ENVIRONMENTAL IMPACT STUDY - BURL'S CREEK EVENT GROUNDS

TOWNSHIP OF ORO-MEDONTE

Burl's Creek Event Grounds Inc.

Project No. 151-03995-00
December 2015
Distribution:
1 c Client
1 c File

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December 9, 2015

Mr. Ryan Howes
Burl's Creek Event Grounds Inc.
180 8th Line South
Oro-Medonte, Ontario
L0L 2X0

Subject : Environmental Impact Study
Burl's Creek Event Grounds
Township of Oro-Medonte, County of Simcoe
Project No 151-03995-00

Dear Mr. Howes:

WSP Canada Inc. (WSP) is pleased to provide you with an Environmental Impact Study for the property with the legal description of Part of Lot 21 & 22, Concession 8, as in RO850934; Part of Lot 22, Concession 9, as in RO1326331, Except PT 1, 51R31499; Part of Lot 22, Concession 8, as in RO1116954; Part of Lot 22, Concession 8, being Part 1 on 51R-3247; Part of Lot 23, Concession 9 being Part 1 on 51R-31789; Part of Lot 22, Concession 8, being Part 1 on 51R-35062; and PT LT 21, Concession 8, ORO, designated as Parts 1, 2 & 3, 51R20880 all in the Township of Oro Medonte, County of Simcoe. The property is located South of Highway 11, between Line 7 and Line 9, northeast of Barrie, Ontario.

This report outlines the existing conditions within the area surveyed by WSP at the time of the site investigations. An assessment of the potential for negative impacts to natural features on the site has been provided along with mitigation measures to help maintain, to the extent possible, the form and function of the natural features found on and within the area of influence of the development.

Thank you for the opportunity to complete this assignment.

Yours truly,
WSP Canada Inc.

Austin Adams, B.Sc., EP
Biologist

AAA:nah

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1 INTRODUCTION

WSP Canada Inc. (WSP) has been retained to complete an Environmental Impact Study (EIS) and an inventory of the Natural Heritage Features for the Burl's Creek Event Grounds, with municipal addresses 241 Line 7 S, 240 Line 8 S, 329 Line 8 S, 80 Line 8 S, 229 Line 8 S, 97 Line 7 S, 3231 Highway 11 N, 8 Line 8 S, 134 Line 8 S, and 237 Line 8 S, Township of Oro-Medonte, Ontario; herein referred to as the "Site". Refer to Figure 1 for Site location details. The Site can be described as Part of Lot 21 & 22, Concession 8, as in RO850934; Part of Lot 22, Concession 9, as in RO1326331, Except PT 1, 51R31499; Part of Lot 22, Concession 8, as in RO1116954; Part of Lot 22, Concession 8, being Part 1 on 51R-3247; Part of Lot 23, Concession 9 being Part 1 on 51R-31789; Part of Lot 22, Concession 8, being Part 1 on 51R-35062; and PT LT 21, Concession 8, ORO, designated as Parts 1, 2 & 3, 51R20880 all in the Township of Oro Medonte, County of Simcoe.

The Burl's Creek Event Grounds contains a mixture of existing uses including an Event Park with a private road system and camping areas, a racetrack/speed way, a commercial area, agricultural uses, forested areas, and variety of natural heritage features. The Site includes areas that were pre-existing event space and newly acquired lands. The Site is generally flat, and is bisected roughly in the centre of the Site by Burl's Creek. The majority of the Site includes sod/lawn areas used for outdoor event space, camping areas and sporting activities. Existing treed fencerows remain in place, providing breaks in the land. Forests/woodlands and Forested Swamps are found primarily on the fringes of the Site, including a large woodland in the southeast.

The site alteration work for this project has recently been carried out with the purpose of creating an event space suitable for a range of small to large scale outdoor events, while limiting disturbances as much as possible. Site alteration work consisted primarily of improving and expanding laneways and minor grading and sodding throughout the Site. Laneway expansion has integrated newly acquired lands into the event grounds. As the proposed impacts have already occurred, this EIS describes the development and its potential impacts, and based on the observed construction and available site plans, mitigation and enhancements are recommended.

2 ENVIRONMENTAL POLICY CONTEXT

2.1 PROVINCIAL POLICY STATEMENT

The Provincial Policy Statement (PPS) (Ontario Ministry of Municipal Affairs and Housing [OMMAH], 2014) is a planning document that provides a framework for, and governs development within, the Province of Ontario. In order to preserve various ecological resources deemed significant in the Province, development lands must be assessed for the presence of natural heritage features and sensitive hydrological features prior to construction. Natural heritage features (listed below) are both defined and afforded protections under the PPS. Linkages between natural heritage features, surface water and groundwater features are also recognized and afforded similar protections under the policy. Section 2.1.2 of the PPS also requires that the diversity and connectivity of natural heritage features and the long-term ecological function of natural heritage systems be maintained, restored or improved where possible.

Under the PPS (OMMAH, 2014), development or site alteration is prohibited within significant wetlands in Ecoregions 5E, 6E and 7E and in significant coastal wetlands, but may be allowed adjacent to these features provided the adjacent lands have been evaluated and it has been demonstrated that there will be no negative impacts to these features or their ecological functions. Development may be permitted in or

adjacent to significant wetlands north of Ecoregions 5E, 6E and 7E, significant woodlands and significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River), significant wildlife habitat, and significant areas of natural and scientific interest (ANSI), provided there will be no negative impacts to these features or their ecological function due to the proposed undertaking. In addition, development and site alteration is not permitted in fish habitat unless in accordance with provincial and federal legislation.

Natural heritage features as defined by the PPS (OMMAH, 2014) include:

- Natural Heritage Systems;
- Fish Habitat;
- Habitats of Endangered and Threatened Species;
- Significant Areas of Natural and Scientific Interest (ANSI);
- Significant Wetlands;
- Significant Coastal Wetlands;
- Significant Wildlife Habitat;
- Significant Woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River); and,
- Significant Valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River).

Natural Heritage Features within 120 metres (m) area of influence (except 50 m for ANSIs) of development lands must be assessed. Planning policies as they relate to surface water features and groundwater features are outlined within Section 2.3 of the PPS (OMMAH, 2014). Specifically, development and site alteration in or near sensitive surface water features and sensitive groundwater features should be restricted to ensure the protection, improvement, and/or restoration of these features and their hydrologic functions, as well as the quality and quantity of water within the watershed and adjacent watersheds.

2.2 LAKE SIMCOE PROTECTION PLAN

The Lake Simcoe Protection Plan (LSPP) provides a framework for development within the Lake Simcoe watershed for lands that fall outside of existing settlement areas and outside of the Greenbelt area and Oak Ridges Moraine area (Government of Ontario, 2009). The LSPP is designed to be read in conjunction with the PPS (OMMAH, 2014) and other policy documents that provide for ecological health and environmental sustainability of the Lake Simcoe watershed. The objectives of the LSPP include policies to protect, improve or restore the elements that contribute to the ecological health of the Lake Simcoe watershed including water quality, hydrology, key natural heritage features and their functions, and key hydrologic features and their functions.

Key natural heritage features and key hydrologic features as defined by the LSPP (Government of Ontario, 2009) include:

- Wetlands;
- Significant Woodlands;
- Significant Valleylands;

- Natural Areas Abutting Lake Simcoe;
- Permanent and Intermittent Streams, and,
- Lakes other than Lake Simcoe.

Under the LSPP Policy Section 6, development or site alteration is not permitted within 120 m of a key natural heritage feature or a key hydrologic feature and its 30 m related minimum vegetation protection zone, except for uses detailed in Policy 6.24-DP. An application for other types of development or site alteration require a natural heritage evaluation be carried out in accordance with guidelines developed by the Ontario Ministry of Natural Resources and Forestry (MNRF) that demonstrates that the development or site alteration will have no adverse effects on the key natural heritage feature, key hydrologic feature, Lake Simcoe and its associated vegetation protection zone, or on the related ecological functions. Natural heritage evaluation will also demonstrate how connectivity between natural heritage features is retained or improved, and will determine the minimum vegetation protection zones sufficient to protect the ecological functions of the feature and the area being evaluated.

The Site is within the LSPP Plan Area, and contains natural heritage features as defined by the Plan.

2.3 COUNTY OF SIMCOE OFFICIAL PLAN

The County of Simcoe Official Plan (2013) implements the policies of the various Plans found within the County, including the Niagara Escarpment Plan, the Oak Ridges Moraine Conservation Plan, and the Greenbelt Plan. The CSOP connects these various Plan Areas together with the establishment of a Regional Greenlands System, noting that all areas must conform to the PPS and the LSPP, where applicable.

The objective of the Greenlands System is “to protect and restore the natural character, form, function, and connectivity of the natural heritage system of the County of Simcoe, and to sustain the natural heritage features and areas and ecological functions of the Greenlands and local natural heritage systems for future generations”. The Greenlands System designation is comprised of the natural heritage system features defined below, and the natural systems defined by the 16 local municipalities within the County of Simcoe. The County of Simcoe Greenlands Heritage System is mapped on Schedule 5.1 of the CSOP, but Section 3.8 notes that any lands that contain the below features are also considered Greenlands.

The key natural heritage features and key hydrologic features comprising the Regional Greenlands System include:

- Significant habitat of endangered species and threatened species;
- Significant wetlands, significant coastal wetlands and all Wetlands 2.0 hectares (ha) or larger in area, including but not limited to evaluated wetlands;
- Significant woodlands south and east of the Canadian Shield;
- Significant valleylands south of the southern limit of the Canadian Shield;
- Significant wildlife habitat;
- Significant Areas of natural and scientific interest (ANSIs);
- Regional Areas of natural and scientific interest (ANSIs);
- Fish Habitat;

- Linkage areas, which the County has identified as areas in which it would be desirable to restore lost or severed natural corridors through natural succession and/or supplementary planting; and,
- Public lands as defined in the Public Lands Act.

The Site is not within the mapped Greenlands System, but does contain natural heritage features as noted above. Under the CSOP, development may not occur within key natural heritage features and key hydrologic features and lands adjacent to these features (120 m setbacks, except for 50 m for ANSIs), unless an EIS demonstrates that there will be no negative impacts on the natural heritage features and areas or their ecological functions, and maintains the connectivity of the natural heritage feature and areas within the natural heritage system.

2.4 TOWNSHIP OF ORO-MEDONTE OFFICIAL PLAN

One of the goals of the Township of Oro-Medonte Official Plan (2007) is to protect and enhance significant natural heritage features and related ecological functions in the Township. In Oro-Medonte, natural heritage features and areas are those components that are important for their environmental and social values as a legacy of the natural landscapes of an area. All of the natural heritage features and systems identified on the Schedules to this Plan, including all of the Oro Moraine and the Greenlands system identified within the County of Simcoe Official Plan are components of the Township's natural heritage system.

