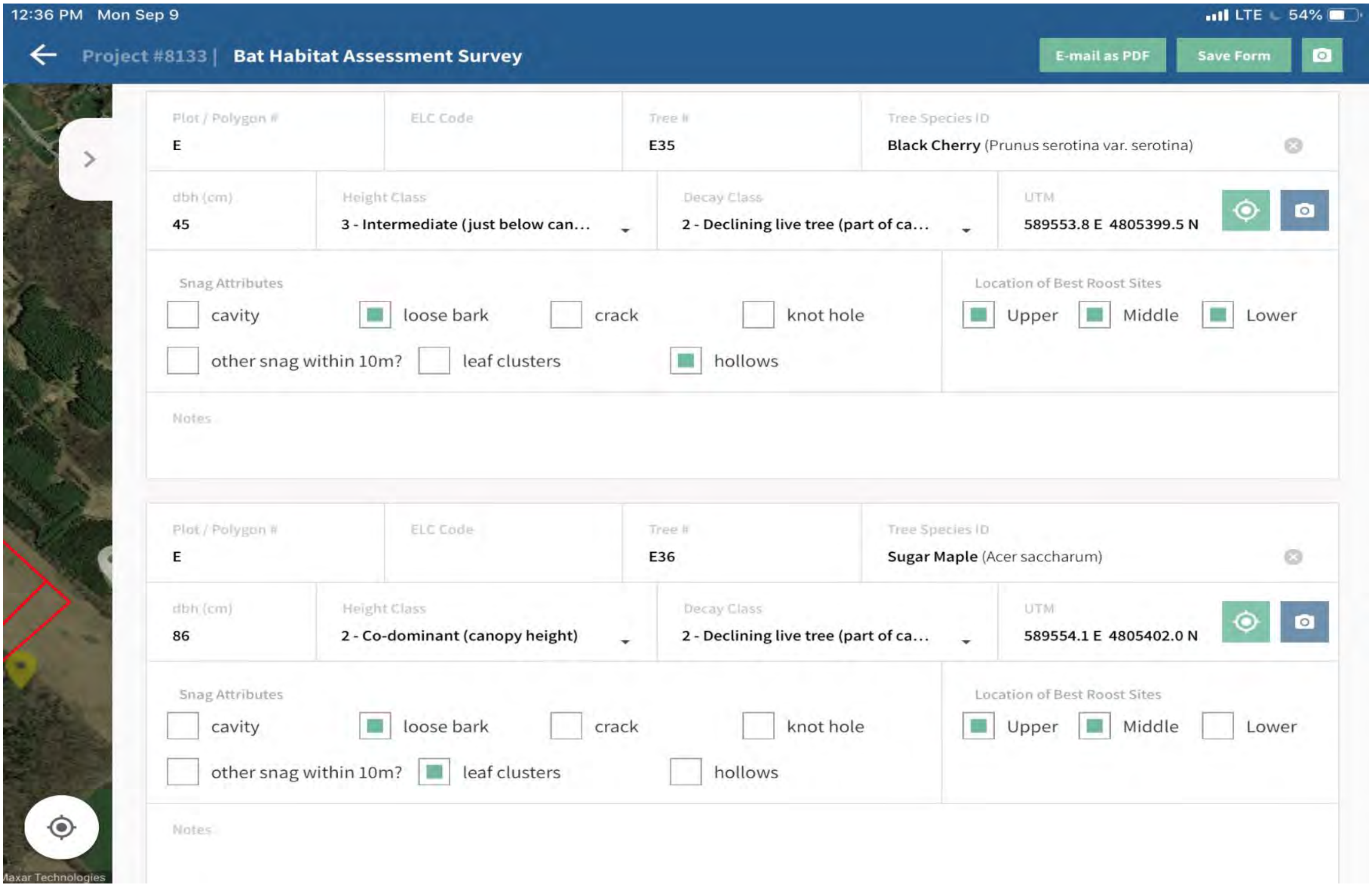
Plot / Polygon #: E
ELC Code:
Tree #: E34
Tree Species ID: **Sugar Maple** (Acer saccharum)

dbh (cm): 54
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 1 - Healthy (live tree)
UTM: 589552.7 E 4805401.0 N

Snag Attributes
☐ cavity ☐ loose bark ☑ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: E
ELC Code:
Tree #: E35
Tree Species ID: **Black Cherry** (Prunus serotina var. serotina)

dbh (cm): 45
Height Class: 3 - Intermediate (just below can...
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589553.8 E 4805399.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☑ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☑ Lower

Notes

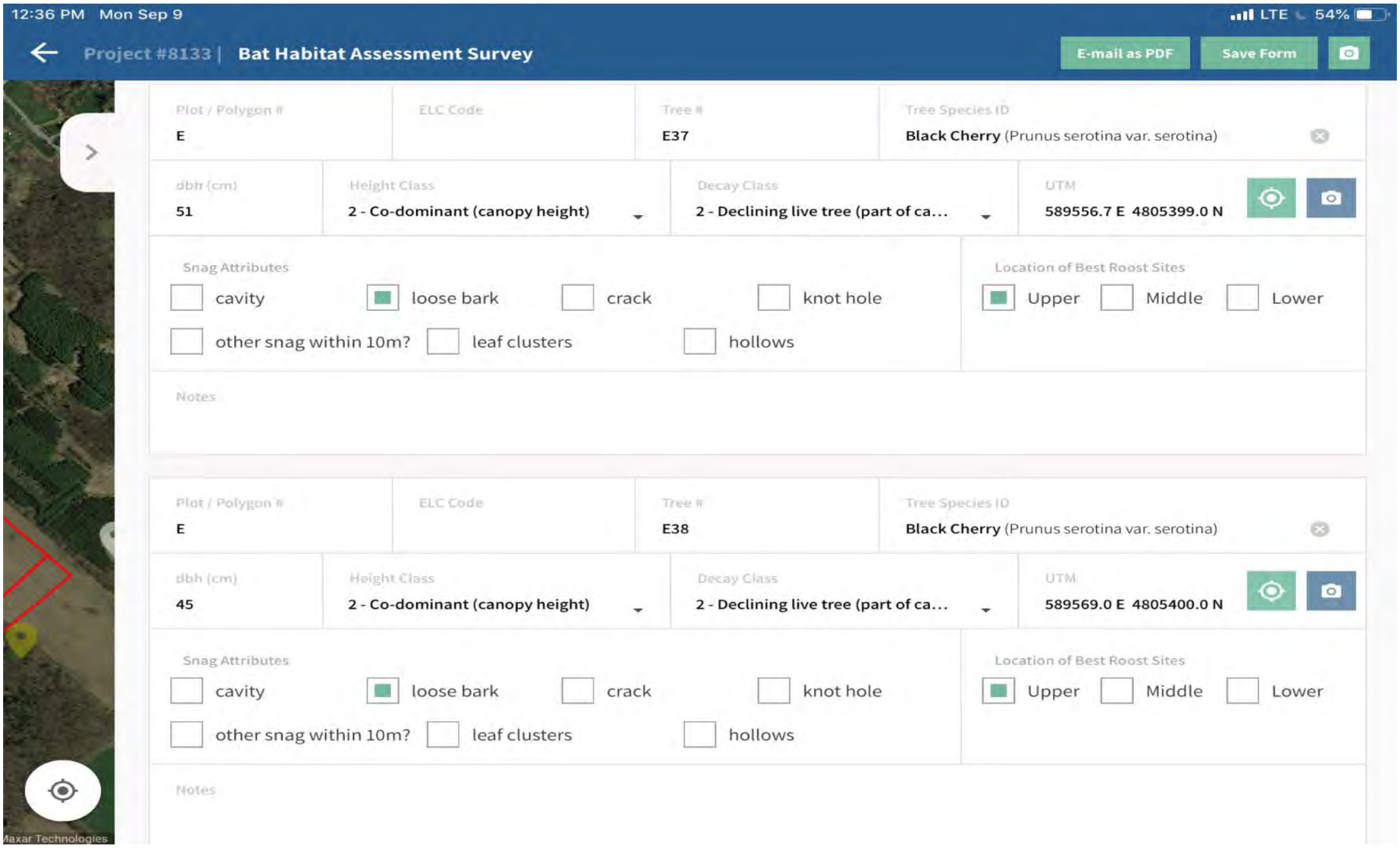
Plot / Polygon #: E
ELC Code:
Tree #: E36
Tree Species ID: **Sugar Maple** (Acer saccharum)

dbh (cm): 86
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589554.1 E 4805402.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☑ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes



Bat Habitat Assessment Survey

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
E		E37	**Black Cherry** (Prunus serotina var. serotina)
dbh (cm)	Height Class	Decay Class	UTM
51	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589556.7 E 4805399.0 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
E		E38	**Black Cherry** (Prunus serotina var. serotina)
dbh (cm)	Height Class	Decay Class	UTM
45	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589569.0 E 4805400.0 N

Snag Attributes

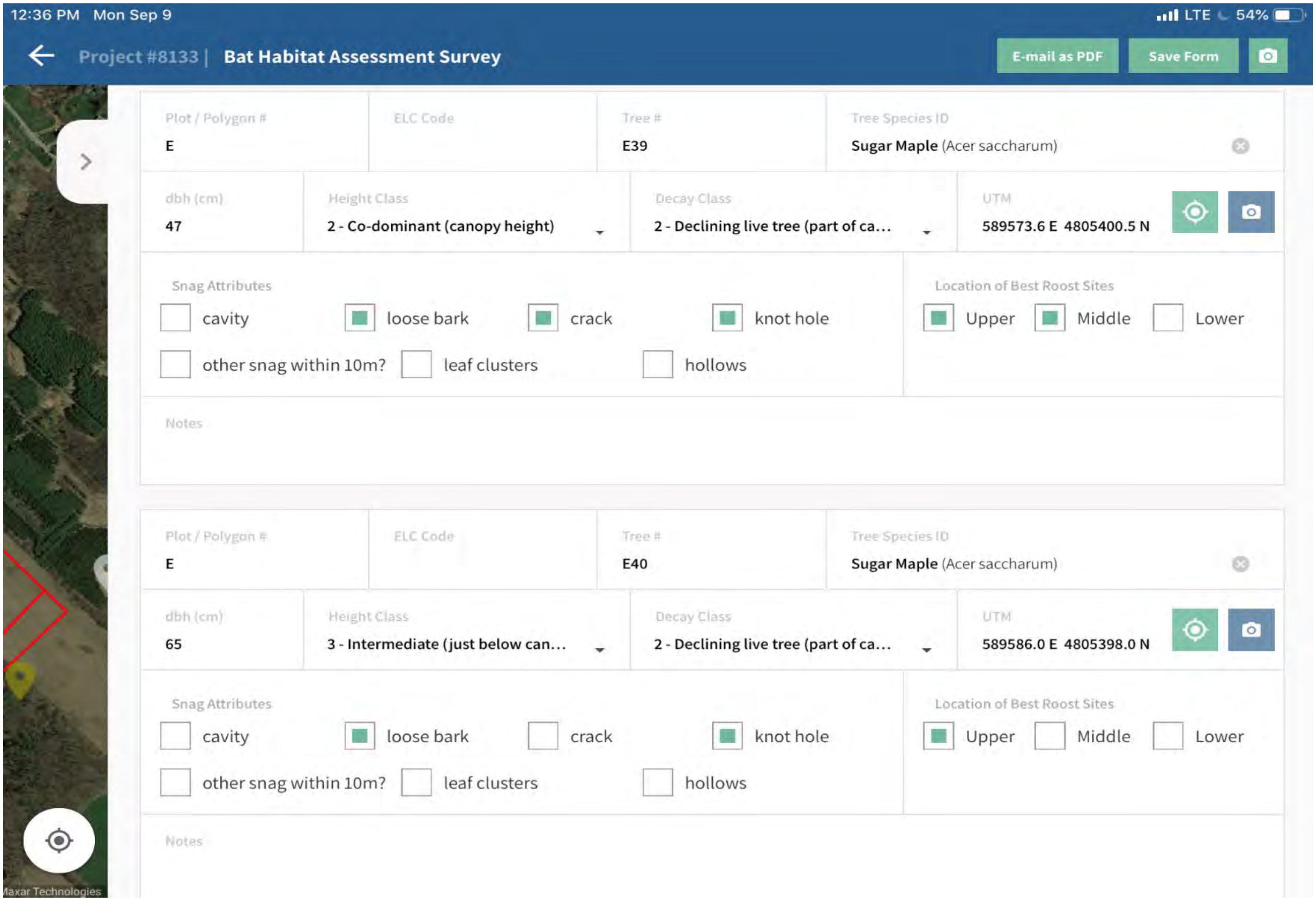
☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes



Bat Habitat Assessment Survey

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
E		E39	**Sugar Maple** (Acer saccharum)
dbh (cm)	Height Class	Decay Class	UTM
47	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589573.6 E 4805400.5 N

Snag Attributes

☐ cavity ☑ loose bark ☑ crack ☑ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
E		E40	**Sugar Maple** (Acer saccharum)
dbh (cm)	Height Class	Decay Class	UTM
65	3 - Intermediate (just below can...	2 - Declining live tree (part of ca...	589586.0 E 4805398.0 N

Snag Attributes

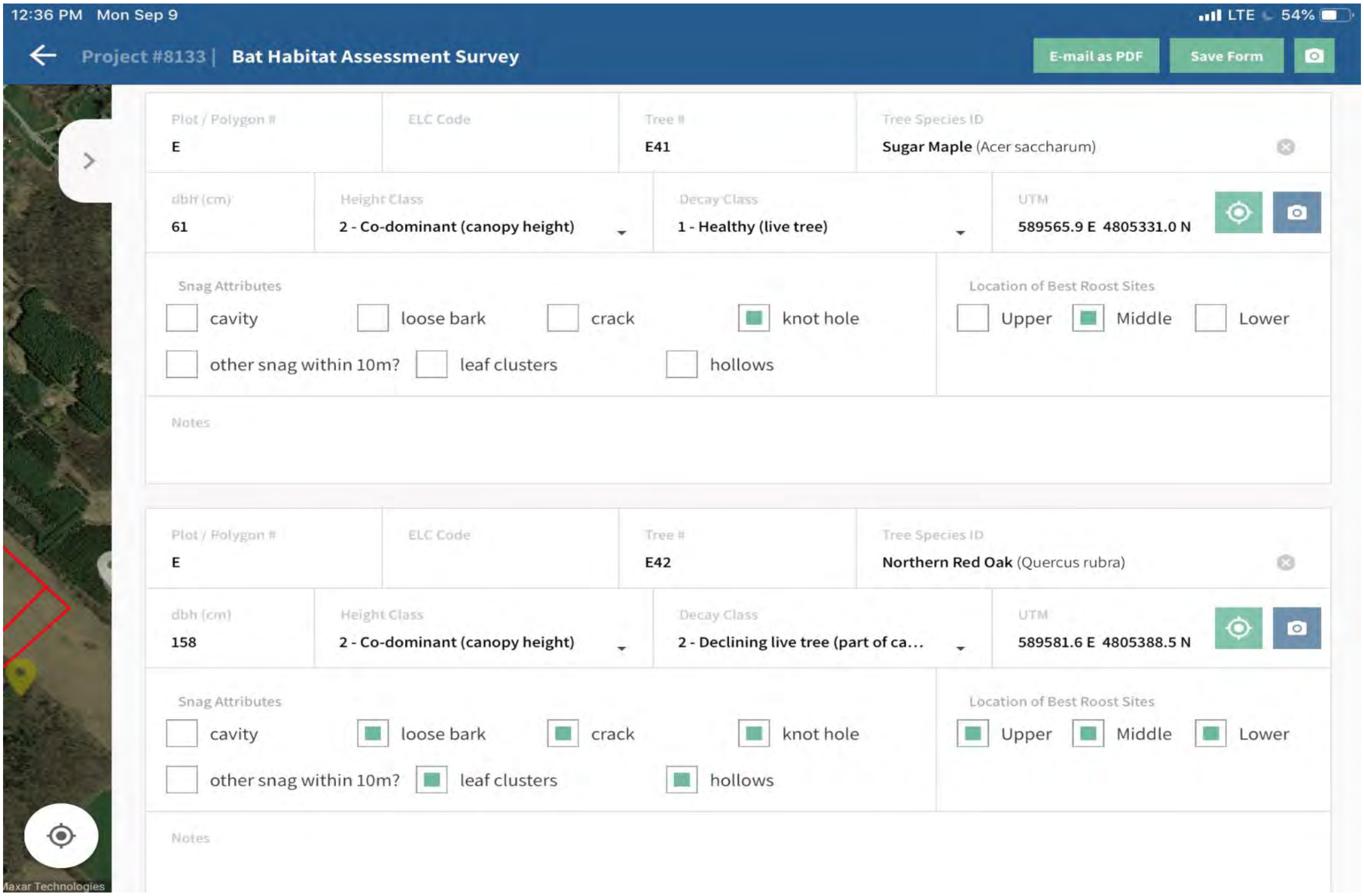
☐ cavity ☑ loose bark ☐ crack ☑ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon # E	ELC Code	Tree # E41	Tree Species ID **Sugar Maple** (Acer saccharum)
dbh (cm) 61	Height Class 2 - Co-dominant (canopy height)	Decay Class 1 - Healthy (live tree)	UTM 589565.9 E 4805331.0 N

Snag Attributes
☐ cavity ☐ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☑ Middle ☐ Lower

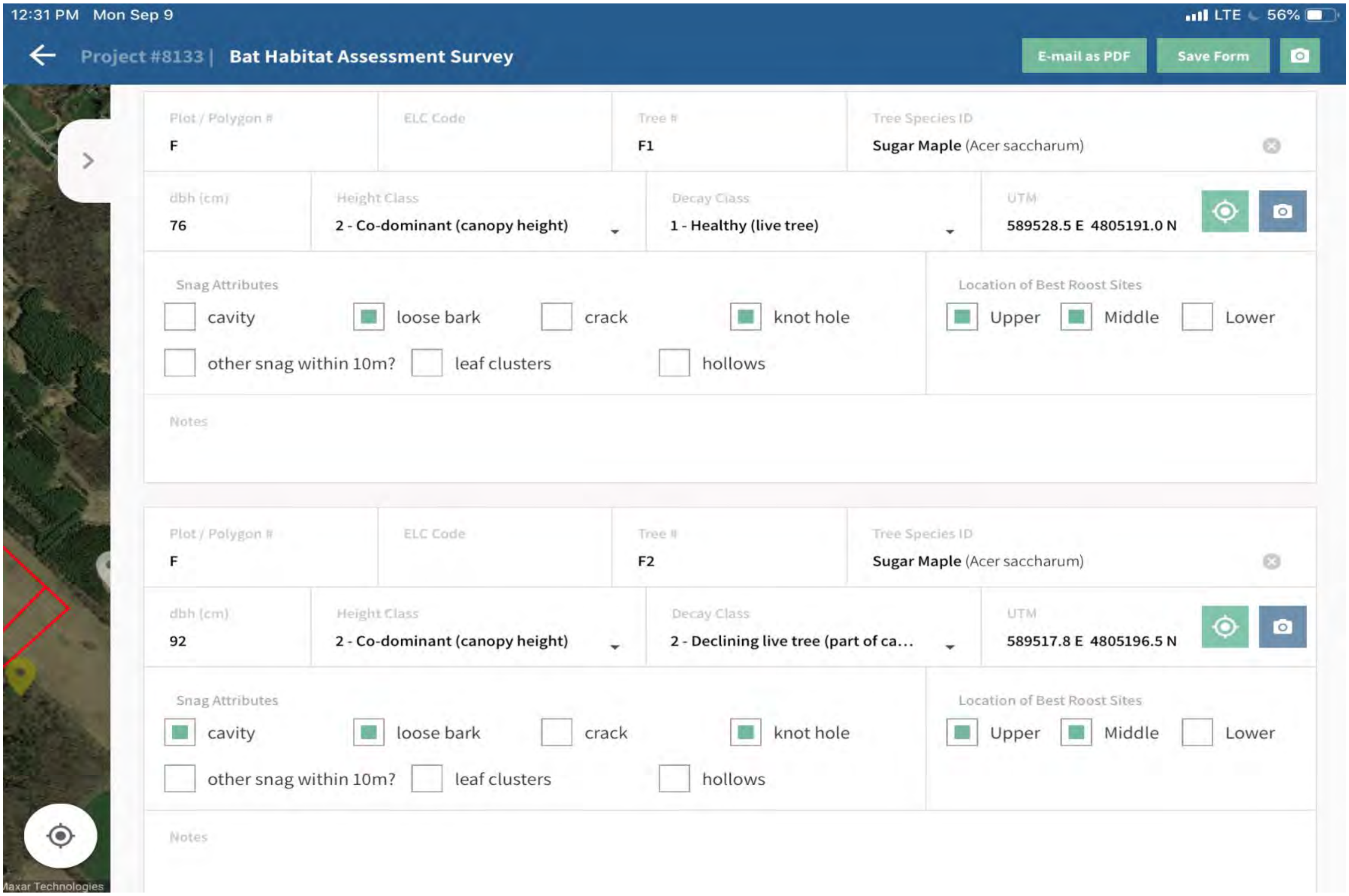
Notes

Plot / Polygon # E	ELC Code	Tree # E42	Tree Species ID **Northern Red Oak** (Quercus rubra)
dbh (cm) 158	Height Class 2 - Co-dominant (canopy height)	Decay Class 2 - Declining live tree (part of ca…	UTM 589581.6 E 4805388.5 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☑ knot hole
☐ other snag within 10m? ☑ leaf clusters ☑ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☑ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
F		F1	**Sugar Maple** (Acer saccharum)

dbh (cm)	Height Class	Decay Class	UTM
76	2 - Co-dominant (canopy height)	1 - Healthy (live tree)	589528.5 E 4805191.0 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☑ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
F		F2	**Sugar Maple** (Acer saccharum)

dbh (cm)	Height Class	Decay Class	UTM
92	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589517.8 E 4805196.5 N

Snag Attributes

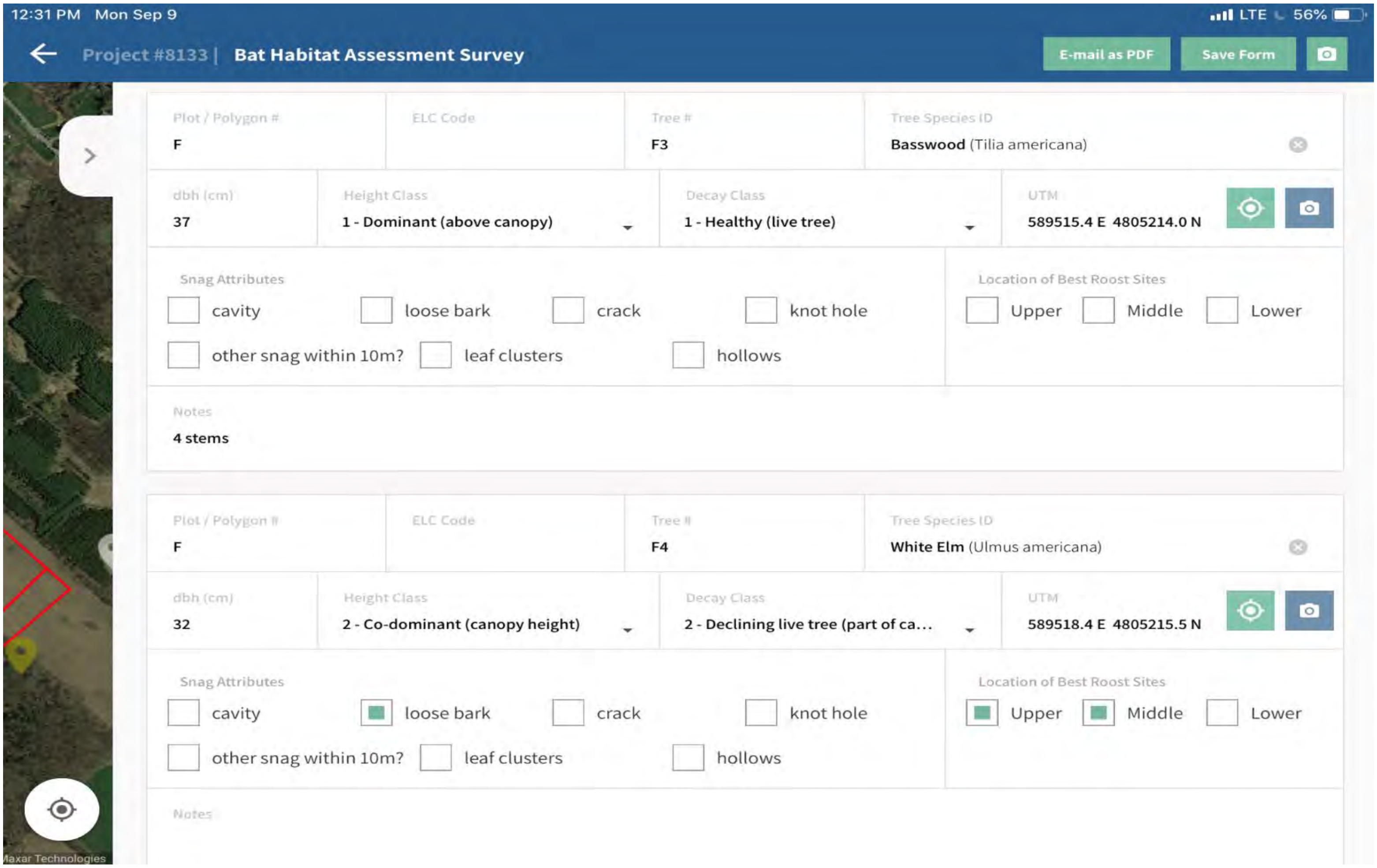
☑ cavity ☑ loose bark ☐ crack ☑ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
F		F3	**Basswood** (Tilia americana)

dbh (cm)	Height Class	Decay Class	UTM
37	1 - Dominant (above canopy)	1 - Healthy (live tree)	589515.4 E 4805214.0 N

Snag Attributes

☐ cavity ☐ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☐ Upper ☐ Middle ☐ Lower

Notes

4 stems

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
F		F4	**White Elm** (Ulmus americana)

dbh (cm)	Height Class	Decay Class	UTM
32	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589518.4 E 4805215.5 N

Snag Attributes

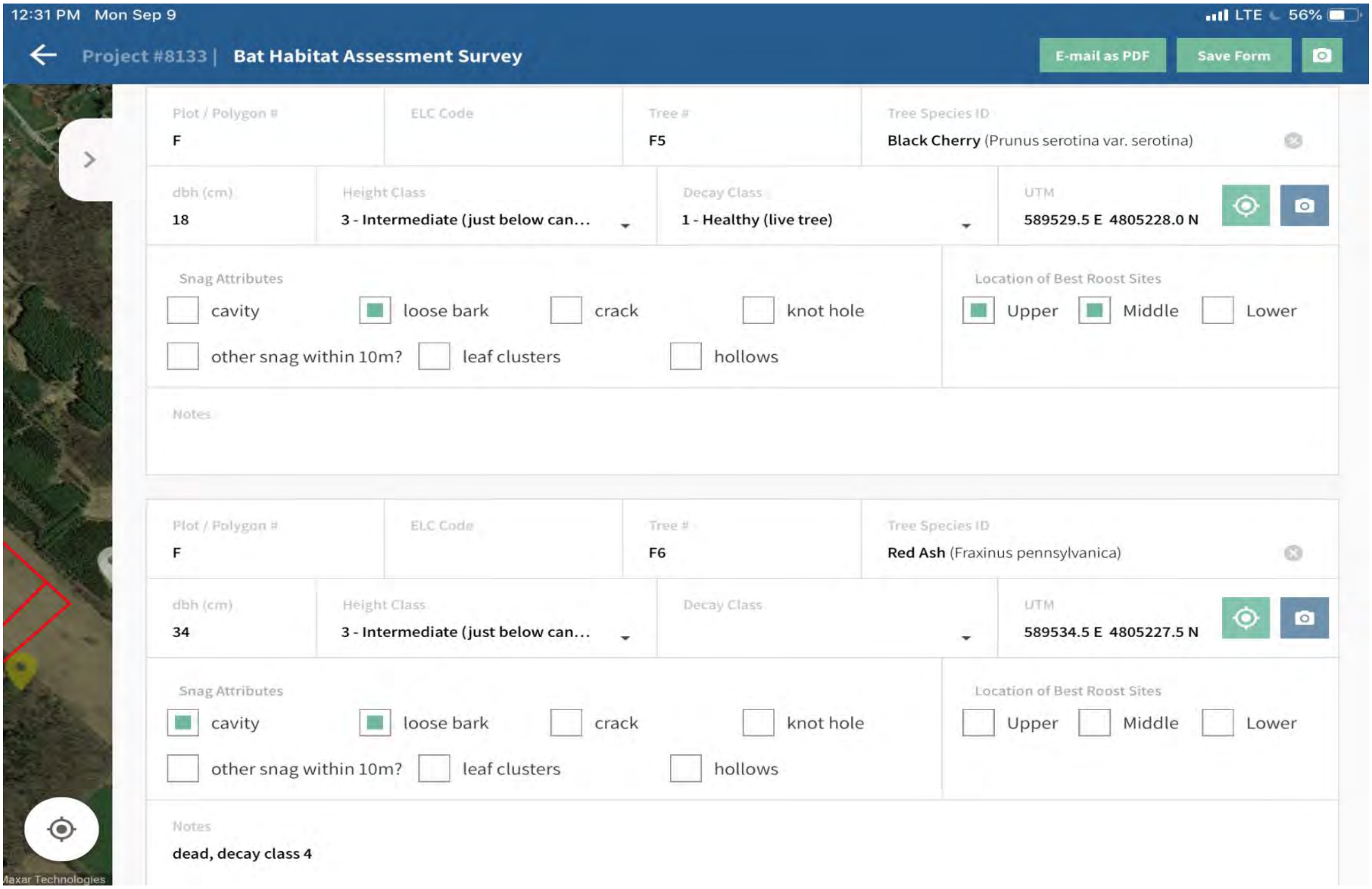
☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
F		F5	**Black Cherry** (Prunus serotina var. serotina)

dbh (cm)	Height Class	Decay Class	UTM
18	3 - Intermediate (just below can...	1 - Healthy (live tree)	589529.5 E 4805228.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes

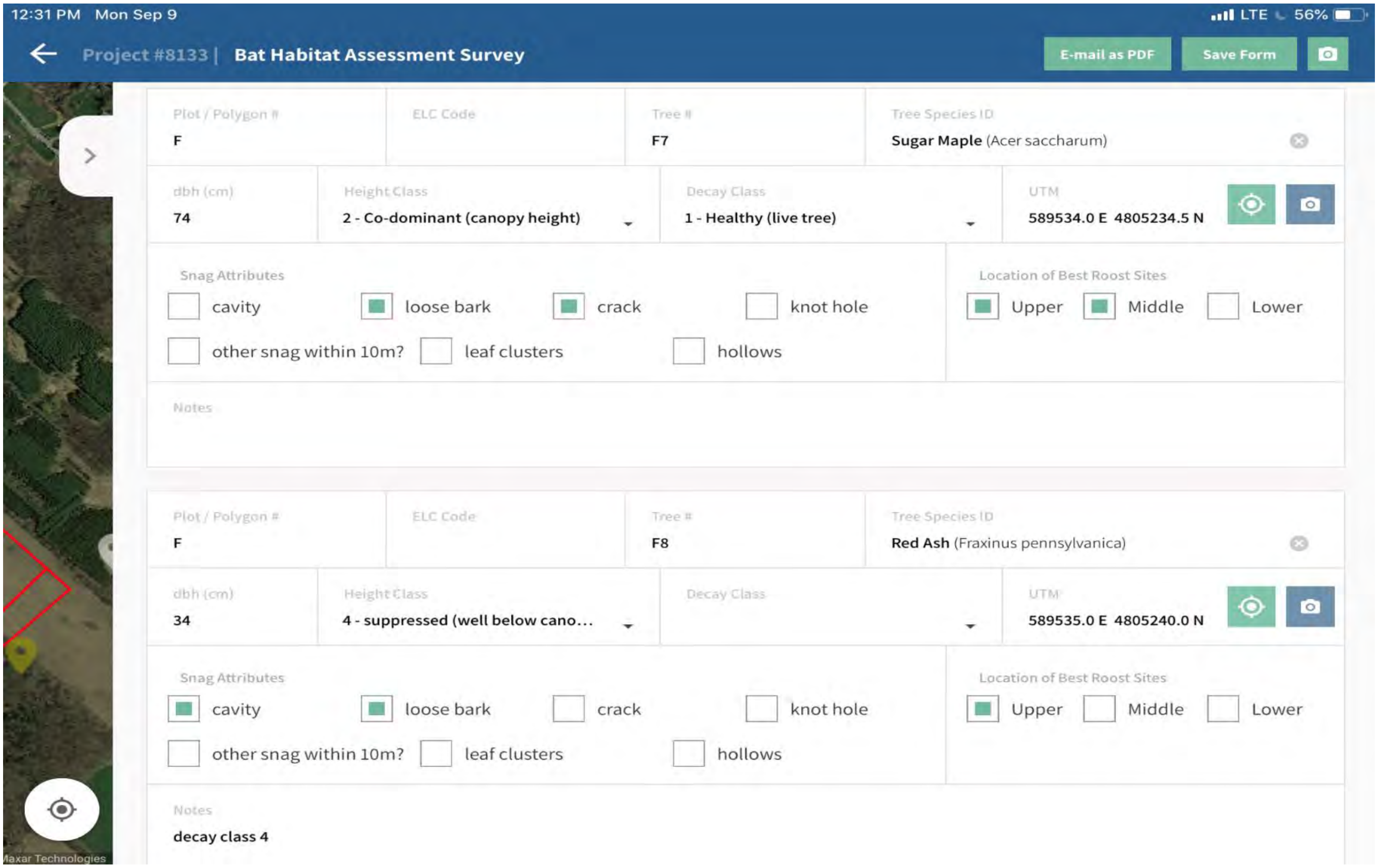
Plot / Polygon #	ELC Code	Tree #	Tree Species ID
F		F6	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
34	3 - Intermediate (just below can...		589534.5 E 4805227.5 N

Snag Attributes
☑ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☐ Middle ☐ Lower

Notes
dead, decay class 4



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
F		F7	**Sugar Maple** (Acer saccharum)

dbh (cm)	Height Class	Decay Class	UTM
74	2 - Co-dominant (canopy height)	1 - Healthy (live tree)	589534.0 E 4805234.5 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes

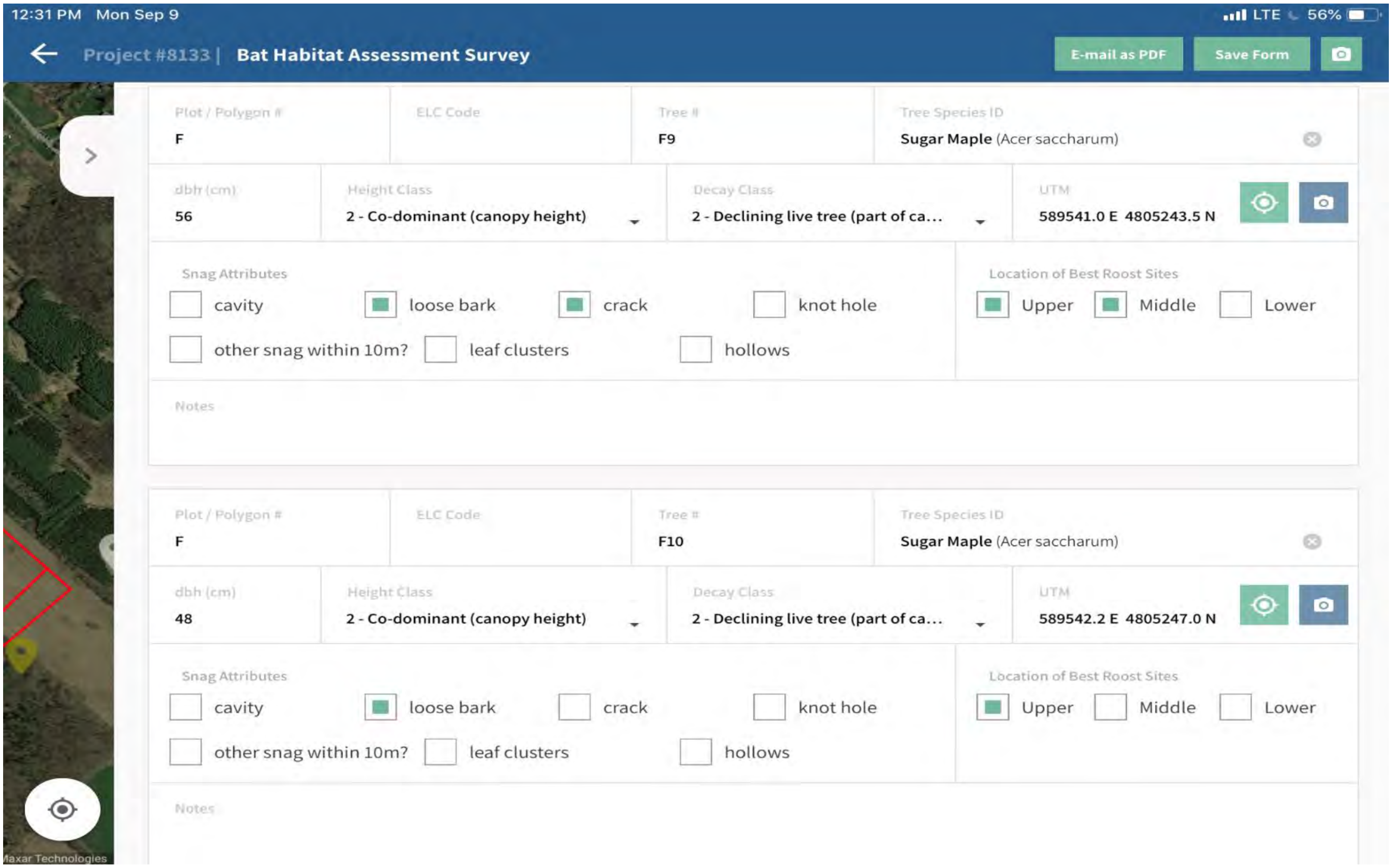
Plot / Polygon #	ELC Code	Tree #	Tree Species ID
F		F8	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
34	4 - suppressed (well below cano...		589535.0 E 4805240.0 N

Snag Attributes
☑ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes
decay class 4



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
F		F9	**Sugar Maple** (Acer saccharum)

dbh (cm)	Height Class	Decay Class	UTM
56	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589541.0 E 4805243.5 N

Snag Attributes

☐ cavity ☑ loose bark ☑ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
F		F10	**Sugar Maple** (Acer saccharum)

dbh (cm)	Height Class	Decay Class	UTM
48	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589542.2 E 4805247.0 N

Snag Attributes

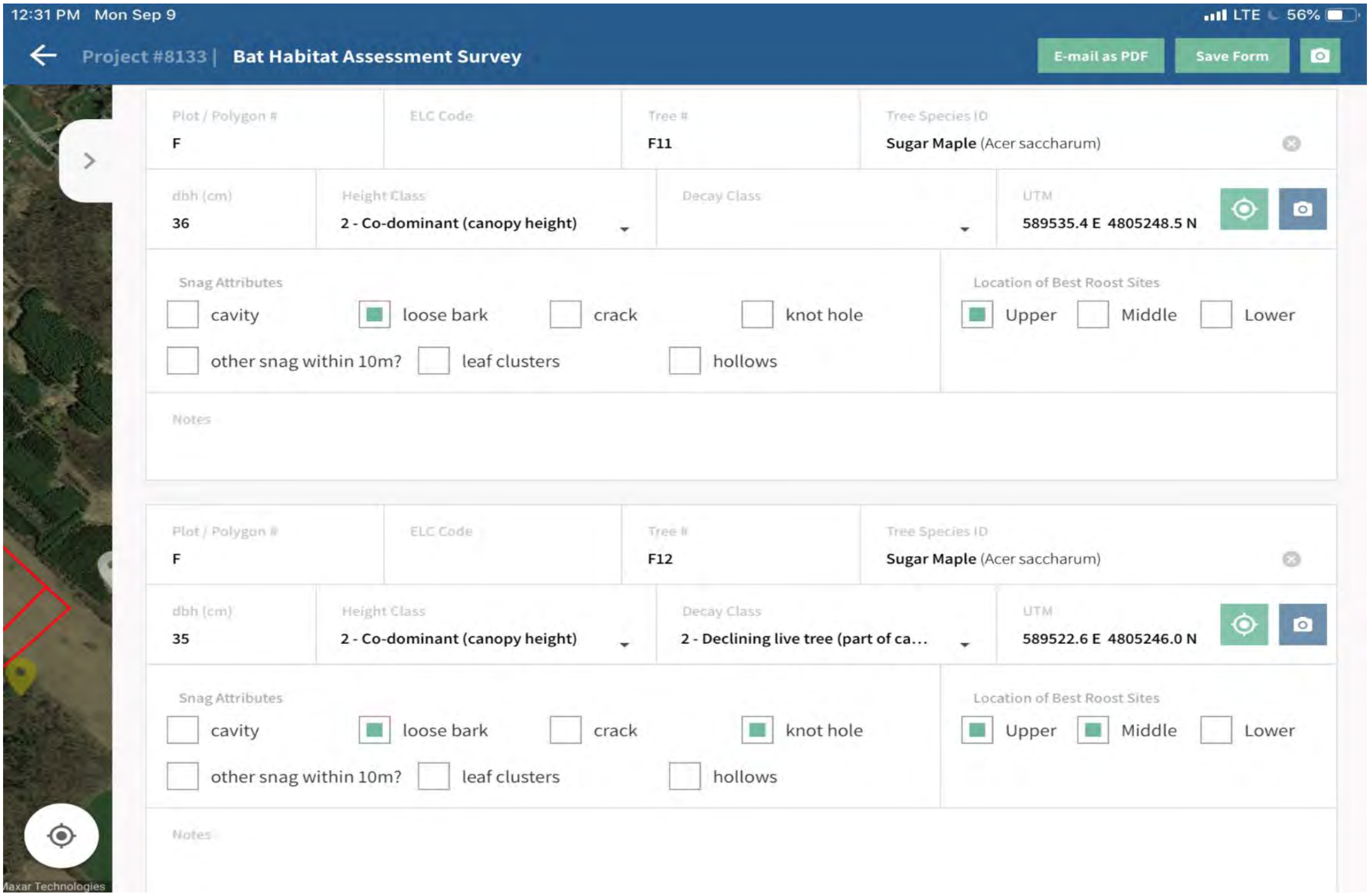
☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
F		F11	**Sugar Maple** (Acer saccharum)

dbh (cm)	Height Class	Decay Class	UTM
36	2 - Co-dominant (canopy height)		589535.4 E 4805248.5 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
F		F12	**Sugar Maple** (Acer saccharum)

dbh (cm)	Height Class	Decay Class	UTM
35	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589522.6 E 4805246.0 N

Snag Attributes

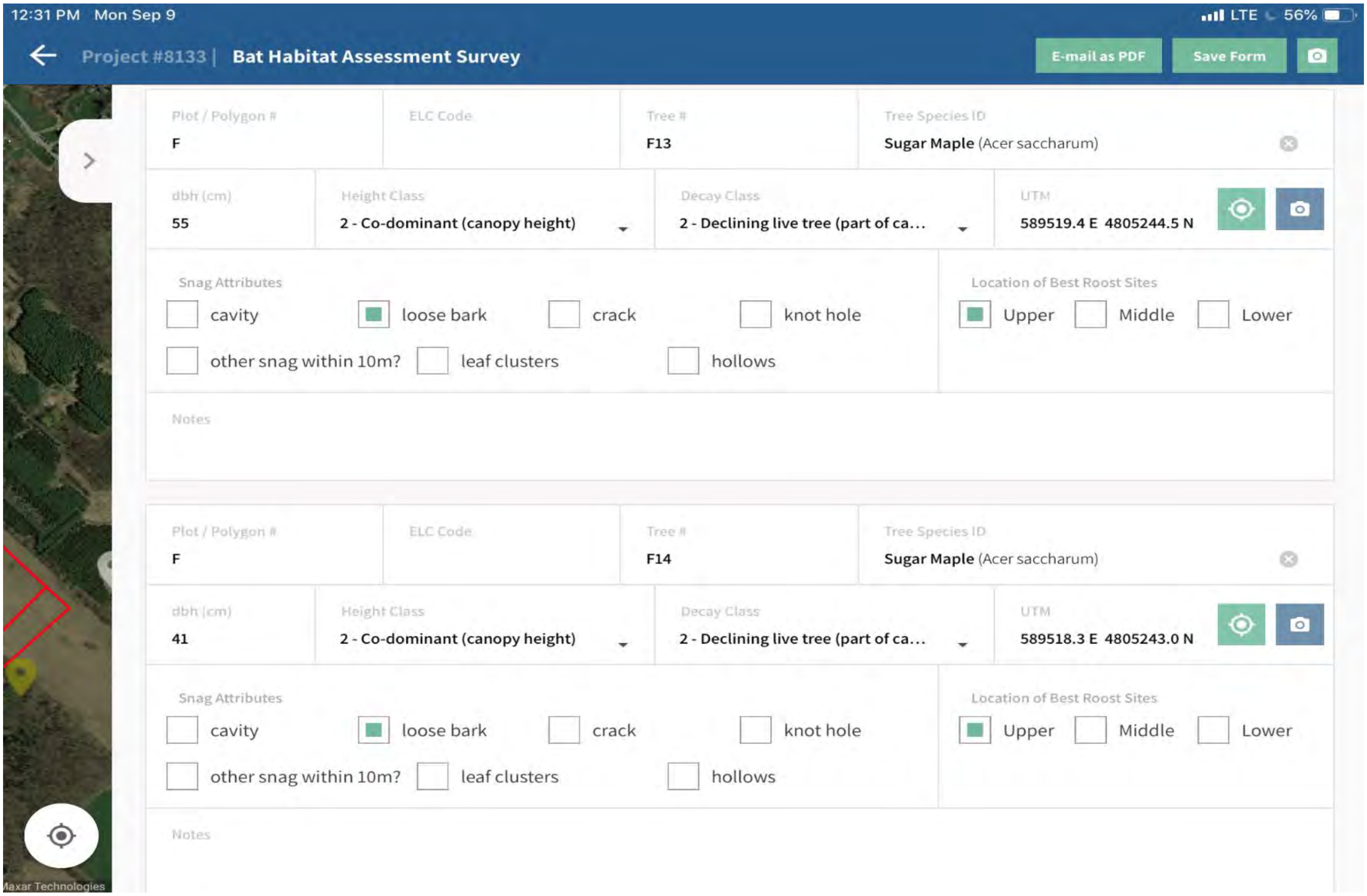
☐ cavity ☑ loose bark ☐ crack ☑ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: F
ELC Code:
Tree #: F13
Tree Species ID: **Sugar Maple** (Acer saccharum)

dbh (cm): 55
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca…
UTM: 589519.4 E 4805244.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes

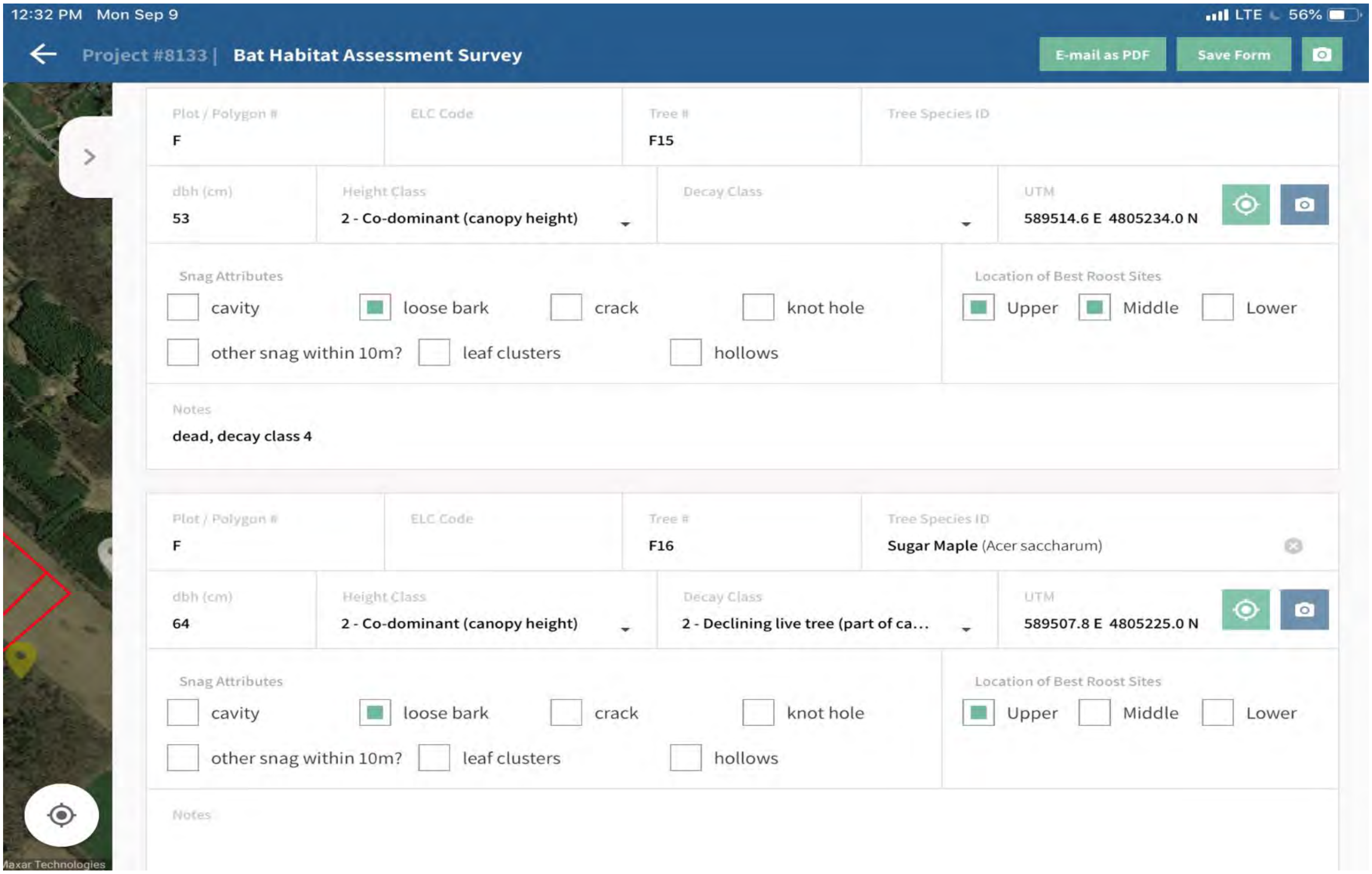
Plot / Polygon #: F
ELC Code:
Tree #: F14
Tree Species ID: **Sugar Maple** (Acer saccharum)

dbh (cm): 41
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca…
UTM: 589518.3 E 4805243.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: F
ELC Code:
Tree #: F15
Tree Species ID:

dbh (cm): 53
Height Class: 2 - Co-dominant (canopy height)
Decay Class:
UTM: 589514.6 E 4805234.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes
dead, decay class 4

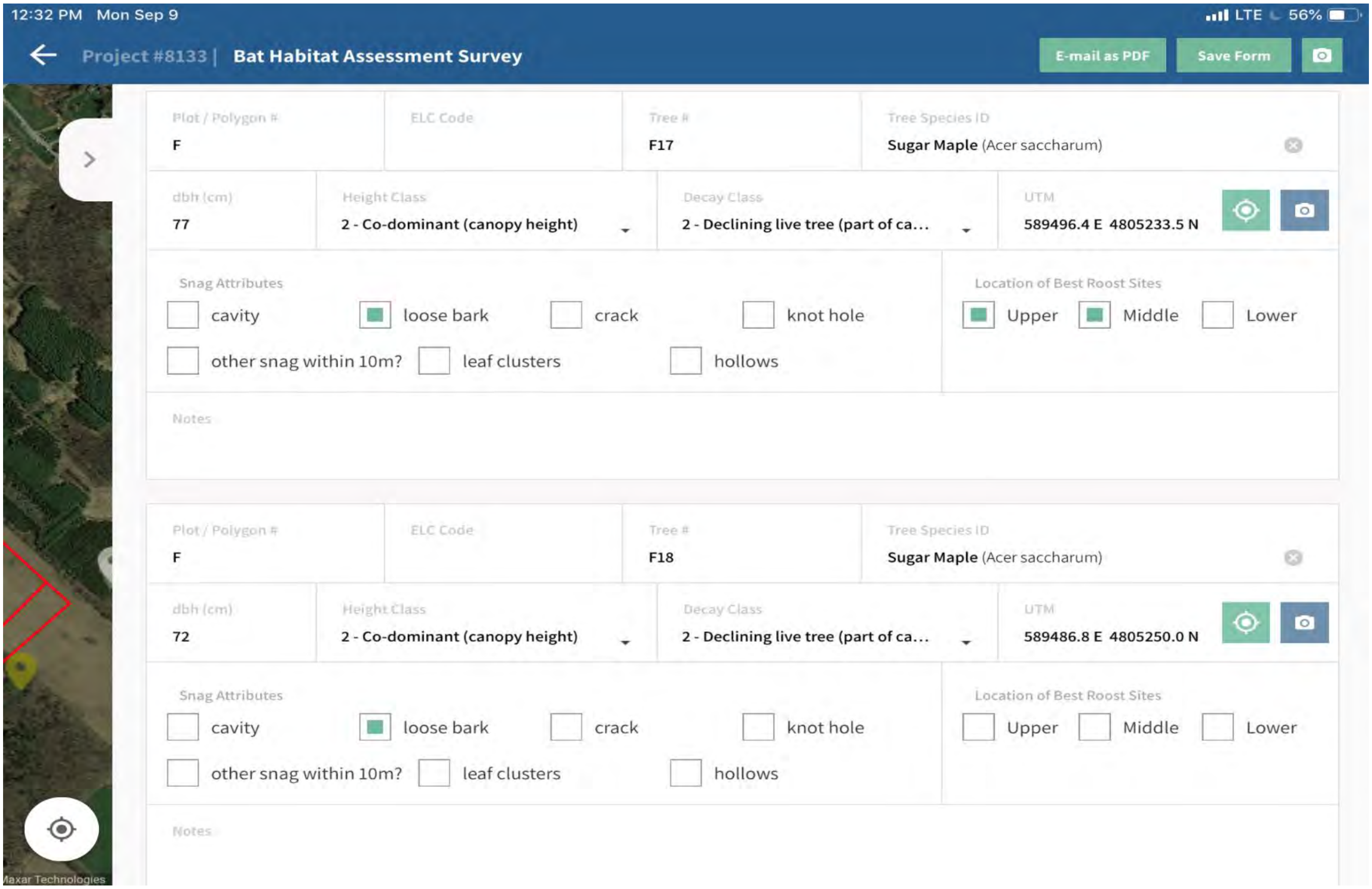
Plot / Polygon #: F
ELC Code:
Tree #: F16
Tree Species ID: **Sugar Maple** (Acer saccharum)

dbh (cm): 64
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca…
UTM: 589507.8 E 4805225.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | Bat Habitat Assessment Survey

Plot / Polygon #: F
ELC Code:
Tree #: F17
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 77
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589496.4 E 4805233.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

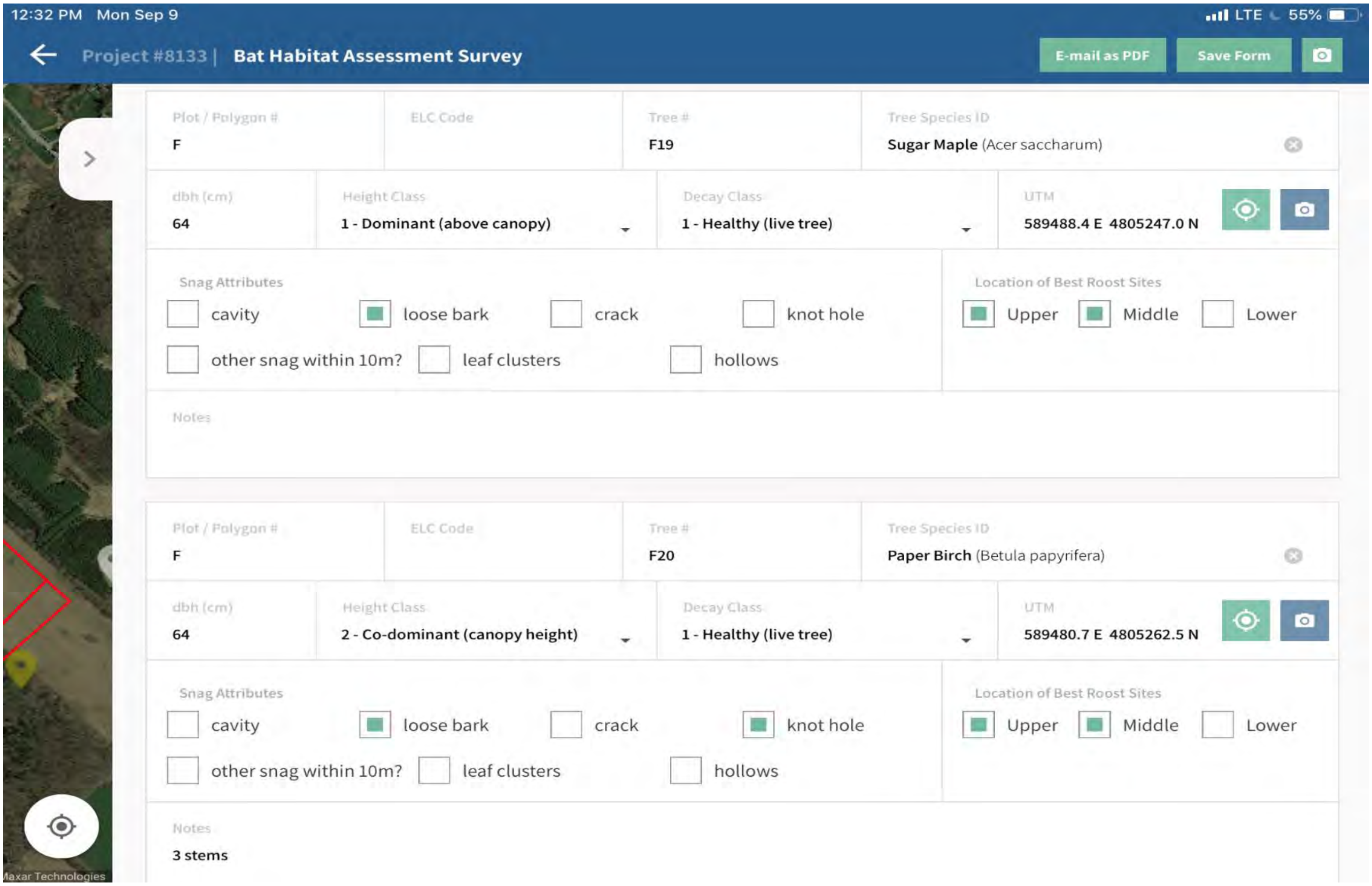
Notes:

Plot / Polygon #: F
ELC Code:
Tree #: F18
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 72
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589486.8 E 4805250.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☐ Middle ☐ Lower

Notes:



Project #8133 | Bat Habitat Assessment Survey

Plot / Polygon #: F
ELC Code:
Tree #: F19
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 64
Height Class: 1 - Dominant (above canopy)
Decay Class: 1 - Healthy (live tree)
UTM: 589488.4 E 4805247.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

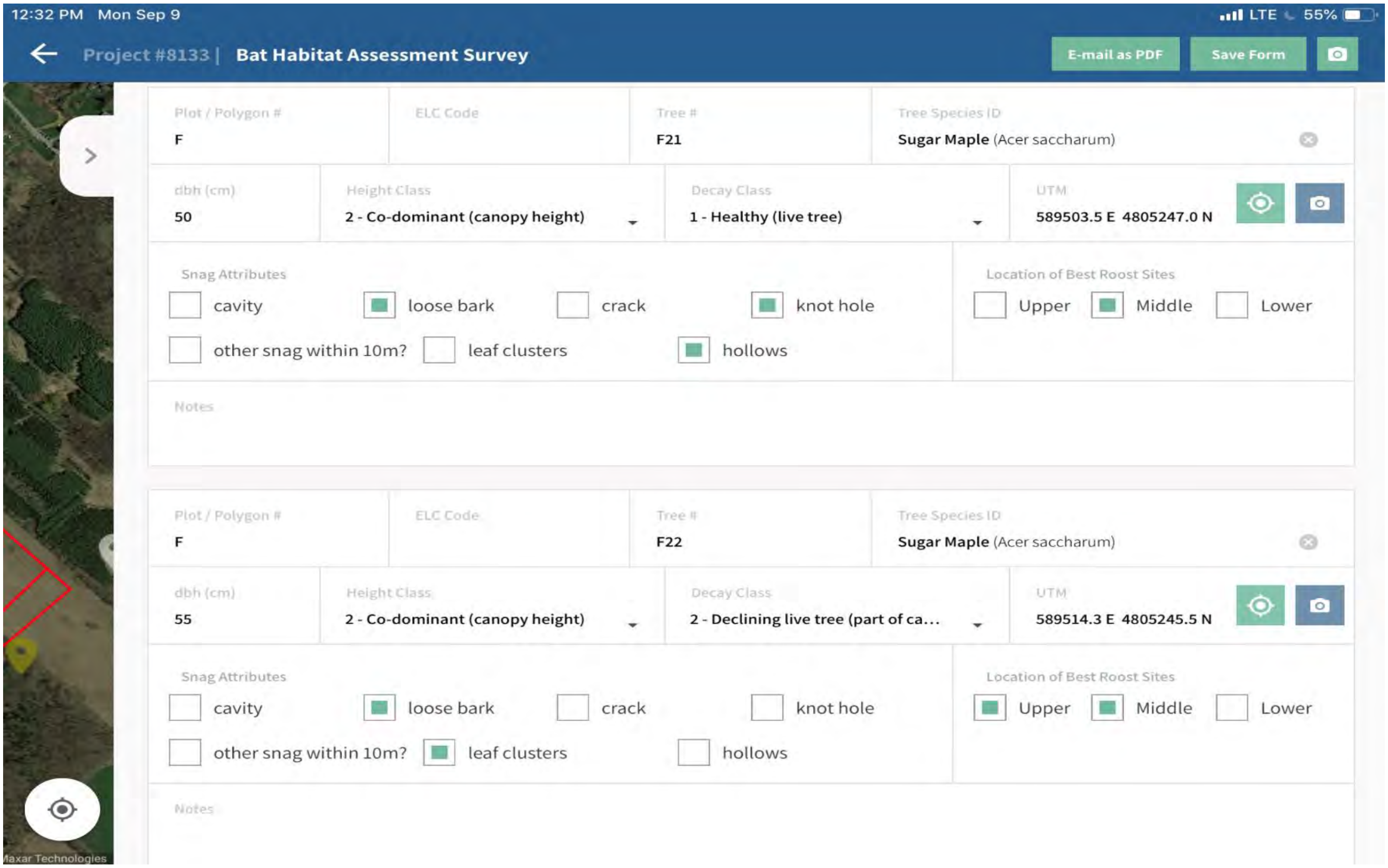
Notes:

Plot / Polygon #: F
ELC Code:
Tree #: F20
Tree Species ID: **Paper Birch** (Betula papyrifera)
dbh (cm): 64
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 1 - Healthy (live tree)
UTM: 589480.7 E 4805262.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes:
3 stems



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: F
ELC Code:
Tree #: F21
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 50
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 1 - Healthy (live tree)
UTM: 589503.5 E 4805247.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☑ hollows

Location of Best Roost Sites
☐ Upper ☑ Middle ☐ Lower

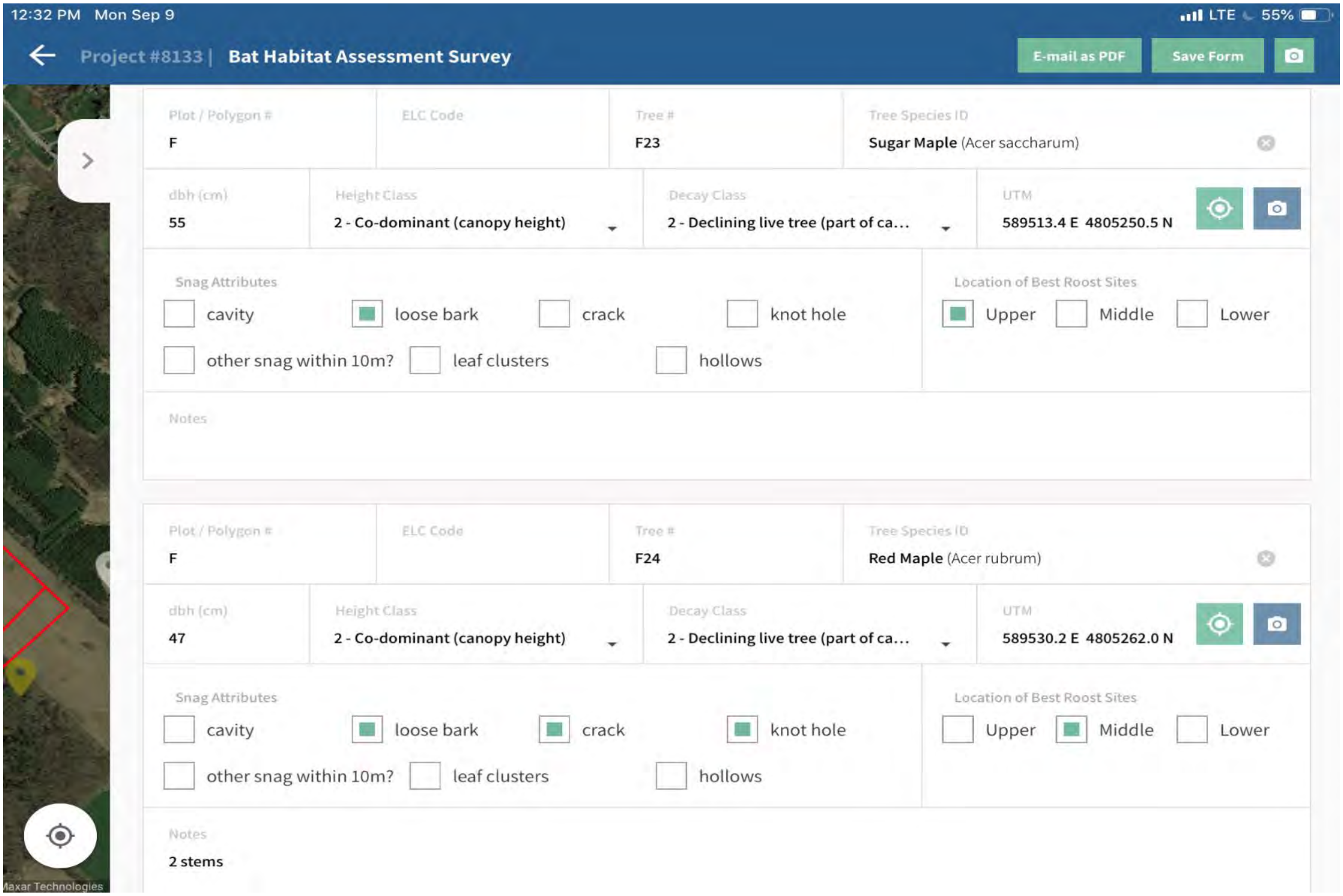
Notes:

Plot / Polygon #: F
ELC Code:
Tree #: F22
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 55
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589514.3 E 4805245.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☑ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes:



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: F
ELC Code:
Tree #: F23
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 55
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589513.4 E 4805250.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

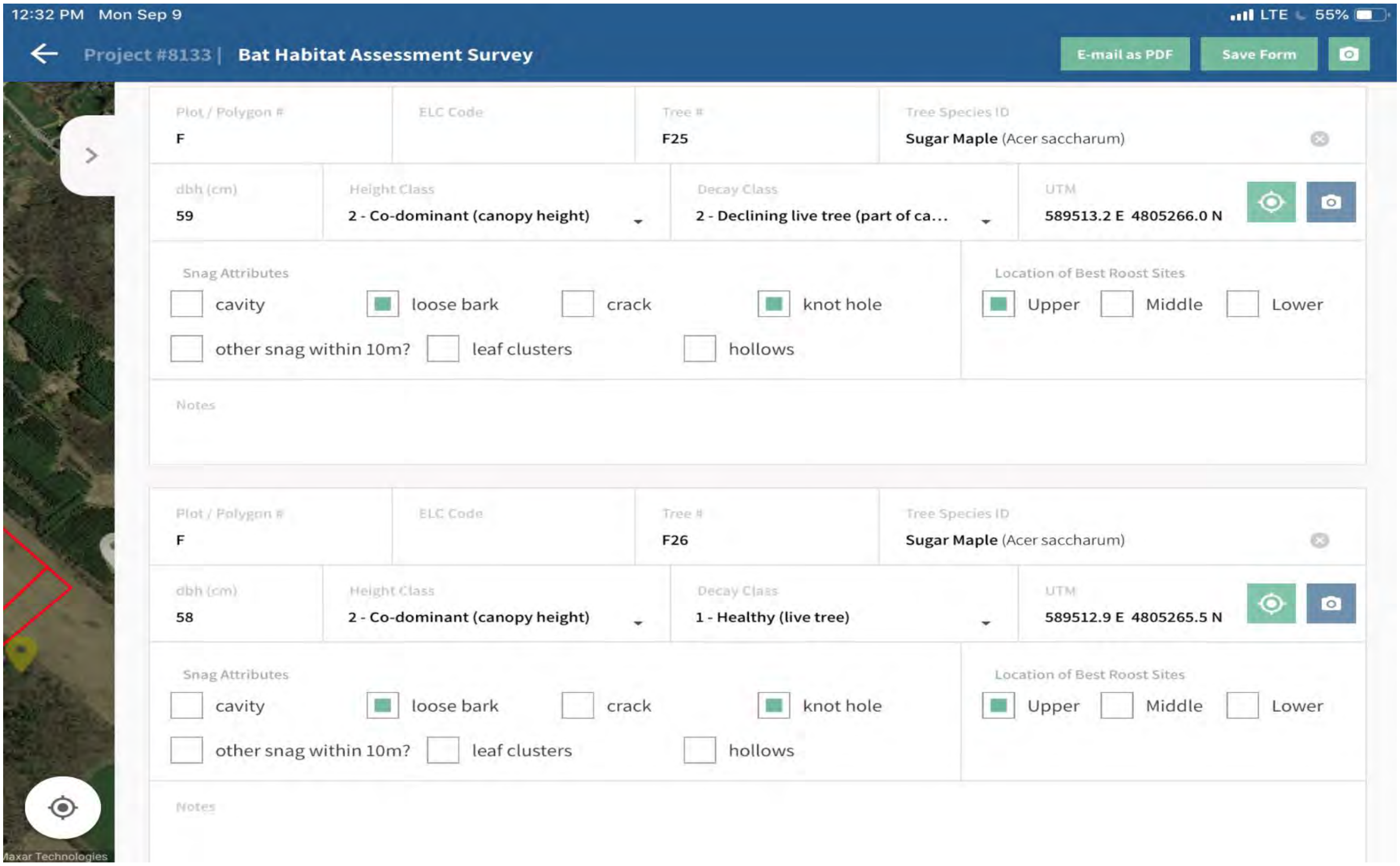
Notes:

Plot / Polygon #: F
ELC Code:
Tree #: F24
Tree Species ID: **Red Maple** (Acer rubrum)
dbh (cm): 47
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589530.2 E 4805262.0 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☑ Middle ☐ Lower

Notes: 2 stems



Bat Habitat Assessment Survey

Plot / Polygon #: F
ELC Code:
Tree #: F25
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 59
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589513.2 E 4805266.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

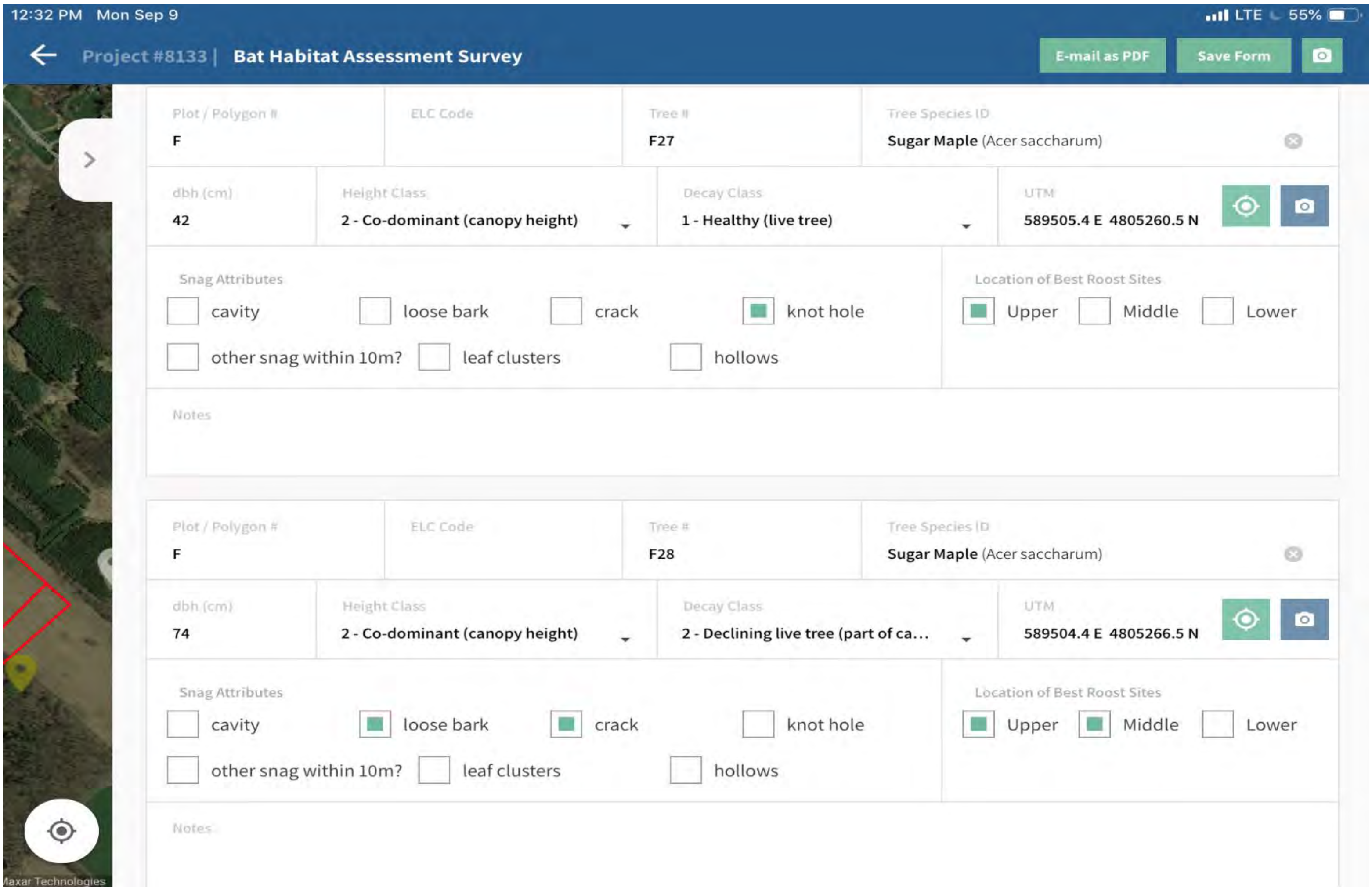
Notes

Plot / Polygon #: F
ELC Code:
Tree #: F26
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 58
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 1 - Healthy (live tree)
UTM: 589512.9 E 4805265.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



Bat Habitat Assessment Survey

Plot / Polygon #: F
ELC Code:
Tree #: F27
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 42
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 1 - Healthy (live tree)
UTM: 589505.4 E 4805260.5 N

Snag Attributes
☐ cavity ☐ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

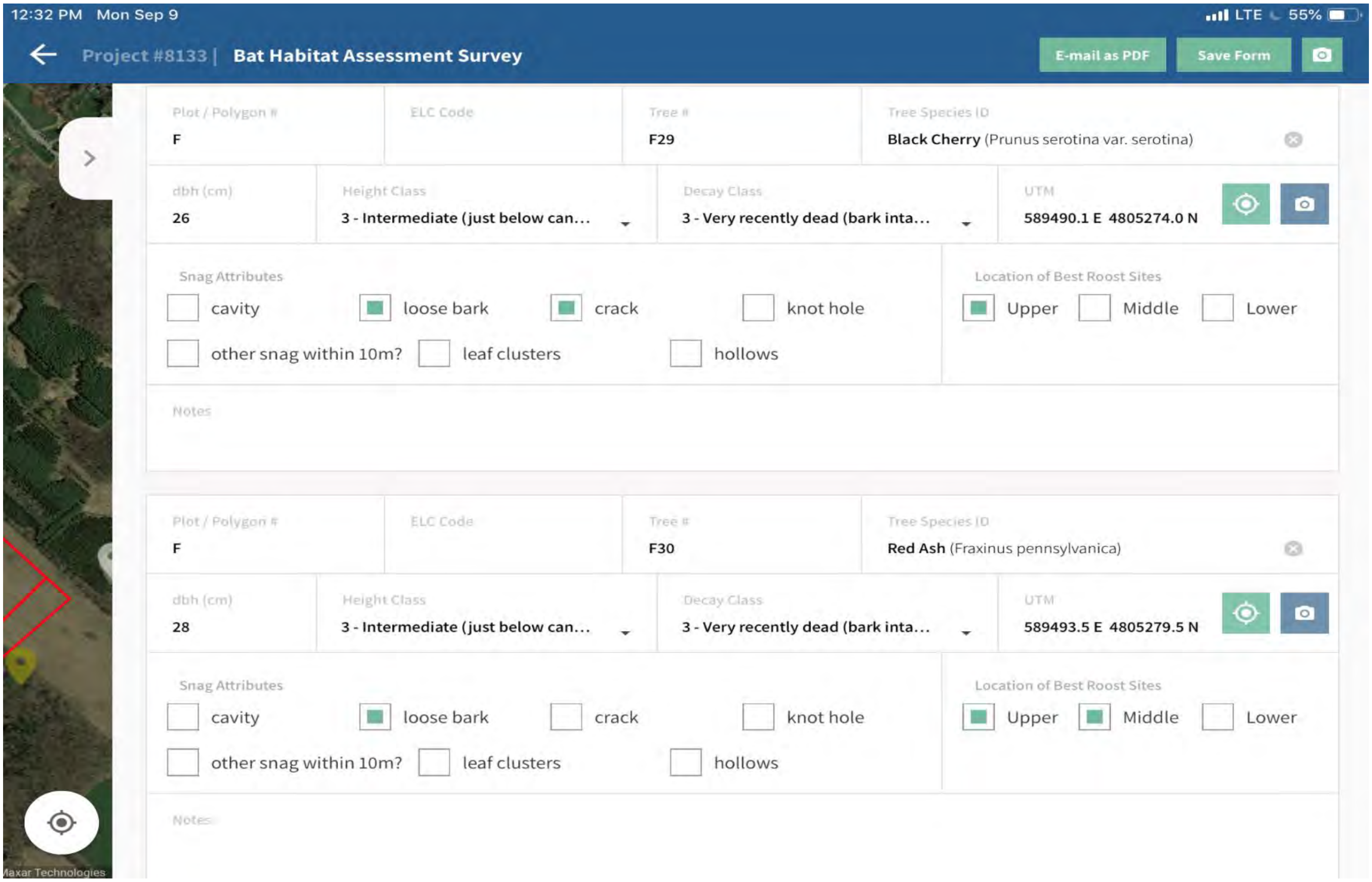
Notes

Plot / Polygon #: F
ELC Code:
Tree #: F28
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 74
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589504.4 E 4805266.5 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | Bat Habitat Assessment Survey

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
F		F29	**Black Cherry** (Prunus serotina var. serotina)

dbh (cm)	Height Class	Decay Class	UTM
26	3 - Intermediate (just below can...	3 - Very recently dead (bark inta...	589490.1 E 4805274.0 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes

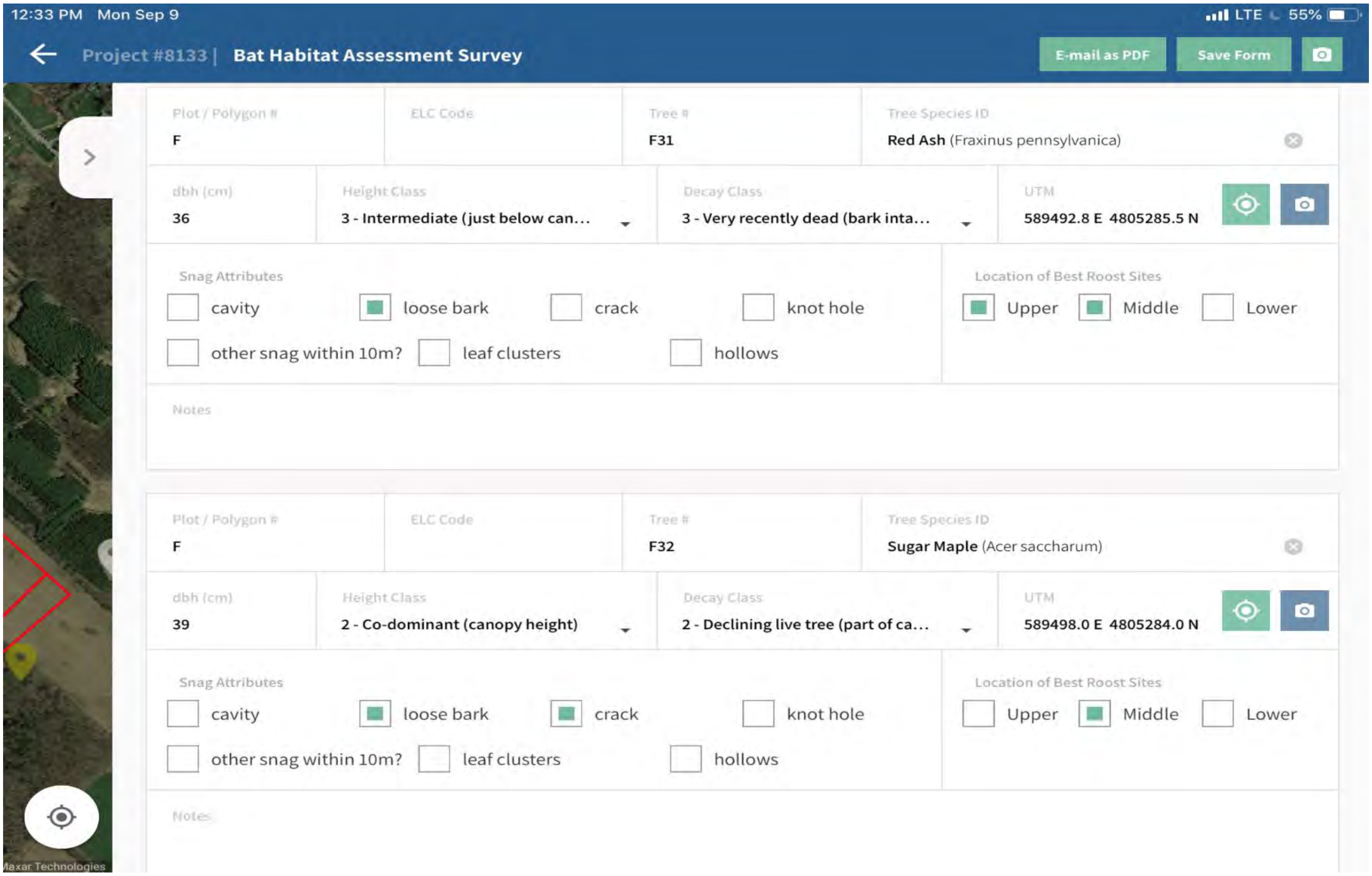
Plot / Polygon #	ELC Code	Tree #	Tree Species ID
F		F30	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
28	3 - Intermediate (just below can...	3 - Very recently dead (bark inta...	589493.5 E 4805279.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | Bat Habitat Assessment Survey

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
F		F31	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
36	3 - Intermediate (just below can...	3 - Very recently dead (bark inta...	589492.8 E 4805285.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes

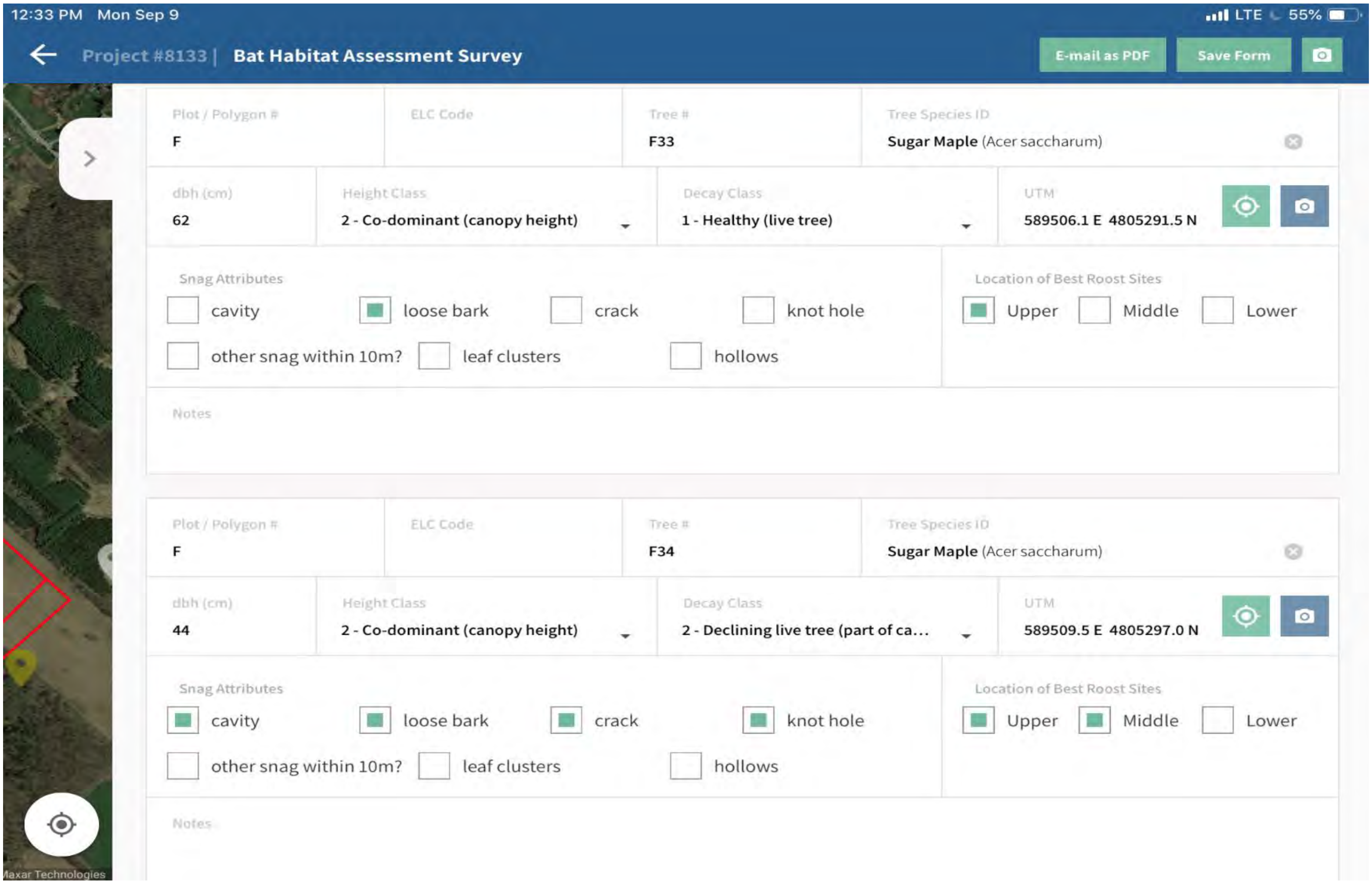
Plot / Polygon #	ELC Code	Tree #	Tree Species ID
F		F32	**Sugar Maple** (Acer saccharum)

dbh (cm)	Height Class	Decay Class	UTM
39	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589498.0 E 4805284.0 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☑ Middle ☐ Lower

Notes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Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
F		F33	**Sugar Maple** (Acer saccharum)

dbh (cm)	Height Class	Decay Class	UTM
62	2 - Co-dominant (canopy height)	1 - Healthy (live tree)	589506.1 E 4805291.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes

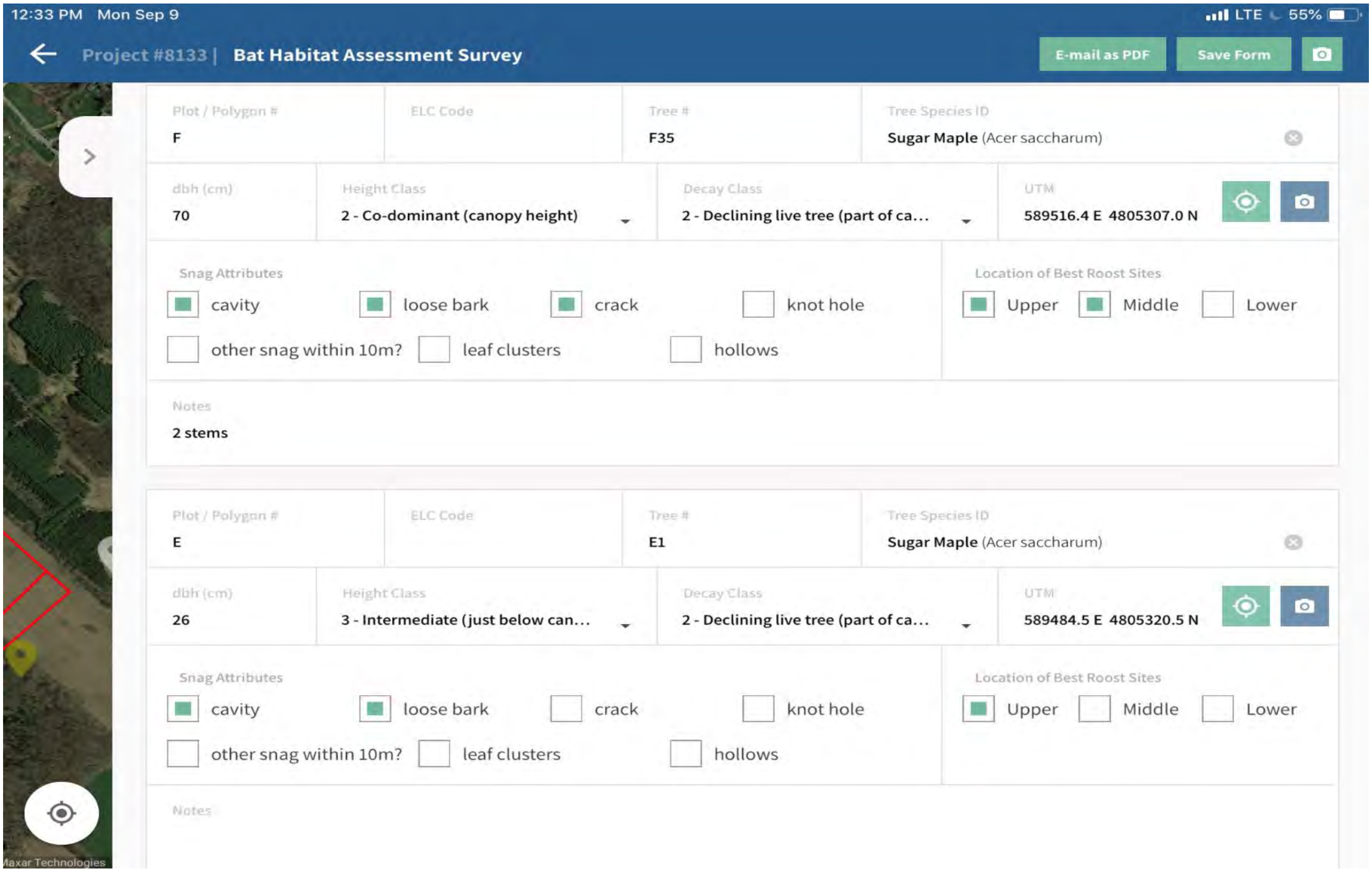
Plot / Polygon #	ELC Code	Tree #	Tree Species ID
F		F34	**Sugar Maple** (Acer saccharum)

dbh (cm)	Height Class	Decay Class	UTM
44	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589509.5 E 4805297.0 N

Snag Attributes
☑ cavity ☑ loose bark ☑ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes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Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
F		F35	**Sugar Maple** (Acer saccharum)

dbh (cm)	Height Class	Decay Class	UTM
70	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589516.4 E 4805307.0 N

Snag Attributes
☑ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes
2 stems

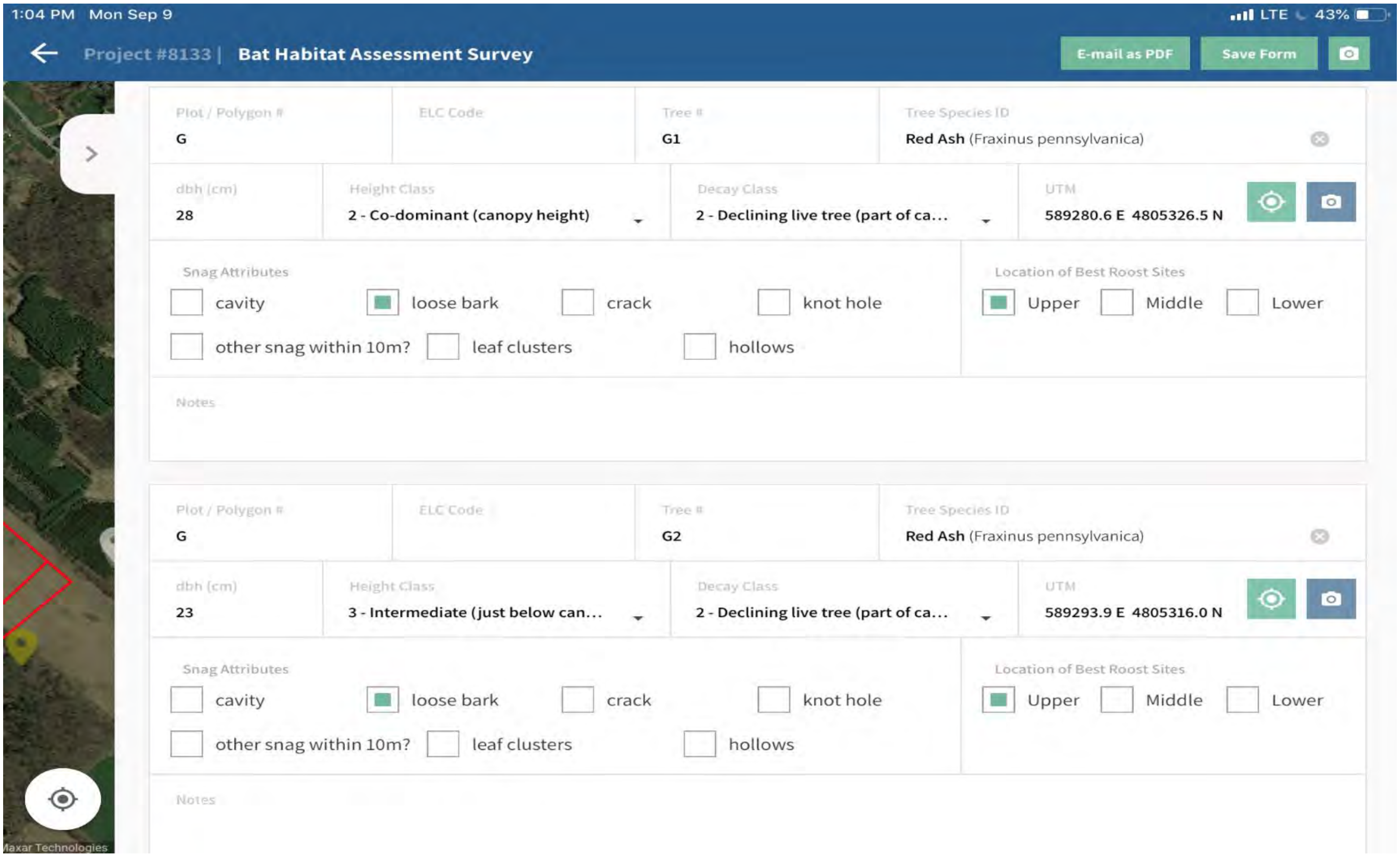
Plot / Polygon #	ELC Code	Tree #	Tree Species ID
E		E1	**Sugar Maple** (Acer saccharum)

dbh (cm)	Height Class	Decay Class	UTM
26	3 - Intermediate (just below can...	2 - Declining live tree (part of ca...	589484.5 E 4805320.5 N

Snag Attributes
☑ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
G		G1	**Red Ash** (Fraxinus pennsylvanica)
dbh (cm)	Height Class	Decay Class	UTM
28	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca…	589280.6 E 4805326.5 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
G		G2	**Red Ash** (Fraxinus pennsylvanica)
dbh (cm)	Height Class	Decay Class	UTM
23	3 - Intermediate (just below can…	2 - Declining live tree (part of ca…	589293.9 E 4805316.0 N