Natural heritage features identified by the Township are mapped on Schedule B of the Official Plan and are designated as Environmental One and Environmental Two lands:

- Environmental One Designations include:
  - All wetlands;
  - Provincially significant Areas of Natural and Scientific Interest;
  - Significant wildlife habitat areas; and,
  - Any other areas that have been determined to be environmentally significant as a result of a development review process.
- Environmental Two designations include:
  - woodlands;
  - Regionally significant areas of natural and scientific interest;
  - other wildlife habitat areas;
  - fish spawning and nursery areas; and,
  - Rivers and streams in the Township.

No development requiring a Planning Act approval shall be permitted unless an EIS is completed. Any EIS must be considered by Council in consultation with other appropriate agencies, before a planning application that facilitates the development that is subject to the EIS is adopted or passed by Council. An EIS must describe the natural heritage features and ecological functions and related hydrological features, identify their significance and sensitivities and describe how they could be affected by a proposed use. The EIS should give consideration to the relevant aspects and inter-relationships of various components of the natural heritage system on and off the Site. In addition, the EIS must address how the proposed development will protect, maintain or restore the significant natural features and ecological functions of the natural heritage system.

The EIS should demonstrate, where applicable, that the relevant policies of the Township of Oro-Medonte Official Plan are met and, in particular, that the proposed use will not have a negative impact on significant natural features and related ecological functions.

2.5 CONSERVATION AUTHORITIES ACT

The Conservation Authorities Act gives individual conservation authorities the power to regulate development and activities in or adjacent to river or stream valleys, Great Lakes and large inland lakes and shorelines, watercourses, hazardous lands and wetlands. Regulations made under the Conservation Authorities Act specify the Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulations managed by individual Conservation Authorities. These regulations apply to lands within river or stream valleys, flood plains, wetlands, watercourses, lakes, hazardous lands or lands within 120 m of a Provincially Significant Wetland or wetlands greater than 2 ha, or lands within 30 m of non-provincially significant wetlands. Development or site alteration within these regulated areas may be permitted provided development is conducted in accordance with existing policies.

The Site is located within the Lake Simcoe Region Conservation Authority (LSRCA) jurisdiction, and the watercourse running through the Site is within the LSRCA Regulated Area. Work must be conducted in accordance with Ontario Regulation 179/06 made under the Conservation Authorities Act and must meet the requirements of the LSRCA.

3 INFORMATION RESOURCES

Relevant information resources were consulted over the course of the report preparation, as documented below. Full references are provided in the Literature Cited section of this report.

- Aerial Photographs and Satellite Images;
- Atlas of the Breeding Birds of Ontario internet site (Bird Studies Canada, 2006);
- Conservation Authorities Act, Ontario Regulation 179/06 Lake Simcoe and Region Conservation Authority;
- County of Simcoe Official Plan (2015);
- Endangered Species Act, 2007 (Government of Ontario, 2007);
- Lake Simcoe Protection Plan (Government of Ontario (Ontario), 2009);
- Lake Simcoe Region Conservation Authority Oro and Hawkstone Creeks Subwatershed Plan (LSRCA, 2013);
- Lake Simcoe Region Conservation Authority Watershed Development Policies (LSRCA 2014);
- Natural Heritage Areas Mapping, including Natural Heritage Information Centre (NHIC) data (MNRF, 2015a);
- Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement (OMNR, 2010);
- Provincial Policy Statement (OMMAH, 2014);
- Significant Wildlife Habitat: Technical Guide (MNRF, 2000);
- Species at Risk in Ontario (SARO) List (MNRF, 2015b);

- Species at Risk Public Registry (Government of Canada, 2015); and,
- Township of Oro-Medonte Official Plan (2007).

4 AGENCY CONSULTATION

The MNRF was contacted to obtain information pertaining to Natural Heritage Features, Species at Risk (SAR), and other developmental constraints on the Site to ensure that available information was reviewed prior to initiating the field program. A copy of email correspondence from Midhurst (Huronia) District MNRF staff (S. Robinson, pers. comm., 2015) outlining potential concerns in the vicinity of the Site is provided in Appendix A. The LSRCA also provided input into Natural Heritage Feature data relevant to the proposed development (F. Pinto, August 5, 2015). This correspondence is also provided in Appendix A.

4.1.1 TERMS OF REFERENCE APPROVAL

The determination of the level of effort required to prepare an EIS shall be in general accordance with the guidelines of the County of Simcoe and be agreed to in advance with the appropriate agencies and shall be scoped as required (Township of Oro-Medonte, 2007).

The proposed Terms of Reference for this study were forwarded to the LSRCA and the Township of Oro Medonte. The LSRCA reviewed and approved the Terms of Reference (Lisa-Beth Bulford, LSRCA, pers. comm., March 4, 2015) and the Township also provided guidance (A. Leigh, Township of Oro-Medonte, pers. comm., June 30, 2015). A record of these emails is provided in Appendix A.

5 PROJECT DEVELOPMENT

The Site alteration work for this project has recently been carried out with the purpose of improving the operational effectiveness of the existing event space suitable for a range of small to large scale outdoor events, while limiting disturbance as much as possible (Figure 2). Mass grading operations were avoided, and minor regrading was carried out only as required to even out sod/lawn surfaces designated to serve as camping and parking areas, and to construct berms for viewing. Limited sod/lawn areas of the Site have had tile drains installed to allow for improved drainage from low lying/flatter sloped areas without mass grading operations. No new permanent structures have been constructed, and the lands retain a rural agricultural appearance.

Other developments include pedestrian paths and gravel pads for temporary stages; existing laneways and camping spaces have been improved and gravelled, and laneway connections have been made to and throughout the newly acquired areas. While most of these laneways already existed or were extended within sod/lawn areas, a new connection has been made through the wooded area in the southeast portion of the Site. A gravel pad parking lot/activity space has also been created immediately south of the open water ponds in the central portion of the Site. Gravel laneways were generally constructed at grade.

As all Site alteration and improvements have already occurred, this EIS describes the development and its potential impacts; based on the observed construction and available site plans, mitigation and enhancements are recommended. Recommendations for general project mitigation are detailed in this EIS, while a Mitigation Plan for specific impacts relating to Lake Simcoe Region Conservation Authority (LSRCA) regulated areas has been prepared as a separate cover (WSP, 2015).

6 SITE INFORMATION

6.1 REGIONAL CONTEXT

The Site is found in the northern portion of the Lake Simcoe-Rideau (6E) Ecoregion (Crins *et al*., 2009). This Ecoregion is primarily croplands, pasture and abandoned fields. Topography is gently undulating to rolling, being relatively level surrounding the Site. Forests include deciduous, coniferous and mixedwood varieties. Hardwood forests dominated by Sugar Maple (*Acer saccharum* ssp. *saccharum*), American Beech (*Fagus grandifolia*), White Ash (*Fraxinus americana*) and Eastern Hemlock (*Tsuga canadensis*) are common. Water comprises 4% of the geographic cover. Characteristic mammals of the region include White-tailed Deer (*Odocoileus virginianus*), Northern Raccoon (*Procyon lotor*), Striped Skunk (*Mephitis mephitis*) and Woodchuck (*Marmota monax*).

The Burl's Creek Event Grounds are located north of the northwest shores of Lake Simcoe, off Highway 11 between Barrie and Orilla. The Oro Moraine lies to the north, and is considered the core natural heritage feature area in the Township of Oro-Medonte (Oro-Medonte, 2007). The land surrounding the Burl's Creek Event Grounds is primarily agricultural land, with occasional wetlands often associated with streams feeding Lake Simcoe, and remnant hardwood forests. Deer habitat (yards) and wintering habitat can be found in more continuously wooded areas south of Ridge Road to the South and north of Highway 11; the developed agriculture lands of the Site and surrounding areas generally limits their use by deer (LSRCA, 2015). Hydrology in the Site is influenced by two creek systems: Burl's Creek and Allingham Creek. Burl's Creek intersects the Site, and has previously been diverted for agriculture. Portions of the Site drain into Allingham Creek to the east.

6.2 SITE DESCRIPTION

The Burl's Creek Event Grounds comprises approximately 228 ha of land in the Township of Oro-Medonte. The Site contains a mixture of existing uses including an event park with a private road system and camping areas, a racetrack/speedway, a commercial area in the southwest corner of Line 8 and Highway 11, agricultural uses, forested areas and natural heritage features. The Site is generally flat and is bisected by Burl's Creek, which flows in a southerly direction and eventually outlets to Lake Simcoe. The Site is bounded by Highway 11 to the north, Line 9 South to the east, Line 7 South to the west, farmer's fields to the south, with Line 8 South bisecting the property. Access to the Site is provided via field entrances off of Lines 7, 8 and 9 South. The largest forested area is a woodland located in the southeast corner of the property which has been used historically for maple syrup production. A barn is located centrally on Site, and had been improved into a multi-use facility as part of the Project, and a Site office is located near the barn. The existing natural conditions of the Site are described in Section 7.

6.3 SITE INVESTIGATION

Prior to the site investigation, satellite images of the property, land use and topographical maps were reviewed to identify the presence of Natural Heritage Features, available habitat and the potential for species of conservation concern on the Site. The Natural Heritage Areas Mapping, including the Natural Heritage Information Centre (NHIC) data (MNRF, 2015a), was reviewed for records of Species at Risk, Significant Plant Communities, Wildlife Concentration Areas and Areas of Natural and Scientific Interest (ANSI) on or near the Site.

The site investigation included ten (10) separate site visits conducted between April 2015 and July 2015. Details of each site visit are provided in Table 1. Site visits were conducted for the purposes of i) documenting the presence of dominant vascular plants, ii) completing breeding bird surveys, iii) completing amphibian surveys, iv) investigating the presence of rare or endangered species or their habitats, and

v) confirming the presence of Natural Heritage Features and general site characteristics. While each survey had a primary purpose, incidental wildlife observations were collected during all surveys. Lists of vegetation, birds, amphibians, and incidental wildlife species observed by WSP during the Site visits are provided in Appendix B.

Table 1 Details of Site Visits

DATE	TIME/DURATION	WEATHER CONDITIONS*	SURVEY TYPE
April 20, 2015	7:35 PM to 11:35 PM	Overcast skies, ±11°C, light breeze, occasional light rain	Amphibian
May 11, 2015	8:00 PM to 11:30 PM	Overcast skies, ±18°C, light air, rain	Amphibian
May 22, 2015	9:45 AM to 4:45 PM	Mostly clear skies, ±20°C, slight breeze, no trace of precipitation	Spring Vegetation
May 31, 2015	7:50 AM to 11:35 AM	Overcast skies, ±11°C, gentle breeze, light rain at beginning of survey, none thereafter	Breeding Bird
June 11, 2015	6:30 AM to 11:30 AM	Clear skies, ±11°C, light breeze, no trace of precipitation	Breeding Bird
June 14, 2015	9:30 PM to 12:15 AM	Overcast skies, ±20°C, light breeze, light rain	Amphibian
June 26, 2015	6:30 AM to 11:00 AM	Clear skies, ±13°C, gentle breeze, no rain	Breeding Bird
July 7, 2015	9:30 AM to 5:10 PM	Mostly clear skies, ±22°C, light air, no trace of precipitation	Summer Vegetation
July 10, 2015	9:45 AM to 5:30 PM	Mostly clear skies, ±25°C, light air, no trace of precipitation	Summer Vegetation
July 21, 2015	9:45 AM to 5:15 PM	Mostly clear skies, ±23°C, light air, no precipitation	Aquatic Habitat

* Sky cover defined as Clear (0-25%), Mostly Clear (25-50%), Mostly Cloudy (50-75%), and Cloudy (75-100%). Precipitation defined as None, Trace, or Rain. Wind defined as Calm (0-2 km/h), Light Air (3-5 km/h), Slight Breeze (6-11 km/h), Gentle Breeze (12-19 km/h), or Moderate Breeze (20-10 km/h).

7 EXISTING CONDITIONS

The following sections describe the existing conditions at the time of the Site visits. Natural Heritage Features, minimum vegetation protection zones, species observations and specific site investigation survey points are mapped on Figure 3. Vegetation communities on the Site have been mapped (Figure 4) using the standardized Ecological Land Classification (ELC) for southern Ontario – first approximation (Lee *et al*., 1998). For vegetation communities where the first approximation ELC does not provide an adequate description, the pending 2008 second approximation description has been used. Mapping for the Site has been completed at the recommended 1:10,000 scale criteria for ELC community delineation. This scale is appropriate for the management and development of the existing conditions on Site.

7.1 GENERAL TERRESTRIAL ENVIRONMENT

Vegetation species were documented during spring and summer surveys (Table 1) to capture early and late season flowering periods, with an emphasis on the identification of rare or endangered vegetation species. Twenty eight (28) plots were created, representing all on-site vegetation communities. In total, there were 19 ELC community types on Site, including six upland types, seven wetland types and six anthropogenic features (Figure 4). Sections 7.1.1 to 7.1.4 describe these ELC Types. A total of 190 vegetation species were identified (Appendix B), of which 137 (72%) were native species and 53 (28%) were non-native exotics, as identified by the Natural Heritage Information Centre (MNRF, 2015c).

The majority of the Site was considered to be recreational greenlands; sod/lawn areas used for outdoor event space, camping areas and sporting activities (Figure 2). The recreational greenlands had been expanded to include some of the newly acquired surrounding lands, yet overall existing treed-fencerows remained largely in place, providing breaks in the land. Forests and Forested Swamps were found primarily on the fringes of the Site, including a large woodland in the southeast. Other treed areas existed on Site, often near water features. Burl's Creek follows an existing diversion pattern, running north – south from the north side of the Site, before running directly east – west, then turning south again to exit the Site (Figure 3). There are four open ponds in the north end of the Site (Figure 3) that are designated by the MNRF as part of the non-provincially significant Allingham Swamp wetland, which can be found to the east, immediately off-site.

Several Butternut (*Juglans cinerea*) trees were observed on Site; this species is listed as Endangered and is protected under the *Endangered Species Act*, 2007. Observations were made within fencerows on Site and the large woodland in the southeast corner. Though widespread geographically in Ontario, this species is threatened by the Butternut Canker (*Ophiognomonia clavigignenti-juglandacearum*) fungus disease, causing steep declines in Butternut populations. Specific locations are not mapped on Figure 3 at the general direction of the MNRF for sensitive plant species.

No other flora Species at Risk were observed on Site; however the potential does exist as noted in Section 8.3.

7.1.1 UPLAND VEGETATION COMMUNITY TYPES

7.1.1.1 DRY – FRESH SUGAR MAPLE DECIDUOUS FOREST (FOD5-1)

A Dry – Fresh Sugar Maple Deciduous Forest (FOD5-1) was observed on the west central side of the Site. This was a square plot of uncleared forest, approximately 2 ha in size. Sugar Maple was dominant throughout the polygon, and was self-sustaining, with trees in all strata. There were some tall Basswood (*Tilia americana*) central to the polygon, and traces of Trembling Aspen (*Populus tremuloides*), White Elm (*Ulmus americana*), and White Ash nearer the fringes. A dense layer of decaying leaves limited forest floor species, with occasional individuals of Choke Cherry (*Prunus virginiana* ssp. *virginiana*), Wild Leek (*Allium tricoccum*), Blue Cohosh (*Caulophyllum thalictroides)* and Trillium (*Trillium* sp.) making appearances. The fringes of this polygon were much more diverse, yet composed primarily of non-native or pervasive species typical of Fencerows on the Site (see Section 7.1.3.6); however, the interior remained unaffected. There was a dense patch of Poison Ivy (*Rhus radicans* ssp. *rydbergii*) observed in the southwest corner. In the interior, there were several large rotting stumps, suggesting selective logging or post fire regeneration.

7.1.1.2 DRY – FRESH SUGAR MAPLE DECIDUOUS FOREST (FOD5-1 W/I) WITH RIPARIAN INCLUSION

Central to the Site, the section of Burl's Creek running west to east similar to the FOD5-1 ELC type described in Section 7.1.1.1, on the south side of the creek. Several healthy Butternut saplings were observed along the creek under the Maple. The creek itself was lightly treed, with occasional individuals of White Ash, Trembling Aspen, and Basswood. The north side of the creek included several planted Norway Spruce (*Picea abies*) and Apple (*Malus* sp.). The shrub layer of the creek included occasional observed Wild Red Raspberry (*Rubus idaeus* ssp. *melanolasius*) and Bebb's Willow (*Salix bebbiana*). In the lower layers, Reed Canary Grass (*Phalaris arundinacea*) was dominant. The moister soils held 25 forb species, of which Goldenrod (*Solidago* sp.) was dominant, but included Common Dandelion (*Taraxacum officinale*), Common Plantain (*Plantago major*), Smooth Aster (*Aster laevis* var. *laevis*) and Queen Anne's Lace (*Daucus carota*), all of which are exotic species except for the aster. Nearest the creek itself, Spotted Jewel-weed (*Impatiens capensis*) and Swamp Milkweed (*Asclepias incarnata* ssp. *incarnata*) were occasionally observed.

7.1.1.3 DRY – FRESH SUGAR MAPLE – BEECH DECIDUOUS FOREST (FOD5-2)

The Dry – Fresh Sugar Maple – Beech Deciduous Forest Type (FOD5-2) was observed in the southwest and southeast corners of the Site (Figure 4). The Woodland in the southeast corner of the Site is designated as a Significant Woodland under the Oro and Hawkstone Creeks Subwatershed Plan (LSRCA, 2013) and the Township of Oro-Medonte Official Plan – Schedule B (Oro-Medonte, 2007). The canopy is dominated by Sugar Maple, though American Beech was co-dominant. Basswood was also observed, and a stand of Butternut was observed within the interior of the woodland. The presence of Butternut Canker was evident on many trees and there were several downed logs. Alternate-leaved Dogwood (*Cornus alternifolia*) was an occasionally observed shrub species. The forest floor had a moderate cover through the leaf litter, with Blue Cohosh, Wild Leek, Jack-in-the-Pulpit (*Arisaema triphyllum* ssp. *triphyllum*), White Trillium (*Trillium grandiflorum*) and Yellow Trout Lily (*Erythronium americanum* ssp. *americanum*) being most common. The terrain was variable, with the Butternut found at higher positions, and a Black Ash Mineral Deciduous Swamp (SWD2-1) found at the lower topographic positions (Section 7.1.2.2). Informal footpaths associated with past maple syrup production activities are found within this woodland.

The FOD5-2 Woodland in the southwest corner was less diverse, with Sugar Maple being dominant in all strata, including the < 0.5 m strata. American Beech was occasionally observed, as well as Basswood and White Ash to a lesser degree. Swamp Red Currant (*Ribes triste*) was observed in the lower shrub layers and the forb layer was marked by a *Trillium* species and Canada Enchanter's Nightshade (*Circaea lutetiana* ssp. *canadensis*). The forest floor was sparse compared to the other woodland due to deeper leaf litter cover. This area included a Red Maple Mineral Deciduous Swamp (SWD3-1) type at lower topographic positions, though delineation was subtle during field surveys due to the lack of water.

7.1.1.4 DRY – FRESH SUGAR MAPLE – IRONWOOD DECIDUOUS FOREST (FOD5-4)

The Dry – Fresh Sugar Maple – Ironwood Deciduous Forest Type (FOD5-4) was observed in the northwest corner of the Site (Figure 4). This woodland is similar in nature to the FOD5-2 woodland in the south east corner, with Ironwood (*Ostrya virginiana*) rather than American Beech as a secondary species, observed in low numbers. On the forest floor, leaf litter limited the forb layer, of which White Trillium and Blue Cohosh were most common. Graceful Sedge (*Carex gracillima*) was also observed in low numbers.

7.1.1.5 FRESH – MOIST WHITE ELM LOWLAND DECIDUOUS FOREST (FOD7-1)

The Fresh to Moist White Elm Lowland Deciduous Forest (FOD7-1) was observed surrounding the west side of the Open Water Ponds in the north end of the Site. The area was a bottomland where flooding or overland drainage may collect into the ponds; yet the area was expected to be dry by mid to late summer (Lee et al., 1998). This area was classed as Mixed Swamp by the LSRCA (2013), yet observations of species and conditions marked it as more of a transitional ecosite. Tree species were mixed and dominated by White Elm and Sugar Maple, with White Ash and Eastern White Cedar (*Thuja occidentalis*) as secondary species. Shrubs species were observed in trace amounts and included Wild Red Raspberry, Swamp Red Currant, Alternate-leaved Dogwood and Choke Cherry. The forest floor included abundant amounts of Sensitive Fern (*Onoclea sensibilis*) and Field Horsetail (*Equisetum arvense*), marking wet conditions, yet upland species such as Wild Sarsaparilla (*Aralia nudicaulis*), Common Dandelion and Garlic Mustard (*Alliaria petiolata*) were also observed. The terrain was variable and the area is home to several camp sites, sloping gradually towards the ponds.