Snag Attributes

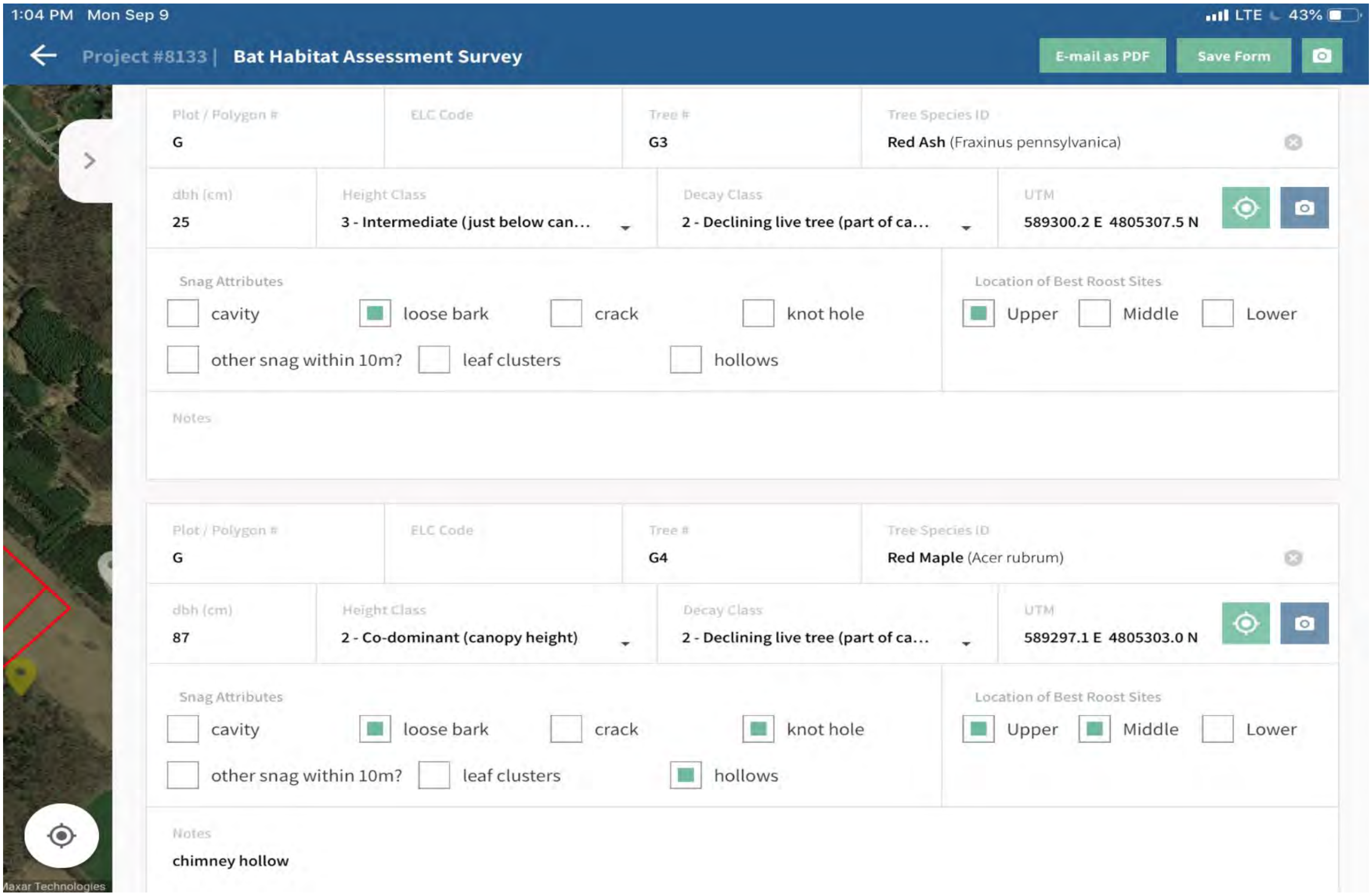
☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
G		G3	**Red Ash** (Fraxinus pennsylvanica)
dbh (cm)	Height Class	Decay Class	UTM
25	3 - Intermediate (just below can…	2 - Declining live tree (part of ca…	589300.2 E 4805307.5 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
G		G4	**Red Maple** (Acer rubrum)
dbh (cm)	Height Class	Decay Class	UTM
87	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca…	589297.1 E 4805303.0 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☑ knot hole

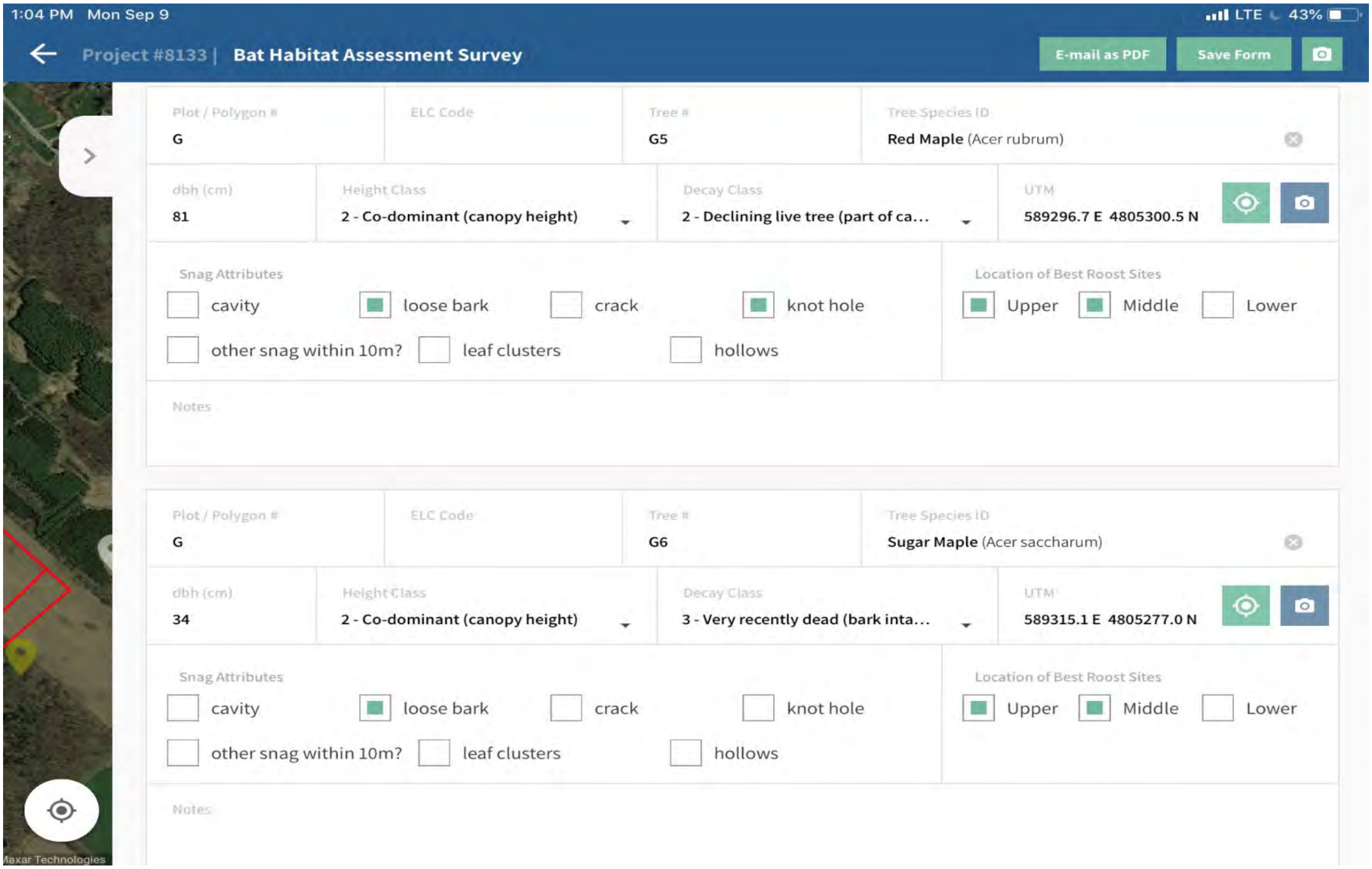
☐ other snag within 10m? ☐ leaf clusters ☑ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes

chimney hollow



Project #8133 | Bat Habitat Assessment Survey

Plot / Polygon #: G
ELC Code:
Tree #: G5
Tree Species ID: **Red Maple** (Acer rubrum)
dbh (cm): 81
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589296.7 E 4805300.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

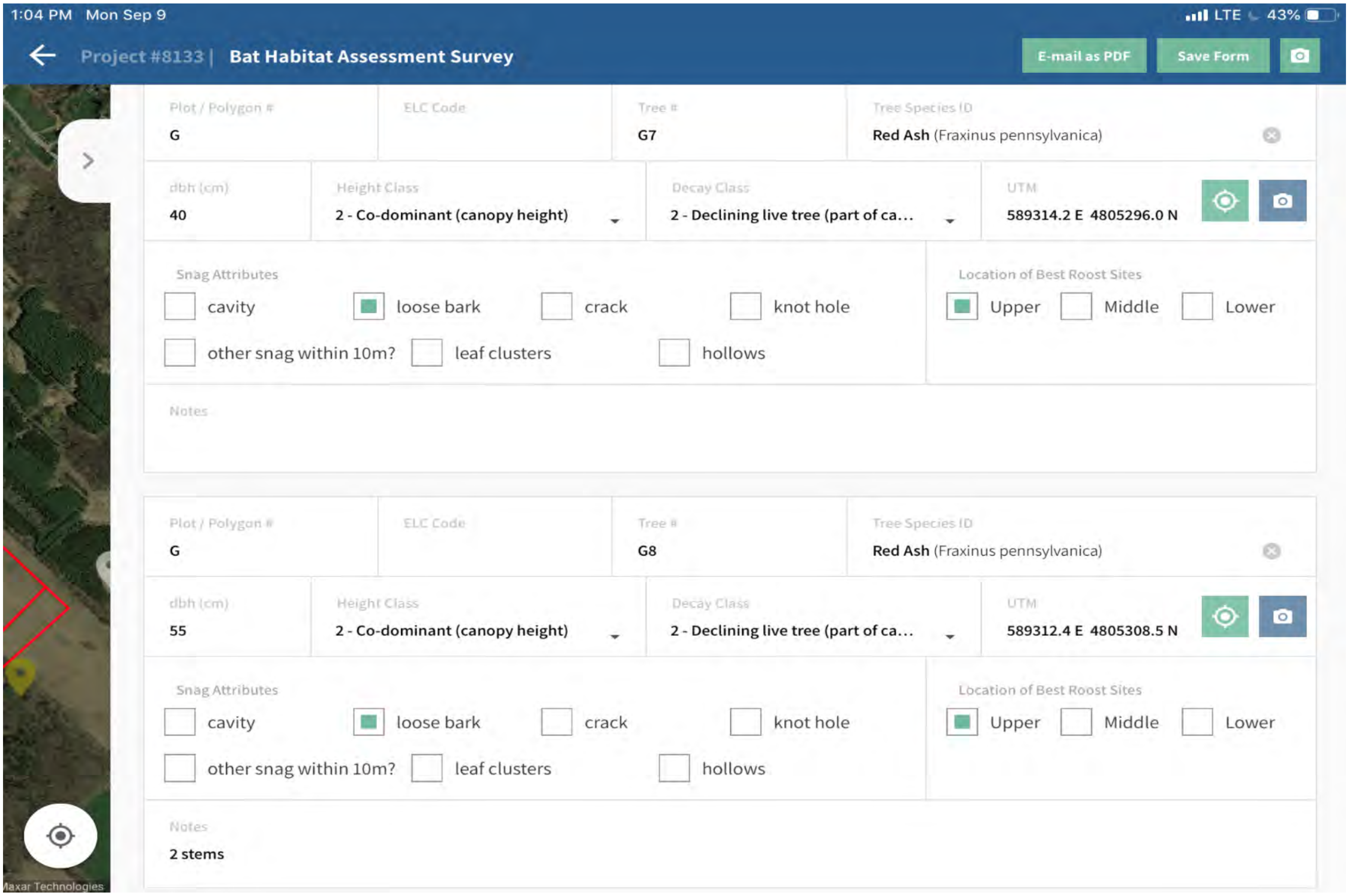
Notes:

Plot / Polygon #: G
ELC Code:
Tree #: G6
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 34
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 3 - Very recently dead (bark inta...
UTM: 589315.1 E 4805277.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes:



Project #8133 | Bat Habitat Assessment Survey

Plot / Polygon #: G
ELC Code:
Tree #: G7
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)
dbh (cm): 40
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589314.2 E 4805296.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

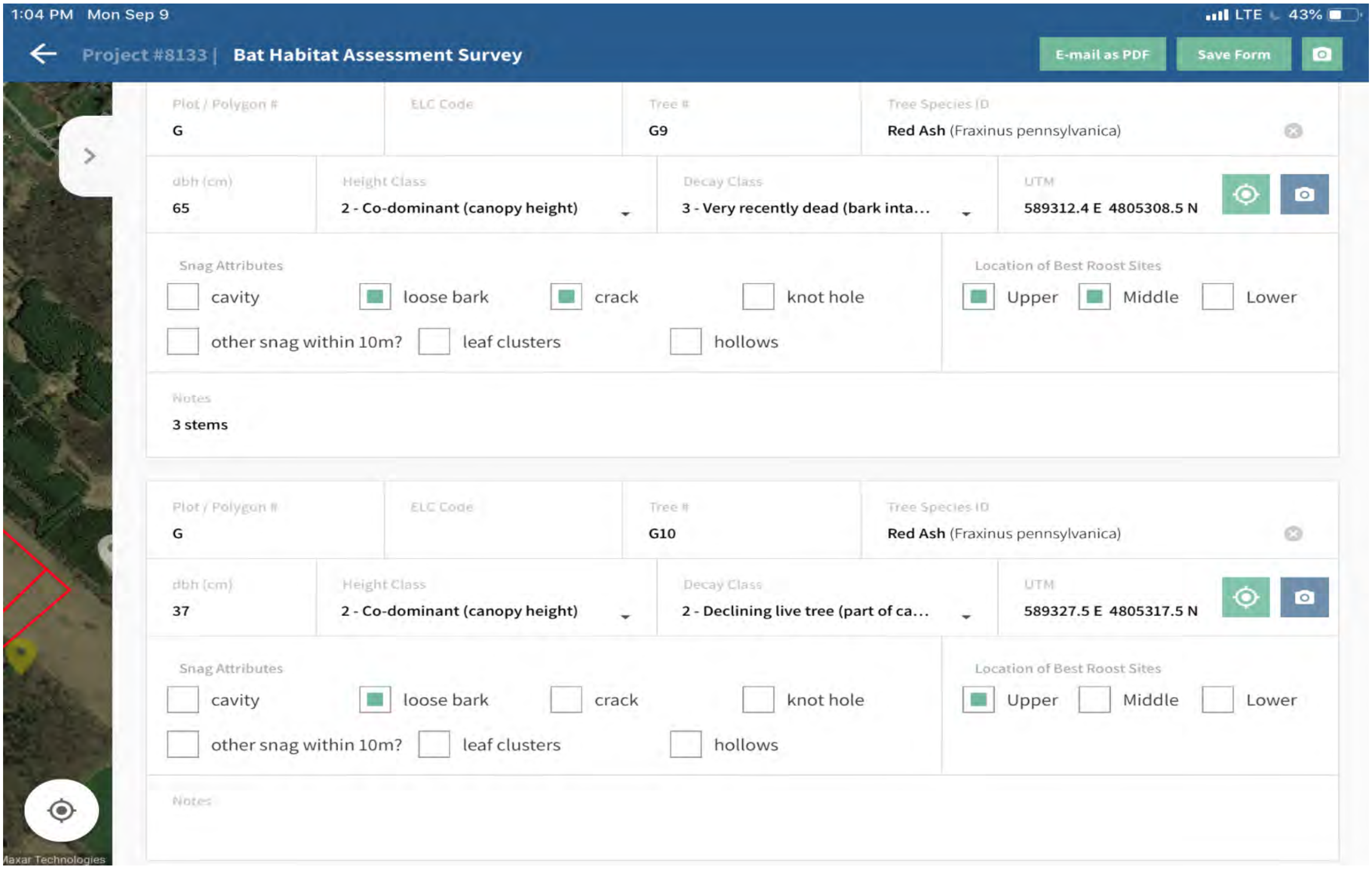
Notes:

Plot / Polygon #: G
ELC Code:
Tree #: G8
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)
dbh (cm): 55
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589312.4 E 4805308.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes: 2 stems



Project #8133 | Bat Habitat Assessment Survey

Plot / Polygon #: G
ELC Code:
Tree #: G9
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)

dbh (cm): 65
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 3 - Very recently dead (bark inta...
UTM: 589312.4 E 4805308.5 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes
3 stems

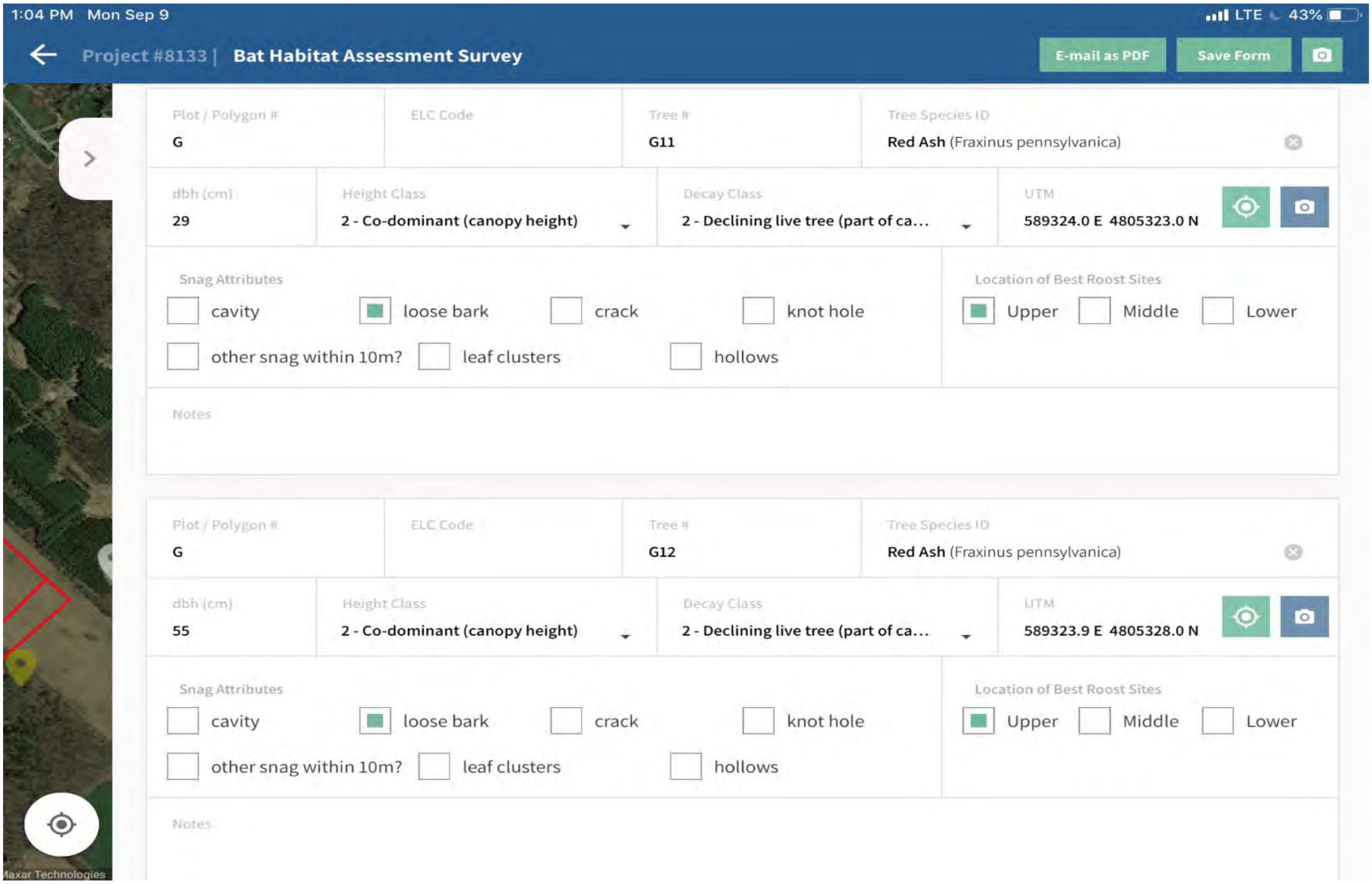
Plot / Polygon #: G
ELC Code:
Tree #: G10
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)

dbh (cm): 37
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589327.5 E 4805317.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | Bat Habitat Assessment Survey

Plot / Polygon #: G
ELC Code:
Tree #: G11
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)

dbh (cm): 29
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589324.0 E 4805323.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes

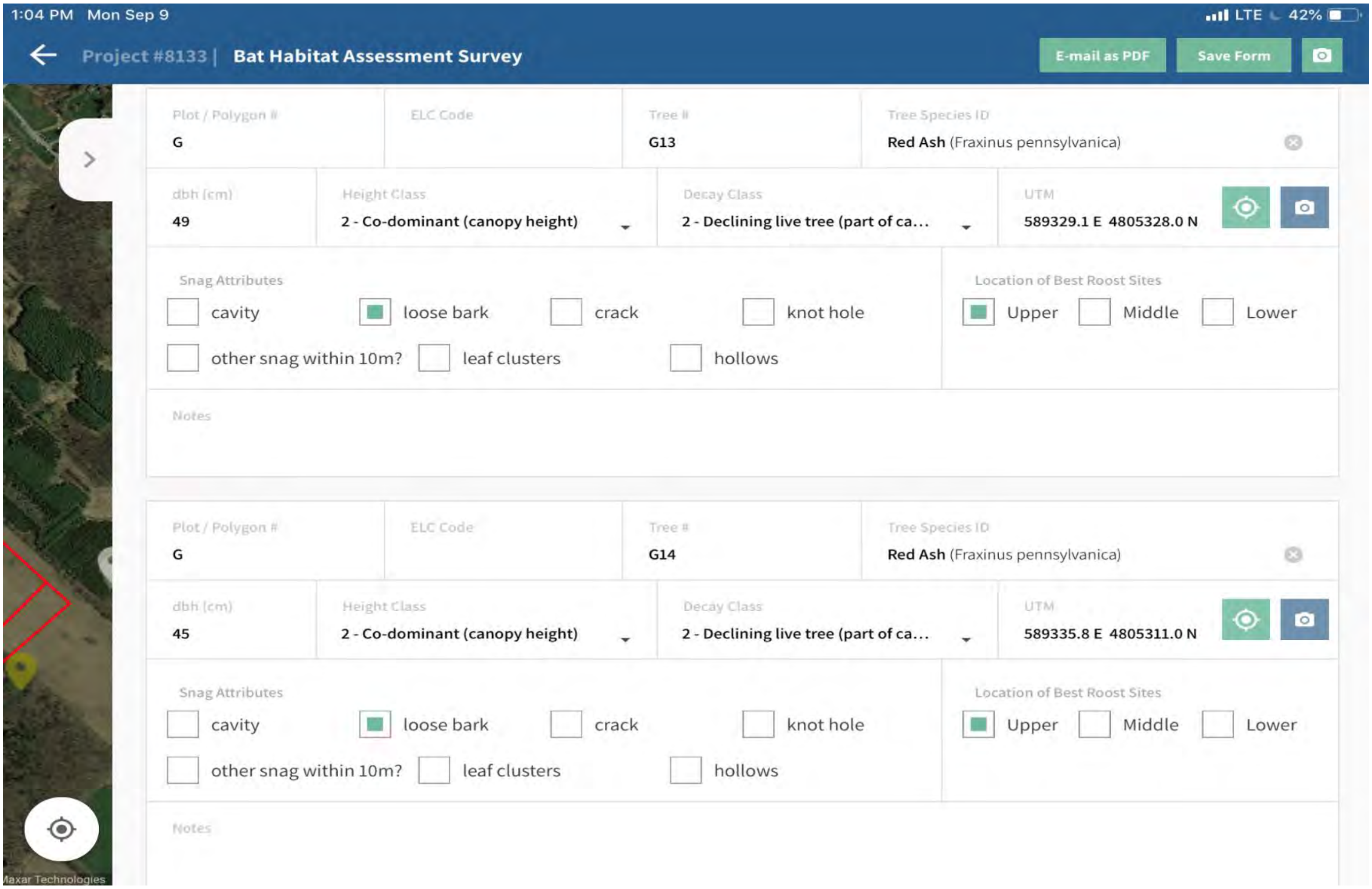
Plot / Polygon #: G
ELC Code:
Tree #: G12
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)

dbh (cm): 55
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589323.9 E 4805328.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: G
ELC Code:
Tree #: G13
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)
dbh (cm): 49
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589329.1 E 4805328.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

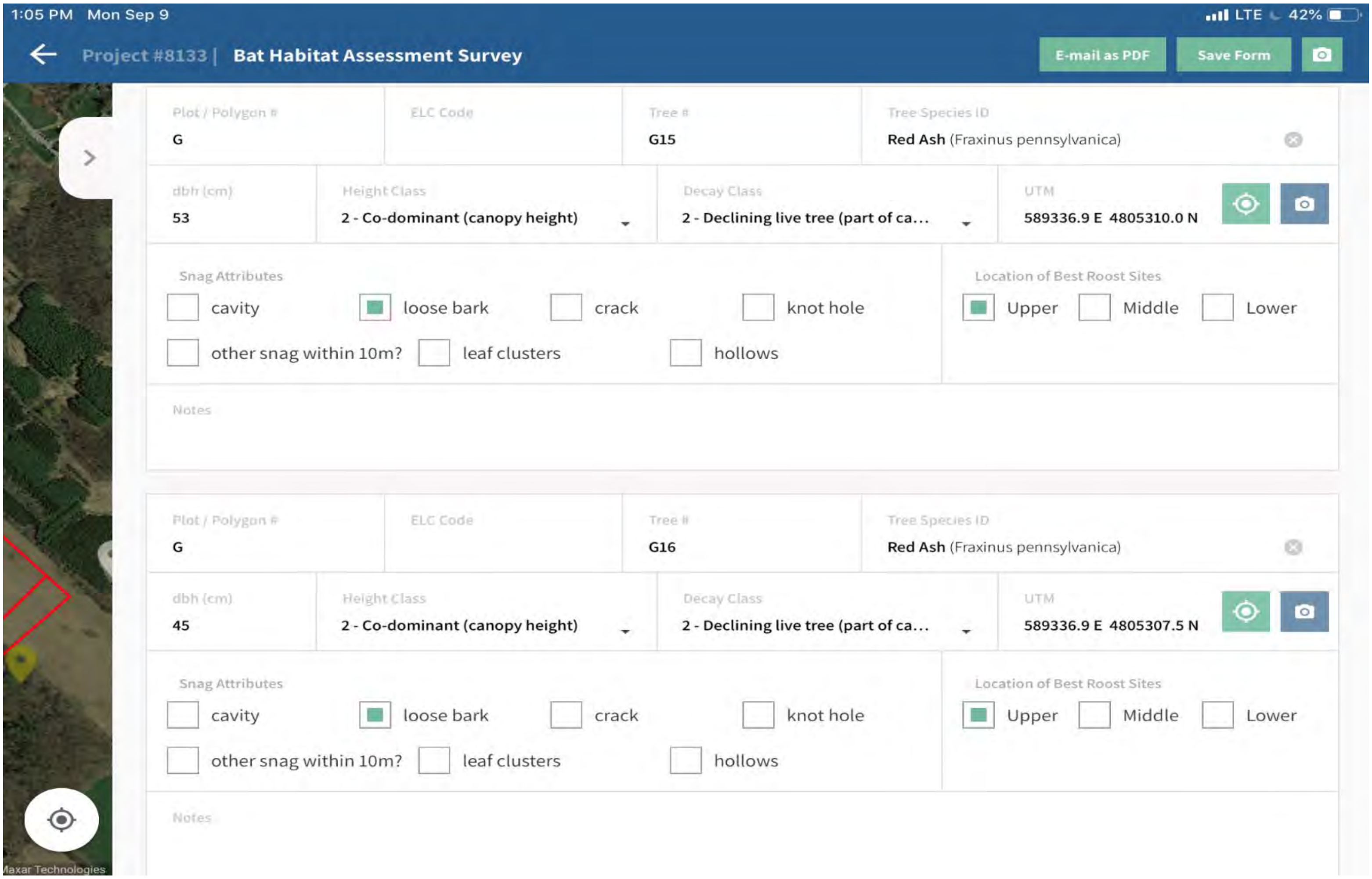
Notes

Plot / Polygon #: G
ELC Code:
Tree #: G14
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)
dbh (cm): 45
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589335.8 E 4805311.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: G
ELC Code:
Tree #: G15
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)
dbh (cm): 53
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589336.9 E 4805310.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

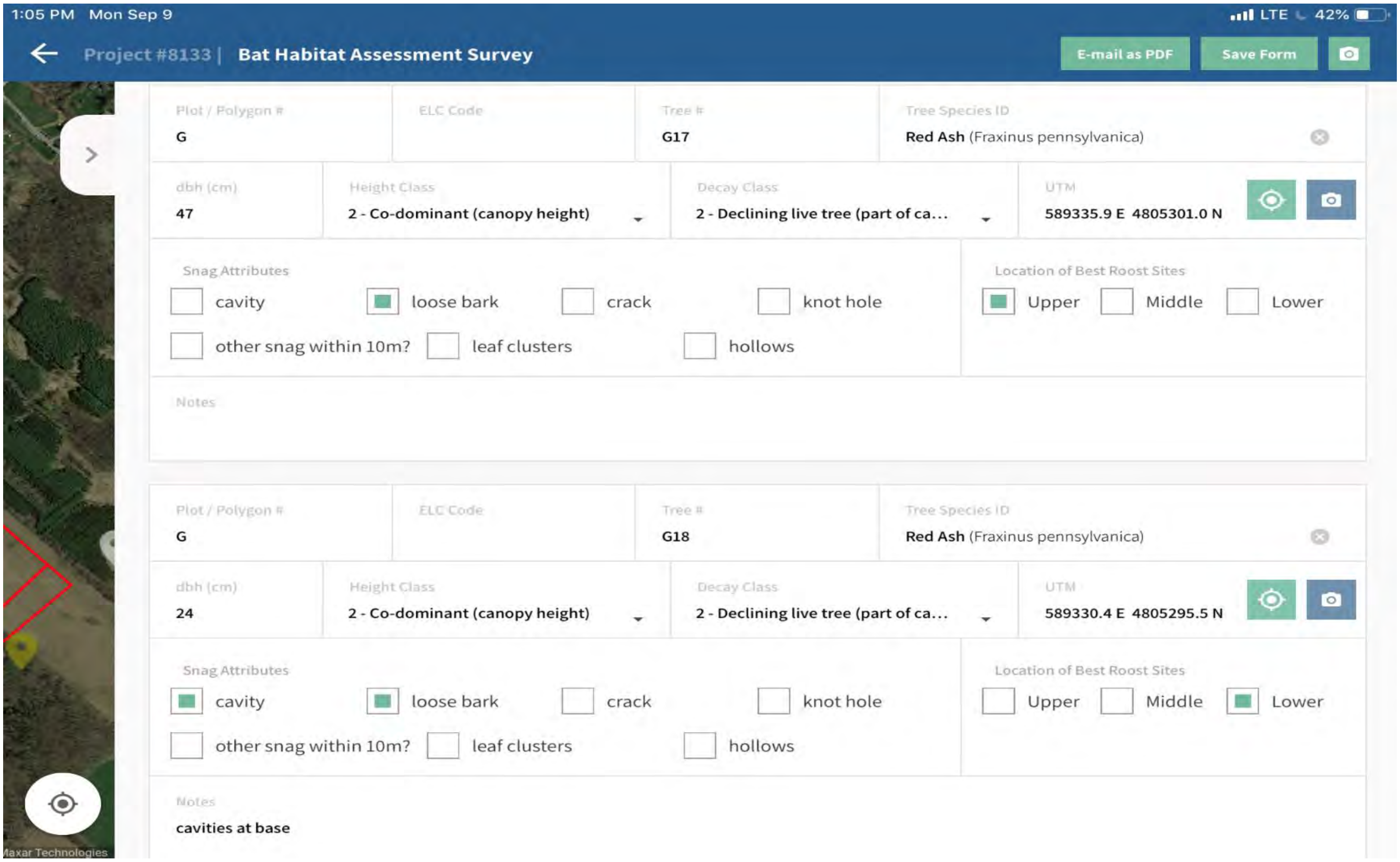
Notes

Plot / Polygon #: G
ELC Code:
Tree #: G16
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)
dbh (cm): 45
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589336.9 E 4805307.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
G		G17	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
47	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589335.9 E 4805301.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes

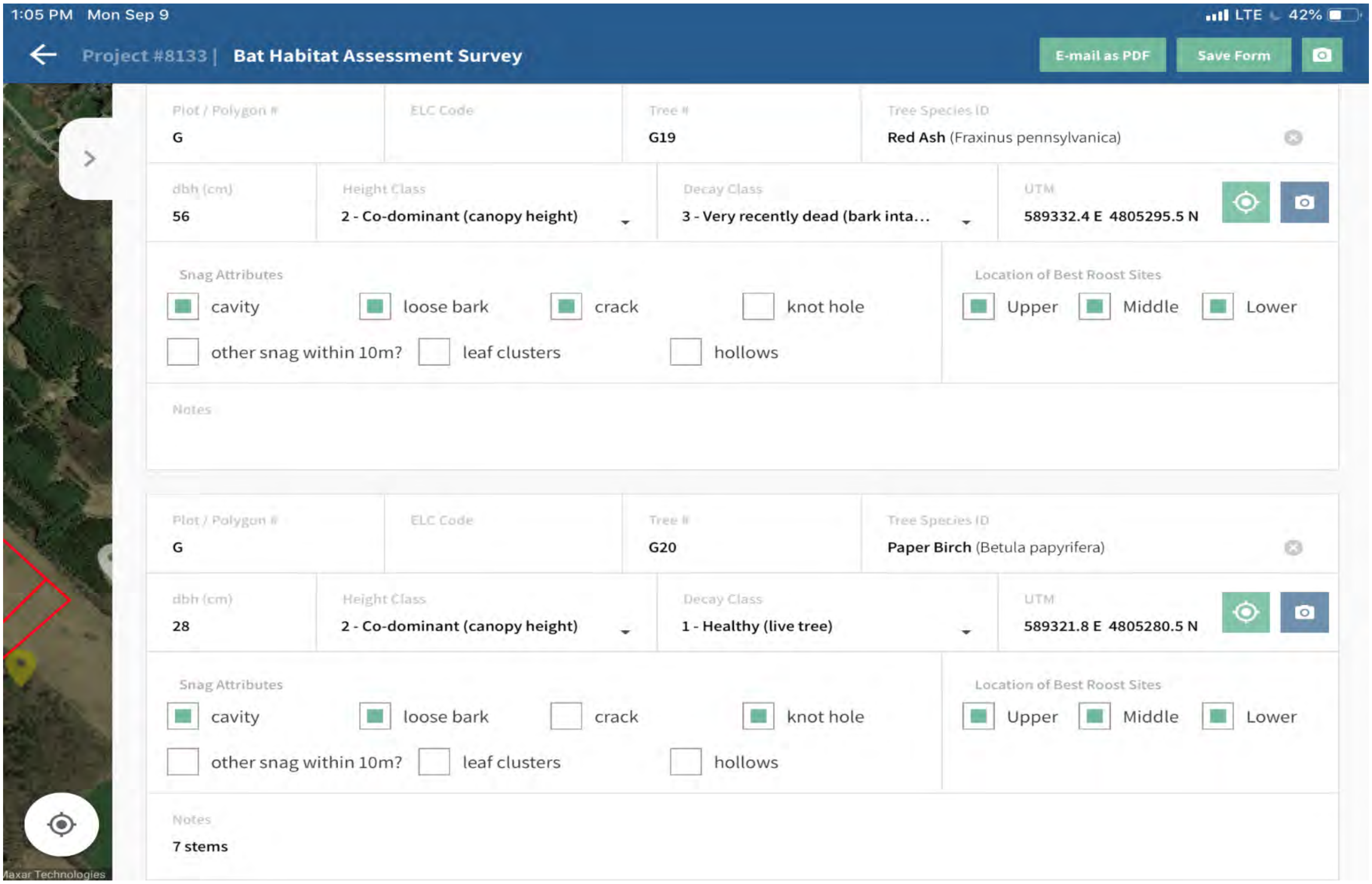
Plot / Polygon #	ELC Code	Tree #	Tree Species ID
G		G18	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
24	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589330.4 E 4805295.5 N

Snag Attributes
☑ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☐ Middle ☑ Lower

Notes
cavities at base



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
G		G19	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
56	2 - Co-dominant (canopy height)	3 - Very recently dead (bark inta...	589332.4 E 4805295.5 N

Snag Attributes
☑ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☑ Lower

Notes

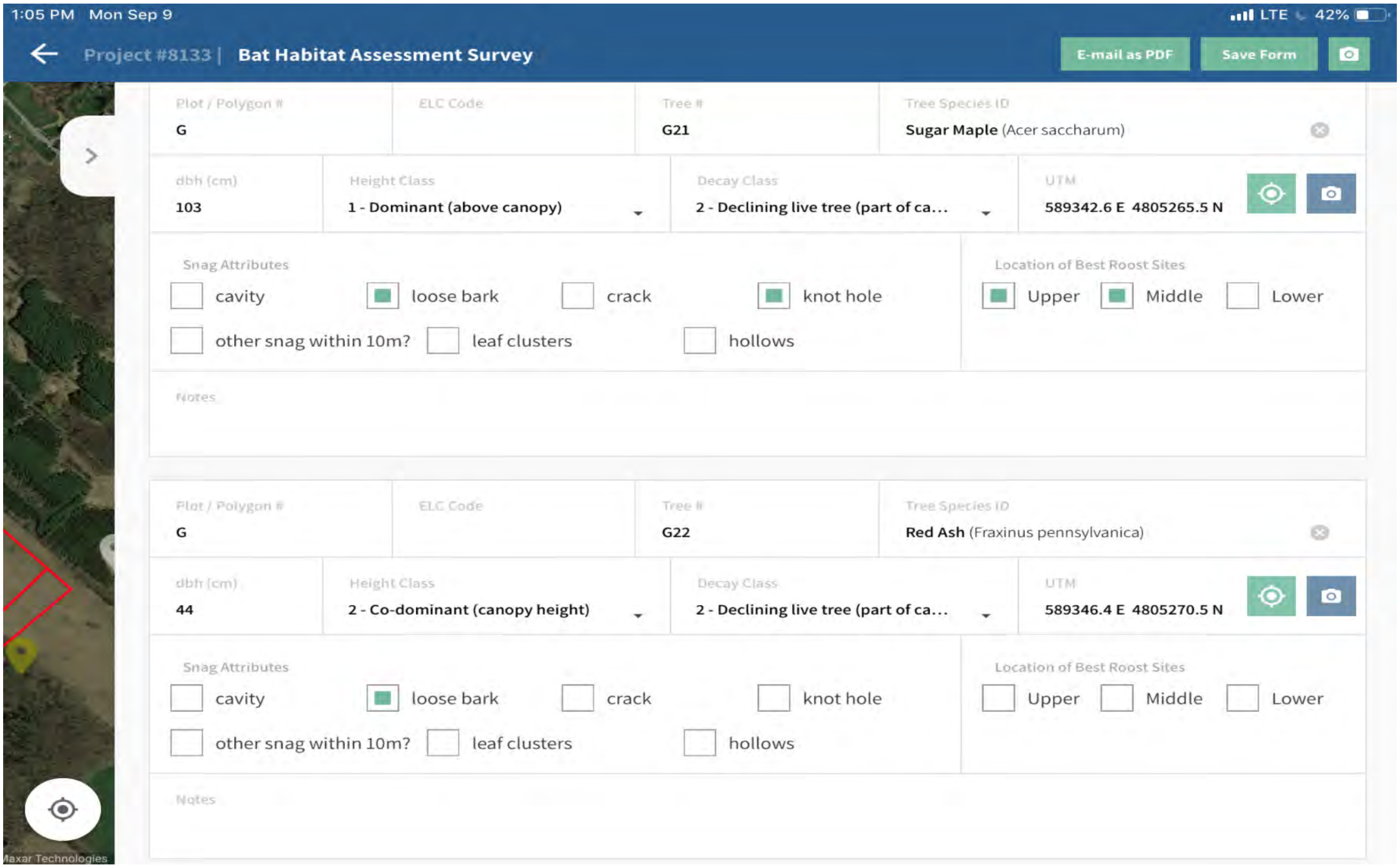
Plot / Polygon #	ELC Code	Tree #	Tree Species ID
G		G20	**Paper Birch** (Betula papyrifera)

dbh (cm)	Height Class	Decay Class	UTM
28	2 - Co-dominant (canopy height)	1 - Healthy (live tree)	589321.8 E 4805280.5 N

Snag Attributes
☑ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☑ Lower

Notes
7 stems



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon # G
ELC Code
Tree # G21
Tree Species ID **Sugar Maple** (Acer saccharum)
dbh (cm) 103
Height Class 1 - Dominant (above canopy)
Decay Class 2 - Declining live tree (part of ca...
UTM 589342.6 E 4805265.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

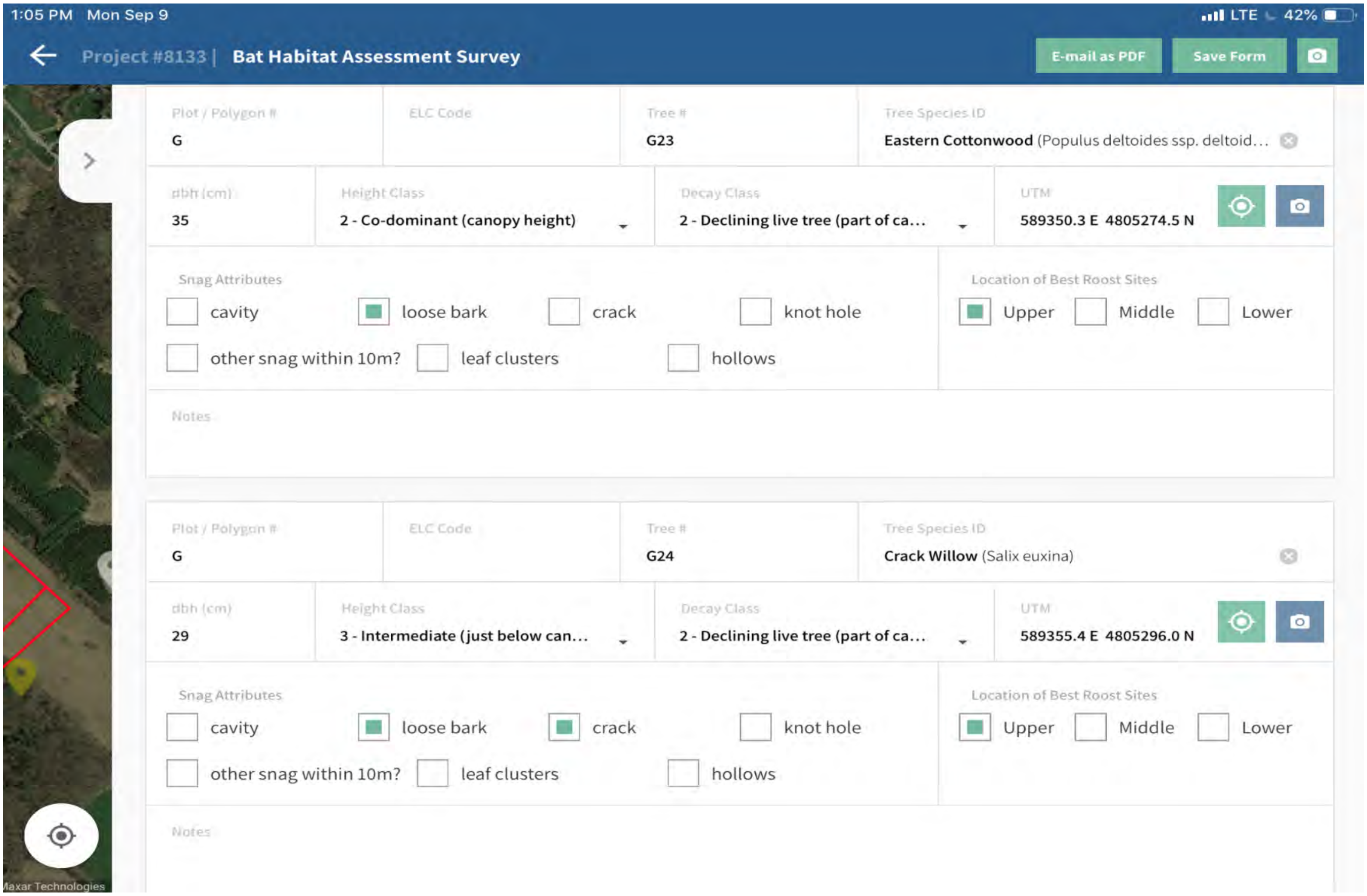
Notes

Plot / Polygon # G
ELC Code
Tree # G22
Tree Species ID **Red Ash** (Fraxinus pennsylvanica)
dbh (cm) 44
Height Class 2 - Co-dominant (canopy height)
Decay Class 2 - Declining live tree (part of ca...
UTM 589346.4 E 4805270.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon # G
ELC Code
Tree # G23
Tree Species ID **Eastern Cottonwood** (Populus deltoides ssp. deltoid...
dbh (cm) 35
Height Class 2 - Co-dominant (canopy height)
Decay Class 2 - Declining live tree (part of ca...
UTM 589350.3 E 4805274.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

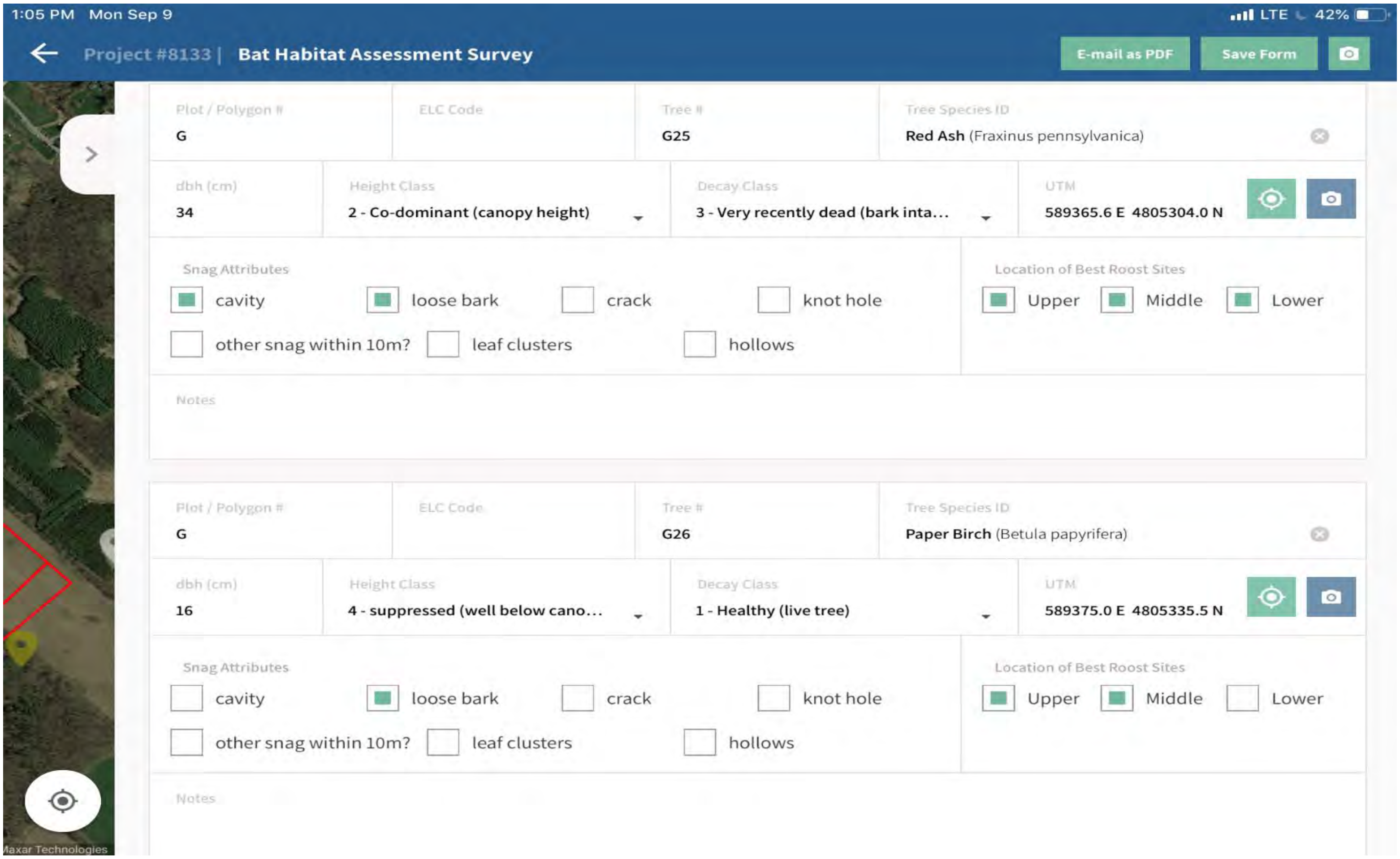
Notes

Plot / Polygon # G
ELC Code
Tree # G24
Tree Species ID **Crack Willow** (Salix euxina)
dbh (cm) 29
Height Class 3 - Intermediate (just below can...
Decay Class 2 - Declining live tree (part of ca...
UTM 589355.4 E 4805296.0 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #
G

ELC Code

Tree #
G25

Tree Species ID
Red Ash (Fraxinus pennsylvanica)

dbh (cm)
34

Height Class
2 - Co-dominant (canopy height)

Decay Class
3 - Very recently dead (bark inta...

UTM
589365.6 E 4805304.0 N

Snag Attributes
☑ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☑ Lower

Notes

Plot / Polygon #
G

ELC Code

Tree #
G26

Tree Species ID
Paper Birch (Betula papyrifera)

dbh (cm)
16

Height Class
4 - suppressed (well below cano...

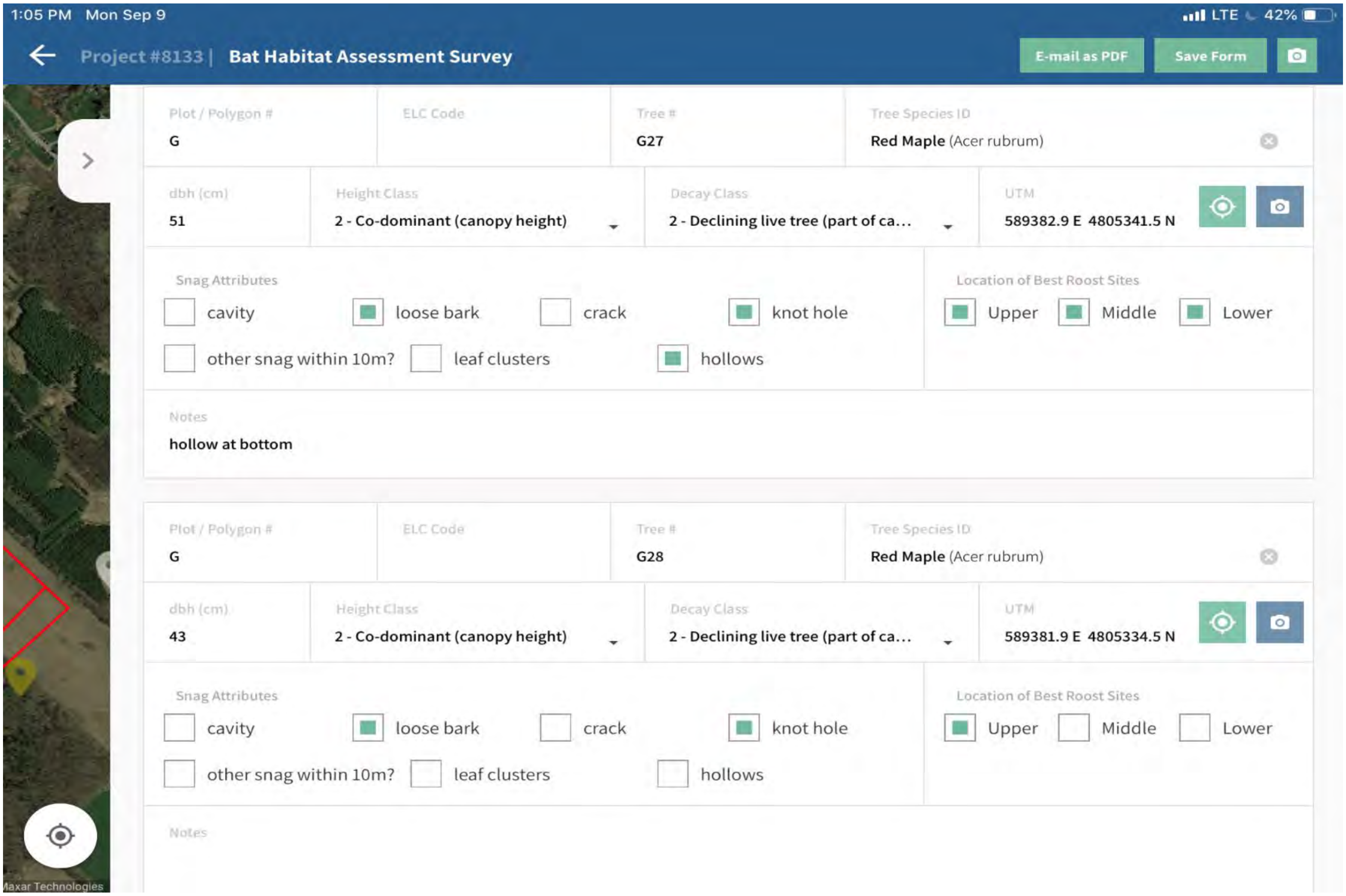
Decay Class
1 - Healthy (live tree)

UTM
589375.0 E 4805335.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #
G

ELC Code

Tree #
G27

Tree Species ID
Red Maple (Acer rubrum)

dbh (cm)
51

Height Class
2 - Co-dominant (canopy height)

Decay Class
2 - Declining live tree (part of ca...

UTM
589382.9 E 4805341.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☑ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☑ Lower

Notes
hollow at bottom

Plot / Polygon #
G

ELC Code

Tree #
G28

Tree Species ID
Red Maple (Acer rubrum)

dbh (cm)
43

Height Class
2 - Co-dominant (canopy height)

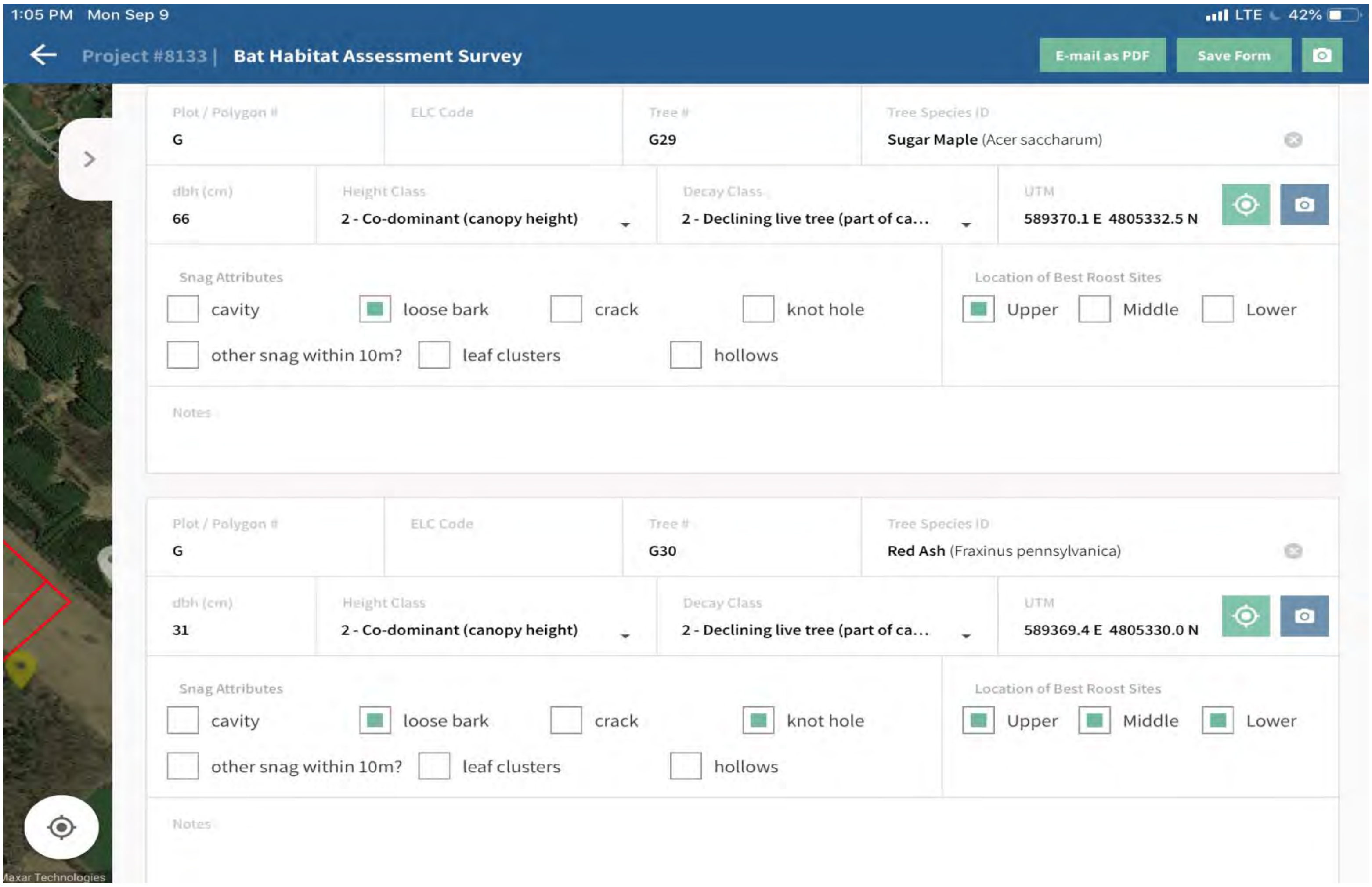
Decay Class
2 - Declining live tree (part of ca...

UTM
589381.9 E 4805334.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



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Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
G		G29	**Sugar Maple** (Acer saccharum)

dbh (cm)	Height Class	Decay Class	UTM
66	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca…	589370.1 E 4805332.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes

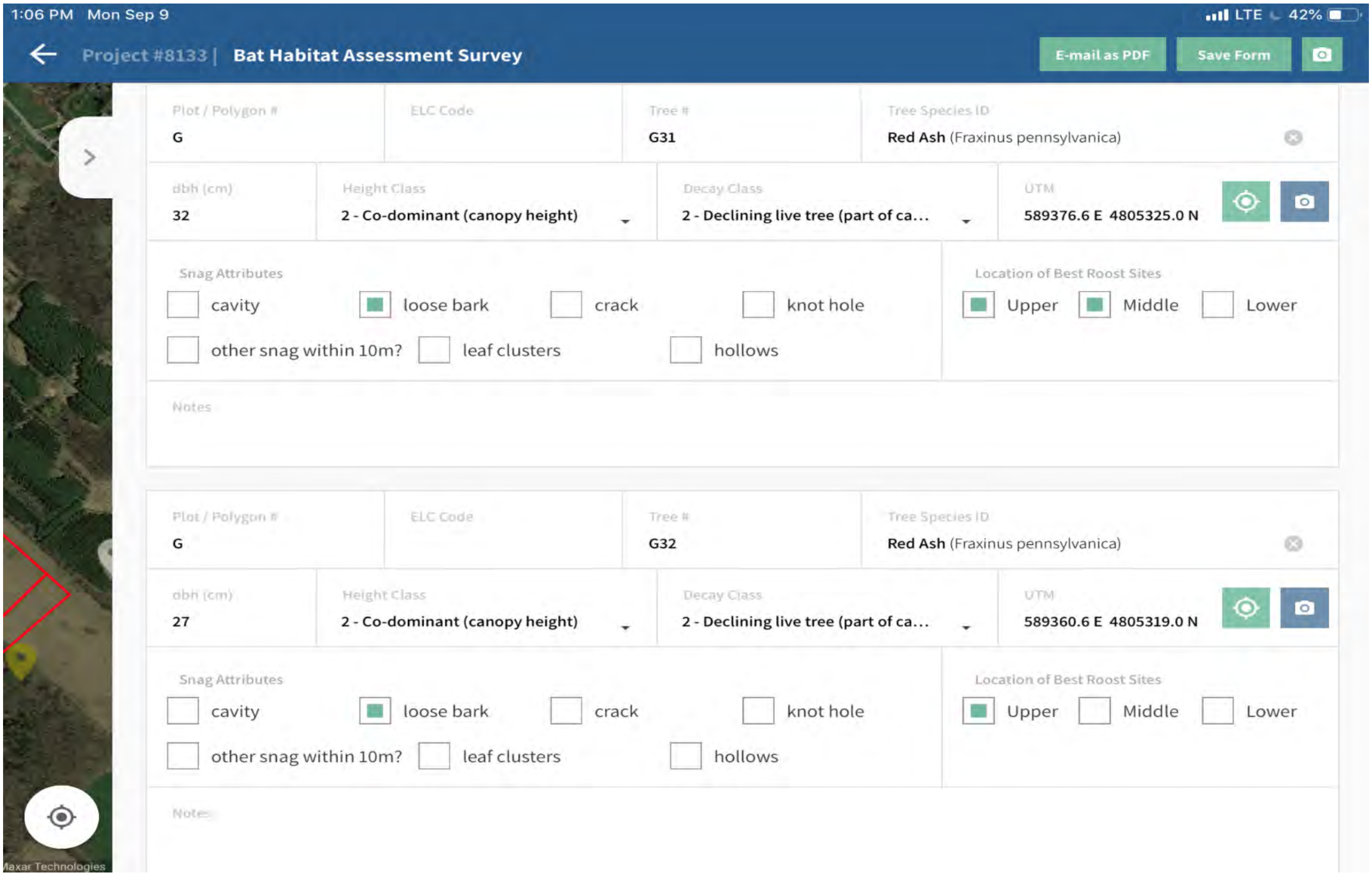
Plot / Polygon #	ELC Code	Tree #	Tree Species ID
G		G30	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
31	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca…	589369.4 E 4805330.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☑ Lower

Notes



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Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
G		G31	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
32	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca…	589376.6 E 4805325.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes

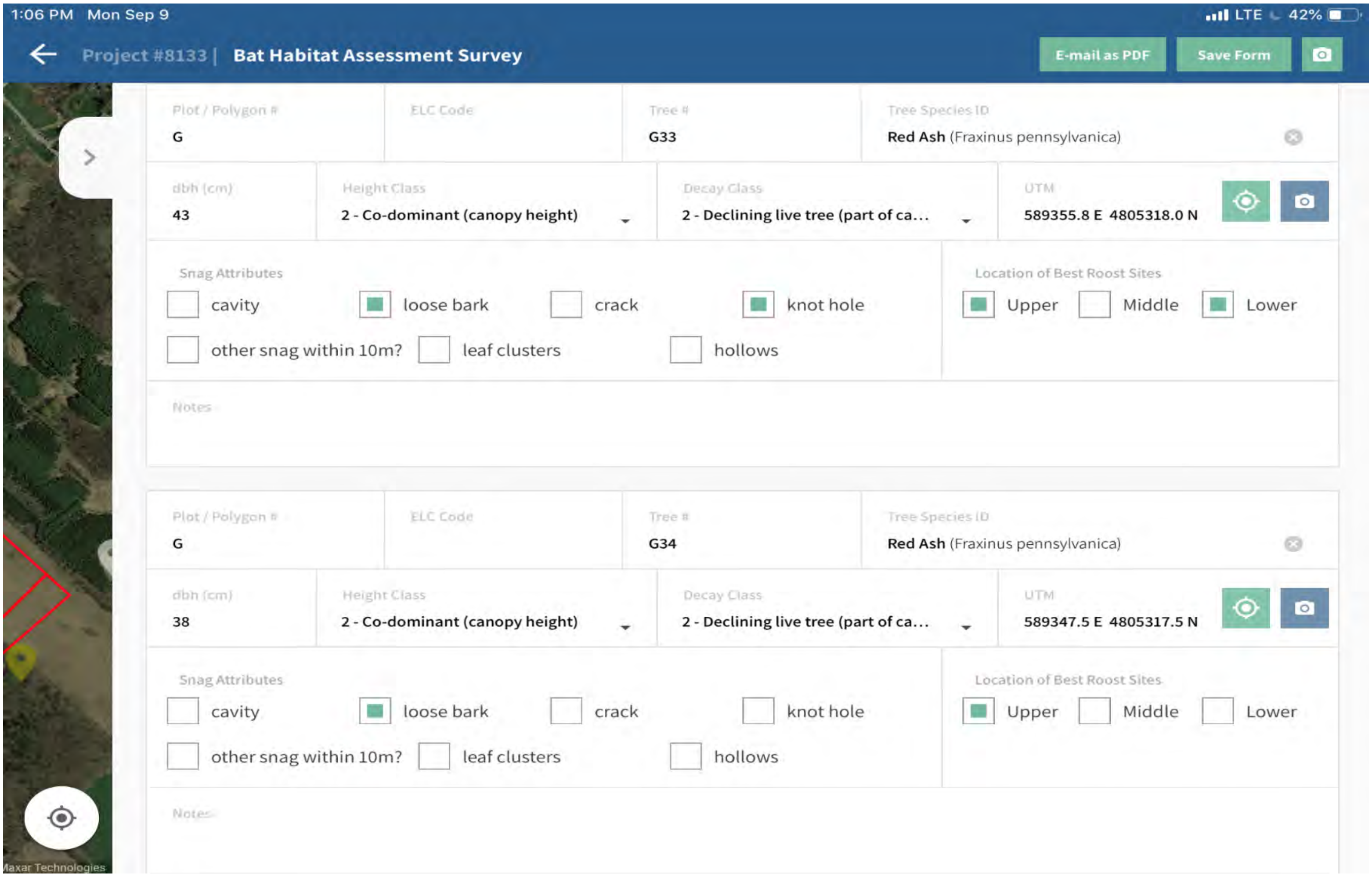
Plot / Polygon #	ELC Code	Tree #	Tree Species ID
G		G32	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
27	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca…	589360.6 E 4805319.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: G
ELC Code:
Tree #: G33
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)
dbh (cm): 43
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589355.8 E 4805318.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☑ Lower

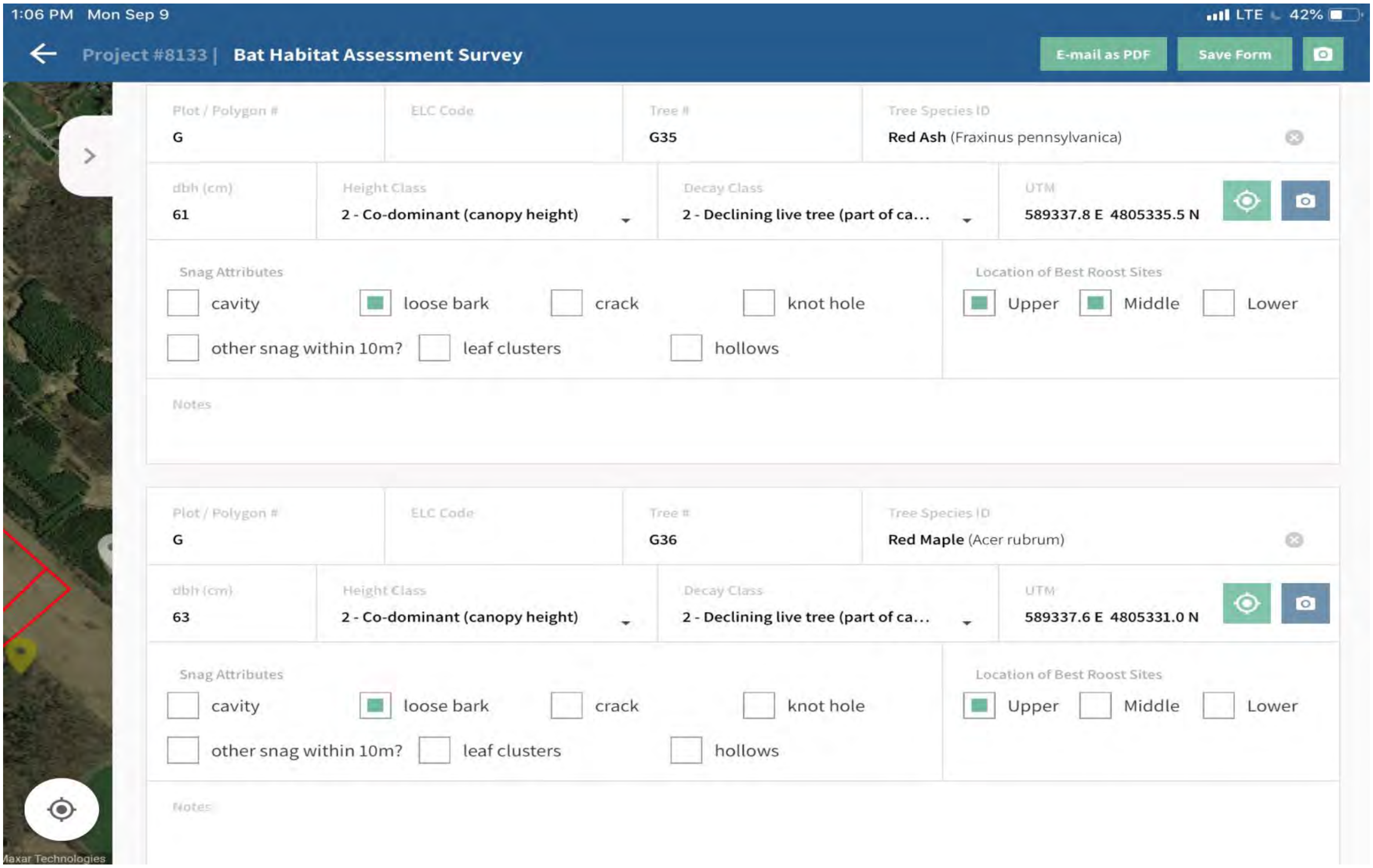
Notes

Plot / Polygon #: G
ELC Code:
Tree #: G34
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)
dbh (cm): 38
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589347.5 E 4805317.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: G
ELC Code:
Tree #: G35
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)
dbh (cm): 61
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589337.8 E 4805335.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

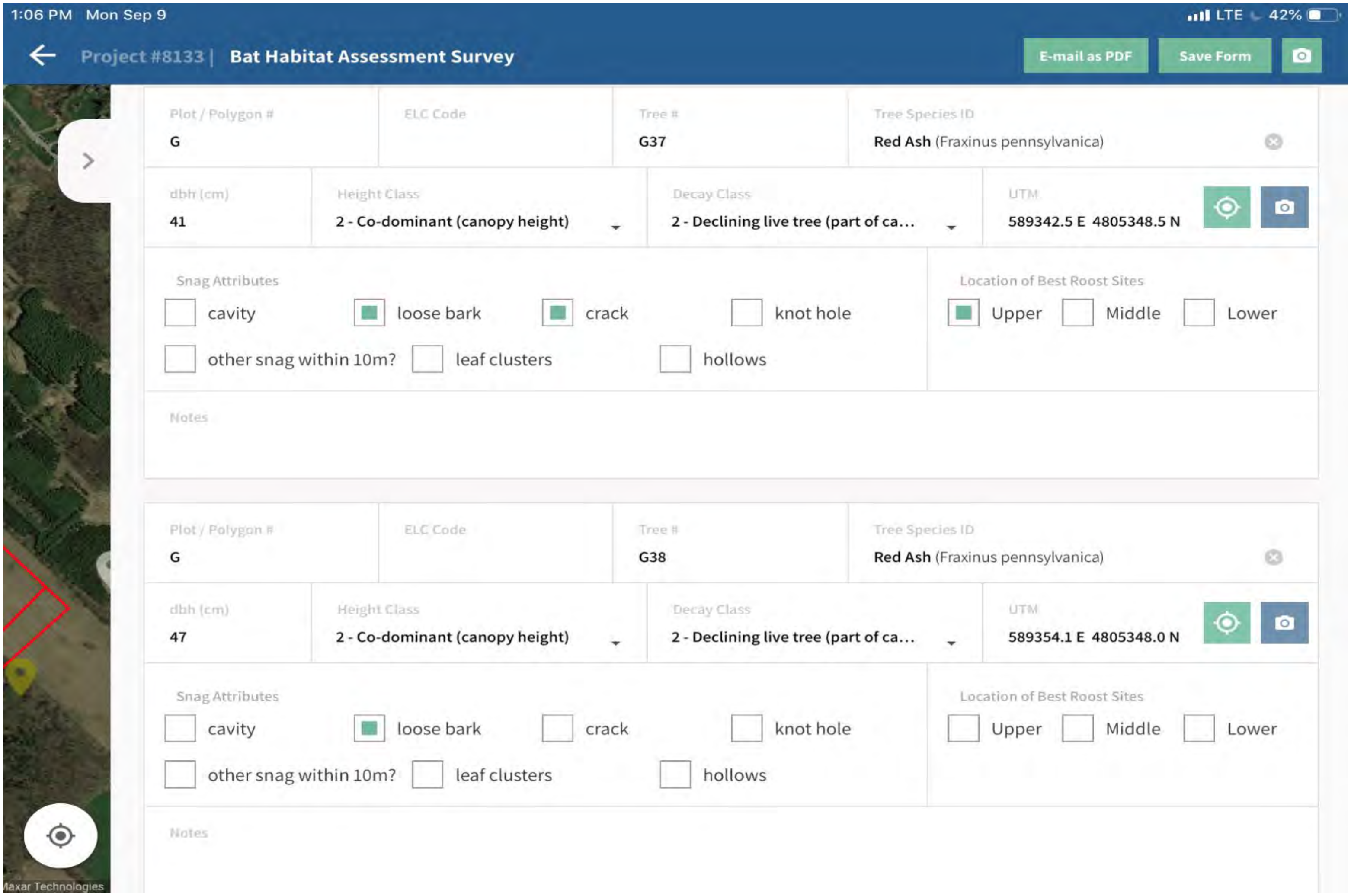
Notes

Plot / Polygon #: G
ELC Code:
Tree #: G36
Tree Species ID: **Red Maple** (Acer rubrum)
dbh (cm): 63
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589337.6 E 4805331.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: G
ELC Code:
Tree #: G37
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)
dbh (cm): 41
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589342.5 E 4805348.5 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

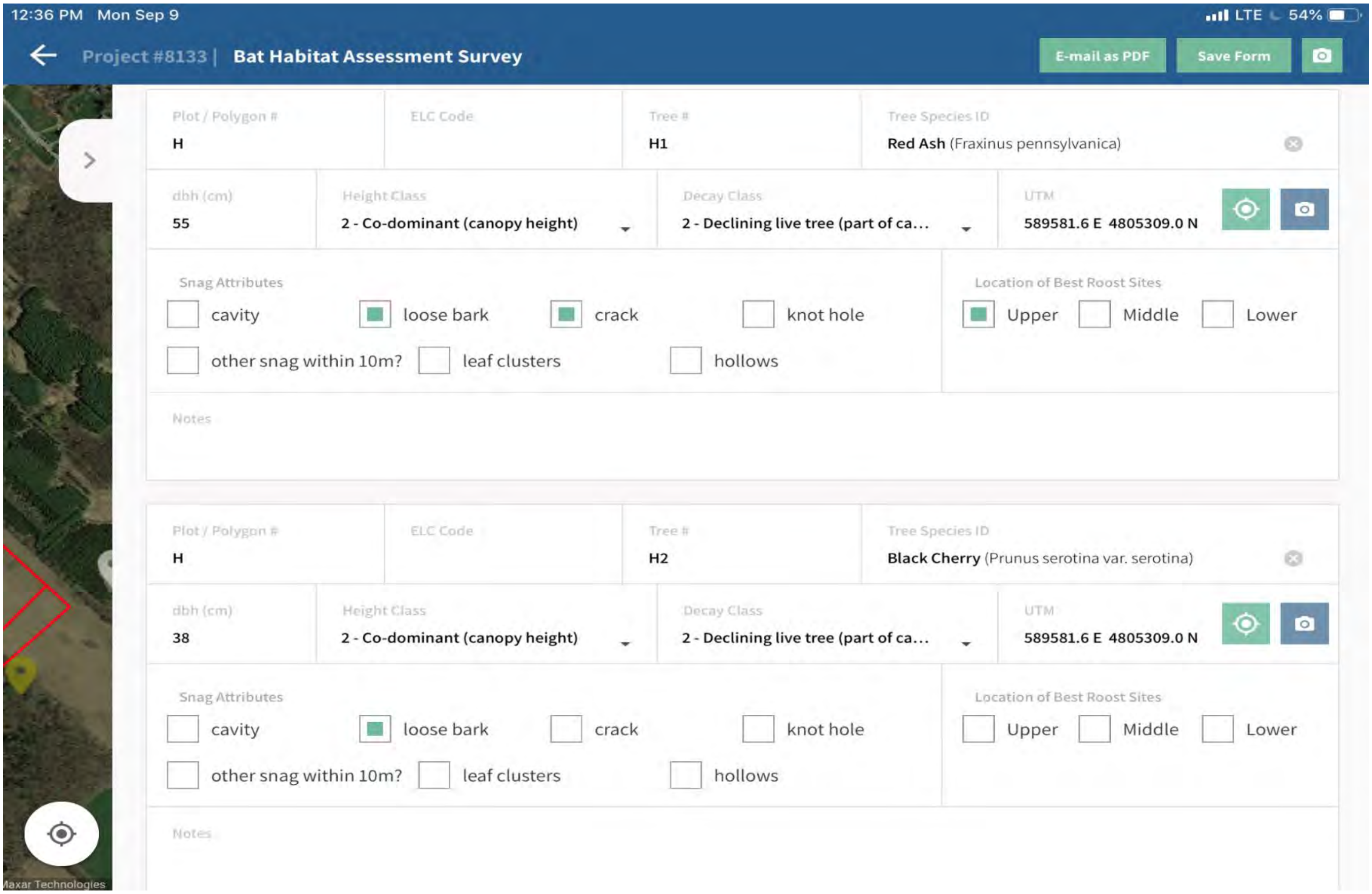
Notes

Plot / Polygon #: G
ELC Code:
Tree #: G38
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)
dbh (cm): 47
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589354.1 E 4805348.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☐ Middle ☐ Lower

Notes



Bat Habitat Assessment Survey

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
H		H1	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
55	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589581.6 E 4805309.0 N

Snag Attributes

☐ cavity ☑ loose bark ☑ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
H		H2	**Black Cherry** (Prunus serotina var. serotina)

dbh (cm)	Height Class	Decay Class	UTM
38	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589581.6 E 4805309.0 N

Snag Attributes

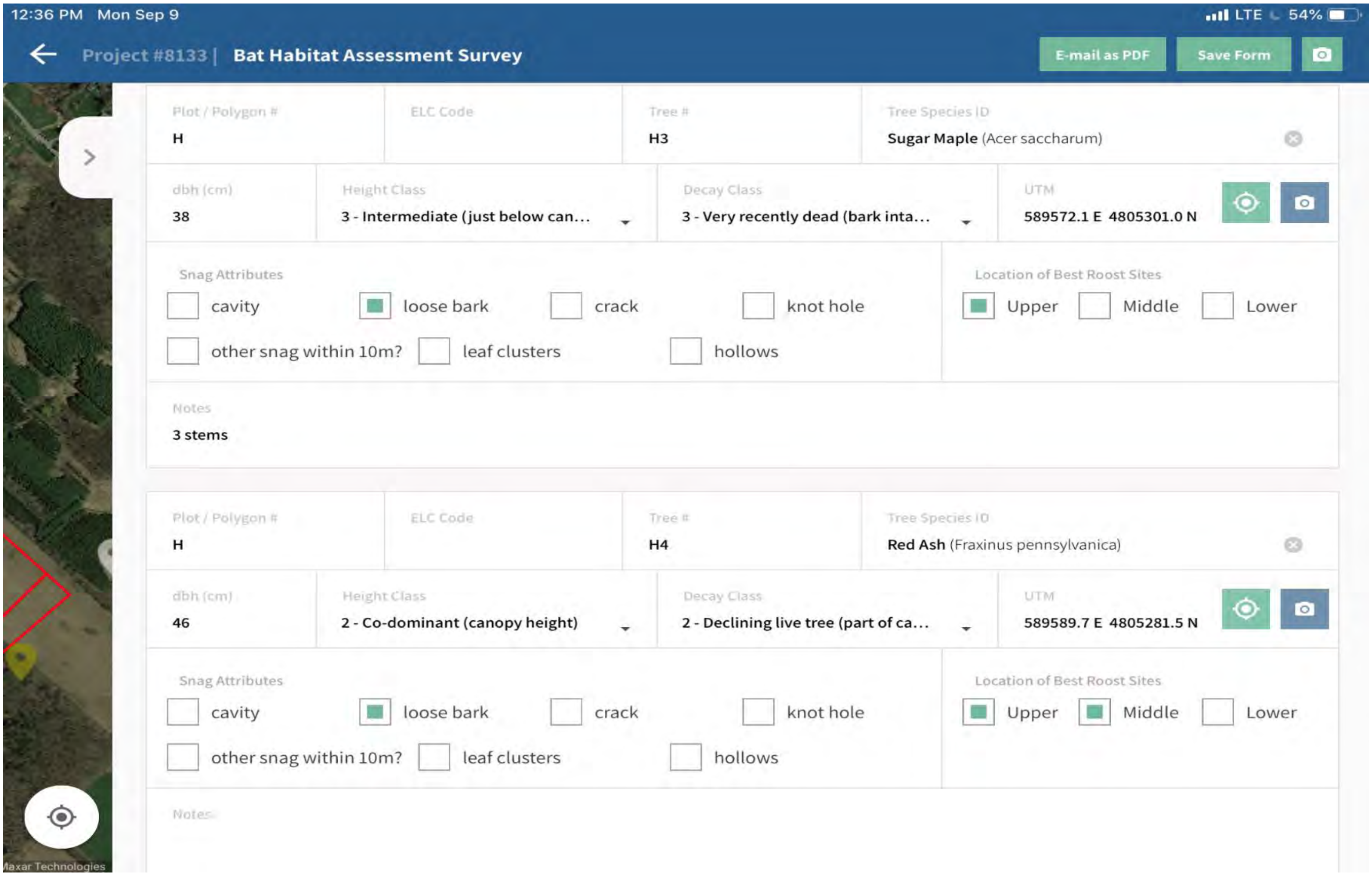
☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☐ Upper ☐ Middle ☐ Lower

Notes



Bat Habitat Assessment Survey

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
H		H3	**Sugar Maple** (Acer saccharum)

dbh (cm)	Height Class	Decay Class	UTM
38	3 - Intermediate (just below can...	3 - Very recently dead (bark inta...	589572.1 E 4805301.0 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes

3 stems

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
H		H4	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
46	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589589.7 E 4805281.5 N

Snag Attributes

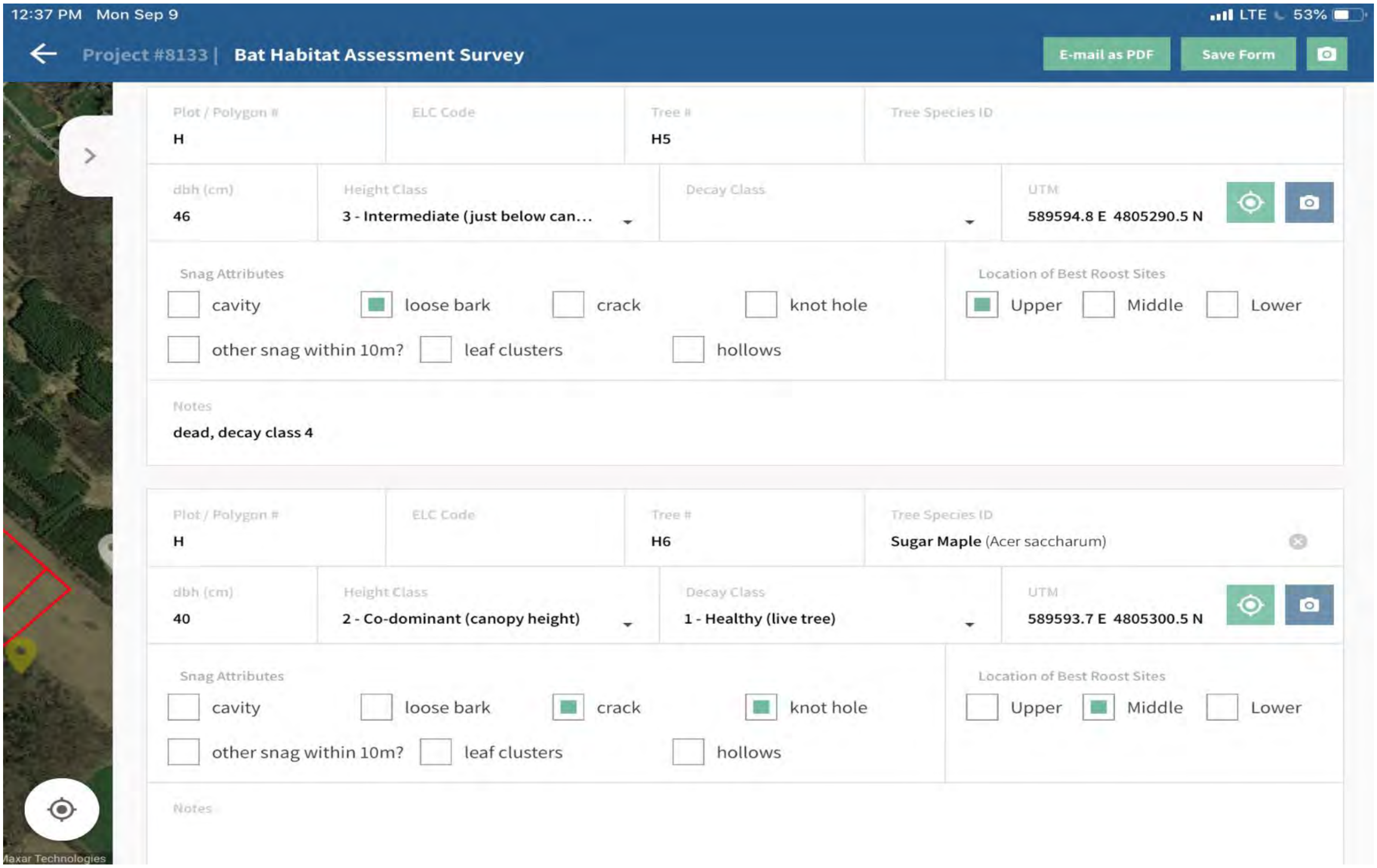
☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
H		H5	

dbh (cm)	Height Class	Decay Class	UTM
46	3 - Intermediate (just below can...		589594.8 E 4805290.5 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes

dead, decay class 4

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
H		H6	**Sugar Maple** (Acer saccharum)

dbh (cm)	Height Class	Decay Class	UTM
40	2 - Co-dominant (canopy height)	1 - Healthy (live tree)	589593.7 E 4805300.5 N

Snag Attributes

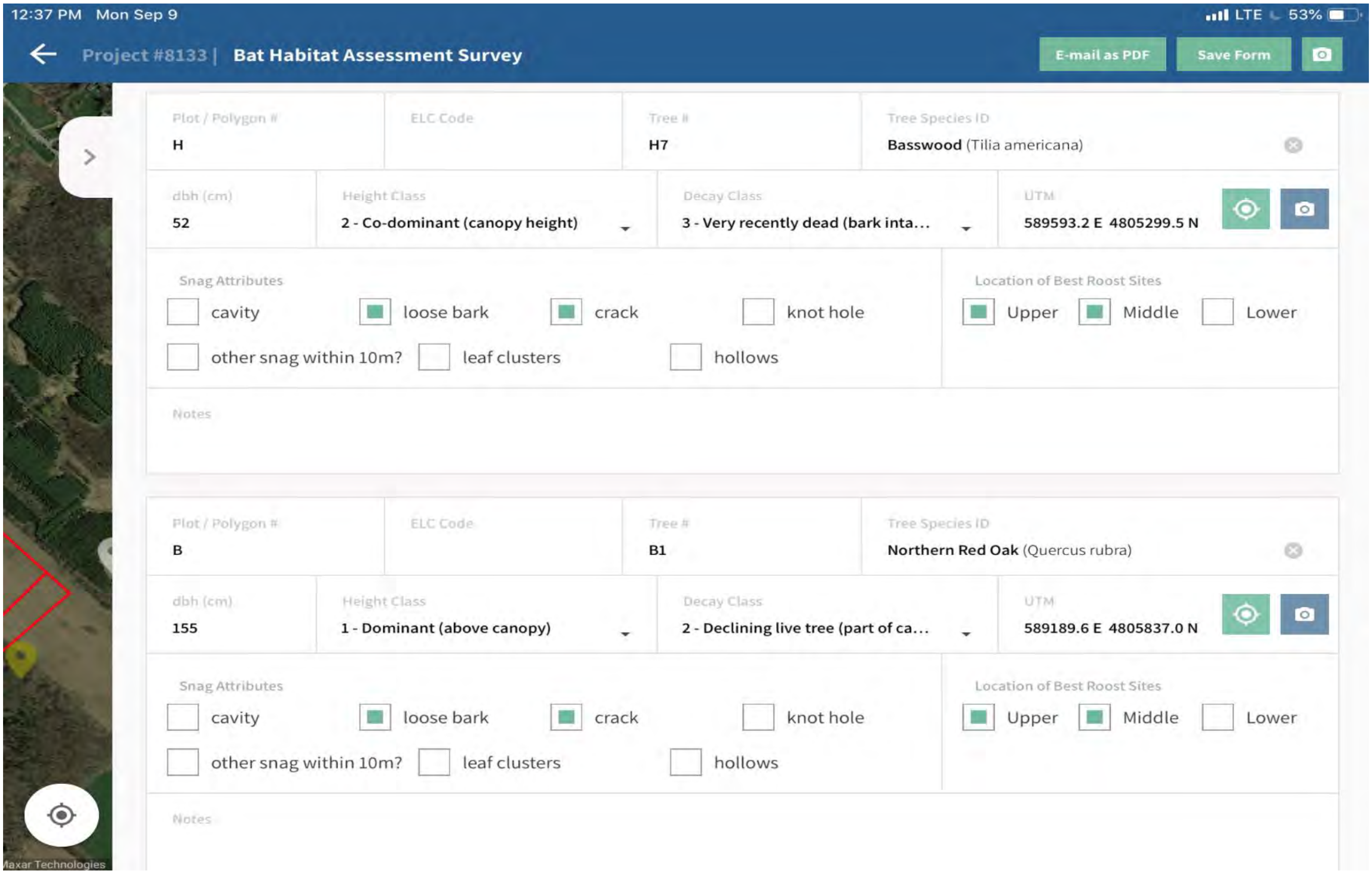
☐ cavity ☐ loose bark ☑ crack ☑ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☐ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
H		H7	**Basswood** (Tilia americana)

dbh (cm)	Height Class	Decay Class	UTM
52	2 - Co-dominant (canopy height)	3 - Very recently dead (bark inta...	589593.2 E 4805299.5 N

Snag Attributes

☐ cavity ☑ loose bark ☑ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
B		B1	**Northern Red Oak** (Quercus rubra)

dbh (cm)	Height Class	Decay Class	UTM
155	1 - Dominant (above canopy)	2 - Declining live tree (part of ca...	589189.6 E 4805837.0 N

Snag Attributes

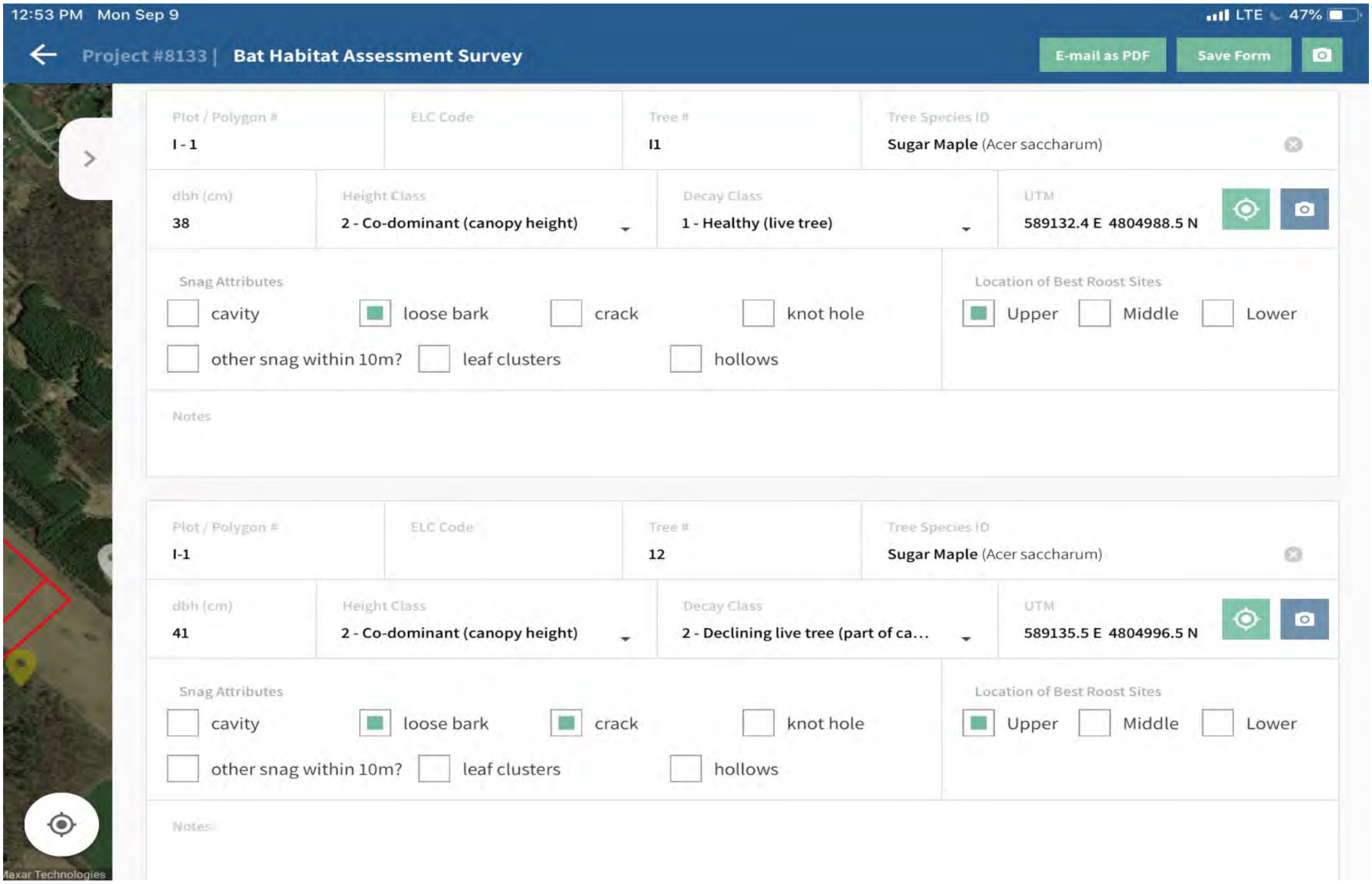
☐ cavity ☑ loose bark ☑ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | Bat Habitat Assessment Survey

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
I - 1		I1	**Sugar Maple** (Acer saccharum)

dbh (cm)	Height Class	Decay Class	UTM
38	2 - Co-dominant (canopy height)	1 - Healthy (live tree)	589132.4 E 4804988.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes

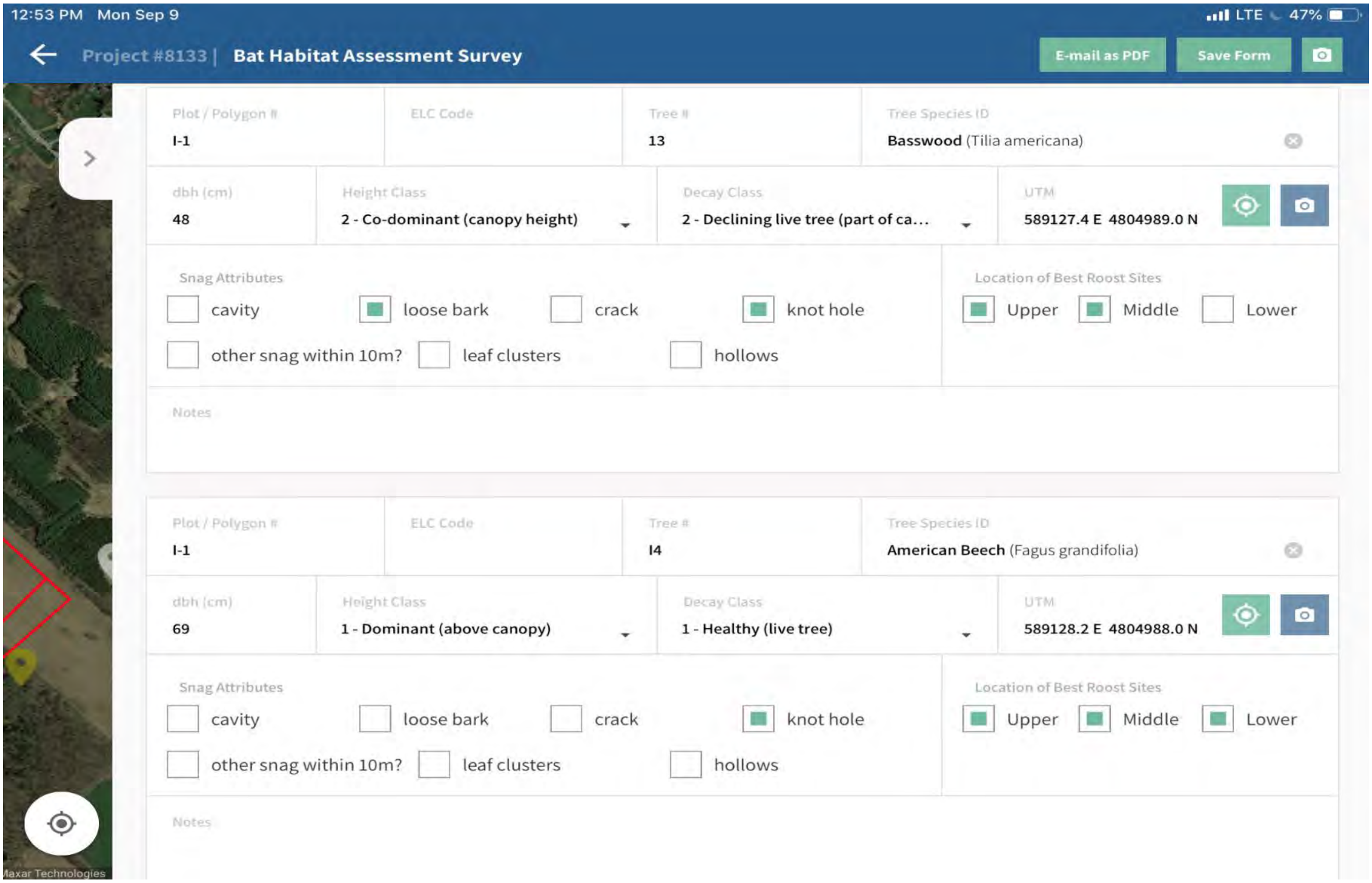
Plot / Polygon #	ELC Code	Tree #	Tree Species ID
I-1		12	**Sugar Maple** (Acer saccharum)

dbh (cm)	Height Class	Decay Class	UTM
41	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589135.5 E 4804996.5 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | Bat Habitat Assessment Survey

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
I-1		13	**Basswood** (Tilia americana)

dbh (cm)	Height Class	Decay Class	UTM
48	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589127.4 E 4804989.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes

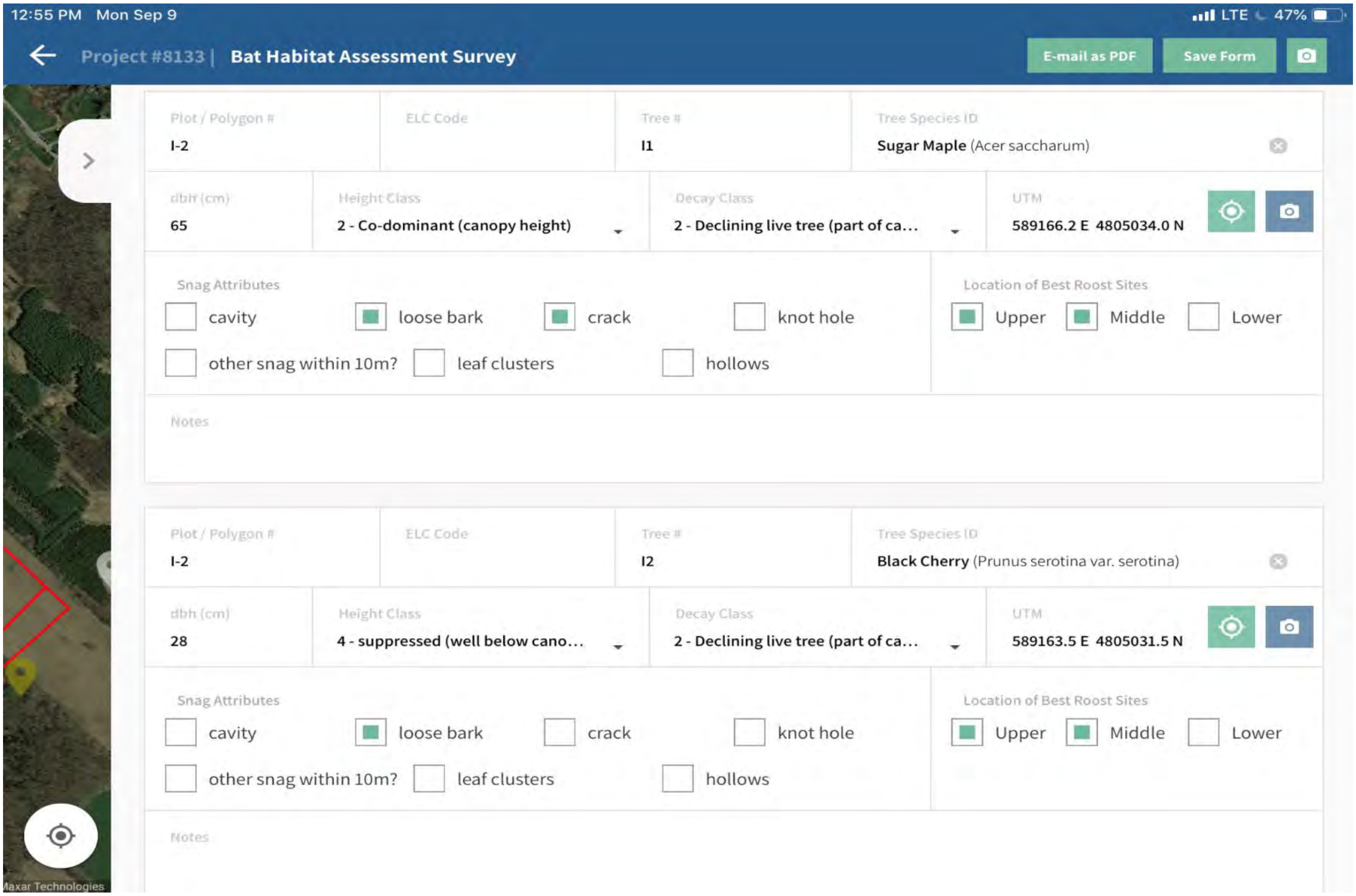
Plot / Polygon #	ELC Code	Tree #	Tree Species ID
I-1		I4	**American Beech** (Fagus grandifolia)

dbh (cm)	Height Class	Decay Class	UTM
69	1 - Dominant (above canopy)	1 - Healthy (live tree)	589128.2 E 4804988.0 N

Snag Attributes
☐ cavity ☐ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☑ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: I-2
ELC Code:
Tree #: I1
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 65
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589166.2 E 4805034.0 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

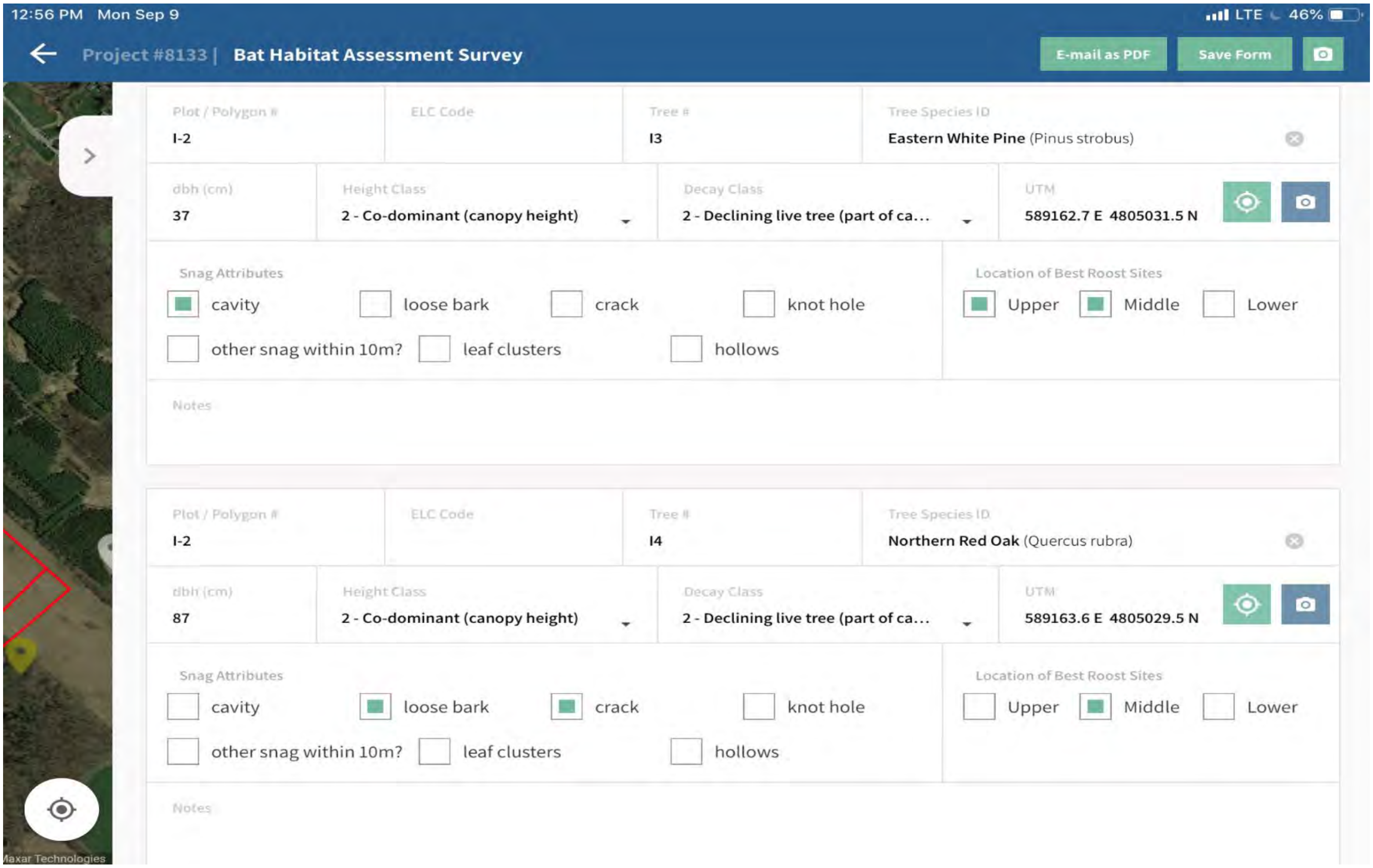
Notes

Plot / Polygon #: I-2
ELC Code:
Tree #: I2
Tree Species ID: **Black Cherry** (Prunus serotina var. serotina)
dbh (cm): 28
Height Class: 4 - suppressed (well below cano...
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589163.5 E 4805031.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: I-2
ELC Code:
Tree #: I3
Tree Species ID: **Eastern White Pine** (Pinus strobus)
dbh (cm): 37
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589162.7 E 4805031.5 N

Snag Attributes
☑ cavity ☐ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

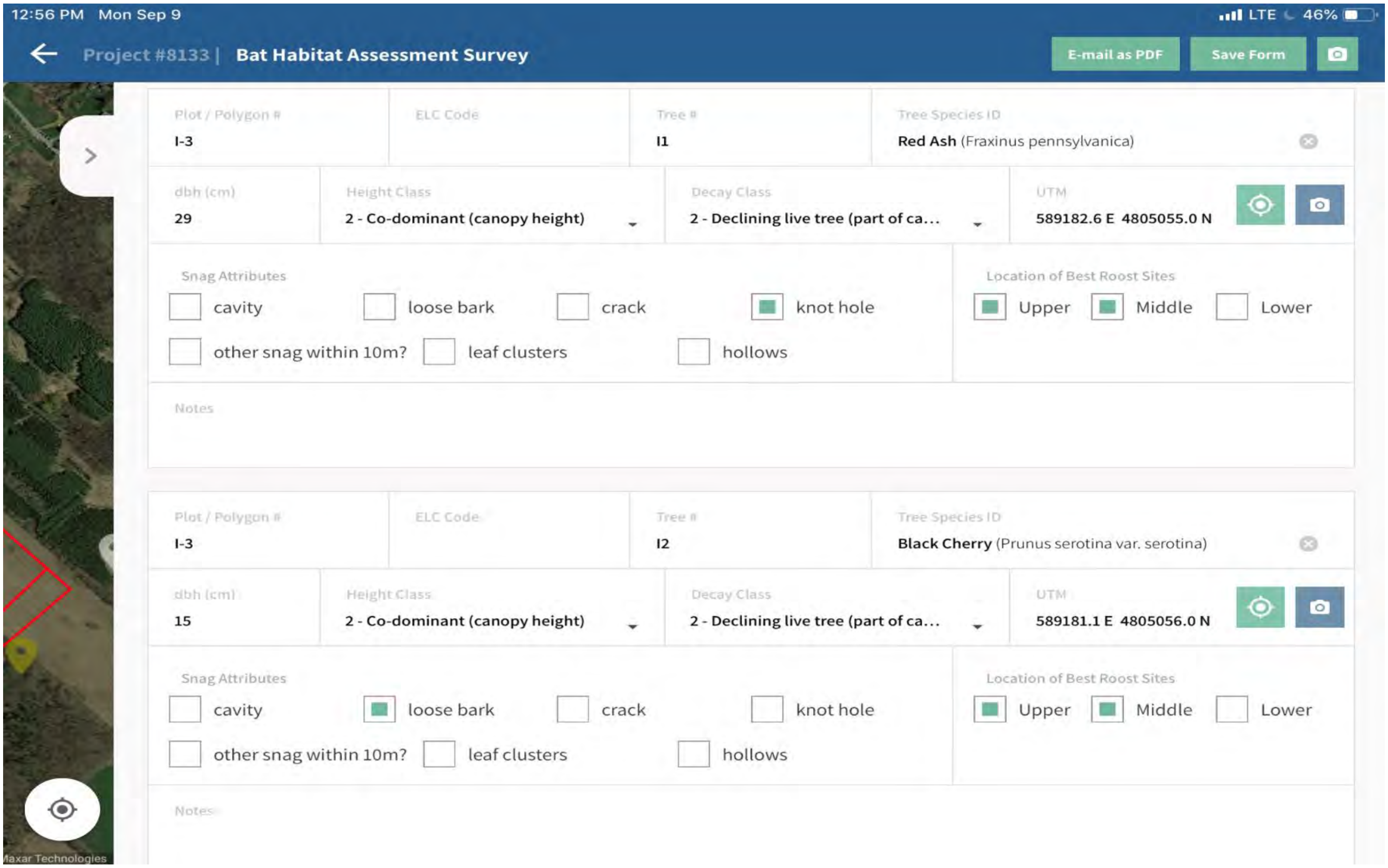
Notes

Plot / Polygon #: I-2
ELC Code:
Tree #: I4
Tree Species ID: **Northern Red Oak** (Quercus rubra)
dbh (cm): 87
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589163.6 E 4805029.5 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
I-3		I1	**Red Ash** (Fraxinus pennsylvanica)
dbh (cm)	Height Class	Decay Class	UTM
29	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589182.6 E 4805055.0 N

Snag Attributes

☐ cavity ☐ loose bark ☐ crack ☑ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
I-3		I2	**Black Cherry** (Prunus serotina var. serotina)
dbh (cm)	Height Class	Decay Class	UTM
15	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589181.1 E 4805056.0 N

Snag Attributes

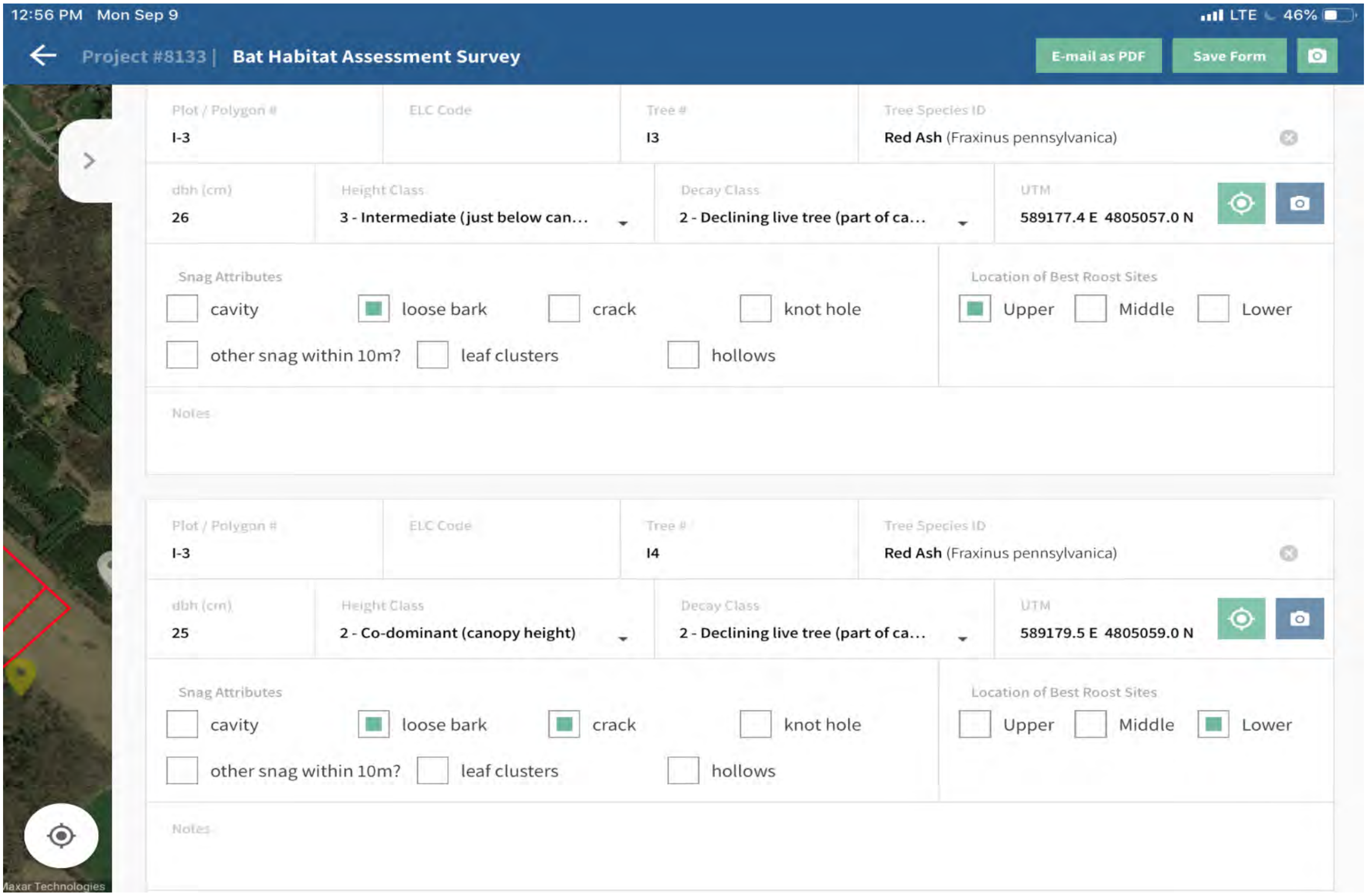
☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
I-3		I3	**Red Ash** (Fraxinus pennsylvanica)
dbh (cm)	Height Class	Decay Class	UTM
26	3 - Intermediate (just below can...	2 - Declining live tree (part of ca...	589177.4 E 4805057.0 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
I-3		I4	**Red Ash** (Fraxinus pennsylvanica)
dbh (cm)	Height Class	Decay Class	UTM
25	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589179.5 E 4805059.0 N

Snag Attributes

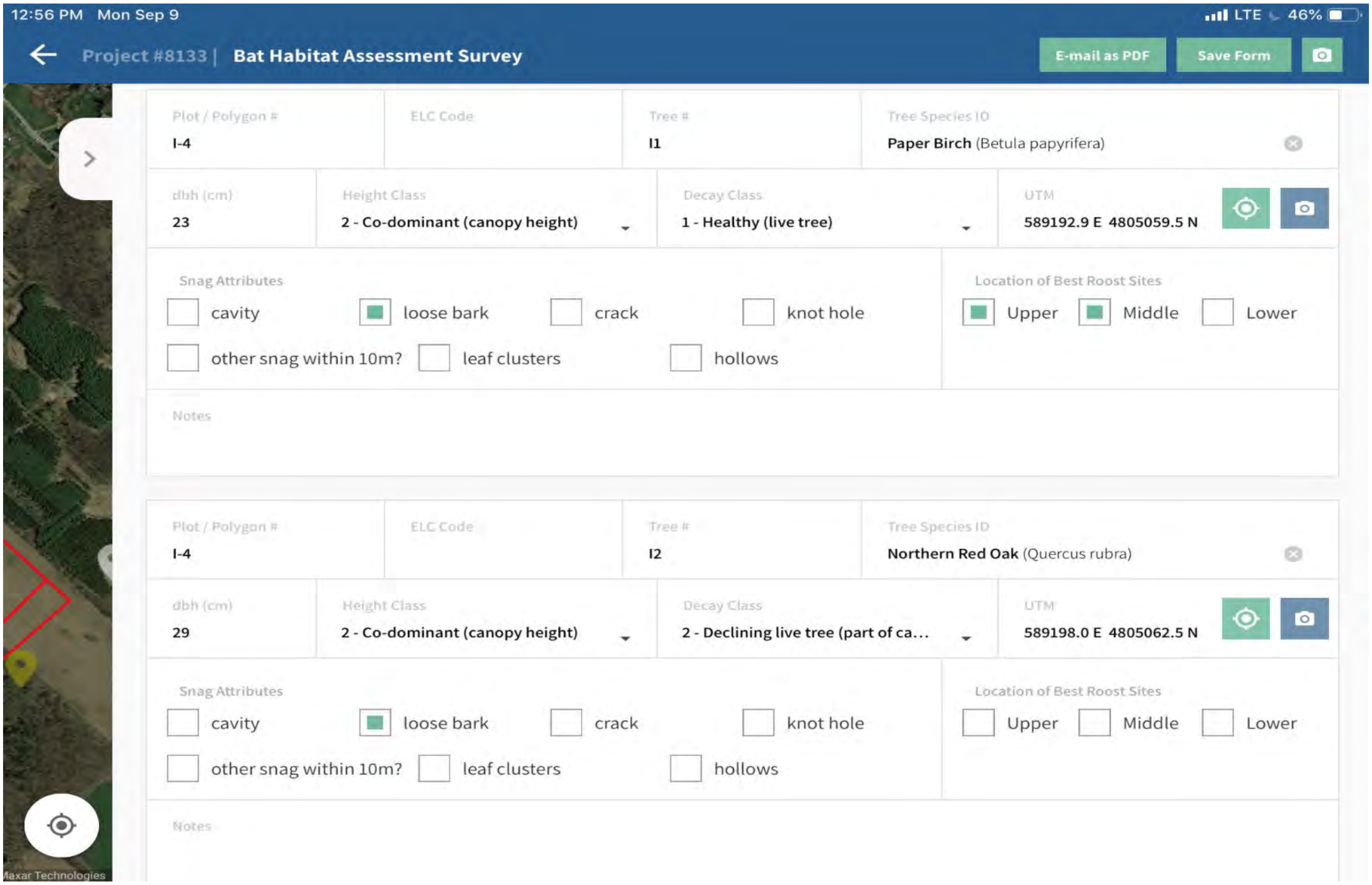
☐ cavity ☑ loose bark ☑ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☐ Upper ☐ Middle ☑ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: I-4
ELC Code:
Tree #: I1
Tree Species ID: **Paper Birch** (Betula papyrifera)
dbh (cm): 23
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 1 - Healthy (live tree)
UTM: 589192.9 E 4805059.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

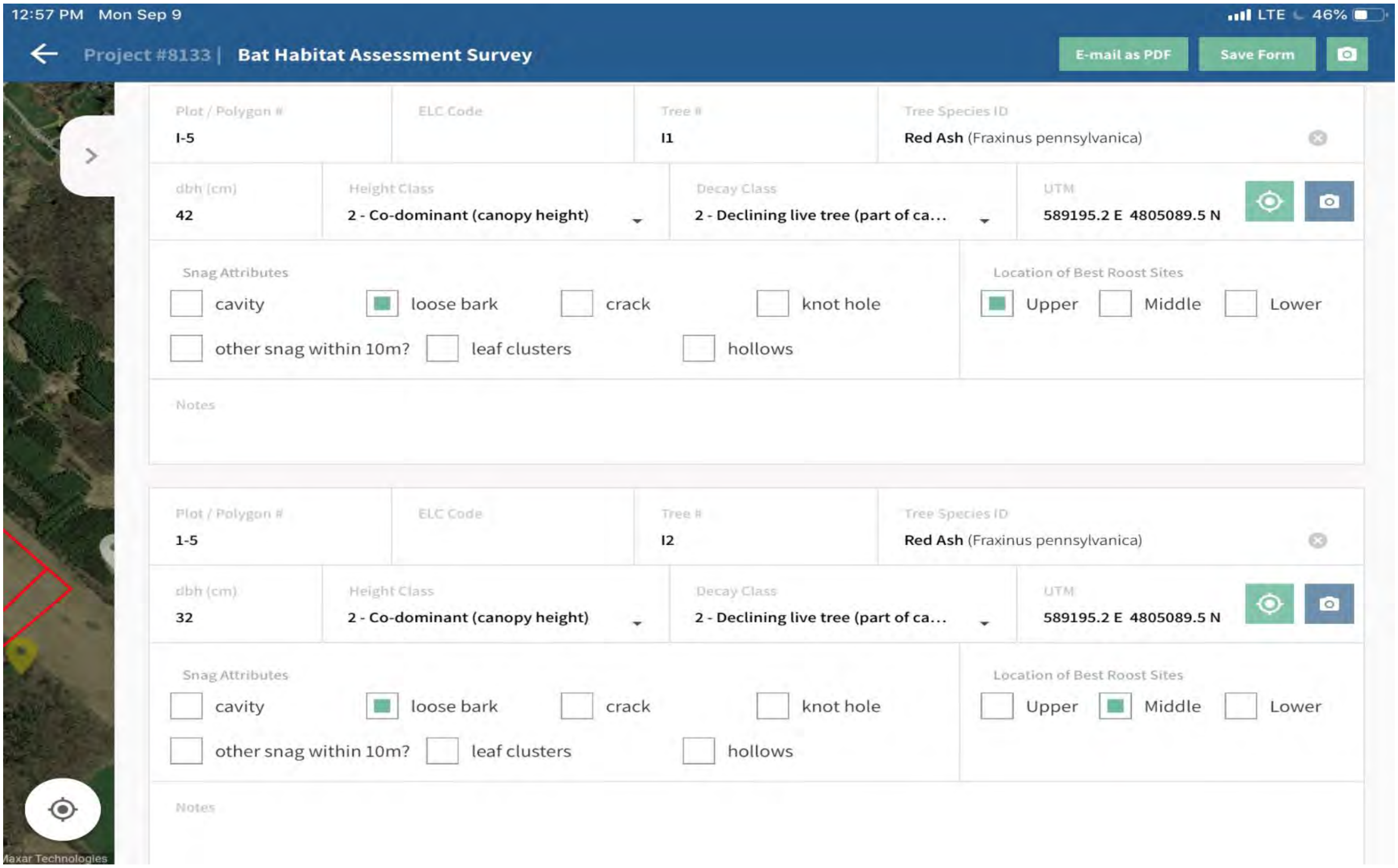
Notes

Plot / Polygon #: I-4
ELC Code:
Tree #: I2
Tree Species ID: **Northern Red Oak** (Quercus rubra)
dbh (cm): 29
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589198.0 E 4805062.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: I-5
ELC Code:
Tree #: I1
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)
dbh (cm): 42
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589195.2 E 4805089.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

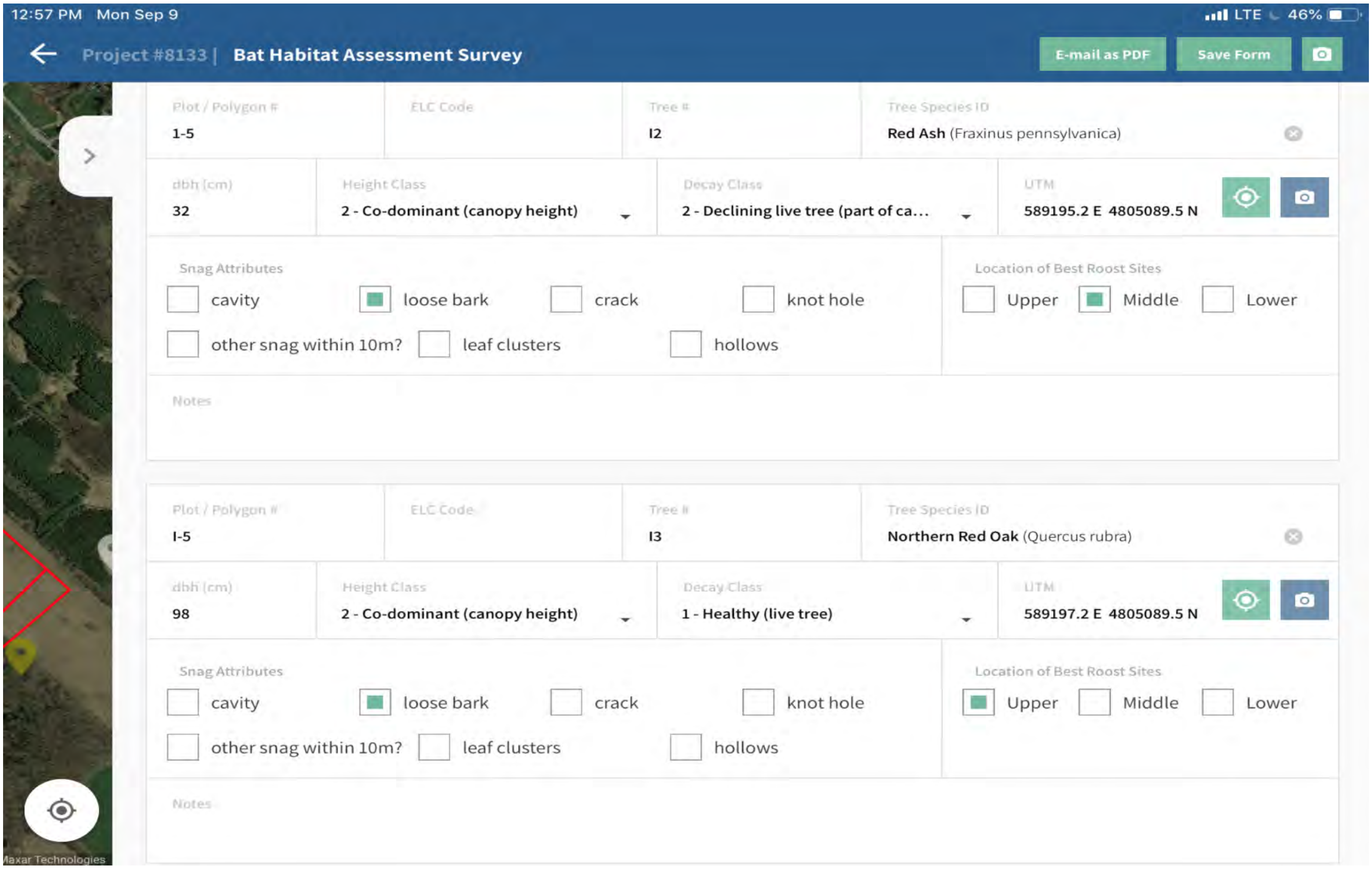
Notes

Plot / Polygon #: 1-5
ELC Code:
Tree #: I2
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)
dbh (cm): 32
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589195.2 E 4805089.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #
1-5

ELC Code

Tree #
I2

Tree Species ID
Red Ash (Fraxinus pennsylvanica)

dbh (cm)
32

Height Class
2 - Co-dominant (canopy height)

Decay Class
2 - Declining live tree (part of ca...

UTM
589195.2 E 4805089.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☑ Middle ☐ Lower

Notes

Plot / Polygon #
I-5

ELC Code

Tree #
I3

Tree Species ID
Northern Red Oak (Quercus rubra)

dbh (cm)
98

Height Class
2 - Co-dominant (canopy height)

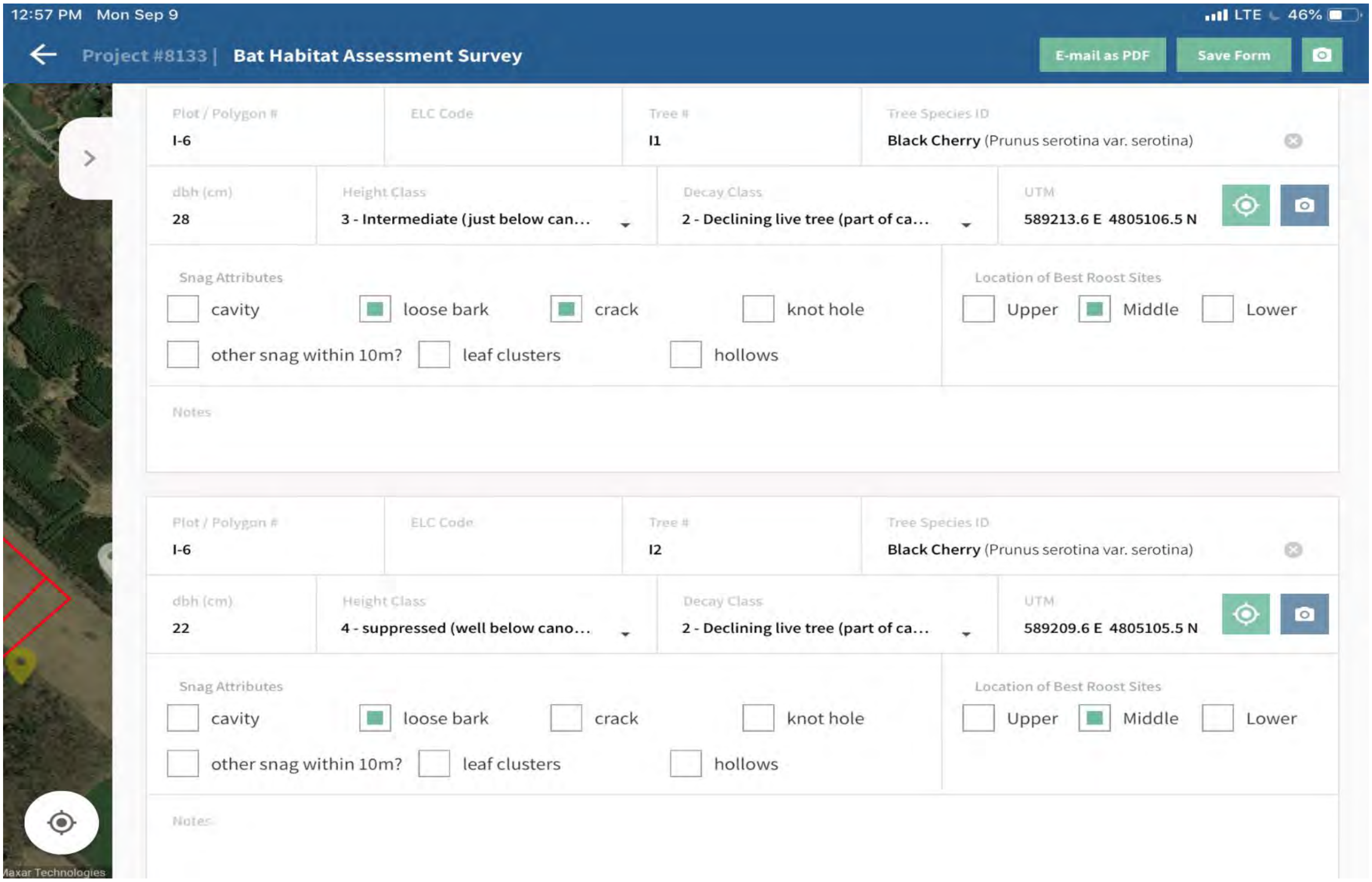
Decay Class
1 - Healthy (live tree)

UTM
589197.2 E 4805089.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #
I-6

ELC Code

Tree #
I1

Tree Species ID
Black Cherry (Prunus serotina var. serotina)

dbh (cm)
28

Height Class
3 - Intermediate (just below can...

Decay Class
2 - Declining live tree (part of ca...

UTM
589213.6 E 4805106.5 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☑ Middle ☐ Lower

Notes

Plot / Polygon #
I-6

ELC Code

Tree #
I2

Tree Species ID
Black Cherry (Prunus serotina var. serotina)

dbh (cm)
22

Height Class
4 - suppressed (well below cano...

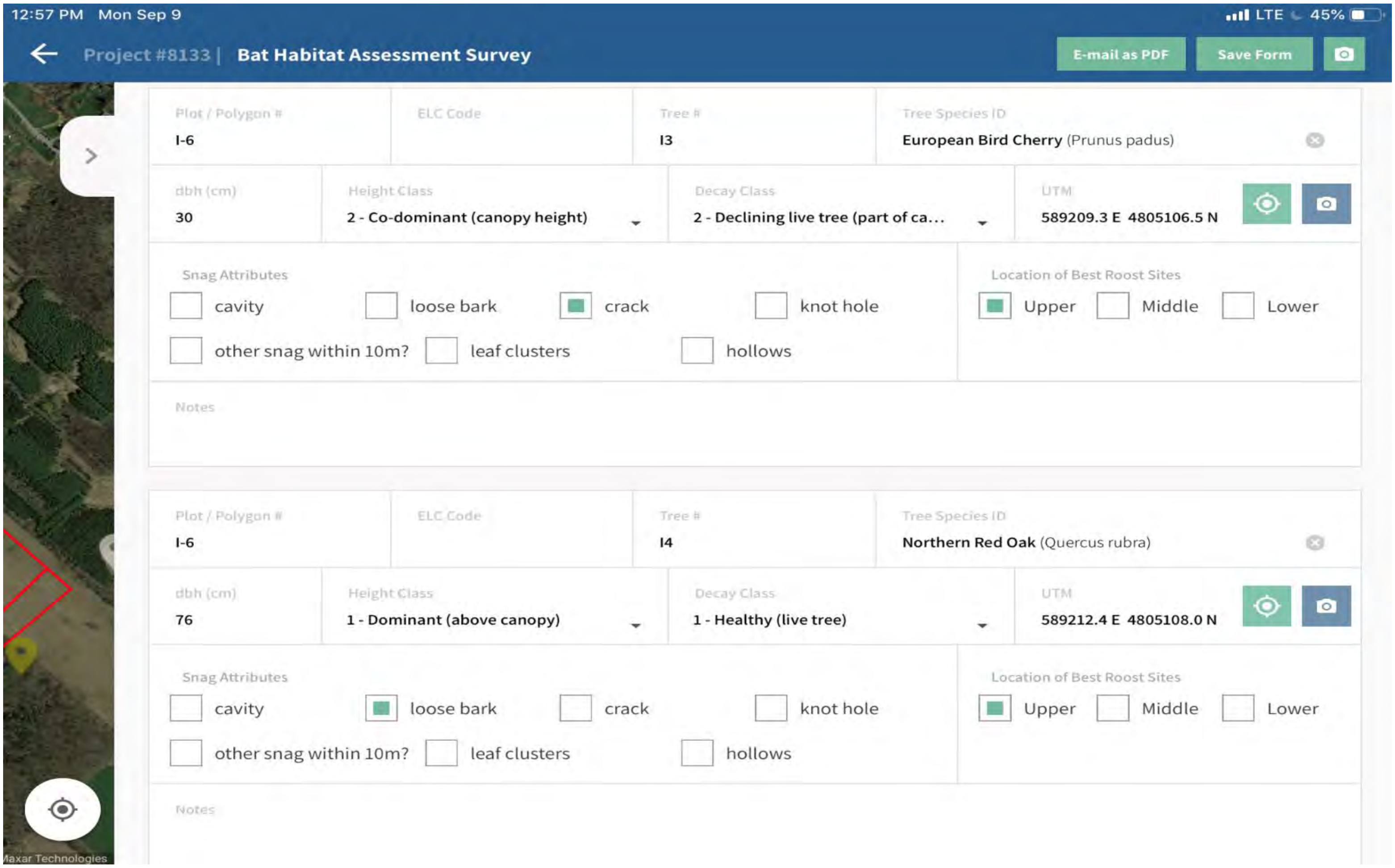
Decay Class
2 - Declining live tree (part of ca...

UTM
589209.6 E 4805105.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☑ Middle ☐ Lower

Notes



Bat Habitat Assessment Survey

Plot / Polygon #: I-6
ELC Code:
Tree #: I3
Tree Species ID: **European Bird Cherry** (Prunus padus)
dbh (cm): 30
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589209.3 E 4805106.5 N

Snag Attributes
☐ cavity ☐ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

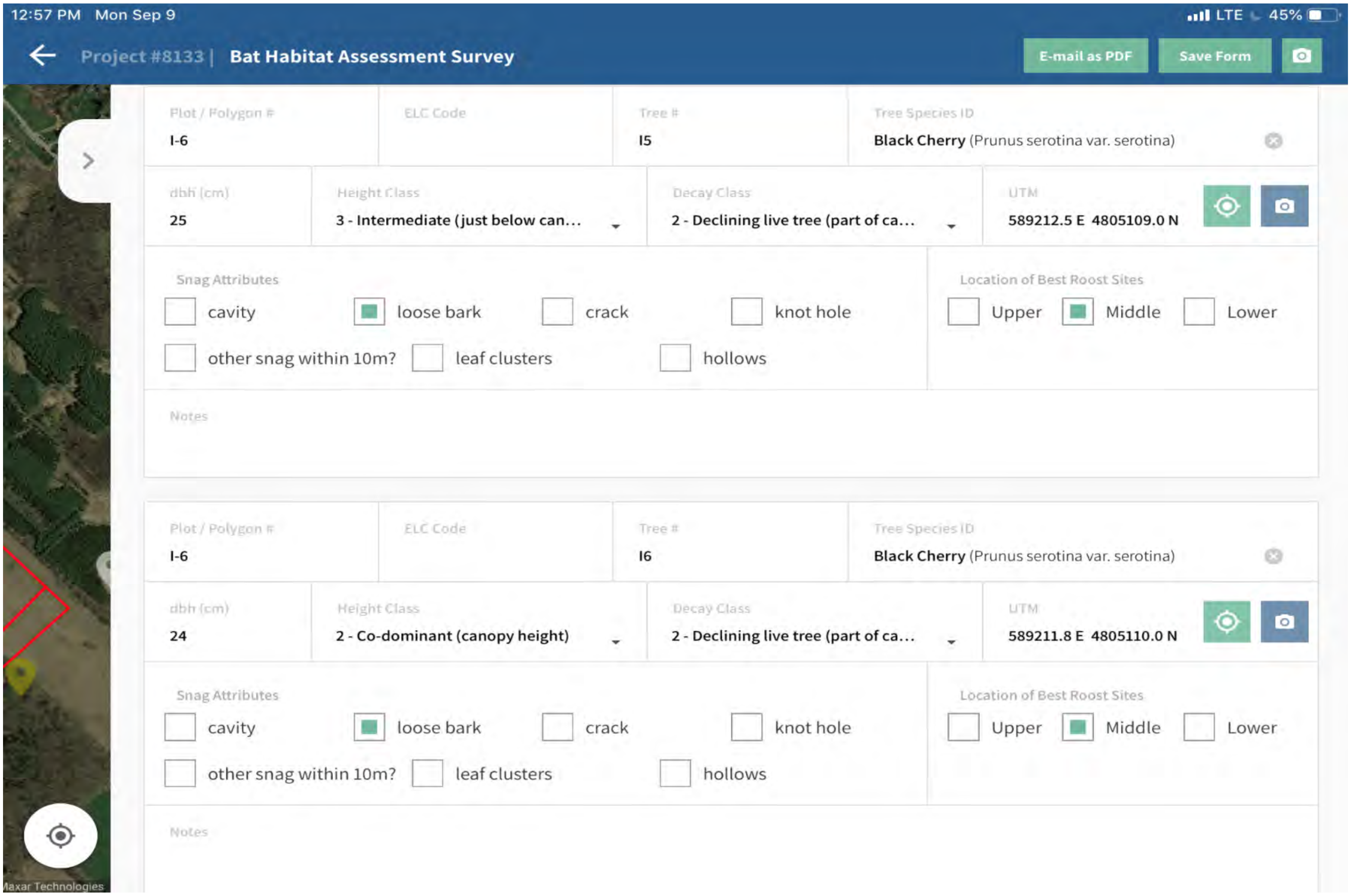
Notes

Plot / Polygon #: I-6
ELC Code:
Tree #: I4
Tree Species ID: **Northern Red Oak** (Quercus rubra)
dbh (cm): 76
Height Class: 1 - Dominant (above canopy)
Decay Class: 1 - Healthy (live tree)
UTM: 589212.4 E 4805108.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



Bat Habitat Assessment Survey

Plot / Polygon #: I-6
ELC Code:
Tree #: I5
Tree Species ID: **Black Cherry** (Prunus serotina var. serotina)
dbh (cm): 25
Height Class: 3 - Intermediate (just below can...
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589212.5 E 4805109.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☑ Middle ☐ Lower

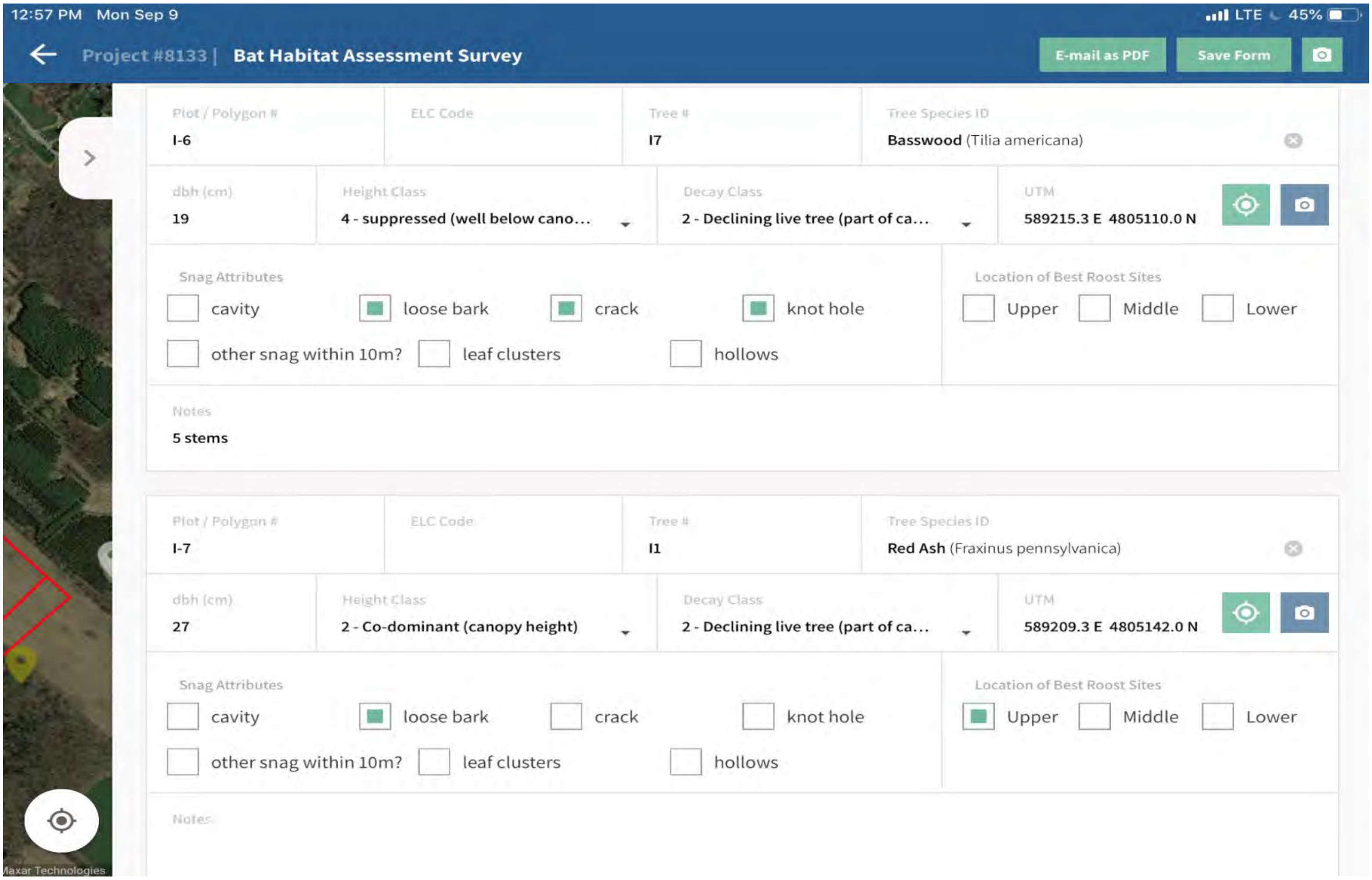
Notes

Plot / Polygon #: I-6
ELC Code:
Tree #: I6
Tree Species ID: **Black Cherry** (Prunus serotina var. serotina)
dbh (cm): 24
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589211.8 E 4805110.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☑ Middle ☐ Lower

Notes



Bat Habitat Assessment Survey

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
I-6		I7	**Basswood** (Tilia americana)

dbh (cm)	Height Class	Decay Class	UTM
19	4 - suppressed (well below cano...	2 - Declining live tree (part of ca...	589215.3 E 4805110.0 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☐ Middle ☐ Lower

Notes
5 stems

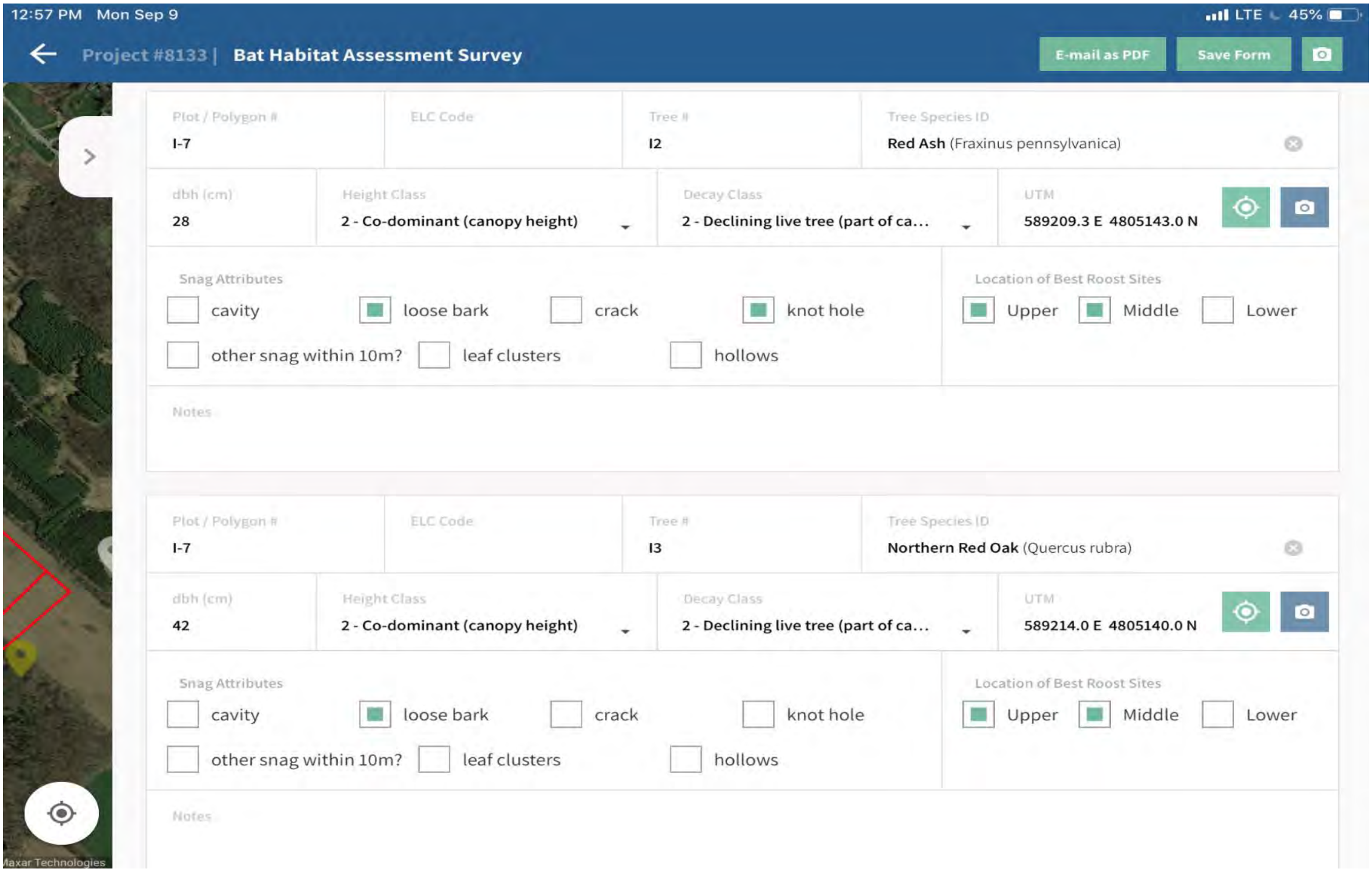
Plot / Polygon #	ELC Code	Tree #	Tree Species ID
I-7		I1	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
27	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589209.3 E 4805142.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



Bat Habitat Assessment Survey

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
I-7		I2	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
28	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589209.3 E 4805143.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes

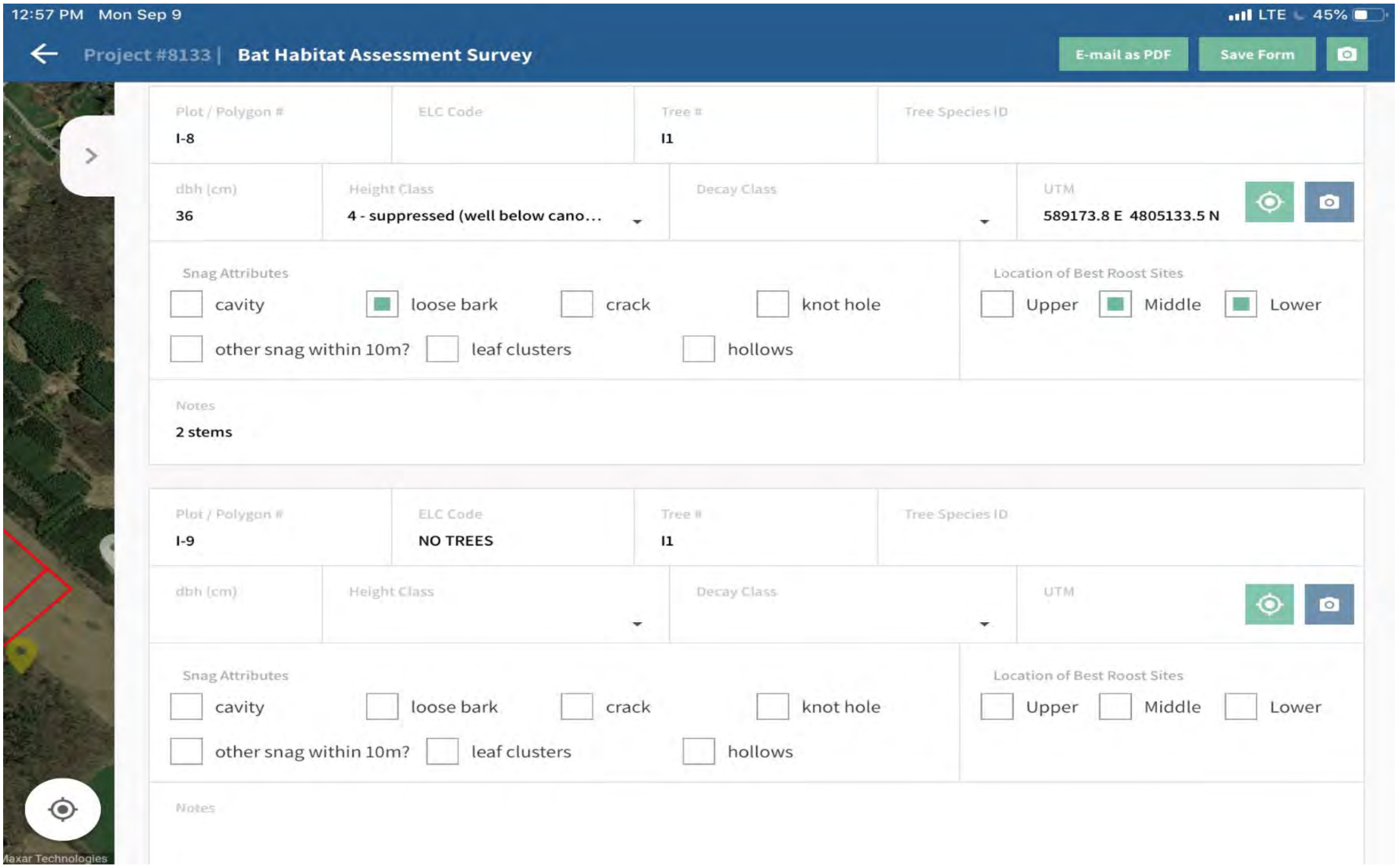
Plot / Polygon #	ELC Code	Tree #	Tree Species ID
I-7		I3	**Northern Red Oak** (Quercus rubra)

dbh (cm)	Height Class	Decay Class	UTM
42	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589214.0 E 4805140.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
I-8		I1	

dbh (cm)	Height Class	Decay Class	UTM
36	4 - suppressed (well below cano…		589173.8 E 4805133.5 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☐ Upper ☑ Middle ☑ Lower

Notes

2 stems

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
I-9	NO TREES	I1	

dbh (cm)	Height Class	Decay Class	UTM

Snag Attributes

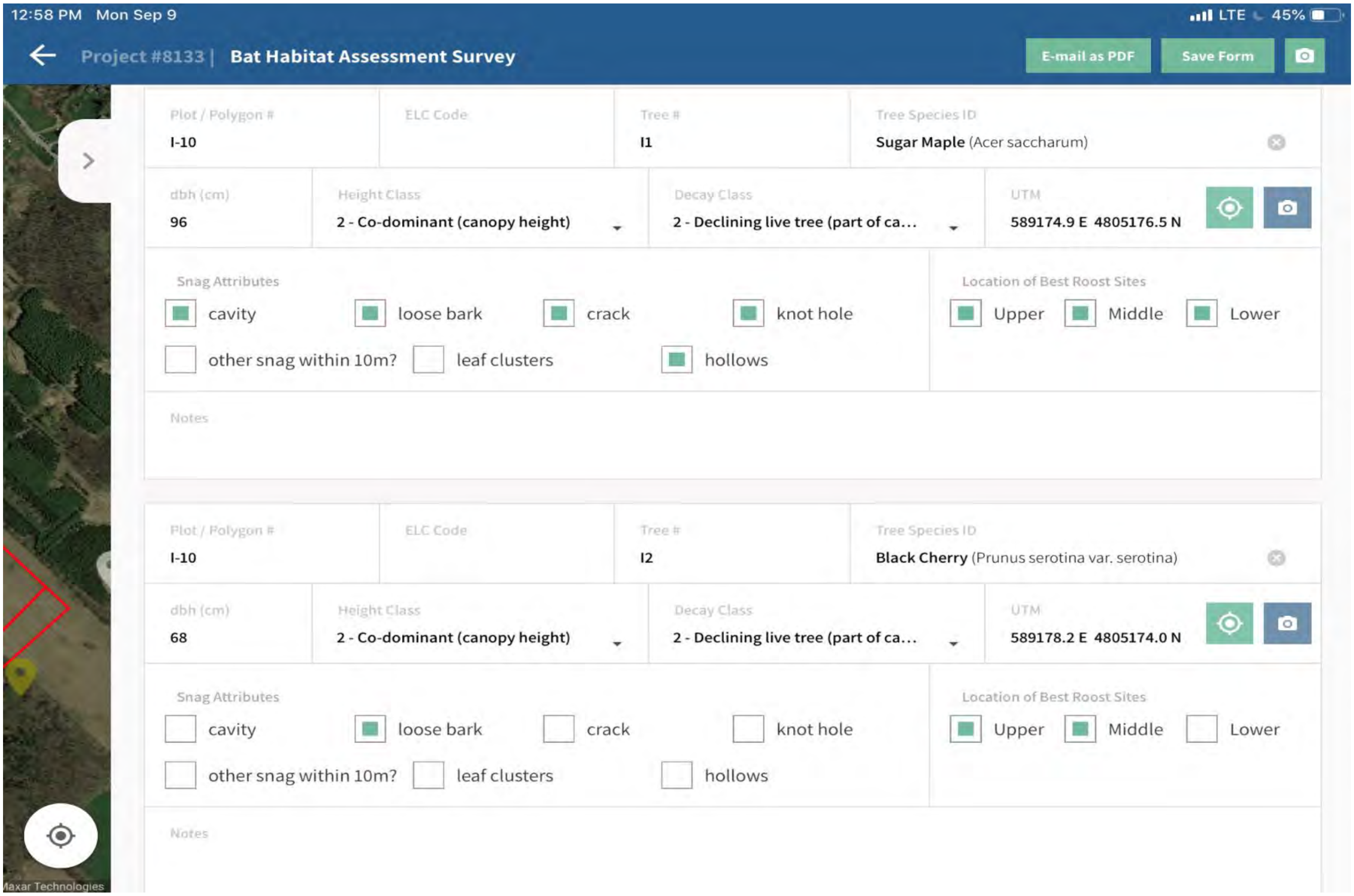
☐ cavity ☐ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☐ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
I-10		I1	**Sugar Maple** (Acer saccharum)

dbh (cm)	Height Class	Decay Class	UTM
96	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca…	589174.9 E 4805176.5 N

Snag Attributes

☑ cavity ☑ loose bark ☑ crack ☑ knot hole

☐ other snag within 10m? ☐ leaf clusters ☑ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☑ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
I-10		I2	**Black Cherry** (Prunus serotina var. serotina)

dbh (cm)	Height Class	Decay Class	UTM
68	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca…	589178.2 E 4805174.0 N

Snag Attributes

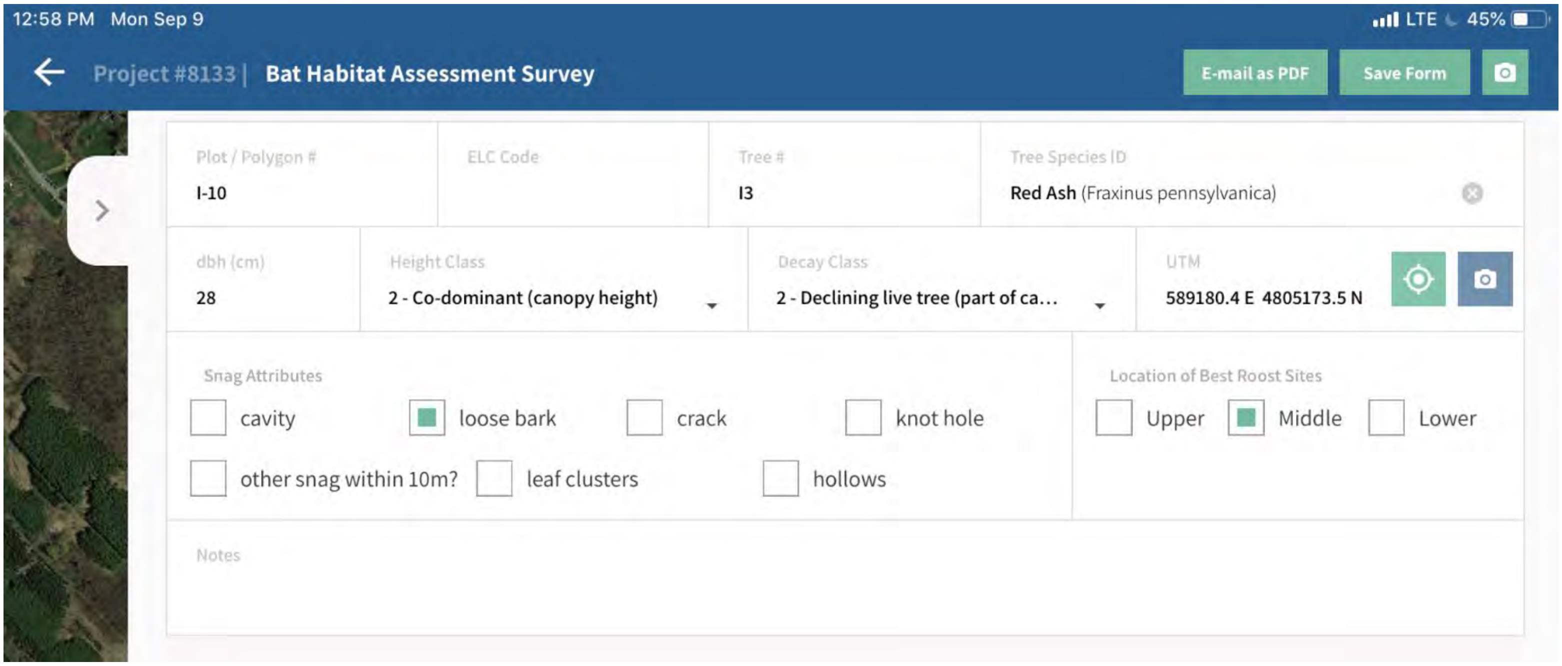
☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
I-10		I3	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
28	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca…	589180.4 E 4805173.5 N

Snag Attributes

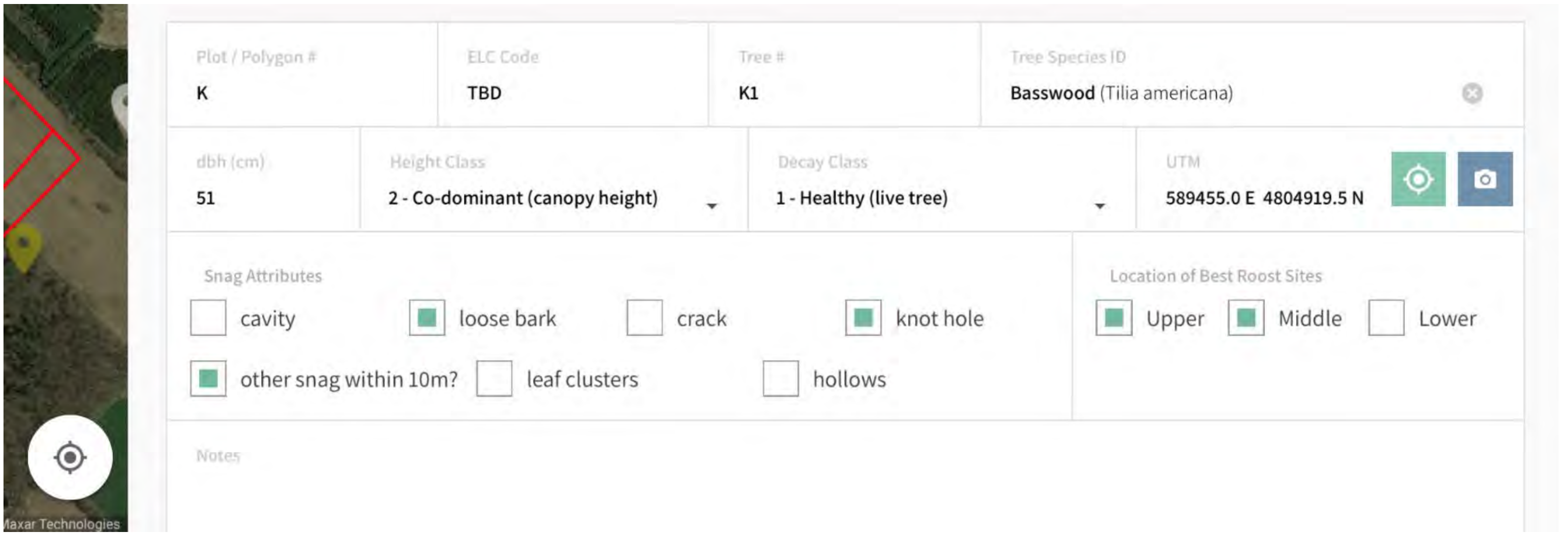
☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☐ Upper ☑ Middle ☐ Lower

Notes



Plot / Polygon #
K

ELC Code
TBD

Tree #
K1

Tree Species ID
Basswood (Tilia americana)

dbh (cm)
51

Height Class
2 - Co-dominant (canopy height)

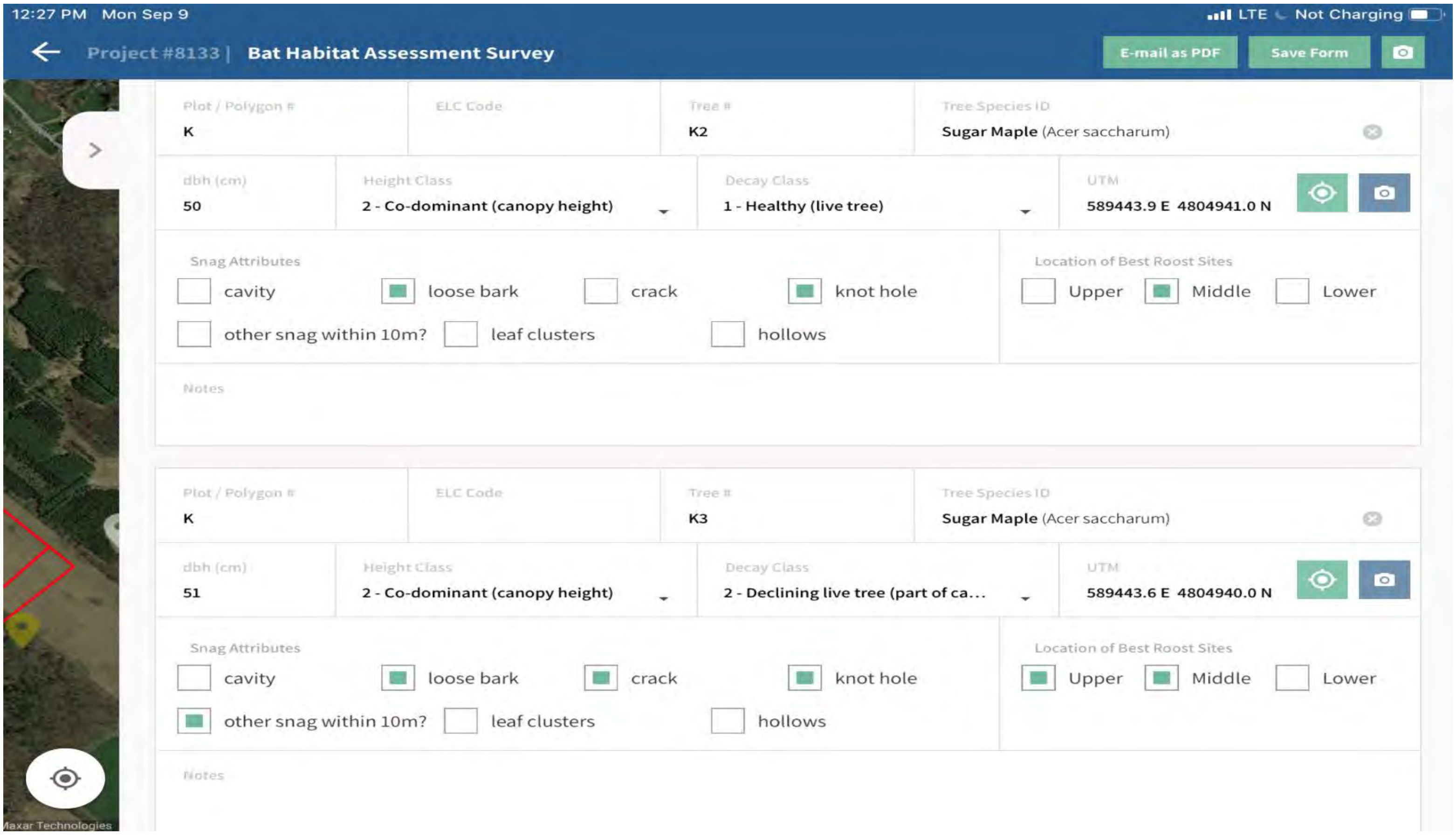
Decay Class
1 - Healthy (live tree)

UTM
589455.0 E 4804919.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☑ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes



12:27 PM Mon Sep 9
LTE Not Charging

Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #
K

ELC Code

Tree #
K2

Tree Species ID
Sugar Maple (Acer saccharum)

dbh (cm)
50

Height Class
2 - Co-dominant (canopy height)

Decay Class
1 - Healthy (live tree)

UTM
589443.9 E 4804941.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☑ Middle ☐ Lower

Notes

Plot / Polygon #
K

ELC Code

Tree #
K3

Tree Species ID
Sugar Maple (Acer saccharum)

dbh (cm)
51

Height Class
2 - Co-dominant (canopy height)

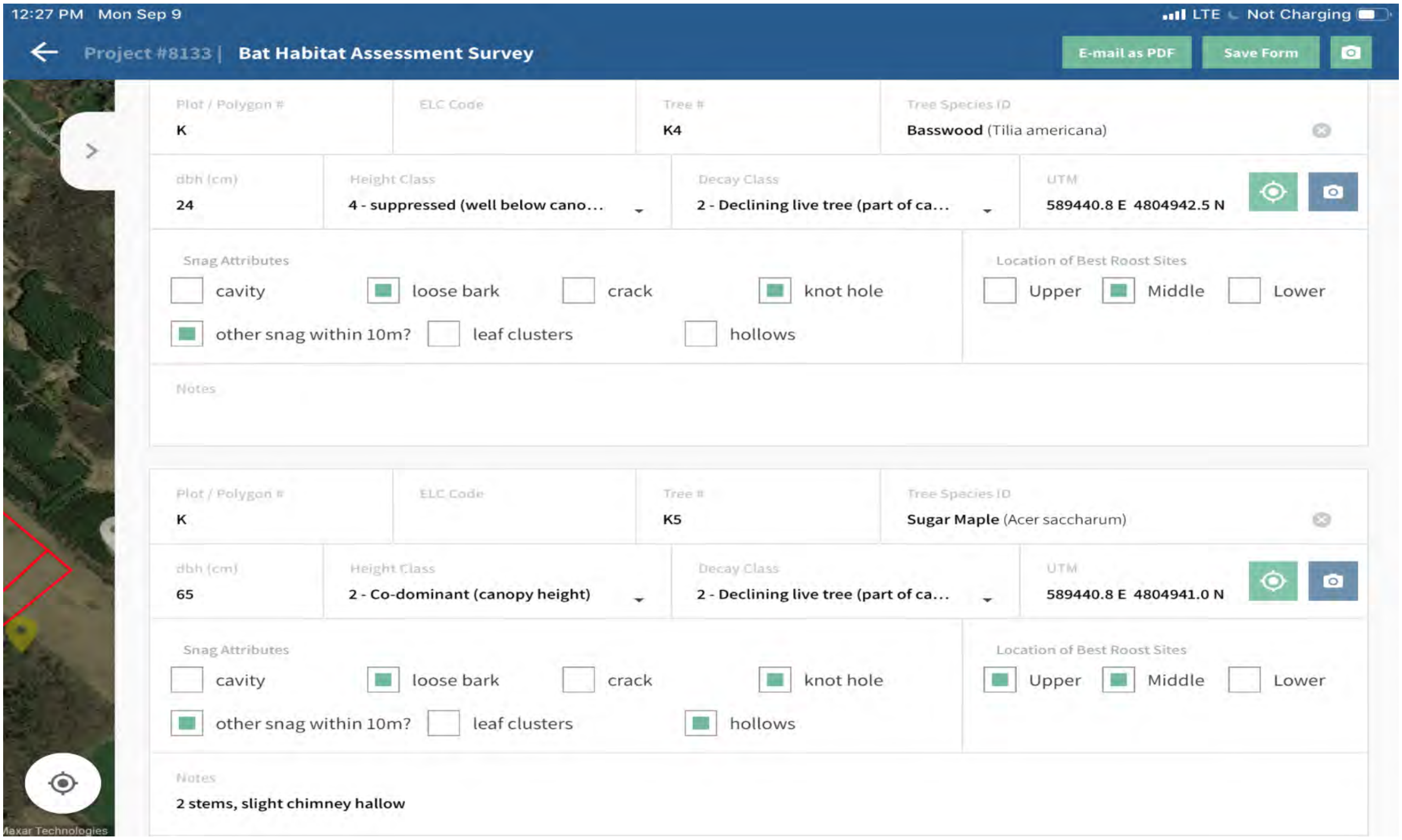
Decay Class
2 - Declining live tree (part of ca…

UTM
589443.6 E 4804940.0 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☑ knot hole
☑ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | Bat Habitat Assessment Survey

Plot / Polygon #: K
ELC Code:
Tree #: K4
Tree Species ID: **Basswood** (Tilia americana)
dbh (cm): 24
Height Class: 4 - suppressed (well below cano...
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589440.8 E 4804942.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☑ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☑ Middle ☐ Lower

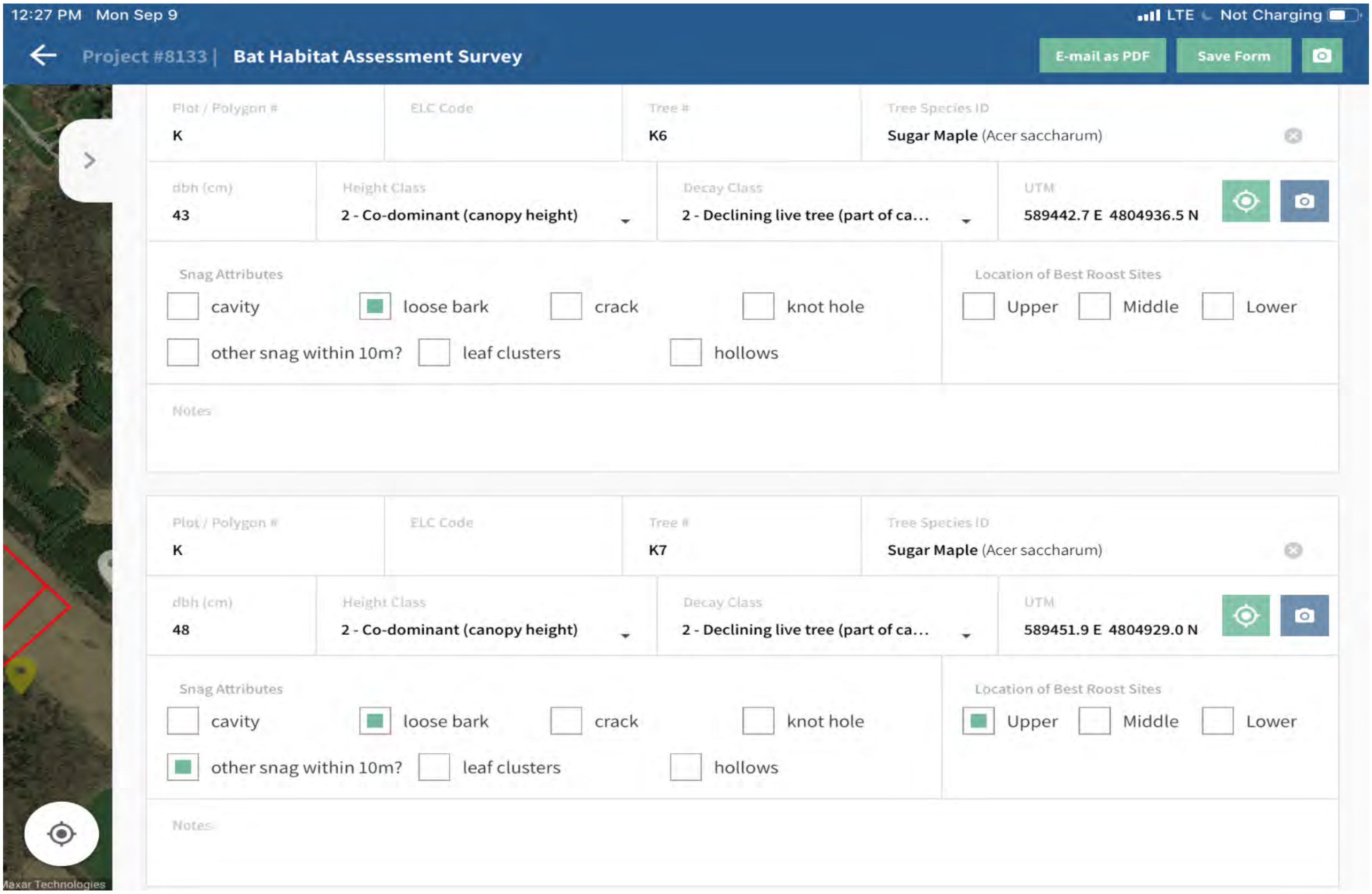
Notes

Plot / Polygon #: K
ELC Code:
Tree #: K5
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 65
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589440.8 E 4804941.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☑ other snag within 10m? ☐ leaf clusters ☑ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes
2 stems, slight chimney hallow



Project #8133 | Bat Habitat Assessment Survey

Plot / Polygon #: K
ELC Code:
Tree #: K6
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 43
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589442.7 E 4804936.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☐ Middle ☐ Lower

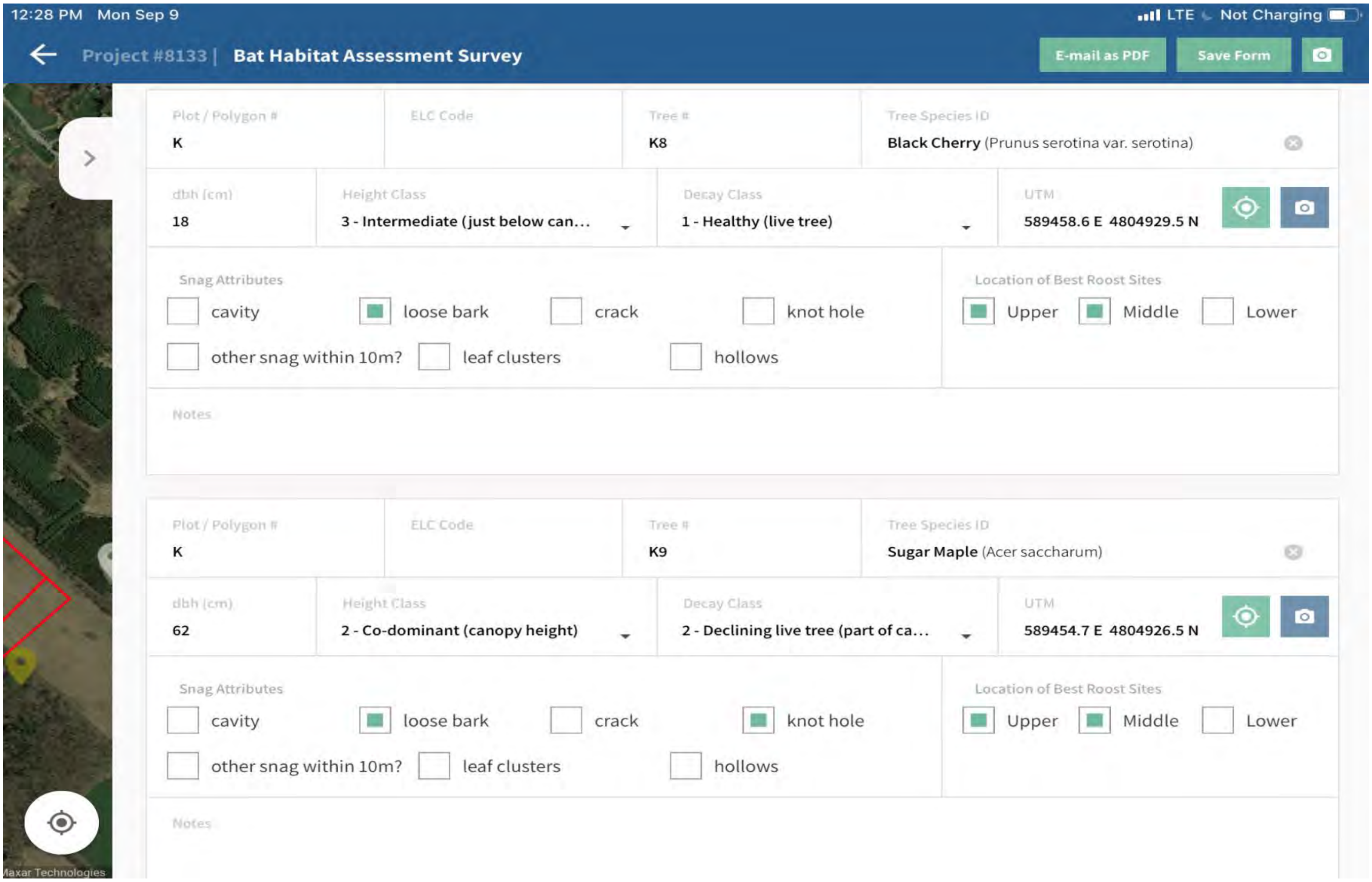
Notes

Plot / Polygon #: K
ELC Code:
Tree #: K7
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 48
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589451.9 E 4804929.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☑ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: K
ELC Code:
Tree #: K8
Tree Species ID: **Black Cherry** (Prunus serotina var. serotina)

dbh (cm): 18
Height Class: 3 - Intermediate (just below can...
Decay Class: 1 - Healthy (live tree)
UTM: 589458.6 E 4804929.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes

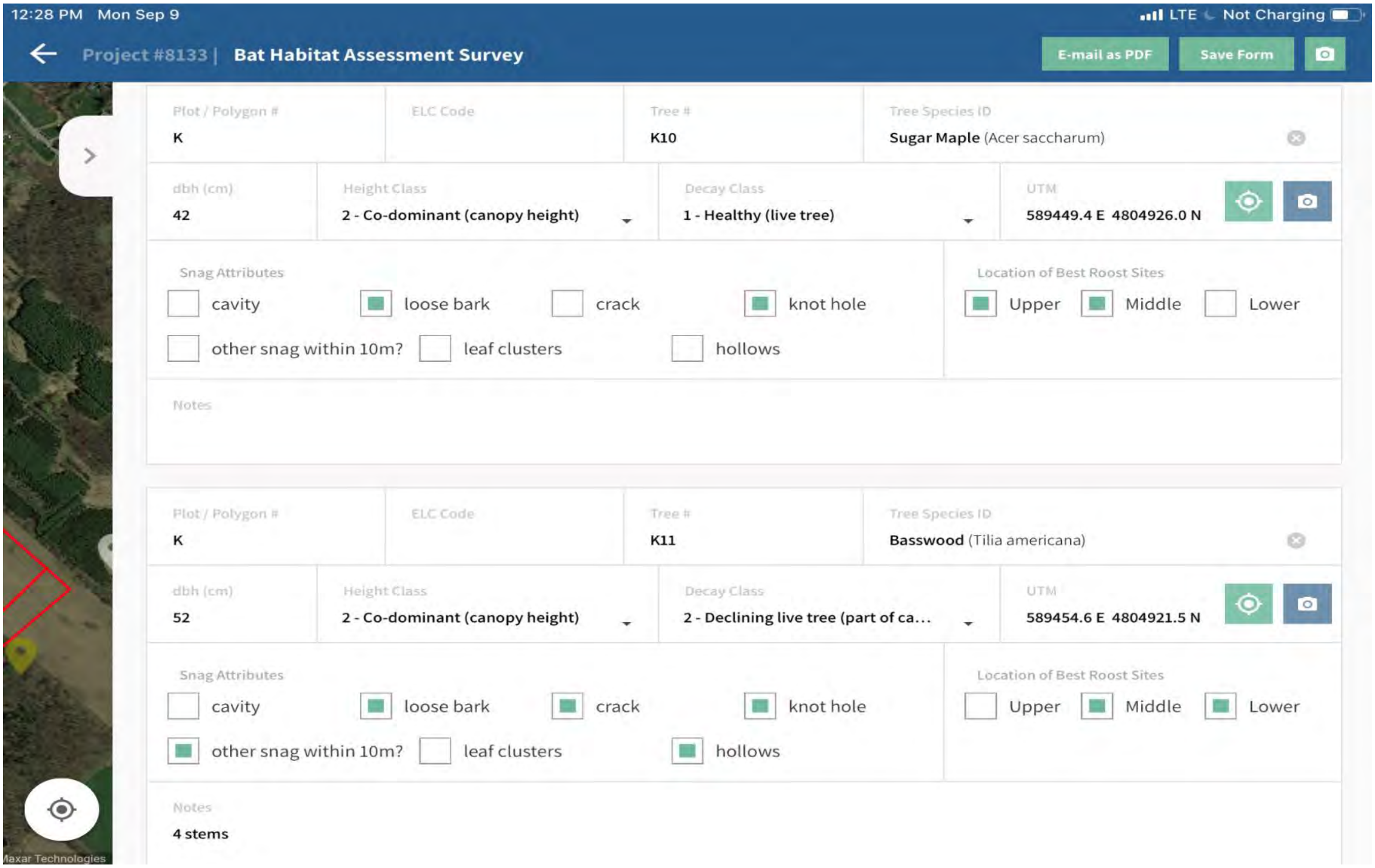
Plot / Polygon #: K
ELC Code:
Tree #: K9
Tree Species ID: **Sugar Maple** (Acer saccharum)

dbh (cm): 62
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589454.7 E 4804926.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: K
ELC Code:
Tree #: K10
Tree Species ID: **Sugar Maple** (Acer saccharum)

dbh (cm): 42
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 1 - Healthy (live tree)
UTM: 589449.4 E 4804926.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes

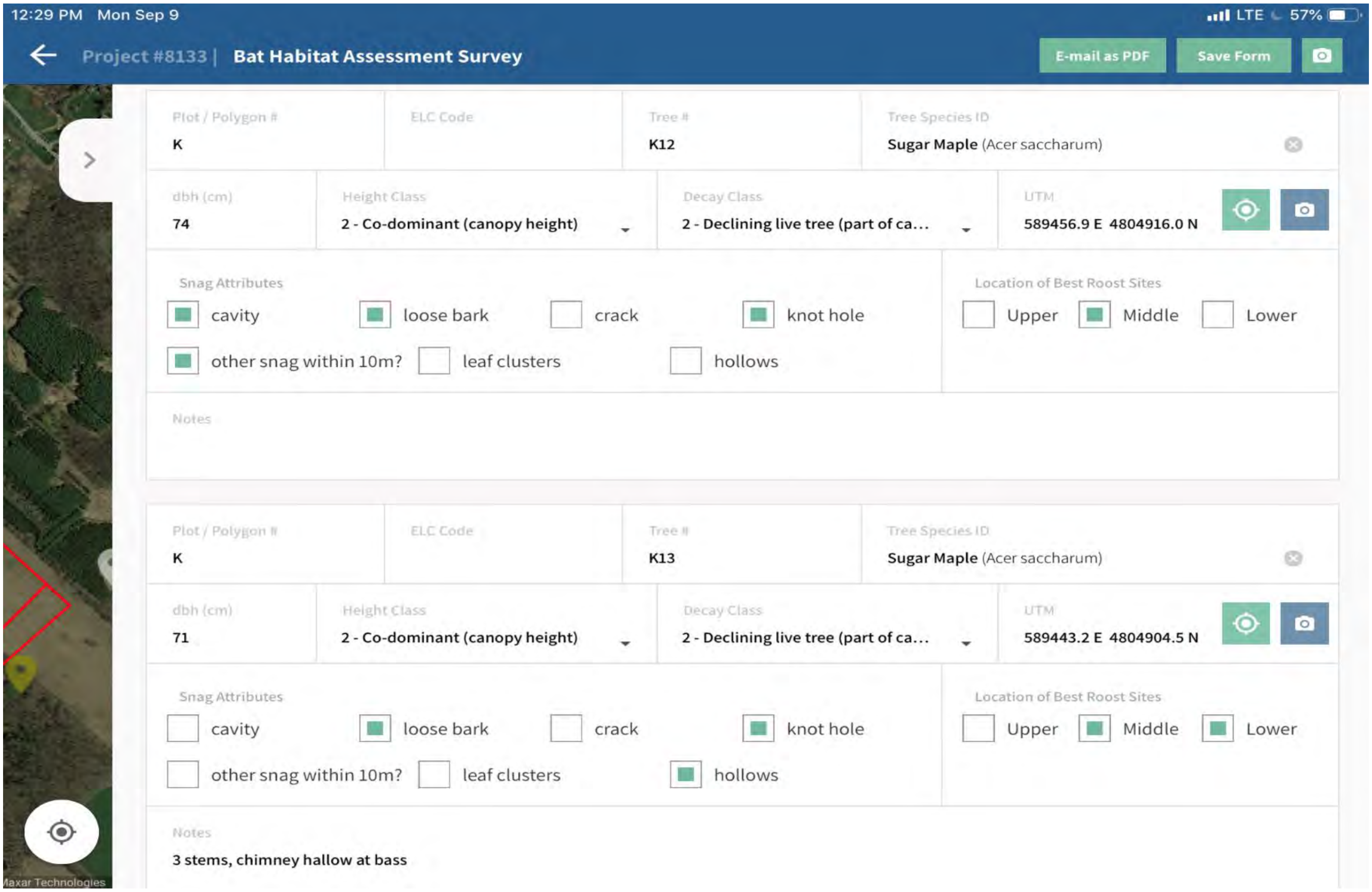
Plot / Polygon #: K
ELC Code:
Tree #: K11
Tree Species ID: **Basswood** (Tilia americana)

dbh (cm): 52
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589454.6 E 4804921.5 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☑ knot hole
☑ other snag within 10m? ☐ leaf clusters ☑ hollows

Location of Best Roost Sites
☐ Upper ☑ Middle ☑ Lower

Notes
4 stems



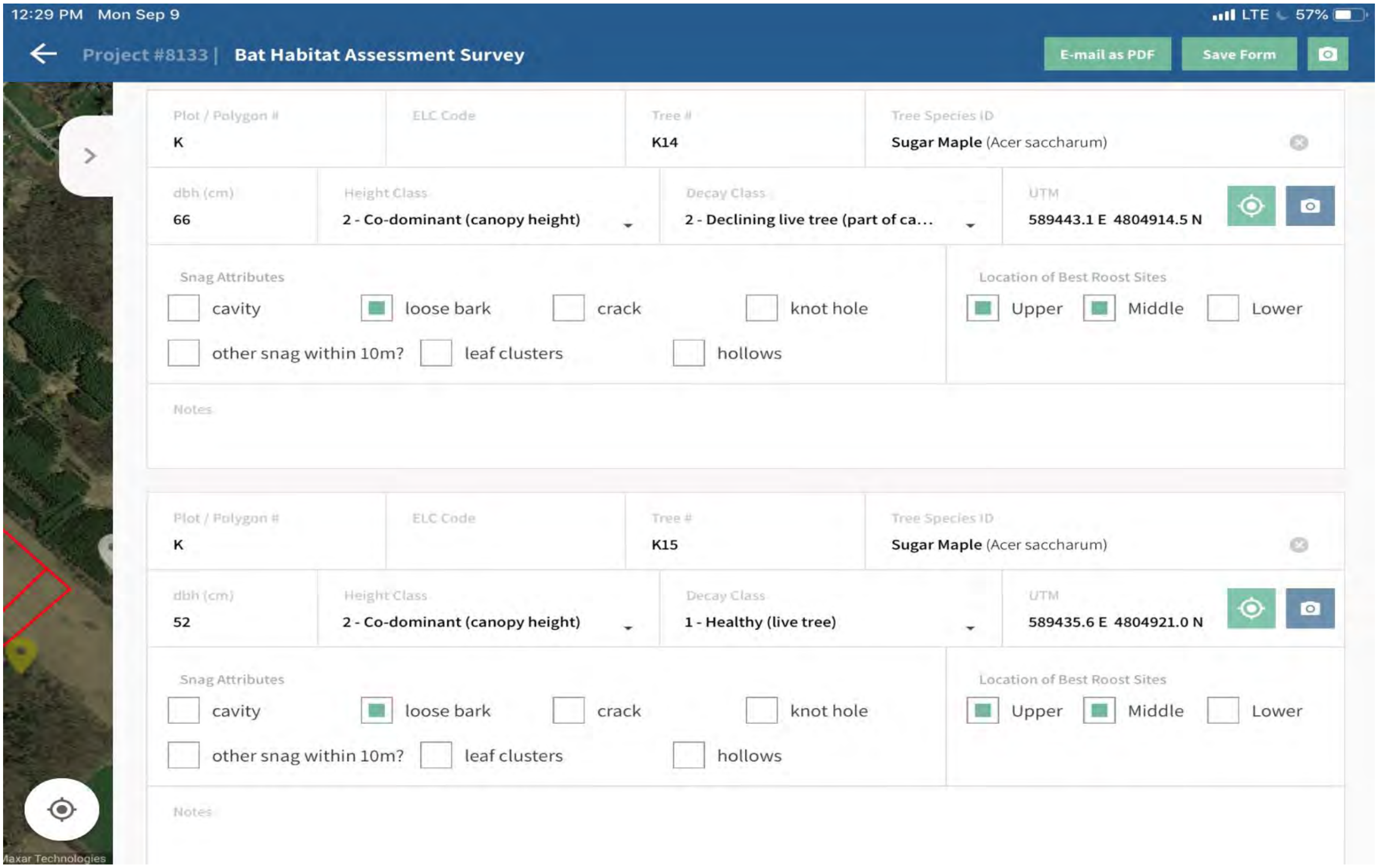
Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: K
ELC Code:
Tree #: K12
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 74
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589456.9 E 4804916.0 N