7.1.1.6 FRESH – MOIST WHITE CEDAR-HARDWOOD MIXED FOREST (FOM7-2)

The Fresh – Moist White Cedar – Hardwood Mixed Forest (FOM7-2) class was observed in the north portion of the Site. This polygon included smaller laneways and tenting campsites within the forested area. The canopy was dominated by Eastern White Cedar, though White Ash and Balsam Poplar (*Populus*

balsamifera ssp. *balsamifera*) were also abundant. Eastern Hemlock was also occasionally observed. Understorey species included Trembling Aspen and Sugar Maple, with minor amounts of White Elm and American Mountain-ash (*Sorbus americana*). The forest floor was diverse, with a mix of 29 native and non-native forb species. Of these, common native species included Field Horsetail, Eastern Bracken Fern (*Pteridium aquilinum* var. *latiusculum*), Sensitive Fern, Spotted Jewel-weed (*Impatiens capensis*), and White Vervain (*Verbena urticifolia*); while the most common non-native species included Coltsfoot (*Tussilago farfara*) and Herb Robert (*Geranium robertianum*).

7.1.2 WETLAND COMMUNITY TYPES

7.1.2.1 REED-CANARY GRASS MINERAL MEADOW MARSH (MAM2-2)

The Reed-Canary Grass Mineral Meadow Marsh (MAM2-2) type was observed along Burl's Creek, directly west of the racetrack/speedway. The floodplain was wide and gently sloping on the east side, and was dominated by Reed Canary Grass. The west slope was steeper and home to several tree species, including Ironwood, American Beech, and Trembling Aspen. Traces of White Spruce (*Picea glauca*) and Eastern Hemlock were also observed. This tree assemblage was primarily natural on the slopes, but did include some buffer plantings at the top of slope. The floodplain was mostly open, but was occasionally dotted by Bebb's Willow, Wild Red Raspberry and Red-osier Dogwood (*Cornus stolonifera*). Among the Reed Canary Grass, Swamp Milkweed (*Asclepias incarnata* ssp. *incarnata*) and Goldenrod (*Solidago* sp.) were dominant, and Spotted Jewel-weed was also found in abundance. Other common forb species included Coltsfoot, Canada Enchanter's Nightshade, Sensitive Fern, Field Horsetail, Water Horsetail (*Equisetum fluviatile*) and Ostrich Fern (*Matteuccia struthiopteris* var. *pensylvanica*).

7.1.2.2 BLACK ASH MINERAL DECIDUOUS SWAMP (SWD2-1)

The Black Ash Mineral Deciduous Swamp (SWD2-1) type was observed within the Dry – Fresh Sugar Maple – Beech Deciduous Forest Type (FOD5-2) in the southeast corner of the Site (Figure 4). This type was observed in lower points in the topography but the water collecting there had receded by the July surveys and is expected to be dry by late summer. Water from this wetland appears to drain north-easterly towards the property line, where it meets a built drainage channel running east-west; however, flowing surface water was not apparent. A portion of this swamp falls within the LSRCA regulation limits (LSRCA, 2013). The Sugar Maple in the surrounding woodland gave way to Black Ash (*Fraxinus nigra*) and occasional Green Ash (*Fraxinus pennsylvanica*) found on the fringes of these wet areas. While forest floor species found in the surrounding FOD5-2 type were also present in this wetland, Sensitive Fern, One-seeded Bur Cucumber (*Sicyos angulatus*), Scouring Rush (*Equisetum hyemale* ssp. *affine*) and Sticky False Asphodel (*Tofieldia glutinosa* ssp. *brevistyla*) marking richer, wetter conditions.

7.1.2.3 GREEN ASH MINERAL DECIDUOUS SWAMP (SWD2-2)

The Green Ash Mineral Deciduous Swamp (SWD2-2) type was observed in the northeast of the Site (Figure 4) forming a portion of the southern boundary of the Allingham Swamp/Unevaluated Wetland found to the north of the Site (Figure 3). The terrain fell immediately from the southern border, becoming variable within the polygon, with areas that would hold water for portions of the growing season. Green Ash was the dominant tree species, with Trembling Aspen also being abundant. This was the densest amount of ash on the Site, yet there was no evidence of the advance of Emerald Ash Borer (EAB) from the southern portion of the province. The shrub layer saw occasional amounts of Choke Cherry, Red-osier Dogwood, Sugar Maple saplings and Wild Red Raspberry. On the forest floor, Graceful Sedge and Field Horsetail were dominant species. Bladder Sedge, Sensitive Fern, a Golden Rod species and Woodland Strawberry (*Fragaria vesca* ssp. *americana*) were also commonly observed, the strawberry being very dense in places. A woodchip walking trail intersects this polygon east to west, from an entrance on the east side of the polygon.

7.1.2.4 RED MAPLE MINERAL DECIDUOUS SWAMP (SWD3-1)

A Red Maple Mineral Deciduous Swamp (SWD3-1) was observed within the FOD5-2 woodland found at the southwest corner of the Site (Section 7.1.1.3). The transition from woodland to swamp in this stand of trees is subtle and the ground was almost completely dry in early July. The transition is marked with a change from Sugar Maple to Red Maple (*Acer rubrum*) in the canopy. The slightly wetter conditions allowed for Sensitive Fern and One-seeded Bur Cucumber, while small amounts of Bittersweet Nightshade (*Solanum dulcamara*) were also seen. Small amounts of Fringed Sedge (*Carex crinita*), Bladder Sedge (*Carex intumescens*) and American Glyceria (*Glyceria grandis*) were also seen in the wetland. While the change from upland to wetland was seen, delineating the polygon was not possible, thus the LSRCA (2013) polygon shape was used to define the boundaries of this wetland.

7.1.2.5 WHITE CEDAR-HARDWOOD MINERAL MIXED SWAMP (SWM1-1)

There were two locations on Site that were classed as a White Cedar – Hardwood Mineral Mixed Swamp (SWM1-1). One location appears to be a natural remnant in the north-central camping area (Figure 4). This island of vegetation held abundant Eastern White Cedar and Black Ash, with occasional amounts of White Ash and White Elm. The wet soil conditions show this area to be a depressional area in the surrounding topography. Shrub species were present in low numbers, and included a Willow species (*Salix* sp.), with Common Blackberry (*Rubus allegheniensis*) European Highbush Cranberry (*Viburnum opulus*), Common Buckthorn (*Rhamnus cathartica*), and Round-leaved Dogwood (*Cornus rugosa*). A small maintenance road cuts this polygon in half.

The other location marks the entrance of Burl's Creek into the Site on the northwest side (Figure 4). This swamp contains Burl's Creek as a channel and holds Eastern White Cedar and Trembling Aspen as abundant species, with lesser amounts of Black Ash and Balsam Poplar. Red-osier Dogwood and Bebb's Willow were occasionally observed, as were the vines Riverbank Grape (*Vitis riparia*) and Virginia Creeper (*Parthenocissus quinquefolia*). Reed Canary Grass and Swamp Milkweed were very dominant on the ground. Spotted Jewel-weed, Field Horsetail, Sensitive Fern and Common Hop Sedge (*Carex lupulina*) were also occasionally observed.

7.1.2.6 POPLAR-CONIFER MINERAL MIXED SWAMP (SWM3-2)

The Poplar – Conifer Mineral Mixed Swamp (SWM3-2) class was observed in the northeast corner of the Site (Figure 4) forming another portion of the southern boundary of the Allingham Swamp/Unevaluated Wetland found to the north (Figure 3). Primary tree species in this polygon included Trembling Aspen and White Elm, with occasional amounts of Sugar Maple and White Ash. A dense stand of Eastern White Cedar was observed where the polygon bordered the open portion of the Allingham Swamp to the North (Figure 3). Shrubs included occasional individuals of Red-osier Dogwood and Wild Red Raspberry, while One-seeded Hawthorn (*Crataegus monogyna*) was less common. Much of the forest floor was covered in leaf litter. Graceful Sedge was the most common species on the forest floor, which also held abundant amounts of Goldenrod species, Dwarf Raspberry (*Rubus pubescens*), with occasional amounts of Woodland Strawberry, a *Geranium* species, Common Dandelion and Yellow Trout Lily.

7.1.2.7 OPEN WATER PONDS (OAW)

There was a system of ponds observed in the northeast portion of the Site (Figure 3). These onsite ponds appeared to collect water and outlet intermittently to the Line 8 roadside ditch. These ponds have been identified as part of the Allingham Creek Swamp (OM7) under the Natural Heritage Areas Mapping (MNRF, 2015a); this swamp system has been identified as a provincially non-significant wetland. While the pond appeared to be connected to the larger unevaluated wetland system to the east, these ponds are an established part of the Burl's Creek Event Grounds landscaping and appeared to be used for stormwater

management. While grass species dominated the fringes, Narrow-leaved Cattail (*Typha angustifolia*) and Softstem Bulrush (*Scirpus validus*) were found in pockets along the shorelines. A Goldenrod species and White Clover (*Trifolium repens*) were also found in abundance along the shore, while Field Horsetail, a Dock species (*Rumex* sp.) and Common Burdock (*Arctium minus* ssp. *minus*) were also observed. Grass-leaved Pondweed (*Potamogeton gramineus*) was occasionally observed from within the water.

An island that appeared to have been constructed was connected to the land by a developed laneway within the largest pond (Pond 1). There was evidence of former structures on the island, such as remnants of foundations. A number of ornamental trees were seen on the island and included White Spruce, Bur Oak (*Quercus macrocarpa*), Chinquapin Oak (*Quercus muehlenbergii*), Choke Cherry, White Willow (*Salix alba*), Staghorn Sumac (*Rhus typhina*) and Red Pine (*Pinus resinosa*).

7.1.3 ANTHROPOGENIC FEATURES

7.1.3.1 GREENLANDS – RECREATION (CGL-4)

The Greenlands – Recreation (CGL-4) class comprises the majority of the Site. This class included areas of older and newly laid sod. Site activities including minor grading and laneway gravelling were observed to be primarily limited to these areas. While the newly laid sod was mostly grass species including Reed Canary Grass, older sod included common forb species such as White Clover, Common Dandelion, Woodland Strawberry, Common Plantain (*Plantago major*), Heal-all (*Prunella vulgaris* ssp. *lanceolata*), Ribgrass (*Plantago lanceolata*), and Cleavers (*Galium aparine*).

Along the main laneway/road off Line 7 in the west, several large trees were observed, but not of a density to be classed as a fencerow (Section 7.1.3.6). Species included White Ash with Ironwood, Apple and a healthy Butternut. The sod/lawn area west of the racetrack/speedway (Figure 4) was sparsely planted with trees, including Sugar Maples, White Ash, Apple and one White Elm.

West of the ponds, a large diversity of planted and remnant trees provided shade for camping within the Recreational Greenland. Trees at this location included Sugar Maple, Norway Maple (*Acer platanoides*) and Eastern White Cedar as primary species. Norway Spruce (*Picea abies*), Apple, Yellow Birch (*Betula alleghaniensis*), Trembling Aspen, Eastern Hemlock, White Ash, Paper Birch (*Betula paperifera*), White Spruce, White Elm and Black walnut (*Juglans nigra*) were also observed. Beaked Hazelnut (*Corylus cornuta*) was also planted occasionally along laneways.