Snag Attributes: ☑ cavity ☑ loose bark ☐ crack ☑ knot hole ☑ other snag within 10m? ☐ leaf clusters ☐ hollows
Location of Best Roost Sites: ☐ Upper ☑ Middle ☐ Lower
Notes:

Plot / Polygon #: K
ELC Code:
Tree #: K13
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 71
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589443.2 E 4804904.5 N

Snag Attributes: ☐ cavity ☑ loose bark ☐ crack ☑ knot hole ☐ other snag within 10m? ☐ leaf clusters ☑ hollows
Location of Best Roost Sites: ☐ Upper ☑ Middle ☑ Lower
Notes: 3 stems, chimney hallow at bass



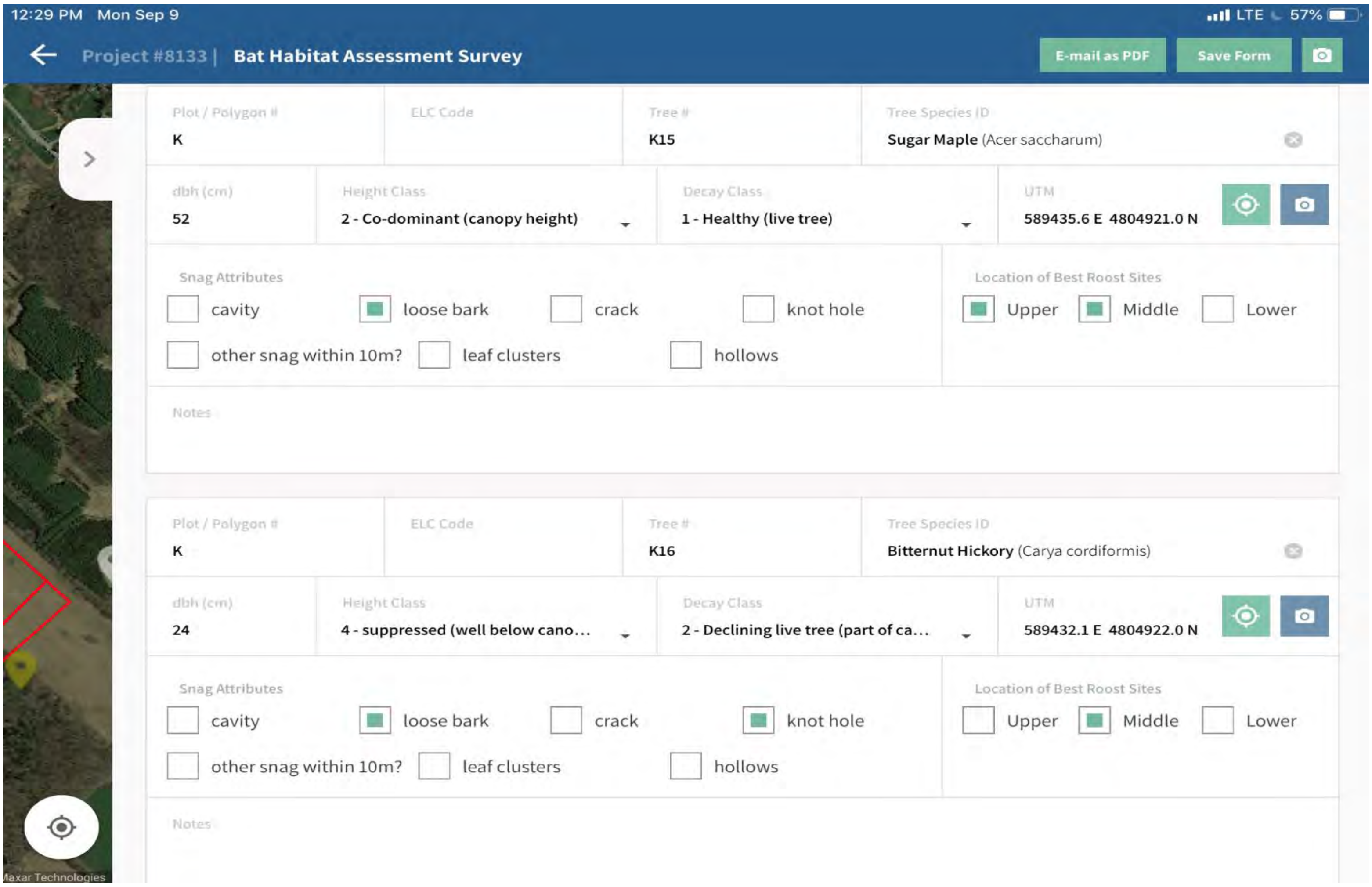
Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: K
ELC Code:
Tree #: K14
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 66
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589443.1 E 4804914.5 N

Snag Attributes: ☐ cavity ☑ loose bark ☐ crack ☐ knot hole ☐ other snag within 10m? ☐ leaf clusters ☐ hollows
Location of Best Roost Sites: ☑ Upper ☑ Middle ☐ Lower
Notes:

Plot / Polygon #: K
ELC Code:
Tree #: K15
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 52
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 1 - Healthy (live tree)
UTM: 589435.6 E 4804921.0 N

Snag Attributes: ☐ cavity ☑ loose bark ☐ crack ☐ knot hole ☐ other snag within 10m? ☐ leaf clusters ☐ hollows
Location of Best Roost Sites: ☑ Upper ☑ Middle ☐ Lower
Notes:



Bat Habitat Assessment Survey

Plot / Polygon #: K
ELC Code:
Tree #: K15
Tree Species ID: **Sugar Maple** (Acer saccharum)

dbh (cm): 52
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 1 - Healthy (live tree)
UTM: 589435.6 E 4804921.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes

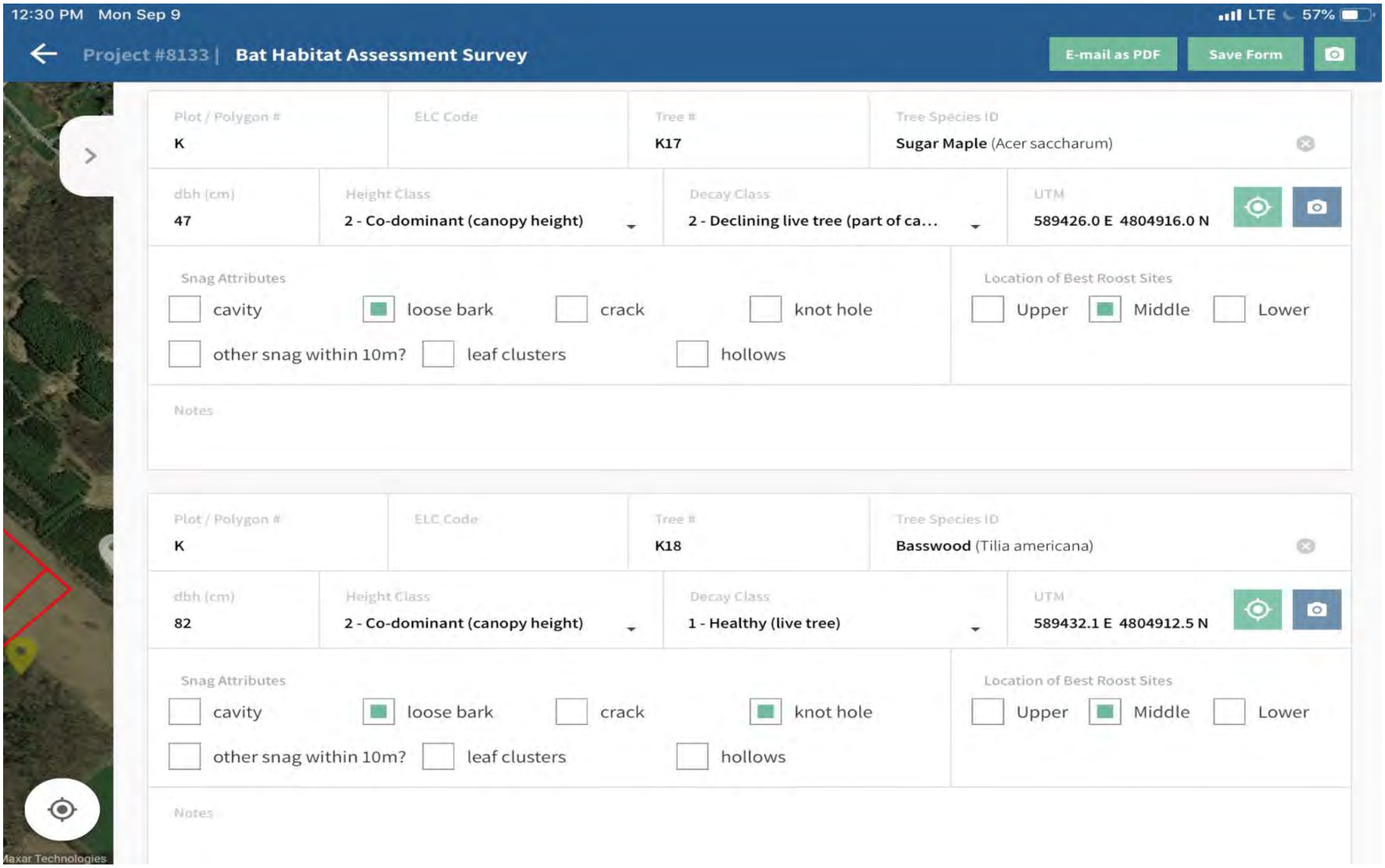
Plot / Polygon #: K
ELC Code:
Tree #: K16
Tree Species ID: **Bitternut Hickory** (Carya cordiformis)

dbh (cm): 24
Height Class: 4 - suppressed (well below cano...
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589432.1 E 4804922.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☑ Middle ☐ Lower

Notes



Bat Habitat Assessment Survey

Plot / Polygon #: K
ELC Code:
Tree #: K17
Tree Species ID: **Sugar Maple** (Acer saccharum)

dbh (cm): 47
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589426.0 E 4804916.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☑ Middle ☐ Lower

Notes

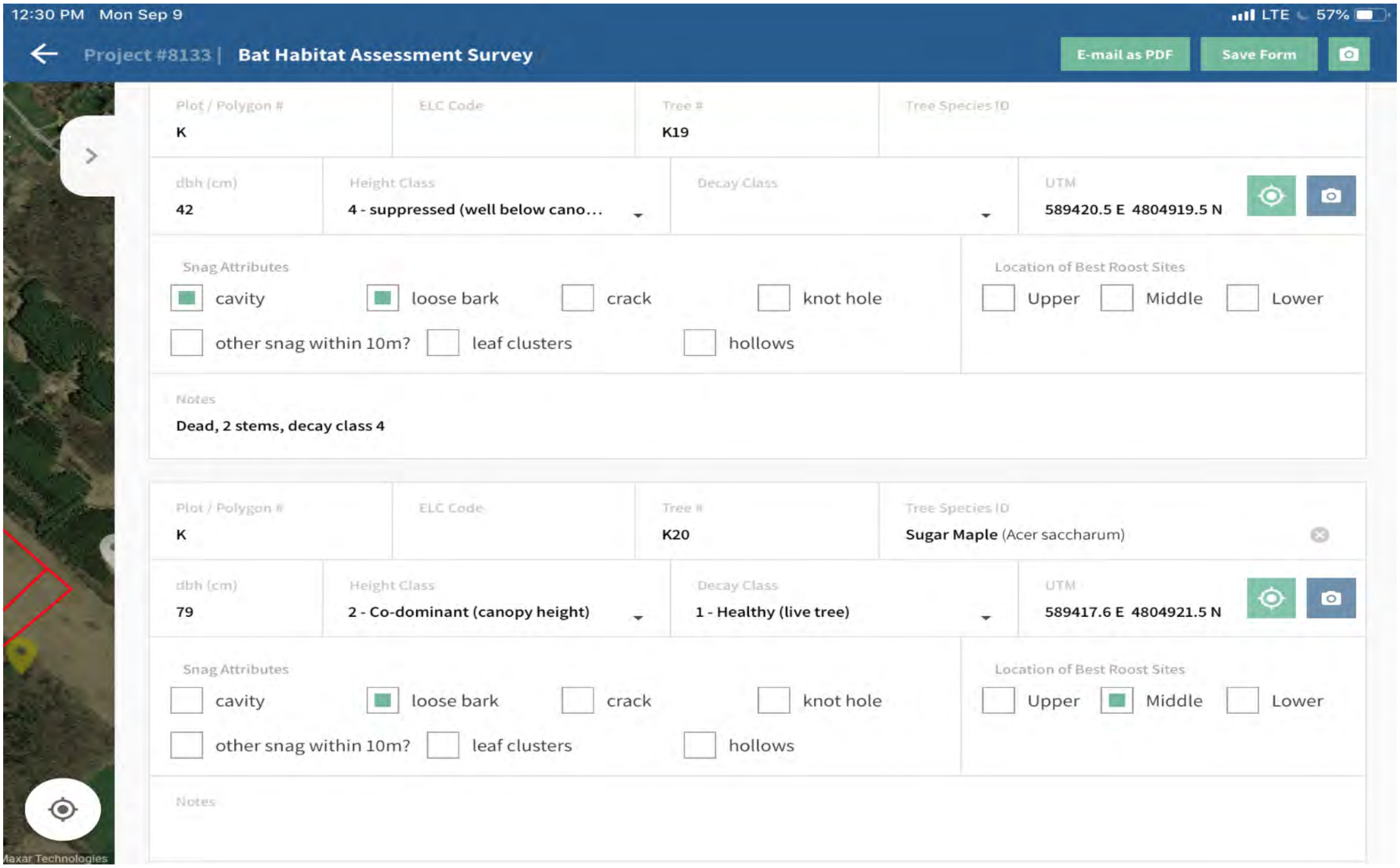
Plot / Polygon #: K
ELC Code:
Tree #: K18
Tree Species ID: **Basswood** (Tilia americana)

dbh (cm): 82
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 1 - Healthy (live tree)
UTM: 589432.1 E 4804912.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☑ Middle ☐ Lower

Notes



Plot / Polygon #	ELC Code	Tree #	Tree Species ID
K		K19	

dbh (cm)	Height Class	Decay Class	UTM
42	4 - suppressed (well below cano…		589420.5 E 4804919.5 N

Snag Attributes
☑ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☐ Middle ☐ Lower

Notes
Dead, 2 stems, decay class 4

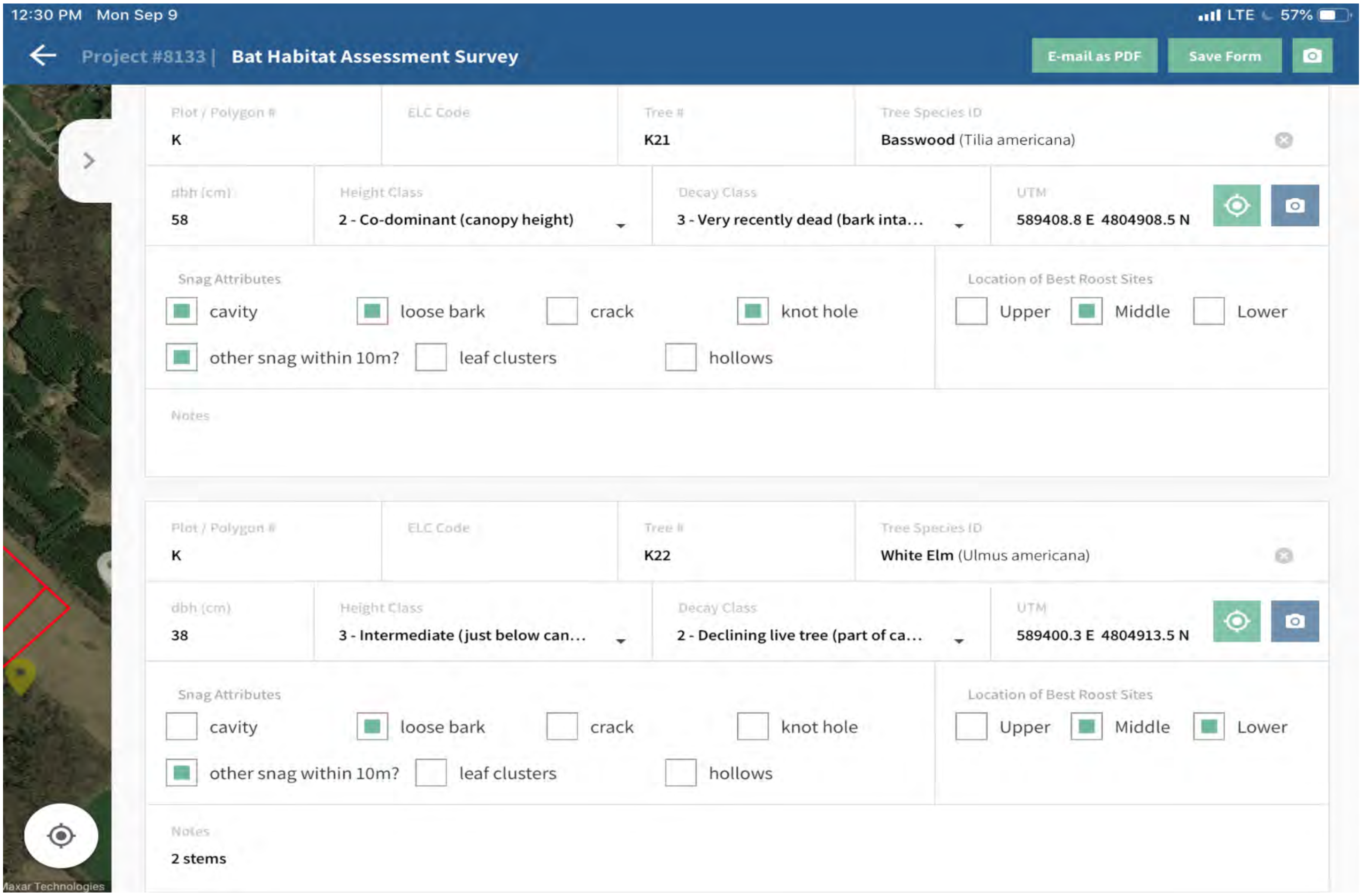
Plot / Polygon #	ELC Code	Tree #	Tree Species ID
K		K20	**Sugar Maple** (Acer saccharum)

dbh (cm)	Height Class	Decay Class	UTM
79	2 - Co-dominant (canopy height)	1 - Healthy (live tree)	589417.6 E 4804921.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☑ Middle ☐ Lower

Notes



Plot / Polygon #	ELC Code	Tree #	Tree Species ID
K		K21	**Basswood** (Tilia americana)

dbh (cm)	Height Class	Decay Class	UTM
58	2 - Co-dominant (canopy height)	3 - Very recently dead (bark inta…	589408.8 E 4804908.5 N

Snag Attributes
☑ cavity ☑ loose bark ☐ crack ☑ knot hole
☑ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☑ Middle ☐ Lower

Notes

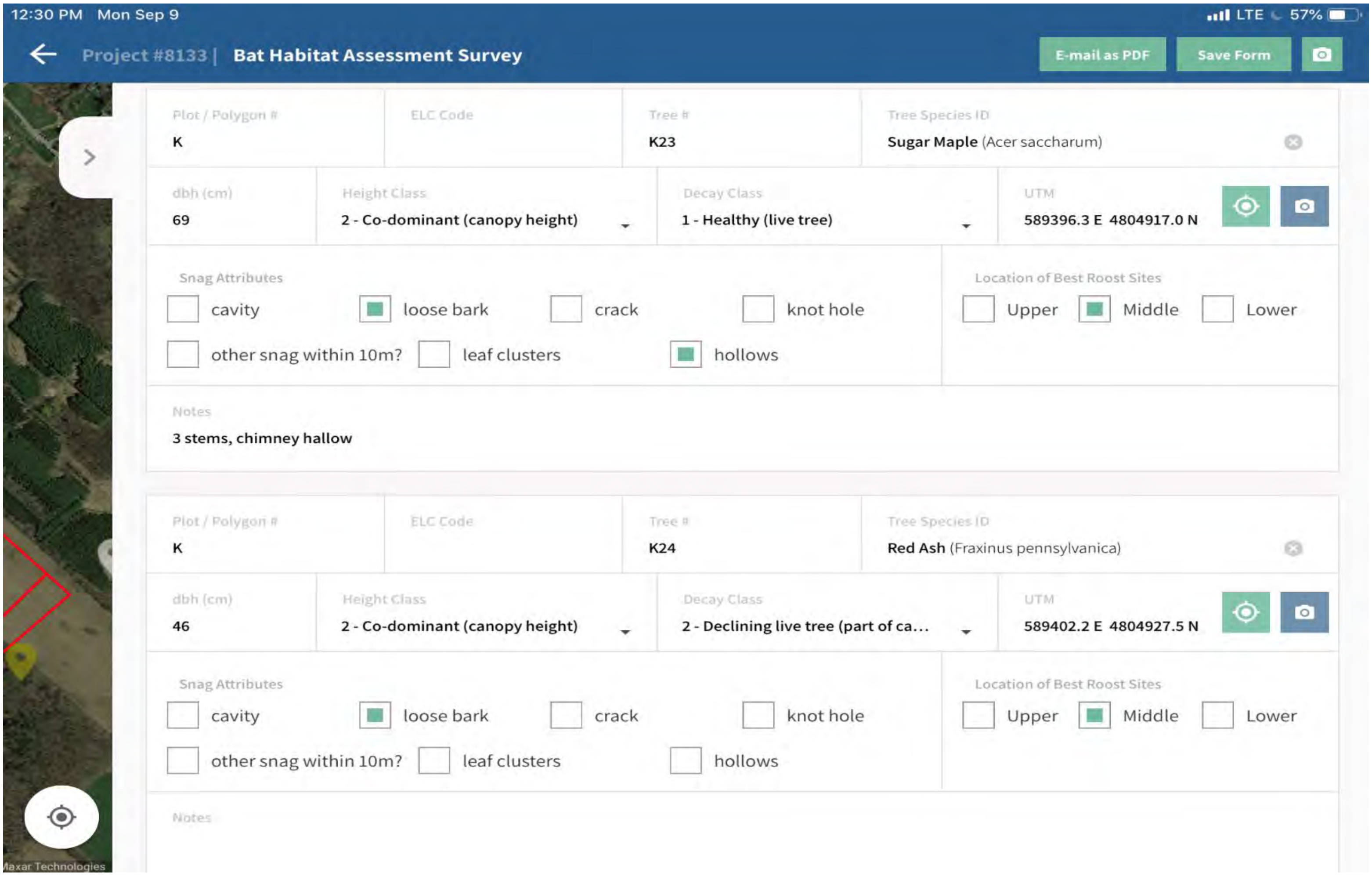
Plot / Polygon #	ELC Code	Tree #	Tree Species ID
K		K22	**White Elm** (Ulmus americana)

dbh (cm)	Height Class	Decay Class	UTM
38	3 - Intermediate (just below can…	2 - Declining live tree (part of ca…	589400.3 E 4804913.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☑ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☑ Middle ☑ Lower

Notes
2 stems



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: K
ELC Code:
Tree #: K23
Tree Species ID: **Sugar Maple** (Acer saccharum)

dbh (cm): 69
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 1 - Healthy (live tree)
UTM: 589396.3 E 4804917.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☑ hollows

Location of Best Roost Sites
☐ Upper ☑ Middle ☐ Lower

Notes: 3 stems, chimney hallow

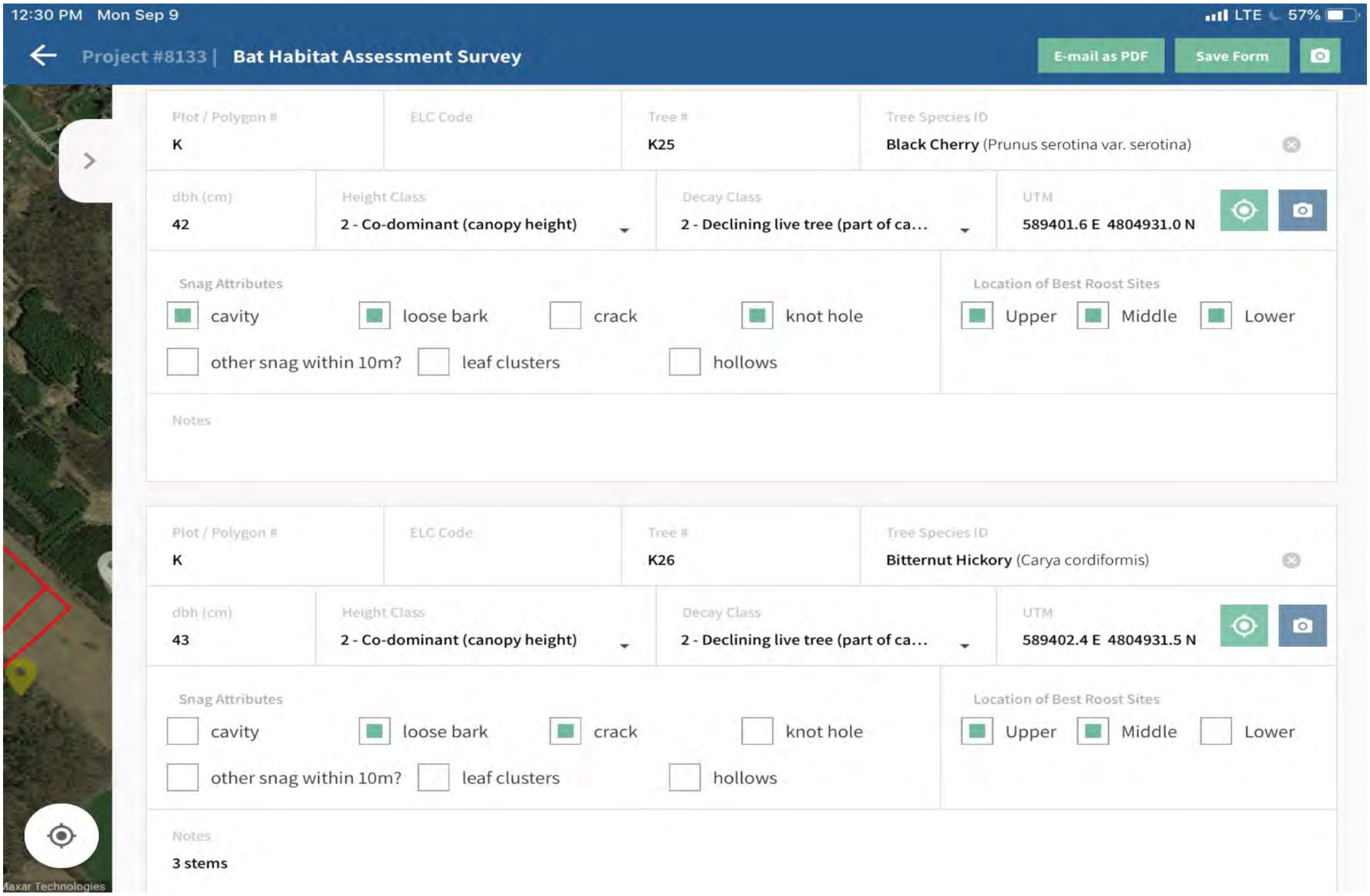
Plot / Polygon #: K
ELC Code:
Tree #: K24
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)

dbh (cm): 46
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589402.2 E 4804927.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☑ Middle ☐ Lower

Notes:



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: K
ELC Code:
Tree #: K25
Tree Species ID: **Black Cherry** (Prunus serotina var. serotina)

dbh (cm): 42
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589401.6 E 4804931.0 N

Snag Attributes
☑ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☑ Lower

Notes:

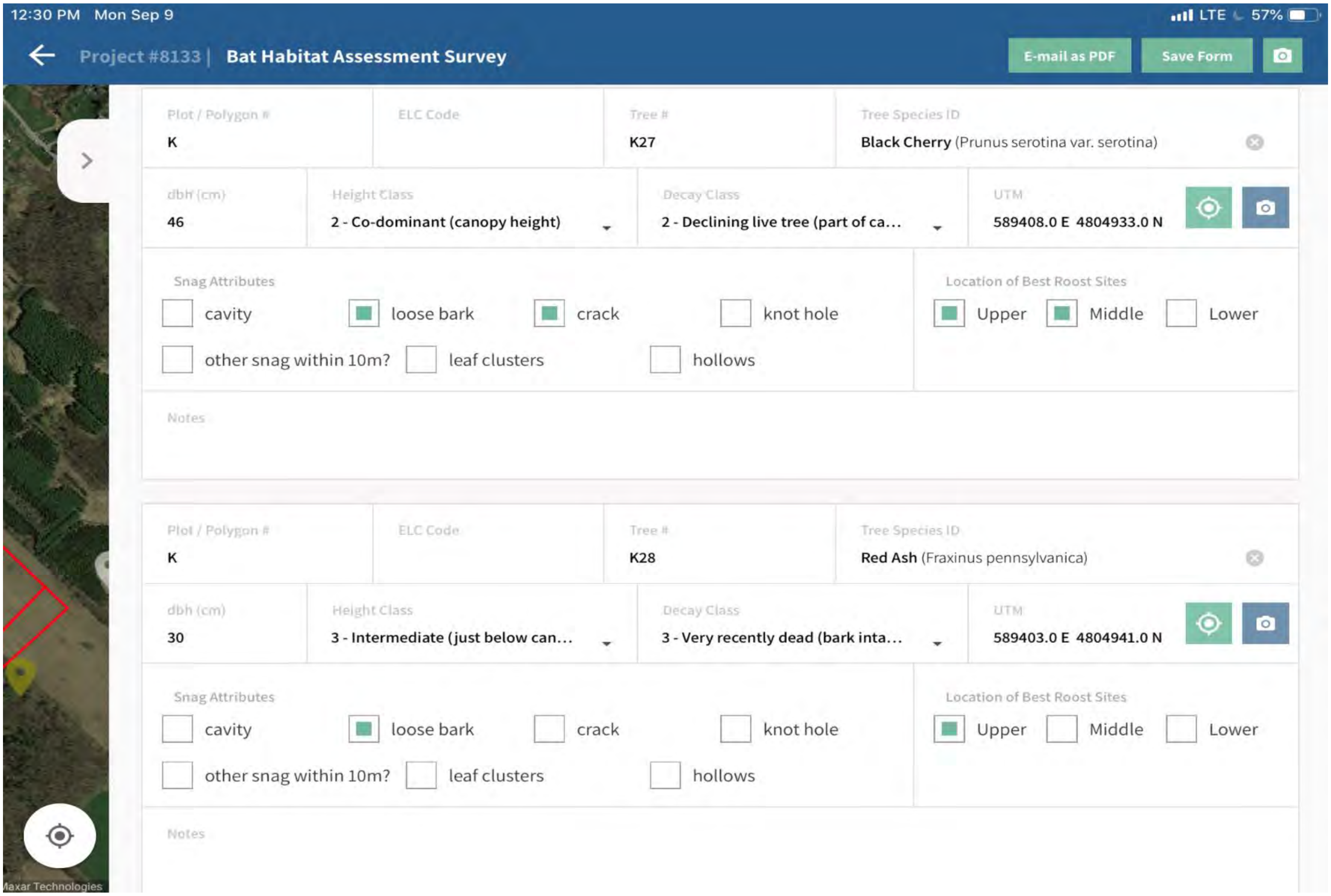
Plot / Polygon #: K
ELC Code:
Tree #: K26
Tree Species ID: **Bitternut Hickory** (Carya cordiformis)

dbh (cm): 43
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589402.4 E 4804931.5 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes: 3 stems



Bat Habitat Assessment Survey

Plot / Polygon #: K
ELC Code:
Tree #: K27
Tree Species ID: **Black Cherry** (Prunus serotina var. serotina)
dbh (cm): 46
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589408.0 E 4804933.0 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

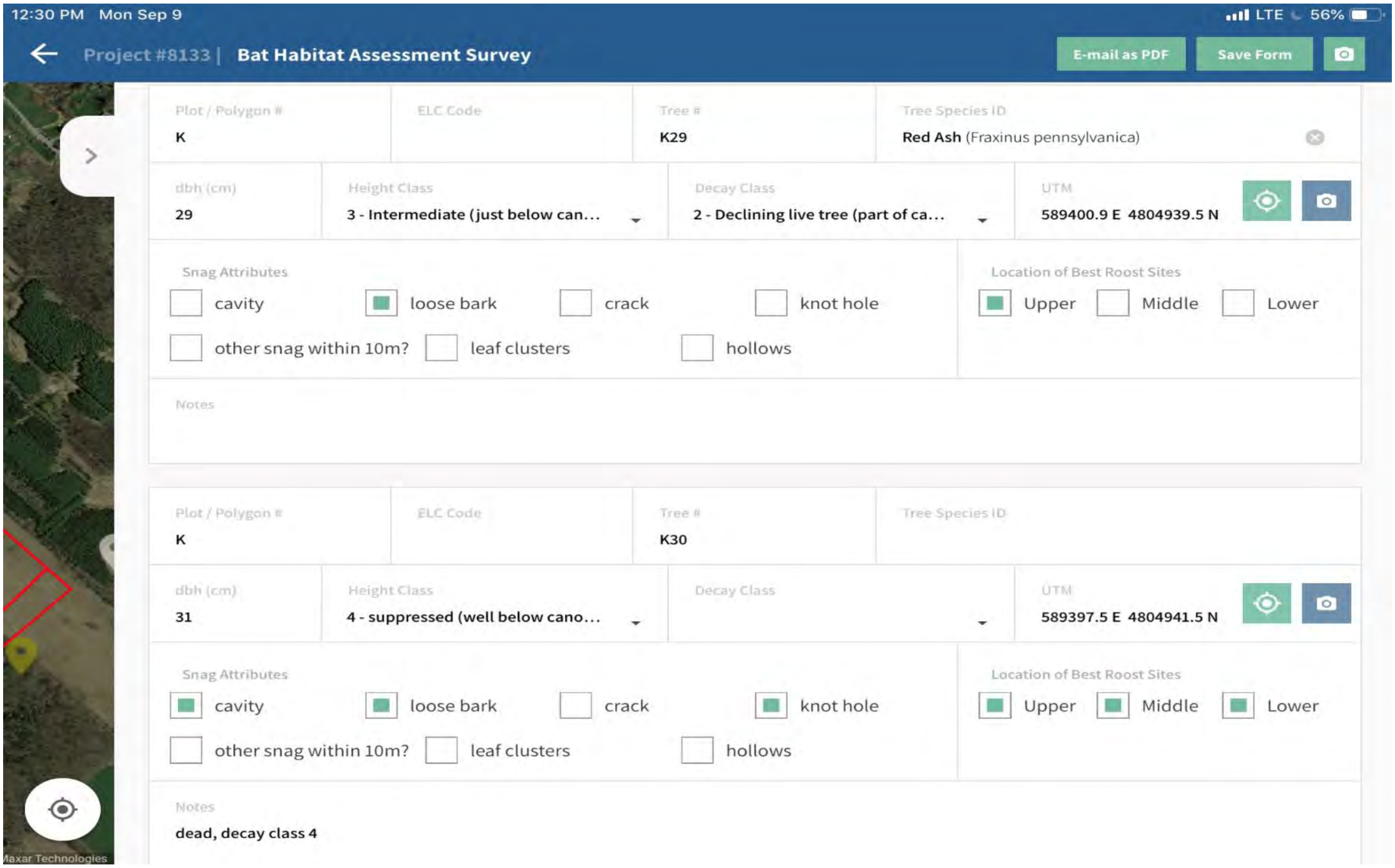
Notes

Plot / Polygon #: K
ELC Code:
Tree #: K28
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)
dbh (cm): 30
Height Class: 3 - Intermediate (just below can...
Decay Class: 3 - Very recently dead (bark inta...
UTM: 589403.0 E 4804941.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



Bat Habitat Assessment Survey

Plot / Polygon #: K
ELC Code:
Tree #: K29
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)
dbh (cm): 29
Height Class: 3 - Intermediate (just below can...
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589400.9 E 4804939.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

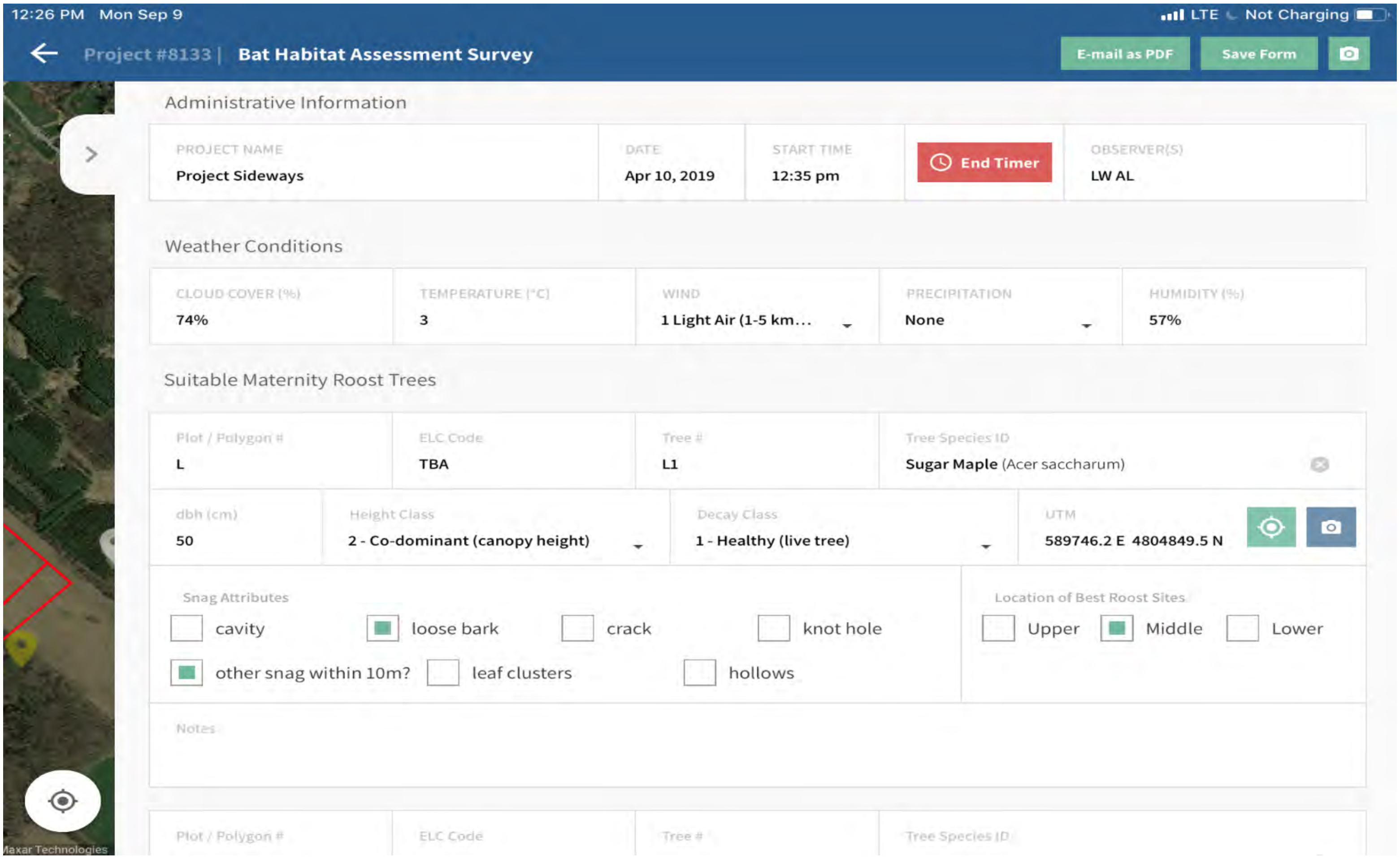
Notes

Plot / Polygon #: K
ELC Code:
Tree #: K30
Tree Species ID:
dbh (cm): 31
Height Class: 4 - suppressed (well below cano...
Decay Class:
UTM: 589397.5 E 4804941.5 N

Snag Attributes
☑ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☑ Lower

Notes
dead, decay class 4



Project #8133 | **Bat Habitat Assessment Survey**

Administrative Information

PROJECT NAME	DATE	START TIME		OBSERVER(S)
Project Sideways	Apr 10, 2019	12:35 pm	End Timer	LW AL

Weather Conditions

CLOUD COVER (%)	TEMPERATURE (°C)	WIND	PRECIPITATION	HUMIDITY (%)
74%	3	1 Light Air (1-5 km...	None	57%

Suitable Maternity Roost Trees

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
L	TBA	L1	**Sugar Maple** (Acer saccharum)

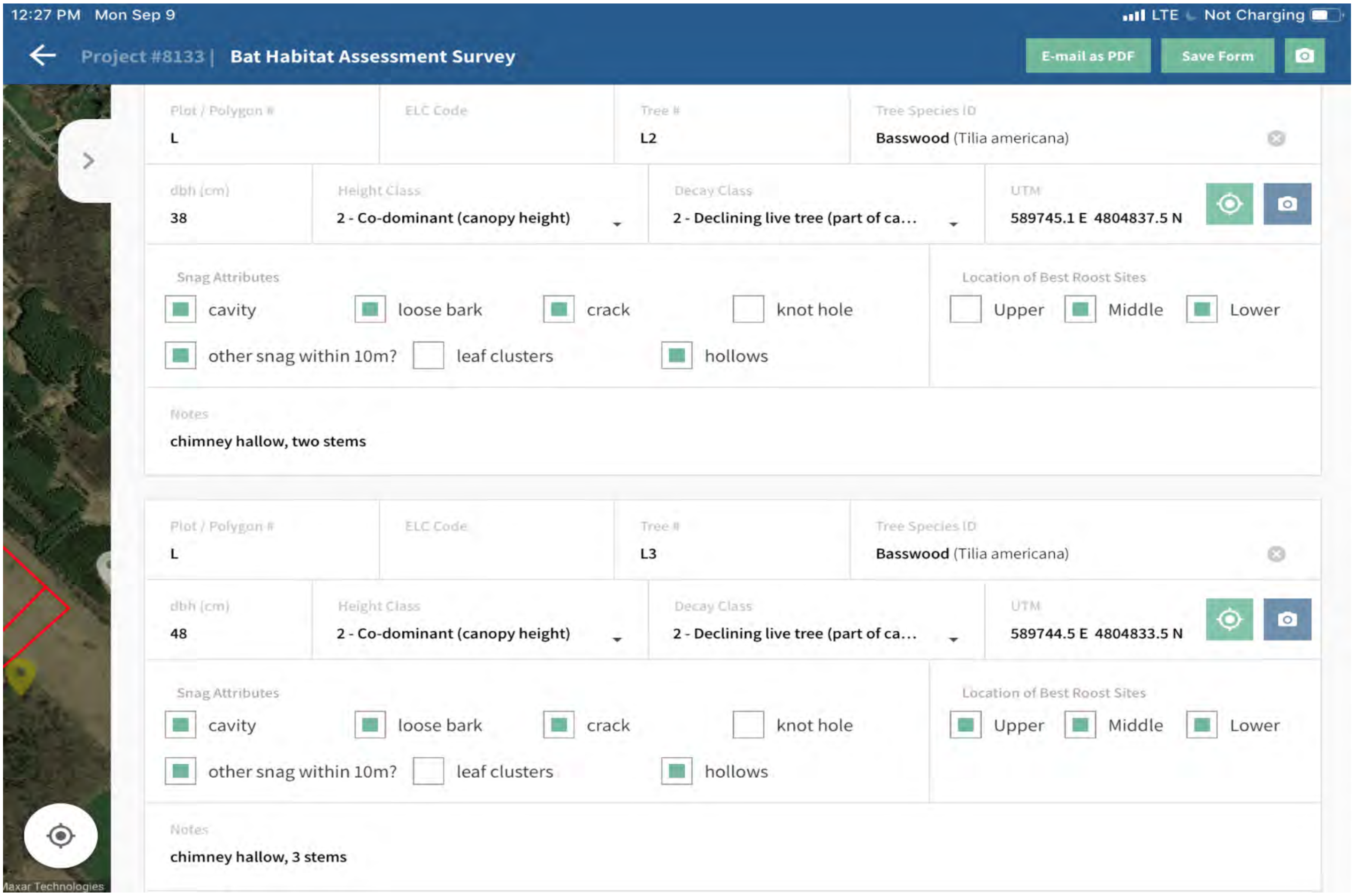
dbh (cm)	Height Class	Decay Class	UTM
50	2 - Co-dominant (canopy height)	1 - Healthy (live tree)	589746.2 E 4804849.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☑ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☑ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
L		L2	**Basswood** (Tilia americana)

dbh (cm)	Height Class	Decay Class	UTM
38	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589745.1 E 4804837.5 N

Snag Attributes
☑ cavity ☑ loose bark ☑ crack ☐ knot hole
☑ other snag within 10m? ☐ leaf clusters ☑ hollows

Location of Best Roost Sites
☐ Upper ☑ Middle ☑ Lower

Notes
chimney hallow, two stems

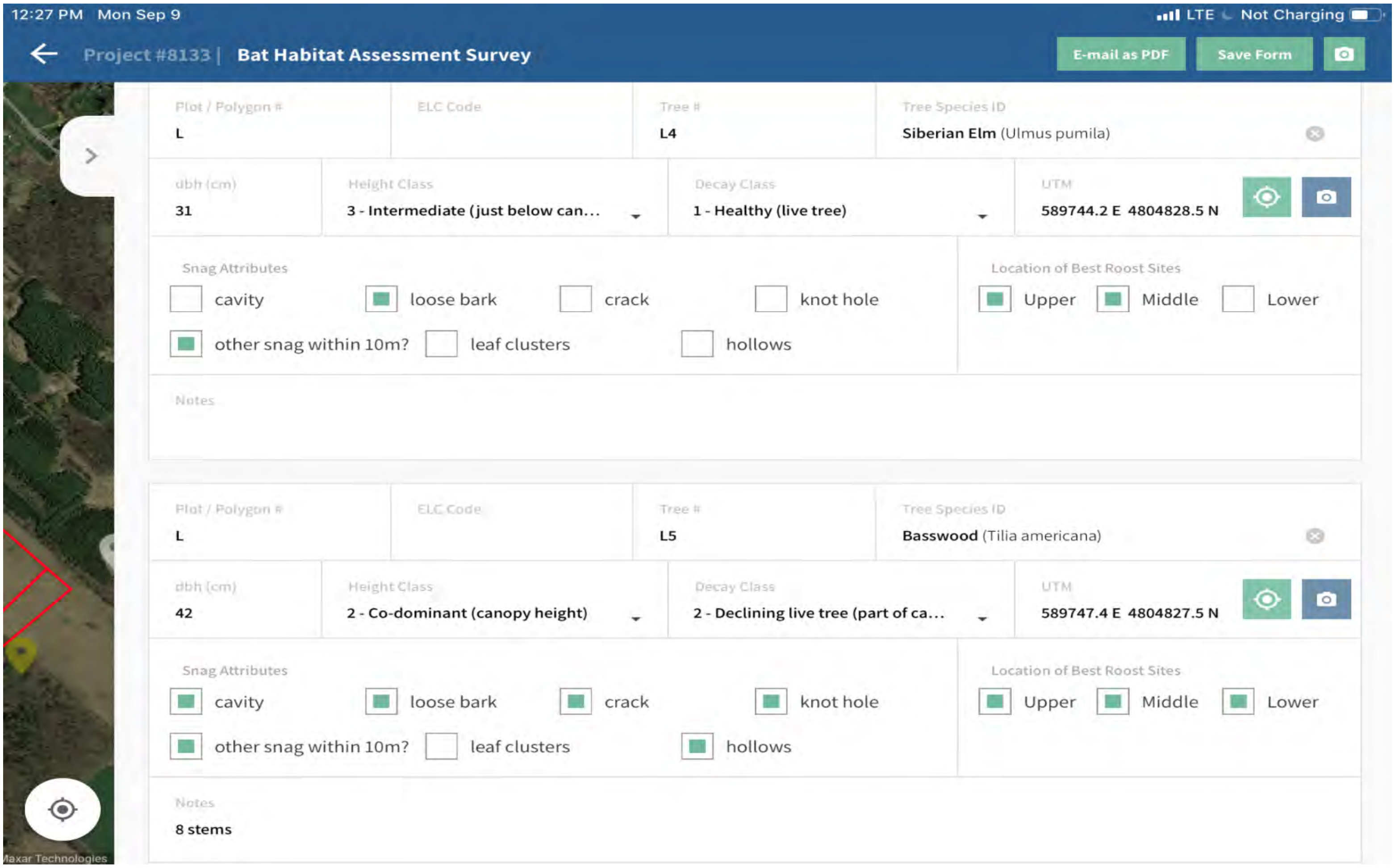
Plot / Polygon #	ELC Code	Tree #	Tree Species ID
L		L3	**Basswood** (Tilia americana)

dbh (cm)	Height Class	Decay Class	UTM
48	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589744.5 E 4804833.5 N

Snag Attributes
☑ cavity ☑ loose bark ☑ crack ☐ knot hole
☑ other snag within 10m? ☐ leaf clusters ☑ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☑ Lower

Notes
chimney hallow, 3 stems



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #
L

ELC Code

Tree #
L4

Tree Species ID
Siberian Elm (Ulmus pumila)

dbh (cm)
31

Height Class
3 - Intermediate (just below can…

Decay Class
1 - Healthy (live tree)

UTM
589744.2 E 4804828.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☑ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes

Plot / Polygon #
L

ELC Code

Tree #
L5

Tree Species ID
Basswood (Tilia americana)

dbh (cm)
42

Height Class
2 - Co-dominant (canopy height)

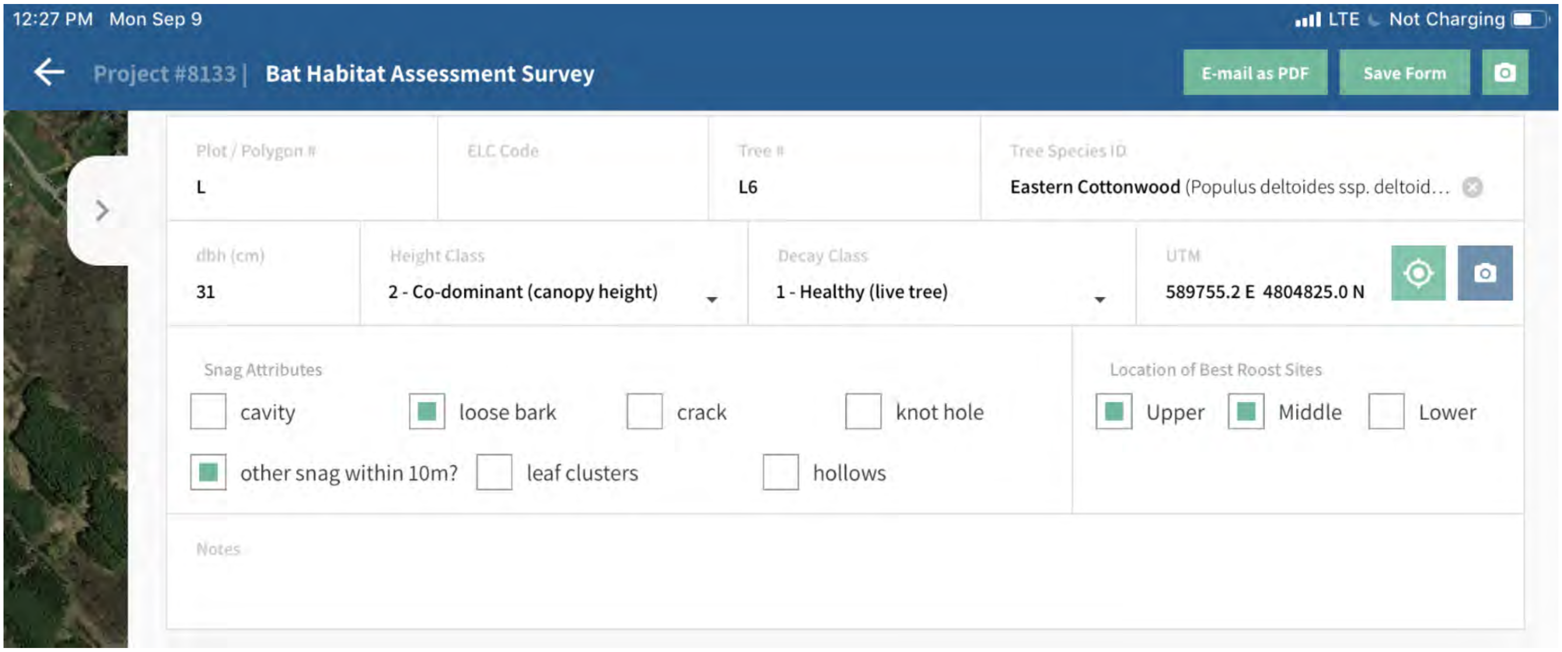
Decay Class
2 - Declining live tree (part of ca…

UTM
589747.4 E 4804827.5 N

Snag Attributes
☑ cavity ☑ loose bark ☑ crack ☑ knot hole
☑ other snag within 10m? ☐ leaf clusters ☑ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☑ Lower

Notes
8 stems



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #
L

ELC Code

Tree #
L6

Tree Species ID
Eastern Cottonwood (Populus deltoides ssp. deltoid…

dbh (cm)
31

Height Class
2 - Co-dominant (canopy height)

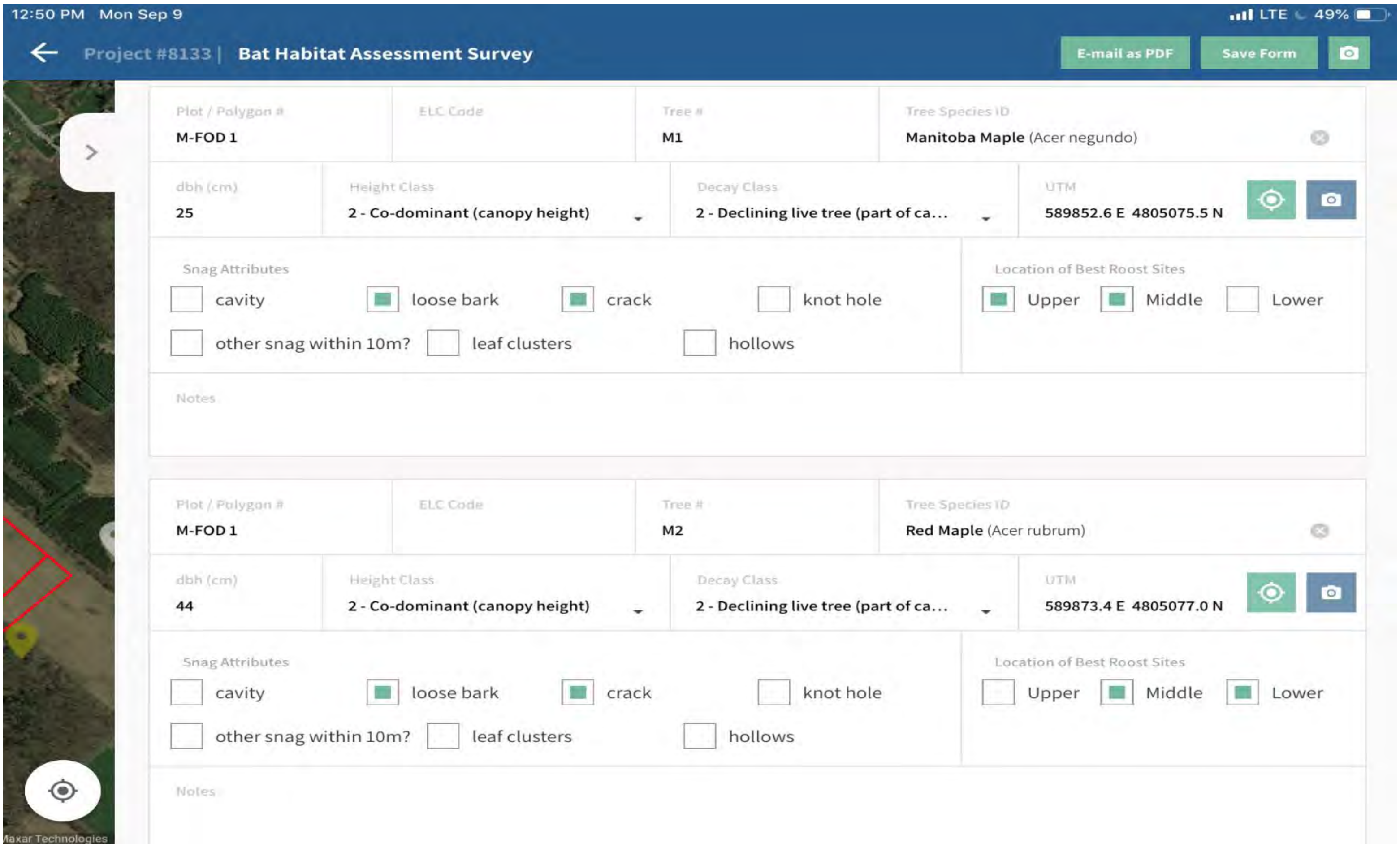
Decay Class
1 - Healthy (live tree)

UTM
589755.2 E 4804825.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☑ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon # M-FOD 1	ELC Code	Tree # M1	Tree Species ID **Manitoba Maple** (Acer negundo)
dbh (cm) 25	Height Class 2 - Co-dominant (canopy height)	Decay Class 2 - Declining live tree (part of ca...	UTM 589852.6 E 4805075.5 N

Snag Attributes

☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes

Plot / Polygon # M-FOD 1	ELC Code	Tree # M2	Tree Species ID **Red Maple** (Acer rubrum)
dbh (cm) 44	Height Class 2 - Co-dominant (canopy height)	Decay Class 2 - Declining live tree (part of ca...	UTM 589873.4 E 4805077.0 N

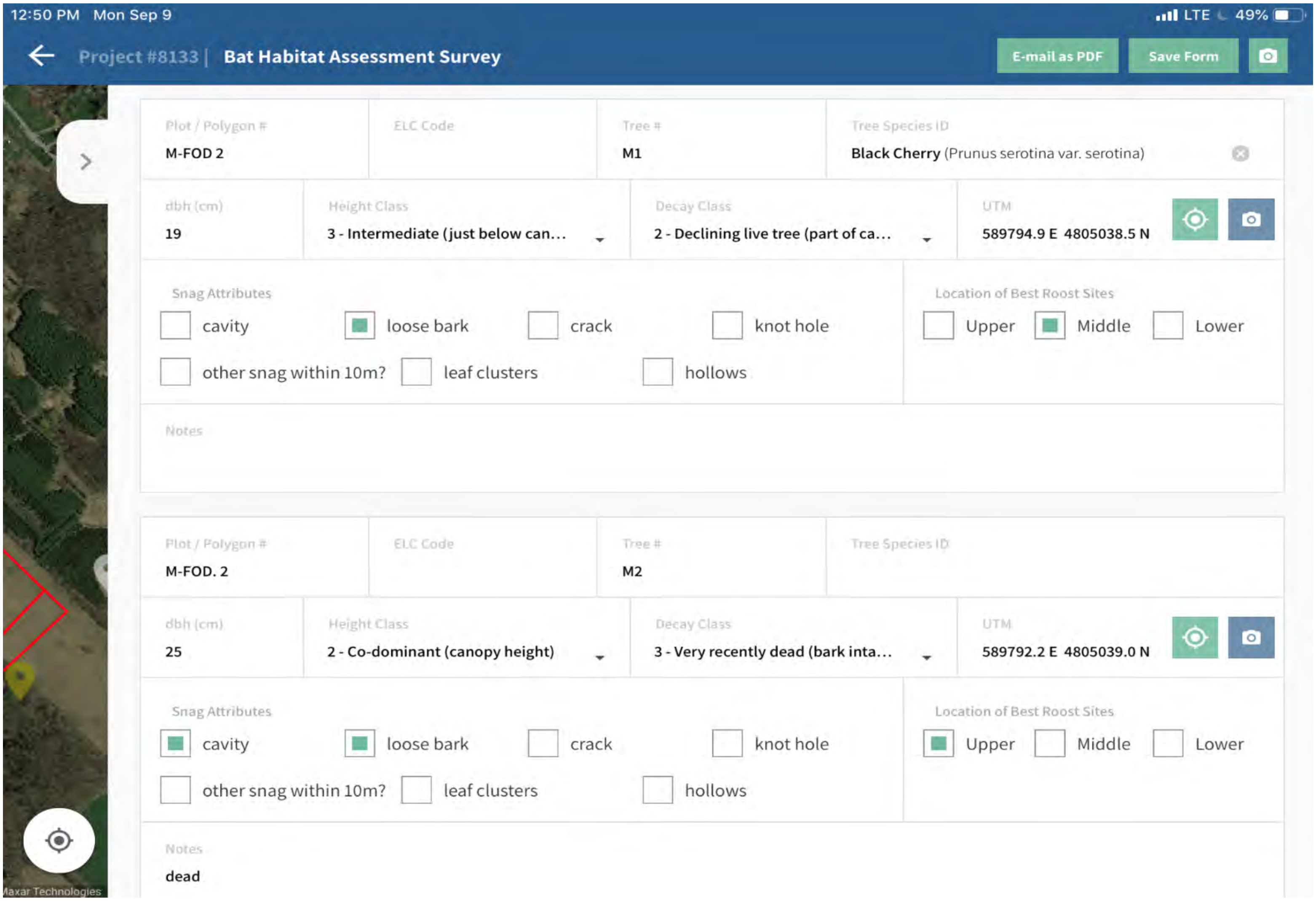
Snag Attributes

☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☐ Upper ☑ Middle ☑ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon # M-FOD 2	ELC Code	Tree # M1	Tree Species ID **Black Cherry** (Prunus serotina var. serotina)
dbh (cm) 19	Height Class 3 - Intermediate (just below can...	Decay Class 2 - Declining live tree (part of ca...	UTM 589794.9 E 4805038.5 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☐ Upper ☑ Middle ☐ Lower

Notes

Plot / Polygon # M-FOD. 2	ELC Code	Tree # M2	Tree Species ID
dbh (cm) 25	Height Class 2 - Co-dominant (canopy height)	Decay Class 3 - Very recently dead (bark inta...	UTM 589792.2 E 4805039.0 N

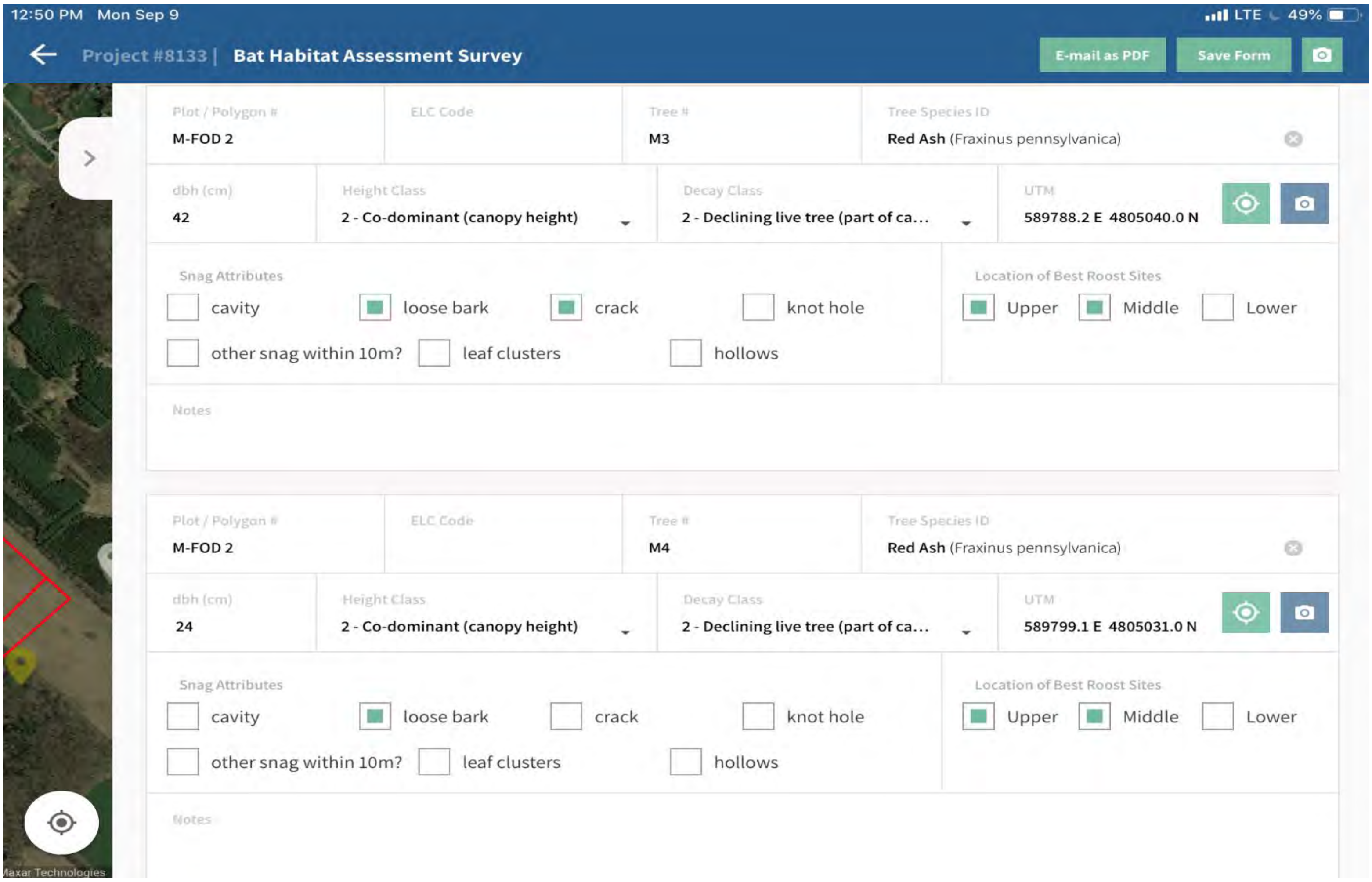
Snag Attributes

☑ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes
dead



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: M-FOD 2
ELC Code:
Tree #: M3
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)

dbh (cm): 42
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589788.2 E 4805040.0 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes

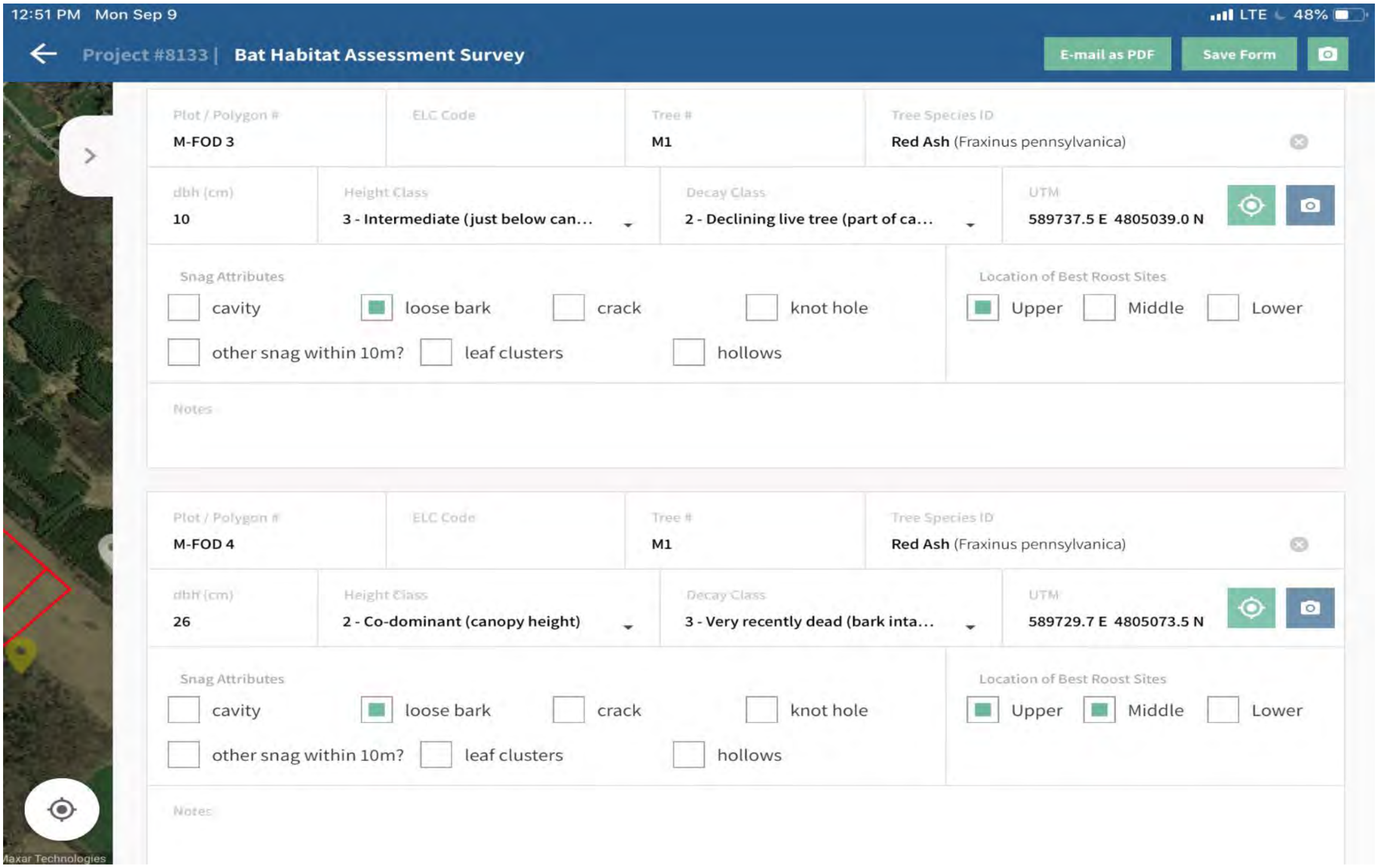
Plot / Polygon #: M-FOD 2
ELC Code:
Tree #: M4
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)

dbh (cm): 24
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589799.1 E 4805031.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: M-FOD 3
ELC Code:
Tree #: M1
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)

dbh (cm): 10
Height Class: 3 - Intermediate (just below can...
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589737.5 E 4805039.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes

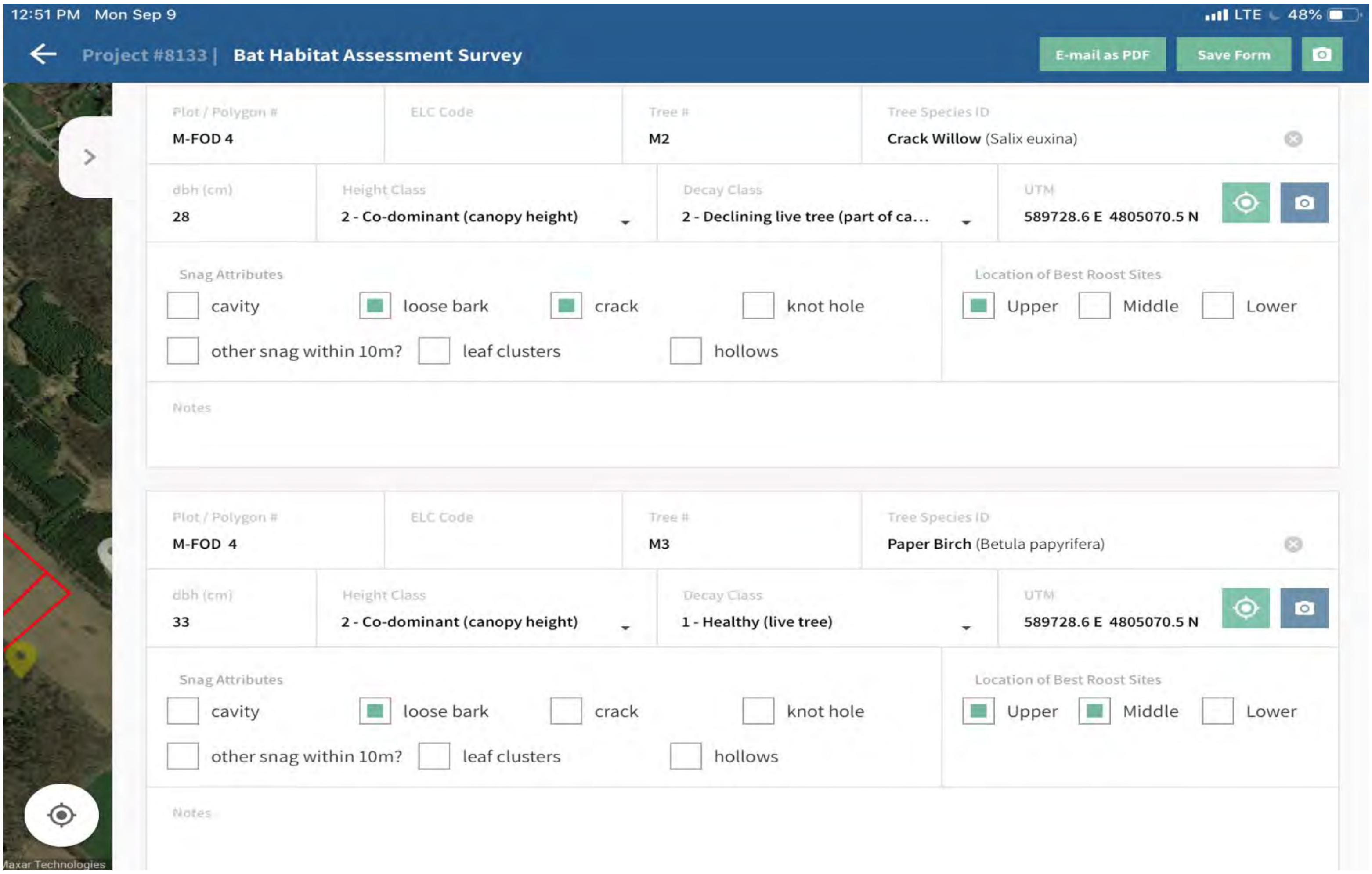
Plot / Polygon #: M-FOD 4
ELC Code:
Tree #: M1
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)

dbh (cm): 26
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 3 - Very recently dead (bark inta...
UTM: 589729.7 E 4805073.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
M-FOD 4		M2	**Crack Willow** (Salix euxina)

dbh (cm)	Height Class	Decay Class	UTM
28	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589728.6 E 4805070.5 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes

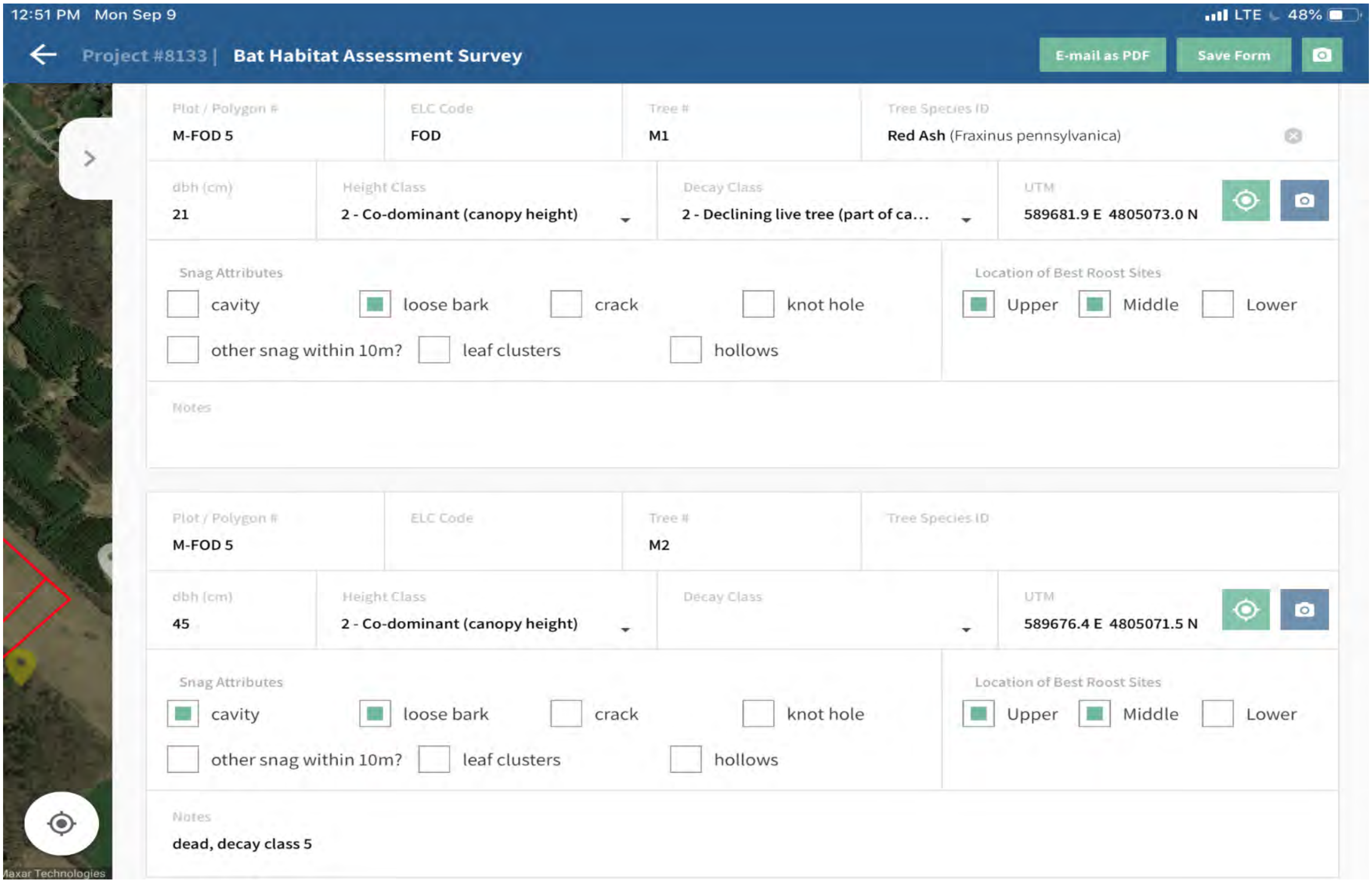
Plot / Polygon #	ELC Code	Tree #	Tree Species ID
M-FOD 4		M3	**Paper Birch** (Betula papyrifera)

dbh (cm)	Height Class	Decay Class	UTM
33	2 - Co-dominant (canopy height)	1 - Healthy (live tree)	589728.6 E 4805070.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
M-FOD 5	FOD	M1	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
21	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589681.9 E 4805073.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes

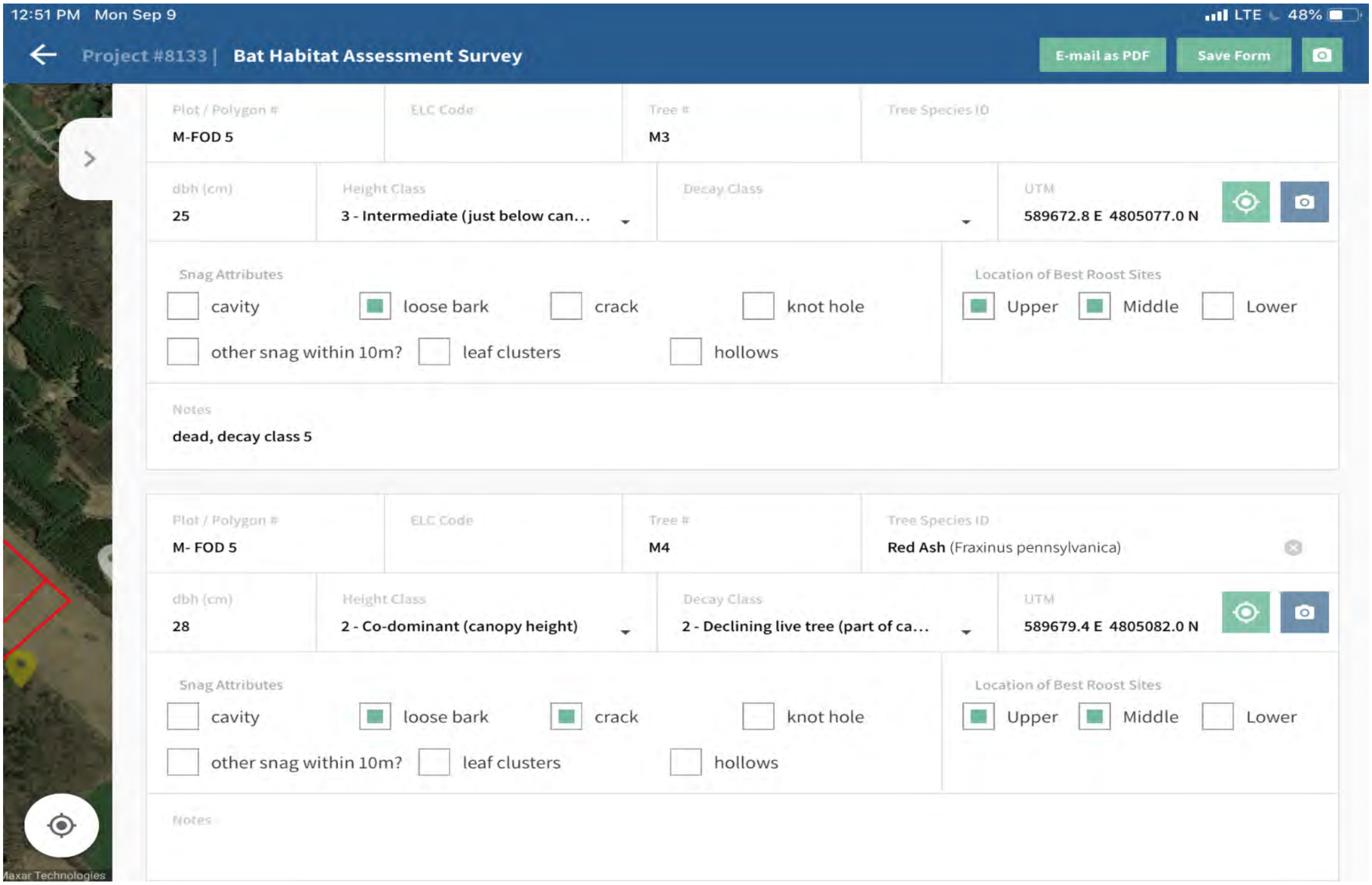
Plot / Polygon #	ELC Code	Tree #	Tree Species ID
M-FOD 5		M2	

dbh (cm)	Height Class	Decay Class	UTM
45	2 - Co-dominant (canopy height)		589676.4 E 4805071.5 N

Snag Attributes
☑ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes
dead, decay class 5



Bat Habitat Assessment Survey

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
M-FOD 5		M3	

dbh (cm)	Height Class	Decay Class	UTM
25	3 - Intermediate (just below can...		589672.8 E 4805077.0 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes

dead, decay class 5

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
M- FOD 5		M4	Red Ash (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
28	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589679.4 E 4805082.0 N

Snag Attributes

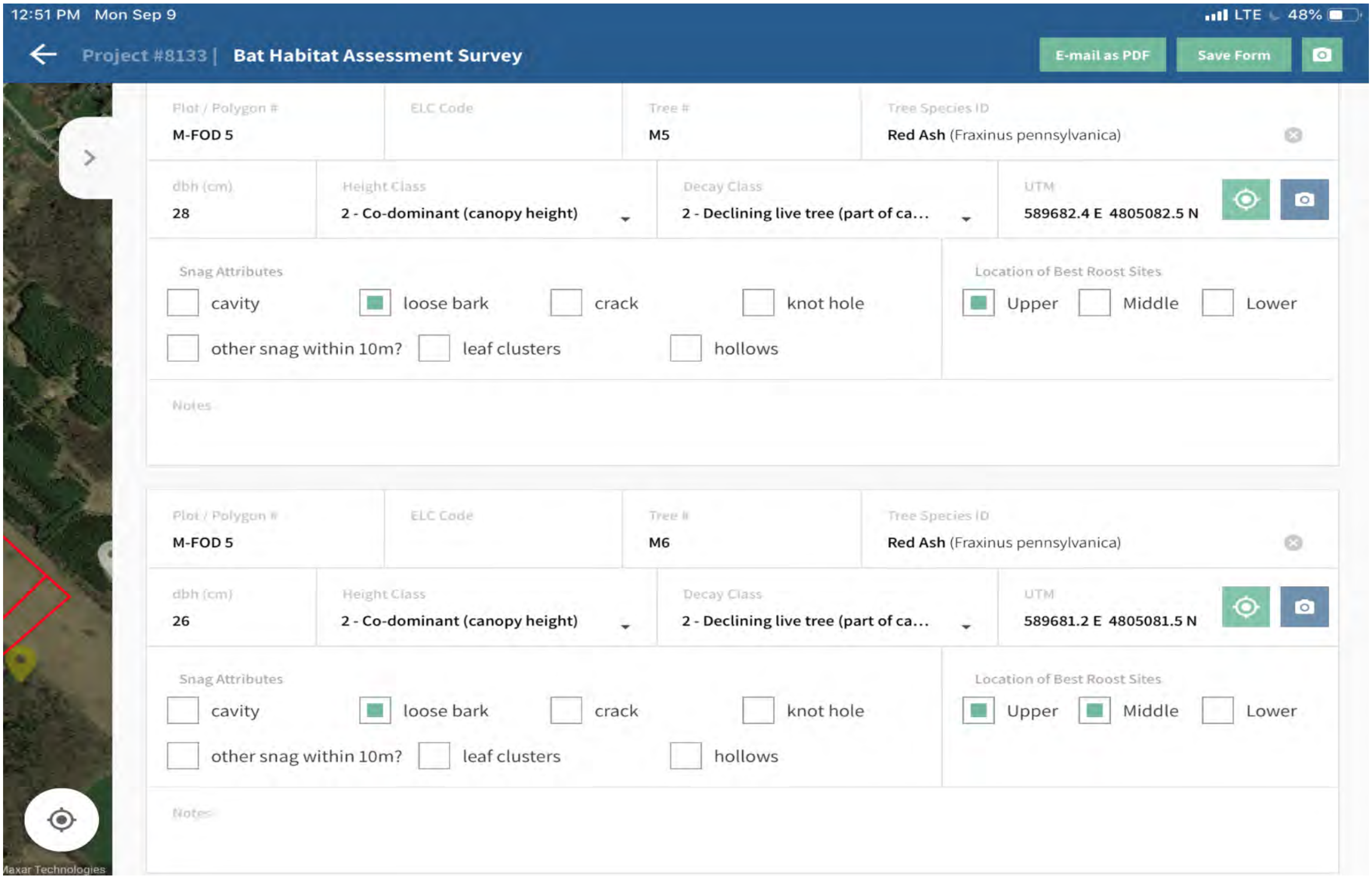
☐ cavity ☑ loose bark ☑ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes



Bat Habitat Assessment Survey

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
M-FOD 5		M5	Red Ash (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
28	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589682.4 E 4805082.5 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
M-FOD 5		M6	Red Ash (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
26	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589681.2 E 4805081.5 N

Snag Attributes

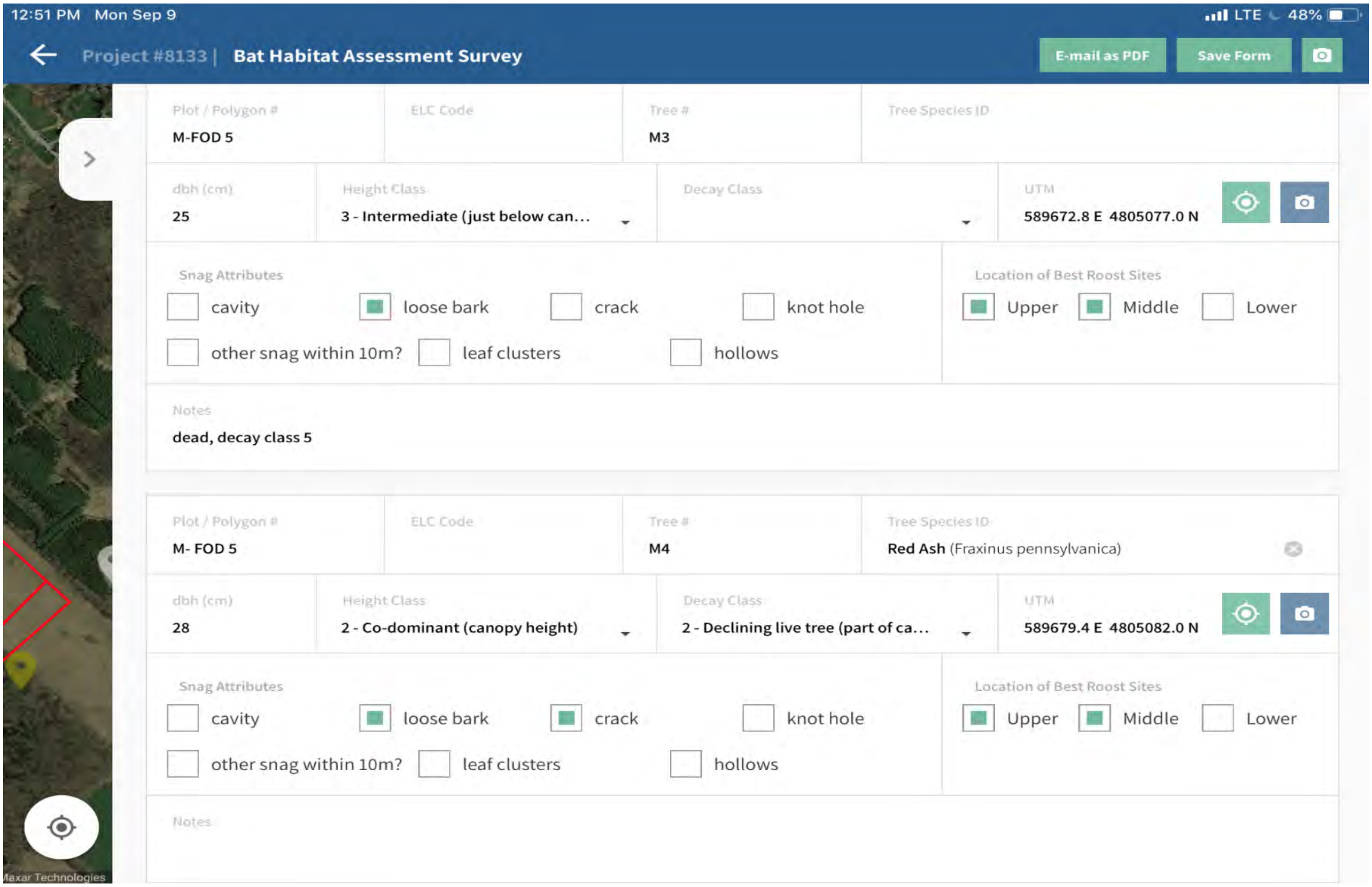
☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | Bat Habitat Assessment Survey

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
M-FOD 5		M3	
dbh (cm)	Height Class	Decay Class	UTM
25	3 - Intermediate (just below can...		589672.8 E 4805077.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

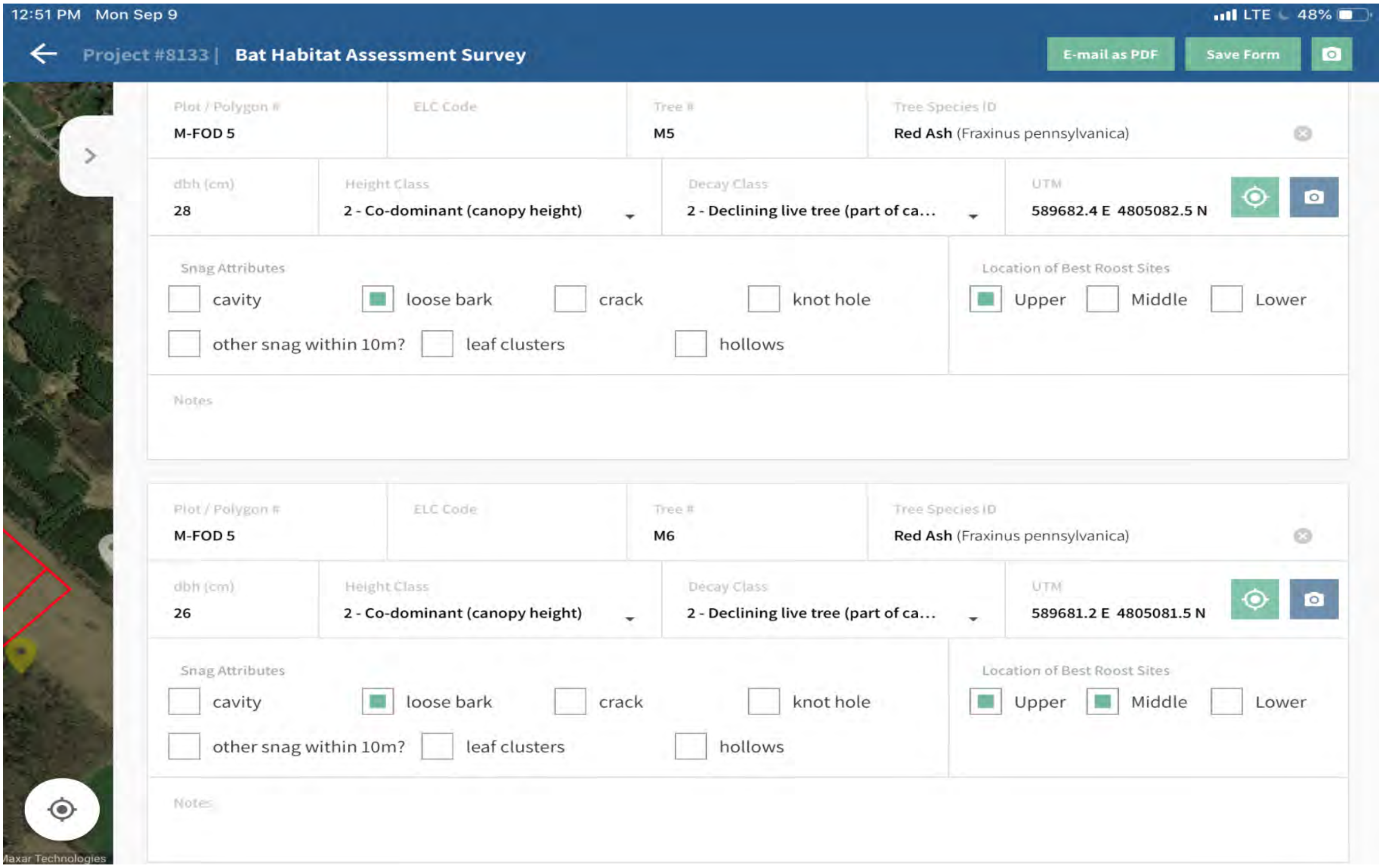
Notes
dead, decay class 5

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
M- FOD 5		M4	**Red Ash** (Fraxinus pennsylvanica)
dbh (cm)	Height Class	Decay Class	UTM
28	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589679.4 E 4805082.0 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | Bat Habitat Assessment Survey

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
M-FOD 5		M5	**Red Ash** (Fraxinus pennsylvanica)
dbh (cm)	Height Class	Decay Class	UTM
28	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589682.4 E 4805082.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

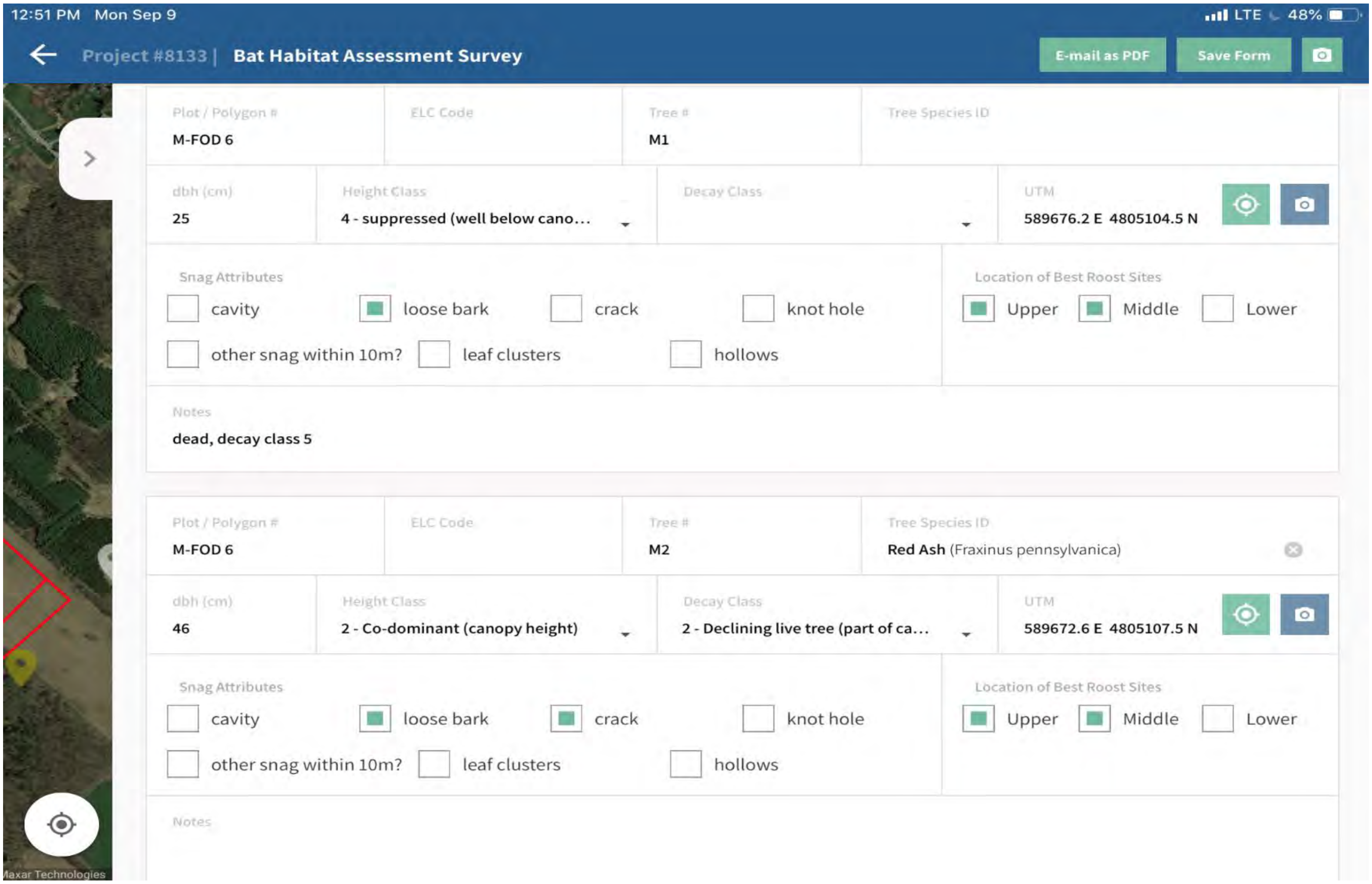
Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
M-FOD 5		M6	**Red Ash** (Fraxinus pennsylvanica)
dbh (cm)	Height Class	Decay Class	UTM
26	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589681.2 E 4805081.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: M-FOD 6
ELC Code:
Tree #: M1
Tree Species ID:
dbh (cm): 25
Height Class: 4 - suppressed (well below cano...
Decay Class:
UTM: 589676.2 E 4805104.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

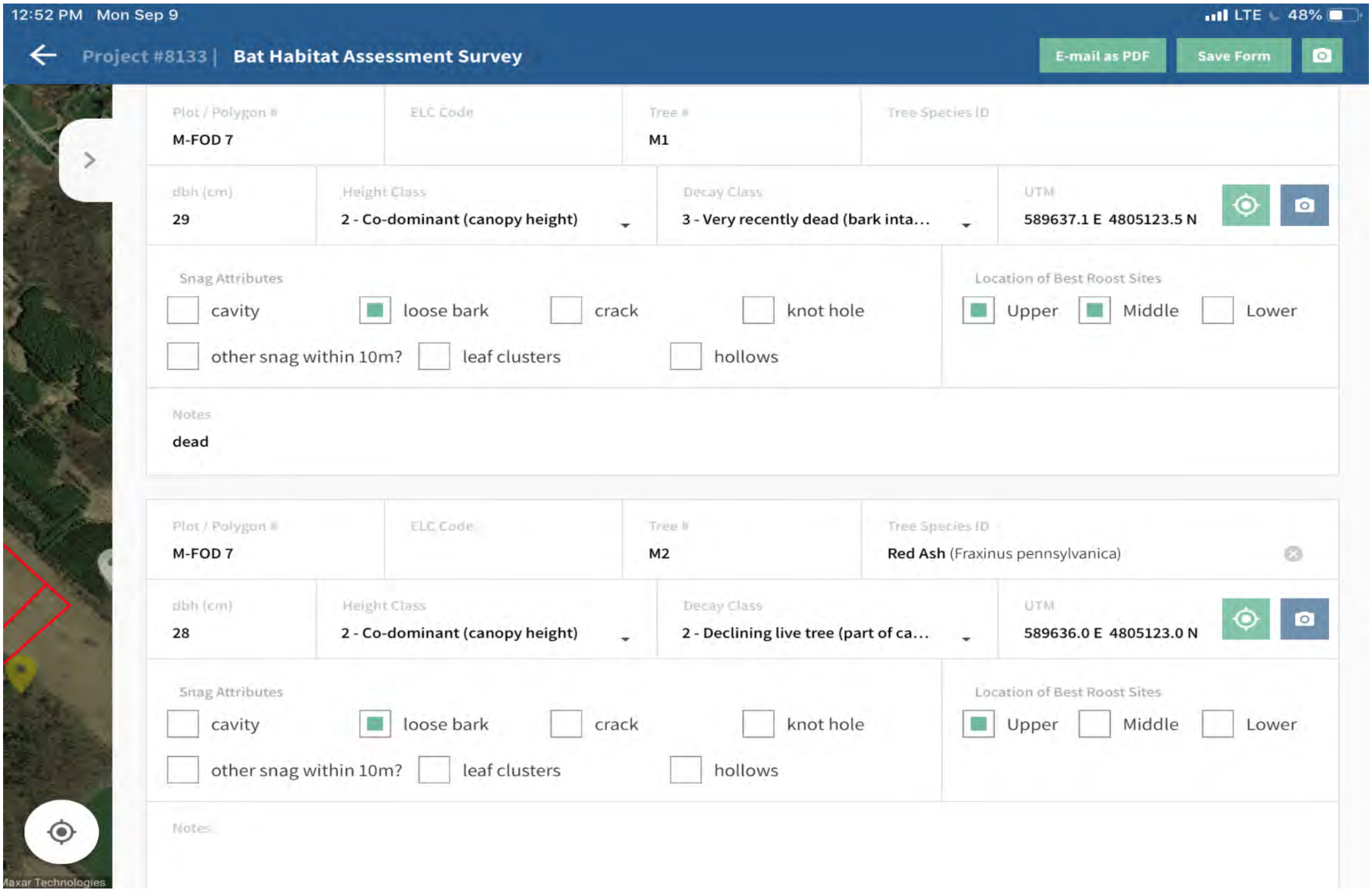
Notes: dead, decay class 5

Plot / Polygon #: M-FOD 6
ELC Code:
Tree #: M2
Tree Species ID: Red Ash (Fraxinus pennsylvanica)
dbh (cm): 46
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589672.6 E 4805107.5 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes:



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: M-FOD 7
ELC Code:
Tree #: M1
Tree Species ID:
dbh (cm): 29
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 3 - Very recently dead (bark inta...
UTM: 589637.1 E 4805123.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

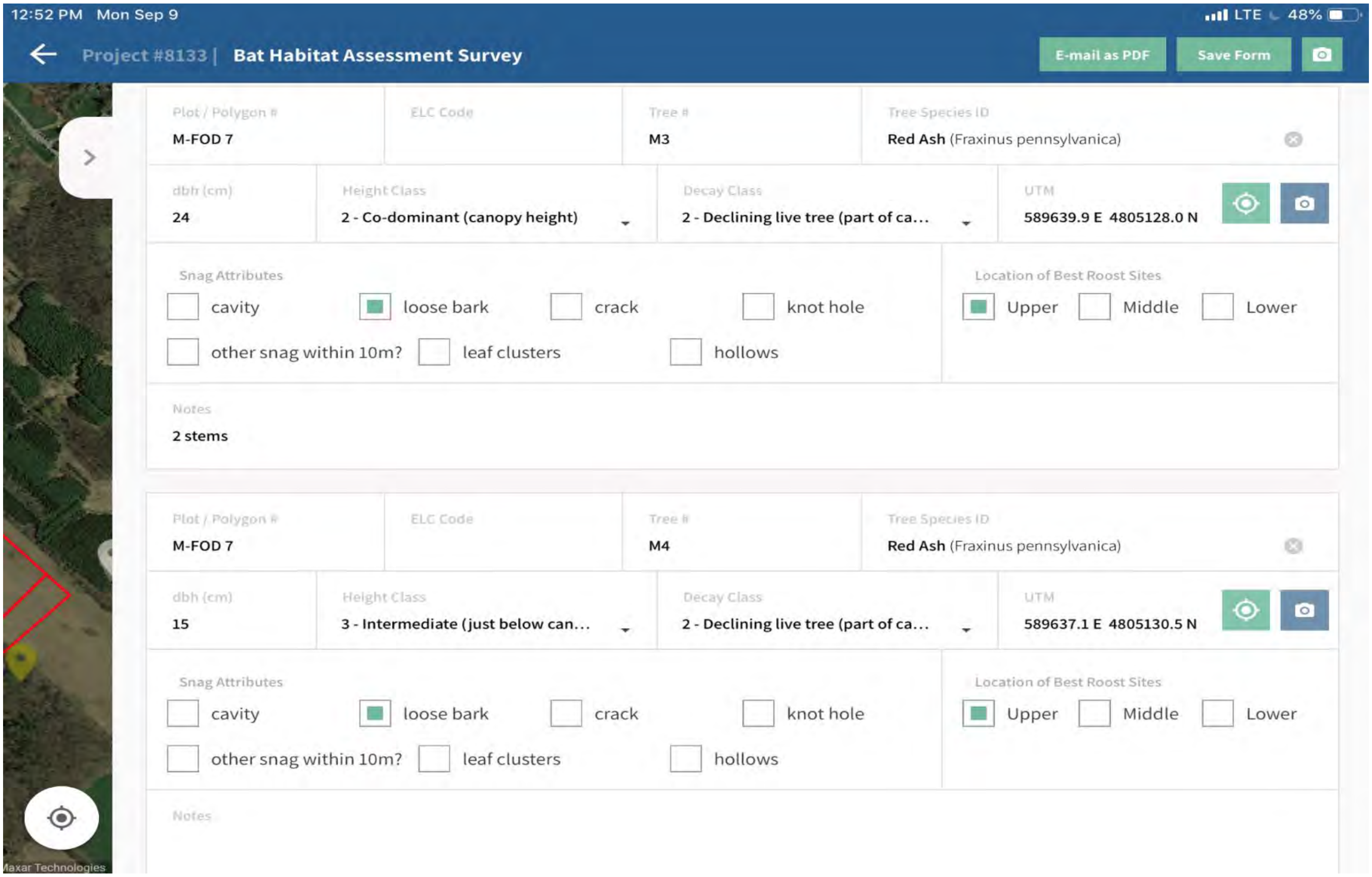
Notes: dead

Plot / Polygon #: M-FOD 7
ELC Code:
Tree #: M2
Tree Species ID: Red Ash (Fraxinus pennsylvanica)
dbh (cm): 28
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589636.0 E 4805123.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes:



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: M-FOD 7
ELC Code:
Tree #: M3
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)

dbh (cm): 24
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca…
UTM: 589639.9 E 4805128.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes: 2 stems

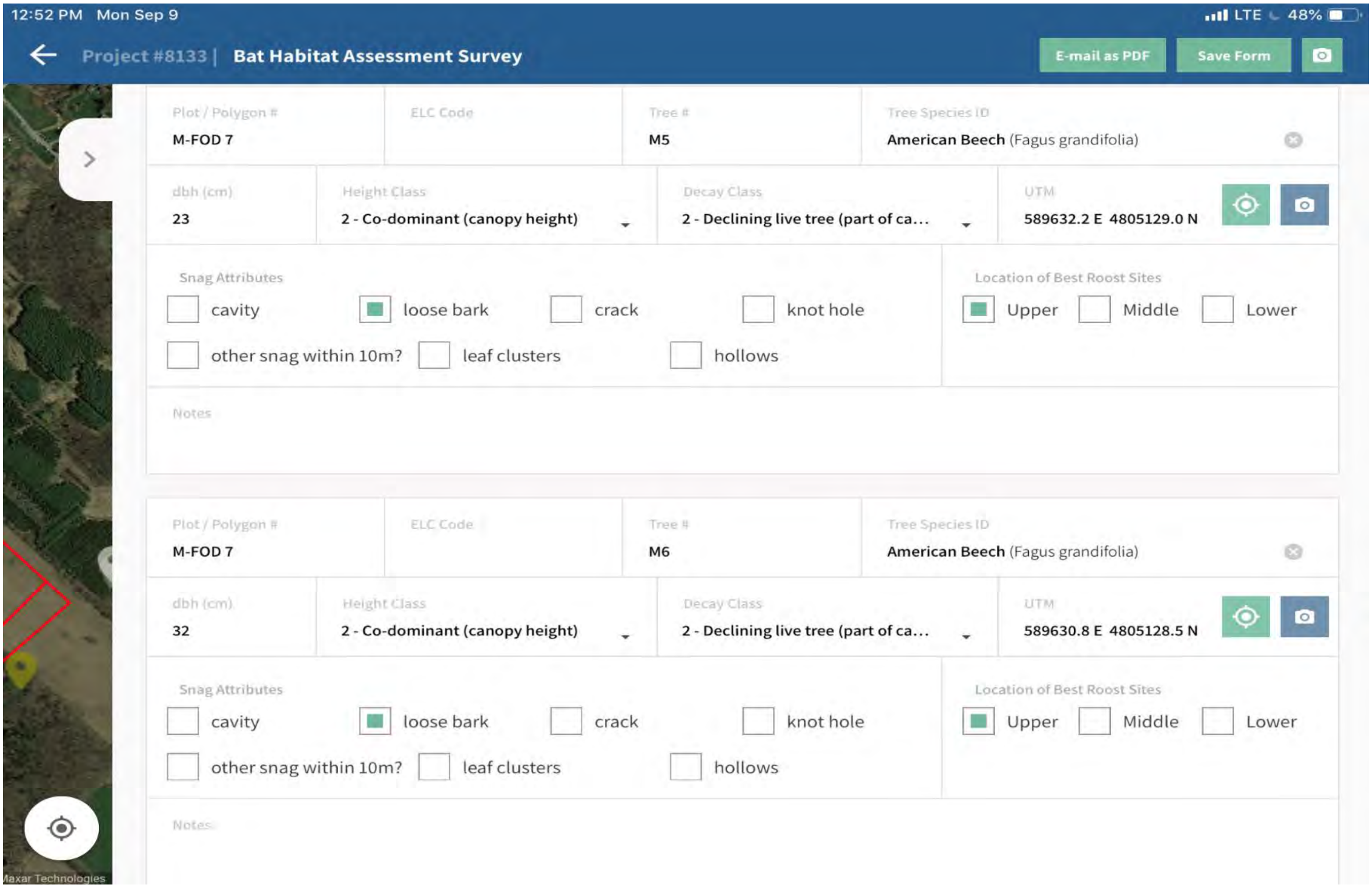
Plot / Polygon #: M-FOD 7
ELC Code:
Tree #: M4
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)

dbh (cm): 15
Height Class: 3 - Intermediate (just below can…
Decay Class: 2 - Declining live tree (part of ca…
UTM: 589637.1 E 4805130.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes:



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: M-FOD 7
ELC Code:
Tree #: M5
Tree Species ID: **American Beech** (Fagus grandifolia)

dbh (cm): 23
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca…
UTM: 589632.2 E 4805129.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes:

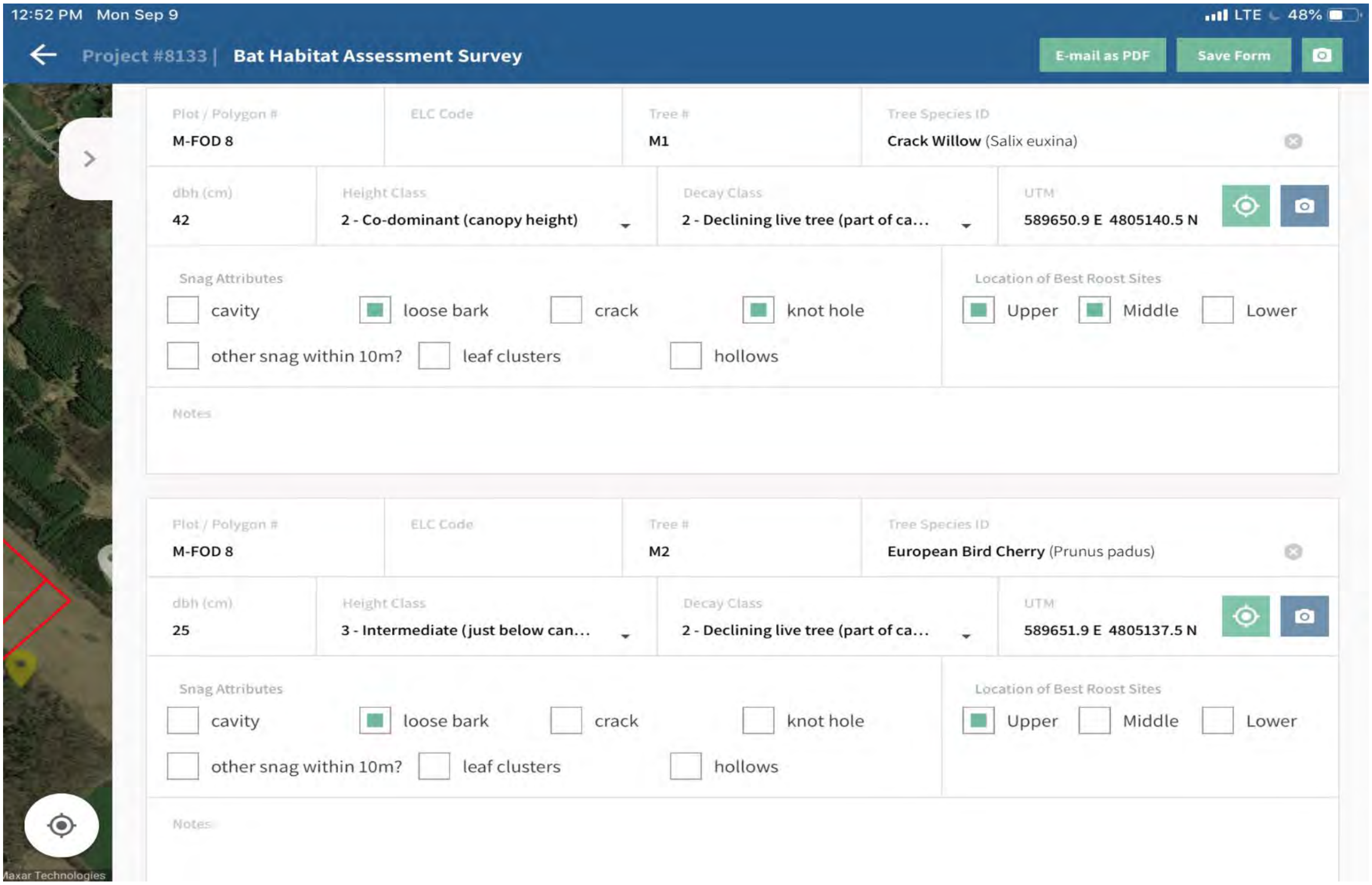
Plot / Polygon #: M-FOD 7
ELC Code:
Tree #: M6
Tree Species ID: **American Beech** (Fagus grandifolia)

dbh (cm): 32
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca…
UTM: 589630.8 E 4805128.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes:



Project #8133 | Bat Habitat Assessment Survey

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
M-FOD 8		M1	**Crack Willow** (Salix euxina)
dbh (cm)	Height Class	Decay Class	UTM
42	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589650.9 E 4805140.5 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☑ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
M-FOD 8		M2	**European Bird Cherry** (Prunus padus)
dbh (cm)	Height Class	Decay Class	UTM
25	3 - Intermediate (just below can...	2 - Declining live tree (part of ca...	589651.9 E 4805137.5 N

Snag Attributes

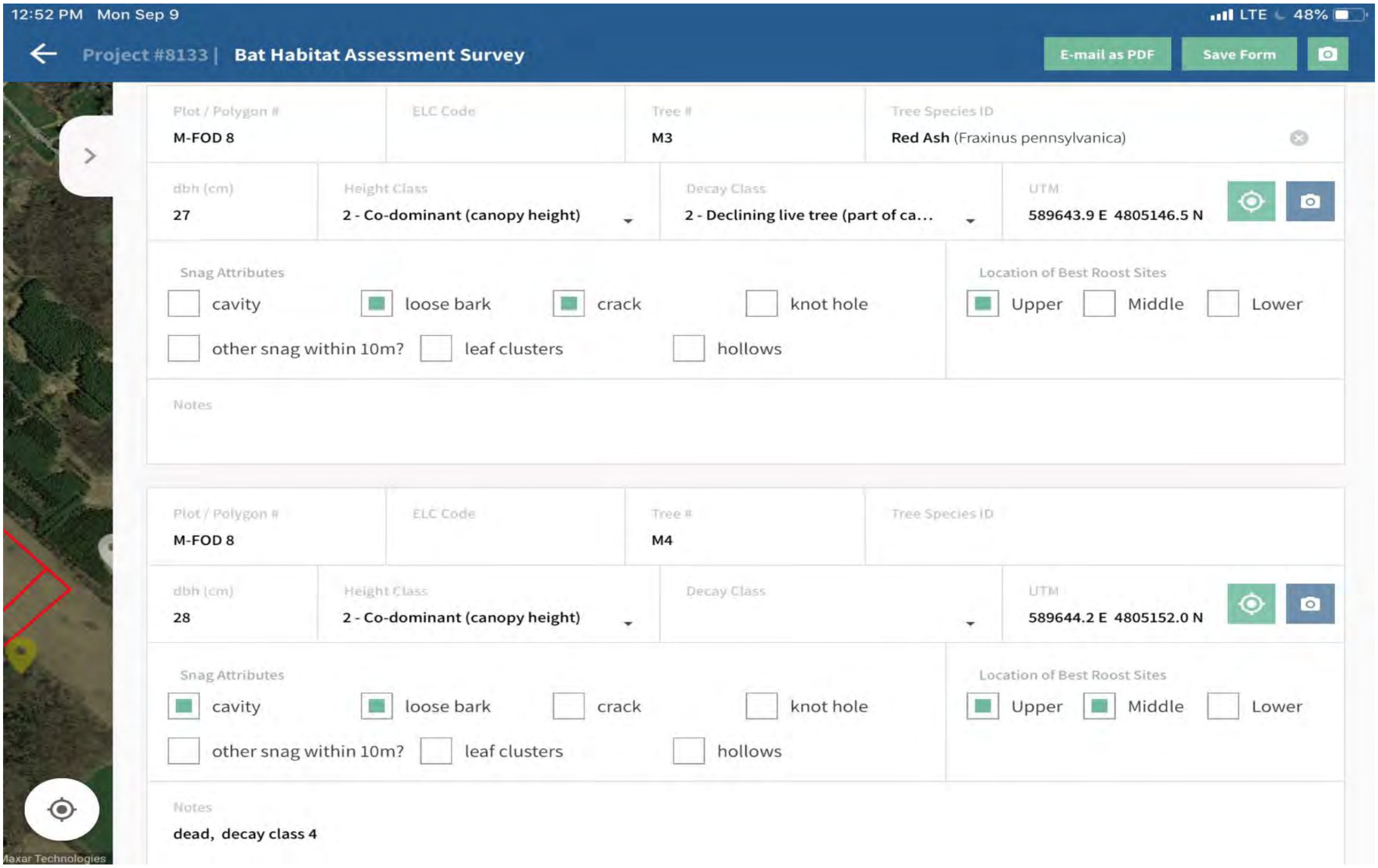
☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | Bat Habitat Assessment Survey

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
M-FOD 8		M3	**Red Ash** (Fraxinus pennsylvanica)
dbh (cm)	Height Class	Decay Class	UTM
27	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589643.9 E 4805146.5 N

Snag Attributes

☐ cavity ☑ loose bark ☑ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
M-FOD 8		M4	
dbh (cm)	Height Class	Decay Class	UTM
28	2 - Co-dominant (canopy height)		589644.2 E 4805152.0 N

Snag Attributes

☑ cavity ☑ loose bark ☐ crack ☐ knot hole

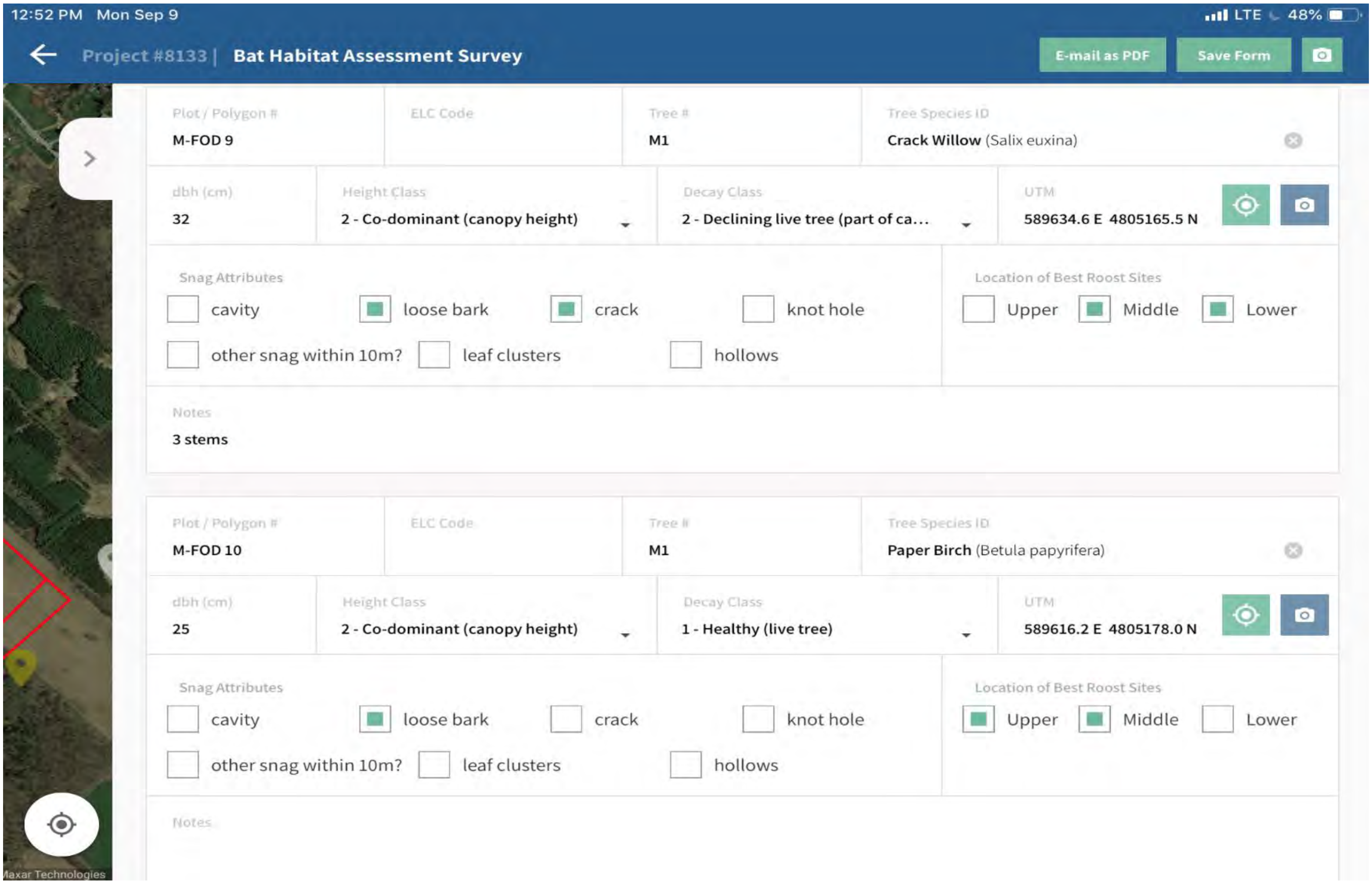
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes

dead, decay class 4



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: M-FOD 9
ELC Code:
Tree #: M1
Tree Species ID: **Crack Willow** (Salix euxina)

dbh (cm): 32
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589634.6 E 4805165.5 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☑ Middle ☑ Lower

Notes: 3 stems

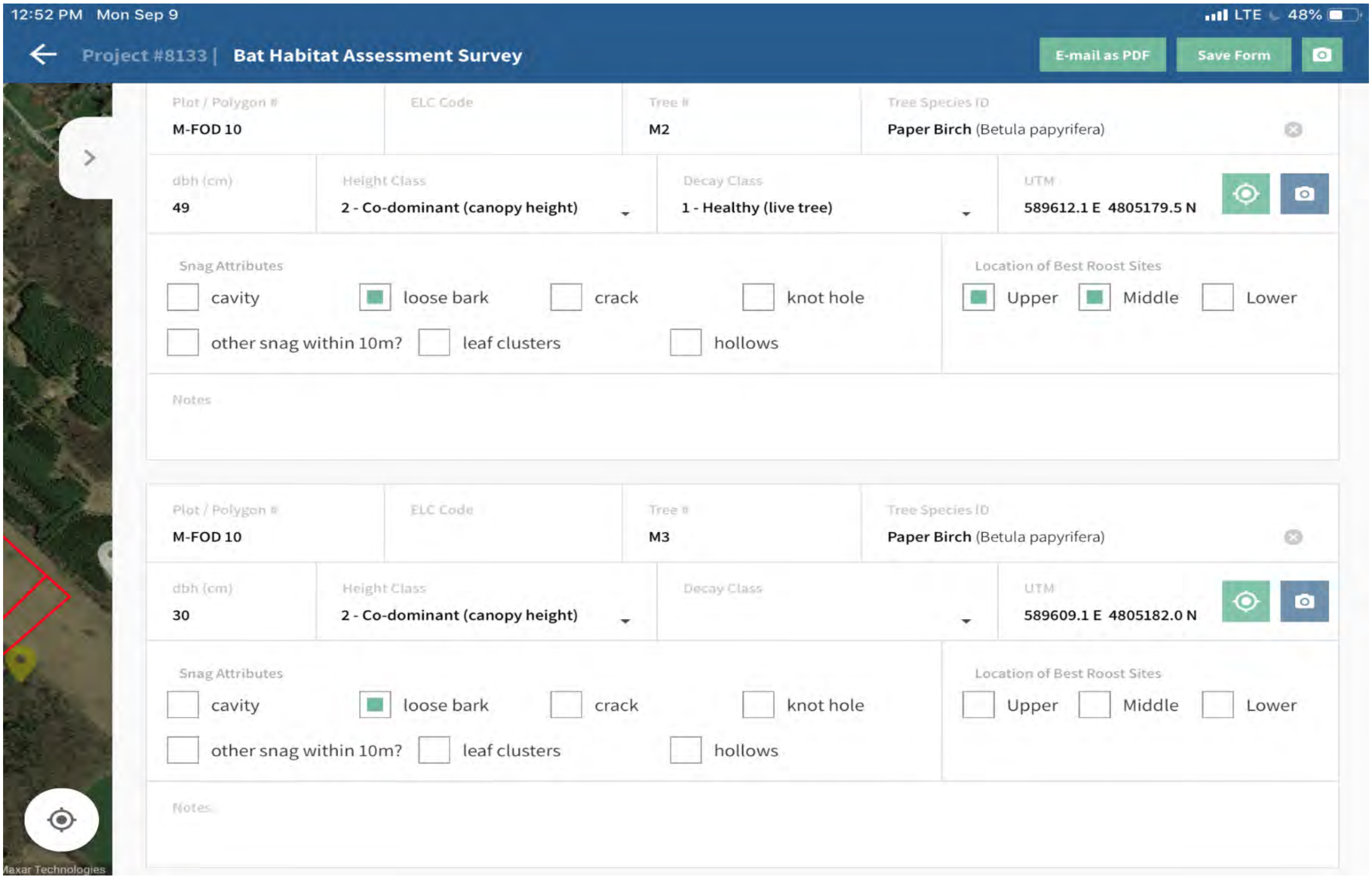
Plot / Polygon #: M-FOD 10
ELC Code:
Tree #: M1
Tree Species ID: **Paper Birch** (Betula papyrifera)

dbh (cm): 25
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 1 - Healthy (live tree)
UTM: 589616.2 E 4805178.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes:



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: M-FOD 10
ELC Code:
Tree #: M2
Tree Species ID: **Paper Birch** (Betula papyrifera)

dbh (cm): 49
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 1 - Healthy (live tree)
UTM: 589612.1 E 4805179.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes:

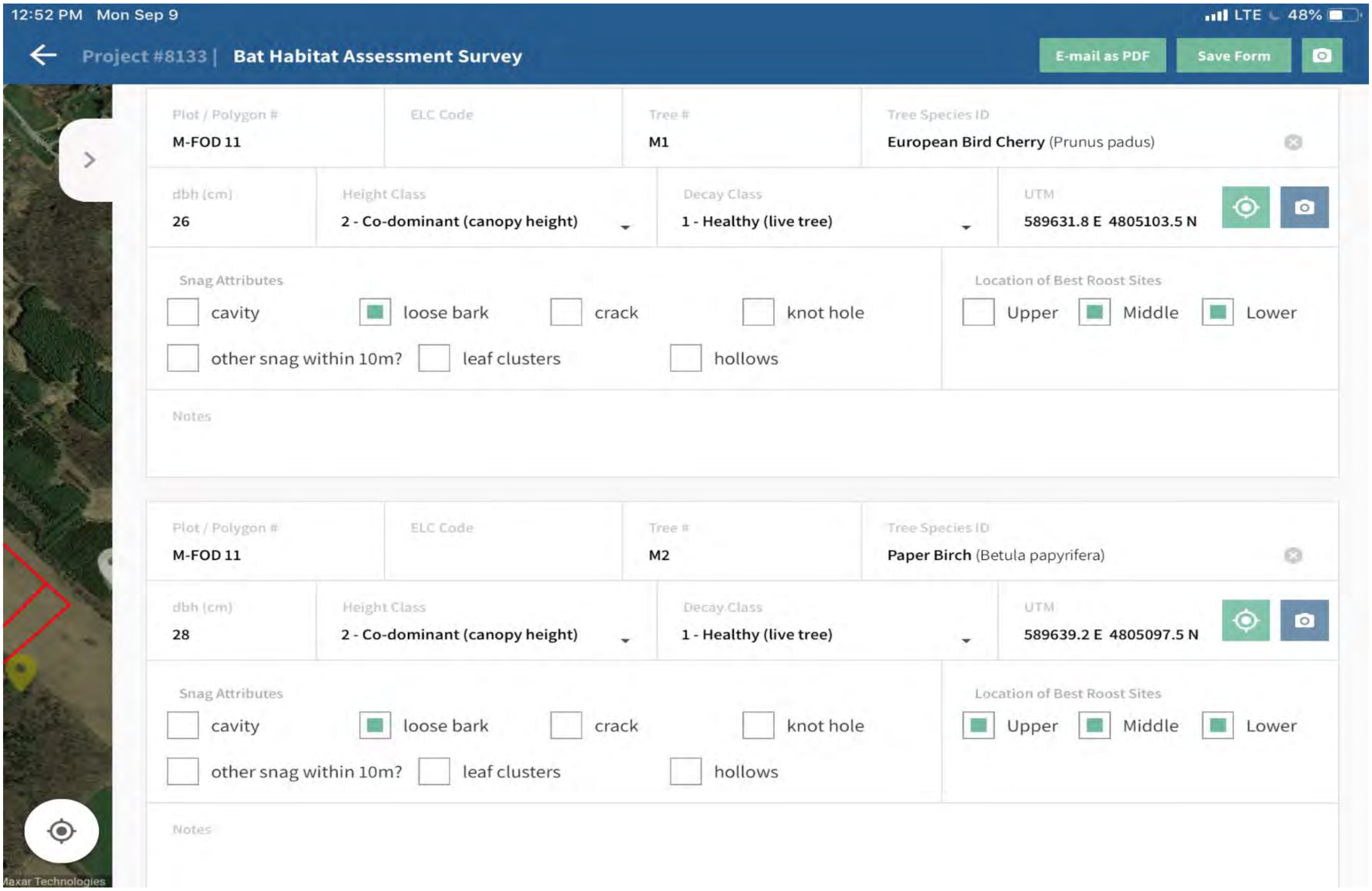
Plot / Polygon #: M-FOD 10
ELC Code:
Tree #: M3
Tree Species ID: **Paper Birch** (Betula papyrifera)

dbh (cm): 30
Height Class: 2 - Co-dominant (canopy height)
Decay Class:
UTM: 589609.1 E 4805182.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☐ Middle ☐ Lower

Notes:



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: M-FOD 11
ELC Code:
Tree #: M1
Tree Species ID: **European Bird Cherry** (Prunus padus)
dbh (cm): 26
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 1 - Healthy (live tree)
UTM: 589631.8 E 4805103.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☑ Middle ☑ Lower

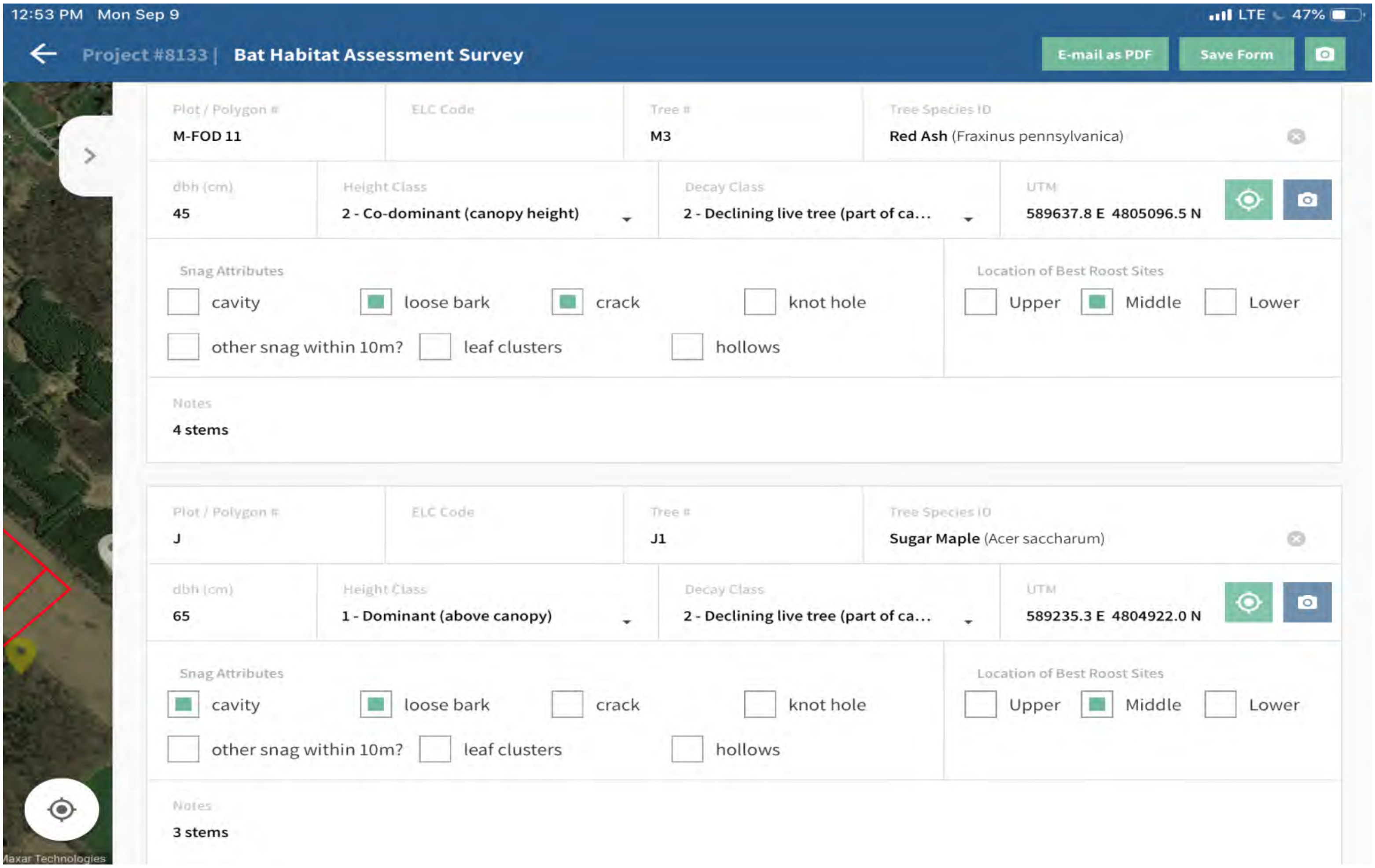
Notes:

Plot / Polygon #: M-FOD 11
ELC Code:
Tree #: M2
Tree Species ID: **Paper Birch** (Betula papyrifera)
dbh (cm): 28
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 1 - Healthy (live tree)
UTM: 589639.2 E 4805097.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☑ Lower

Notes:



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: M-FOD 11
ELC Code:
Tree #: M3
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)
dbh (cm): 45
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589637.8 E 4805096.5 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☑ Middle ☐ Lower

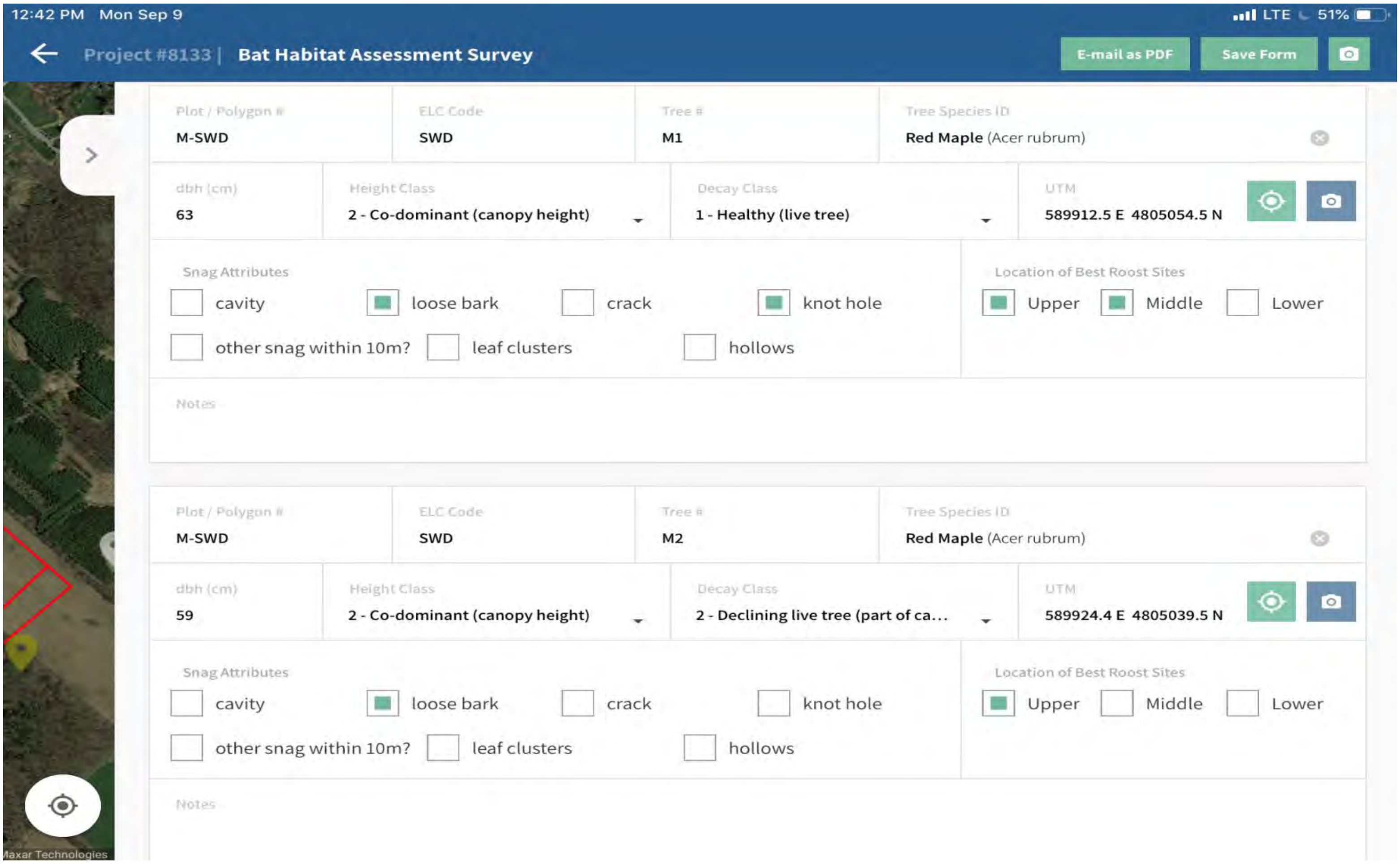
Notes: 4 stems

Plot / Polygon #: J
ELC Code:
Tree #: J1
Tree Species ID: **Sugar Maple** (Acer saccharum)
dbh (cm): 65
Height Class: 1 - Dominant (above canopy)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589235.3 E 4804922.0 N

Snag Attributes
☑ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☑ Middle ☐ Lower

Notes: 3 stems



Plot / Polygon #	ELC Code	Tree #	Tree Species ID
M-SWD	SWD	M1	**Red Maple** (Acer rubrum)

dbh (cm)	Height Class	Decay Class	UTM
63	2 - Co-dominant (canopy height)	1 - Healthy (live tree)	589912.5 E 4805054.5 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
M-SWD	SWD	M2	**Red Maple** (Acer rubrum)

dbh (cm)	Height Class	Decay Class	UTM
59	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589924.4 E 4805039.5 N

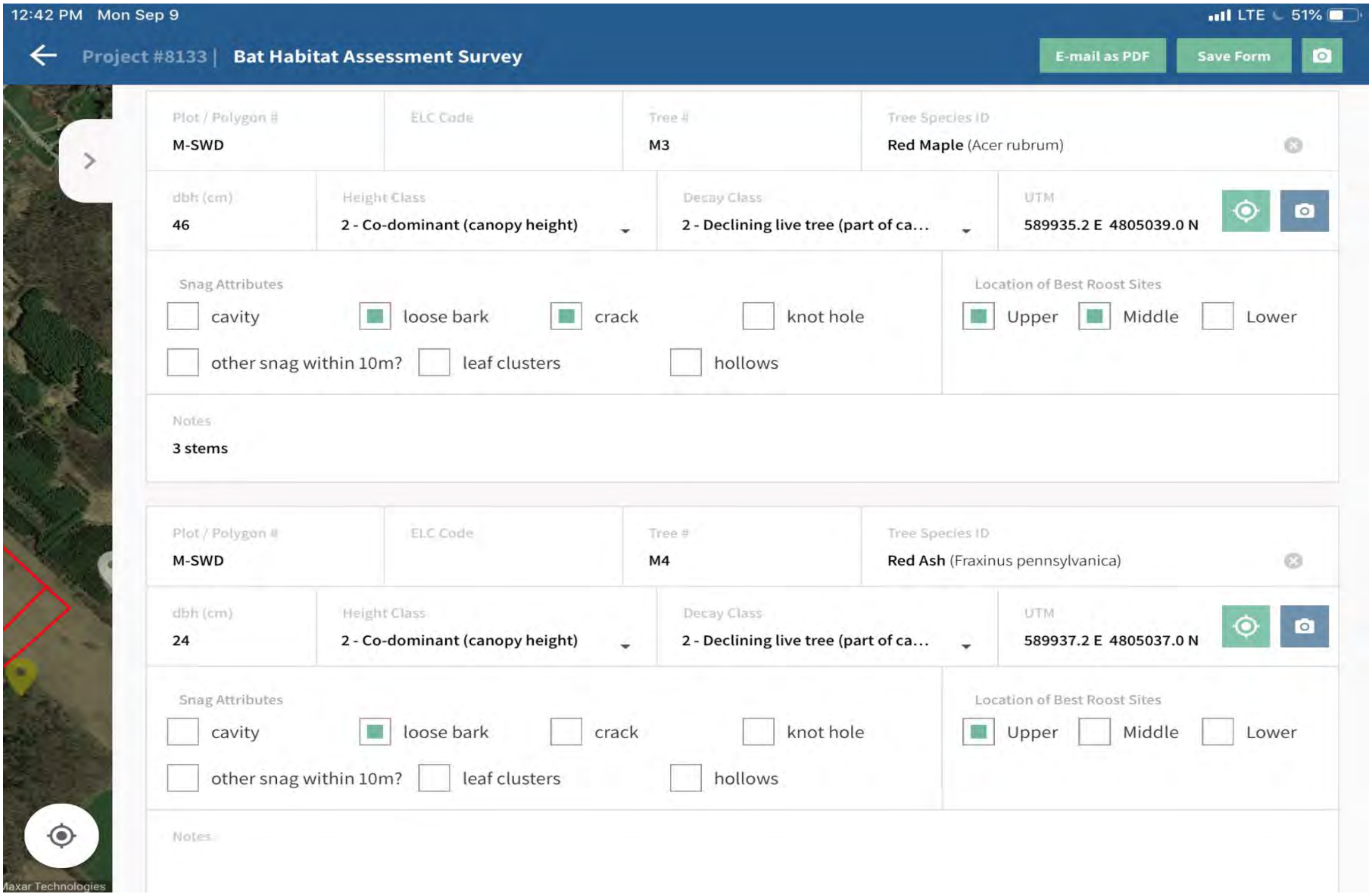
Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes



Plot / Polygon #	ELC Code	Tree #	Tree Species ID
M-SWD		M3	**Red Maple** (Acer rubrum)

dbh (cm)	Height Class	Decay Class	UTM
46	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589935.2 E 4805039.0 N

Snag Attributes

☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes

3 stems

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
M-SWD		M4	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
24	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589937.2 E 4805037.0 N

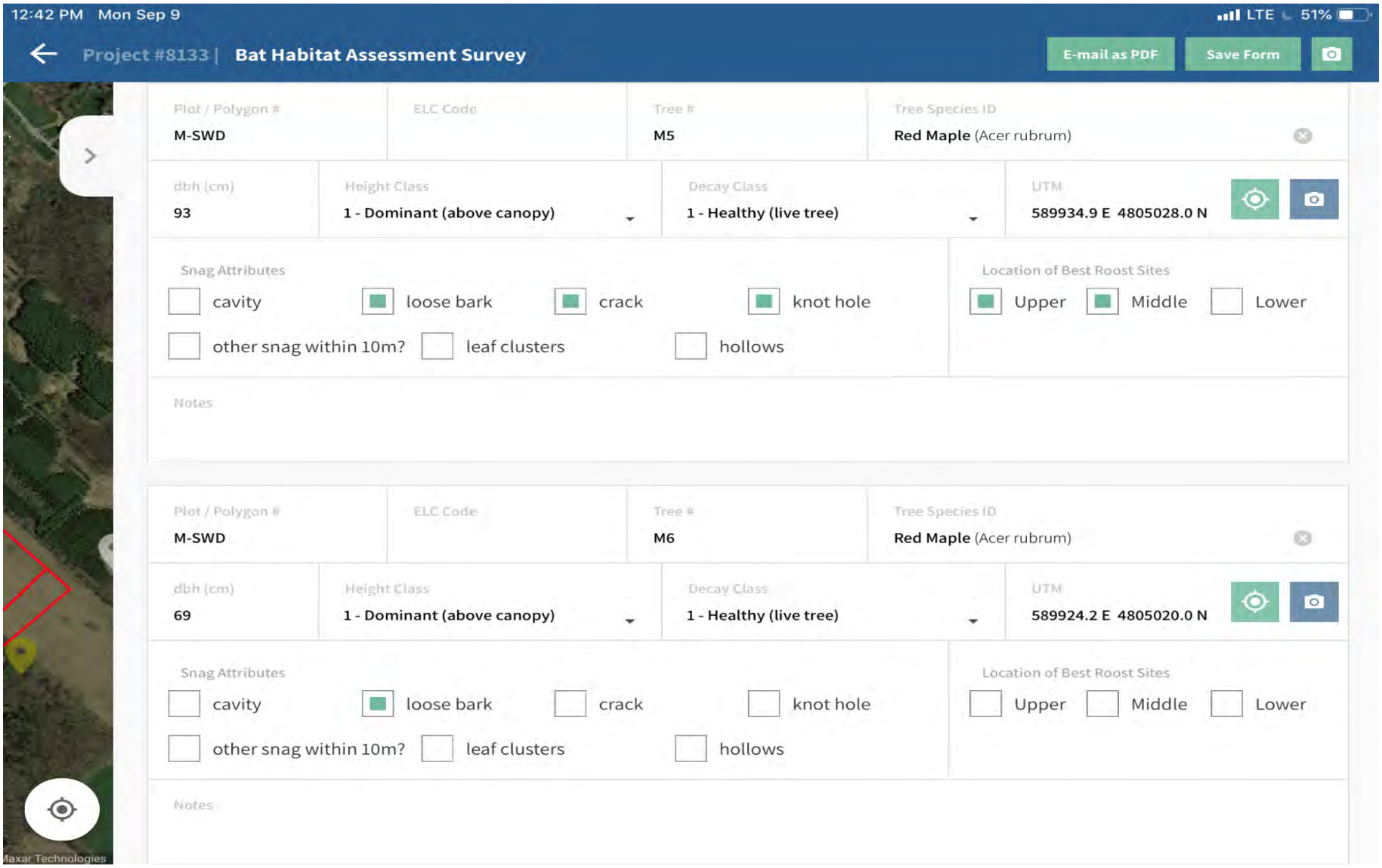
Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: M-SWD
ELC Code:
Tree #: M5
Tree Species ID: **Red Maple** (Acer rubrum)
dbh (cm): 93
Height Class: 1 - Dominant (above canopy)
Decay Class: 1 - Healthy (live tree)
UTM: 589934.9 E 4805028.0 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

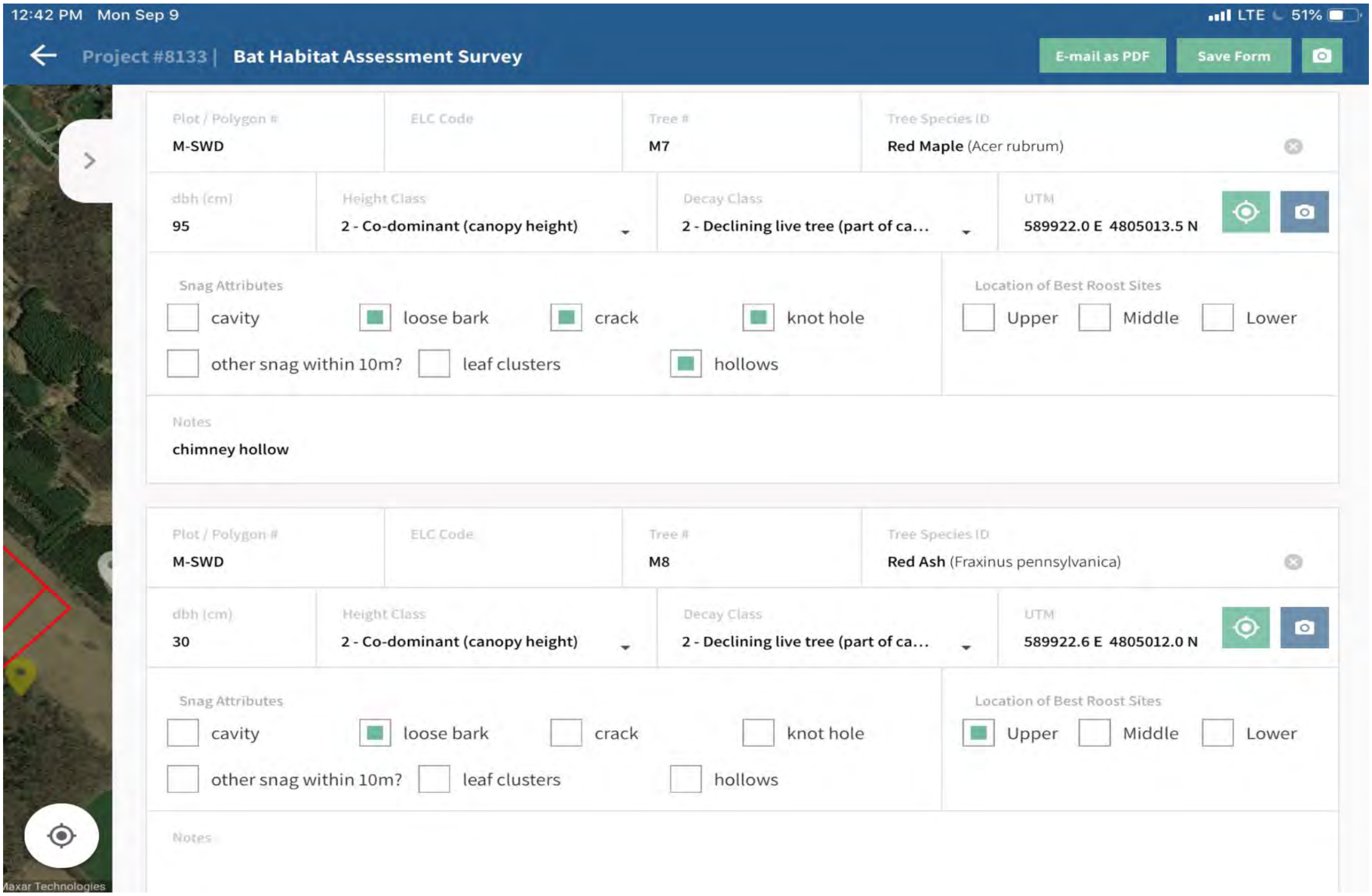
Notes:

Plot / Polygon #: M-SWD
ELC Code:
Tree #: M6
Tree Species ID: **Red Maple** (Acer rubrum)
dbh (cm): 69
Height Class: 1 - Dominant (above canopy)
Decay Class: 1 - Healthy (live tree)
UTM: 589924.2 E 4805020.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☐ Middle ☐ Lower

Notes:



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: M-SWD
ELC Code:
Tree #: M7
Tree Species ID: **Red Maple** (Acer rubrum)
dbh (cm): 95
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589922.0 E 4805013.5 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☑ hollows

Location of Best Roost Sites
☐ Upper ☐ Middle ☐ Lower

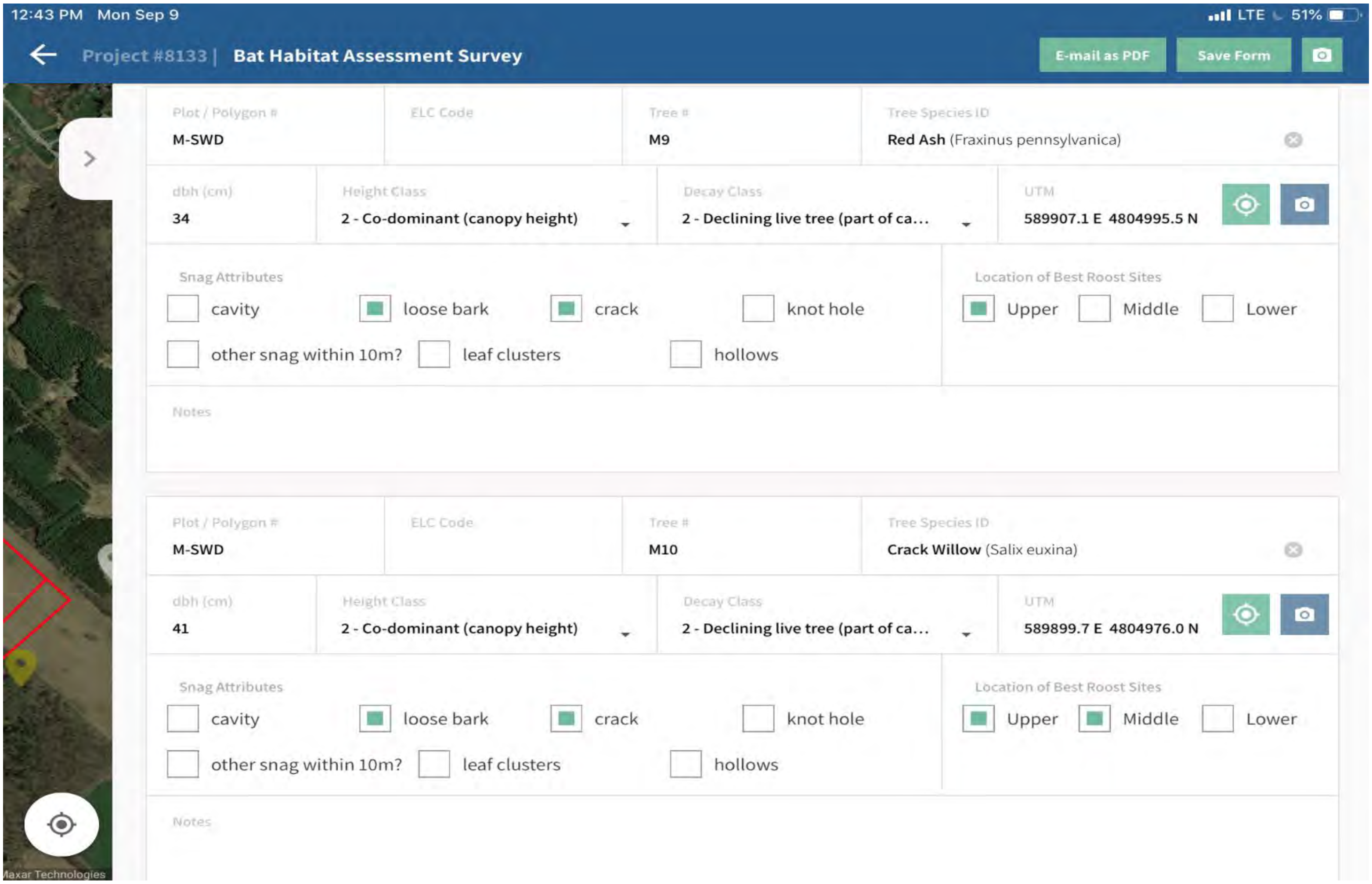
Notes: chimney hollow

Plot / Polygon #: M-SWD
ELC Code:
Tree #: M8
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)
dbh (cm): 30
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589922.6 E 4805012.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes:



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
M-SWD		M9	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
34	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589907.1 E 4804995.5 N

Snag Attributes

☐ cavity ☑ loose bark ☑ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
M-SWD		M10	**Crack Willow** (Salix euxina)

dbh (cm)	Height Class	Decay Class	UTM
41	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589899.7 E 4804976.0 N

Snag Attributes

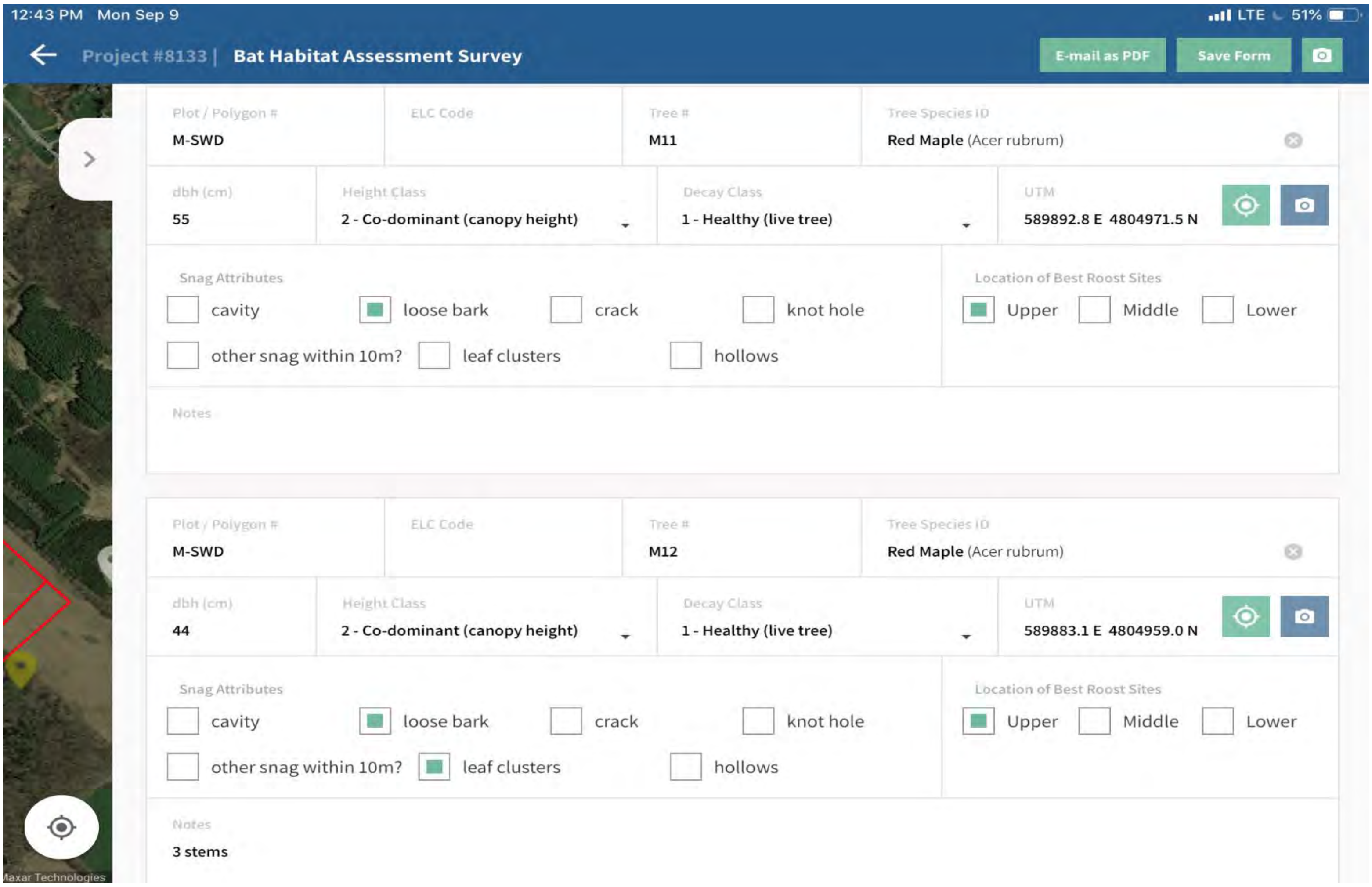
☐ cavity ☑ loose bark ☑ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
M-SWD		M11	**Red Maple** (Acer rubrum)

dbh (cm)	Height Class	Decay Class	UTM
55	2 - Co-dominant (canopy height)	1 - Healthy (live tree)	589892.8 E 4804971.5 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
M-SWD		M12	**Red Maple** (Acer rubrum)

dbh (cm)	Height Class	Decay Class	UTM
44	2 - Co-dominant (canopy height)	1 - Healthy (live tree)	589883.1 E 4804959.0 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole

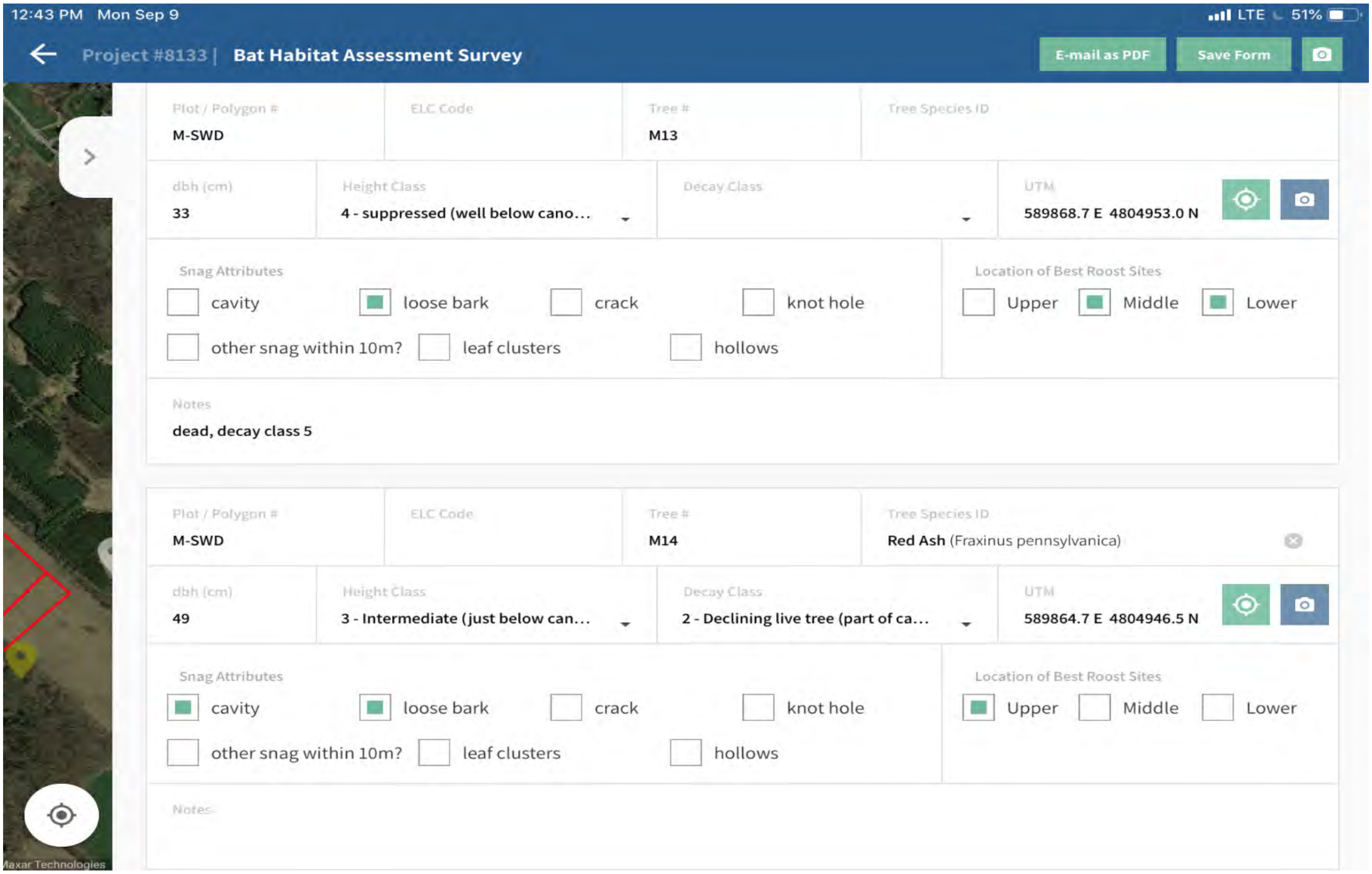
☐ other snag within 10m? ☑ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes

3 stems



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
M-SWD		M13	

dbh (cm)	Height Class	Decay Class	UTM
33	4 - suppressed (well below cano...		589868.7 E 4804953.0 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☐ Upper ☑ Middle ☑ Lower

Notes

dead, decay class 5

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
M-SWD		M14	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
49	3 - Intermediate (just below can...	2 - Declining live tree (part of ca...	589864.7 E 4804946.5 N

Snag Attributes

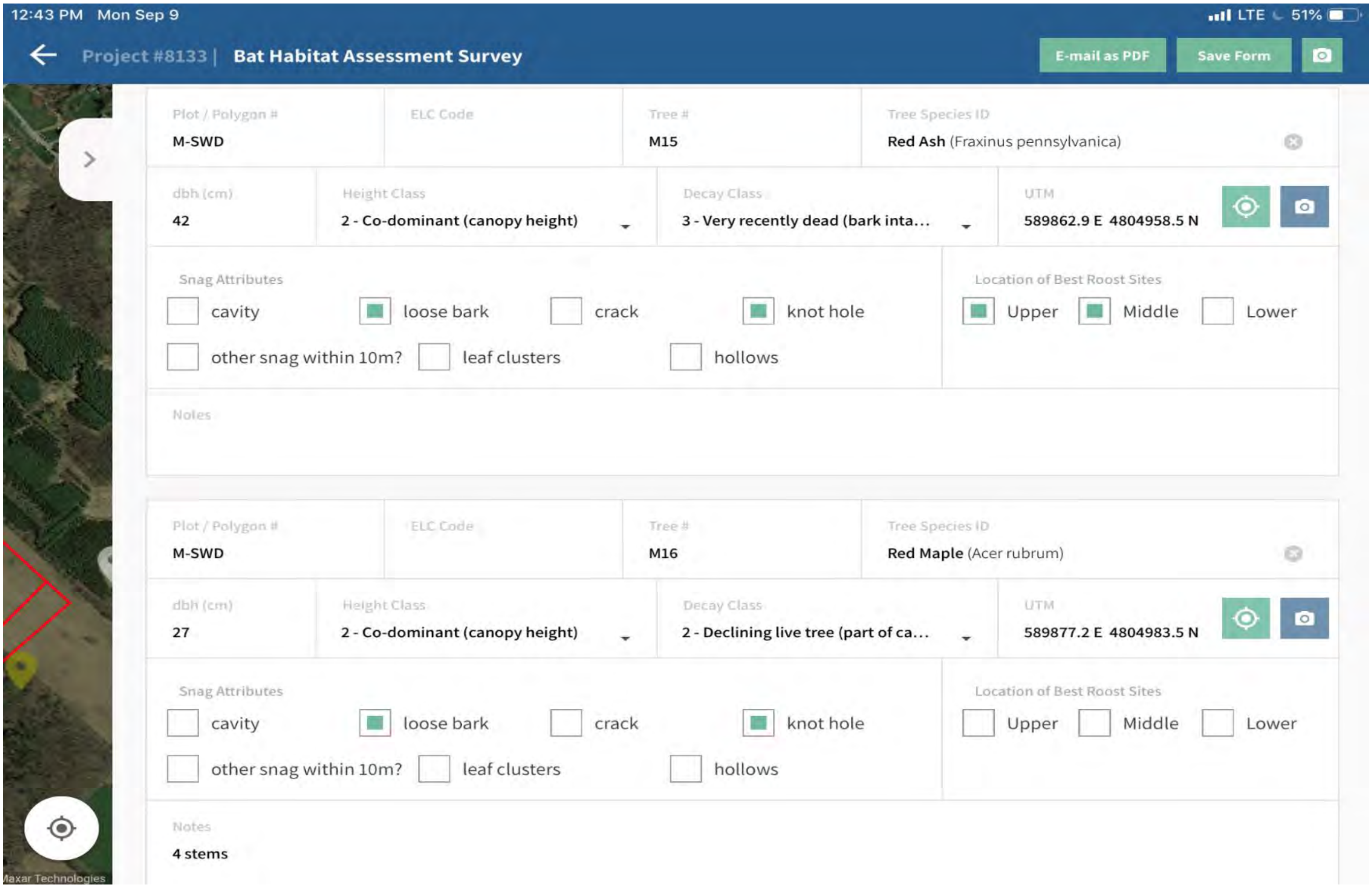
☑ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
M-SWD		M15	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
42	2 - Co-dominant (canopy height)	3 - Very recently dead (bark inta...	589862.9 E 4804958.5 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☑ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
M-SWD		M16	**Red Maple** (Acer rubrum)

dbh (cm)	Height Class	Decay Class	UTM
27	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	589877.2 E 4804983.5 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☑ knot hole

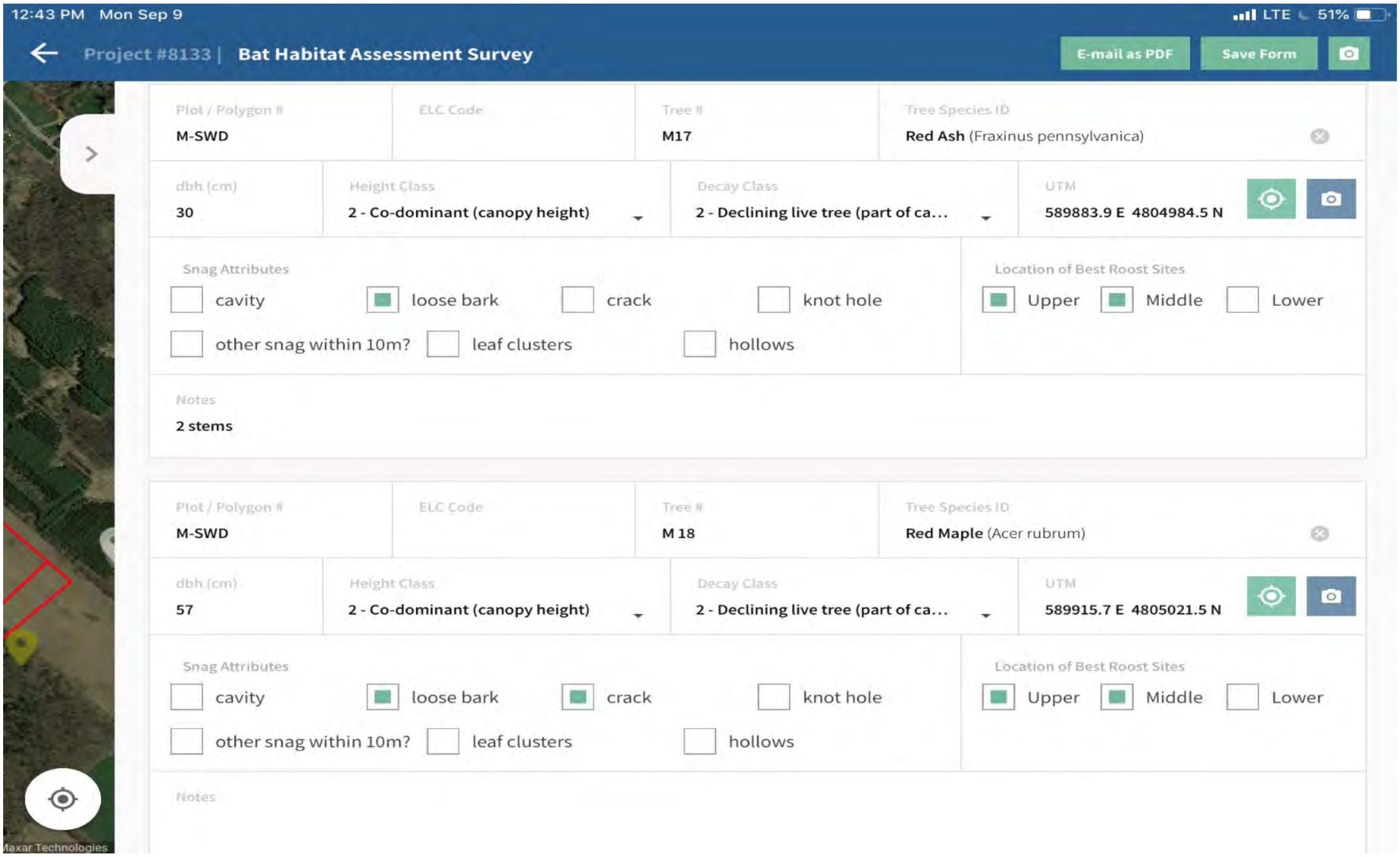
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☐ Upper ☐ Middle ☐ Lower

Notes

4 stems



Bat Habitat Assessment Survey

Plot / Polygon #: M-SWD
ELC Code:
Tree #: M17
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)

dbh (cm): 30
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589883.9 E 4804984.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes: 2 stems

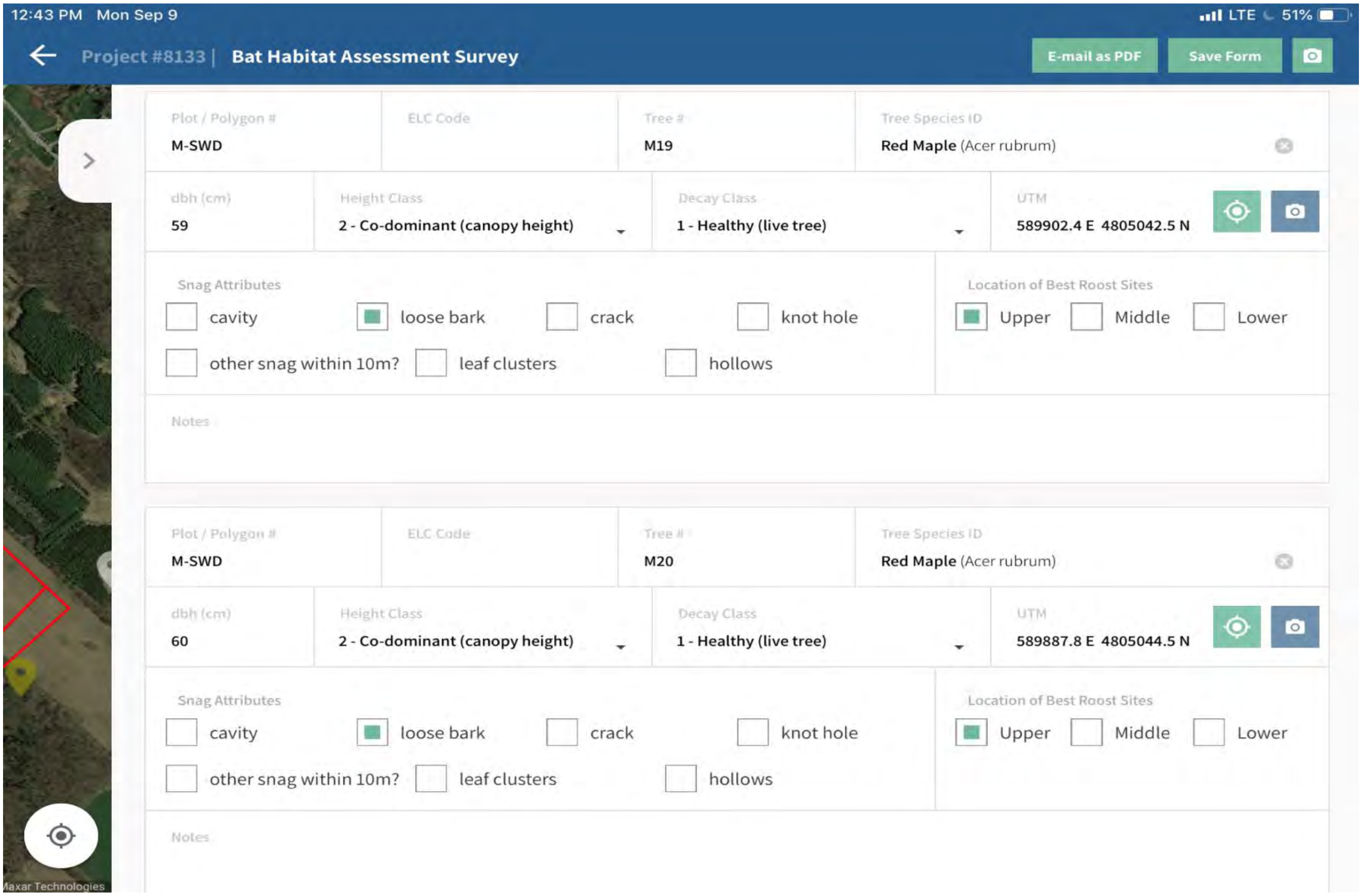
Plot / Polygon #: M-SWD
ELC Code:
Tree #: M 18
Tree Species ID: **Red Maple** (Acer rubrum)

dbh (cm): 57
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589915.7 E 4805021.5 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes:



Bat Habitat Assessment Survey

Plot / Polygon #: M-SWD
ELC Code:
Tree #: M19
Tree Species ID: **Red Maple** (Acer rubrum)

dbh (cm): 59
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 1 - Healthy (live tree)
UTM: 589902.4 E 4805042.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes:

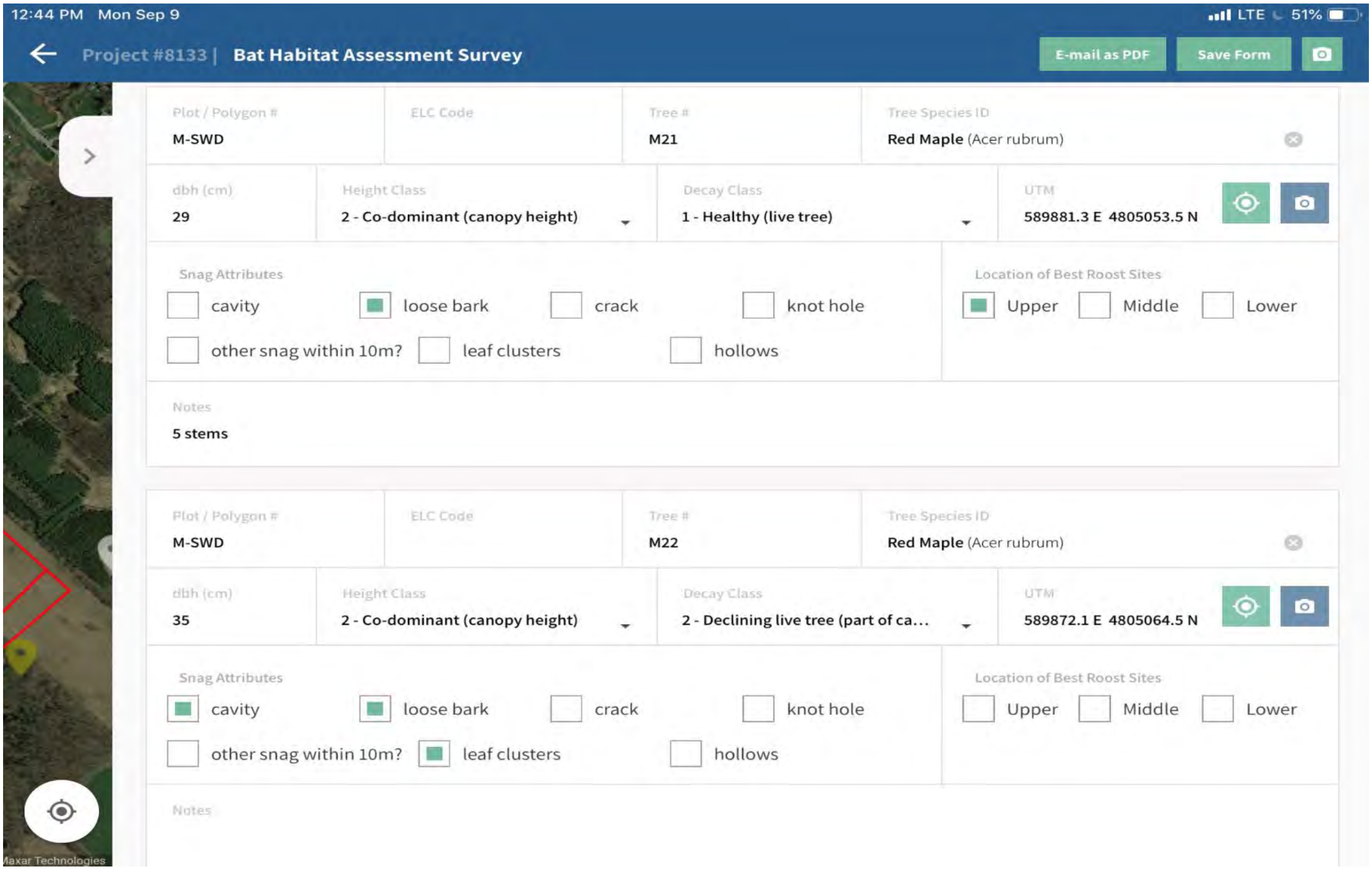
Plot / Polygon #: M-SWD
ELC Code:
Tree #: M20
Tree Species ID: **Red Maple** (Acer rubrum)

dbh (cm): 60
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 1 - Healthy (live tree)
UTM: 589887.8 E 4805044.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes:



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #
M-SWD

ELC Code

Tree #
M21

Tree Species ID
Red Maple (Acer rubrum)

dbh (cm)
29

Height Class
2 - Co-dominant (canopy height)

Decay Class
1 - Healthy (live tree)

UTM
589881.3 E 4805053.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes
5 stems

Plot / Polygon #
M-SWD

ELC Code

Tree #
M22

Tree Species ID
Red Maple (Acer rubrum)

dbh (cm)
35

Height Class
2 - Co-dominant (canopy height)

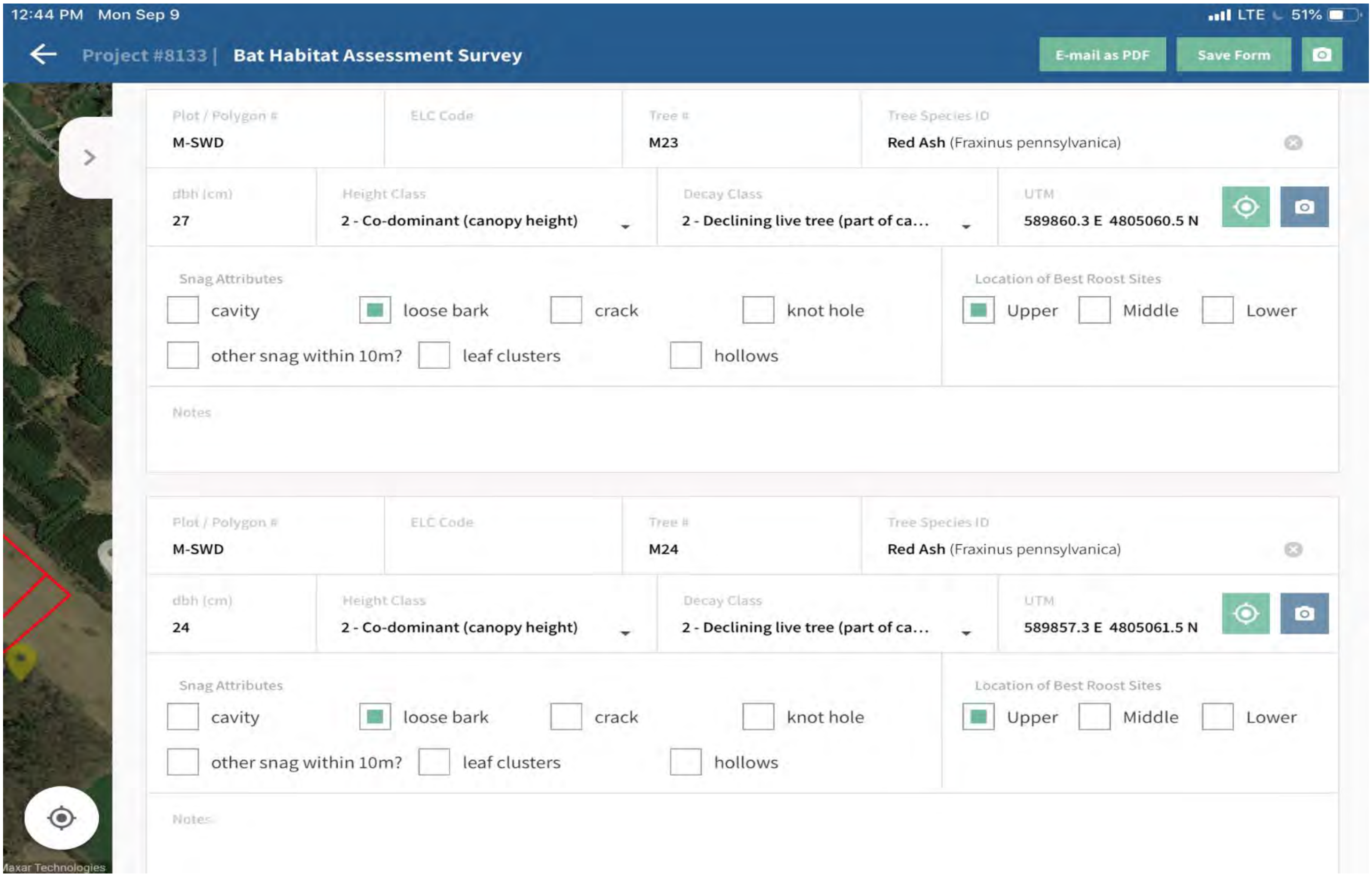
Decay Class
2 - Declining live tree (part of ca...

UTM
589872.1 E 4805064.5 N

Snag Attributes
☑ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☑ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #
M-SWD

ELC Code

Tree #
M23

Tree Species ID
Red Ash (Fraxinus pennsylvanica)

dbh (cm)
27

Height Class
2 - Co-dominant (canopy height)

Decay Class
2 - Declining live tree (part of ca...

UTM
589860.3 E 4805060.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes

Plot / Polygon #
M-SWD

ELC Code

Tree #
M24

Tree Species ID
Red Ash (Fraxinus pennsylvanica)

dbh (cm)
24

Height Class
2 - Co-dominant (canopy height)

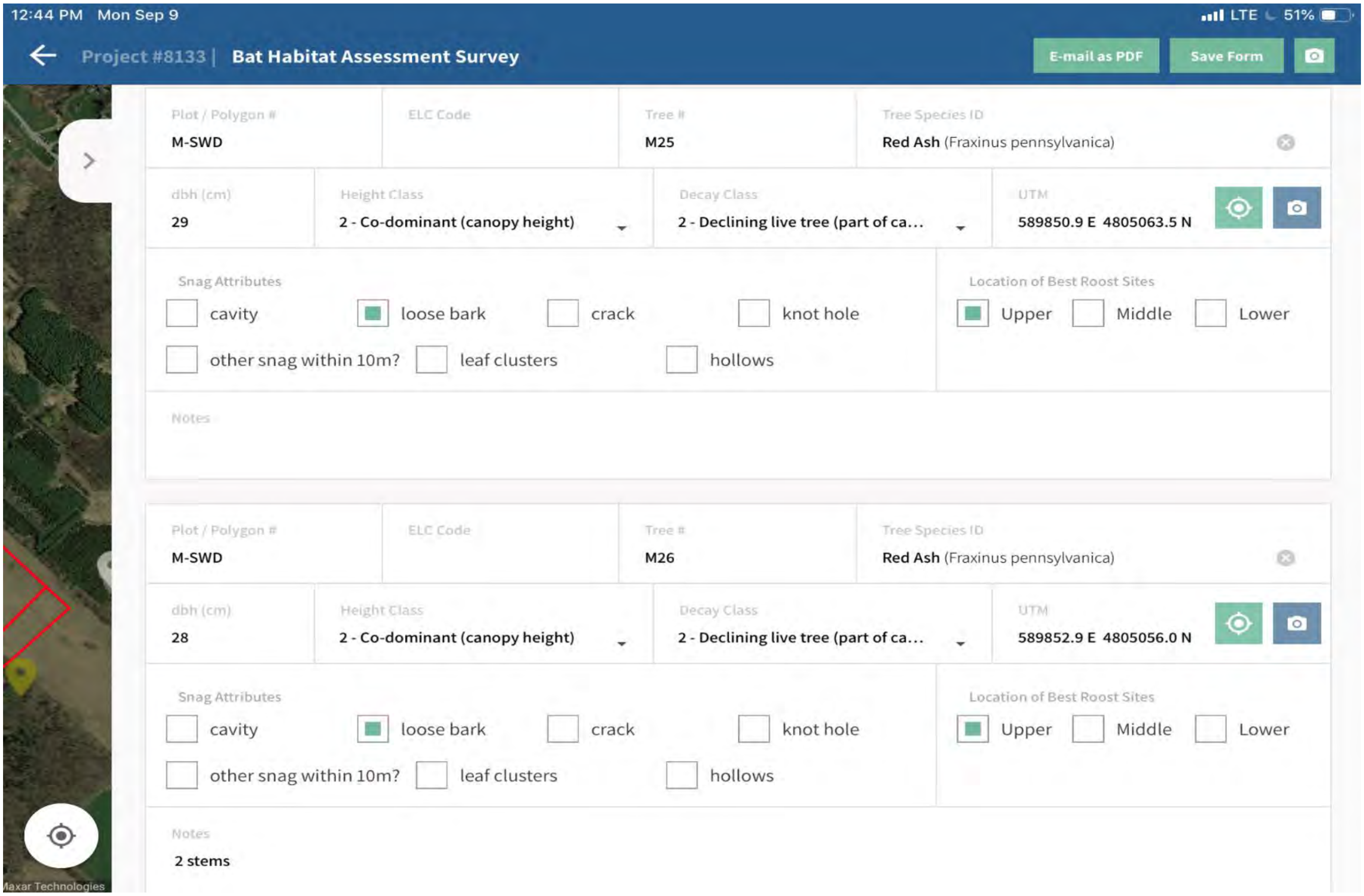
Decay Class
2 - Declining live tree (part of ca...