7.1.3.2 SUGAR MAPLE DECIDUOUS PLANTATION (CUP1-1)

This area is along Burl's Creek in the north central portion of the Site (Figure 4). It has been classed as Sugar Maple Plantation, as the forest floor in this location had been mowed and cleared. The trees included Sugar Maple, Eastern White Cedar, White Ash and Apple. A few Saskatoon Berry (*Amelanchier alnifolia*) individuals were the entire shrub layer present. The forest floor, white mowed, included a Violet species (*Viola* sp.), Dock (*Rumex* sp.), Woodland Strawberry and Common Dandelion.

7.1.3.3 COMMERCIAL AND INSTITUTIONAL – LIGHT INDUSTRY (CVC-2)

The Commercial and Institutional – Light Industry class includes the racetrack/speedway, the area that serves as a Site office and grounds for smaller event such as farmer's markets and the maintenance yards for the Site.

7.1.3.4 TRANSPORTATION – ROADS (CVI-1)

Roads on the Site include Line 8, which was a two-lane gravel road with ditches. There was a culvert underneath this road that served as an outlet for the Open Water Ponds on the west side of the road. Some laneways within the Site were also wide enough to be classed as roads, but were gravelled laneways primarily set on the existing grade.

7.1.3.5 RESIDENTIAL RURAL PROPERTY (CVR-4)

There were 3 residential properties found on-site; one along Line 7 on the west side of property, one on Line 8, and another on south side of the Site. These properties were not accessed during surveys.

7.1.3.6 FENCEROWS (TAGM5)

Fencerows (TAGM5) were present at the fringes of the Recreational Greenlands throughout the Site. Overall, Sugar Maple appeared to be the dominant tree species in the Fencerows, though White Ash, Basswood, Green Ash and Black Cherry (*Prunus serotina*) were also common. Butternut was also observed in many of the Fencerows on Site, both as large trees and subcanopy saplings. Shrub species most commonly included Wild Red Raspberry, Swamp Red Currant, Staghorn Sumac, and Common Buckthorn. The vines Riverbank Grape and Virginia Creeper were also common. The forb layer was diverse and variable, containing a mix of native and non-native species. Common native species included Blue Cohosh, Canada Enchanter's Nightshade, Smooth Aster (*Aster laevis* var. *laevis*); while exotic species included Common Dandelion, Garlic Mustard, Catchfly (*Silene vulgaris*), and Herb Robert. Reed Canary Grass and Smooth Brome (*Bromus inermis* ssp. *inermis*) were both abundant grass-species in the Fencerows. A notable observation on the Site was a dense patch of Wild Ginger (*Asarum canadense*) near Line 7.

7.1.4 BURL'S CREEK VEGETATION

The Site included a north to south channelized portion of Burl's Creek (Figure 3). The trees along this portion of the creek were planted, and were primarily White Spruce, Apple, and White Ash; though Norway Spruce, Red Oak (*Quercus rubra*) and White Elm were also observed. Shrubs included Red-osier Dogwood and Bebb's Willow. Forbs were dense in the channel itself, with 31 different species, dominated by Goldenrod, Ostrich Fern, Swamp Milkweed, Common Dandelion, Spotted Jewel-weed, Rough-fruited Cinquefoil (*Potentilla recta*), Common St. John's-wort (*Hypericum perforatum*), and Cow Vetch (*Vicia cracca*). Reed Canary Grass and Smooth Brome were also abundant grass-species along the creek.

7.2 BREEDING BIRD SURVEYS

7.2.1 SURVEY METHODOLOGY

Breeding bird survey protocols were designed and completed based on recommendations given by the Forest Bird Monitoring Protocol (FBMP) and Ontario Breeding Bird Atlas (OBBA). The Forest Bird Monitoring Protocol recommends completing standardized point counts to survey an area for breeding birds. These point counts are required to be at least 250 m apart and at least 100 m from the edge of a habitat type. Eight (8) point counts were completed on the Site, separated from each other by a distance of approximately 250 m (Figure 3). In addition, an active survey was carried out during each breeding bird survey which involved looking and listening for birds while moving between the different habitat types on the Site.

Breeding bird surveys were conducted on May 31, June 11, and June 26, 2015. In accordance with accepted protocols, at least six days separated each site visit, and the surveys were completed within 5 hours after sunrise. The three breeding bird surveys were completed before July 10, 2015, as recommended by the OBBA.

Breeding evidence was noted for each species observed in the Site. Breeding evidence is divided into four categories: confirmed (CONF), probable (PROB), possible (POSS), and none (NONE). Confirmed breeding evidence includes observations involving young or eggs; observations of adult birds carrying food, nesting material, or a fecal sac; observations of adult birds involved in a distraction display; or observations of adult birds exhibiting physiological evidence of a brood patch. Probable breeding evidence includes observations of a bird occupying territory for at least 7 days, visiting a nest site, or exhibiting territorial behaviour; observations of a pair in appropriate habitat; or observations of a pair copulating. Possible breeding evidence includes observations of a singing male or observations of a bird in suitable breeding habitat. Migrant or vagrant birds are considered to have no breeding evidence.

A total of 8 hours and 45 minutes were spent on the Site completing breeding bird surveys.

7.2.2 RESULTS

A cumulative total of 51 species were observed on or within 120 m of the Site during the site investigation. Of the 51 species observed, breeding evidence was noted for 48 species. The remaining 3 species are known to breed within the general area, but did not appear to be breeding on or within 120 m of the Site. Breeding was confirmed for 6 species, considered probable for 23 species, and considered possible for 19 species. A list of the bird species observed, including breeding evidence, can be found in Appendix B.

Four provincially listed bird Species at Risk were observed on the Site: Barn Swallow (*Hirundo rustica*), Eastern Meadowlark (*Sturnella magna*), Eastern Wood-pewee (*Contopus virens*), and Wood Thrush (*Hylocichla mustelina*). Eastern Meadowlark and Barn Swallow are listed as Threatened in Ontario, while Eastern Wood-pewee and Wood Thrush are listed as species of Special Concern in Ontario (MNRF, 2015b and 2015d).

Barn Swallows were observed during each of the three breeding bird surveys on May 31, June 11 and June 26, 2015. Most observations were from the centre of the Site and included sightings of birds foraging over open fields. Additionally, four Barn Swallows were encountered flying over open fields south of point count BC02 near the southwest Site corner during the June 26, 2015 survey (Figure 3). Barn Swallow was assigned a breeding code of “Possible” due to the association of individuals in suitable breeding habitat. 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. Existing structures on the Site were surveyed for the presence of Barn Swallow nests. Nests were not identified, and it is likely that the Barn Swallows are using the Site as a foraging ground and breeding somewhere nearby.

A male Eastern Meadowlark was observed singing from west of 8 Line S, east of the racetrack/speedway (Figure 3) during the breeding bird survey on June 26, 2015. It was assigned a breeding code of “Possible” due to the observation of a singing male.

Wood Thrushes were encountered in two locations on and within 120 m of the Site during the breeding bird surveys (Figure 3). One Wood Thrush was vocalizing from north of point count BC06 near the northeast Site corner, and two Wood Thrushes were vocalizing from the woodland surrounding point count BC07. Wood Thrush was assigned a breeding code of “Possible” due to the observation of singing males.

Several Eastern Wood-Pewees were encountered during the site investigation and were assigned a breeding code of “Probable” due to the observation of singing males on territory for at least 7 days. These birds were heard singing in most woodlots located on and within 120 m of the Site during all three breeding bird surveys.

Wood Thrush and Eastern Wood-pewee are currently listed as species of Special Concern on the SARO List (Government of Ontario, 2015) and as such, are not afforded habitat protection. A complete list of the bird species observed, including breeding evidence, can be found in Appendix B. The locations of the identified Species at Risk and of Special Concern observations are depicted on Figure 3.

7.3 AMPHIBIAN SURVEYS

Amphibian survey methodology was based on the Marsh Monitoring Program Amphibian Survey outlined by Bird Studies Canada (BSC), and is further described as follows:

- Three surveys were conducted between April 1 and June 30; survey dates were April 20, May 11 and June 14, 2015. Site visit details are provided in Table 1.
- Surveys were three minutes in duration and commenced no earlier than one half-hour after sunset and ended before midnight;
- Surveys took place during evenings with little wind and minimum night air temperatures of 5 °C, 10 °C, and 15 °C for each of the three respective survey periods;
- Surveys were conducted using a semi-circular sampling area at nine specific locations within woodland and wetland habitats (Figure 3). Subsequent surveys were conducted at the same survey locations;
- For each call heard the approximate distance to each call was recorded as being greater than or less than 100 m from the survey location and call level codes were assigned as follows:
  - Code 1: individual calls do not overlap and calling individuals can be discretely counted;
  - Code 2: calls of individuals sometimes overlap, but numbers of individuals can still be estimated; and,
  - Code 3: overlap among calls seems continuous (full chorus), and a count estimate is impossible.

Five amphibian species were heard calling during surveys of the Site: Gray Treefrog (*Hyla versicolor*), Green Frog (*Lithobates clamitans*), Northern Leopard Frog (*Lithobates pipiens*), Wood Frog (*Lithobates sylvaticus*), and Spring Peeper (*Pseudacris crucifer*). Refer to Appendix D for the Amphibian Survey data sheets.

Amphibians were calling primarily from three locations on or within 120 m of the Site. A maximum count of approximately 15 Spring Peepers on May 11, 2015 and 1 Green Frog on June 14, 2015 were encountered in the Open Water Ponds located at the north part of the Site, near amphibian point counts AMPH01 and AMPH03 (Figure 3).

The Green Ash Mineral Deciduous Swamp (SWM2-2) wetland near amphibian point count AMPH09 (Figure 3) provided habitat for Spring Peeper. During all three surveys Spring Peepers were observed, and a maximum of approximately 30 were encountered during the amphibian survey on May 11, 2015. In addition, a single Wood Frog was heard during the April 20, 2015 survey and a single Green Frog was vocalizing during the April 20 and May 11, 2015 surveys.

The off-Site woodlot west of 7 Line S near amphibian point count AMPH08 (Figure 3) may also provide some amphibian breeding habitat. One Spring Peeper was vocalizing during each of the three amphibian surveys, and a single Gray Treefrog was heard during the June 14, 2015 survey. This woodlot is located outside of the Site and was not investigated during the site investigation.

Incidental amphibian observations were noted during the site investigation. Individual Green Frogs were observed near the Open Water Ponds located at the north part of the Site near amphibian counts AMPH01 and AMPH03, and a single American Toad was observed during the April 20, 2015 amphibian survey on 8 Line S near amphibian point count AMPH03 (Figure 3).