UTM
589857.3 E 4805061.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: M-SWD
ELC Code:
Tree #: M25
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)
dbh (cm): 29
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589850.9 E 4805063.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

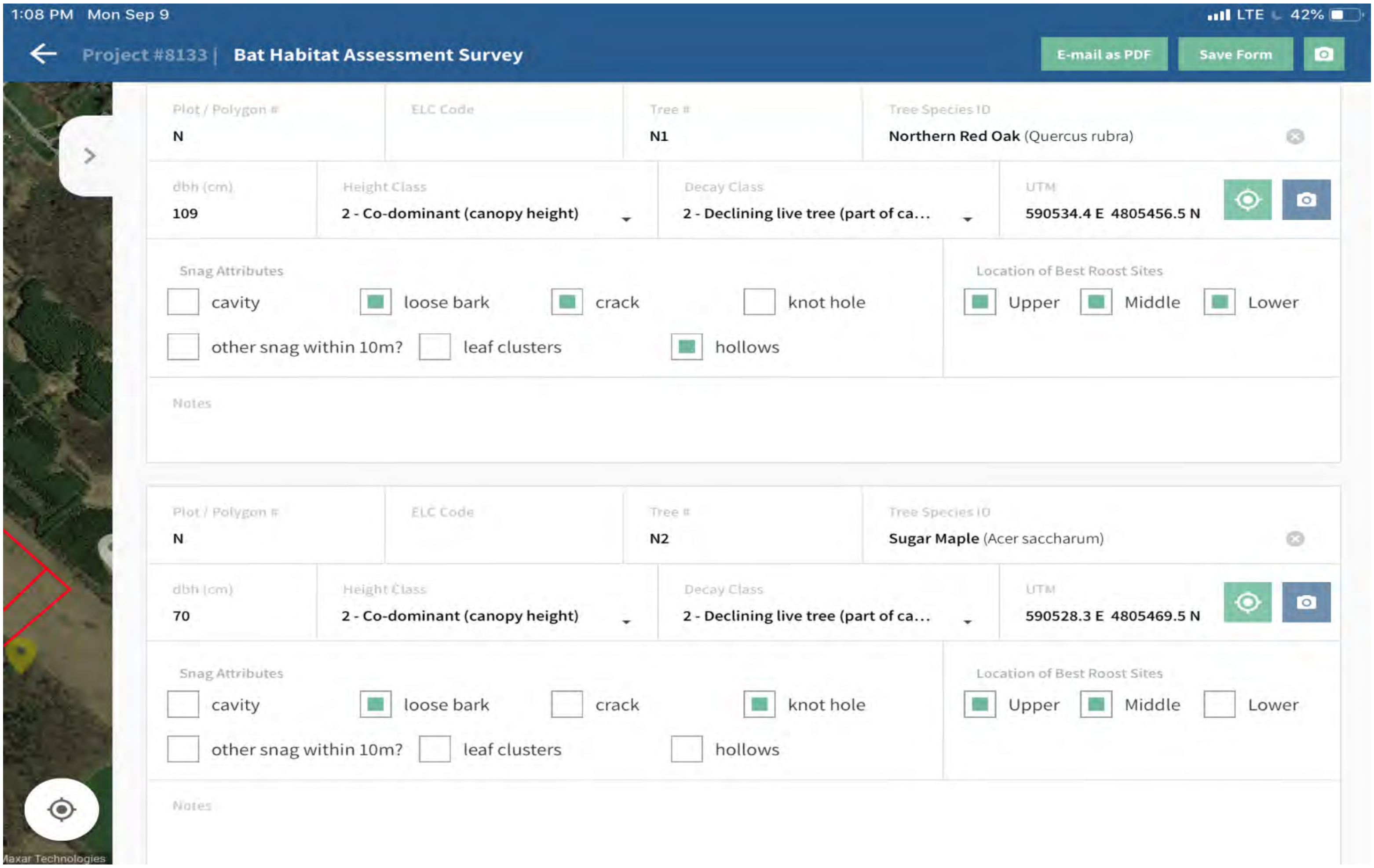
Notes

Plot / Polygon #: M-SWD
ELC Code:
Tree #: M26
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)
dbh (cm): 28
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 589852.9 E 4805056.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes
2 stems



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
N		N1	**Northern Red Oak** (Quercus rubra)

dbh (cm)	Height Class	Decay Class	UTM
109	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	590534.4 E 4805456.5 N

Snag Attributes

☐ cavity ☑ loose bark ☑ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☑ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☑ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
N		N2	**Sugar Maple** (Acer saccharum)

dbh (cm)	Height Class	Decay Class	UTM
70	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	590528.3 E 4805469.5 N

Snag Attributes

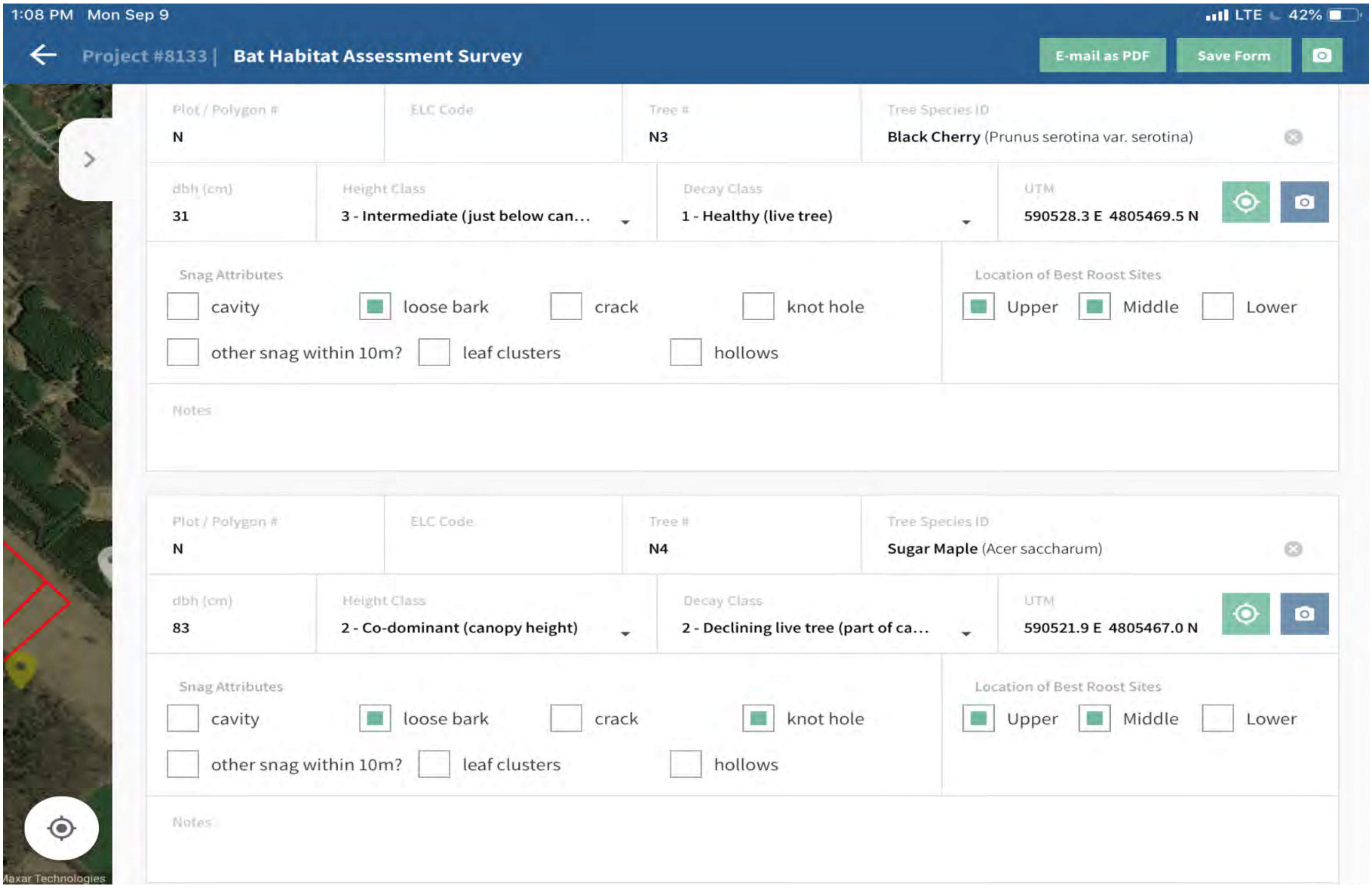
☐ cavity ☑ loose bark ☐ crack ☑ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
N		N3	**Black Cherry** (Prunus serotina var. serotina)

dbh (cm)	Height Class	Decay Class	UTM
31	3 - Intermediate (just below can...	1 - Healthy (live tree)	590528.3 E 4805469.5 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
N		N4	**Sugar Maple** (Acer saccharum)

dbh (cm)	Height Class	Decay Class	UTM
83	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	590521.9 E 4805467.0 N

Snag Attributes

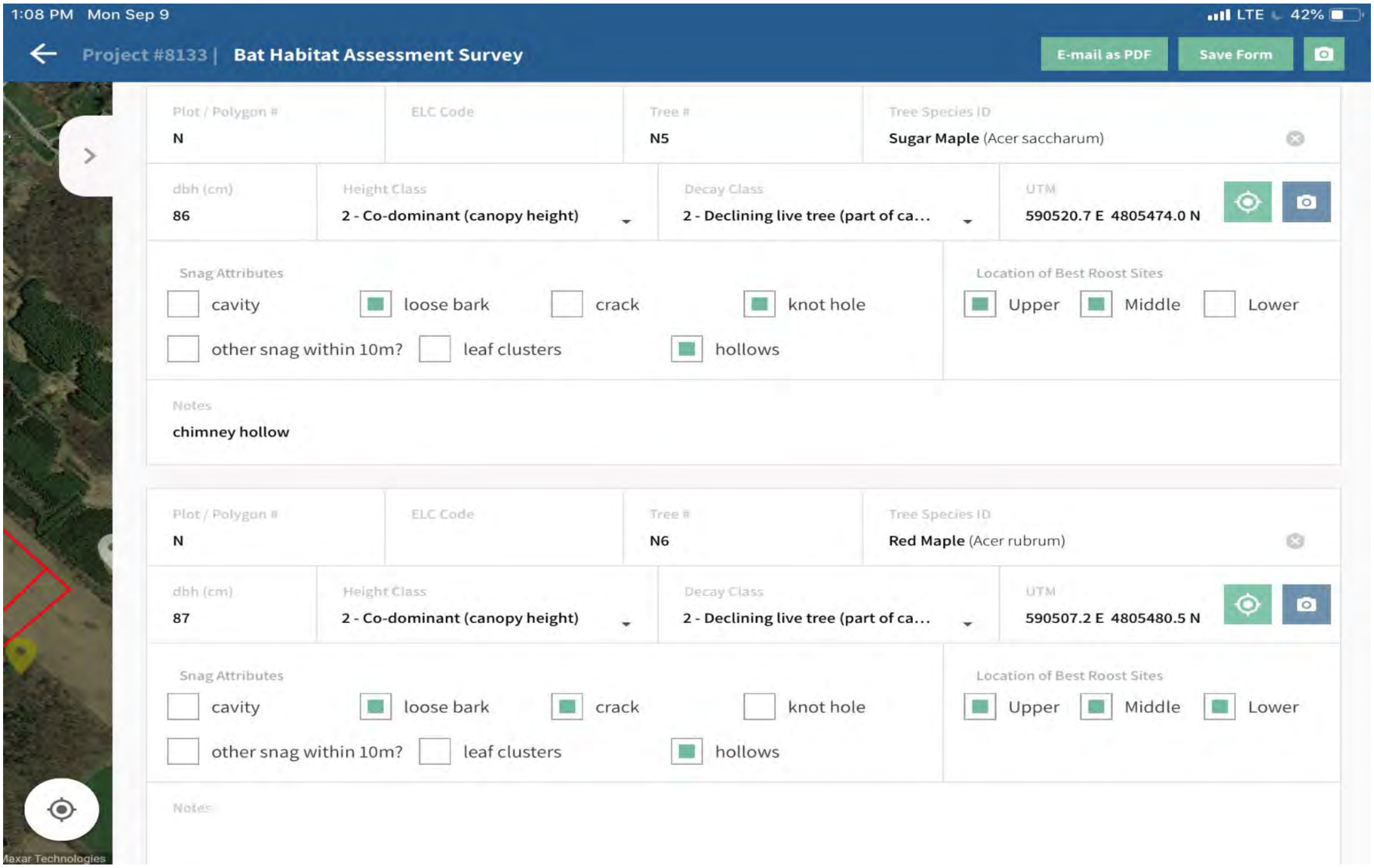
☐ cavity ☑ loose bark ☐ crack ☑ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: N
ELC Code:
Tree #: N5
Tree Species ID: **Sugar Maple** (Acer saccharum)

dbh (cm): 86
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 590520.7 E 4805474.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☑ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes: chimney hollow

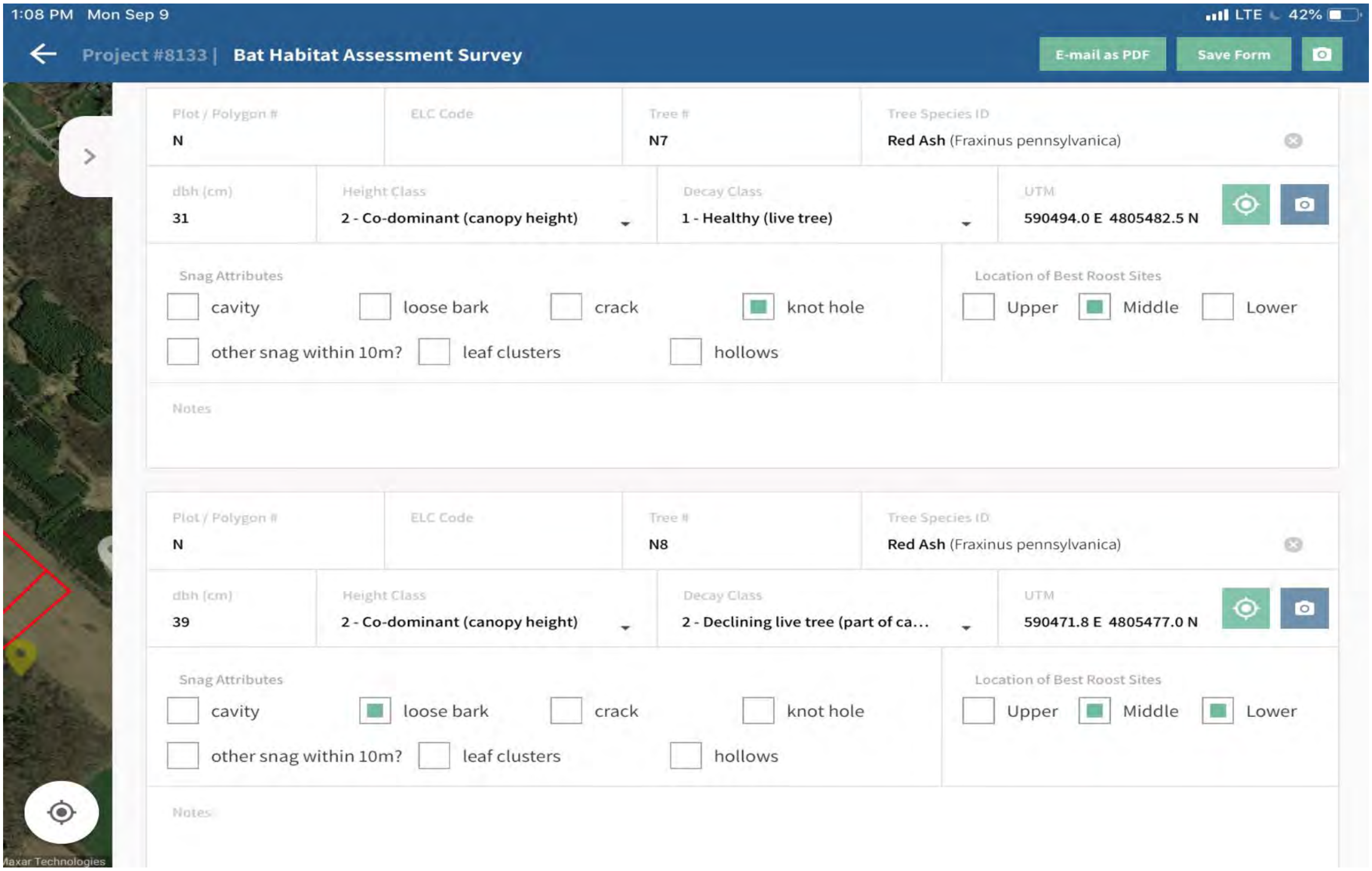
Plot / Polygon #: N
ELC Code:
Tree #: N6
Tree Species ID: **Red Maple** (Acer rubrum)

dbh (cm): 87
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 590507.2 E 4805480.5 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☑ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☑ Lower

Notes:



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: N
ELC Code:
Tree #: N7
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)

dbh (cm): 31
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 1 - Healthy (live tree)
UTM: 590494.0 E 4805482.5 N

Snag Attributes
☐ cavity ☐ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☑ Middle ☐ Lower

Notes:

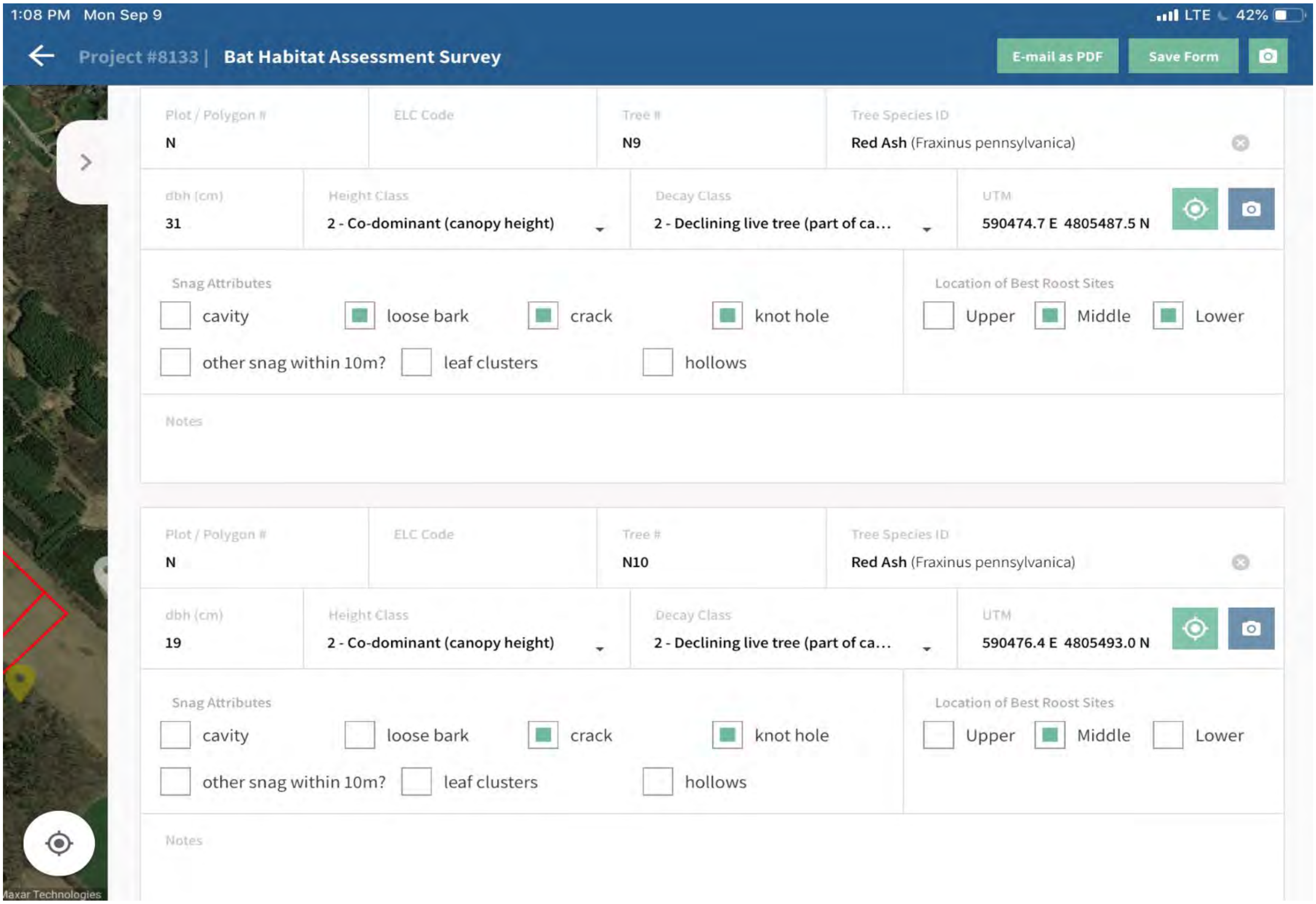
Plot / Polygon #: N
ELC Code:
Tree #: N8
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)

dbh (cm): 39
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 590471.8 E 4805477.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☑ Middle ☑ Lower

Notes:



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
N		N9	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
31	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca…	590474.7 E 4805487.5 N

Snag Attributes

☐ cavity ☑ loose bark ☑ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☐ Upper ☑ Middle ☑ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
N		N10	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
19	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca…	590476.4 E 4805493.0 N

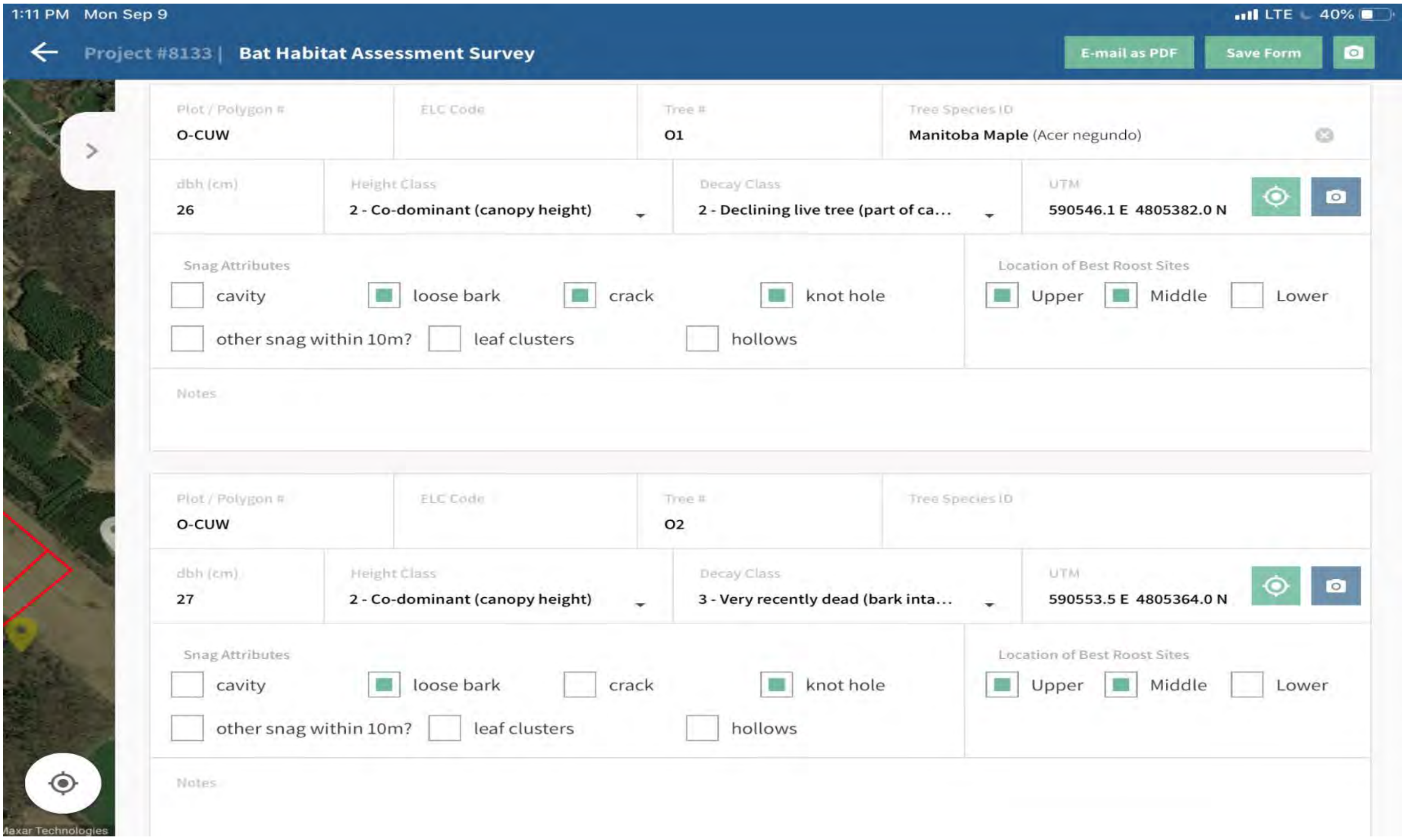
Snag Attributes

☐ cavity ☐ loose bark ☑ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☐ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
O-CUW		01	**Manitoba Maple** (Acer negundo)

dbh (cm)	Height Class	Decay Class	UTM
26	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	590546.1 E 4805382.0 N

Snag Attributes

☐ cavity ☑ loose bark ☑ crack ☑ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
O-CUW		02	

dbh (cm)	Height Class	Decay Class	UTM
27	2 - Co-dominant (canopy height)	3 - Very recently dead (bark inta...	590553.5 E 4805364.0 N

Snag Attributes

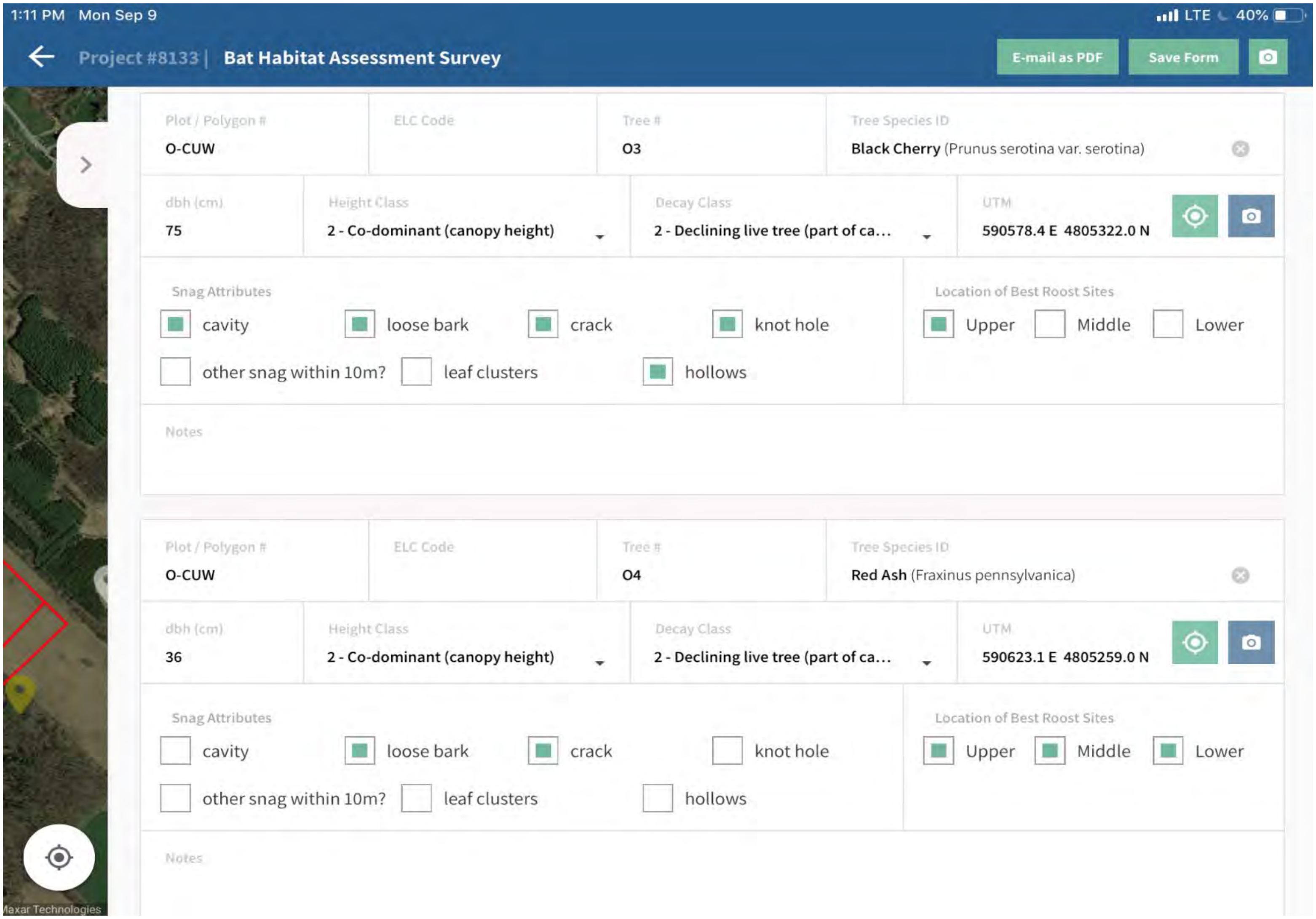
☐ cavity ☑ loose bark ☐ crack ☑ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
O-CUW		03	**Black Cherry** (Prunus serotina var. serotina)

dbh (cm)	Height Class	Decay Class	UTM
75	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	590578.4 E 4805322.0 N

Snag Attributes

☑ cavity ☑ loose bark ☑ crack ☑ knot hole

☐ other snag within 10m? ☐ leaf clusters ☑ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
O-CUW		04	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
36	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	590623.1 E 4805259.0 N

Snag Attributes

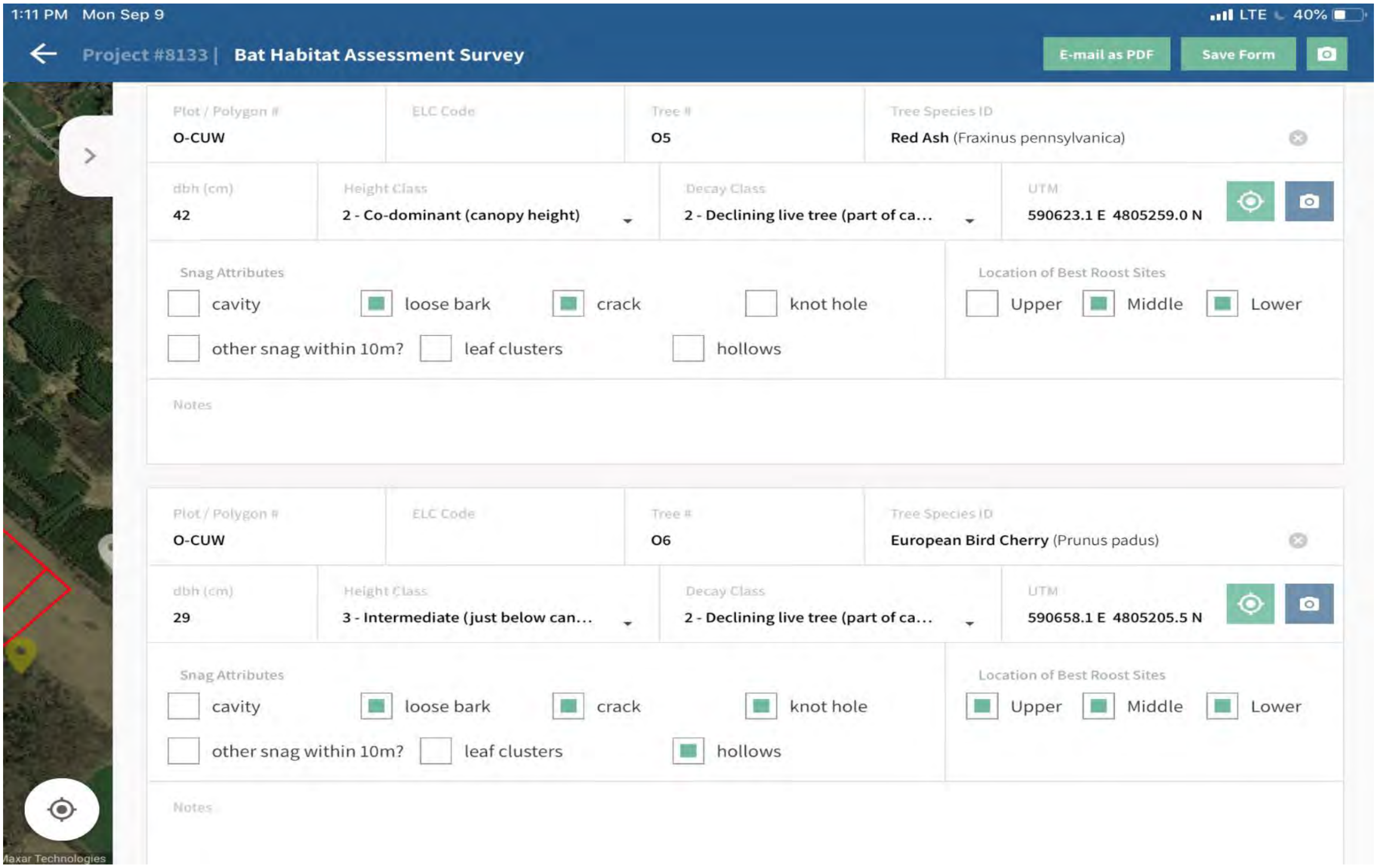
☐ cavity ☑ loose bark ☑ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☑ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: O-CUW
ELC Code:
Tree #: O5
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)
dbh (cm): 42
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 590623.1 E 4805259.0 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☑ Middle ☑ Lower

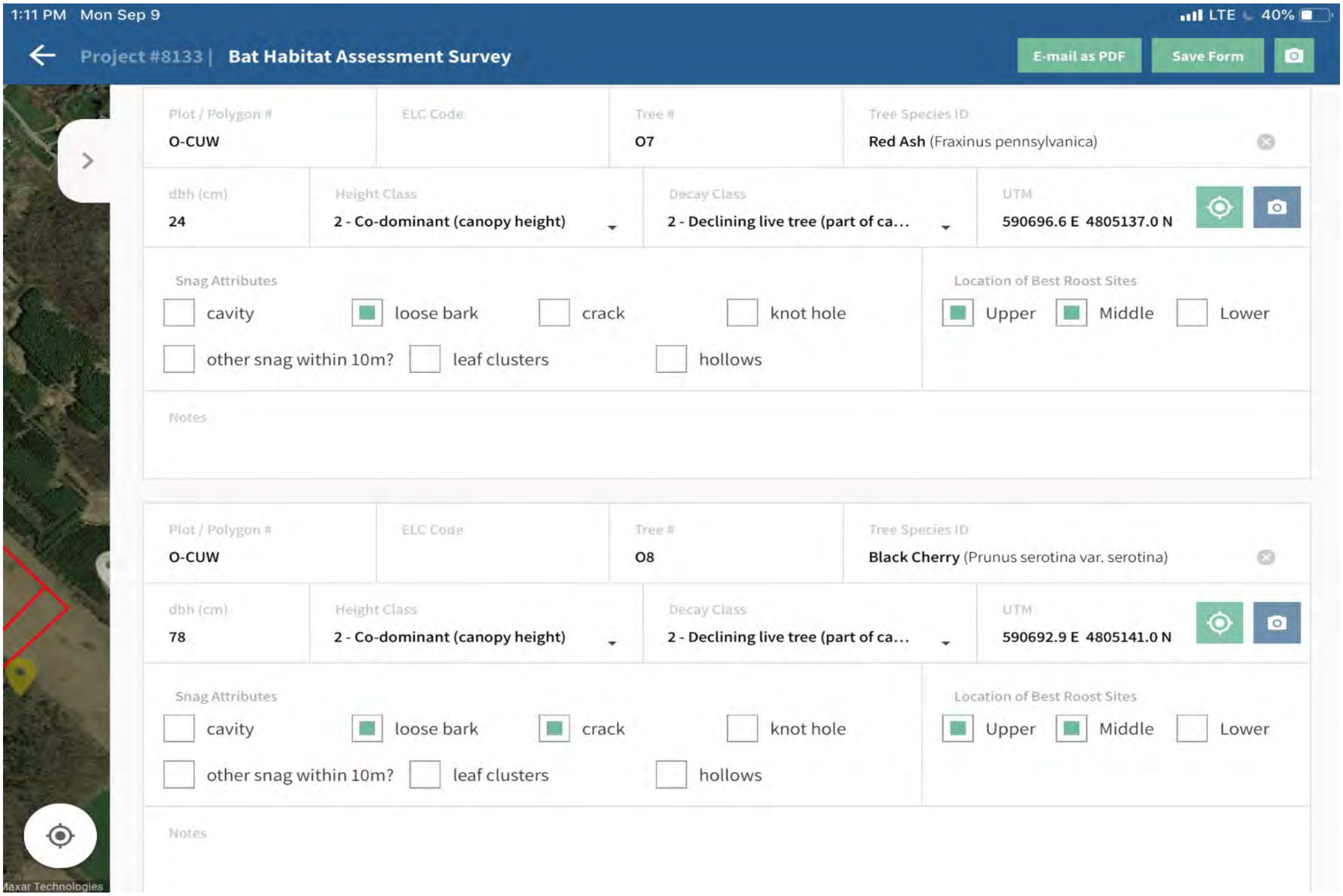
Notes

Plot / Polygon #: O-CUW
ELC Code:
Tree #: O6
Tree Species ID: **European Bird Cherry** (Prunus padus)
dbh (cm): 29
Height Class: 3 - Intermediate (just below can...
Decay Class: 2 - Declining live tree (part of ca...
UTM: 590658.1 E 4805205.5 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☑ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☑ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: O-CUW
ELC Code:
Tree #: O7
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)
dbh (cm): 24
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 590696.6 E 4805137.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

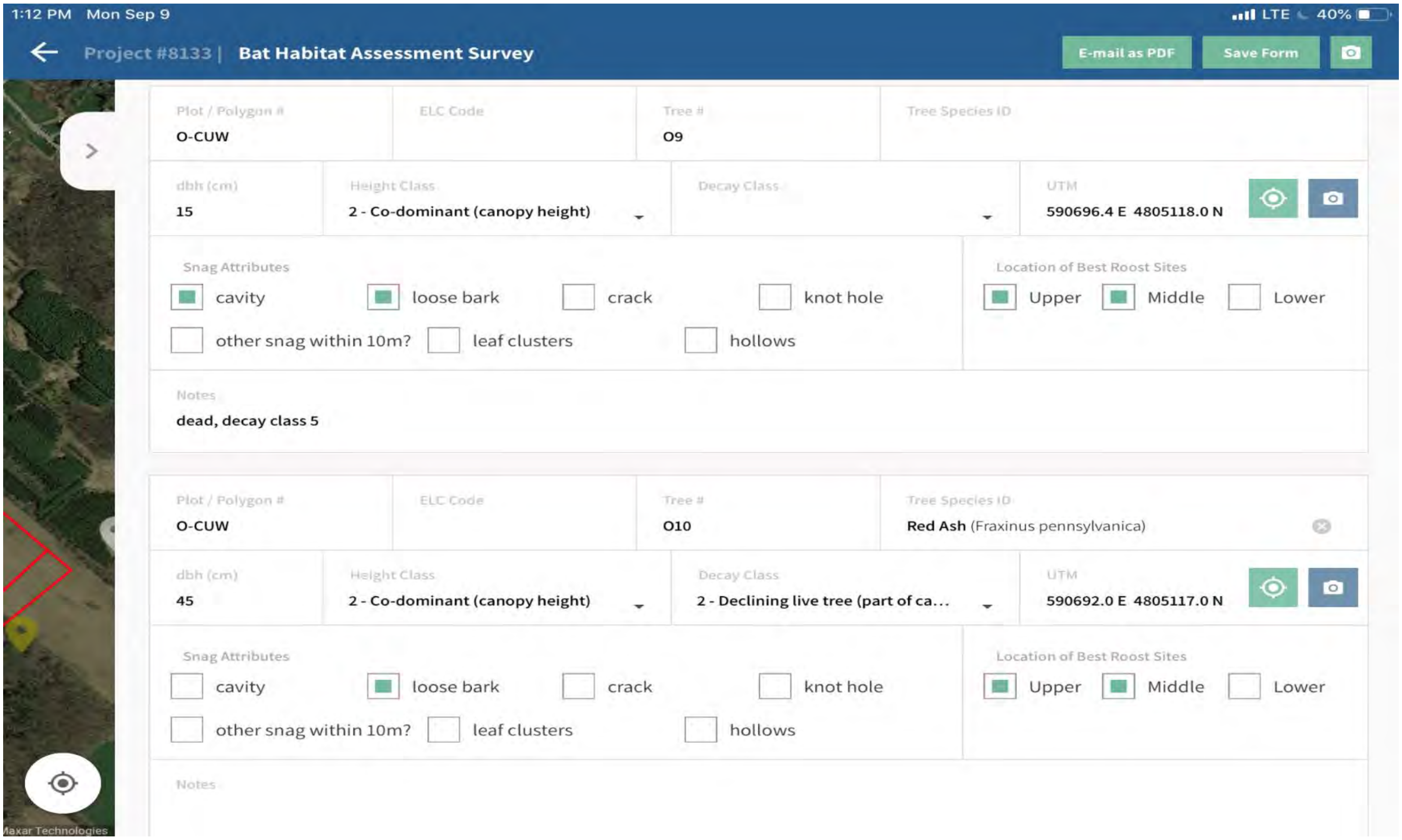
Notes

Plot / Polygon #: O-CUW
ELC Code:
Tree #: O8
Tree Species ID: **Black Cherry** (Prunus serotina var. serotina)
dbh (cm): 78
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 590692.9 E 4805141.0 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes



Bat Habitat Assessment Survey

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
O-CUW		O9	

dbh (cm)	Height Class	Decay Class	UTM
15	2 - Co-dominant (canopy height)		590696.4 E 4805118.0 N

Snag Attributes

☑ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes

dead, decay class 5

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
O-CUW		O10	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
45	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	590692.0 E 4805117.0 N

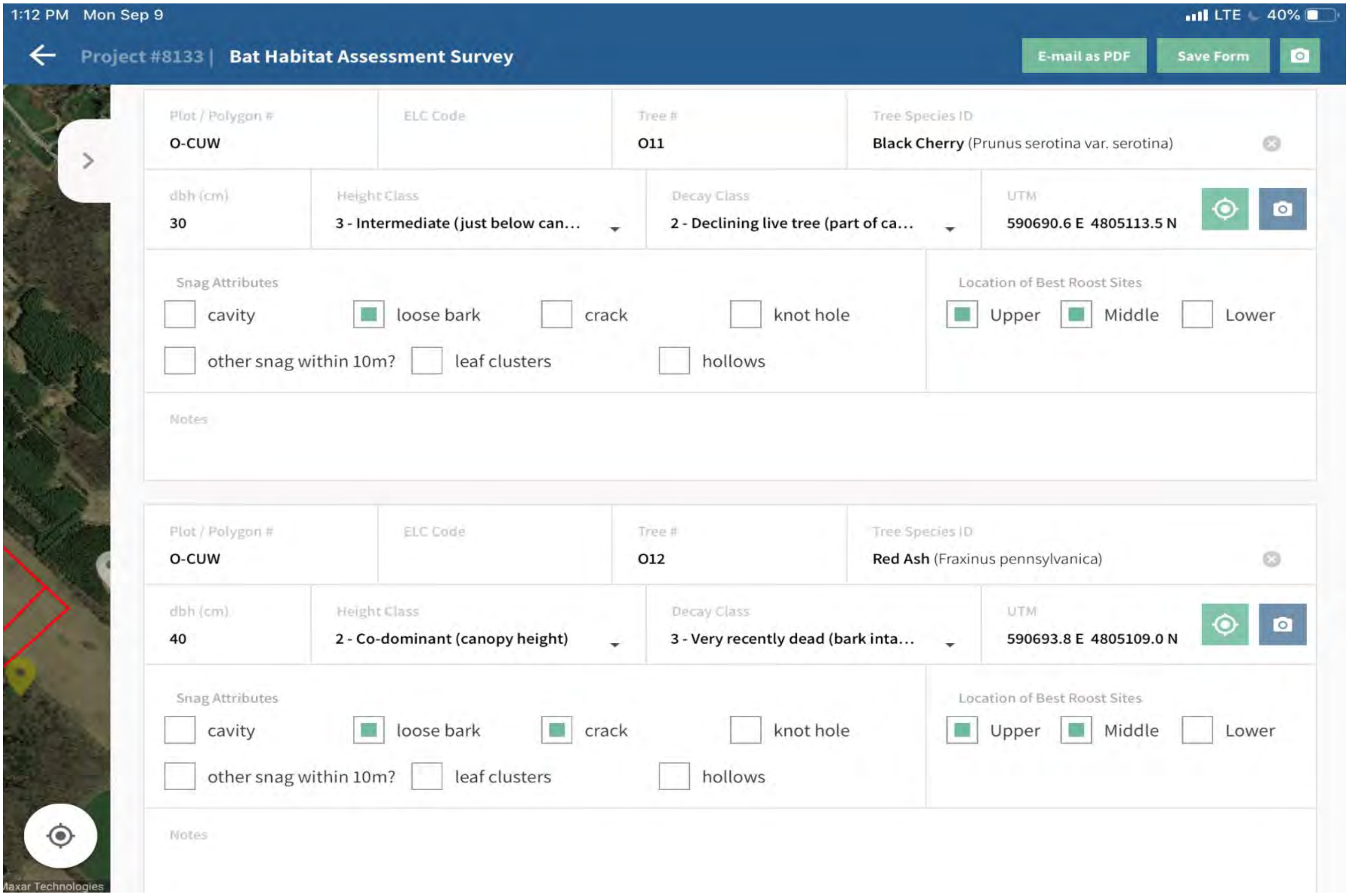
Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes



Bat Habitat Assessment Survey

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
O-CUW		O11	**Black Cherry** (Prunus serotina var. serotina)

dbh (cm)	Height Class	Decay Class	UTM
30	3 - Intermediate (just below can...	2 - Declining live tree (part of ca...	590690.6 E 4805113.5 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
O-CUW		O12	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
40	2 - Co-dominant (canopy height)	3 - Very recently dead (bark inta...	590693.8 E 4805109.0 N

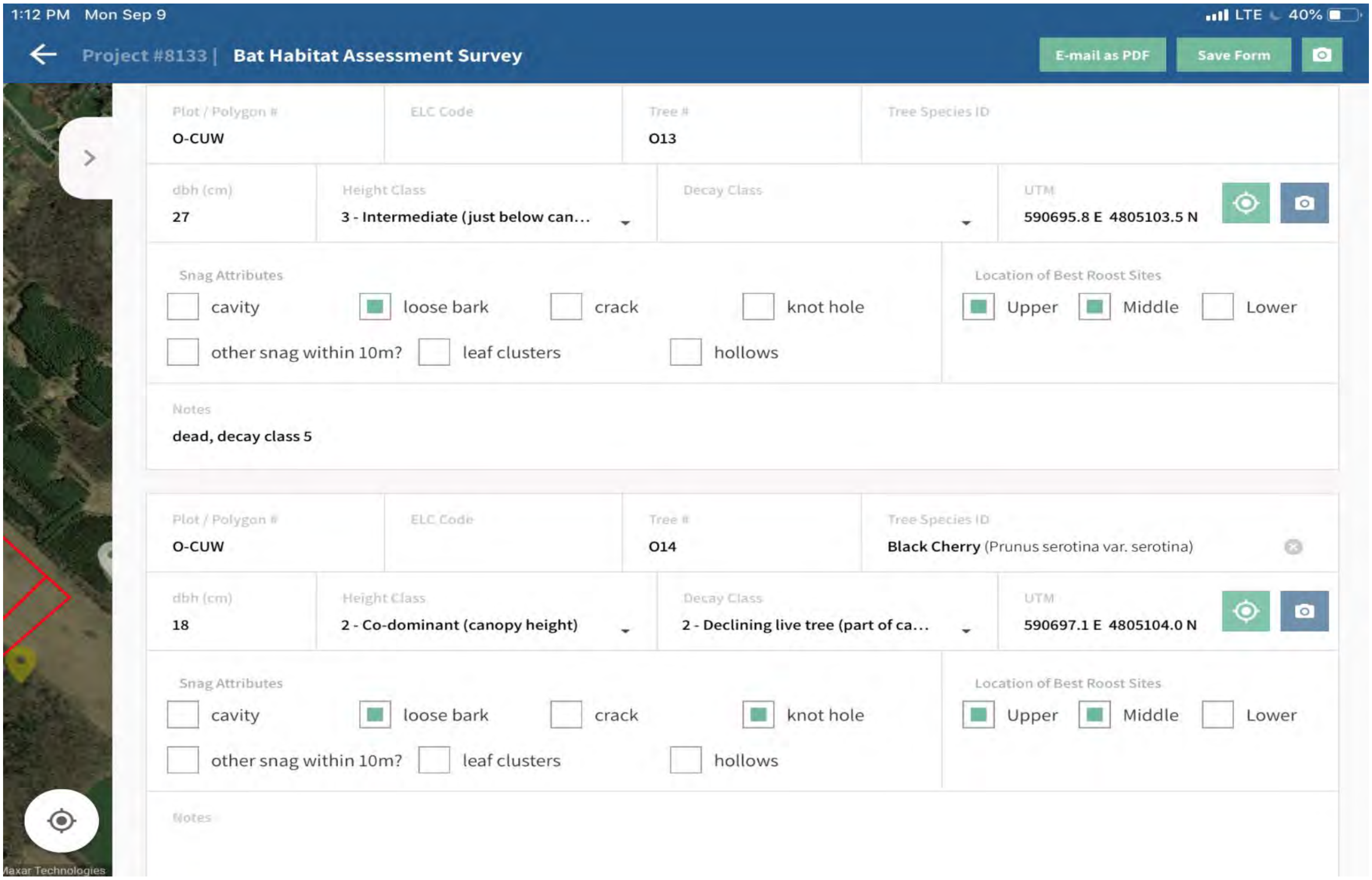
Snag Attributes

☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: O-CUW
ELC Code:
Tree #: O13
Tree Species ID:

dbh (cm): 27
Height Class: 3 - Intermediate (just below can...
Decay Class:
UTM: 590695.8 E 4805103.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes: dead, decay class 5

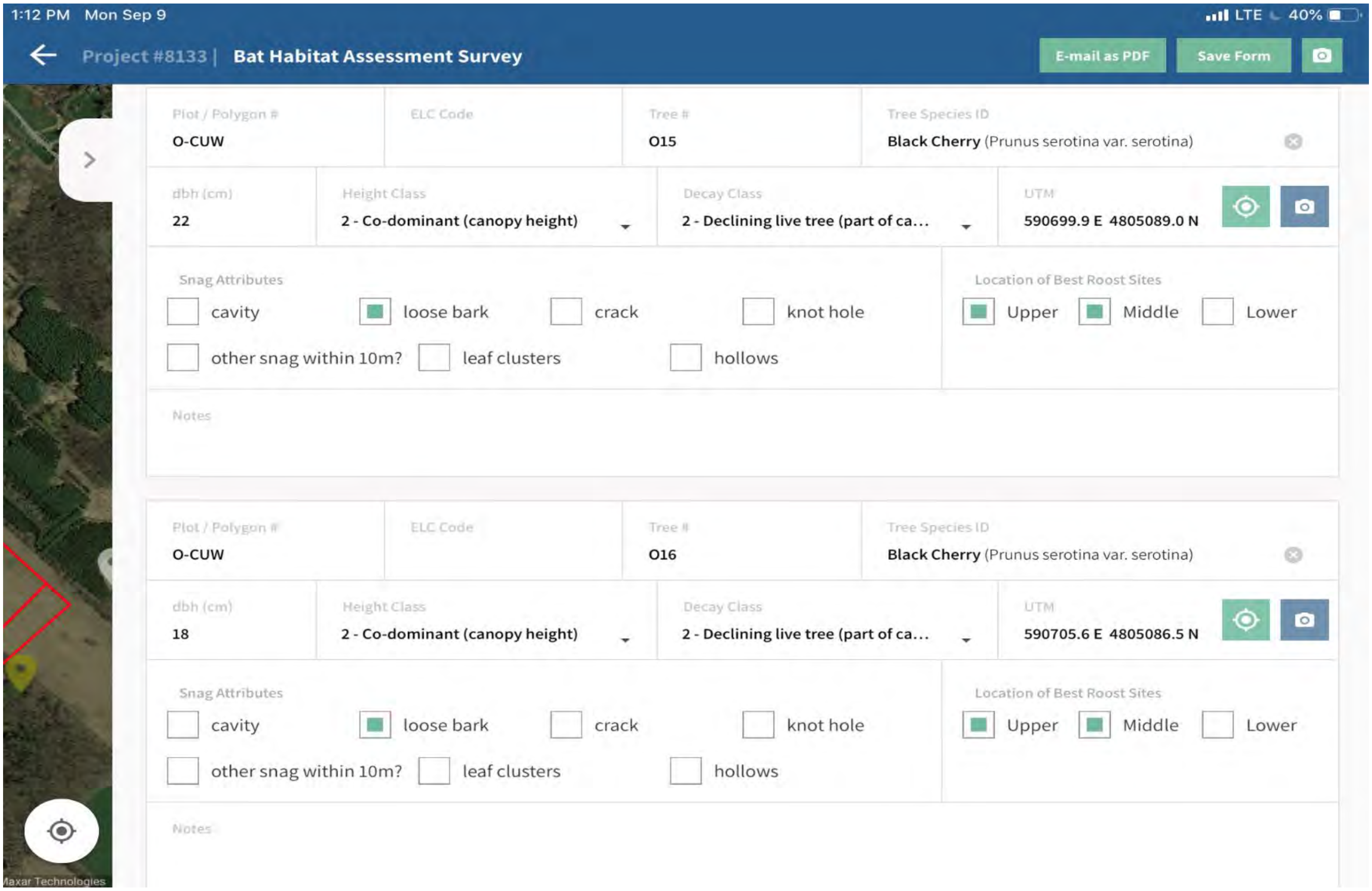
Plot / Polygon #: O-CUW
ELC Code:
Tree #: O14
Tree Species ID: **Black Cherry** (Prunus serotina var. serotina)

dbh (cm): 18
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 590697.1 E 4805104.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes:



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: O-CUW
ELC Code:
Tree #: O15
Tree Species ID: **Black Cherry** (Prunus serotina var. serotina)

dbh (cm): 22
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 590699.9 E 4805089.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes:

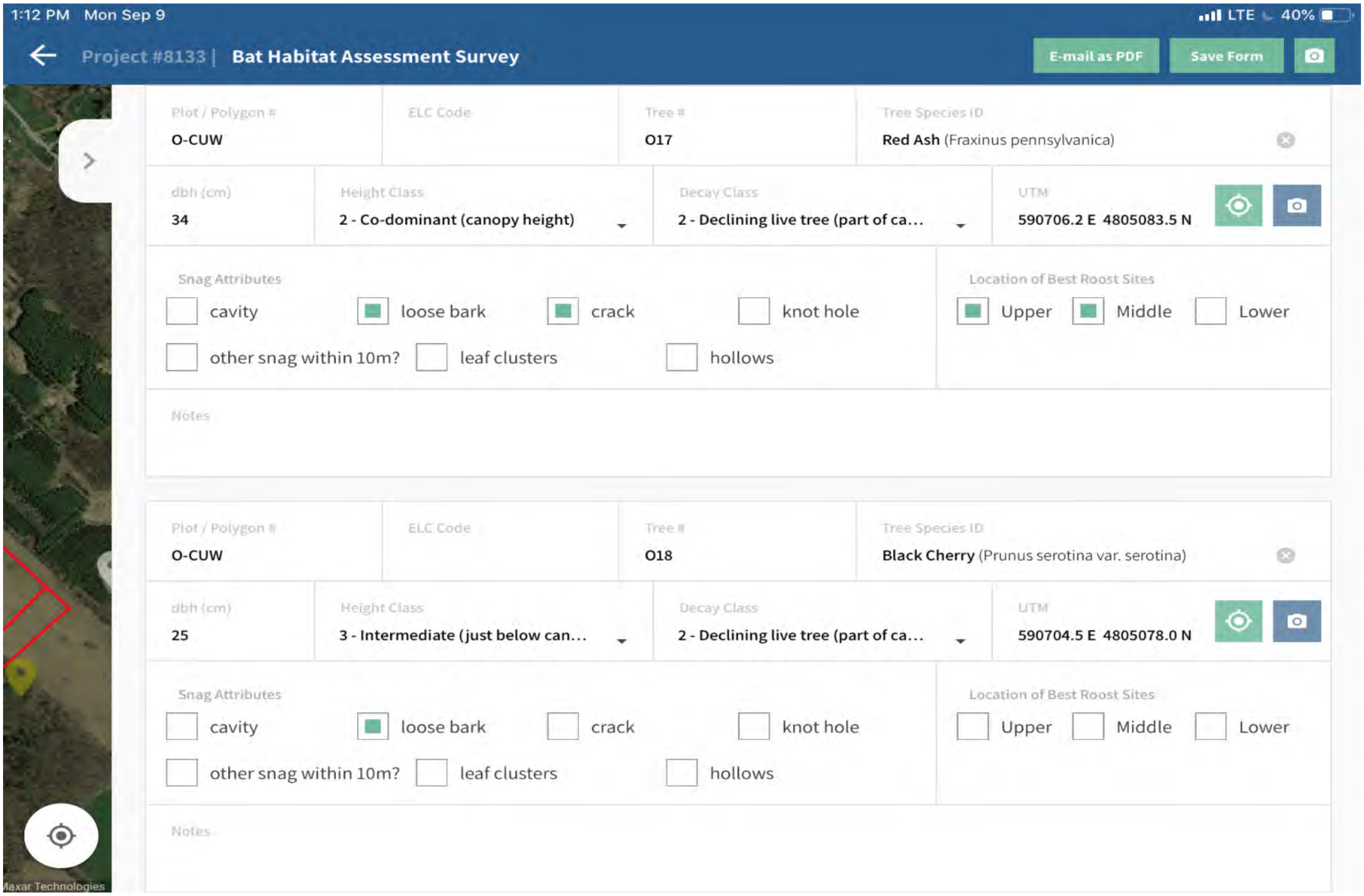
Plot / Polygon #: O-CUW
ELC Code:
Tree #: O16
Tree Species ID: **Black Cherry** (Prunus serotina var. serotina)

dbh (cm): 18
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 590705.6 E 4805086.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes:



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
O-CUW		O17	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
34	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	590706.2 E 4805083.5 N

Snag Attributes

☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
O-CUW		O18	**Black Cherry** (Prunus serotina var. serotina)

dbh (cm)	Height Class	Decay Class	UTM
25	3 - Intermediate (just below can...	2 - Declining live tree (part of ca...	590704.5 E 4805078.0 N

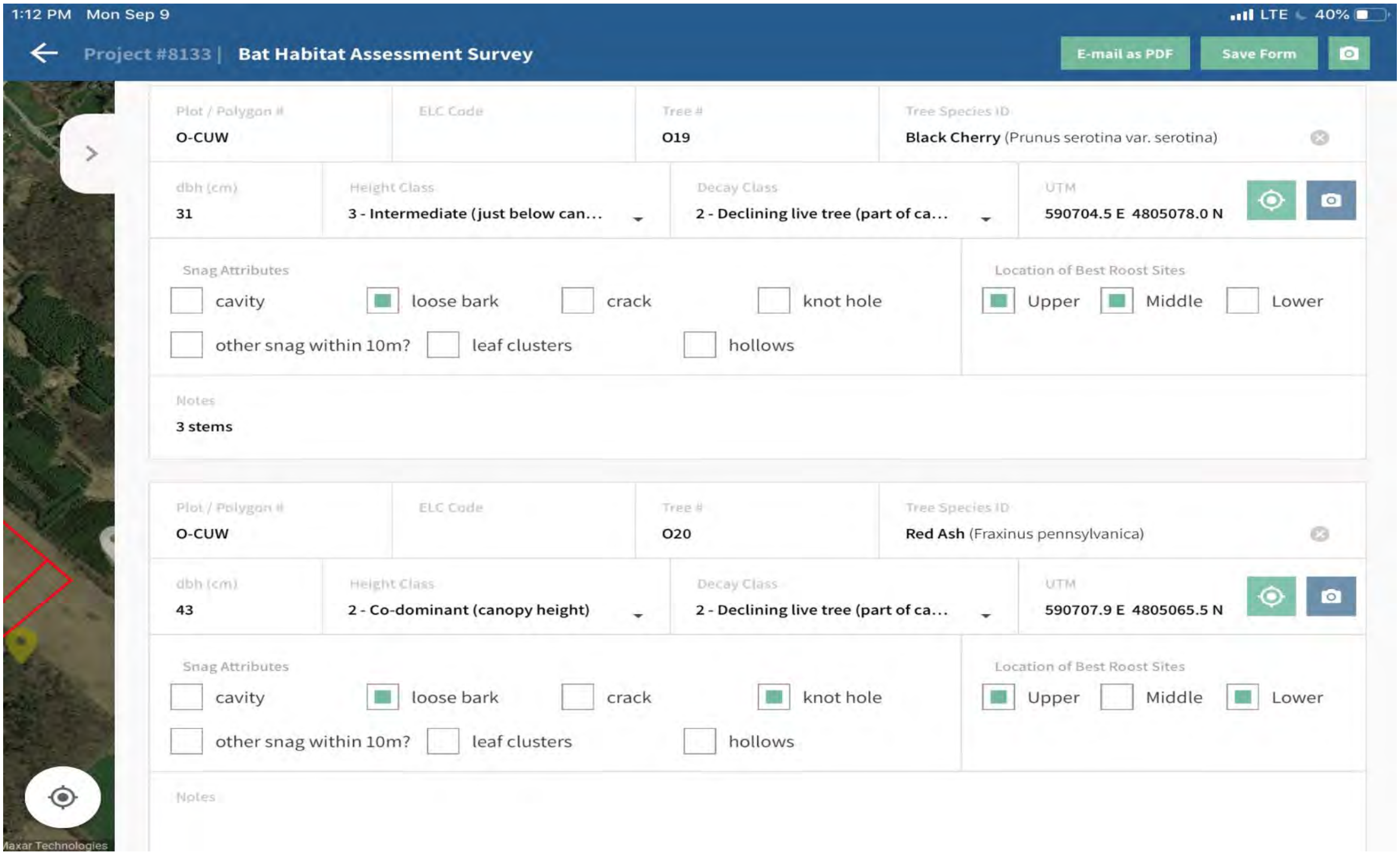
Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☐ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
O-CUW		O19	**Black Cherry** (Prunus serotina var. serotina)

dbh (cm)	Height Class	Decay Class	UTM
31	3 - Intermediate (just below can...	2 - Declining live tree (part of ca...	590704.5 E 4805078.0 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes

3 stems

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
O-CUW		O20	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
43	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	590707.9 E 4805065.5 N

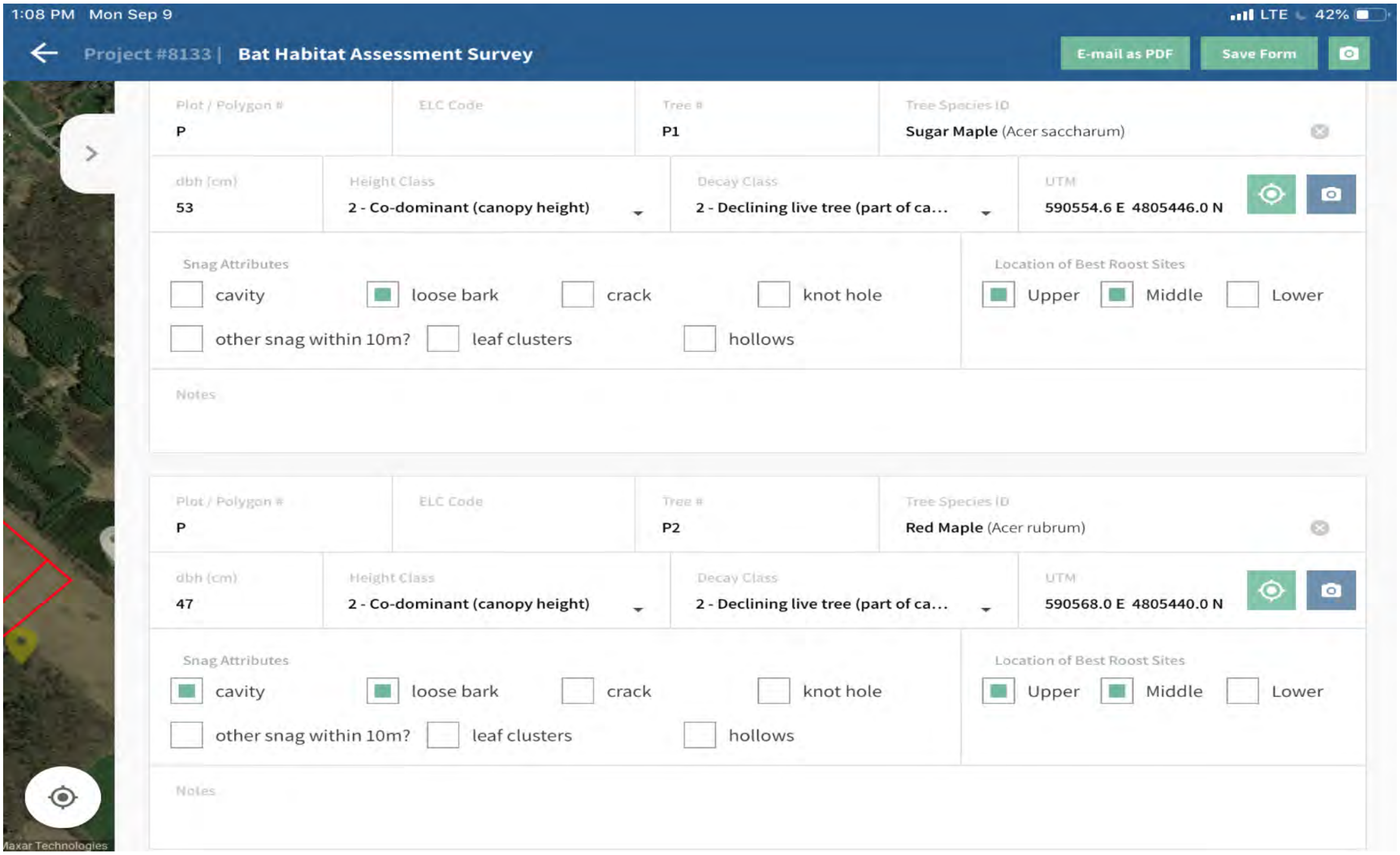
Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☑ Lower

Notes



Bat Habitat Assessment Survey

Plot / Polygon # P	ELC Code	Tree # P1	Tree Species ID **Sugar Maple** (Acer saccharum)
dbh (cm) 53	Height Class 2 - Co-dominant (canopy height)	Decay Class 2 - Declining live tree (part of ca...	UTM 590554.6 E 4805446.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

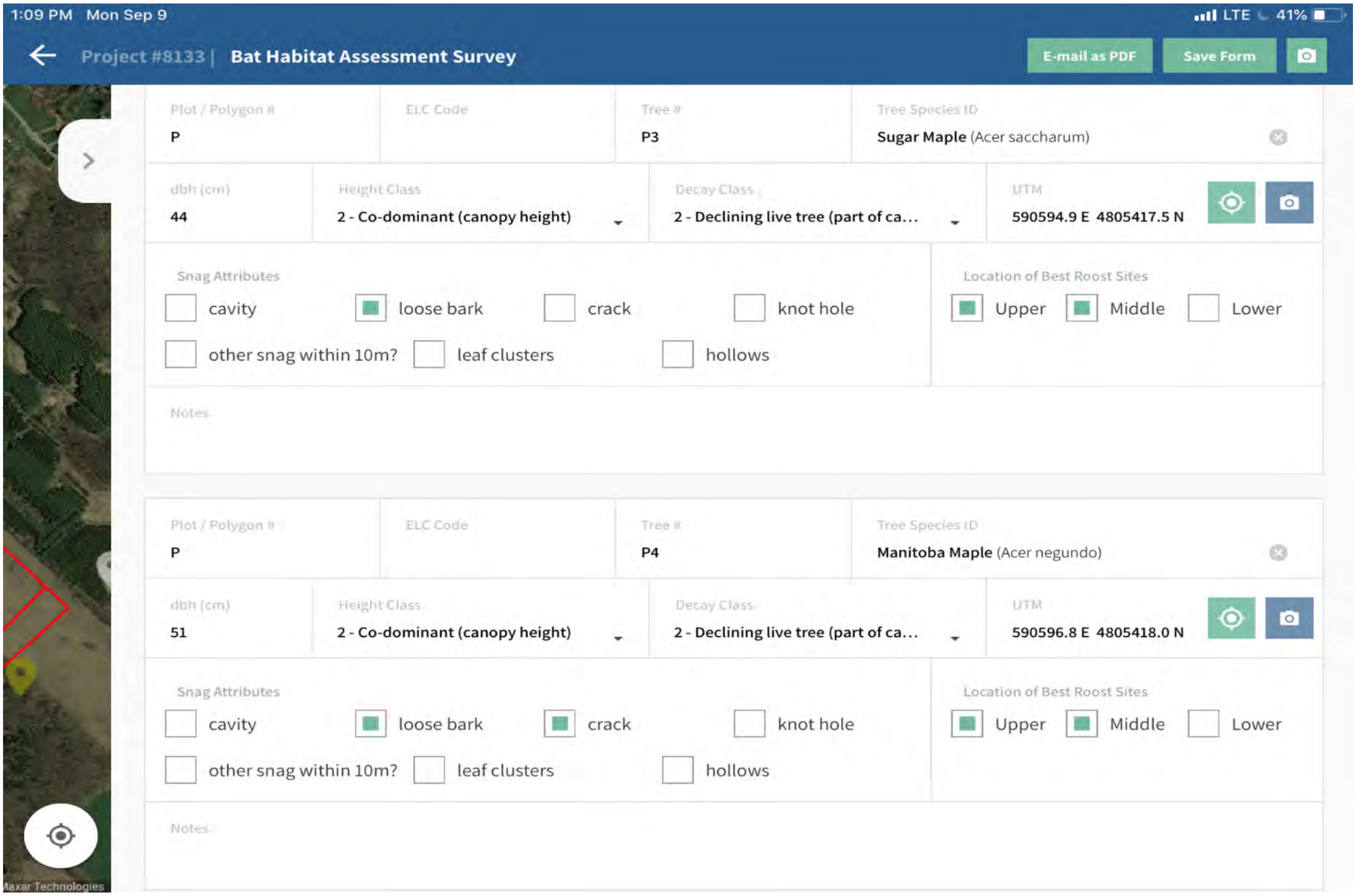
Notes

Plot / Polygon # P	ELC Code	Tree # P2	Tree Species ID **Red Maple** (Acer rubrum)
dbh (cm) 47	Height Class 2 - Co-dominant (canopy height)	Decay Class 2 - Declining live tree (part of ca...	UTM 590568.0 E 4805440.0 N

Snag Attributes
☑ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes



Bat Habitat Assessment Survey

Plot / Polygon # P	ELC Code	Tree # P3	Tree Species ID **Sugar Maple** (Acer saccharum)
dbh (cm) 44	Height Class 2 - Co-dominant (canopy height)	Decay Class 2 - Declining live tree (part of ca...	UTM 590594.9 E 4805417.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

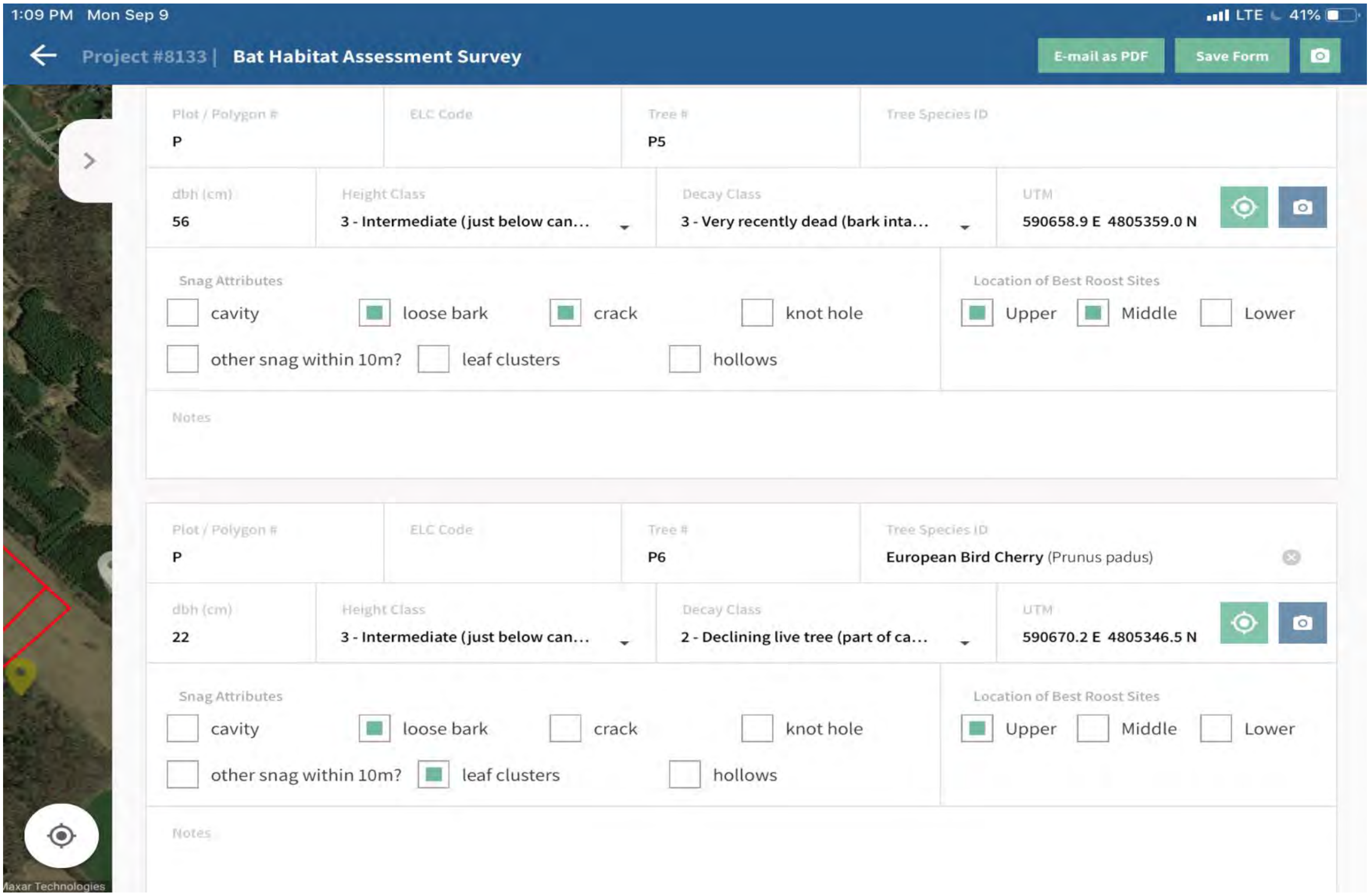
Notes

Plot / Polygon # P	ELC Code	Tree # P4	Tree Species ID **Manitoba Maple** (Acer negundo)
dbh (cm) 51	Height Class 2 - Co-dominant (canopy height)	Decay Class 2 - Declining live tree (part of ca...	UTM 590596.8 E 4805418.0 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon # P	ELC Code	Tree # P5	Tree Species ID

dbh (cm) 56	Height Class 3 - Intermediate (just below can...	Decay Class 3 - Very recently dead (bark inta...	UTM 590658.9 E 4805359.0 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes

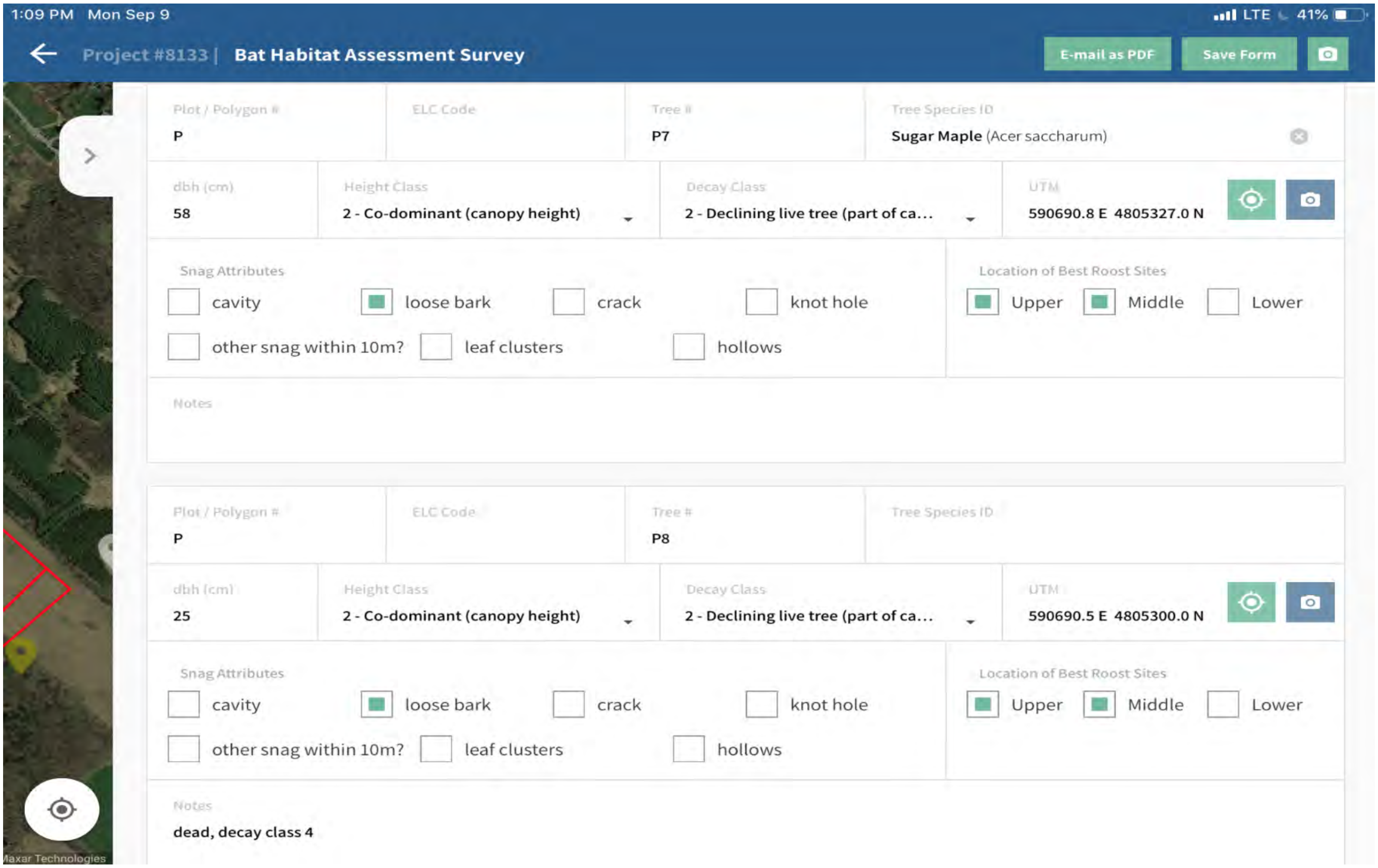
Plot / Polygon # P	ELC Code	Tree # P6	Tree Species ID **European Bird Cherry** (Prunus padus)

dbh (cm) 22	Height Class 3 - Intermediate (just below can...	Decay Class 2 - Declining live tree (part of ca...	UTM 590670.2 E 4805346.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☑ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon # P	ELC Code	Tree # P7	Tree Species ID **Sugar Maple** (Acer saccharum)

dbh (cm) 58	Height Class 2 - Co-dominant (canopy height)	Decay Class 2 - Declining live tree (part of ca...	UTM 590690.8 E 4805327.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes

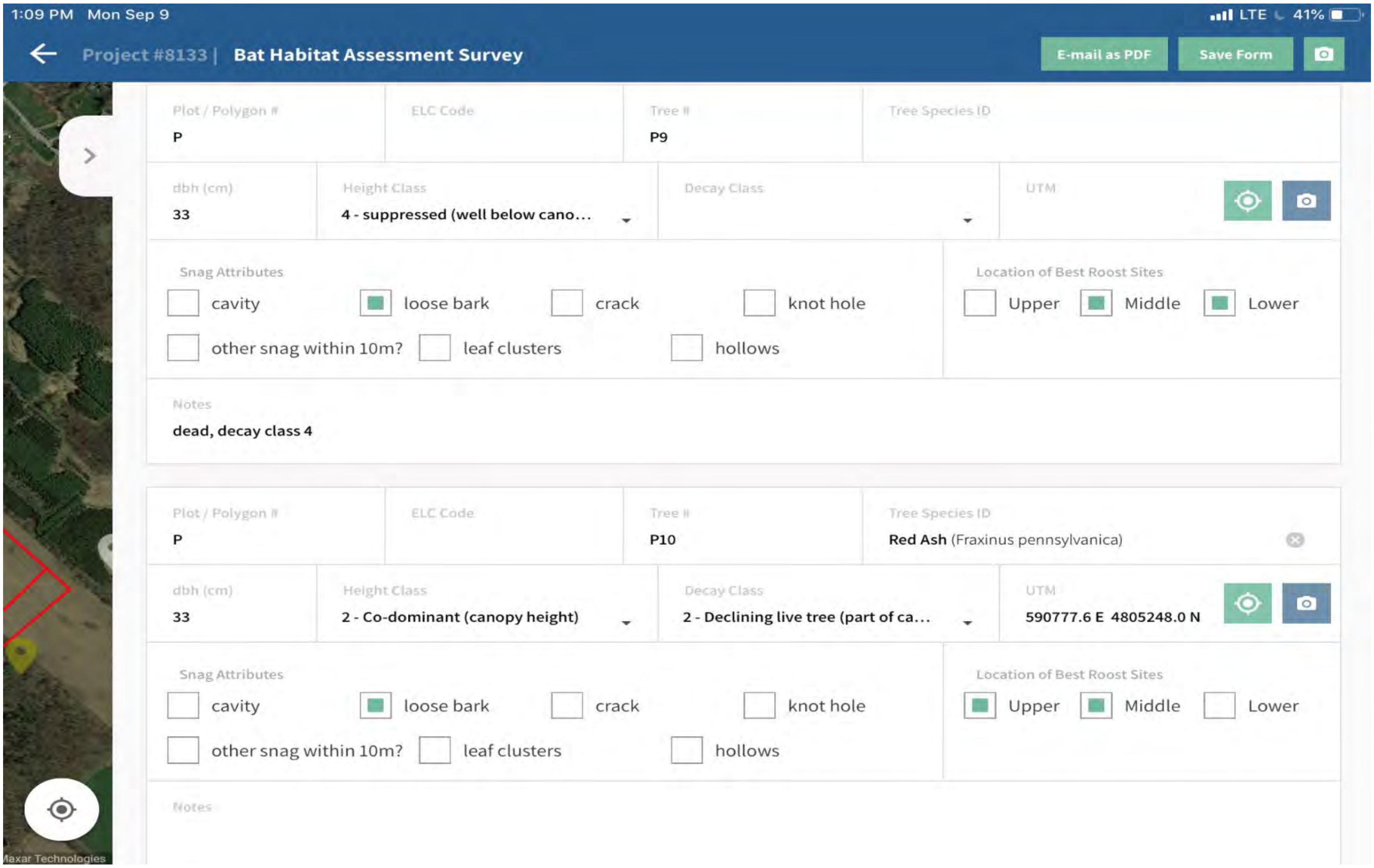
Plot / Polygon # P	ELC Code	Tree # P8	Tree Species ID

dbh (cm) 25	Height Class 2 - Co-dominant (canopy height)	Decay Class 2 - Declining live tree (part of ca...	UTM 590690.5 E 4805300.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes
dead, decay class 4



Bat Habitat Assessment Survey

Plot / Polygon #: P
ELC Code:
Tree #: P9
Tree Species ID:

dbh (cm): 33
Height Class: 4 - suppressed (well below cano...
Decay Class:
UTM:

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☐ Upper ☑ Middle ☑ Lower

Notes: dead, decay class 4

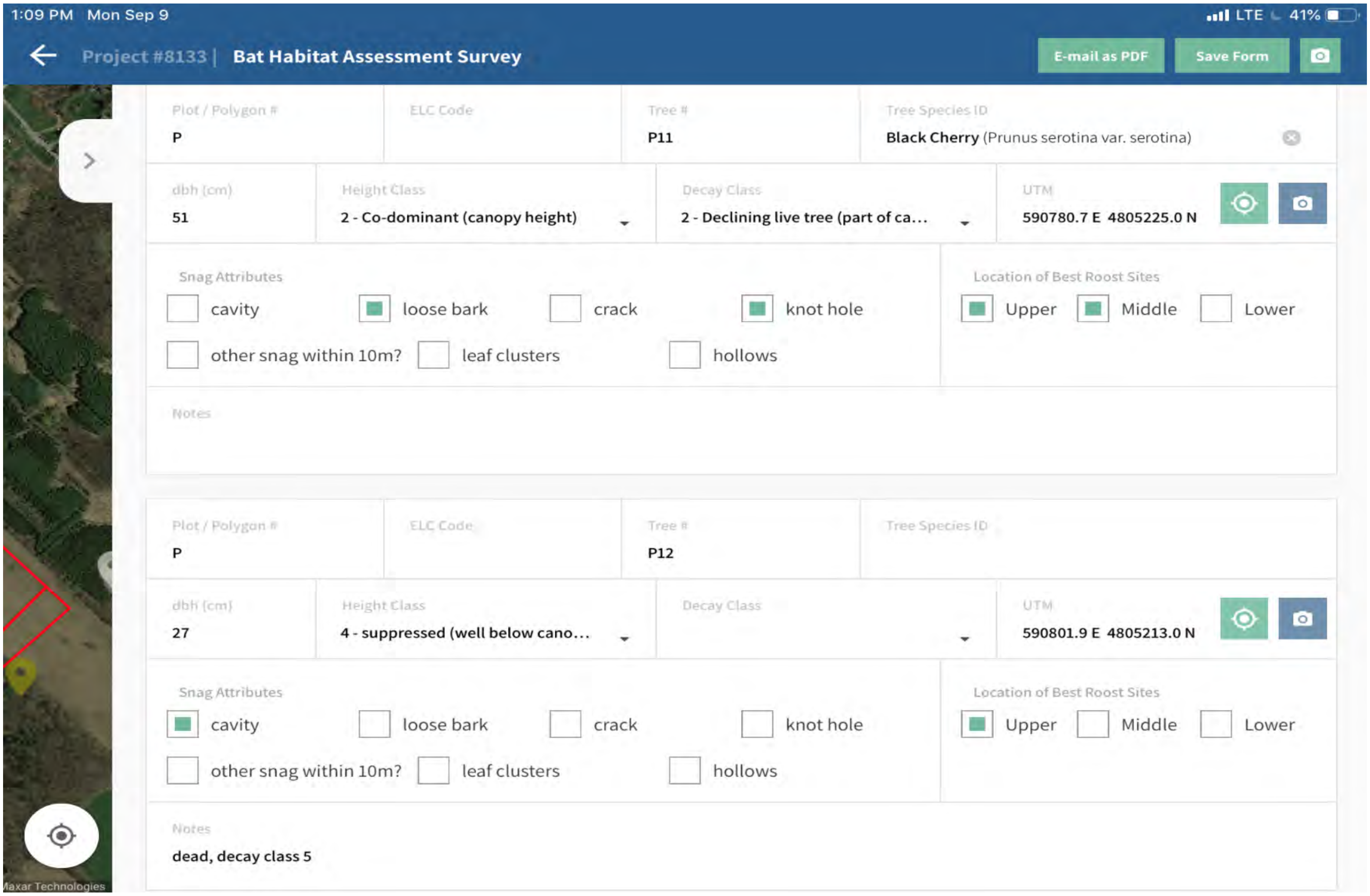
Plot / Polygon #: P
ELC Code:
Tree #: P10
Tree Species ID: **Red Ash** (Fraxinus pennsylvanica)

dbh (cm): 33
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 590777.6 E 4805248.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes:



Bat Habitat Assessment Survey

Plot / Polygon #: P
ELC Code:
Tree #: P11
Tree Species ID: **Black Cherry** (Prunus serotina var. serotina)

dbh (cm): 51
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 590780.7 E 4805225.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☑ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes:

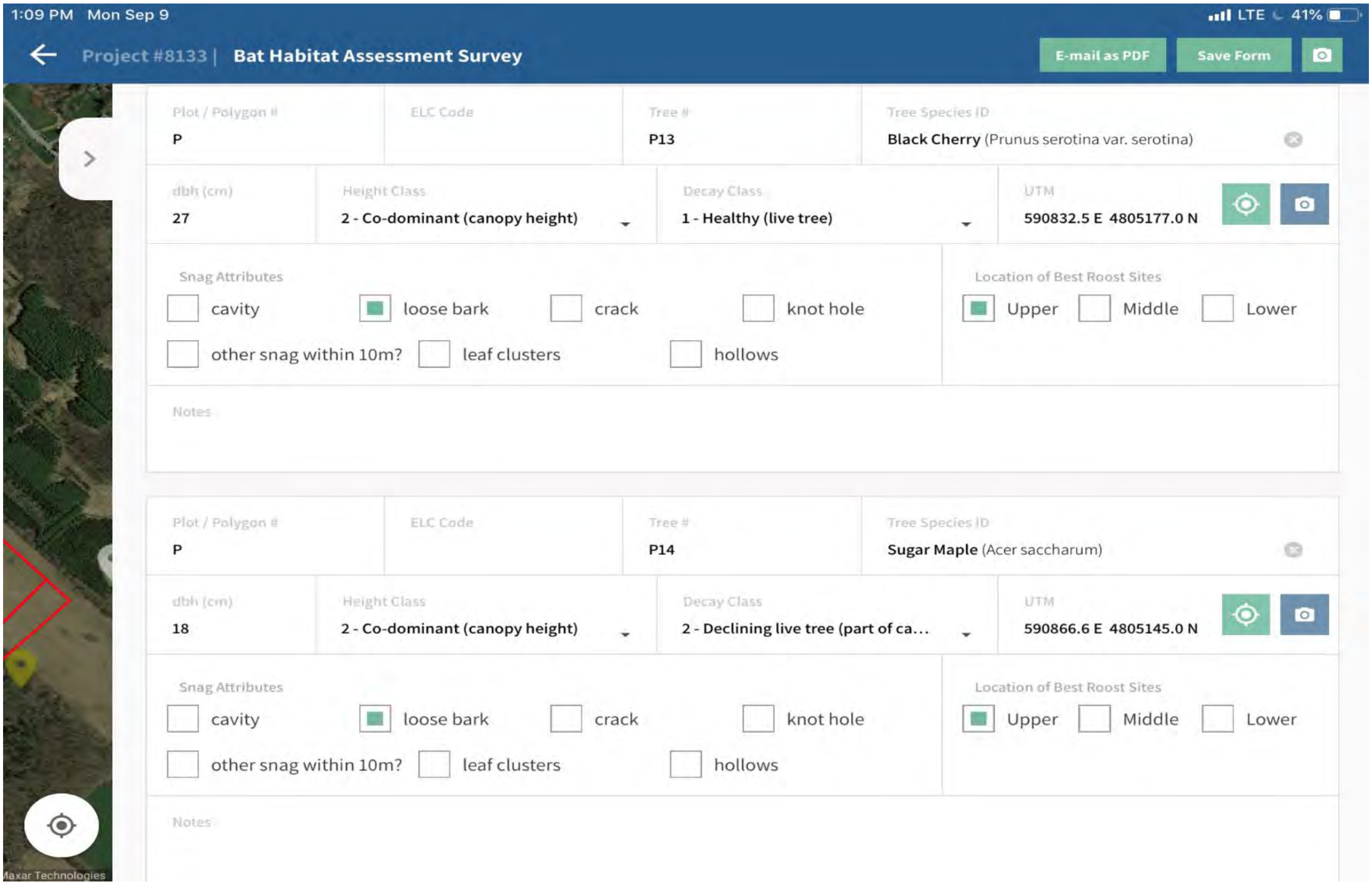
Plot / Polygon #: P
ELC Code:
Tree #: P12
Tree Species ID:

dbh (cm): 27
Height Class: 4 - suppressed (well below cano...
Decay Class:
UTM: 590801.9 E 4805213.0 N

Snag Attributes
☑ cavity ☐ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes: dead, decay class 5



Bat Habitat Assessment Survey

Plot / Polygon #: P
ELC Code:
Tree #: P13
Tree Species ID: **Black Cherry** (Prunus serotina var. serotina)

dbh (cm): 27
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 1 - Healthy (live tree)
UTM: 590832.5 E 4805177.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes

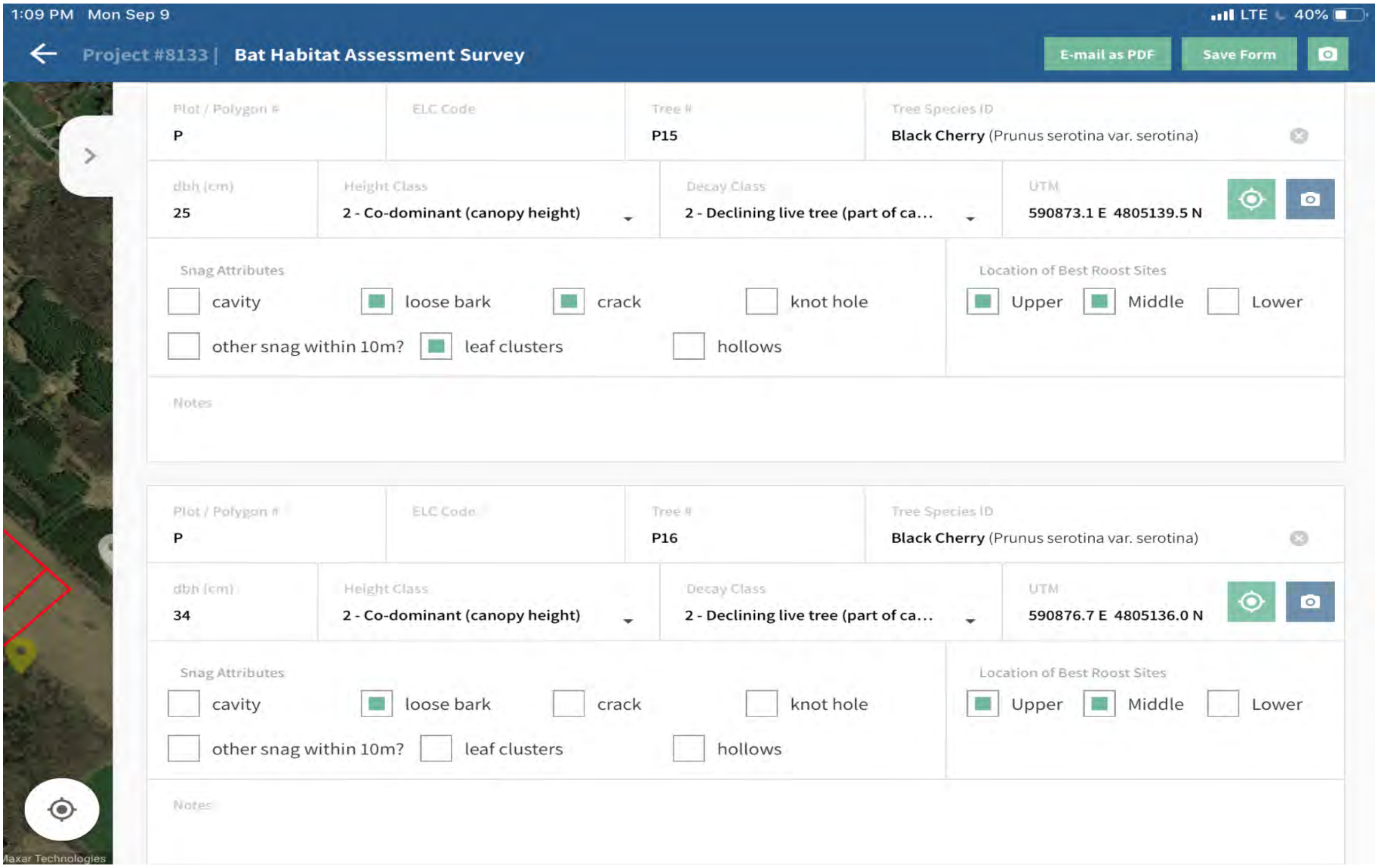
Plot / Polygon #: P
ELC Code:
Tree #: P14
Tree Species ID: **Sugar Maple** (Acer saccharum)

dbh (cm): 18
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 590866.6 E 4805145.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



Bat Habitat Assessment Survey

Plot / Polygon #: P
ELC Code:
Tree #: P15
Tree Species ID: **Black Cherry** (Prunus serotina var. serotina)

dbh (cm): 25
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 590873.1 E 4805139.5 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☑ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes

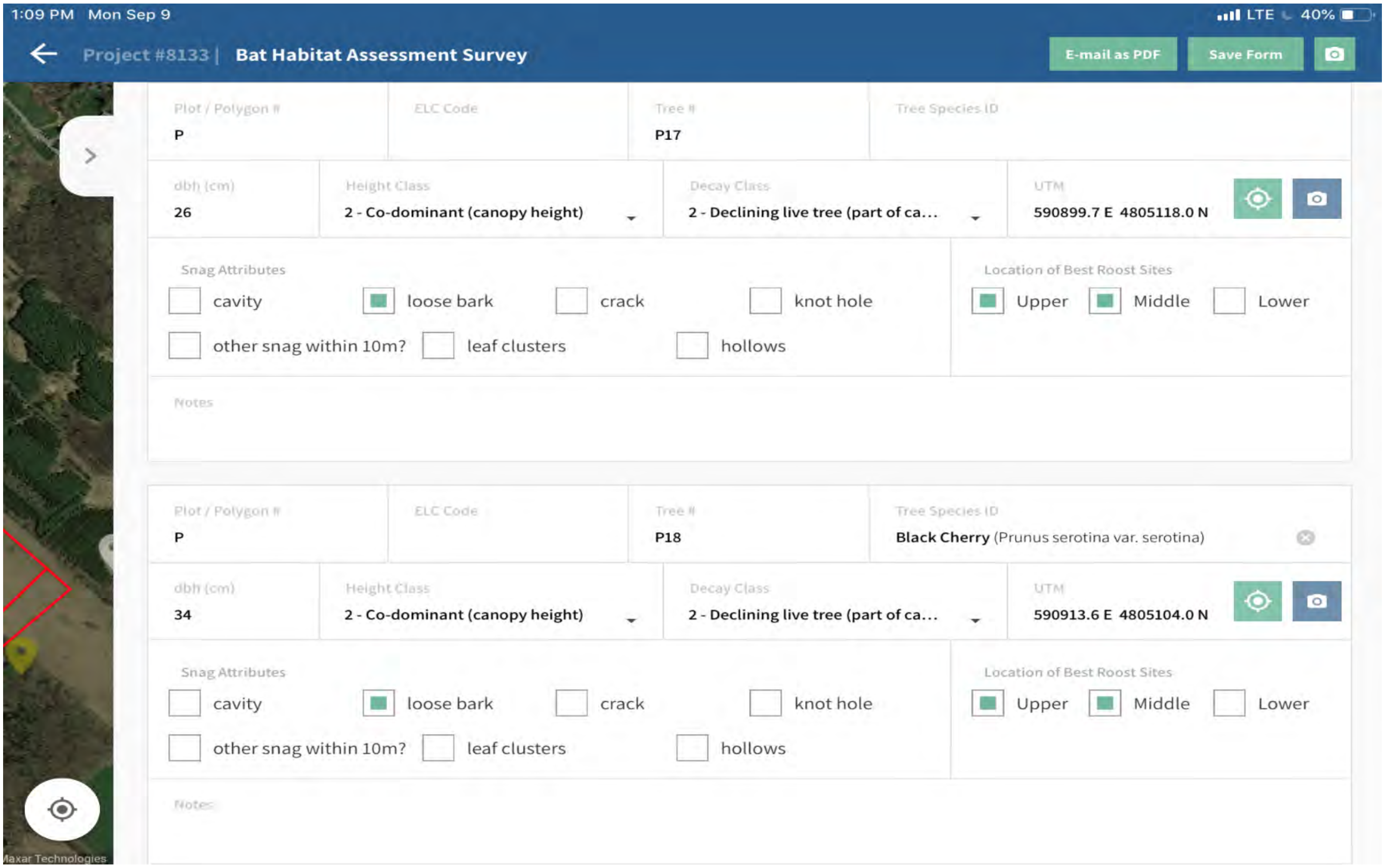
Plot / Polygon #: P
ELC Code:
Tree #: P16
Tree Species ID: **Black Cherry** (Prunus serotina var. serotina)

dbh (cm): 34
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 590876.7 E 4805136.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: P
ELC Code:
Tree #: P17
Tree Species ID:

dbh (cm): 26
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 590899.7 E 4805118.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes:

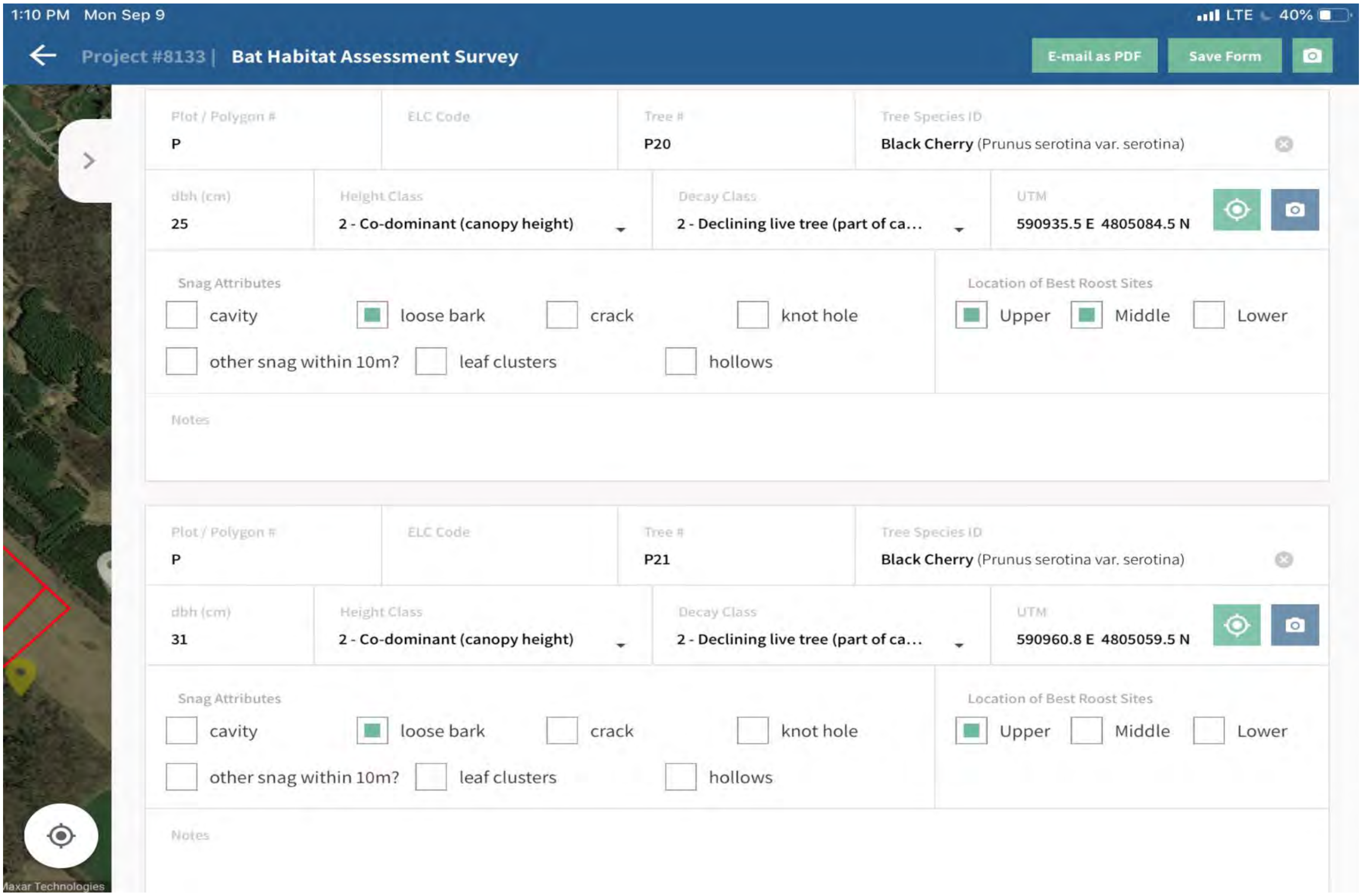
Plot / Polygon #: P
ELC Code:
Tree #: P18
Tree Species ID: **Black Cherry** (Prunus serotina var. serotina)

dbh (cm): 34
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 590913.6 E 4805104.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes:



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: P
ELC Code:
Tree #: P20
Tree Species ID: **Black Cherry** (Prunus serotina var. serotina)

dbh (cm): 25
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 590935.5 E 4805084.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

Notes:

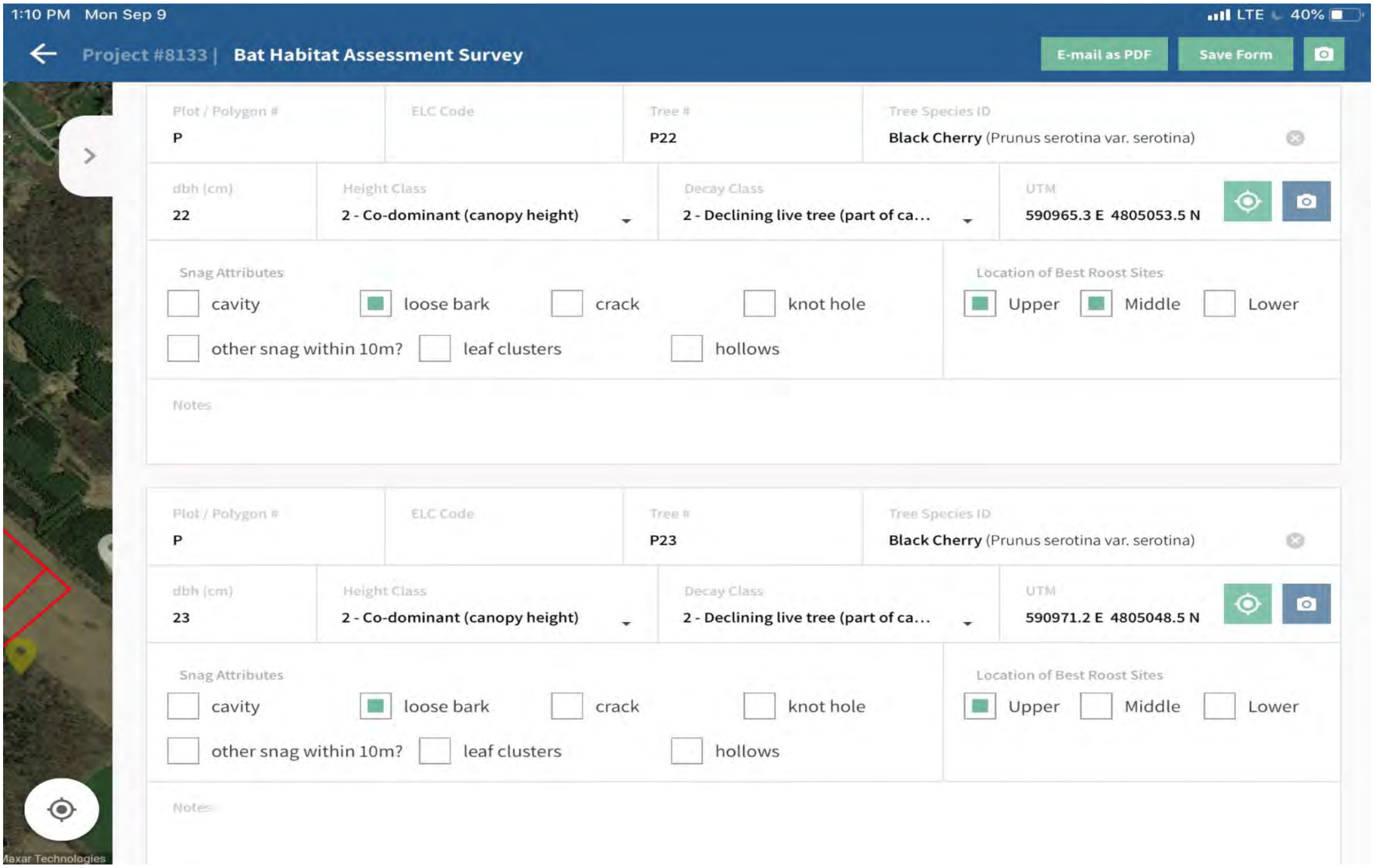
Plot / Polygon #: P
ELC Code:
Tree #: P21
Tree Species ID: **Black Cherry** (Prunus serotina var. serotina)

dbh (cm): 31
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 590960.8 E 4805059.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes: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Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: P
ELC Code:
Tree #: P22
Tree Species ID: **Black Cherry** (Prunus serotina var. serotina)
dbh (cm): 22
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 590965.3 E 4805053.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☑ Middle ☐ Lower

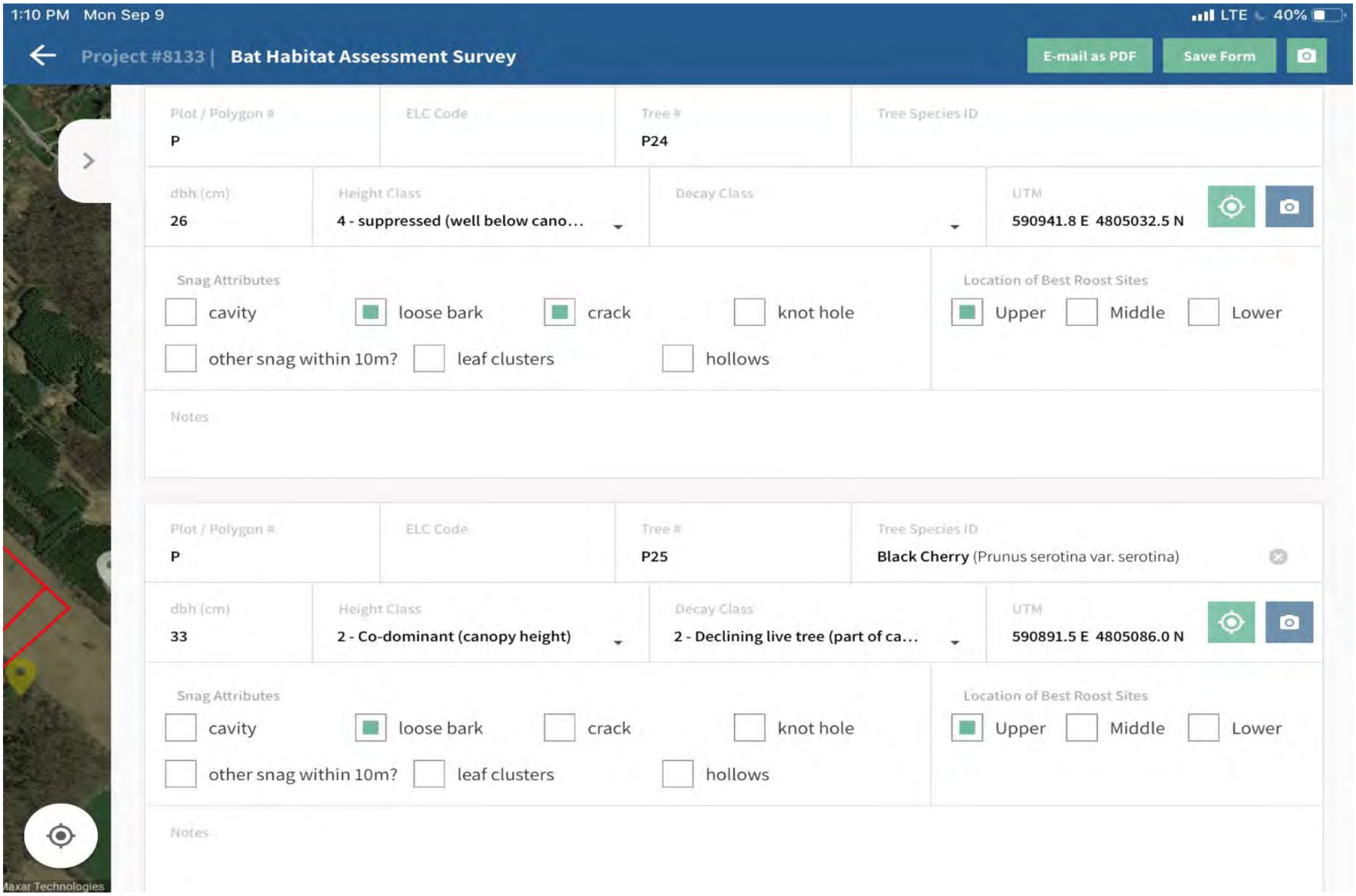
Notes

Plot / Polygon #: P
ELC Code:
Tree #: P23
Tree Species ID: **Black Cherry** (Prunus serotina var. serotina)
dbh (cm): 23
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 590971.2 E 4805048.5 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes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Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #: P
ELC Code:
Tree #: P24
Tree Species ID:
dbh (cm): 26
Height Class: 4 - suppressed (well below cano...
Decay Class:
UTM: 590941.8 E 4805032.5 N

Snag Attributes
☐ cavity ☑ loose bark ☑ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

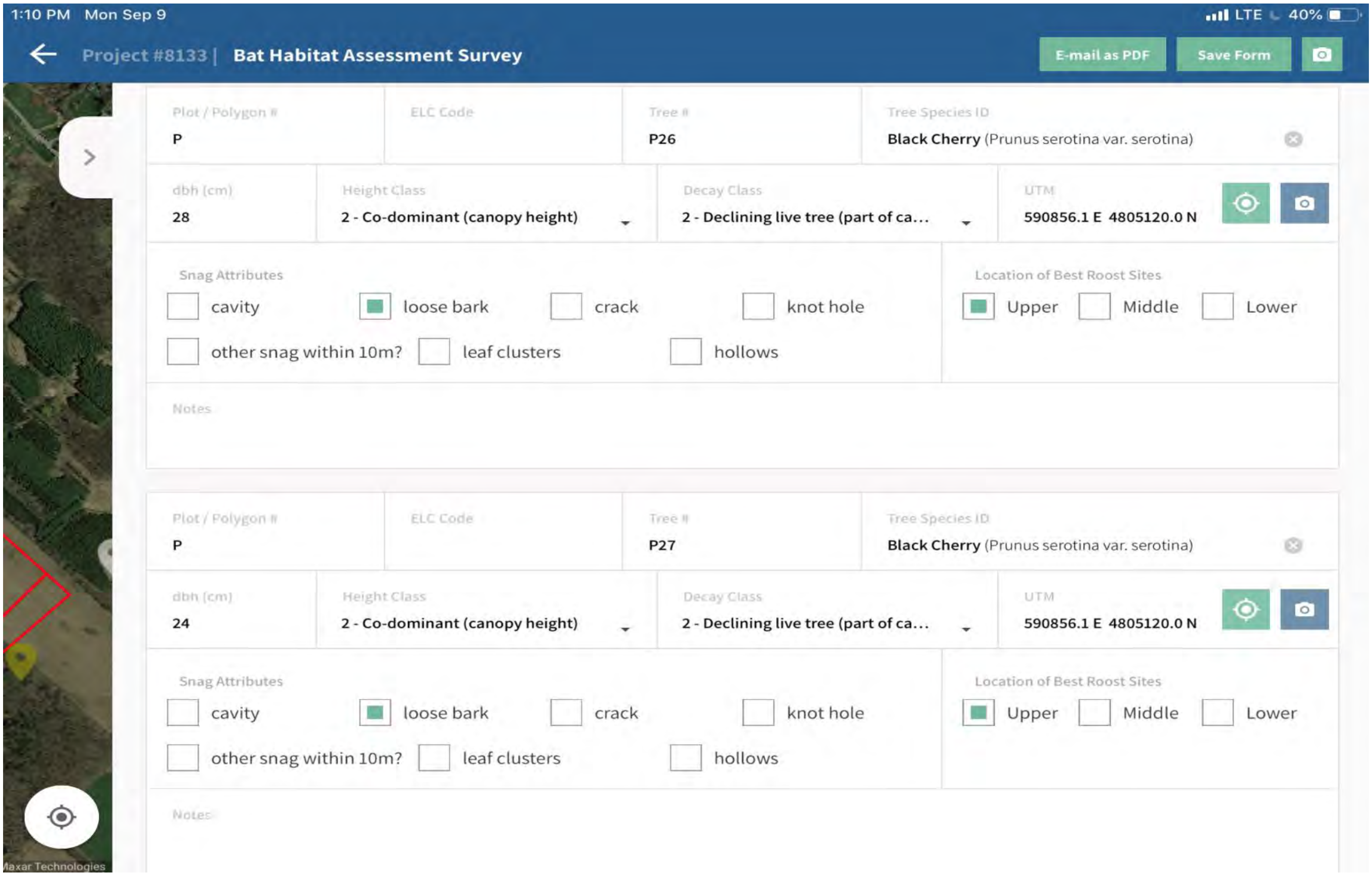
Notes

Plot / Polygon #: P
ELC Code:
Tree #: P25
Tree Species ID: **Black Cherry** (Prunus serotina var. serotina)
dbh (cm): 33
Height Class: 2 - Co-dominant (canopy height)
Decay Class: 2 - Declining live tree (part of ca...
UTM: 590891.5 E 4805086.0 N

Snag Attributes
☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites
☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | Bat Habitat Assessment Survey

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
P		P26	**Black Cherry** (Prunus serotina var. serotina)

dbh (cm)	Height Class	Decay Class	UTM
28	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca…	590856.1 E 4805120.0 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
P		P27	**Black Cherry** (Prunus serotina var. serotina)

dbh (cm)	Height Class	Decay Class	UTM
24	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca…	590856.1 E 4805120.0 N

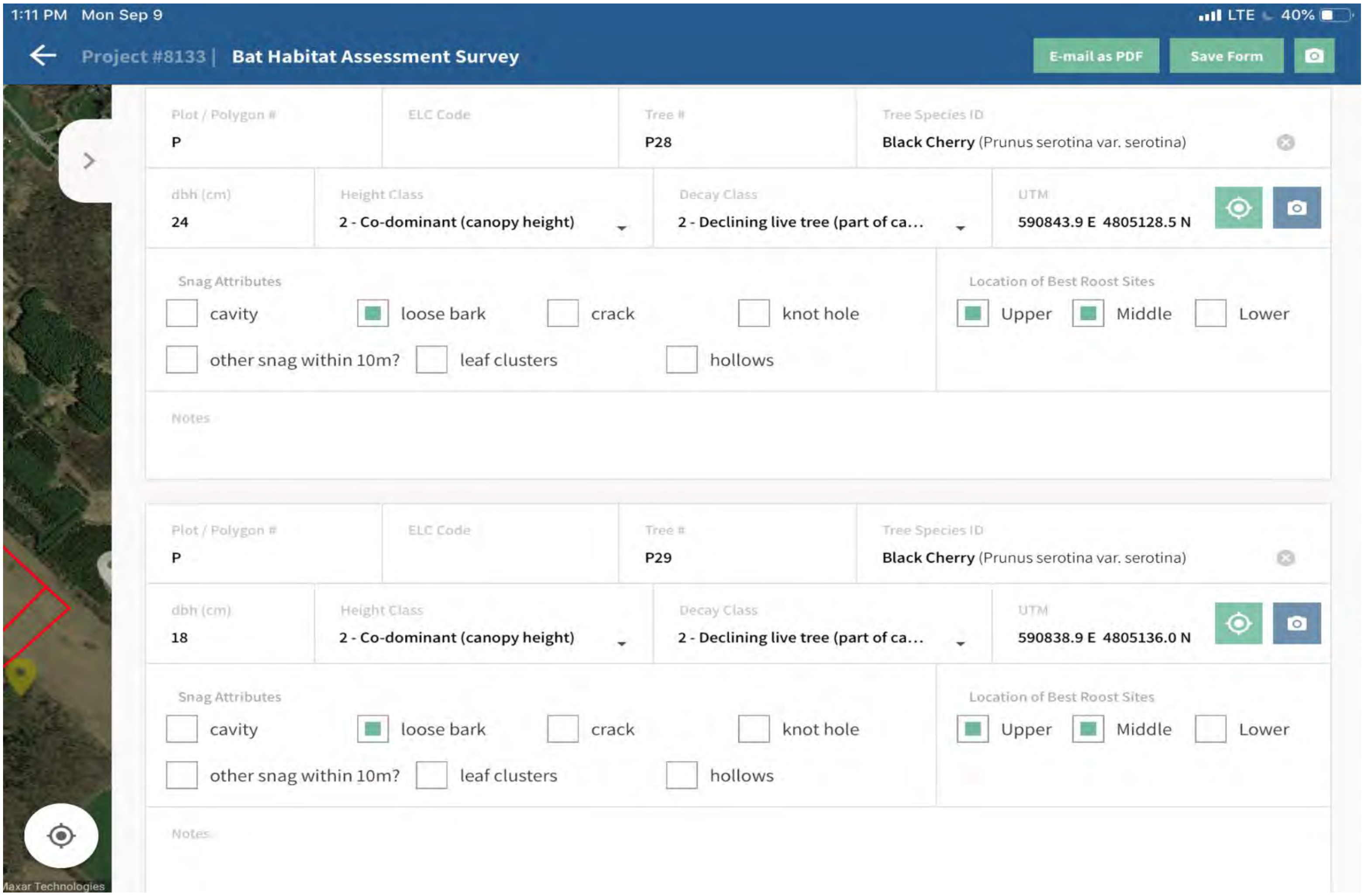
Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | Bat Habitat Assessment Survey

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
P		P28	**Black Cherry** (Prunus serotina var. serotina)

dbh (cm)	Height Class	Decay Class	UTM
24	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca…	590843.9 E 4805128.5 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
P		P29	**Black Cherry** (Prunus serotina var. serotina)

dbh (cm)	Height Class	Decay Class	UTM
18	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca…	590838.9 E 4805136.0 N

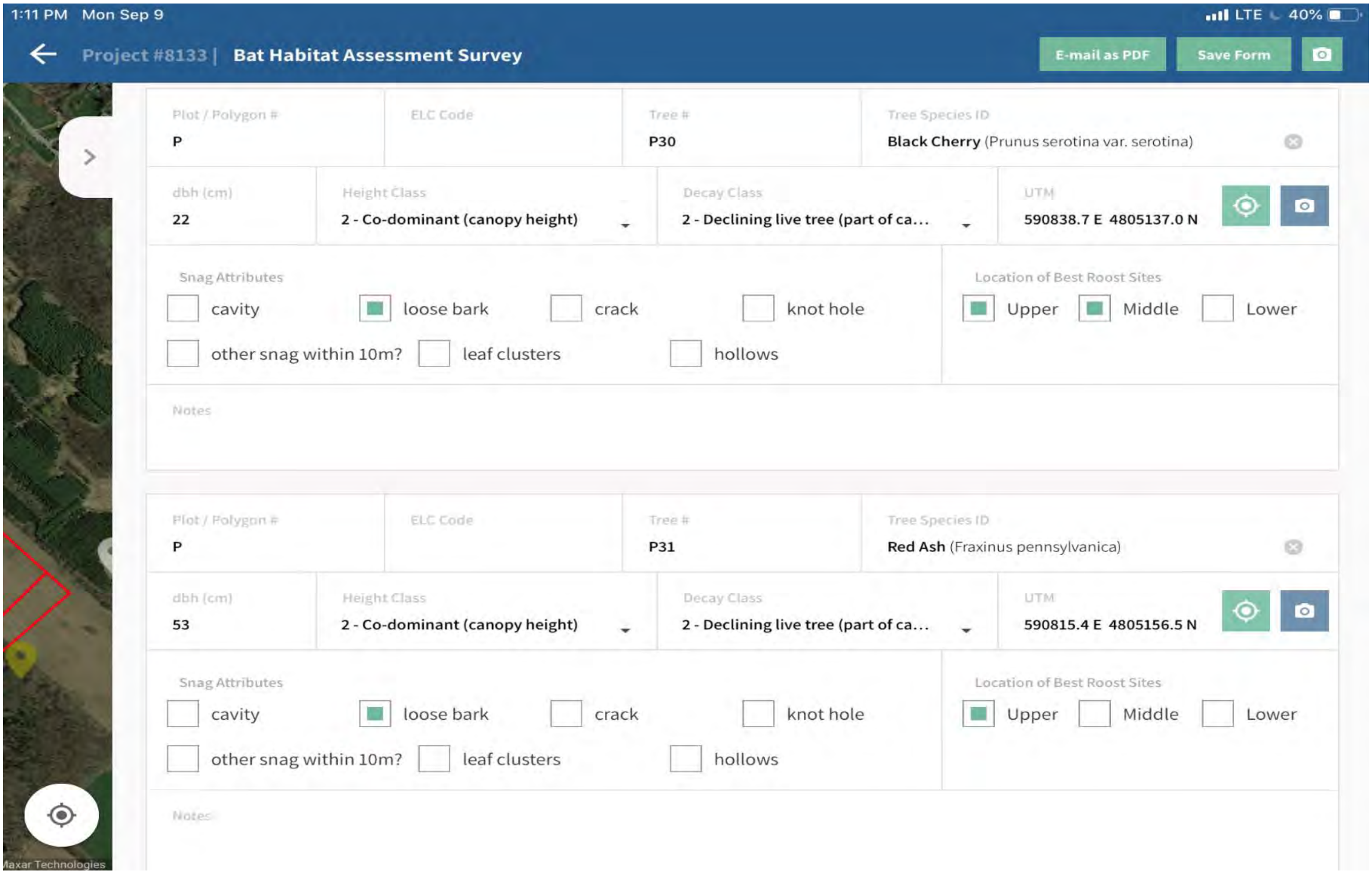
Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
P		P30	**Black Cherry** (Prunus serotina var. serotina)

dbh (cm)	Height Class	Decay Class	UTM
22	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	590838.7 E 4805137.0 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
P		P31	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
53	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	590815.4 E 4805156.5 N

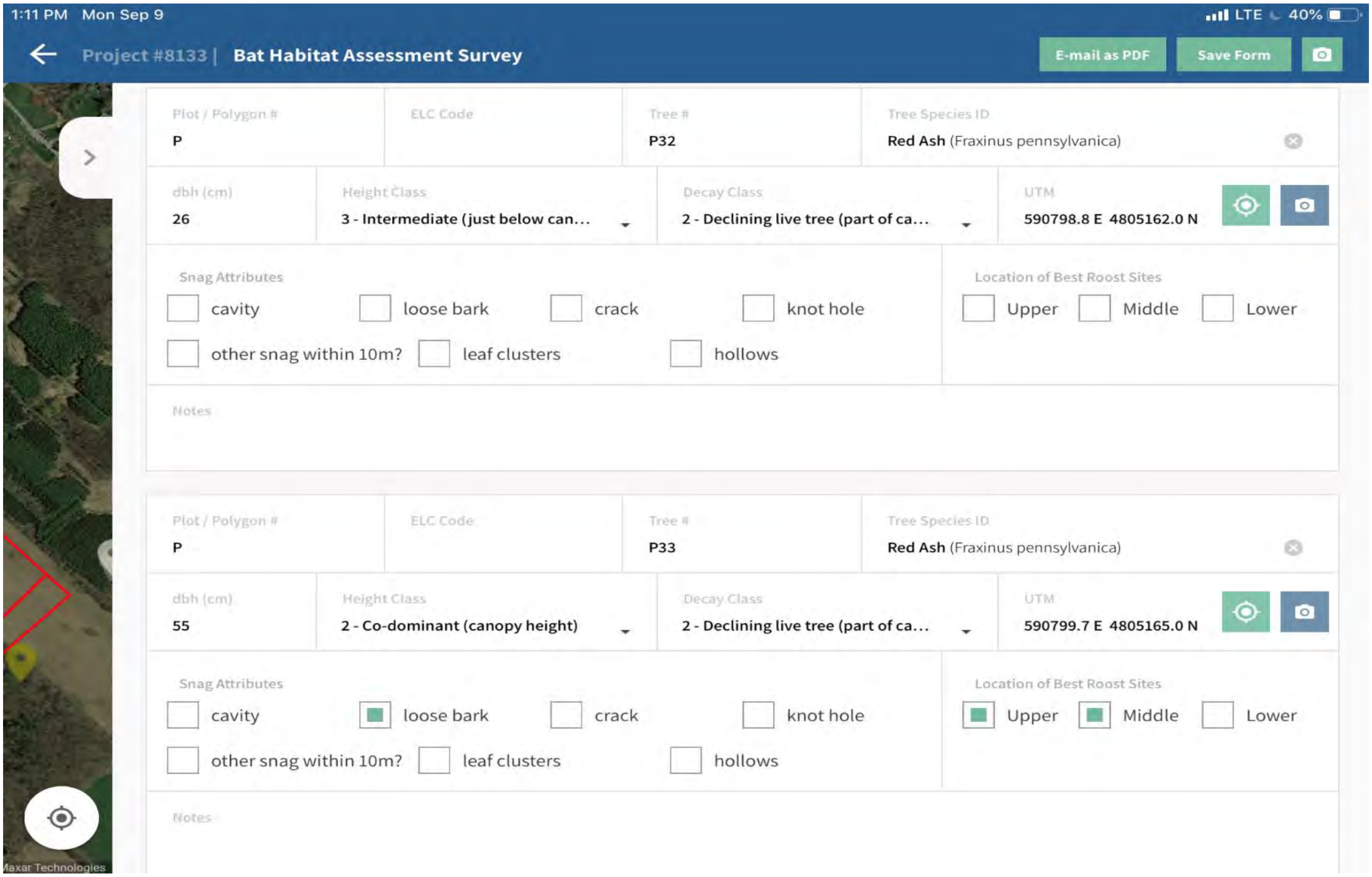
Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☐ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
P		P32	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
26	3 - Intermediate (just below can...	2 - Declining live tree (part of ca...	590798.8 E 4805162.0 N

Snag Attributes

☐ cavity ☐ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☐ Upper ☐ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
P		P33	**Red Ash** (Fraxinus pennsylvanica)

dbh (cm)	Height Class	Decay Class	UTM
55	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	590799.7 E 4805165.0 N

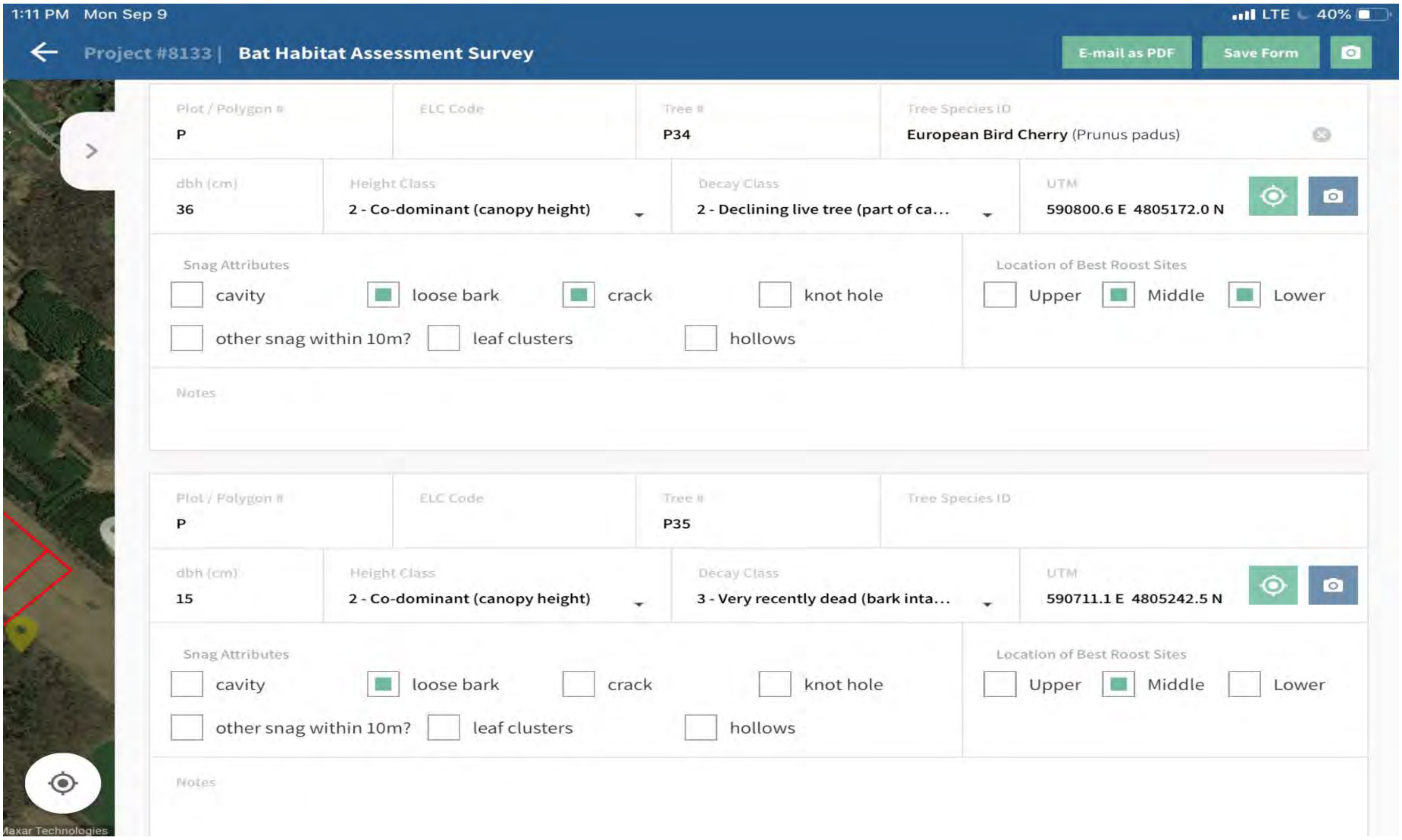
Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole
☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
P		P34	**European Bird Cherry** (Prunus padus)

dbh (cm)	Height Class	Decay Class	UTM
36	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	590800.6 E 4805172.0 N

Snag Attributes

☐ cavity ☑ loose bark ☑ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☐ Upper ☑ Middle ☑ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
P		P35	

dbh (cm)	Height Class	Decay Class	UTM
15	2 - Co-dominant (canopy height)	3 - Very recently dead (bark inta...	590711.1 E 4805242.5 N

Snag Attributes

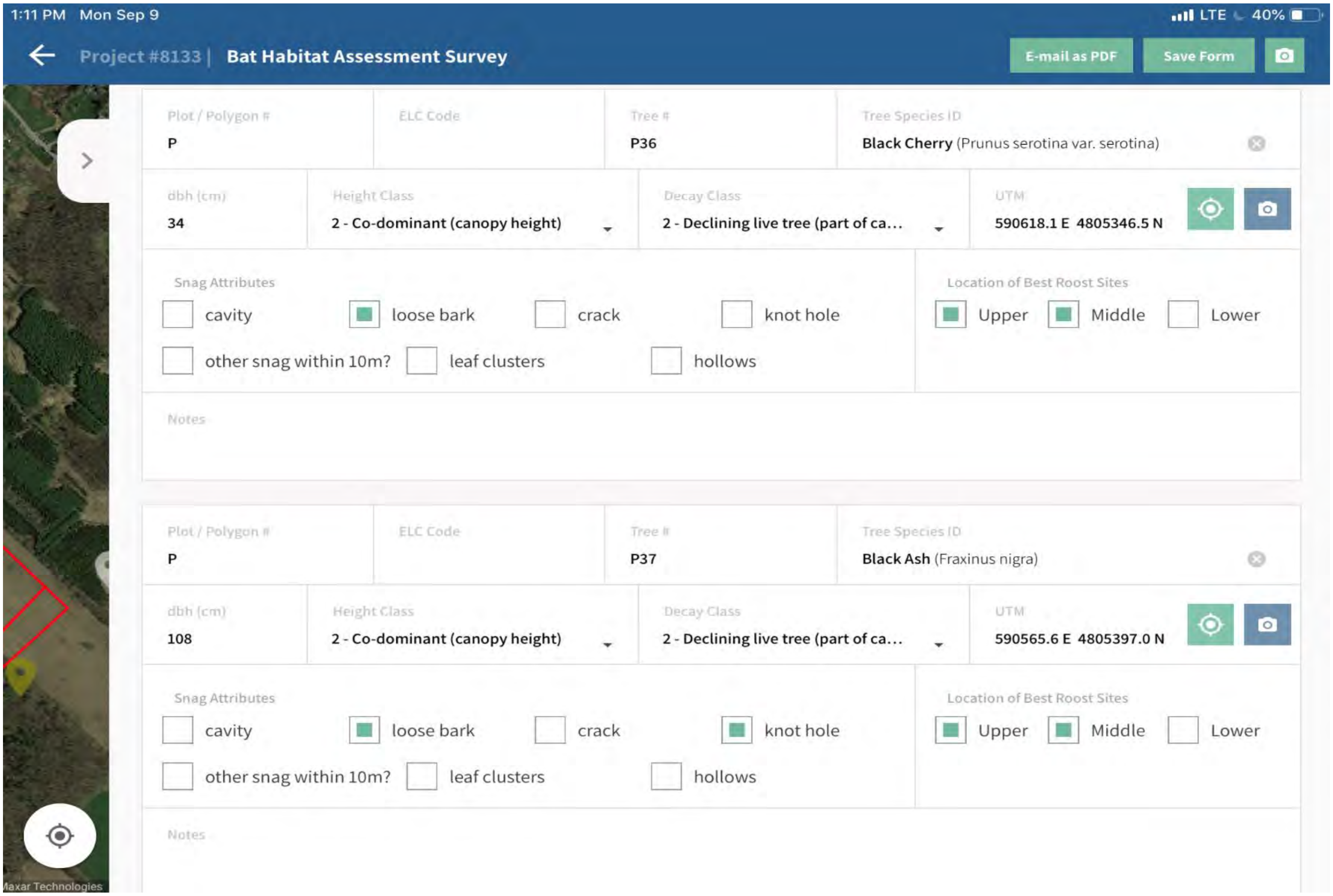
☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☐ Upper ☑ Middle ☐ Lower

Notes



Project #8133 | **Bat Habitat Assessment Survey**

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
P		P36	**Black Cherry** (Prunus serotina var. serotina)

dbh (cm)	Height Class	Decay Class	UTM
34	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	590618.1 E 4805346.5 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☐ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes

Plot / Polygon #	ELC Code	Tree #	Tree Species ID
P		P37	**Black Ash** (Fraxinus nigra)

dbh (cm)	Height Class	Decay Class	UTM
108	2 - Co-dominant (canopy height)	2 - Declining live tree (part of ca...	590565.6 E 4805397.0 N

Snag Attributes

☐ cavity ☑ loose bark ☐ crack ☑ knot hole

☐ other snag within 10m? ☐ leaf clusters ☐ hollows

Location of Best Roost Sites

☑ Upper ☑ Middle ☐ Lower

Notes

Appendix C – Ecological Field Data – Aquatic

Savanta Inc. Watercourse Aquatic Habitat Assessment - Field Use Only

Page 1 of 3

Administrative Information

Project Number	Date	Observer(s)	Project Code:
8133	June 24	OP ML	

Sampling Location and Water Chemistry

Upstream UTM (easting/northing): 589117 4805936

Downstream UTM (easting/northing): 589065 4805904

Surrounding Land Use Within 50m (check all that apply):
- ☐ Agricultural
- ☒ Residential
- ☐ Forest
- ☐ Meadow
- ☐ Wetland
- ☐ Livestock
- ☒ Other (describe) Golf course

General Site Location Map (include closest road intersection)

Site Length (m): ~60

pH: 7.2

Rain within last 48 hrs ☐ Yes ☒ No

Dissolved O_2 (mg/l): —

Turbidity (NTU): —

Water Temp (°C): 11

Hydraulic Head (mm): 4

Water Colour
- ☒ Colourless
- ☐ Yellow/Brown
- ☐ Blue/Green
- ☐ Turbid
- ☐ Other (describe)

Waterbody Name: Road Ditch

Watershed Name: Medad

Input(s) into the stream (e.g. tile drainage, seepages, overland flow): Overland

Location of input(s) (UTM): —

Stream Morphology and Habitat

If any part of watercourse is underground (i.e. piped, tiled) or different than available mapping, mark updates required on General Site Location map above.

Type of Waterbody (check all that apply)
☐ Lake ☒ Stream/River ☐ Pond ☐ Wetland ☒ Channelized

Flow Condition
☒ Permanent ☐ Intermittent ☐ Ephemeral

Associated Wetland (PSW, unevaluated, etc.): NA

Flow Influence
☒ Base Flow ☐ Freshet ☐ Spate

Sub-Section(s)	Run ☑	Pool ☐	Riffle ☐	Flats ☑	Inside Culvert ☐	Other ☐
Percentage of Area	80			20		
Mean depth wetted (m)	0.25			0.25		
Mean width wetted (m)	1.80			1.80		
Mean bankfull depth (m)	1.20			1.20		
Mean bankfull width (m)	4.0			4.0		
Flow Velocity (mk)	0.17 m/s			0.17 m/s		
Hydraulic Head (mm)	—			—		
Substrate	silt			silt		

Bedrock	Boulder	Cobble	Gravel	Sand	Silt	Clay	Muck	Detritus
Br	Bo	Co	Gr	Sa	Si	Cl	Mu	D

Bank Stability

Left Upstream Bank	Right Upstream Bank
☒ Stable ☐ Slightly Unstable ☐ Moderately Unstable ☐ Unstable	☒ Stable ☐ Slightly Unstable ☐ Moderately Unstable ☐ Unstable
Bank Substrate Type: *Include evidence of channel hardening, bank alteration* silt/clay – natural veg	Bank Substrate Type: silt/clay – natural veg

Habitat

Instream Cover (% surface area)	Undercut Banks	Boulders	Cobble	Woody Debris	Organic Debris	Vascular Macrophytes	None
	0	0	0	10 ☒ Instream ☒ Overhanging	10	80 ☒ Instream ☒ Overhanging	0

Vegetation

Riparian Classification* (from D/S looking U/S)
1=none, 2=lawn, 3=cropped, 4=meadow, 5=scrubland, 6=forest, 7=wetland)

Distance (m)	Left Bank	Right Bank
0 - 1.5	7	1
1.5 - 10	2	1
10 - 30	2	2

Dominant Riparian Vegetation Type (list species)

Tyfa sp
Jewel weed

Instream Vegetation Type (Predominant Species)

Submergent	Floating	Emergent	None
20 (%)	0 (%)	40 (%)	☐

Instream Patch Size (m²) (if applicable) —

Watercress Present ☐ Yes ☒ No
If yes, patch size (m²)

Shore Cover (% stream shaded)	100 - 90	90 - 60	60 - 30	30 - 1	None
	☒	☐	☐	☐	☐

Additional Notes

Migratory Obstructions *If yes, describe.* wetland culvert obstructed
☐ None ☐ Seasonal ☒ Permanent
UTM (Easting/Northing) what location is this is for?

☐ Iron Staining ☐ Watercress ☐ Sheen ☐ Bubb...
☐ Evidence of Groundwater
UTM (Easting/Northing) what location is this is for?

Potential Enhancement Opportunities
Naturalize

Fish Observed ☐ Yes ☒ No
If yes, describe (species/families; spawning; nursery habitat)

Incidental Wildlife Observations

—

General Comments

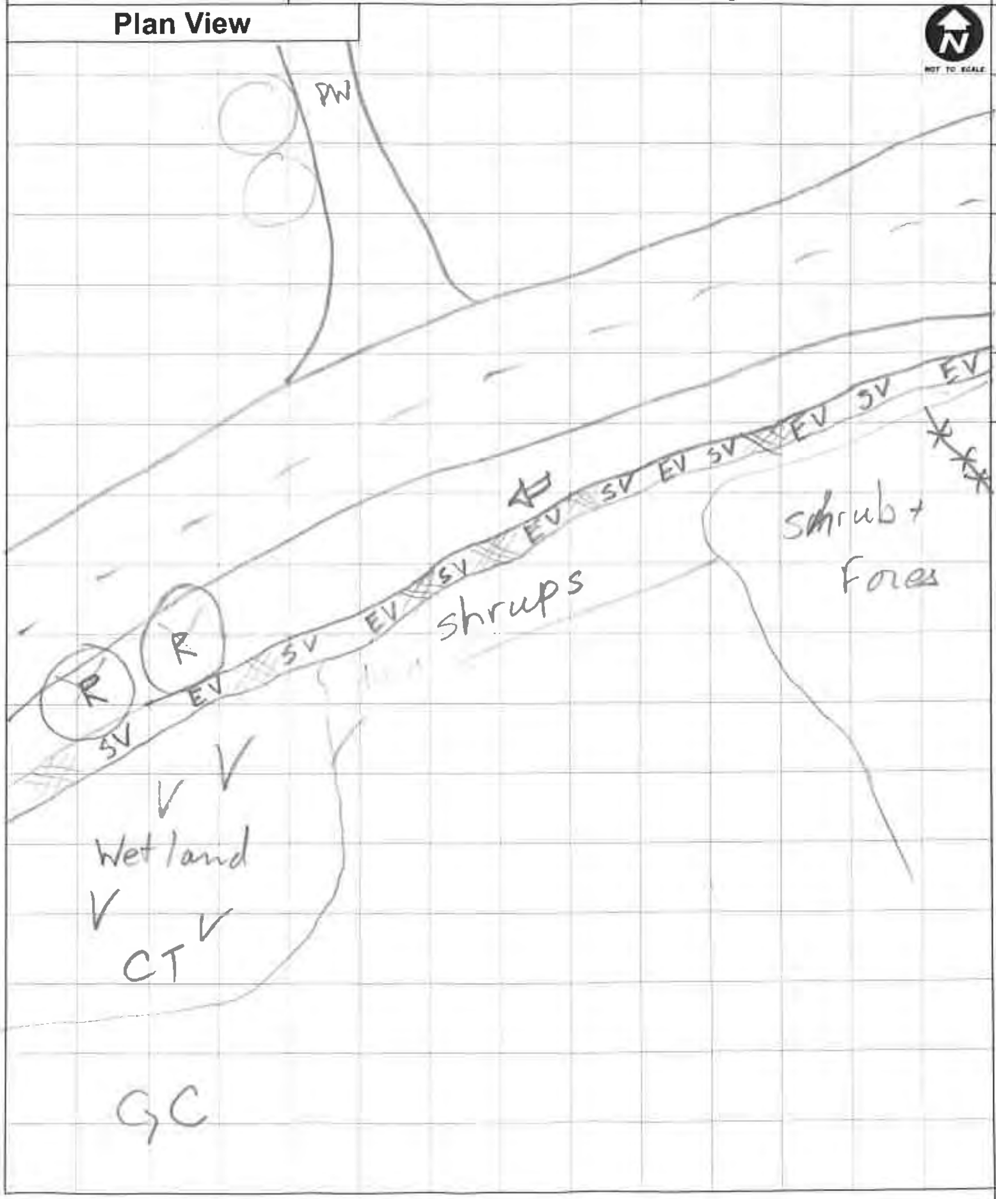
—

Savanta Inc. Watercourse Aquatic Habitat Assessment - Field Use Only

Aquatic Habitat Map

Section Identifier	Section Location	Section Length (m)	Scale (cm / m)
		~60 m	2 cm / 10 m

Plan View



Project Number 8133

Mapper ML

Name of waterbody Road Ditch to Medad Trib.

Crossing Number

Station Number

Date (dd-mmm-yr) 24-Jun-2019

Legend

10d	Depth (cm)
6w	Width
➡	Riffle
⇨	Run/Glide
⬭	Pool
▮	Island/Bar
▩	Fine Substrate
###	Gravel Substrate
oOooO	Cobble/Boulder
CT	Cattail
SV/FV	Submerg/Float Veg
EV	Emergent Veg
W	Watercress
Fe	Iron Staining
//////	Eroded Bank
xxx	Riprap/Other Stabilization
⊂⊃	Instream Log/Tree
^^^	Dam/Weir/Obstruction
®	Riparian Tree
↦	Seep/Spring
------	Undercut Bank
—	Barrier to Fish Movement
-S-	Seasonal Barrier
-x-x-	Fence Line
⊔	Culvert

Cross Section Profile

Horizontal Scale ________ Vertical Scale ________

Savanta Inc. MNR Fish Collection Report - Field Use Only

Administrative Information

Licence No: 1092377	Date of Issue: 2019-03-28	Licensee First Name: Michelle	Licensee Last Name: Letourneau

Purpose of Survey: (why were you collecting fish)

Presence / Absence Survey

Number of Part 2 Site Collection Report Submitted: 1

Site Location Information

Survey Site # / Code: MD1	Waterbody Name: Medad Tributary	Waterbody Type: Watercourse	Stream Permanency: Permanent	Watercress Present: No

Downstream (D/S) UTM NAD83 ZONE 17:
East: GPS kit North: GPS kit

Upstream (U/S) UTM NAD83 ZONE 17:
East: GPS kit North: GPS kit

Site Location/Access Description:

Site Location Comments:

Sampling Information

Sampling Date: June 24, 2019	Sampling Start Time: (24 hour clock) 7:00	Sampling End Time: (24 hour clock) 7:30

Water Temperature (°C)	Time Taken: (24 hour clock)	Air Temperature (°C)	Time Taken: (24 hour clock)

Electrofishing

Number of Electrofisher Seconds Fished: (seconds) 190.7	Voltage: (V) 150	Amperage: (A) -	Frequency: (Hz) 60

Length of Site Electrofished: (m)

Mean Width of Site Surveyed: (m)

Sampling/Electrofishing Comments:

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Fish Captured (complete for each site)

Species Common Name	# Captured	# Live Release	Adult (y/n)	YOY (y/n)	Smallest Size (mm)	Largest Size (mm)	Bulk Weight (g)
Largemouth Bass	5	5			2.0 cm	10.6 cm	25g

Fish Captured Comments: (Include incidental wildlife captures and observations here)

Savanta Inc. MNR Fish Collection Report - Field Use Only

Administrative Information

Licence No: 1092377	Date of Issue: 2019-03-28	Licensee First Name: Michelle	Licensee Last Name: Letourneau

Purpose of Survey: (why were you collecting fish)

Community assemblage

Number of Part 2 Site Collection Report Submitted: 1

Site Location Information

Survey Site # / Code: MD2	Waterbody Name: Medad Tributary	Waterbody Type: Stream	Stream Permanency: Permanent	Watercress Present: No

Downstream (D/S) UTM NAD83 ZONE 17: East: 589057 North: 4805791	Upstream (U/S) UTM NAD83 ZONE 17: East: 589134 North: 4805633

Site Location/Access Description:

Park at golf course

Site Location Comments:

-

Sampling Information

Sampling Date: June 24, 2019	Sampling Start Time: (24 hour clock) 5:35	Sampling End Time: (24 hour clock) 5:55

Water Temperature (°C) 16	Time Taken: (24 hour clock) 5:30	Air Temperature (°C) 14	Time Taken: (24 hour clock) 5:30

Electrofishing

Number of Electrofisher Seconds Fished: (seconds) 1318.1	Voltage: (V) 150	Amperage: (A) /	Frequency: (Hz) 60
Length of Site Electrofished: (m)	80 m	Mean Width of Site Surveyed: (m)	5m

Sampling/Electrofishing Comments:

—

Fish Captured (complete for each site)

Species Common Name	# Captured	# Live Release	Adult (y/n)	YOY (y/n)	Smallest Size (mm)	Largest Size (mm)	Bulk Weight (g)
Large Mouth Bass	4	4			8.5cm	10.2cm	37g

Fish Captured Comments: (Include incidental wildlife captures and observations here)

- AMTO tadpole ①
- GRFR tadpole ①
- GRFR calling ② at pond
- Poor water quality
- Deep silt/sediment
- Abundant algae

Savanta Inc. MNR Fish Collection Report - Field Use Only

Administrative Information

Licence No: 1092377	Date of Issue: 2019-03-28	Licensee First Name: Michelle	Licensee Last Name: Letourneau

Purpose of Survey: (why were you collecting fish)

Presence / Absence Survey

Number of Part 2 Site Collection Report Submitted: 1

Site Location Information

Survey Site # / Code: MDD	Waterbody Name: McDad Tributary	Waterbody Type: Stream	Stream Permanency: Permanent	Watercress Present: No

Downstream (D/S) UTM NAD83 ZONE 17:

East: GPS kit North: GPS kit

Upstream (U/S) UTM NAD83 ZONE 17:

East: GPS kit North: GPS kit

Site Location/Access Description:

Site Location Comments:

Sampling Information

Sampling Date: June 24, 2019	Sampling Start Time: (24 hour clock)	Sampling End Time: (24 hour clock)

Water Temperature (°C)	Time Taken: (24 hour clock)	Air Temperature (°C)	Time Taken: (24 hour clock)

Electrofishing

Number of Electrofisher Seconds Fished: (seconds)	Voltage: (V)	Amperage: (A)	Frequency: (Hz)

Length of Site Electrofished: (m)

Mean Width of Site Surveyed: (m)

Sampling/Electrofishing Comments: Seine

Fish Captured (complete for each site)

Species Common Name	# Captured	# Live Release	Adult (y/n)	YOY (y/n)	Smallest Size (mm)	Largest Size (mm)	Bulk Weight (g)
No fish							

Fish Captured Comments: (Include incidental wildlife captures and observations here)

Savanta Inc. MNR Fish Collection Report - Field Use Only

Administrative Information

Licence No: 1092377	Date of Issue: 2019-03-28	Licensee First Name: Michelle	Licensee Last Name: Letourneau

Purpose of Survey: (why were you collecting fish)

Presence / Absence survey

Number of Part 2 Site Collection Report Submitted: 1

Site Location Information

Survey Site # / Code: MDT-1	Waterbody Name: Medad Tributary	Waterbody Type: Watercourse	Stream Permanency: Permanent	Watercress Present: No

Downstream (D/S) UTM NAD83 ZONE 17:

East: GPS Kit North: ______

Upstream (U/S) UTM NAD83 ZONE 17:

East: GPS Kit North: ______

Site Location/Access Description:

AG field through thicket to watercourse

Site Location Comments:

4 BARS foraging AG field

Sampling Information

Sampling Date: June 17, 2019	Sampling Start Time: (24 hour clock) 09:30	Sampling End Time: (24 hour clock) 11:05

Water Temperature (°C) 13	Time Taken: (24 hour clock) 10:50	Air Temperature (°C) 16	Time Taken: (24 hour clock) 1:05

Electrofishing

Number of Electrofisher Seconds Fished: (seconds) 640	Voltage: (V) 160	Amperage: (A) /	Frequency: (Hz) 80

Length of Site Electrofished: (m) GPS Kit

Mean Width of Site Surveyed: (m) 2

Sampling/Electrofishing Comments:

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Fish Captured (complete for each site)

Species Common Name	# Captured	# Live Release	Adult (y/n)	YOY (y/n)	Smallest Size (mm)	Largest Size (mm)	Bulk Weight (g)
No fish							

Fish Captured Comments: (Include incidental wildlife captures and observations here)

- no benthics or amphibian. Low benthic biomass observed.
- Cattail, Phragmites + Reed canary grass
- ↑ flow
- "wetlandish" feature with sometimes multi-flow paths
- Depth ranges 10-50 cm depth

Savanta Inc. MNR Fish Collection Report - Field Use Only

Administrative Information

Licence No: 1092377	Date of Issue: 2019-03-28	Licensee First Name: Michelle	Licensee Last Name: Letourneau

Purpose of Survey: (why were you collecting fish)
Presence / Absence Survey

Number of Part 2 Site Collection Report Submitted: 1

Site Location Information

Survey Site # / Code: MN-1	Waterbody Name: Medad Tributary	Waterbody Type: Stream	Stream Permanency: Permanent	Watercress Present: No

Downstream (D/S) UTM NAD83 ZONE 17:
East: GPS kit North: GPS kit

Upstream (U/S) UTM NAD83 ZONE 17:
East: GPS kit North: GPS kit

Site Location/Access Description:

Site Location Comments:

Sampling Information

Sampling Date: June 24, 2019	Sampling Start Time: (24 hour clock)	Sampling End Time: (24 hour clock)

Water Temperature (°C)	Time Taken: (24 hour clock)	Air Temperature (°C)	Time Taken: (24 hour clock)

Electrofishing

Number of Electrofisher Seconds Fished: (seconds) 944.1	Voltage: (V) 150	Amperage: (A) /	Frequency: (Hz) 60

Length of Site Electrofished: (m)

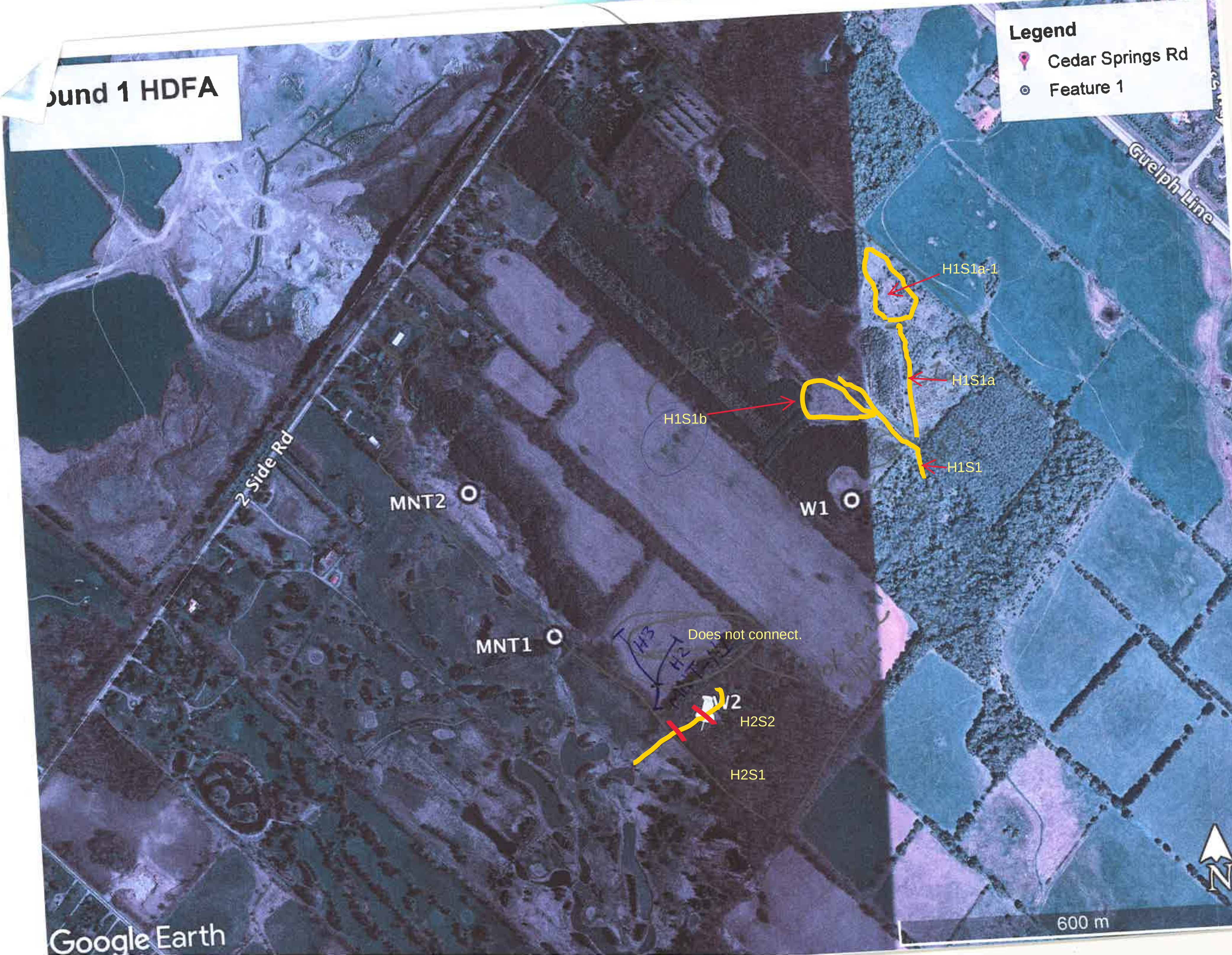
Mean Width of Site Surveyed: (m)

Sampling/Electrofishing Comments:

Fish Captured (complete for each site)

Species Common Name	# Captured	# Live Release	Adult (y/n)	YOY (y/n)	Smallest Size (mm)	Largest Size (mm)	Bulk Weight (g)
No fish							

Fish Captured Comments: (Include incidental wildlife captures and observations here)



ound 1 HDFA

Legend
Cedar Springs Rd
Feature 1
Guelph Line
2 Side Rd
H1S1a-1
H1S1a
H1S1b
H1S1
W1
MNT2
MNT1
Does not connect.
H3
H2
W2
H2S2
H2S1
N
600 m
Google Earth

Savanta Inc. Headwater Drainage Aquatic Habitat Assessments - Field Use Only

Crew Leader	Crew	Recorder	**Savanta Project Code:**
ML	AL + AM	AL	8133

Site Location Information

Subwatershed	**Date:** YYYY/MM/DD	**Time:** (24 hr)	
Mount Nemo	2019/06/03	13:22	**UTM Upstream:** Easting: 590880 Northing: 4804881 **UTM Downstream:** Easting: 590842 Northing: 4804864

Stream Code:	**Reach Code:**	**Optional**	
H2	H2-S2	Water Temp (°C) 12 Air Temp (°C) 15	**Photo #** Upstream **Photo #** Downstream

Hydrology Classification (Step 1)

Feature Type (Table 1)	**Flow Influence** (Table 3)	**Bankful Depth** (cm)	**Feature Width** (cm)	**Width MT for FW** (Table 4)
1	1	50	1020	2
Flow Condition (Table 2)	**Bankful Width** (cm)	**Width MT for BW** (Table 4)	**Wetted Width** (cm)	**Width MT for BW** (Table 4)
4	1020	2	355	2

Record EITHER Hydraulic Head OR Volume OR Distance

Hydraulic Head (cm)			**Water Depth** (cm)			**Distance** (m)			**Time** (sec)		
1	2	3	1	2	3	1	2	3	1	2	3
			3	2.5	2.7						

Sediment Transport (Table 5)	**Sediment Deposition** (Table 6)	**Feature Roughness** (Table 7)	**Bed Substrate** (Table 8)
Valley 1 Adjacent 1	2	2	2

Riparian Classification (Step 2)

Riparian Vegetation (Table 9)	0 - 1.5 m		1.5 - 10 m		10 - 30 m	
	Left	Right	Left	Right	Left	Right
	6	6	6	6	6	6

Fish and Fish Habitat Classification (Step 3)

Instream Vegetation (Table 10) 3

Photo # 1-3

Approx. patch size (cm) ______

If watercress present:

UTM Easting ______

UTM Northing ______

Fish Visual Observation

YES [✓ NO]

If yes, species type and #: ______ # ______

Fish Habitat Present *(check all that apply)*

☐ Riffles ☐ Runs ☐ Pools ☐ Undercut Banks

Barriers to Fish

☐ **Perched culvert**
Photo # ______
Jumping height (cm) ______
Perched height (cm) ______
UTM Easting ______
UTM Northing ______

☐ **Log jam**
Photo # ______
Flow being blocked (%) ______
UTM Easting ______
UTM Northing ______

☐ **Blocked culvert**
Photo # ______
Flow being blocked (%) ______
UTM Easting ______
UTM Northing ______

☐ **Other** ______
Photo # ______
Flow being blocked (%) ______
UTM Easting ______
UTM Northing ______

Linkage **What is upstream of this reach?** Wetland **Downstream of this reach?** Wetland/Online pond

Site Feature(s)	**Category Value**	**Comments**
Major Nutrient Sources Upstream	1	AG
Potential Contamination Sources Upstream	1	
Channel Hardening	4	
Dredging or Straightening	4	
Barriers and/or Dams in proximity	4	
On-line ponds upstream	4	
Springs or Seeps at the Site	5	
Evidence of channel scouring/erosion	4	
BMPs or restoration activities	4	

Site Feature Categories 1 Ongoing and active 2 Historical Evidence 3 No evidence but reported 4 No evidence 5 Unknown

File: S:\6005 - SAV Marketing and Support\TEMPLATES - FIELD COLLECTION FORMS\02(3)_2015_HeadwaterDrainage_AquaticHabAssessments

Savanta Inc. Headwater Drainage Aquatic Habitat Assessments - Field Use Only

Crew Leader ML	Crew AL AM	Recorder AM	**Savanta Project Code:** 8133

Site Location Information

Subwatershed Mt. Nemo	**Date:** YYYY/MM/DD 2019/06/03	**Time:** (24 hr) 13:44	**UTM Upstream:** Easting: 590998 Northing: 4804958 **UTM Downstream:** Easting: 590968 Northing: 4804951

Stream Code: H2	**Reach Code:** H2-S1	**Optional** Water Temp (°C) 12 Air Temp (°C) 15	**Photo #** Upstream **Photo #** Downstream

Hydrology Classification (Step 1)

Feature Type (Table 1)	**Flow Influence** (Table 3)	**Bankful Depth** (cm)	**Feature Width** (cm)	**Width MT for FW** (Table 4)
1	2	20	~1000	2
Flow Condition (Table 2)	**Bankful Width** (cm)	**Width MT for BW** (Table 4)	**Wetted Width** (cm)	**Width MT for BW** (Table 4)
4	~1000	2	80, 300, 75	3

Record EITHER Hydraulic Head OR Volume OR Distance

Hydraulic Head (cm)			**Water Depth** (cm)			**Distance** (m)			**Time** (sec)		
1	2	3	1	2	3	1	2	3	1	2	3
			3.5	4	2						

Sediment Transport (Table 5) Valley 1 Adjacent 1	**Sediment Deposition** (Table 6) 3	**Feature Roughness** (Table 7) 2	**Bed Substrate** (Table 8) 2

Riparian Classification (Step 2)

Riparian Vegetation (Table 9)	0 - 1.5 m		1.5 - 10 m		10 - 30 m	
	Left	Right	Left	Right	Left	Right
	6	6	6	6	6	6

Fish and Fish Habitat Classification (Step 3)

Instream Vegetation (Table 10) 1

Photo # _____

Approx. patch size (cm) _____

If watercress present:

UTM Easting ________________

UTM Northing ________________

Fish Visual Observation

YES [✓ NO]

If yes, species type and #: ________________ # _____

Fish Habitat Present *(check all that apply)*

Riffles ☐ Runs ☐ Pools ☐ Undercut Banks ☐

Barriers to Fish

☐ **Perched culvert**
Photo # _____
Jumping height (cm) _____
Perched height (cm) _____
UTM Easting ____________
UTM Northing ____________

☐ **Log jam**
Photo # _____
Flow being blocked (%) _____
UTM Easting ____________
UTM Northing ____________

☐ **Blocked culvert**
Photo # _____
Flow being blocked (%) _____
UTM Easting ____________
UTM Northing ____________

☐ **Other** ____________
Photo # _____
Flow being blocked (%) _____
UTM Easting ____________
UTM Northing ____________

Linkage **What is upstream of this reach?** wetland **Downstream of this reach?** wetland

Site Feature(s)	**Category Value**	**Comments**
Major Nutrient Sources Upstream	1	AG
Potential Contamination Sources Upstream	1	
Channel Hardening	4	
Dredging or Straightening	4	
Barriers and/or Dams in proximity	4	
On-line ponds upstream	4	
Springs or Seeps at the Site	5	
Evidence of channel scouring/erosion	4	
BMPs or restoration activities	4	

Site Feature Categories 1. Ongoing and active 2. Historical Evidence 3. No evidence but reported 4. No evidence 5. Unknown

Incidental - tiny bivalve mussel
planarium

Savanta Inc. Headwater Drainage Aquatic Habitat Assessments - Field Use Only

Crew Leader ML	Crew OP	Recorder ML	**Savanta Project Code:** 8133

Site Location Information

Subwatershed Mount Nemo	**Date:** YYYY/MM/DD 2019/	**Time:** (24 hr) 13:04	**UTM Upstream:** Easting: 591229 Northing: 4805522 **UTM Downstream:** Easting: 591238 Northing: 4805326

Stream Code: HI	**Reach Code:** S1a-1	**Optional** Water Temp (°C) 12.6 Air Temp (°C) ____	**Photo #** Upstream **Photo #** Downstream ✓

Hydrology Classification (Step 1)

Feature Type (Table 1) 2	**Flow Influence** (Table 3) 2	**Bankful Depth** (cm) 24	**Feature Width** (cm) 1.68	**Width MT for FW** (Table 4) 2
Flow Condition (Table 2) 4	**Bankful Width** (cm) 1.68	**Width MT for BW** (Table 4) 2	**Wetted Width** (cm) 80	**Width MT for BW** (Table 4) 2

Record EITHER Hydraulic Head OR Volume OR Distance

Hydraulic Head (cm)			**Water Depth** (cm)			**Distance** (m)			**Time** (sec)		
1	2	3	1	2	3	1	2	3	1	2	3
			21								

Sediment Transport (Table 5) Valley 1 Adjacent 1	**Sediment Deposition** (Table 6) 2	**Feature Roughness** (Table 7) 4	**Bed Substrate** (Table 8) 1

Riparian Classification (Step 2)

Riparian Vegetation (Table 9)	0 - 1.5 m		1.5 - 10 m		10 - 30 m	
	Left	Right	Left	Right	Left	Right

Fish and Fish Habitat Classification (Step 3)

Instream Vegetation (Table 10) 6

Photo # _____

Approx. patch size (cm) _____

If watercress present:

UTM Easting ____________

UTM Northing ____________

Fish Visual Observation

YES [✓ NO]

If yes, species type and #:

____________ # _____

Fish Habitat Present *(check all that apply)*

Riffles	Runs	Pools	Undercut Banks
☐	☐	☐	☐

Barriers to Fish

☐ **Perched culvert** Photo # _____ Jumping height (cm) _____ Perched height (cm) _____ UTM Easting _________ UTM Northing _________	☐ **Log jam** Photo # _____ Flow being blocked (%) _____ UTM Easting _________ UTM Northing _________	☐ **Blocked culvert** Photo # _____ Flow being blocked (%) _____ UTM Easting _________ UTM Northing _________	☐ **Other** _________ Photo # _____ Flow being blocked (%) _____ UTM Easting _________ UTM Northing _________

Linkage What is upstream of this reach? ____________ Downstream of this reach? ____________

Site Feature(s)	**Category Value**	**Comments**
Major Nutrient Sources Upstream		
Potential Contamination Sources Upstream		
Channel Hardening		
Dredging or Straightening		
Barriers and/or Dams in proximity		
On-line ponds upstream		
Springs or Seeps at the Site		
Evidence of channel scouring/erosion		
BMPs or restoration activities		

Site Feature Categories 1. Ongoing and active 2. Historical Evidence 3. No evidence but reported 4. No evidence 5. Unknown

File: S:\6005 - SAV Marketing and Support\TEMPLATES - FIELD COLLECTION FORMS\02(3)_2015_HeadwaterDrainage_AquaticHabAssessments

Savanta Inc. Headwater Drainage Aquatic Habitat Assessments - Field Use Only

Crew Leader	Crew	Recorder	**Savanta Project Code:**
ML	OP	ML	8133

Site Location Information

Subwatershed	Date: YYYY/MM/DD	Time: (24 hr)	UTM Upstream: Easting:	Northing:
Mount Nemo	2019/04/18	13:30	UTM Downstream: Easting: 591163	Northing: 4805381

Stream Code:	Reach Code:	Optional	
H1	S2b	Water Temp (°C) 9.2 Air Temp (°C) ____	Photo # Upstream ✓ Photo # Downstream ✓

Hydrology Classification (Step 1)

Feature Type (Table 1)	Flow Influence (Table 3)	Bankful Depth (cm)	Feature Width (cm)	Width MT for FW (Table 4)
6	2		36 m	4
Flow Condition (Table 2)	**Bankful Width** (cm)	**Width MT for BW** (Table 4)	**Wetted Width** (cm)	**Width MT for BW** (Table 4)
2			20 m	4

Record EITHER Hydraulic Head OR Volume OR Distance

Hydraulic Head (cm) 1	2	3	Water Depth (cm) 1	2	3	Distance (m) 1	2	3	Time (sec) 1	2	3
			3	1							

Sediment Transport (Table 5)	Sediment Deposition (Table 6)	Feature Roughness (Table 7)	Bed Substrate (Table 8)
Valley 1 Adjacent 1	1	4	1

Riparian Classification (Step 2)

Riparian Vegetation (Table 9)	0 - 1.5 m Left	0 - 1.5 m Right	1.5 - 10 m Left	1.5 - 10 m Right	10 - 30 m Left	10 - 30 m Right
	5	5	5	5	6	6

Fish and Fish Habitat Classification (Step 3)

Instream Vegetation (Table 10) 6

Photo # _____

Approx. patch size (cm) _____

If watercress present:

UTM Easting ____________

UTM Northing ____________

Fish Visual Observation

YES NO

If yes, species type and #:

____________ # ____

Fish Habitat Present *(check all that apply)*

Riffles ☐ Runs ☐ Pools ☐ Undercut Banks ☐

Barriers to Fish

☒ **Perched culvert**
Photo # _____
Jumping height (cm) 4
Perched height (cm) 9
UTM Easting 591163
UTM Northing 4805381

☐ **Log jam**
Photo # _____
Flow being blocked (%) _____
UTM Easting ____________
UTM Northing ____________

☐ **Blocked culvert**
Photo # _____
Flow being blocked (%) _____
UTM Easting ____________
UTM Northing ____________

☐ **Other** ____________
Photo # _____
Flow being blocked (%) _____
UTM Easting ____________
UTM Northing ____________

Linkage **What is upstream of this reach?** Nothing **Downstream of this reach?** HDF

Site Feature(s)	Category Value	Comments
Major Nutrient Sources Upstream		
Potential Contamination Sources Upstream		
Channel Hardening		
Dredging or Straightening		
Barriers and/or Dams in proximity		
On-line ponds upstream		
Springs or Seeps at the Site		
Evidence of channel scouring/erosion		
BMPs or restoration activities		

Site Feature Categories 1 Ongoing and active 2 Historical Evidence 3 No evidence but reported 4 No evidence 5 Unknown

isolated pockets of water in WL

Savanta Inc. Headwater Drainage Aquatic Habitat Assessments - Field Use Only

Crew Leader ML	Crew DP	Recorder ML	**Savanta Project Code:** 8133

Site Location Information

Subwatershed	**Date:** YYYY/MM/DD	**Time:** (24 hr)	**UTM Upstream:** Easting: Northing: **UTM Downstream:** Easting: See GPS kit Northing:
Mount Nemo	2019/04/18	1316	

Stream Code:	**Reach Code:**	**Optional**	
H1	S1a-2	Water Temp (°C) 9.1 Air Temp (°C) ____	**Photo #** Upstream] GPS kit **Photo #** Downstream]

Hydrology Classification (Step 1)

Feature Type (Table 1)	**Flow Influence** (Table 3)	**Bankful Depth** (cm)	**Feature Width** (cm)	**Width MT for FW** (Table 4)
6	2		17	4
Flow Condition (Table 2)	**Bankful Width** (cm)	**Width MT for BW** (Table 4)	**Wetted Width** (cm)	**Width MT for BW** (Table 4)
2			14	4

Record EITHER Hydraulic Head OR Volume OR Distance

Hydraulic Head (cm)			**Water Depth** (cm)			**Distance** (m)			**Time** (sec)		
1	2	3	1	2	3	1	2	3	1	2	3
			18	8	19						

Sediment Transport (Table 5)	**Sediment Deposition** (Table 6)	**Feature Roughness** (Table 7)	**Bed Substrate** (Table 8)
Valley 1 Adjacent 1	1	4	1

Riparian Classification (Step 2)

Riparian Vegetation (Table 9)	0 - 1.5 m		1.5 - 10 m		10 - 30 m	
	Left	Right	Left	Right	Left	Right
	5	5	5	5	6	5

Fish and Fish Habitat Classification (Step 3)

Instream Vegetation (Table 10) 6

Photo # _____

Approx. patch size (cm) _____

If watercress present:

UTM Easting ____________

UTM Northing ____________

Fish Visual Observation

YES [✓ NO]

If yes, species type and #:

____________ # _____

Fish Habitat Present *(check all that apply)*

Riffles ☐ Runs ☐ Pools ☒ Undercut Banks ☐

Barriers to Fish

☐ **Perched culvert**
Photo # _____
Jumping height (cm) _____
Perched height (cm) _____
UTM Easting ____________
UTM Northing ____________

☐ **Log jam**
Photo # _____
Flow being blocked (%) _____
UTM Easting ____________
UTM Northing ____________

☐ **Blocked culvert**
Photo # _____
Flow being blocked (%) _____
UTM Easting ____________
UTM Northing ____________

☐ **Other** ____________
Photo # _____
Flow being blocked (%) _____
UTM Easting ____________
UTM Northing ____________

Linkage **What is upstream of this reach?** AG | CUP **Downstream of this reach?** HS1A-1

Site Feature(s)	**Category Value**	**Comments**
Major Nutrient Sources Upstream	4	
Potential Contamination Sources Upstream	1	AG
Channel Hardening	4	
Dredging or Straightening	4	but also HS1A-1 has altered
Barriers and/or Dams in proximity	4	
On-line ponds upstream	4	
Springs or Seeps at the Site	5	unknown but + potential
Evidence of channel scouring/erosion	4	
BMPs or restoration activities	4	

Site Feature Categories 1. Ongoing and active 2. Historical Evidence 3. No evidence but reported 4. No evidence 5. Unknown

WO FR21-1 in woodlot to north

Savanta Inc. Headwater Drainage Aquatic Habitat Assessments - Field Use Only

Crew Leader ML	Crew OP	Recorder ML	**Savanta Project Code:** 8133

Site Location Information

Subwatershed Mount Nemo	**Date:** YYYY/MM/DD 2019/04/18	**Time:** (24 hr) 13:02	**UTM Upstream:** Easting: 591161	Northing: 4805391
			UTM Downstream: Easting: 591230	Northing: 4805292

pH 7.68

Stream Code: H1	**Reach Code:** S1	**Optional** Water Temp (°C) 12 Air Temp (°C) ____	**Photo #** Upstream ✓ **Photo #** Downstream ✓

428 ca
217ppm

Hydrology Classification (Step 1)

Feature Type (Table 1) 2	**Flow Influence** (Table 3) 2	**Bankful Depth** (cm) 40	**Feature Width** (cm) 1.41	**Width MT for FW** (Table 4) 2
Flow Condition (Table 2) 4	**Bankful Width** (cm) 1.41	**Width MT for BW** (Table 4) 2	**Wetted Width** (cm) 1.31	**Width MT for BW** (Table 4) 2

Record EITHER Hydraulic Head OR Volume OR Distance

Hydraulic Head (cm)			**Water Depth** (cm)			**Distance** (m)			**Time** (sec)		
1	2	3	1	2	3	1	2	3	1	2	3
			14	21							

Sediment Transport (Table 5) Valley Adjacent	**Sediment Deposition** (Table 6)	**Feature Roughness** (Table 7) 4	**Bed Substrate** (Table 8) 1

Riparian Classification (Step 2)

Riparian Vegetation (Table 9)	0 - 1.5 m		1.5 - 10 m		10 - 30 m	
	Left	Right	Left	Right	Left	Right
	medow	medow	Forest	scrub	Forest	scrub

Fish and Fish Habitat Classification (Step 3)

1st - 19cm water depth

Instream Vegetation (Table 10) wetland

Photo # _____

Approx. patch size (cm) _____

If watercress present:

UTM Easting ____________

UTM Northing ____________

Fish Visual Observation

YES [✓ NO]

If yes, species type and #:

____________ # ____

Fish Habitat Present *(check all that apply)*

Riffles ☐ Runs ☐ Pools ☐ Undercut Banks ☐

Barriers to Fish GPS kit

☑ **Perched culvert**
Photo # _____
Jumping height (cm) _____
Perched height (cm) _____
UTM Easting ____________
UTM Northing ____________

☐ **Log jam**
Photo # _____
Flow being blocked (%) _____
UTM Easting ____________
UTM Northing ____________

☐ **Blocked culvert**
Photo # _____
Flow being blocked (%) _____
UTM Easting ____________
UTM Northing ____________

☐ **Other** ____________
Photo # _____
Flow being blocked (%) _____
UTM Easting ____________
UTM Northing ____________

Linkage **What is upstream of this reach?** SW **Downstream of this reach?** SW

Site Feature(s)	**Category Value**	**Comments**
Major Nutrient Sources Upstream		
Potential Contamination Sources Upstream		
Channel Hardening		
Dredging or Straightening		
Barriers and/or Dams in proximity		
On-line ponds upstream		
Springs or Seeps at the Site		
Evidence of channel scouring/erosion		
BMPs or restoration activities		

Site Feature Categories 1. Ongoing and active 2 Historical Evidence 3 No evidence but reported 4. No evidence 5 Unknown

- red osier dogwood on bank

down stream culvert blowout → pushed gravel downstream

Appendix D - CVs

Noel Boucher B.Sc. (Env)

Senior Fisheries Biologist

EDUCATION

B. Sc., Environmental Science, University of Guelph

EXPERIENCE IN THE INDUSTRY

20 years

EXPERIENCE WITH SAVANTA

4 years

CERTIFICATIONS & TRAINING

MTO/DFO/OMNRF Fisheries Protocol Training

Ontario Class 2 Backpack Electrofishing Certification

Standard First Aid & CPR/AED

Noel Boucher is a Senior Fisheries Biologist who specializes in the design and implementation of fisheries studies, fish and fish habitat impact assessment and related permitting for a wide range of project types in the land development, energy and infrastructure industries. He has provided fisheries input to support environmental assessments, environmental impact studies, watershed and subwatershed planning studies, permitting and approvals, constraints assessments and post-construction studies.

Noel has experience with numerous fisheries assessment protocols and techniques, as well as agency expectations regarding fisheries studies in various development sectors. Noel is experienced with the assessment and permitting requirements for aquatic species at risk in Ontario, including Redside Dace, Silver Shiner, American Eel and Lake Sturgeon.

In addition to his technical expertise, Noel is a senior Project Manager, with experience managing projects ranging from small studies to large, multi-disciplinary assessments for complex developments.

PROJECT EXPERIENCE

Brightwater Development, Port Credit West Village Partners, Mississauga, ON. Fisheries Biologist and Project Manager for an Environmental Impact Study for commercial/residential redevelopment of a former industrial property on the Lake Ontario shoreline. Completed fish community investigations and managed overall natural heritage studies and impact assessment process.

Milton Phase 4 Lands Development Process, MP4 Landowners Group, Milton, ON. Project Manager and Fisheries Biologist representing the Landowner’s Group in the municipally led Subwatershed Study for urban development on a 5,260-ha block of rural land. Responsibilities have included completion of aquatic ecological investigations, input to the design of the Natural Heritage System, review and comment on behalf of the Landowner’s Group on the Town’s Subwatershed Study documentation and participation in the Technical Advisory Committee.

Britannia West Secondary Plan Area, MP4 (West) Landowners Group, Milton, ON. Project Manager and Fisheries Biologist representing the Landowner’s Group in the municipally led Master Environmental Servicing Plan and Secondary Plan development processes for urban development with a currently rural area. Responsibilities have included completion of aquatic ecological investigations, input to the design of the Natural Heritage System, review and comment on behalf of the Landowner’s Group on the Town’s study documentation and participation in the Technical Advisory Committee.

Trafalgar Corridor Secondary Plan Area, Milton P4 Trafalgar Landowners Group Inc., Milton, ON. Project Manager and Fisheries Biologist representing the Landowner’s Group in the municipally led Master Environmental Servicing Plan and Secondary Plan development processes for urban development with a currently rural area. Responsibilities have included completion of aquatic ecological investigations, input to the design of the Natural Heritage System, review and comment on behalf of the Landowner's Group on the Town's study documentation and participation in the Technical Advisory Committee.

Boyne Survey Block 1 Subwatershed Impact Study, Block 1 Landowners Group, Milton, ON. Project Manager for the Subwatershed Impact Study for urban development of a 200-ha block of rural land. Completed agency consultation and managed preparation of project documentation.

Riverfront Community, GR(CAN) Investments Inc., Niagara Falls, ON. Fisheries Biologist and Project Manager for an Environmental Impact Study for urban development of a 77-ha greenfield site. Participated in environmental impact study documentation, ecological field investigations and agency consultation.

Britannia West Secondary Plan Area, MP4 (West) Landowners Group, Milton, ON. Project Manager and Fisheries Biologist representing the Landowner's Group in the municipally led Master Environmental Servicing Plan and Secondary Plan development processes for urban development with a currently rural area. Responsibilities have included completion of aquatic ecological investigations, input to the design of the Natural Heritage System, review and comment on behalf of the Landowner's Group on the Town's study documentation and participation in the Technical Advisory Committee.

Industrial Lands Development, 678604 Ontario Inc., Mississauga, ON. Fisheries Biologist and Project Manager for an Environmental Impact Study for a proposed industrial development on an existing agricultural property. Completed aquatic ecological studies, participated in agency consultations including meetings and field visits and managed overall natural heritage studies and impact assessment process. Currently completed MECP discussions under the *Endangered Species Act* to ensure all requirements associated with regulated Redside Dace habitat are met.

Wasauksing Bridge Ecological Studies, Wasauksing First Nation, ON. Fisheries Biologist for the completion of environmental studies and permitting for a new replacement bridge over a channel in Georgian Bay. Completed scoping of field studies and assessment of potential effects of various bridge alignment options. Currently providing input to ongoing aquatic permitting processes.

South Wellington Lands Development, The Stronach Group, Aurora, ON. Fisheries Biologist and Project Manager for an Environmental Impact Study for residential development of an existing property with a mix of land uses. Completed aquatic ecological studies including headwater drainage feature assessment and fish community surveys, participated in agency consultations including meetings and field staking events and managed overall natural heritage studies and impact assessment process.

Jeffery Property Residential Development, Delpark Homes, Port Perry, ON. Fisheries Biologist and Project Manager for an Environmental Impact Study for residential development of an existing agricultural property. Completed aquatic ecological studies, participated in agency consultations including meetings and field staking events and managed overall natural heritage studies and impact assessment process.

Mill Pond EA, Town of Richmond Hill, Richmond Hill, ON. Senior Fisheries Biologist and Project Manager for natural heritage input to the Class Environmental Assessment to assess options for upgrades to the Mill Pond property, including potential stormwater management pond upgrades, trail realignments/upgrades, channel realignment and pond mitigation. Scoped aquatic field studies including trap netting, electrofishing and habitat assessment.

Whitlock Bridge Environmental Permitting, Milton Phase 3 Landowner's Group, Milton, ON. Fisheries Biologist and Project Manager for provision of ecological assistance to address permitting requirements under the *Endangered Species Act* (for Silver Shiner), Conservation Authority regulation and *Fisheries Act* for an approximately 180-m long bridge over the Sixteen Mile Creek valley.

Confidential Aggregate Pit Expansion Project, ON. Fisheries Biologist responsible for design and implementation of baseline fish and fish habitat assessment program and completion of fish habitat impact assessment for documentation in the Level I/II Natural Environment Technical Report.

Lathrop Pond Decommissioning and Restoration Project, Nature Conservancy of Canada, Pelham, ON. Fisheries Biologist and Project Manager for the design and implementation of a restoration project to decommission and restore two anthropogenic online ponds in the headwaters of a coldwater stream.

Completed fish and fish habitat investigations, managed natural heritage studies, participated in the design of conceptual restoration options and completed pre-consultation with agencies.

Hallstone Road Storm Sewer Bypass Project, Kaneff Group of Companies, Brampton, ON. Fisheries Biologist and Project Manager for an infrastructure project involving the construction of a new storm sewer to bypass an existing online golf course pond. Completed aquatic field studies, prepared Environmental Impact Study documentation and addressed all requirements under the *Fisheries Act* and *Endangered Species Act*.

Hunt Club Pond Decommissioning and Restoration, Hunt Club Partners Inc., Cambridge, ON. Managed the successful application for an Authorization under the *Fisheries Act* to permit decommissioning of an online pond and restoration of the former pond area with a natural channel and restored riparian habitat. Secured a Letter of Advice from DFO to replace an existing CSP culvert with a larger open-bottom structure that will enhance upstream fish passage.

West Gormley Sanitary Sewer Expansion, DG Group, Richmond Hill, ON. Fisheries Biologist responsible for discussions with DFO and MNRF to obtain clearance under the *Fisheries Act* and *Endangered Species Act* for a proposed sanitary sewer construction project in Redside Dace contributing habitat.

Park Place Phase 2, Country Green Homes, Waterdown, ON. Fisheries Biologist and Project Manager for an Environmental Impact Study to assess effects and mitigation requirements for realignment of a watercourse and installation of servicing for a proposed residential development. Completed agency discussions (City of Hamilton, Hamilton Conservation Authority, MNRF) and Environmental Impact Study documentation.

4050 Yonge Street, 2432014 Ontario Inc., Toronto, ON. Fisheries Biologist for the permitting for a shoreline and slope stabilization project on the Lower West Don River to support a commercial/hotel development on the adjacent tablelands. Completed a DFO Request for Review package and obtained confirmation that no authorization under the *Fisheries Act* was required. Provided input to the fish and fish habitat mitigation tender specifications and drawings.

Mary Fix and Levi Creek Erosion Risk Mitigation Project, City of Mississauga, ON. Fisheries Biologist providing input to the Class Environmental Assessment and *Fisheries Act*/*Endangered Species Act* review processes for proposed channel upgrades to address ongoing erosion in two urban creeks. Completed DFO Request for Review packages for each creek and obtained confirmation that no authorizations under the *Fisheries Act* were required.

13330 Dufferin Street, 632025 Ontario Ltd., King Township, ON. Fisheries Biologist and Project Manager for an Environmental Impact Study for a proposed urban development on a currently agricultural property in the Oak Ridges Moraine. Requirements included assessment of development limits and potential effects on a watercourse and significant wetland associated with upgrades of an existing farm lane road crossing. Currently proceeding with permitting discussions with DFO and MECP.

Block 18 SWM Pond Fish Removal, Landowners Group, Vaughan, ON. Fisheries Biologist and Project Manager for the completion of a fish salvage operation in two stormwater management ponds prior to pond clean-out activities. Fish salvage resulted in collection of over 10,000 fish from two ponds in an urban settlement area.

Shickluna Hydro Development, St. Catharines Hydro, St. Catharines, ON. Fisheries Biologist and Project Manager for revisions to *Fisheries Act*, *Endangered Species Act* and Conservation Authority permit applications for a proposed small hydroelectric development on Twelve Mile Creek.

Cochrane Solar Project, Northland Power Inc., Cochrane, ON. Project Manager for the completion of Renewable Energy Approval amendment for the existing Cochrane Solar Project. The amendment was required for construction and operation of a new access road and water crossing. Amendment required revised study documentation, impact assessment and public notification.

PREVIOUS PROJECT EXPERIENCE

Hilton Falls Diversion Dyke Upgrade Project, Conservation Halton, Milton, ON. Project Manager for the completion of the Conservation Ontario Class Environmental Assessment process for upgrades to an existing diversion dam in a Conservation Area. Completed ecological investigations, agency, public and Indigenous community consultation and all Class EA documentation requirements.

Shickluna Hydro Development, St. Catharines Hydro, St. Catharines, ON. Fisheries Biologist and Project Manager for the Environmental Screening for a proposed 4 MW hydroelectric facility on Twelve Mile Creek. Completed fish community and fish habitat studies, agency, public and Indigenous consultation, provided aquatic input to design of a natural bypass fishway and completed all Environmental Assessment requirements.

Chaudière Hydro Project, Energy Ottawa, Ottawa, ON. Fisheries Biologist for the Environmental Effects Determination and permitting and approvals for a proposed 26 MW redevelopment of an aging hydroelectric facility on the Ottawa River. Completed agency consultation, provided aquatic input to the Environmental Effects Determination and design of downstream eel passage facilities and prepared application for *Fisheries Act* Authorization.

20 Solar Projects in Southern Ontario, Recurrent Energy, ON. Project Manager for the Renewable Energy Approval application process for 20 solar projects throughout Southern Ontario. Completed stakeholder consultation, waterbody assessment reports and management completion of all application materials.

Gull Bay Shoreline Stabilization Project, Ontario Power Generation, Gull Bay First Nation, ON. Fisheries Biologist and Project Manager for the environmental permitting and community consultation for a shoreline stabilization project, including opening of a new rock quarry for source material. Completed applications under *Fisheries Act*, *Aggregate Resources Act* and *Endangered Species Act* (Eastern Whip-poor-will).

Darlington Deepwater Characterization, Ontario Power Generation, Bowmanville, ON. Fisheries Biologist and Project Manager for the baseline aquatic ecological studies to assess potential water intake locations for an expanded nuclear facility on the Lake Ontario shoreline. Fisheries studies included habitat assessment, fish community assessment (adult netting, larval trawling), water quality and zooplankton studies.

Kabinakagami River Hydro Development, Northland Power Inc., Kabinakagami First Nation, ON. Fisheries Biologist and Project Manager for the Class Environmental Assessment for four proposed small hydroelectric facilities on the Kabinakagami River in northern Ontario. Completed fish community, spawning, tagging/tracking and fish habitat studies, agency, public and Indigenous consultation, provided aquatic input to design of a fish habitat compensation and completed all Environmental Assessment requirements.

Umbata Falls Hydroelectric Development, Innergex Power Corporation, Marathon, ON. Fisheries Biologist for the environmental screening and permitting for a greenfield hydroelectric facility on the Umbata River in northern Ontario. Completed fish community, spawning, and fish habitat studies, and provided aquatic input to the Environmental Assessment requirements. Completed three years of post-construction monitoring to confirm and verify predicted impacts.

PROFESSIONAL AFFILIATIONS

American Fisheries Society

PRESENTATIONS

Boucher, N., Heaton, M. and A. Watt, 2019. Natural Channel Design for an Aquatic Species at Risk vs. Nature's Engineer: Case Study of Mount Pleasant, Brampton. At *Latornell Conservation Symposium*, Orillia, Ontario. November 21, 2019.

Peter Burke

Ornithologist, Senior Ecologist

Peter experience has broad experience working with Species at Risk (SAR) in many regards; their biology, habitat, management, threats, regulations, policies and programs. He is familiar with the *Endangered Species Act (2007)* and has become immersed in working towards the recovery, conservation and management of species ranging from Special Concern to Endangered across Ontario. Peter evaluates issues pertaining to SAR in relation to his underrating of the needs of the his clients. He is an effective communicator, facilitator and presenter, and is able to share his knowledge with those who may have limited understanding of the topic.

Peter has a solid naturalist-driven knowledge of virtually all components of Ontario's flora and fauna communities. He possesses expert knowledge of birds, mammals, reptiles, fish, amphibians and a wide variety of insect groups, including Odonata and Lepidoptera. He is frequently consulted on identifications and biology from across Ontario and internationally. He has a long interest in botany with a well-rounded knowledge of Ontario's plants and vegetation communities.

PROJECT EXPERIENCE

Viability Assessment for Species at Risk. Ring of Fire. Environment and Climate Change Canada. Downsview ON. Performed backgound review of species biology from the scientific literature, determined risk potentially associated with development and constructed a viability assessment tool to potentially measure and assess risk associated with future scenarios of human activity in the area.

PAR033 Fire Impacts Henvey Inlet First Nation Reserve #2. Henvey Inlet First Nations, ON. Co-author of Special Report. Prepared and reviewed sections of report describing historical, ecological and SAR specific impacts due to fire, citing scientific literature and solicited expert opinion. Conducted field surveys to assess fire impact on SAR habitat on PAR033, and documented the results.

Species at Risk Loggerhead Shrike Mitigation. Solar Flow-Through, Napanee, ON. Conducted breeding bird and SAR monitoring protocols for endangered Loggerhead Shrike (LOSH) and threatened Eastern Whip-poor-will (EWPW) in 2017 on the Napanee Plain. Assessed habitat and consulted with Wildlife Preservation Canada (WPC) and a Federal SAR biologist regarding LOSH breeding site suitability history of client lands. Participated as part of a team in discussions with MNRF, WPC and the client to navigate policies and procedures to avoid and/or minimize adverse effects for LOSH and EWPW. Helped map protected Category 1, 2 and 3 habitats in order to determine possible options for development based on known nests/territories.

Kirtland's Warbler Recovery Monitoring. Environment and Climate Change Canada, Downsview, ON. Used Land Information Ontario (LIO) mapping and ground-truthing to identify sites with

EDUCATION

B.S., Biology, Guelph University

EXPERIENCE IN THE INDUSTRY

20 years

EXPERIENCE WITH SAVANTA

5 years

REGISTRATIONS/CERTIFICATIONS

Wilderness First Aid Training
Wilderness Bear Safety Courses
First Aid and CPR

some habitat characteristics in proximity to a known breeding location of Kirtland's Warbler (a federally and provincially Endangered Species) in southern Ontario. Acoustic recording devices (SM4 songmeters) were deployed in the breeding season, data cards were downloaded and files analyzed using Wildlife Acoustics Kaleidoscope Pro licensed software. Over 300,000 song samples were identified and analyzed by the recognition software, which were then filtered using a constructed algorithm to identify breeding song of Kirtland Warber, and other species associated with the same habitat. Some 3,100 hits were analyzed visually and auditorily to confirm presence or absence.

Kirtland's Warbler Habitat Restoration. Simcoe County, ON. Conceptualized, coordinated and helped to lead restoration of habitat for endangered Kirtland's Warbler on 50 ha of County land over a three-year project term. Provided guidance into restoration and adaptive management plans for the area, helped coordinate site restoration works, completed site inventory works, participated in the collection of 85 species of native, local seed to be used during restoration, and coordinated and co-authored the final Restoration Plan document. Provided assistance with ongoing communications efforts, and delivered presentations to numerous interested groups across southern Ontario. and coordinated, co-authored Restoration Plan document.

PREVIOUS PROJECT EXPERIENCE

Species at Risk Management Plans and constructed Annotated SAR Bibliography. Ontario Ministry of Natural Resources, Peterborough. Constructed annotated bibliography on all Ontario SAR bird species through collection of large amounts of information from a diverse array of sources to complete the over 1200-page document. Additionally, prepared Ontario Ministry of Natural Resources and Forestry Management Plans for Special Concern Species the West Virginia White and Black Tern, which included an extensive literature search and analysis of large data sets to extract important information related to current distribution.

Wildlife Inventory. Ring of Fire. Golder Associates, Sudbury Office, ON. Field surveys along two proposed transportation corridors, including river crossings, to service Ring of Fire mining camps in Hudson Bay Lowlands. Sites accessed by helicopter, transects surveyed by foot. Wilderness First Aid and Bear Safety training. Seven weeks remote work with data collection and entry.

Surveying Odonate populations across Ontario. Ontario Ministry of Natural Resources, Peterborough. **ON.** Surveying Odonate (Dragonfly and Damselfly) populations on several large rivers in the Timmins/Cochrane/Hearst area, and south-west Ontario Counties Grey, Huron, Lambton, Essex, Middlesex, Oxford, Elgin and Norfolk. Extensive work with adult and aquatic stages of surveying for species diversity and abundance.

PROFESSIONAL AFFILIATIONS

Served as Chair of the Ontario Bird Records Committee: 2001

World-renowned illustrator for bird and insect identification guides for North, Central and South American countries. Published with Houghton-Mifflin, National Geographic and Princeton University.

Shannon Catton, M.Sc.

Senior Ecologist, Branch Manager

Shannon brings almost 15 years of experience working on environmental approvals, impact assessment studies, natural heritage reviews, ecological restoration and Species at Risk assignments for various private interests. Shannon has provided environmental expertise to major oil and gas pipeline expansion projects, aggregate expansions (pit and quarry), power transmission and electricity infrastructure renewal projects, wind and solar power project approvals, various residential developments and input into expert witness testimony.

Shannon provides a senior advisory role, overseeing the identification, assessment and interpretation of natural heritage features across large, complex files in various industries including land development, aggregate, oil and gas and energy. She brings positive energy, insight and mindfulness to the resolution of complex environmental approval challenges.

AGGREGATE PROJECT EXPERIENCE

McCormick Pit, Caledon, Ontario. Project Director and Senior Ecologist. Provide on-going strategic advice regarding natural heritage feature identification and assessment under various planning considerations including the Niagara Escarpment Planning Act, the Greenbelt Act, the Peel Region Official Plan, the Ministry of Environment, Conservation and Parks and the Ministry of Natural Resources and Forestry.

Dufferin Aggregates Acton Quarry Extension, Acton, Ontario. Terrestrial Ecologist/Project Manager. Terrestrial surveys included salamander migration surveys, salamander egg mass surveys, salamander tissue sampling (in conjunction with MNR), and amphibian calling surveys. Coordination of project includes additional fieldwork, technical reporting and species at risk permit applications, as well as ongoing collaboration with various government agencies and stakeholders.

Terrestrial Surveys for Various Pit and Quarry Implementation and Extension Projects, Ontario. Terrestrial Ecologist. Terrestrial surveys for the following projects included habitat assessments, floral inventories, tree surveys, American Hart's-tongue Fern surveys (a species at risk), winter wildlife surveys, salamander egg mass surveys and reptile hibernacula surveys:

- Duntroon Quarry Extension, Duntroon, ON
- Hillsburgh Quarry, Hillsburgh, ON
- Flamborough Quarry, Hamilton, ON
- West Montrose Quarry, West Montrose, ON
- Melancthon Quarry, Melancthon Township, ON

EDUCATION

M.Sc., University of Guelph / Botany, Guelph, Ontario

B.A., B.Sc., University of Guelph/ Sociology and Biology (Hons), Guelph, Ontario

EXPERIENCE IN THE INDUSTRY

14 years

EXPERIENCE WITH SAVANTA

7 years

REGISTRATIONS/CERTIFICATIONS

Ontario Ministry of Natural Resources Ontario Wetland Evaluation Systems (OWES) Certification, North Bay, Ontario, 2008

Ontario Ministry of Natural Resources Ecological Land Classification for southern Ontario (ELC) Certification, Turkey Point, Ontario, 2006

OIL & GAS PROJECT EXPERIENCE

Imperial Oil Inc., Waterdown to Finch Pipeline Replacement Project, Hamilton to Toronto, Ontario. Senior Ecologist. Provide strategic input to the identification and assessment of existing natural heritage features along a 63 km pipeline as part of the Ontario Energy Board's Leave to Construct Process.

TransCanada Energy, Halton Hills Generating Station, Halton Hills, Ontario. Project Manager and Senior Ecologist. Provided strategic technical advice regarding municipal and regional natural heritage feature identification and assessment.

TransCanada PipeLines Parkway Loop, Greater Toronto Area, Ontario. Terrestrial Lead and Support. Provided guidance and support regarding the Endangered Species Act, species at risk, and municipal permitting, as well as provided support and technical advice regarding woodlot inventories and restoration concept plans.

NOVA Chemicals Pipeline Extension Project, Sarnia, Ontario. Natural Heritage Lead and Senior Reviewer. Designed and coordinated terrestrial field program. Provided support and senior review of natural heritage reports, species at risk reports, Endangered Species Act permitting, and Letters of Advice.

Bluewater River Crossing Replacement Project, Sarnia, Ontario. Natural Heritage Lead and Senior Reviewer. Designed and coordinated terrestrial field program. Provided support and senior review of natural heritage reports, species at risk reports, Endangered Species Act permitting, and Letters of Advice.

Proposed Bickford to Dawn Pipeline Project, Chatham, Ontario. Terrestrial Lead, Technical Reporting. Terrestrial surveys included vegetation community assessments, floral inventory and species at risk habitat assessments. Study design and development in conjunction with local OMNR district for Eastern Foxsnake, including a species at risk 17b permit application.

LAND DEVELOPMENT PROJECT EXPERIENCE

Trafalgar Corridor Secondary Plan Area, Milton, Ontario. Project Director and Senior Ecologist representing the MP4 Landowner's Group in the municipally led Master Environmental Servicing Plan and Secondary Plan development process. Created and provide oversight of a terrestrial field program, provide input into the design of the regional Natural Heritage System, provide review and comments on the Town's planning process reports and participate in the Technical Advisory Committee.

Britannia West Secondary Plan Area, Milton, Ontario. Project Director and Senior Ecologist representing the MP4 Landowner's Group in the municipally led Master Environmental Servicing Plan and Secondary Plan development process. Created and provide oversight of a terrestrial field program, provide input into the design of the regional Natural Heritage System, provide review and comments on the Town's planning process reports and participate in the Technical Advisory Committee.

Milton Phase 4 Lands Development, Milton, Ontario. Project Director and Senior Ecologist representing the Landowner's Group in the municipally led Subwatershed Study for urban development on a 5,260-ha block of rural land. Created and provide oversight of a terrestrial field program, provide input into the design of the regional Natural Heritage System, provide review and comments on the Town's Subwatershed Study phased reports and participate in the Technical Advisory Committee.

Timberland Homes Subdivision, LaSalle, Ontario. Species at Risk Lead. Designed and coordinated a species-specific field program for Eastern Foxsnake and completed an Endangered Species Act C Permit for the Ministry of Natural Resources.

Natural Heritage Evaluations for Various Residential Development Projects, Ontario. Environmental Impact Studies for various residential development projects in the Oak Ridges Moraine (ORM) planning area.

POWER TRANSMISSION PROJECT EXPERIENCE

Electrical Power Distribution, Midtown Electricity Infrastructure Renewal Project, Toronto, Ontario. Terrestrial Lead / Project Manager. Conducted terrestrial surveys, including vegetation community assessments, floral inventory, and species at risk habitat assessments.

Darlington Power Plant, Pickering, Ontario. Terrestrial Lead / Project Manager. Coordinated terrestrial surveys, including vegetation community assessments, floral inventory, and species at risk habitat assessments.

Coote's Paradise Transmission Reinforcement Project, Hamilton, Ontario. Terrestrial Lead, Technical Reporting. Terrestrial surveys included vegetation community assessments, floral inventory and species at risk habitat assessments. Technical reporting and species at risk assessment in conjunction with local Conservation Authority.

Bruce to Milton Transmission Reinforcement Project Environmental Assessment Report and Vegetation Enhancement Plans, Southern Ontario. Lead Terrestrial Ecologist. Terrestrial surveys included vegetation community assessments, floral inventories, winter wildlife and species at risk habitat assessments. Technical reporting and development of a comprehensive terrestrial monitoring and mitigation report. Designed and wrote vegetation enhancement plans for lands within Niagara Escarpment Plan area.

RENEWABLE ENERGY PROJECT EXPERIENCE

St. Columban Wind Project, St. Columban, Ontario. Natural Heritage Lead. Wrote the Natural Heritage Assessment and Environmental Impact Study (NHA/EIS), the Environmental Effects Monitoring Plan (EEMP), and the Species at Risk (SAR) Report.

Almonte Solar Project, Almonte, Ontario. Natural Heritage Lead. Wrote the Natural Heritage Assessment and Environmental Impact Study (NHA/EIS) and provided senior review of the Species at Risk (SAR) Report. Completed an Endangered Species Act C Permit for Bobolink and Eastern Meadowlark.

Grand Renewable Energy Park, Haldimand County, Ontario. Natural Heritage and Species at Risk Support. Wrote and reviewed the Natural Heritage Assessment and Environmental Impact Study (NHA/EIS) and the Species at Risk (SAR) Report. Completed an Endangered Species Act C Permit for Bobolink and Eastern Meadowlark.

Niagara Region Wind Farm, Niagara Region, Ontario. Species at Risk Reviewer and Support. Provided senior guidance and review of the Species at Risk (SAR) Report.

Springwood Wind Project, Wellington County, Ontario. Natural Heritage Support. Contributed to writing the Natural Heritage Assessment and Environmental Impact Study (NHA/EIS) and provided support regarding species at risk.

Whittington Wind Project, Township of Amaranth, Ontario. Natural Heritage Support. Contributed to writing the Natural Heritage Assessment and Environmental Impact Study (NHA/EIS) and provided support regarding species at risk.

David Brown Solar, Cornwall, Ontario. Natural Heritage Support. Provided senior guidance with the Natural Heritage Assessment and Environmental Impact Study (NHA/EIS) and provided support regarding species at risk.

Melancthon I Wind Plant Project, Shelburne, Ontario. Terrestrial Ecologist. Terrestrial surveys included winter raptor, both pre- and post-construction, and bird and bat mortality monitoring.

Wolfe Island Wind Power Project, 86 Turbines, 197.6 MW, Wolfe Island, Ontario. Terrestrial Ecologist. Terrestrial surveys included winter raptor, both pre- and post-construction.

TRANSPORTATION PLANNING PROJECT EXPERIENCE

Highway 401 Interchanges Preliminary Design Study, Woodstock, Ingersoll, and London, Ontario. Terrestrial Lead.

Highway 11, Preliminary Design Study, Access Review from Powassan to Callander, Ontario. Technical Reporting.

Highway 3 Rehabilitation, Detail Design, Renton to Jarvis, Ontario. Technical Reporting.

Highway 21 Rehabilitation, Bayfield to St. Joseph, Ontario. Terrestrial Ecologist, Technical Reporting. Terrestrial surveys included vegetation community assessments, floral inventory, incidental wildlife and nest searches and structure assessments in compliance with the Migratory Bird Act.

NATURAL SCIENCES & HERITAGE RESOURCES PROJECT EXPERIENCE

Nature Counts Natural Areas Inventory, Hamilton Conservation Authority. Ecological Land Classification Coordinator. Provided the Hamilton Conservation Authority and the City of Hamilton with current vegetation inventories and identified and classified Areas of Natural and Scientific Interest (ANSI) using Ecological Land Classification (ELC). Other tasks included habitat mapping, air photo interpretation, orienteering, GPS, ground truthing, mineral and organic soil description and identification and soil moisture regimes and drainage.

RESEARCH / LABORATORIES PROJECT EXPERIENCE

Biophysical Comparisons of Quarry Floors and Alvars of Southern Ontario, University of Guelph. Researcher and Technician. Examined the ecological similarities and differences of abandoned limestone quarry floors and alvars to determine whether alvar habitat could be a potential restoration target for abandoned limestone quarry floors. Developed sampling designs, identified lichens, mosses and vascular plants and performed statistical analyses on descriptive and multi-variate data.

PUBLICATIONS

Catton, S. The Ontario Endangered Species Act: Project Implications and Proactive Management. Presentation to various clients throughout Ontario, 2012.

Matthes, U., P.J. Richardson, S. Catton, C.D. Stabler, D.W. Larson. The quarry-to-alvar initiative: Creating new alvar habitat from abandoned limestone quarries. Canadian Reclamation, 2:10-15, 2009.

Tomlinson, S., U. Matthes, P.J. Richardson, D.W. Larson. The ecological equivalence of quarry floors to alvars. Applied Vegetation Science, 11:73-82, 2008.

A comparison of the biophysical characteristics and seed banks of abandoned limestone quarry floors in southern Ontario and alvars. M.Sc. Thesis, Department of Biology, University of Guelph, Ontario, 2006.

A comparative analysis of the seed bank, vegetation and environmental conditions of abandoned limestone quarry floors of southern Ontario and alvars on the Bruce Peninsula, Canada. Presentation to the World Conference on Ecological Restoration by the Society of Ecological Restoration (SER), Spain, 2005.

Biological and physical comparisons of quarry floors and alvars. Presentation to the Aggregate Producers' Association of Ontario Pit and Quarry Restoration Workshop, Hamilton, Ontario, 2005.

Using alvars as a reference ecosystem to restore abandoned limestone quarries. Poster Presentation at the A.D. Latornell Conservation Symposium, Alliston, Ontario, 2004.

A comparative analysis of the seed bank, vegetation and environmental characteristics of abandoned limestone quarry floors of southern Ontario and alvars on the Bruce Peninsula. Presentation to the Ontario Ecology and Ethology Colloquium (OEEC), Mississauga, Ontario, 2004.

The quarry-to-alvar initiative: progress report. The Ontario Aggregate Resources Corporation (TOARC) Annual Report, Burlington, Ontario, 2004.

The quarry-to-alvar initiative: progress report. The Ontario Aggregate Resources Corporation (TOARC) Annual Report, Burlington, Ontario, 2003.

The quarry-to-alvar initiative: restoring value to abandoned quarries. The Ontario Aggregate Resources Corporation (TOARC) Annual Report, Burlington, Ontario, 2002.

Megan Green, B.Sc., CERPIT

Ecologist

EDUCATION

Post-Graduate Certificate, Ecosystem Restoration, Niagara College (2016)
B.Sc., Biology, University of Victoria (2013)

EXPERIENCE IN THE INDUSTRY

3.5 years

EXPERIENCE WITH SAVANTA

3.5 years

REGISTRATIONS/CERTIFICATIONS

Certified Ecological Restoration Practitioner in Training (CERPIT)
Certified Environmental Professional in Training (EPt)
Ontario Stream Assessment Protocol (OSAP) Headwater Drainage Feature Technical Training
Ontario Benthos Biomonitoring Network
Class 2 Electrofishing Backpack Crew Leader
PADI Advanced Scuba Diving Certification
Emergency First Aid with CPR "C" + AED
Workplace Hazardous Materials Information System (WHMIS)

Megan has experience managing and conducting ecological studies, impact assessments and restoration projects in a variety of sectors. As an Ecologist, Megan is highly integrated between practice areas and performs a variety of terrestrial and aquatic ecological inventories evaluating the significance and sensitivity of natural heritage features and their associated functions on local and regional scales. She has extensive knowledge related to aquatic ecology and ecosystem restoration. Megan has experience coordinating regulatory approvals required by local, provincial and federal agencies including Fisheries and Oceans Canada, the Ministry of Natural Resources and Forestry and the Ministry of Environment, Conservation and Parks.

In her role as a Project Manager, Megan manages a comprehensive portfolio of projects across multiple sectors (e.g., natural heritage, energy and restoration) throughout Southern Ontario. She has managed and authored Environmental Impact Studies and various other environmental reports, as directed in official planning documents and the Provincial Policy Statement. Megan has demonstrated a high degree of competency in the interpretation of planning policy, and assessing natural heritage features and functions. Megan routinely liaises with reviewing agencies, such as conservation authorities, associated municipalities and other parties, on behalf of her clients.

PROJECT EXPERIENCE

River Road West Development Environmental Impact Study (EIS), Farsight Homes, Wasaga Beach, ON. Project Manager – Completed baseline studies in support of site development. Completed an impact assessment based on development limits in support of the municipal planning application and outlined preliminary restoration concepts.

Bowmanville Severance Scoped Environmental Impact Study, Vanstone Mill Inc., Bowmanville, ON. Project Manager – Completed baseline studies in support of a lot severance application. Provided policy direction pertaining to the delineation and protection of natural heritage features and functions.

Ninth Line Lands Scoped Environmental Impact Study, Mattamy Development Corporation, Mississauga, ON. Project Manager and Field Lead – Completed aquatic and terrestrial studies to inform Scoped EIS and identification of species at risk and wetland compensation opportunities.

Renewable Energy Approval (REA) Amendment: Brockville and Beckwith Solar Projects, ENGIE, Township of Elizabethtown-Kitley and Town of Mississippi Mills, ON. Project Manager– Completed REA amendment application packages for each project, including completion of impact assessment, stakeholder notifications and preparation of application materials.

Pin Oak Drive Property Environmental Impact Study, Penta Properties, Niagara Falls, ON. Project Coordinator and Field Lead – Completed baseline studies to inform EIS. Reviewed natural heritage features present on the property based on municipal and provincial criteria. Identified constraints to development and potential restoration opportunities.

Lathrop Property Pond Decommissioning, Nature Conservancy of Canada, Pelham, ON. Field Lead and Technical Contributor – Completed baseline studies to inform ecological restoration concepts in support of the proposed pond decommissioning. Targeted improvements to downstream water quality to promote the expansion of Brook Trout populations, embankment stability and pedestrian access.

Henvey Inlet First Nation Wind Project, Henvey Inlet First Nation, Pickerel, ON. Environmental Abatement Officer and Supervisor - Facilitated the consistent implementation of Environmental Permit requirements. Incorporated indigenous knowledge into the environmental process to avoid adverse environmental effects. Upheld environmental protection laws and standards.

Elgin Mills Greenway Natural Heritage System Design Brief, Town of Richmond Hill, Richmond Hill, ON. Technical Contributor – Prepared ecological restoration plan to enhance lands impacted by stormwater management facility improvements in support of a Natural Heritage System Design Brief.

Patterson Creek Riparian Restoration Plan, Lawrence Thomas (Private Landowner), Richmond Hill, ON. Restoration Advisor – Prepared and implemented riparian restoration plan within contributing Redside Dace habitat, including use of bioengineering opportunities.

PROFESSIONAL AFFILIATIONS

Society for Ecological Restoration

Tom Hilditch **M.Sc.**

President

thilditch@savanta.ca
1.800.810.3281 ex 1010

Tom is an environmental professional with 36 years of experience in Impact Assessment, Mitigation Planning and Design and Ecological Planning. He has completed hundreds of EAs and IAs and has completed numerous land use, watershed, coastal zone and regional planning projects. Impact Assessment assignments have ranged from regional landscape planning, to major resource and infrastructure project impact assessments, to site-specific studies development. While the bulk of his career has been focused on Canadian projects, he has also been engaged in regional planning and coastal zone assignments in Barbados, Venezuela, China, and Equatorial Guinea.

Tom has extensive experience as a Technical Expert and Peer Reviewer and has appeared as an Expert Witness before various tribunals. He has appeared on behalf of public and private sector clients in over 30 proceedings. He has been appointed by the Ontario Ministry of Natural Resources (MNRF) to serve on two committees. He first served as a member and Chair of the Species at Risk Program Advisory Committee (2008 to 2014). In 2015, he was appointed by the Minister to serve as the Chair of the Committee on the Status of Species at Risk in Ontario (COSSARO), a group that advises the Ontario Minister of Natural Resources on matters related to Ontario’s Endangered Species Act. Tom is very familiar with provincial, federal SAR legislation (SARA 2002), policies and guidelines and is also familiar with relevant international bodies and processes (e.g., IUCN Red List of Threatened Species).

In 2016, Tom was appointed as the Environmental Stewardship Commissioner for the Henvey Inlet First Nation, a position created within an innovative stewardship regime, to provide environmental expertise on behalf of the First Nation. As Commissioner, Tom is responsible for the implementation of an Environmental Permit for a 300 MW wind energy facility on Reserve lands. A focus of that work is the conservation of a large number and concentration of endangered and threatened species within the implementation of the renewable energy project.

He has spoken before national and international audiences, including: Wetlands International, INTECOL, International Association for Impact Assessment, Society of Wetland Scientists, 2nd World Biodiversity Congress, and the Canadian Society of Landscape Architects.

Scientific and Industry Association Work

In 2015, Tom was appointed by the Province of Ontario to serve as the Chair of the Committee on the Status of Species at Risk in Ontario (COSSARO). This builds upon his earlier provincial appointment as the Chair of the Species at Risk Program Advisory Committee (SARPAC), a body that reports to Ontario's Ministry of Natural Resources and Forests, regarding the implementation of the Ontario Endangered Species Act, 2007. Tom also served as Director on the Ontario Board for Nature Conservancy Canada, and served as the Special Advisor to the Board of Directors of the Ontario Stone, Sand and Gravel Association (OSSGA) for all matters related to the environment and Natural Heritage. He remains an active participant in the Building and Land Development Industry of Ontario (BILD).

Tom has served as the President of the Canadian Chapter of the Society of Wetland Scientists and for the Canadian Land Reclamation Association in Ontario.

Expert Testimony & Mediation – Representative Examples

- Sifton Bog Wetland Impact Assessment and EIA, Hearing
- Jackson Wetland and Forest Buffer EIA, Hearing
- Burlington Quarry Expansion EIA, Hearing
- Cannington Mineral Aggregate Extraction Application EIA, Hearing
- Kilally Valley and North Thames River Sewer Installation Ecological Restoration, London
- Silver Creek Coastal Wetland EIA, Hearing
- Bronte Creek Valley Appleby Line EIA, Hearing
- Hamilton Urban Official Plan, Environmental Policies, Mediation
- Halton Region ROPA 38 Official Plan, Environmental Policies, Mediation
- Halton Region Agricultural and Resource Policies, Mediation
- City of Brampton/Region of Peel Official Plan, Environmental Policies, Mediation
- Niagara Escarpment Georgian Aggregates Dolostone Extraction, Hearing
- Waterdown Village Settlement EIA, Mediation
- Friends of East Lake Aggregate Extraction Hearing
- Grindstone Creek Eagle Heights Escarpment Slopes EIA, Hearing
- Matthews Woods Development EIA, Hearing
- Teeple Terrace Development EIA, Hearing
- North Markham Urban Area Expansion Official Plan, Environmental Policies, Mediation
- York Official Plan, Environmental Policies, Mediation
- Walmer Road Land Severance, Hearing
- Heathwood Halton Development EIA, Hearing
- North Oakville, ROPA 25 Environmental Policies, Mediation
- Grandview Ravines Development EIA, Hearing
- Kitchener OP Environmental Policies, Mediation

Select Publications & Presentation

- Provincial Policy Statement 2014: A Comparison of Recent Changes to the PPS with a Focus on Natural Heritage System Policies. Presented at: Ontario Bar Association; 2015 February 5; Toronto, Canada.
- Provincial Planning Statement and Environmental Protection. Presented at: Land Development & Planning Forum; 2014 June 17-18; Toronto, Canada.
- Founder and Chair of The Ontario Endangered Species Act Conference; 2013 April 8-9; Royal Ontario Museum, Toronto, Canada.
- Innovations in Endangered Species Legislation. Presented at: 2nd World Biodiversity Congress: 2011 September 8-12; Kuching, Malaysia.

- Endangered Species Legislation as a Stimulus for Habitat Restoration. Presented at: Society for Ecological Restoration 4th World Conference on Ecological Restoration; 2011 August 21-25; Merida, Mexico.
- The Presqu'ile Bay Species at Risk Outreach Project Case Study. Presented at: The International Association for Great Lakes Research 53rd Annual Conference on Great Lakes Research; 2010 May 17-21; Toronto, Canada.
- Endangered Species Act, 2007: Implications and Opportunities. Presented at: Ontario Stone, Sand and Gravel Rehabilitation Tour: 2008 September 11 and September 25; Bowmanville, Canada.
- Endangered Species Act, 2007: Consequences and Opportunities. Presented at: Ontario East Municipal Conference; 2008 September 10-12; Kingston, Canada.
- Endangered Species Act, 2007: A Private Sector Perspective. Presented at: Ontario Bar Association; 2008 September 11; Toronto, Canada.
- A Private Sector Species at Risk Initiative: St. Mary's Cement & Great Lakes Wetland Stewardship. Presented at: A.D. Latornell Conservation Symposium; 2007 November 14-16; Alliston, Canada.
- An Overview of Canadian Environmental Technologies. Presented at: Environment 2001 Conference; 2001 4-8 February; Abu Dhabi, United Arab Emirates.
- Achieving Excellence in Natural Heritage Planning. Presented with D. Charlton and R. Hubbard at: Ontario Provincial Planners Conference; 2000 Niagara Falls, Canada.
- Biodiversity Planning; Multi-layered Stakeholder Consensus Building, A Model for Success. Presented at: International Association for Impact Assessment Annual Meeting; 1998; Christchurch, New Zealand.
- Provincial Wetlands Policy, Environmental Impact Study Requirements. Presented at: Society of Wetland Scientists; 1994; Washington, United States.
- Brick Wetlands Complex, An EIS Case Study. Presented at: Wetlands Boundaries, Buffers and Gradients Conference; 1994; Waterloo, Canada.
- Wetland Impact Mitigation Techniques, A Case Study. Presented at: Ontario Ministry of Natural Resources and Transportation; 1994; Ontario, Canada.
- Wetland Policy Statement Implementation Issues and Experiences, Long Range Planning Directions; 1993; Ontario, Canada.
- Woodland Evaluation Systems – Their Use and Application in Municipal Planning. Presented at: The Significant Woodlands Workshop, Ontario Ministry of Natural Resources; 1993; Dorset, Canada.
- Buffers for the Protection of Wetland Ecological Integrity – A Model for Buffer Determination. Presented at: International Association of Ecology 4th International Wetlands Conference; 1992 September; Ohio, United States.
- GIS – A Tool for Ecological Mapping and Impact Assessment of an Environmentally Sensitive Area. Presented at: The International Association for Impact Assessment Annual Meeting; 1992 August; Washington, D.C., United States.

Select Project Experience

- Henvey Inlet Wind Species at Risk EA Peer Review and Environmental Permit Input, Henvey Inlet First Nation, Pickerel
- Natural Heritage and Drainage Sector Planning and Input to the Barbados Physical Development Plan, Barbados

- Milton Urban Expansion Lands Ecological Investigations and Environmental Approvals (Boyne District, Milton Phase 4, Derry Green)
- North Markham Urban Expansion Lands Ecological Investigations and Environmental Approvals
- Grandview Resort Golf Course Development EIA, Huntsville
- Environmental Baseline, Impact Assessment and Natural Heritage System Design Study, Heritage Heights, Brampton
- Nelson Burlington Quarry License Expansion and Rehabilitation Design
- Environmental Inventory Reporting, North Oakville Secondary Plan Implementation
- EIAs for Clublink Corporation: Kings Riding, Cherry Downs, Rolling Hills
- EIAs for Kaneff Group Golf Course developments: Royal Ontario Lionhead
- EIA for golf course, resort and condo development, Grand Niagara, Niagara Falls
- Eagle Heights Environmental Impact Assessment, Environmental Monitoring and Expert Testimony
- St. Mary’s Cement Greenfield Quarry EIA and ARA Application, Flamborough
- Brighton, Presqu’ile Species at Risk Conservation and Restoration Planning, St. Mary’s Cement
- American Badger Strategic Assessment of Range and Soils/Habitat; Creation of Innovative Recovery Tools
- Airport Expansion, Screening Level Environmental Assessment, Equatorial Guinea, Africa
- Mai Po Wetland EIS and Conservation Planning Investigation, Hong Kong, PRC
- Niagara Waterfront Planning Study; Master Planning for Economic Rejuvenation
- Municipal Class Environmental Assessment, Scarborough Golf Club Road, Rail Separation
- Municipal Class Environmental Assessment Jackson District Sanitary and Storm Sewer
- Horseshoe Valley Resort Corporation, Sewage Treatment Class Environmental Assessment
- Kingston Area Waste Management Master Plan
- GO Transit Class EA, Rail Line Upgrade, Toronto
- Swan Lake Wetland Management Concept Plan, Wehai Province, PRC
- Downsview National Urban Park Design and Green Infrastructure Plan
- Greening of the Official Plan, Regional Municipality of York
- Elephant Conservation ENGO Observations & Opportunities, Confidential Exploratory Document

Education

- B.Sc., Agr., Resources Management, University of Guelph

Professional and Other Affiliations

- Society for Conservation Biology
- International Association for Impact Assessment
- Ontario Field Ornithologists
- Canadian Society of Environmental Biologists
- International Association for Environmental Philosophy
- The International Society for Ecological Economics
- Ontario Stone, Sand and Gravel Association

- Society for Ecological Restoration
- Canadian Land Reclamation Association

Employment History

- Savanta Inc. 2006 – Current: Founder, President & CEO
- Stantec Consulting 2005 – 2006: Vice President
- Stantec Consulting 2005: Senior Principal
- Stantec Consulting 2003 – 2005: Principal
- ESG International Inc. 2001 – 2003: President
- ESG International Inc. 1997 – 2001: Vice President
- ESG International Inc. 1994 – 1997: Senior Ecologist, Principal
- Gartner Lee Ltd. 1989 – 1994: Senior Ecologist, Associate
- Gartner Lee Ltd. 1983 – 1989: Ecologist
- Lake Simcoe Region Conservation Authority 1981 – 1983: Forest and Wetland Technician
- Ecologistics Ltd. 1981: Manager, Field Biology Team
- Toronto and Region Conservation Authority 1979 – 1981: Field Biologist, Environmentally Significant Areas of Study

Eva Lee, B.Sc.

Intermediate Ecologist

Eva is an Intermediate Ecologist who specializes in terrestrial ecology and conservation biology. Eva has experience reviewing, assessing and applying academic research to natural heritage planning and impact assessments. Eva has developed extensive ecological inventory skills, including conducting anuran surveys, reptile surveys, bat habitat and acoustic monitoring (passive/active) surveys, wildlife sweeps, small mammal surveys, benthic sampling, headwater drainage feature assessments (HDFA), aquatic habitat assessments, and unmanned aerial vehicle (UAV) imagery capture. She is also experienced in conducting pre/post construction monitoring, abatement monitoring, and erosion and sediment control monitoring surveys.

PROJECT EXPERIENCE

Henvey Inlet Wind Energy Centre Environmental Commissioner, Henvey Inlet, Reserve #2. Abatement Supervisor and Community Liaison overseeing pre-construction, construction, and operation works to ensure compliance with Henvey Inlet's Land Permit and Environmental Laws.

Milton Phase 4 Lands, Milton Phase 4 Landowners Group Inc., Milton, ON. Terrestrial Ecologist investigating and analyzing observation data and habitat use of birds, bats, reptiles and amphibians across the Milton Phase 4 Lands to support the Landowners input to the Subwatershed Study and Master Environmental Servicing Plans. Responsibilities have also included applying for wildlife collection permits under the *Endangered Species Act, 2007* and the *Fish and Wildlife Conservation Act* and preparing collection reports to address permit conditions.

Revised Natural Heritage Impact Study (NHIS) – 4050 Yonge Street, Yonge Park Plaza Inc., Toronto, Ontario (ON). Project Manager overseeing ecological constraints and environmental impact assessment of a proposed residential/commercial building within the West Don River subwatershed.

Distrikt Bat Roost Exit Surveys, Distrikt Development, Oakville, ON. Project Manager overseeing passive bat exit surveys of a restaurant building removal for a proposed residential development plan.

Kaitlin Lands Environmental Impact Study (EIS), Kaitlin Corporation, Bath, ON. Project Manager and lead Terrestrial Ecologist overseeing ecological investigations and environmental impact assessment of a proposed residential development.

Golfview Park Estates Screening Letter, Amico Properties, Amhertburg, ON. Project Manager overseeing ecological investigations and potential Species at Risk (SAR) constraints in support of a resubmission of a draft plan approval application.

Upper Chedoke Waterfalls Environmental Impact Study, City of Hamilton, Hamilton, ON. Project coordinator investigating and analyzing ecological data collected in support of a feasibility study for a proposed public viewing platform of the Upper Chedoke Waterfall within the Niagara Escarpment.

EDUCATION

B.Sc. Env., Natural Resource Management, University of Guelph

Environmental Technician Diploma, Seneca College

EXPERIENCE IN THE INDUSTRY

8 Years

EXPERIENCE WITH SAVANTA

6 Years

REGISTRATIONS/CERTIFICATIONS

UAV Basic Operator License (Ministry of Transport)
Restricted Operator Certificate – Aeronautical (ROC-A)
UAV Ground School – Aerobotika Aerial Intelligence Ltd.
WHMIS & TDG
First Aid
ATV and ARGO Operator
Pipeline Construction and Safety Training
Wildlife Awareness
Infrastructure Health and Safety Association (HAS) Basic
Pleasure Craft Operator Card (PCOC)
Possession and Acquisition License (PAL)
Petroleum Safety Training (PST 2.0)

PREVIOUS PROJECT EXPERIENCE

Trans Mountain Expansion Project (TMEP), Kinder Morgan Energy Partners, Edmonton, Alberta (AB). Crew Lead overseeing post-construction reclamation assessments, environmental monitoring, and weed surveys along the pipeline right-of-way through privately owned lands.

Alberta Clipper Pipeline, Enbridge Pipelines Inc., Hardisty, AB. Crew Lead overseeing pre-construction monitoring and weed surveys along the proposed expansion pipeline right-of-way through privately owned lands.

Edmonton to Hardisty Pipeline Project, Enbridge Pipelines Inc., Edmonton, AB. Crew Lead overseeing pre-construction monitoring and weed surveys along the proposed pipeline right-of-way through privately owned lands.

Eastern and Western Alberta Transmission Line (EATL and WATL), ATCO Electric, Calgary, AB. Crew Lead overseeing pre-construction monitoring and weed surveys along the proposed transmission line right-of-way through privately owned lands.

PROFESSIONAL AFFILIATIONS

Eco Canada, Member

Ontario Association of Certified Engineering Technicians and Technologists (OACETT), Member

Canadian Section of The Wildlife Society (CSTWS), Member

Rava Lee, M.Sc.
Intermediate Ecologist

EDUCATION
M.Sc. Env, Environmental Science, University of Toronto
B.Sc. Env., Natural Resources Management, University of Guelph

EXPERIENCE IN THE INDUSTRY
8 Years

EXPERIENCE WITH SAVANTA
7 Years

Rava is an Intermediate Ecologist who specializes in terrestrial ecology, environmental restoration and conservation biology. During the past eight years, she has directed and managed Species at Risk (SAR) projects including snake distribution and impact mitigation, turtle reintroduction, population modelling and habitat restoration, as well as conducted a variety of wildlife inventories.

Rava has experience reviewing, assessing and applying academic research to natural heritage planning and ecological mitigation. She has a sound understanding of various conservation biology frameworks and population modelling tools. Through Rava's terrestrial ecology work and research regarding reintroduction of species and habitat restoration in Canada, she has developed a detailed knowledge base of current habitat and development challenges and solutions.

PROJECT EXPERIENCE

1855 Rosebank Road Environmental Impact Study, Marshall Homes, Pickering, ON. Project Coordinator conducting an environmental impact assessment on a proposed residential development designated as Significant Woodland by the City of Pickering.

3064 Trafalgar Road Natural Heritage and Tree Preservation, Distrikt Developments, Oakville, ON. Project Manager overseeing ecological investigations and environmental impact assessment of a proposed add-on development in association with the North Oakville Environmental Implementation Report.

2500 Royal Windsor Drive Environmental Impact Study, Carttera Management, Mississauga, ON. Project Manager overseeing ecological investigations and the environmental impact assessment of a proposed industrial development constrained by Avonhead Creek.

Block 51-1 Natural Heritage System Monitoring Plan, Mount Pleasant Block 51-1 Landowner's Group, Brampton, ON. Project Coordinator overseeing Year 5 ecological monitoring and assessment of restoration success within the created Natural Heritage System.

Henvey Inlet Wind Energy Centre Environmental Commissioner, Henvey Inlet, Reserve #2. Abatement Supervisor and Community Liaison overseeing pre-construction, construction, and operation works to ensure compliance with Henvey Inlet's Land Permit and Environmental Laws.

Milton Phase 4 Lands, Milton Phase 4 Landowners Group Inc., Milton, ON. Terrestrial Ecologist investigating and analyzing observation data and habitat use of birds, bats, reptiles and amphibians across the Milton Phase 4 Lands to support the Landowners input to the Subwatershed Study and Master Environmental Servicing Plans. Responsibilities have also included apply for wildlife collection permits under the *Endangered Species*

Act, 2007 and the *Fish and Wildlife Conservation Act* and preparing collection reports to address permit conditions.

Burnt Log Management and Environmental Impact Study, DG Group, Brampton, ON. Project Coordinator providing reptile habitat restoration advice, and assessment of impacts to wildlife crossing Heart Lake Road.

East Boundary Road, Town of Cambridge, Cambridge, ON. Terrestrial Ecologist responsible for trapping and investigating habitat use by Jefferson Salamander and Blue Spotted Salamander in relation to the proposed East Boundary Road routes.

PREVIOUS PROJECT EXPERIENCE

Rouge Park Blanding’s Turtle Headstart Initiative, Toronto Zoo, Scarborough, ON. Lead Biologist preparing a 20-year plan for Blanding’s Turtle reintroduction in Rouge Park, involving Population Viability Analysis, collection of eggs, incubation and release.

Rouge Park Eastern Milksnake Long-term Monitoring Study, Toronto Zoo, Scarborough, ON. Lead Biologist overseeing the implementation of the population distribution and analysis of an artificial coverboard study targeting Eastern Milksnake populations within Rouge Park.

PROFESSIONAL AFFILIATIONS

Canadian Herpetological Society

James Leslie, B.E.S.

Senior Vegetation Ecologist

James Leslie is a project manager and field ecologist with expertise in vegetation ecology, botany and remote sensing. He has worked extensively in most regions of Ontario, as well as parts of southeastern Québec, northern Alberta, and the Great Lakes shorelines of Michigan. He frequently conducts comprehensive plant inventories, species at risk surveys, Ecological Land Classification (ELC), wetland assessments, and vegetation monitoring. He has also led or assisted with numerous types of wildlife surveys and habitat assessments.

James is proficient with imagery analysis software (e.g. ArcGIS, HyperCube) for remote sensing and mapping. This includes preparation and analysis of multispectral and orthographic imagery, LiDAR, and digital elevation models for efficient interpretation of landscape features.

James has had significant involvement in aggregate, mining, highway infrastructure, renewable energy, and oil and gas, and has managed urban development and ecological restoration projects.

PROJECT EXPERIENCE

Renaissance Wetland Restoration, Mattamy Homes, Milton, ON. Project Manager for ecology component of a 2.5-hectare wetland/upland restoration. Collaborated with Fluvial Geomorphologists, Engineers, and agencies during design and construction of marsh wetlands and upland meadows. Designed to create suitable habitat for Western Chorus Frog and other breeding amphibians with consideration to natural heritage systems and local connectivity of adjacent woodlands through strategic planting of woody species. Preparation of multi-year post-construction monitoring plan.

Point Pelee National Park Invasive Species Management Plan, Parks Canada, Leamington, ON. Project Manager for contract to prepare an Invasive Species Management Plan and adaptive modelling tool. Ensured thorough and timely compilation of invasive species background data, species at risk and sensitive vegetation communities mapping to determine best management approach for each invasive species. A weighted ranking system was developed, and analysis was completed by creating an ArcGIS model. Collaborated with local and provincial experts, local State Botanists, and regulatory agencies during development of invasive species ranking and prioritization.

Kirtland’s Warbler Habitat Restoration Site Selection, Environment Canada, Southern Ontario. Vegetation Ecologist and GIS Specialist tasked with identifying and mapping current and potential breeding habitat for Kirtland’s Warbler across Central, Northeastern, Eastern Ontario, and into Northern Ontario. The GIS analysis used provincial datasets for soil texture, drainage, and existing land cover by overlaying and weighting all variables then running an analysis to locate all large, contiguous areas of potentially suitable habitat (i.e., currently suitable or potentially

EDUCATION

Certificate Program, University of Toronto, Geographic Information Systems (GIS) for Environmental Management (Ongoing)

Bachelor of Environmental Studies, University of Waterloo, Waterloo, ON

EXPERIENCE IN THE INDUSTRY

14 years

EXPERIENCE WITH GEI

6 years

REGISTRATIONS/CERTIFICATIONS

Advanced Hydric Soils, Wetland Training Institute, Portage, WI;

Applied Field Identification of Grasses and Sedges, Humboldt Field Research Institute, Steuben, ME;

Butternut Health Assessor, Ontario Ministry of Natural Resources & Forestry;

Ontario Wetland Evaluation System, Ontario Ministry of Natural Resources & Forestry;

Ecological Monitoring and Assessment Network, Environment Canada;

Ecological Land Classification, Ontario Ministry of Natural Resources & Forestry;

Registry, Appraisal & Qualification System (RAQS), Ontario Ministry of Transportation;

Standard First Aid & CPR/AED Level C

suitable through restoration efforts). In total, 56 suitable areas were identified and mapped for future consideration of Kirtland's Warbler habitat restoration efforts.

Line 5 Rare Wetland Survey, Enbridge, Great Lakes Shoreline, MI. Botanist assisting with targeted surveys of rare wetland communities along the western shoreline of Lake Huron and northern shoreline of Lake Michigan. Worked alongside other Botanists conducting plant inventories, rare species documentation, and wetland classification/mapping using the Michigan Natural Features Inventory protocol.

Milton Phase 4 Lands Development Process, MP4 Landowners Group, Milton, ON. Lead Vegetation Ecologist for a proposed urban development of a 5,260-hectare block of rural land. Responsibilities have included ELC, vascular plant inventories, wetland delineations, soil assessments, and woodland significance analysis. Provided technical input regarding significance of wetlands to client and agencies.

Riverfront Community, GR(CAN) Investments Inc., Niagara Falls, ON. Vegetation Ecologist for an Environmental Impact Study for urban development of a 77-hectare greenfield site. Responsible for ELC, wetland delineations, and plot-based woodland stem density surveys.

Lathrop Pond Decommissioning and Restoration Project, Nature Conservancy of Canada, Pelham, ON. Vegetation Ecologist for a restoration project to decommission and restore two anthropogenic ponds and associated access routes through a Carolinian forest. Completed refinements to ELC mapping, vascular plant surveys, population mapping of the nine rare plant species observed, and invasive plant species mapping.

Wylie Road Carden Plain Ecological Surveys, Premier Shooting Centre, Dalrymple Lake, ON. Vegetation Ecologist for a proposed shooting range. Completed ELC and vascular plant inventories of a 555-hectare naturalized property consisting of alvar, forest, and wetlands. Assisted with bat habitat assessments and nocturnal avian surveys of Eastern Whip-poor-will and Common Nighthawk.

Kirby Road Extension Municipal Class EA, Rizmi Holdings Limited and City of Vaughan, Vaughan, ON. Vegetation Ecologist assisting multidisciplinary team to determine route options for a proposed extension of Kirby Road from Dufferin Street to Bathurst Street in the Oak Ridges Moraine physiographic region. Completed ELC, vascular plant inventories, Butternut health assessments, American Ginseng (*Panax quinquefolius*) surveys, and amphibian call-count and egg mass surveys.

Preston Road, Delpark Homes, Courtice, ON. Project Manager and Vegetation Ecologist for Environmental Impact Study of proposed urban development. Managed and assisted with technical surveys of vascular plants, bat habitat and ultrasonic call analysis, amphibians, fish, turtles, and birds. Correspondence with agencies and preparation of EIS.

Sunderland Pit, Vicdom Sand and Gravel, Sunderland, ON. Vegetation Ecologist for a proposed below water-table gravel pit application and accompanying Natural Environment Level 1 and Level 2 Technical Report. Study areas consisted of approximately 120 hectares and surveys completed included ELC, vascular plant inventories, and wetland delineations and significance analysis with the Ontario Ministry of Natural Resources & Forestry.

Ontario Place Live Nation VIP Deck, Somerville Construction, Toronto, ON. Project Manager of proposed VIP deck overhanging a channel of Lake Ontario at the Amphitheatre at Ontario Place. Objectives were to identify potential environmental constraints and prepare an Environmental Constraints Opinion Letter.

Ground Mounted Solar Project Environmental Assessment, Solar-Flow Through and Renesola Canada, Toronto, ON. Vegetation Ecologist for species at risk due diligence reviews to identify permitting triggers under Ontario's *Endangered Species Act*. Completed desktop ELC mapping and strategic ground-truthing surveys for numerous project properties across Ontario. Surveyed habitat included globally rare alvar vegetation communities.

Waterdown to Finch Pipeline Replacement Project, Imperial Oil Inc., Hamilton to Toronto, ON. Lead Vegetation Ecologist for a 63 km pipeline replacement project extending across urban and rural areas, as well as naturalized features associated with the Niagara Escarpment, Conservation Authorities, and privately owned lands. Conducted ELC, vascular plant inventories, Butternut health assessments, tree inventories, and targeted species at risk surveys.

Block 51-1 Terrestrial and Aquatic Performance Monitoring, North West Brampton Landowners' Group, Brampton, ON. Lead Vegetation Ecologist for the monitoring component of a 5 km Natural Heritage

System created in Northwest Brampton. Studies included multi-year monitoring of 60 permanent plots, most of which were 1 m² with analysis of species diversity, frequency, and prominence value. A year-5 survey consisted of ELC and vascular plant inventories to determine success of vegetation community establishment and floristic quality.

PREVIOUS PROJECT EXPERIENCE

Newman Todd Project, Confederation Minerals, Red Lake, ON. Lead Terrestrial Ecologist at prospective gold mine in remote northwest Ontario. Completed desktop background review of study area and GIS mapping of all vegetation communities. Field work consisted of strategic ELC ground-truthing of targeted community types and wildlife/wildlife habitat surveys. Prepared technical report.

Kami Iron Ore, Alderon Iron Ore Corp., Port of Sept Iles, QC. Lead Botanist for proposed rail reconfiguration at mineral shipping port. On-site surveys and preparation of vegetation community mapping and vascular plant inventory. Objective of survey was to confirm presence/absence of species at risk and document observations. Prepared and submitted Rare Plant Survey Report.

Bissett Creek Mine, Northern Graphite Corp., Mattawa, ON. Lead Vegetation Ecologist for proposed graphite mine having a study area of nearly 3,000 hectares. Completed desktop ELC of all vegetation communities using ArcGIS; data layers included digital elevation models, LiDAR, multiple orthographic images, and provincial datasets. Ground verification was completed using plot-based assessments in pre-determined locations.

Acton Quarry, Dufferin Aggregates, Acton, ON. Project Ecologist for proposed quarry expansion. Assisted with seven years of amphibian surveys to identify and monitor significant wildlife habitat, species diversity, and presence/absence of Jefferson Salamander. Surveys included amphibian call-counts, egg mass surveys, pit and aquatic trapping, and tail clippings of potential Jefferson species (in conjunction with the Ontario Ministry of Natural Resources & Forestry).

Duntroon Quarry, Walker Aggregates, Duntroon, ON. Terrestrial Ecologist for proposed quarry expansion. Designed and conducted a multi-year research program to assess the habitat characteristics of American hart’s-tongue fern (*Asplenium scolopendrium*) – a federal and provincial Special Concern species. Research objective was to identify suitable transplant locations by studying a naturally occurring population. Research included in-field studies of soil, ambient air, tree canopy cover, associate species, slope aspect, and snow depth. A preliminary transplant of over 500 ferns was conducted where post-transplant monitoring studies were completed over three years.

Energy East Project, TransCanada, ON and QC. Lead Vegetation Ecologist for Ontario segment of a national pipeline project proposed to transport crude oil from Alberta to New Brunswick and Québec. Ontario study area extended from the border of Manitoba to the border of Québec, assessing vegetation communities and vascular plants. Québec study area was near Cacouna and included surveys of inland vegetation as well as estuary marshes along the St. Lawrence River. Desktop assessment included GIS mapping of all vegetation communities; field surveys occurred over a two-year period, consisting of ELC data collection, vascular plant inventories, documentation of species at risk and significant wildlife habitat. Identified amphibian breeding habitat through air-photo interpretation and verified the data by helicopter surveys. Conducted amphibian call-counts and Blanding’s Turtle surveys. Assisted the soils team with field data collection in organic wetland communities. Primary author of four reports – two technical data reports, and two Environmental Assessment reports, submitted by TransCanada to the National Energy Board.

Line 37 Spill Site, Enbridge, Fort McMurray, AB. Lead Botanist at a recently ruptured petroleum pipeline in northern Alberta. Conducted full botanical inventory and vegetation community mapping of contaminated wetlands; also conducted similar surveys of adjacent upland areas proposed for temporary use. Each survey required prompt submission of accompanying technical reports.

PCB Remediation, Georgia Pacific, Thorold, ON. Terrestrial Ecologist for vegetation component of PCB remediation project. Completed ELC, Butternut health assessments, developed and implemented multi-year vegetation monitoring plan to determine density, frequency, dominance, and importance value of restoration area plant species.

Yellow Falls Hydroelectric Project, Carlex Corporation Inc., Smooth Rock Falls, ON. Terrestrial Ecologist for proposed hydroelectric dam in remote northern Ontario. Assisted with ELC, vascular plant inventories and soil surveys.

Terrestrial Surveys for Wind and Solar Projects, various municipalities, ON. Conducted numerous pre-construction surveys under the Renewable Energy Approvals (REA) process for proposed wind and solar projects. Field work included wetland delineations and evaluations using the Ontario Wetland Evaluation System, ELC, plant and wildlife inventories, and identification of significant wildlife habitat. Completed data analysis and technical reports, which were integrated into their respective Natural Heritage Assessment Reports. Projects included but were not limited to:

- White Pines Wind Project, wpd Canada, Prince Edward County. 28 wind turbines. Lead Vegetation Ecologist.
- Amherst Island Wind Energy Project, Windlectric Inc., County of Lennox and Addington. 26 wind turbines. Lead Vegetation Ecologist.
- Bow Lake Wind Facility, BluEarth Renewables, District of Algoma. 36 wind turbines. Lead Vegetation Ecologist.
- Port Dover and Nanticoke Wind Project, Capital Power, Haldimand and Norfolk Counties. 58 wind turbines. Terrestrial Ecologist.
- Almonte Solar Project, Beckwith Solar Inc., Lanark County. 10 megawatt. Lead Vegetation Ecologist.

Highway 401 and Highway 8 Improvements, Preliminary Design, Ontario Ministry of Transportation. Terrestrial Ecologist for proposed interchange improvements in the cities of Kitchener and Cambridge along Highway 401 and Highway 8. Conducted ELC, inventories of vascular plants and wildlife, and mapping of significant wildlife habitat. The preliminary impact assessment included constraint rankings of each ELC unit affected by the Preferred Plan.

Highway 11/17 Route Planning Study, Preliminary Design, Ontario Ministry of Transportation, Kakabeka Falls to Shabaqua Corners. Terrestrial Ecologist for a proposed 40 km highway. Conducted ELC, inventories of vascular plants and wildlife, and mapping of significant wildlife habitat. Assisted with preparation and submission of a Terrestrial Ecosystems Report.

Highway 69, Patrol Yard Selection, Preliminary Design, Parry Sound to Sudbury, Ontario Ministry of Transportation. Terrestrial Ecologist for siting of suitable Patrol Yard locations based on ecological considerations along Highway 69 between Parry Sound and Sudbury. Conducted ELC, inventories of vascular plants and wildlife, and mapping of significant wildlife habitat. Assisted with preparation and submission of a Terrestrial Ecosystems Report.

Victoria Road North Class EA, City of Guelph, Guelph ON. Terrestrial Ecologist and Task Manager for a proposed road widening, parking area and boat launch. Completed background review of applicable legislation and guidelines, conducted or delegated appropriate field surveys and participated in agency consultation. Prepared Natural Environment Technical Report.

PROFESSIONAL AFFILIATIONS

Ontario Invasive Plant Council, Member

Field Botanists of Ontario, Member

PRESENTATIONS

Leslie, James 2019. The Ontario Wetland Evaluation System & Wetland Conservation Strategy. At Latornell Conservation Symposium, Orillia, Ontario. November 20, 2019.

Leslie, James, Melanie Randolph 2019. Mount Pleasant Sub-Area 51-1 Restoration: Year-5 Terrestrial Performance Monitoring. At Latornell Conservation Symposium, Orillia, Ontario. November 21, 2019.

PUBLICATIONS

Leslie, James (2018). Vascular Plants at Risk in Ontario. 103 pp. Available online: http://www.savanta.ca/idea/new-publication-vascular-plants-at-risk-in-ontario

Michelle Letourneau M.Sc.

Senior Aquatic Ecologist

EDUCATION

B.Sc., Marine and Freshwater Biology, University of Guelph
M.Sc., Environmental Practice, Royal Roads University

EXPERIENCE IN THE INDUSTRY

15 years

EXPERIENCE WITH SAVANTA

3 year(s)

CERTIFICATIONS

CAN-CISEC #0608
Ontario Benthos Biomonitoring Network Training
Marine Emergency Duties A3 (MEDA3)
Small Vessel Operators Proficiency
Restricted Radio Operators Licence (Maritime)
Class 2 Electrofishing Certification
ROM Fish Identification Workshop
PADI Advanced Open Water
Ecological Land Classification Training
Joint Health and Safety Committee Member
WHIMIS

PROFESSIONAL ASSOCIATIONS

Toronto Women in Mining
American Fisheries Society, Ontario Chapter

Michelle is an aquatic ecologist with extensive experience in project oversight, design and implementation of ecological surveys, construction monitoring, natural areas management and best management practice (BMP) design projects with more than 15 years of experience in throughout Canada, United States and South America.

Michelle has experience inventorying and assessing flora and fauna in both freshwater and marine environments. She has led and organized projects in various industry sectors, including pulp and paper, mining, power generation, transportation, recreation, urban development and government. These projects have given her a comprehensive working knowledge of government regulations, habitat assessment techniques and monitoring methods. She has implemented projects to meet regulatory requirements under CEPA, SARA, ESA, FWCA, Planning Act, Reg. 153/04, Fisheries Act, MMER, and PPER. She delivers experience and services in ecology (aquatic and terrestrial), biology (aquatic and terrestrial), environmental quality, ecological health, human health and toxicology. She has developed a holistic view of the aquatic ecosystem and anthropogenic activities allowing her to identify and focus on key interactions potentially affecting the long-term health of ecosystems.

PROJECT EXPERIENCE

Mayfield Road, Georgian Group, Brampton, ON. Project manager and aquatic lead. Delivered a scoped Environmental Impact Study addressing TRCA and the City of Brampton's ecological concerns. Responsibilities included oversight of aquatic and terrestrial ecological investigations, and impact assessment documentation.

King Road, Advanced Taxidermy, Caledon, ON. Project Manager. Delivered a scoped Environmental Impact Study addressing TRCA and the Town of Caledon's ecological concerns. Finalized the augmented buffer planting plan to the satisfaction of TRCA and the Town of Caledon facilitating reductions in the ecological buffers and allowing the site plan to meet the client's needs.

Block 11, McGill Development Services, Vaughn, ON. Project manager and aquatic lead. Managing the DFO, MECP and TRCA regulatory submissions and technical contributions to the detailed design for a stormwater outfall discharging to Redside Dace occupied habitat.

Block 11 SWM Pond Sediment Removal, McGill Development Services, Vaughn, ON. Project manager and aquatic lead. Oversaw turbidity monitoring during sediment removal from two SWM Ponds. Provided expert advice to achieve water quality targets.

Block 51-1 SWM Pond Fish Removal, Block 51-1 Landowners Group, Brampton, ON. Project manager and aquatic ecologist for the completion of a fish salvage operation in a SWM pond prior to sediment removal activities. Fish salvage resulted in collection of over 1,000 fish from a pond in an urban settlement area.

Block 51-2 NHS Monitoring, Block 51-2 Landowner Group, Brampton, ON. Project manager and aquatic lead. Managing construction and post-construction monitoring plan implementation and reporting for the NHS. Adaptive management and expert advice have addressed weather delay complications, sediment mobility, invasive species, and other technical issues.

Heritage Heights Scoped Subwatershed Study and Community (Areas 52 & 53) Secondary Plan, City of Brampton, Brampton, ON. Project manager and aquatic lead for the municipally-led Subwatershed Study for urban development on a large block of rural land. Responsibilities have included completion of aquatic ecological investigations, oversight of terrestrial investigations, input to the design of the Natural Heritage System, review and participation in the Technical Advisory Committee.

Lancaster Heights, Georgian Group, Hamilton, ON. Project manager and aquatic lead. Responsible for implementation of a fish and wildlife rescue from a farm pond designated for removal to facilitate urban development.

Mary Fix and Levi Creek Erosion Risk Mitigation Project, City of Mississauga, ON. Aquatic ecologist providing input to the Class Environmental Assessment and review processes for proposed channel upgrades to address ongoing erosion in two urban creeks.

Mill Pond EA, Town of Richmond Hill, Richmond Hill, ON. Senior aquatic ecologist responsible for the completion of the aquatic field surveys to support the Class Environmental Assessment to assess options for upgrades to the Mill Pond property, including potential stormwater management pond upgrades, trail realignments/upgrades, channel realignment and pond mitigation. Scoped field studies including turtle basking, trap netting, electrofishing, temperature monitoring and habitat assessment.

Norval Quarry Opposition, Heritage Heights Landowner Group, Brampton, ON. Project manager and aquatic technical lead. Preparation for Ontario Municipal Board hearing in opposition of a quarry application. The application was withdrawn prior to the hearing date.

Park Place Phase 2, Country Green Homes, Waterdown, ON. Project Manager and aquatic lead for finalization of an Environmental Impact Study, Operations and Management Letter and the landscaping plan. Completed agency discussions (City of Hamilton, Hamilton Conservation Authority, MNRF) and initiated construction monitoring.

Victoria Park, Mikmada Homes, Guelph, ON. Project manager and aquatic lead. Provided ecological construction monitoring and support focused on fish habitat, turtle monitoring, barn swallow structure monitoring, fish/wildlife rescue and arborist evaluations.

Wasauksing Bridge Ecological Studies, Wasauksing First Nation, ON. Aquatic ecologist for the completion of environmental studies and technical input to permitting process for a new replacement bridge over a channel in Georgian Bay. Contributed to scoping of field studies, completed field investigations, obtained local knowledge and scoped potential effects of replacement bridge.

Confidential Aggregate Pit Expansion Project, ON. Aquatic ecologist responsible for implementation of headwater drainage feature assessment, baseline fish and fish habitat assessment program and completion of headwater drainage feature and fish habitat impact assessment for documentation in the Level 1/2 Natural Environment Technical Report.

PREVIOUS PROJECT EXPERIENCE

Preliminary Quantitative Risk Assessment and Ecological Risk Evaluation for First Nation Communities in Northern Ontario: Eabamatoong First Nation (Fort Hope, 2 sites), Webequie First Nation (3 sites), ON. Conducted preliminary quantitative risk assessments and ecological reviews for sites in First Nation communities in northern Ontario following federal guidance. The primary contaminants of concern were petroleum hydrocarbons, polycyclic aromatic hydrocarbons and metals. Potential risks related to exposures to contaminants in soil, sediment, groundwater and surface water via ingestion, dermal contact, particulate inhalation and vapour inhalation were considered.

Preliminary Quantitative Risk Assessment and Ecological Risk Evaluation, Bearskin Lake First Nation, Indian and Northern Affairs Canada, ON. Primary Contaminants of Concern (CoCs) were BTEX, petroleum hydrocarbons, polycyclic aromatic hydrocarbons (PAHs), and metals. Health risks to local residents and workers were evaluated in order to prioritize and conduct remediation work in these communities. Conducted literature review, completed the ERE spreadsheet as it related to the topography and ecology of the sites and writing of the relevant PQRA sections.

Risk Assessment on 8051 Keele Street, Toronto, ON. Primary CoCs were VOCs and petroleum hydrocarbons. Health risks to workers and valued ecosystem components were prioritized and risk management measures were determined. Used Approved Model for preliminary evaluation of ecological risks and wrote ecological risk assessment to include all relevant information.

Pre-submission Form and Modified Generic Risk Assessment on 2087 Upper Middle Road East, Oakville, ON. Primary CoCs were uranium, nitrate and molybdenum. Health risks to workers, visitors and valued ecosystem components were prioritized and risk management measures were determined. Conducted the ecological site assessment, used MOE Approved Model for evaluation of risks, and completed the Pre-submission Form and Risk Assessment with all relevant information.

Xtrata Gold. Heath Steele Mine Wetland Monitoring Program, Miramichi, NB. Project Manager and Primary Ecologist – Conducted final wetland vegetation community surveys, arial image wetland assessment and water quality assessments. Produced the final monitoring report in the 7-year monitoring program summary confirming the restoration targets were met for submission to the client and regulators.

Confidential development files, Conservation Halton, Burlington, ON. Aquatic Planning Ecologist – Review, gap analysis and expert advice relative to meeting regulatory obligations under O.Reg. 162/06.

Stillwater PGM (Marathon PGM) Baseline Ecological Assessment and Federal Environmental Assessment, Marathon, Ontario. Orchestrated the baseline ecological survey for Marathon PGM by leading four teams of two environmental scientists. Conducted night surveys for amphibians and nocturnal birds focusing on Species at Risk.

SELECT PRESENTATIONS

“Storm Water Management: Getting the Temperature Just Right” TRIECA 2018

“A Little Bit Obsessed: Your Guide to Dominating Construction Erosion” TRIECA 2019

“Where did all the concrete go?” TRIECA 2020

Sean Male, B.Sc., M.Sc.

Senior Terrestrial Ecologist, Natural Sciences Practice Area Leader

Sean has designed and implemented baseline studies of natural heritage features, assessed environmental impacts, developed mitigation measures and monitoring plans, and coordinated environmental permits and approvals for a variety of projects in the land development, linear infrastructure and renewable power sectors. He has managed environmental requirements for projects from development planning, including permits/approvals, through to the construction and post-construction phases.

Sean also brings extensive experience with species at risk legislation. He has designed field programs to confirm presence/absence of species at risk, obtained permits and approvals from relevant authorities, and identified measures to avoid impacts and provide overall benefit to target species.

As a project manager, he has ensured the development of project documents and coordination of public, First Nation and Métis, agency and municipal consultation programs. He has also participated in environmental constraints assessments, due diligence studies and construction monitoring.

PROJECT EXPERIENCE

Waterdown to Finch Pipeline Replacement Project, Imperial Oil Inc., Hamilton to Toronto, ON. Terrestrial Ecology Lead. Oversaw the assessment of the existing environmental conditions along an existing 63 km refined products pipeline that is proposed to be replaced. The assessment was completed as a component of the Ontario Energy Board’s Leave to Construct Process and included assessment of the presence of natural heritage features along the route.

1600 Teston Road, Teston Sands Inc., Vaughan, ON. Project Manager and Environmental Lead. Assessed the presence of natural heritage features in accordance with the requirements of the Provincial Policy Statement for a proposed residential subdivision. This assessment included identification of natural heritage features and recommendation of mitigation measures to be employed to mitigate the impacts on the identified features.

Chedoke Waterfalls Recreation Infrastructure, City of Hamilton, Hamilton, ON. Project Manager and Environmental Lead. Assessed the potential impacts of a proposed lookout and associated infrastructure to be constructed within the Niagara Escarpment gorge associated with the East Branch of the Chedoke Creek. This included the identification of natural heritage features in accordance with the requirements of the Provincial Policy Statement and the Niagara Escarpment Plan.

750 Lockhart Road, Ballymore Homes, Barrie, ON. Project Manager and Environmental Lead. Assessed the presence of natural heritage features in accordance with the requirements of the Provincial Policy Statement for a proposed residential subdivision. This assessment included identification of Significant Wildlife Habitat (SWH) features and recommendation of mitigation

EDUCATION

M.Sc., Watershed Ecosystem Graduate Program, Trent University

B.Sc.Hons., Biology, Queen’s University

EXPERIENCE IN THE INDUSTRY

13.5 Years

EXPERIENCE WITH SAVANTA

3.5 Years

REGISTRATIONS/CERTIFICATIONS

Project Planning, Analysis and Control – George Washington University

Canadian Environmental Assessment Act – Canadian Environmental Assessment Agency

Renewable Energy Approval – Ontario Ministry of the Environment

Natural Heritage Assessment for Renewable Energy Approvals – Ontario Ministry of Natural Resources measures to be employed to mitigate the impacts on the identified features.

Confidential Project, ON. Project Manager and Terrestrial Environmental Lead. Leading the assessment of terrestrial environmental features associated with a significant electricity project in Ontario. The project will require a federal and provincial environmental assessment.

St. George Subdivision, Losani Homes, County of Brant, ON. Project Manager and Environmental Lead. Assessed the presence of natural heritage features in accordance with the requirements of the Provincial Policy Statement for a proposed residential subdivision. This assessment included identification of natural heritage features and recommendation of mitigation measures to be employed to mitigate the impacts on the identified features.

PREVIOUS PROJECT EXPERIENCE

Solar Power Portfolio (13 solar projects), Northland Power, Various municipalities, ON. Project Manager and Environmental Lead. Oversaw the preparation of Renewable Energy Approval materials for submission to the Ontario Ministry of the Environment, coordinated consultation activities, developed baseline and post-construction field programs to satisfy the requirements of the Ontario Ministry of Natural Resources with respect to natural heritage assessments, including significant wildlife habitat and species at risk requirements, obtained permits under the *Endangered Species Act*, and oversaw environmental monitoring during construction and completion of Phase 1 and 2 Environmental Site Assessments.

South Kent Wind Project, Pattern Energy, Chatham-Kent, ON. Environmental Coordinator. As Environmental Coordinator, oversaw the preparation of Renewable Energy Approval documents in support of the 270 MW project for submission to the Ontario Ministry of the Environment in association with the original project submission and various amendments, and prepared an environmental orientation to be provided to workers on site during the operations phase of the project. Provided quality assurance/quality control review of the natural heritage assessment.

Solar Power Portfolio (20 solar projects), Recurrent Energy, Various municipalities, ON. Environmental Coordinator and Terrestrial Lead. As Environmental Coordinator for four of the solar projects in southwestern Ontario, oversaw the preparation of Renewable Energy Approval materials for submission to the Ontario Ministry of the Environment and coordinated public, First Nation and Métis, municipal and agency consultation activities. As Terrestrial Lead for all 20 projects throughout the province, developed field programs to satisfy the requirements of the Ontario Ministry of Natural Resources with respect to natural heritage assessments, including significant wildlife habitat and species at risk requirements, including obtaining permits under the *Endangered Species Act*.

Gesner Wind Power Development, Saturn Power, Chatham-Kent, ON. Project Manager/Environmental Coordinator. As Environmental Coordinator for a 10 MW wind project, oversaw the preparation of Renewable Energy Approval materials for submission to the Ontario Ministry of the Environment, coordinated public, First Nation and Métis, municipal and agency consultation activities, and developed baseline natural heritage and species at risk field programs to satisfy the requirements of the Ontario Ministry of Natural Resources.

Darlington New Nuclear Project, Ontario Power Generation, Darlington, ON. Mod Manager. The project entailed monitoring of Bank Swallow populations within natural colonies and artificial nest habitats and provision of technical support with respect to the design of an earthen embankment artificial nest habitat structure. As Mod Manager, ensured project delivery with respect to budget and schedule, oversaw all project activities and preparation of reports, and attended meetings of the Bank Swallow Working Group.

Lower Mattagami River Hydroelectric Complex Project, Ontario Power Generation, north of Kapuskasing, ON. Terrestrial Lead. As Terrestrial Lead for the Comprehensive Study Report for the redevelopment of four existing hydro facilities on the Mattagami River, designed and implemented the baseline terrestrial field investigation program, completed the description of the terrestrial environment within the project location, assessed the potential impacts of the project, identified mitigation and monitoring measures to be employed throughout all phases of the project, and designed the post-construction monitoring plan.

Gitchi Animki Hydroelectric Project, Pic Mobert Hydro Power Inc., near White River, ON. Terrestrial Lead. As Terrestrial Lead for the Environmental Screening Report of two hydroelectric facilities along the

White River, completed the description of the terrestrial environment within the project location, assessed the potential impacts of the project, and identified mitigation and monitoring measures to be employed throughout all phases of the project. Two addendum memoranda were also prepared to address proposed modifications to the project development.

Kabinakagami Hydro Project, Northland Power, near Constance Lake, ON. Terrestrial Lead. As Terrestrial Lead for the Environmental Report for the development of four hydro facilities on the Kabinakagami River, designed and implemented the baseline terrestrial field investigation program, completed the description of the terrestrial environment within the project location, assessed the potential impacts of the project, and identified mitigation and monitoring measures to be employed throughout all phases of the project.

Kapuskasing North Waterpower Project, Hydromega Services Inc, near Kapuskasing, ON. Terrestrial Lead. As Terrestrial Lead for the Environmental Screening Report of a hydro facility on the Kapuskasing River, designed and implemented the baseline terrestrial field investigation program, completed the description of the terrestrial environment within the project location, assessed the potential impacts of the project, and identified mitigation and monitoring measures to be employed throughout all phases of the project.

Kashechewan First Nation Protective Dyke Repairs, Indian and Northern Affairs Canada, Kashechewan, ON. Terrestrial Ecologist. Provided input to the Environmental Screening Report on the existing terrestrial environment, assessed environmental effects with respect to the proposed undertakings, and identified mitigation measures to be employed during construction.

Coldwell Wind Energy Project, Brookfield Power, near Marathon, ON. Terrestrial Ecologist. As Terrestrial Ecologist for the Environmental Screening Report of a 100 MW wind facility northwest of Marathon, Ontario, designed and implemented the baseline terrestrial field investigation program, completed the description of the terrestrial environment within the project location, assessed the potential impacts of the project, and identified mitigation and monitoring measures to be employed throughout all phases of the project.

Riverview/Glenridge/Queenston Trunk Watermain Upgrade, Region of Niagara, St. Catharines, ON. Terrestrial Ecologist. Provided input to the Schedule B Municipal Class Environmental Assessment on the existing terrestrial environment within the project location, and an evaluation of the alternative solutions for carrying out the project.

Eastchester Watermain Upgrade, Region of Niagara, St. Catharines, ON. Terrestrial Ecologist. Provided input to the Schedule B Municipal Class Environmental Assessment on the existing terrestrial environment within the project location.

PRESENTATIONS

Male, S.K., and E. Nol, Impacts of Roads Associated with the Ekati Diamond Mine™ on Lapland Longspur Reproductive Success and Breeding Habitat, 7th Association of Canadian Universities for Northern Studies Student Conference on Northern Studies, Edmonton, Alberta, Canada, 2003

Male, S.K., and E. Nol, Impacts of Roads Associated with the Ekati Diamond Mine™ on Lapland Longspur Reproductive Success and Breeding Habitat, Ontario Ecology and Ethology Colloquium 2004, Mississauga, Ontario, Canada, 2004

Male, S.K., and E. Nol, Impacts of Roads Associated with the Ekati Diamond Mine™ on Lapland Longspur Reproductive Success and Breeding Habitat, 122nd meeting of the American Ornithologists' Union, Quebec City, Quebec, Canada, 2004

PUBLICATIONS

Male, S.K., and E. Nol, Impacts of Roads Associated with the Ekati Diamond MineTM, Northwest Territories, Canada, on Reproductive Success and Breeding Habitat of Lapland Longspurs, Canadian Journal of Zoology 83(10): 1286-1296, Peterborough, Ontario, Canada, 2005

Male, S.K., J. Jones, and R.J. Robertson, Effects of Nest-Box Density on the Behaviour of Tree Swallow During Nest Building, Journal of Field Ornithology, 77(1):61-66, Kingston, Ontario, Canada, 2006

Olivia Park, B.Sc., CERPIT

Intermediate Ecologist

Olivia is an Intermediate Ecologist with a deep understanding of aquatic and terrestrial ecosystems. She specializes in ecosystem restoration and ecological monitoring. Olivia has experience managing ecological studies, impact assessment and restoration projects related to greenfield development. Olivia performs a variety of terrestrial and aquatic ecological inventories focusing on evaluating the signifiance and sensitivity of natural heritage features and their associated functions across scales. She has extensive aquatic field knowledge related to headwater drainage feature assessments, aquatic habitat assessments and fish community sampling. Olivia leads both aquatic and terrestrial surveys and holds her Class 2 Electrofishing Backpack Crew Leader certification.

Olivia manages a comprehensive portfolio of ecological projects throughout Southern Ontario and is developing a track record of providing ecosystem-based solutions. She has coordinated and managed Environmental Impact Studies/Assessments, Subwatershed Impact Studies and Scoped Subwatershed Studies. Olivia has demonstrated a high degree of competency in assessing natural heritage features, including identifying Species at Risk (SAR) and associated habitats, significant wildlife habitat, significant woodlands, significant wetlands, significant valleylands and fish habitat. Olivia has worked collaboratively with stakeholders to identify restoration and enhancement opportunities, and a has experience applying for permitting under various regulatory agencies.

PROJECT EXPERIENCE

11333 Dufferin Street Environmental Impact Study (EIS), The Milani Group, Vaughan, ON. Project Coordinator and field lead – Completed baseline studies in support of residential development. Completed impact assessment including evaluation of natural heritage features (significant wildlife assessment, habitat for endangered and threatened species, significant woodlands, fish habitat) and identification of restoration and enhancement opportunities.

8175 Winston Churchill Blvd EIS, Maple Lodge Farms, Brampton, ON. Project Manager and field lead – Completed baseline studies in support of site redevelopment. Completed impact assessment to identify natural heritage features and identified enhancement opportunities through vegetated buffer plantings.

Bathurst Street Scoped EIS, Islamnic Shia Ithna Asheri Jamaat of Toronto, Vaughan, ON. Project Manager - Completed baseline studies within occupied Redside Dace habitat in support of redevelopment. Prepared project for successful Ontario Municipal Board (OMB) proceeding.

Block 51-1 Mount Pleasant, Block 51-1 Landowner Group, Brampton, ON. Aquatic field lead and technical contributor – Completed five years of aquatic monitoring within realigned watercourse within designated Redside Dace habitat. Prepared

EDUCATION

Masters of Environmental Science, University of Toronto (Ongoing)

Post Graduate Certificate Hons. Ecosystem Restoration, Niagara College

B.Sc. (Hons.) Geological Sciences, minor in Environmental Studies, Queen’s University

EXPERIENCE IN THE INDUSTRY

4.5 Years

EXPERIENCE WITH SAVANTA

4.5 Years

REGISTRATIONS/CERTIFICATIONS

Certified Ecological Restoration Practitioner in Training (CERPIT)

Ontario Stream Assessment Protocol’s Level 2 Fish Identification

Ontario Benthos Biomonitoring Network

Class 2 Electrofishing Backpack Crew Leader

Emergency First Aid with CPR “C” + AED

Workplace Hazardous Materials Information System (WHMIS) formal monitoring reports and adaptive management plans for Fisheries and Oceans Canada (DFO), Ministry of Natural Resources and Forestry (MNRF) and Credit Valley Conservation (CVC).

Derry Green 3A Subwatershed Impact Study (SIS), Broccolini Construction, Milton, ON. Project Coordinator – Completed baseline aquatic and terrestrial studies within a site proposed for industrial development. Prepared SIS, which identified natural heritage features and worked to identify mitigative and net gain opportunities were impacts were proposed.

Derry Green 5A SIS, Broccolini Construction, Milton, ON. Project Coordinator and field lead – Completed baseline studies and assessed impacts for proposed industrial development. Prepared SIS and identified restoration opportunities, including watercourse realignment and wetland compensation and enhancement.

Eagle Heights Environmental Impact Assessment, Penta Properties Inc., Waterdown, ON. Project coordinator and field lead – Completed baseline studies which informed impact assessment for proposed residential development. Reviewed natural heritage features present on the property based on municipal and provincial criteria. Identified restoration opportunities including woodland, wetland and Species at Risk (SAR) habitat compensation.

Eighth Line Halton Scoped Subwatershed Study (SWS), Hodero Holding Ltd., Halton Hills, ON. Project Manager – Completed aquatic and terrestrial studies to inform Scoped SWS and Characterization Report and identify wetland compensation opportunities. Olivia acted as the lead ecologist in a Subwatershed Technical Advisory Committee where she provided an ecological characterization of the study area.

Kirby Road Class Environmental Assessment (EA), The Milani Group, Vaughan, ON. Project Coordinator and field lead – Completed baseline studies to inform municipal Class EA for a proposed municipal road extension project. Progressing restoration and enhancement plan to provide ecological net gain to the surrounding ecosystem.

Milton North Porta EIS, Orlando Corporation, Milton, ON. Project Manager and field lead – Completed baseline studies and prepared EIS in support of industrial business park. Identified and provided compensation habitat for removal of SAR through a Notice of Activity under the MNRF. Progressing detailed design phase, including natural heritage design brief outlining net benefits of watercourse realignment and wetland compensation.

Patterson Creek Riparian Restoration Plan, Lawrence Thomas (Private Landowner), Richmond Hill, ON. Project coordinator and restoration advisor – Prepared and implemented riparian restoration plan within contributing Redside Dace habitat, including use of bioengineering opportunities.

Port Credit West Village EIS, Imperial Oil, Mississauga, ON. Field lead – Completed baseline aquatic and terrestrial studies in support of EIS.

Salem EIS, Penta Properties Inc., Hamilton, ON. Project coordinator and field lead – Completed baseline terrestrial surveys in support of residential development. Completed constraints analysis to understand extents of natural heritage features (significant wildlife habitat, significant woodlands, significant wetlands, fish habitat, habitat for endangered and threatened species).

Solmar Bolton Comprehensive Environmental Impact Study and Management Plan, Solmar Development Corp., Bolton, ON. Project Coordinator and field lead – Completed baseline studies in support of site development.

PREVIOUS PROJECT EXPERIENCE

Twelve Mile Creek Aquatic Assessment and Gap Analysis, Trout Unlimited Canada – Niagara Chapter, St. Catharines, ON. Team member and field technician – Completed baseline studies and assessed restoration opportunities through a detailed gap analysis related to Brook Trout habitat availability.

PROFESSIONAL AFFILIATIONS

American Fisheries Society, Ontario Chapter

Society for Ecological Restoration

Agneta Szabo, B.Sc.

Botanist

Agneta Szabo is a botanist with experience in coordinating and contributing to Environmental Impact Studies, Natural Heritage Evaluations, and the Natural Environmental components of Class Environmental Assessments. Agneta collects baseline environmental data through botanical surveys, tree inventories, vegetation community classification, and the delineation of natural heritage features such as woodlands and wetlands. She also provides input to compensation plans including vegetation planting, wildlife habitat enhancement, and community stewardship. Agneta's experience with regulatory applications spans a variety of sectors including land development, water and wastewater infrastructure, highway and road infrastructure, and agriculture. She has also worked with local and regional municipalities to conduct monitoring in natural and restored systems to inventory plant species, identify and map species at risk, and document invasive species.

PROJECT EXPERIENCE

Block 51-2 North East Channel Design, Mayfield Station Landowners Group, Brampton, ON. Project Ecologist responsible for coordinating the preparation of a Natural Heritage Design Brief, Wildlife Passage Memorandum, and Operation and Maintenance Letter outlining the restoration works proposed for the North East Channel portion of the Block 51-2 Natural Heritage System within the Mount Pleasant Secondary Plan Area.

Block 51-2 Ecological Restoration Oversight and NHS Implementation, Block 51-2 Landowners Group, Brampton, ON. Project Botanist responsible for ecological restoration oversight and post-construction monitoring in the Block 51-2 Natural Heritage System within the Mount Pleasant Secondary Plan Area. Monitored landscape construction within two channel restoration areas, including verification of planting beds and plant species. Completed post-construction monitoring of invasive and weedy species occurrences within four completed restoration areas, and prepared an Invasive Species Monitoring Technical Memorandum.

Point Pelee National Park Invasive Species Management, Parks Canada, Leamington, ON. Project Botanist responsible for compiling known occurrences of exotic species in Point Pelee National Park from background records and preparing descriptions of the biology and invasiveness of the known aggressive exotic species. This information was used to map occurrences of invasive species and inform the prioritization of their management.

Waterdown to Finch Project, Imperial Oil, Greater Toronto and Hamilton Area, ON. Project Botanist responsible for supporting the Project Arborist by coordinating a five-week arborist survey field program along 63 km of proposed pipeline upgrades. Conducted tree inventories and drafted arborist reports and tree preservation plans for seven municipalities in support of permit applications for tree removals under a total of 10 municipal tree by-laws. In this role, also completed a survey of agricultural weed communities along the proposed pipeline route.

EDUCATION

M.Env.Sc. (Candidate), Conservation and Biodiversity, University of Toronto, Ongoing
Graduate Certificate, Ecosystem Restoration, Niagara College
Honours B.Sc., Environmental Science, Conservation and Biodiversity, University of Ottawa

EXPERIENCE IN THE INDUSTRY

6 Years

EXPERIENCE WITH SAVANTA

1 Year

REGISTRATIONS/CERTIFICATIONS

Ontario Wetland Evaluation System, 2017
Butternut Health Assessor, 2019
Natural Heritage Information Centre Data Sensitivity Training, 2017
Standard First Aid with CPR C + AED, 2019

Remington/Bratty MP5 Lands Conservation Halton Land Securement Evaluation, The Remington Group, Milton, ON. Project Ecologist responsible for completing the natural heritage evaluation and scoring of the Remington/Bratty MP5 lands in the context of Conservation Halton's Land Securement Strategy (2017) to determine whether portions of these lands within the Greenbelt Area were suitable for dedication to Conservation Halton.

PREVIOUS PROJECT EXPERIENCE

Wetland Evaluations, Ministry of Natural Resources and Forestry, Various Locations in ON. Wetland Biologist responsible for completing five wetland evaluations throughout the Greater Toronto Area per Ontario Wetland Evaluation System (OWES) protocols. Completion of these evaluations involved wetland boundary delineation through stakings and air photo interpretation, collection of vegetation community data, and assembling flora and fauna lists based on field data and the review of existing background information. Wetland data were compiled, summarized, and scored according to the OWES Southern Manual, 3rd Edition.

York Regional Forest Vegetation Inventory, Regional Municipality of York, ON. Project Botanist responsible for conducting vegetation inventories at various sites within the York Regional Forest system to identify and map plant SAR, as well as rare and invasive plant species.

Green Lake Aquatic Vegetation SAR Monitoring, Green Lake Landowners Group, Caledon, ON. Project Botanist responsible for conducting an aquatic flora inventory of Green Lake, including mapping rare plant species and monitoring for Hill's Pondweed, a federal and provincial species of Special Concern.

Cottonwood Flats Monitoring Program, City of Toronto, ON. Project Botanist responsible for completing multi-year vegetation monitoring of 20 m x 20 m permanent plots at the newly restored Cottonwood Flats, including three-season botanical surveys and recording species cover and phenology.

Redside Dace Habitat Restoration, Stouffville Grace Baptist Church, Stouffville, ON. Project Botanist responsible for the completion of a summer botanical inventory, ELC, and wetland staking with the Ministry of Natural Resources and Forestry and the Toronto and Region Conservation Authority to inform the preparation of an Information Gathering Form (IGF) submitted to the Ministry of Natural Resources and Forestry.

Des Newman Boulevard, West Whitby Landowners Group, Whitby, ON. Project Botanist responsible for completing wetland community characterization and wetland boundary staking with the Ministry of Natural Resources and Forestry and the Central Lake Ontario Conservation Authority.

Savannah Habitat Assessment, Friends of Malcolmson Park, St. Catharines, ON. Project Botanist responsible for conducting a botanical survey and ELC to inform proposed restoration efforts of savannah habitat in Malcolmson Park.

Pollinator Garden, General Motors Canada, St. Catharines, ON. Project Botanist responsible for developing a plant list and planting plan that General Motors used to establish a garden to provide habitat for pollinators at their Glendale Avenue plant in St. Catharines.

Stormwater Management (SWM) Pond Cleanout, Baycliffe Homes, Whitby, ON. Project Botanist responsible for completing wetland community characterization within Redside Dance contributing habitat as input to applications for a Licence to Collect Fish for Scientific Purposes and a Wildlife Scientific Collector's Authorization. These permits were obtained for a fish collection and wildlife salvage in support of a SWM pond cleanout.

SWM Pond Retrofit, City of Brampton, ON. Project Botanist responsible for providing input to the evaluation of alternative SWM pond retrofit options by conducting a literature review of the latest science to assess the effectiveness of nutrient removal of the present and proposed wetland vegetation communities.

Cooksville Creek SWM Facility, City of Mississauga, ON. Project Botanist responsible for contributing to the preparation of a Natural Heritage Technical Memorandum to inform the detailed design of a SWM facility that will outlet into Cooksville Creek. Fieldwork included a summer botanical survey and ELC.

North Toronto Wastewater Treatment Plant Infrastructure Upgrades, City of Toronto, ON. Project Botanist responsible for contributing to the preparation of a Natural Heritage Technical Memorandum to address concerns regarding the potential impacts of proposed infrastructure upgrades on SAR. The technical memorandum outlined the results of a site visit and provided management recommendations regarding SAR observed or potentially present, particularly with respect to the *Endangered Species Act* (2007) and the *Migratory Birds Convention Act* (1994).

Peel Victoria Feedermain, Regional Municipality of Peel, Caledon, ON. Project Botanist responsible for conducting ELC and preparing a Natural Heritage Technical Memorandum regarding potential impacts and management recommendations for potentially present SAR.

Pressure District 7 Reservoir and Pumping Stations, City of Hamilton, ON. Project Botanist responsible for contributing to the preparation of a Natural Environment Assessment as part of a Municipal Class EA to evaluate alternative locations and select a preferred alternative for a new elevated water storage facility and new pumping station. Reviewed background information and identified necessary fieldwork to address information gaps, conducted a summer botanical survey and ELC, identified the potential environmental impacts of proposed works at seven alternative sites, and recommended measures to mitigate impacts.

Glenwood Crescent Emergency Road Repairs, City of Toronto, ON. Project Botanist responsible for contributing to a scoped EIS through the assessment of natural heritage features and input to mitigation and compensation plans for maintaining the function of a mature deciduous forest. Fieldwork completed includes a summer botanical survey, ELC, and SWH assessment. Prepared and submitted a permit application for tree removal and injury under Chapters 658 and 813, Article II of the Toronto Municipal Code, as well as a Notice of Activity under Section 23.18 of Ontario Regulation 242/08 of the *Endangered Species Act* (2007).

Col. Phillips Drive & Highway 10 Intersection Improvements, 247783 Ontario, Shelburne, ON. Project Environmental Scientist responsible for coordinating an EA under the Class Environmental Assessment for Provincial Transportation Facilities (2000), which was initiated as a Group B and bumped down to a Group C. Prepared letters for landowner contact, conducted ELC, and prepared the Environmental Screening Document as well as the Natural Environment Assessment Report appended in the ESD.

Forestbrook Hills Phase II Townhouses, ARG Group, Schomberg, ON. Project Botanist responsible for contributing to an EIS in support of the proposed development of a 51-unit residential subdivision on an 8 ha property. Completed a three-season botanical survey, conducted ELC, staked wetland boundaries with the Lake Simcoe Region Conservation Authority (LSRCA), prepared a woodland and wetland restoration, compensation, and enhancement plan in accordance with the LSRCA 2017 Ecological Offsetting Plan, and assembled Public Information Centre display boards that were presented at a PIC meeting. Input to the EIS included a summary of existing ecological conditions, the assessment of potential impacts of the proposed development, and recommendations to avoid or mitigate impacts.

16th Avenue Townhouses, Zen Homes, Richmond Hill, ON. Project Botanist responsible for contributing to the preparation of an NHE in support of a proposed residential development. Conducted a summer botanical survey and ELC and provided input to a restoration and compensation plan. The NHE included a summary of existing ecological conditions, an assessment of potential impacts of the proposed development, and recommendations for avoidance or mitigation of impacts.

Swan Park Road Townhouses, Digram Developments, Markham, ON. Project Botanist responsible for contributing to the preparation of a scoped EIS addendum in support of a proposed residential development. Provided input to a restoration and compensation plan including a planting plan, a homeowner stewardship manual, and establishing a partnership with Sam Chapman Public School staff to deliver a stewardship program to elementary school students.

Valleymede Townhouses, Guthrie Muscovitch Architects, Markham, ON. Project Botanist responsible for contributing to the preparation of a scoped EIS in support of a proposed residential development. Field work completed includes a summer botanical inventory, and ELC.

Maryvale Crescent Residential Development, King Construction, Richmond Hill, ON. Project Botanist responsible for contributing to a scoped EIS in support of the redevelopment of single-family home. Field work included a summer botanical survey and ELC.

Bellini Avenue Residential Development, Huis Design Studio, Brampton, ON. Project Botanist responsible for contributing to a scoped EIS through the assessment of natural heritage features. Field work completed includes a two-season botanical survey, ELC, and wetland staking with the Ministry of Natural Resources and Forestry and the Toronto and Region Conservation Authority.

Holland Landing Road Commercial Development, 6IX Design, East Gwillimbury, ON. Project Botanist responsible for contributing to a scoped EIS through the assessment of natural heritage features. Field work completed includes a two-season botanical survey, ELC, and wetland staking with the LSRCA.

Dufferin Street, Private Landowner, King Township, ON. Project Botanist responsible for coordinating a natural heritage study to obtain approval from the Toronto and Region Conservation Authority and King Township for the import of fill and topsoil to restore a degraded property for agricultural use. Completed ELC, conducted a wetland staking with the Ministry of Natural Resources and Forestry and the Toronto and Region Conservation Authority, and prepared the NHE report.

PROFESSIONAL AFFILIATIONS

Toronto Field Naturalists, Board Member

Field Botanists of Ontario, Member

Laura Williamson, B.E.S., CERPIT

Intermediate Ecologist

Laura is an Intermediate Ecologist with a thorough understanding of ecological systems and their functions on the landscape. She specializes in ecosystem restoration, resource management, and ecological monitoring. Laura has experience leading a wide variety of ecological studies, environmental impact studies and restoration projects related to compensation and species at risk (SAR) habitat creation efforts. Laura has earned her Certified Ecological Restoration Practitioner (in training) designation from Society for Ecological Restoration.

Laura conducts a wide range of terrestrial and aquatic ecological surveys that evaluate the significance of natural heritage features and their associated functions. She specializes in terrestrial surveys and inventories related to herptiles, bats and insects. She has developed her knowledge of Significant Wildlife Habitat (SWH) evaluation criteria, and SAR habitat identification and protocols for confirming presence or absence. She also has experience with invasive species management and amphibian habitat rehabilitation. Laura has begun to manage ecological projects focused on providing ecosystem-based solutions to urban expansion.

PROJECT EXPERIENCE

Milton Phase 4, Milton Phase 4 Landowner Groups, Milton ON, Environmental Impact Study (EIS). Project Coordinator and field lead – Completed baseline studies across all properties as part of a large-scale block plan for a proposed multi-development residential expansion. Reviewed natural heritage features present on the properties based on municipal and provincial criteria. Identified restoration opportunities including woodland, wetland and SAR habitat compensation.

Riverfront Residential, GR (CAN) Investments LTD, Niagara ON, Environmental Impact Study (EIS). Project Coordinator and field lead – Completed baseline studies and assessed impacts for proposed residential development. Identified restoration opportunities including woodland, wetland and SAR habitat compensation.

Nelson Burlington Quarry Expansion, Nelson Aggregate, Burlington, ON, Natural Environment Technical Report (NETR). Project Coordinator and field lead – Completed baseline studies and assessed impacts for a proposed aggregate quarry. Prepared the Level 1 and Level 2 NETR, including evaluation of occurrence of significant natural heritage features on and adjacent to the proposed expansion area.

Bram East 47-3, Orlando Corporation, Brampton, ON, Environmental Impact Study (EIS). Project Coordinator – Completed baseline studies to inform the EIS Progressing restoration and enhancement plan to provide ecological net gain to the surrounding ecosystem.

EDUCATION

Post Graduate Certificate Hons. Ecosystem Restoration, Niagara College
BES Hons. Environmental Studies, Con. Resource Management, York University

EXPERIENCE IN THE INDUSTRY

3.5 Years

EXPERIENCE WITH SAVANTA

3.5 Years

REGISTRATIONS/CERTIFICATIONS

Certified Ecological Restoration Practitioner in Training (CERPIT)
Class 2 Electrofishing Backpack Crew Leader
Ontario Benthos Biomonitoring Network
Standard First Aid with CPR “C’ + AED
PADI Open Water Scuba Diving
Workplace Hazardous Materials Information System (WHMIS)

Boblo Island, Boblo Developments Inc, Windsor ON, Overall Benefit Permit (OBP). Project Coordinator and field lead – Completed baseline studies for Eastern Foxsnake, assessed impacts of a proposed residential development on identified SAR and their habitat, assisted in the preparation of the Information Gathering Form and OBP application to further engagement with the Ministry of Natural Resources and Forestry, and recommended restoration opportunities for Eastern Foxsnake.

Bahá'i Temple, Bahá'i Community of Canada, Markham, Environmental Impact Study (EIS). Project Manager - Completed baseline studies within significant woodland habitat in support of a forest temple placement. Creation of restoration conceptual plan to provide invasive species management and an overall net increase in forest cover.

Re-establishment of Kirtland's Warbler Habitat in Southern Ontario, Simcoe County, Simcoe County, Restoration Initiative. Project and Volunteer Coordinator – Co-organized seed collection and planting efforts for the restoration of habitat for a provincially and federally endangered species. Assisted in the monitoring of the planting and planning efforts.

Monarch Stop Over Area Settlement Support, Central Lake Ontario Conservation Authority (CLOCA) and City of Oshawa, Oshawa ON, Local Planning Appeal Tribunal (LPAT) Hearing. Project Coordinator – Completed technical peer review on behalf of CLOCA and the City of Oshawa of an EIS prepared in support of a proposed residential development along the shore of Lake Ontario. Presented the results of the peer review during a settlement meeting under the LPAT process. Provided technical support for witness statements and hearing preparation for the LPAT along with CLOCA and the City of Oshawa.

PROFESSIONAL AFFILIATIONS

Society for Ecological Restoration

PRESENTATIONS

Re-establishing a Lost Ecosystem in Southern Ontario – Recovery of Kirtland's Warbler – Latornell Conservation Symposium, 2018

Shared perspectives and approaches to effectively restore habitat for an endangered song bird and ecosystem in Southern Ontario – Society for Ecological Restoration, 2019 Annual General Meeting

Endangered Species Site Walk (Fieldtrip) – Recovery of Kirtland's Warbler – Latornell Conservation Symposium, 2019