7.4 AQUATICS SURVEYS

Prior to site investigation, the MNRF and the LRSCA were contacted to discuss existing conditions and identify areas of concern within the Site (Appendix A). In addition, the MNRF's Natural Heritage Information Centre's (NHIC), MNRF's Species at Risk in Ontario (SARO) list were queried regarding aquatic Species at Risk and other possible natural heritage values nearby. The LRSCA and MNRF information regarding fisheries values, habitat information and aquatic characteristics were obtained for the project area with respect to the following general outline:

- Water body type(s),
- Habitat information/location,
- Fish species presence, including SAR information,
- In-water work timing windows

Suzanne Robinson, Management Biologist with MNRF Midhurst District office was also contacted to discuss existing conditions at the water bodies on the Burl's Creek property (S. Robinson, MNRF, pers. com. July 2, 2105).

There were no records of thermal regime or fish community for Open Water Ponds 1-4 (Figure 3). However, MNRF mapping (MNRF, 2015a) suggests that Open Water Pond 1 and 2 are part of a naturally occurring wetland complex acting as a catchment for Allingham Creek. The connection between Open Water Ponds 1 and 2 and Allingham Creek is confirmed by a Storm Water Management Report for the Site (C.C. Tatham, 2015). Allingham Creek is a cold water system and species known to inhabit the system include Brook Trout (*Salvelinus fontinalis*), White Sucker (*Catostomus commersonii*) and Rainbow Smelt (*Osmerus mordax*), Northern Redbelly Dace (*Chrosomus eos*), Blacknose Dace (*Rhinichthys atratulus*), Creek Chub (*Semotilus atromaculatus*), Brassy Minnow (*Hybognathus hankinsoni*), Longnose Dace (*Rhinichthys cataractae*) and Johnny Darter/Tessellated Darter (*Etheostoma* spp.) (S. Robinson, MNRF, pers. com. July 2, 2105; LSRCA, 2015).

Burl's Creek (Figure 3) is classified as a cool water system and species known to inhabit the creek include Brook Trout, White Sucker, River Chub (*Nocomis micropogon*), Longnose Dace, Blacknose Dace, Northern Redbelly Dace, Mottled Sculpin (*Cottus bairdii*), Common Shiner (*Luxilus cornutus*), Creek Chub, Central Mudminnow (*Umbra limi*), Brook Stickleback (*Culaea inconstans*), Bluntnose Minnow (*Pimephales notatus*), Fathead Minnow (*Pimephales promelas*), and Johnny Darter/Tessellated Darter (S. Robinson, MNRF, pers. com. July 2, 2105; LSRCA, 2015).

The MNRF does not have a specific fisheries management objective for Burl's Creek. Generally, MNRF aims to maintain and improve fish habitat where known and to mitigate potential impacts where spawning/ nursery sites are known. There are no fish species of concern listed under the federal *Species at Risk Act* (SARA) or Ontario's *Endangered Species Act, 2007* (Ontario, 2007) within the Open Water Ponds, Burl's Creek or connecting waterbodies.

7.4.1 HABITAT CONDITIONS

An inventory of the existing physical habitat characteristics for the four (4) Open Water Ponds and Burl's Creek was completed on July 21, 2015. During the Site Investigation, habitat characteristics were mapped and documented (Appendix E). The area of investigation included the immediate area of each Open Water Pond as well as the length of Burl's Creek within the property boundaries. A detailed assessment of habitat was completed within 20 m upstream and 50 m downstream of each culvert location on Burl's Creek. A general assessment was conducted for the remaining length of the creek on the Site. Detailed habitat characteristics were measured and recorded. Below is a summary of the measured characteristics as well as additional observations. Photographs were also taken of notable features at each culvert location, each Open Water Pond and along Burl's Creek. Photos are provided in Appendix E.

7.4.2 OPEN WATER POND 1

The pond is a permanent storm water management area with a volume dependent on seasonal release and runoff conditions. The eastern and southern banks are engineered concrete block with unstable areas on the eastern bank which are partly caving into the pond. To the west there is a gravel causeway with a naturalized bank. The northern bank appears to be natural soil and stone, with some undercutting/instability present. The bank vegetation is dominated by cattails (*Typha angustifolia).* There is a twin culvert to the east, with a large cement cube at the surface which appears to act as an outlet to the east, under Line 8. There was no obvious inlet to Open Water Pond 1. There was limited organic debris in the pond and some floating-leaved pondweed (*Potamogeton natans*) was present (~5% surface). Submerged vegetation included blooms of the macrophytic brown algae *Chara* sp., noted at <1% of surface water. The mean wetted width at the time of assessment was approximately 28.31 m. Depth was not taken at centre. The mean bankfull width was approximately 34.59 m. The substrate consisted of placed angular stone (5 centimetres (cm) x 5 cm) and muck. The water was brownish but clear; the bottom was visible from the pond edge. Water quality information, including pH, Dissolved Oxygen, Conductivity and temperature are given in Table 2. Photos are provided in Appendix E.

There was no fish community information available from MNRF for Open Water Pond 1. However, Open Water Pond 1 is linked hydrologically to Allingham Creek (C.C. Tatham, 2015), a known cold water system (Suzanne Robinson, MNRF, pres. com., July 2, 2015). The twin culverts under Line 8 link Open Water Pond 1 to the wetland east of Line 8, which is a catchment for Allingham Creek. Several individuals of an unidentified minnow species were observed during site investigations. This pond directly supports a bait-fish fishery and is likely to support a downstream fishery through culvert connection.

7.4.3 OPEN WATER POND 2

The pond is a permanent storm water management area with a volume dependent on seasonal release and runoff conditions. The south-eastern arm of the pond is bordered by a gravel causeway with a semi-naturalized bank. The remaining banks of the pond are naturalized, with some undercutting/instability present in the north-eastern arm. The bank vegetation is dominated by cattails and common reed (*Phragmites australis*) with some sedge species (*Carex* sp.) and terrestrial forbs. There is an inlet culvert on the western bank which appears to drain runoff from adjacent lands to the west of the pond. Additionally, there is a perched culvert on the north bank of the north-eastern arm of the pond. There was no obvious source for this culvert, although it appeared to originate from the north, toward Highway 11. There were no obvious outlets to Open Water Pond 2 observed during the site investigation. There was some organic debris observed in the pond, including several driftwood snags (0.5 m- 1.0 m length). Pond vegetation included floating-leaved pondweed (~10% surface). The shape of the pond is irregular (non-circular) and as such mean wetted width at the time of assessment was difficult to approximate. The high water level (bank-full) of the pond was 28 cm from the existing water level. Depth was not taken at centre. The substrate consisted of cobble, gravel and muck. The substrate did not appear to be engineered, but rather rounded

river rock. The water was brownish but clear and the bottom was visible from the pond edge. Water quality information, including pH, Dissolved Oxygen, Conductivity and temperature are given in Table 2. Photos are provided in Appendix E.

There was no fish community information available from MNRF for Open Water Pond 2. However, like Open Water Pond 1, Open Water Pond 2 is hydrologically connected to Allingham Creek (C.C. Tatham, 2015), a known cold water system (Suzanne Robinson, MNRF, pres. com., July 2, 2015). The twin culverts under Line 8 link Open Water Pond 2 via Open Water Pond 1 to the wetland east of Line 8, which is a catchment for Allingham Creek. Several individuals of an unidentified minnow species were observed during site investigations. This pond directly supports a bait-fish fishery and is likely to support a downstream fishery through culvert connection.

7.4.4 OPEN WATER POND 3

The pond is a permanent storm water management area with a volume dependent on seasonal release and runoff conditions. The banks appear to be natural soil and are heavily vegetated. Dominant vegetation includes cattails and common reed. The west bank consists of lowland transition uplands and is adjacent to the campgrounds. There were no obvious inlet or outlet culverts observed connecting this pond to adjacent waterways. There was limited organic debris in the pond and some floating-leaved pondweed was present (~15% surface). The mean wetted width at the time of assessment was approximately 45 m. Depth was not taken at centre. The mean bankfull width was approximately 49 m. The substrate consisted primarily of muck (80%), cobble (5%) and gravel (15%). The water was brownish but clear; the bottom was visible from the pond edge. Water quality information, including pH, Dissolved Oxygen, Conductivity and temperature are given in Table 2. Photos are provided in Appendix E.

There was no fish community information available from MNRF for Open Water Pond 3. No fish were observed during site investigations. This Open Water pond does not appear to be hydrologically connected to a downstream waterbody that directly or indirectly supports a fishery.

7.4.5 OPEN WATER POND 4

The pond is a permanent storm water management area with a volume dependent on seasonal release and runoff conditions. The banks appear to be natural soils and are heavily vegetated. Dominant vegetation includes cattails and common reed. The west bank consists of deciduous swamp and is adjacent to the campgrounds. There is a bedrock outcrop on the eastern bank and a deciduous swamp. There were no obvious inlet or outlet culverts observed connecting this pond to adjacent waterways. There was a beaver (*Castor canadensis*) lodge and evidence of Beaver activity on the north eastern bank. There was limited organic debris in the pond and some floating-leaved pondweed was present (~10% surface). The mean wetted width at the time of assessment was approximately 40 m. Depth was not taken at centre. The mean bankfull width was approximately 42 m. The substrate consisted primarily of muck (80%), cobble (5%), gravel (10%) and bedrock (5%). The water was brownish but clear; the bottom was visible from the pond edge. Water quality information, including pH, Dissolved Oxygen, Conductivity and Temperature are given in Table 2. Photos are provided in Appendix E.

There was no fish community information available from MNRF for Open Water Pond 4. No fish were observed during site investigations. This Open Water pond does not appear to be hydrologically connected to a downstream waterbody that directly or indirectly supports a fishery.

7.4.6 BURL'S CREEK

A total of four (4) culverts were identified and assessed along the length of Burl's Creek between the northern property boundary of the creek and the area just north of the Barrie Speedway. Water quality information, including pH, Dissolved Oxygen, Conductivity and Temperature are given in Table 2 (Section 7.4.7). A summary of notable features, aquatic habitat conditions, and geographic co-ordinates, is provided in Table 3 (Section 7.4.7). Photos are provided in Appendix E. An additional culvert is located southwest of the Speedway, and beyond the influence of Site alterations.

7.4.6.1 CULVERT 1

DOWNSTREAM

Located at the northern boundary, Burl's Creek flows south through Culvert 1 (Figure 2). The creek was assessed as 90% run and 10% pool in the area immediately downstream of the culvert with a mean wetted width and depth of 0.5 m and 0.05 m. Bankfull width and depth was 3.0 m and 0.7 m. Substrate consisted of gravel and cobble and muck. Water depth within the culvert at the outlet was 0.05 m. In-stream cover was provided by undercut banks (30% Surface Area [SA]), organic debris (20% SA), boulders (50% SA), and woody debris (5% in-stream; 25% overhanging). 60-90% of the downstream channel was shaded by grasses, riparian shrubs and trees.

7.4.6.2 CULVERT 2

UPSTREAM

Located approximately 26 m from the northern property boundary, Burl's Creek flows south through Culvert 2 (Figure 2). The creek was assessed as 100% run in the area immediately upstream of the culvert with a mean wetted width and depth of 0.3 m and 0.04 m. Bankfull width and depth was 1.74 m and 0.8 m. Substrate consisted of cobble, gravel, sand and silt. Water depth within the culvert at the inlet was 0.06 m. In-stream cover was provided by organic debris (25% SA), cobble (50% SA), and woody debris (10% in-stream; 80% overhanging). 60-90% of the downstream channel was shaded by grasses, riparian grasses and trees.

DOWNSTREAM

The creek was assessed as 20% riffle in the area immediately downstream of the culvert with a mean wetted width and depth of 0.15 m and 0.03 m. Bankfull width and depth was 1.9 m and 0.8 m. Substrate consisted of cobble, gravel, sand and silt. Water depth within the culvert at the outlet was 0.02 m. In-stream cover was provided by organic debris (25% SA), cobble (50% SA), and woody debris (10% in-stream; 80% overhanging). 60-90% of the downstream channel was shaded by grasses, riparian grasses and trees. Excess gravel is present at the culvert outlet, presenting a potential migratory obstruction to fish at low-flow. It is unclear whether the gravel is naturally occurring in this location or anthropogenic in source.

7.4.6.3 CULVERT 3

UPSTREAM

Located approximately 341 m from the northern property boundary, Burl's Creek flows southeast through Culvert 3 (Figure 2). The creek was assessed as 100% run in the area immediately upstream of the culvert with a mean wetted width and depth 1.1 m and 0.06 m. Bankfull width and depth was 2.1 m and 0.5 m. Substrate consisted of muck and gravel. Water depth within the culvert at the inlet was 0.06 m. In-stream cover was provided by undercut banks (10% SA), organic debris (10% SA) and vascular plants (20% in-

stream; 20% overhanging). 60-90% of the upstream channel was shaded by grasses, riparian vegetation and trees.

DOWNSTREAM

The creek was assessed as 80% pool and 20% riffle in the area immediately upstream of the culvert with a mean wetted width and depth in the pool of 2.2 m and 0.15 m. Mean wetted width and depth in the riffle were 1.5 m and 0.03m. Bankfull width and depth in both areas was 3.4 m and 1.2 m. Substrate consisted of angular stone (5 cmx 5 cm), cobble, gravel and sand in the riffle, and cobble, gravel and muck in the pool. Water depth within the east culvert was <0.01 m; the west culvert was dry. In-stream cover at the outlet included undercut banks (10% SA) and cobbles (30% SA). 1-30% of the downstream channel was shaded by grasses and trees. The inlet culvert is a single culvert while the outlet is a twin culvert. Both culverts on the downstream side were perched at the time of site investigation. This appears to be a seasonal obstruction as the bankfull depth would submerge at least half of each culvert.

7.4.6.4 CULVERT 4

UPSTREAM

Located approximately 414 m from the northern property boundary, Burl's creek flows east through Culvert 4 (Figure 2). The creek was assessed as 100% riffle in the area immediately upstream of the culvert with a mean wetted width and depth 1.0 m and 0.03 m. Bankfull width and depth was 3.5 m and 1.1 m. Substrate consisted of boulders, cobble, gravel and sand. Water depth within the culvert at the inlet was 0.04 m. In-stream cover was provided by undercut banks (10% SA), boulders (1% SA), cobble (25% SA), vascular plants (0% in-stream; 40% overhanging), and woody debris (0% in-stream; 10% overhanging). 1-30% of the upstream channel was shaded by grasses, riparian vegetation and trees.

DOWNSTREAM

There was no water at the outlet of Culvert 4 and no water downstream for approximately 144 m. Bankfull width and depth were 3.5 m and 1.8 m. Substrate consisted of cobble, gravel and sand. In-stream cover at the outlet included cobbles (30% SA), vascular plants (0% in-stream; 40% overhanging), and woody debris (0% in-stream; 10% overhanging). 1-30% of the downstream channel was shaded by grasses and trees.

7.4.7 WATER QUALITY PARAMETERS

General water quality parameters were measured using a hand held YSI 556 MPS meter.

Table 2 Measured Water Quality Parameters

SAMPLE AREA	AIR TEMPERATURE (°C)	WATER TEMPERATURE (°C)	PH	DISSOLVED OXYGEN (mg/L)	CONDUCTIVITY (µS/cm)
Open Water Pond 1	23.5	25.9	9.76	11.06	444
Open Water Pond 2	23.5	26.1	9.26	11.96	445
Open Water Pond 3	23.5	26.7	7.80	9.30	749
Open Water Pond 4	23.5	26.5	7.28	10.10	869
Culvert 1 US	23.5	Off property	Off property	Off property	Off property
Culvert 1 DS	23.5	22.9	7.88	9.21	955
Culvert 2 US	23.5	23.1	7.91	9.54	899

SAMPLE AREA	AIR TEMPERATURE (°C)	WATER TEMPERATURE (°C)	PH	DISSOLVED OXYGEN (mg/L)	CONDUCTIVITY (µS/cm)
Culvert 2 DS	23.5	23.5	7.87	9.53	892
Culvert 3 US	23.5	25.7	8.21	9.91	830
Culvert 3 DS	23.5	25.9	8.16	9.85	829
Culvert 4 US	23.5	23.1	7.98	8.16	841
Culvert 4 DS	23.5	No water	No water	No water	No water

Table 3 Summary of Burl's Creek Aquatic Features

FEATURE	DISTANCE TO CREEK AT NORTH WEST PROPERTY BOUNDARY (M)	LATITUDE	LONGITUDE	DESCRIPTION
Culvert 1	0	44.478740°	-79.523552°	Extending from neighbouring property onto the Burl's Creek property. Partially perched.
Culvert 2	26	44.478469°	79.523323°	Culvert partially perched, potential barrier to fish migration. Culvert vertically compressed, possibly damaged during road gravelling.
Excess gravel	44			Excess gravel present in creek bed that is inconsistent with substrate in adjacent reaches of Burl's Creek. Potential barrier to fish migration
Pool	50			
Bridge 1	87	44.478070°	-79.522950°	Small multi-purpose bridge
Bridge 2	108	44.477908°	-79.522810°	Small foot bridge, ~4m wide
Cobble/boulder	150	44.477585°	-79.522552°	Possible seasonal barrier to fish migration
Bridge 3	185	44.477303°	-79.522288°	Small multi-purpose bridge
Bridge 4	265	44.476644°	-79.521733°	Double foot bridge ~8m wide
Culvert 3	341	44.476224°	-79.521204°	Culverts under gravel road, single inlet, (partially perched) twin outlet (both perched). Road ~6m wide + 1 m grass each side
Culvert 4 inlet	414	44.476585°	-79.520417°	Large span between inlet/outlet. ~19m. Vertically compressed and damaged.
Culvert 4 outlet	448	44.476679°	-79.520148°	Large span between inlet/outlet. ~19m. Culvert was dry at outlet.
Culvert inlet/rock spillway	547	44.477026°	-79.519049°	Rock spill from south (possibly old agricultural field tile drain) and culvert outlet for seasonal overflow from north field into creek. Possible outlets to existing tiling of previously agricultural fields.
Bridge 5	592	44.477212°	-79.518532°	Pedestrian bridge only

FEATURE	DISTANCE TO CREEK AT NORTH WEST PROPERTY BOUNDARY (M)	LATITUDE	LONGITUDE	DESCRIPTION
Bridge 6	693	44.476763°	-79.517389°	Multi-use bridge with barbed wire underneath. Wire poses a risk to wildlife that likely use the creek bed as a movement corridor.
Culvert 5	806	44.476823°	-79.517029°	Culvert under informal laneway

8 NATURAL HERITAGE FEATURES AND HYDROLOGIC FEATURES

The following sections summarize the findings of the background review and site investigations as they pertain to Natural Heritage Features and Hydrologic Features described within the Provincial Policy Statement (OMMAH, 2014), the Lake Simcoe Protection Plan (Government of Ontario, 2009) and municipal and regional official plans (Township of Oro-Medonte, 2007; County of Simcoe, 2015).

8.1 FISH HABITAT

Fish habitat, as defined by the *Fisheries Act*, c. F-14, includes the 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. The *Act* also includes a broader definition of fish as shellfish, crustaceans, and marine mammals at all stages of their life cycles. Sensitivity of fish and fish habitat are assessed using five relative levels of sensitivity of fish and fish habitat:

- Rare – the most highly sensitive extreme including Species at Risk;
- Highly sensitive;
- Moderately sensitive;
- Low sensitivity; AND
- Not Fish Habitat – the least sensitive extreme representing areas that are not considered fish habitat.

Below is a summary and assessment of the fish and fish habitat related to the sensitivity:

8.1.1 SPECIES SENSITIVITY

8.1.1.1 BURL'S CREEK

Burl's Creek is a permanent, cool water environment containing Brook Trout, White Sucker, Johnny Darter, Fathead Minnow, River Chub, Longnose Dace, Blacknose Dace, Northern Redbelly Dace, Mottled Sculpin, Common Shiner, Bluntnose Minnow, Creek Chub, Central Mudminnow and Brook Stickleback.

The above noted species are a mix of warm, cool and cold water species and generally capable of tolerating a range of habitats and adapting to changes in environmental conditions. Brook Trout is a species that is sensitive to the changes in their aquatic habitat that may result from environmental perturbations during construction activities. This may include change to the thermal regime, water quality or specific habitat characteristics such as amount of cover and substrate type for spawning. Brook Trout prefer clear waters of high purity and are sensitive to pollution, low oxygen and changes in pH caused by environmental impacts such as construction activities. The typical pH range of brook trout waters is 5.0 to 7.5. Preferred water temperatures range from 1 to 22 °C. Warmer temperatures are stressful to Brook Trout populations (Scott and Crossman, 1973). The measured water quality values of Burl's Creek on the Site are all outside of these preferred habitat ranges. In addition, large sections of Burl's Creek were completely dry at the time of investigation. Several previously installed culverts are potential barriers to fish migration along the length of the creek. It is unlikely that there is an active Brook Trout fishery in the reach of Burl's Creek on the subject property. However, Burl's Creek is connected to Lake Simcoe and water quality/habitat quality would have potential to impact downstream conditions for Brook Trout.

8.1.1.2 OPEN WATER PONDS AND ALLINGHAM CREEK

MNRF did not have details for fish community for the Open Water Pond locations. However, Open Water Ponds 1 and 2 are hydrologically connected to Allingham Creek which is a permanent cold water system containing Brook Trout, White Sucker and Rainbow Smelt.

The above noted species are a mix of warm, cool and cold water species and generally capable of tolerating a range of habitats and adapting to changes in environmental conditions. Brook Trout is a species that is sensitive to the changes in their aquatic habitat that may result from environmental perturbations during construction activities (Section 8.1.1.1).

Water quality parameters of Open Water Pond 1 and 2 were outside of the range of preferred habitat conditions for Brook Trout. However, Open Water Pond 1 and 2 are likely to be hydrologically connected to a wetland complex serving as catchment for Allingham Creek. The wetland would buffer any direct impacts of water quality from the Open Water Ponds on Allingham Creek. The connection between Open Water Ponds 1 and 2 is not channelized through the wetland connected to Allingham Creek. As such, it is unlikely that Brook Trout, even during high water conditions, would migrate from the creek into the Open Water Ponds. As such, an aquatic habitat assessment was not completed for Allingham Creek and water quality parameters were not measured in the creek.

8.2 SIGNIFICANT AREAS OF NATURAL AND SCIENTIFIC INTEREST

Significant Areas of Natural and Scientific Interest (ANSI) are defined as areas of land and water containing natural landscapes or features that have been identified as having life science or earth science values related to protection, scientific study or education.

The Natural Heritage Areas Mapping (MNRF, 2015a), County of Simcoe Official Plan (2015), and Township of Oro-Medonte Official Plan (2007) were searched for the presence of ANSI's on or within 120 m of the Site. There were no recorded ANSI's on or adjacent to the Site. Furthermore, there were no environmentally significant areas identified on or within 120 m of the Site within the regional or municipal official plans.

8.3 SIGNIFICANT HABITAT OF ENDANGERED OR THREATENED SPECIES

The PPS (OMMAH, 2014) defines the significant habitat of Endangered or Threatened species as the habitat, as approved by the MNRF, that is necessary for the maintenance, survival and/or the recovery of a naturally occurring or reintroduced population of Endangered or Threatened species as listed in the *Endangered Species Act*, 2007, and where those areas of occurrences are occupied or habitually occupied by the species during all or any part(s) of their life cycle. The MNRF is mandated to ensure accurate database information for the identification, listing and conduct of ongoing assessments for significant endangered species and their related habitats. Development and site alteration is also not permitted within the significant habitat of Endangered or Threatened species under Section 3.3.4(i) of the County of Simcoe Official Plan (2015) and Section A3.1.2 of the Township of Oro-Medonte Official Plan (2007) for Environmental One designated lands.

As part of a desktop review, a search of the MNRF Natural Heritage Information Centre (NHIC) database (MNRF, 2015a) was conducted to determine the existence and approximate location of recorded occurrences of Endangered or Threatened species in the general area. Six (6) one square kilometre (1 km^2) quadrats (17PK1625, 17PK1725, 17PK1825, 17PK1726, 17PK1826, and 17PK1926) surrounding the Site were checked to ensure potentially occurring Endangered or Threatened species were accounted for during field surveys. A single Endangered Species, Henslow's Sparrow (*Ammodramus henslowii*), and two Threatened species, Bobolink (*Dolichonyx oryzivorus)* and Eastern Meadowlark had element occurrences within these quadrats.

In addition to the NHIC database search, the Ontario Breeding Bird Atlas (OBBA) (Bird Studies Canada et al., 2006) and Ontario Reptile and Amphibian Atlas (Ontario Nature, 2015) were consulted to determine if there were Endangered or Threatened species known to be present within the vicinity of the Site. The OBBA uses 100 km by 100 km blocks, further subdivided into 10 km by 10 km squares to compartmentalize geographical areas. The Site lies in the square identified as 17PK12. Bank Swallow (*Riparia riparia*), Barn Swallow, Bobolink, Eastern Whip-poor-will (*Antrostomus vociferus*), Chimney Swift (*Chaetura pelagica*), and Eastern Meadowlark had breeding evidence values within these blocks. Provincially Endangered or Threatened reptile or amphibian species with records from the general vicinity includes Blanding's Turtle (*Emydoidea blandingii*), according to the Ontario Reptile and Amphibian Atlas. A copy of the search results from the Ontario Breeding Bird Atlas is provided in Appendix C.

Information requests were sent to the MNRF and LSRCA to identify potential Threatened or Endangered species which could be present on or within 120 m of the Site. The MNRF identified the potential for American Ginseng (*Panax quinquefolius*), Butternut, Northern Myotis (*Myotis septentrionalis*), Little Myotis (*Myotis lucifugus*), Eastern Small-footed Bat (*Myotis leibii*), Eastern Whip-poor-will and Barn Swallow within the general vicinity of the Site. Documentation of MNRF and LSRCA correspondence can be found in Appendix A.

An assessment of the habitat potential for the above-mentioned endangered or threatened species on or within 120 m of the Site is provided in Table 4. Special consideration was given to these species and their habitats during the Site visits. Species of Special Concern on the SARO List are addressed in Section 8.5.3 of this report. Mitigation measures to address potential impacts to significant habitat of Endangered or Threatened species are outlined in Section 9.1.

Table 4 Endangered and Threatened Species Habitat Potential Assessment

SPECIES	SARO[1]	COSEWIC[2]	HABITAT DESCRIPTION[3]	HABITAT POTENTIAL	FIELD OBSERVATIONS
American Ginseng	END	END	American Ginseng prefers, moist rich, well-drained mature deciduous woodlands, particularly those dominated by Sugar Maple, White Ash and American Basswood.	Moderate	This species was not observed during the site investigation, but is noted to exist in the area.
Bank Swallow	THR	THR	This species nests in burrows located in vertical faces of sand and silt, such as along banks of rivers and lakes or in sand and gravel pits.	Low	This species was not observed during the site investigation. Suitable nesting habitat was not identified within 120 m of the Site.
Barn Swallow	THR	THR	The species often lives 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. This species forages over a wide area.	High	Several individuals were observed foraging over open fields on the Site. Structures located on the Site were searched for the presence of nests, and none were observed.
Bobolink	THR	THR	The species builds their nests on the ground in dense grasses, such as those found in hay fields, tallgrass prairies and open meadows.	Low - Moderate	This species was not observed during the site investigation. Ideal habitat was not identified within 120 m of the Site.
Butternut	END	END	This species is commonly found in riparian habitats, but is also found on rich, moist, well-drained loams, and well-drained gravels, particularly those of limestone origin.	High	This species was observed on Site within woodland areas and fencerows.
Chimney Swift	THR	THR	The species feeds in flocks around water bodies due to the large amount of insects present. Nesting occurs in large, hollow trees or in the chimneys of houses in urban and rural areas.	Low	This species was not observed during the site investigation. Suitable nesting habitat was not identified within 120 m of the Site.
Eastern Meadowlark	THR	THR	The species prefers native grasslands, pastures and savannahs though will use a variety of other grassland habitats such as hayfields, weedy meadows, etc.	High	A male was observed singing from open fields located between the racetrack/speedway and 8 Line S.

SPECIES	SARO[1]	COSEWIC[2]	HABITAT DESCRIPTION[3]	HABITAT POTENTIAL	FIELD OBSERVATIONS
Eastern Small-footed Bat	END	-	Eastern Small-footed Bats roosts in rock outcrops, within buildings, under bridges, or in caves. They hibernate in caves and abandoned mines, preferring colder and drier sites than other bat species.	Low-Moderate	This species was not observed. Evidence of bats was not observed on the Site and bat activity was not observed during evening surveys. The wooded areas on and within 120 m of the Site do not fit the criteria to be considered candidate maternity roosting habitat.
Eastern Whip-poor-will	THR	THR	This species avoids exposed, open areas or closed-canopy forests, and prefers rock or sand barrens with scattered trees, savannahs, and open conifer plantations.	Low	This species was not observed. Suitable open woodlands or barrens were not identified within 120 m of the Site.
Henslow's Sparrow	END	END	This species breeds in open, weedy fields with tall grasses and occasional scattered shrubs. Henslow's Sparrow is nearly extirpated from Ontario and may only be found in a few select locations.	Low	This species was not observed. Suitable habitat was not identified within 120 m of the Site.
Little Brown Myotis	END	END	During the summer, this species roosts in trees, abandoned buildings, attics, and barns close to water. This species overwinters in large groups in warm, moist caves or abandoned mines.	Low-Moderate	This species was not observed. Evidence of bats was not observed on the Site and bat activity was not observed during evening surveys. The wooded areas on and within 120 m of the Site do not fit the criteria to be considered candidate maternity roosting habitat.
Northern Myotis	END	END	This mainly solitary species is most commonly associated with the boreal forest where they roost in tree cavities or under loose bark. Over-wintering occurs in caves or abandoned mines that remain above freezing.	Low-Moderate	This species was not observed. Evidence of bats was not observed on the Site and bat activity was not observed during evening surveys. The wooded areas on and within 120 m of the Site do not fit the criteria to be considered candidate maternity roosting habitat.

Protection status: [1] SARO - Species at Risk in Ontario and [2] COSEWIC - Committee on the Status of Endangered Wildlife in Canada: END – Endangered, THR – Threatened, SC – Special concern, "-"– Not listed. [3] Habitat Description Source: COSEWIC reports and/or Species at Risk in Ontario (SARO) List.

Barn Swallow, Butternut and Eastern Meadowlark were observed during the site investigation. Refer to Figure 3 for location details. Mitigation measures for these species can be found in Sections 9.1. General mitigation measures have been suggested in Section 9.4 to minimize the potential for harm to wildlife, including Species at Risk.

8.4 SIGNIFICANT WETLANDS

Wetlands are defined in the PPS (OMMAH, 2014) as lands that are seasonally or permanently covered by shallow water, as well as lands where the water table is close to or at the surface. There are four major wetland types, which are classified as swamps, marshes, bogs, and fens. A significant wetland is defined as an area identified as provincially significant by the Ontario Ministry of Natural Resources using evaluation procedures established by the province, as amended from time to time (OMMAH, 2014). Accordingly, it is the responsibility of the MNRF to both identify and classify wetlands as significant in Ontario.

The MNRF Natural Heritage Areas Mapping (2015a), Oro and Hawkstone Creeks Subwatershed Plan (LSRCA, 2013), Schedule 5.2.2 of the County of Simcoe Official Plan (2015), and Schedule B of the Township of Oro-Medonte Official Plan (2007) were reviewed for the presence of wetlands on or within 120 m of the Site. There were no locally or provincially significant wetlands noted on or within 120 m of the Site.

The Lake Simcoe Protection Plan (Ontario, 2009) provides for protection of all wetlands within the policy area. According to Section 6.23-DP, development or site alteration is not permitted within a wetland, except in relation to certain uses that include among others:

- Forest, fish, and wildlife management;
- Stewardship, conservation, restoration and remediation undertakings; and
- Low-intensity recreational uses that require very little terrain or vegetation modification, such as natural heritage appreciation.

For the policy area that contains the Site, Section 6.11-DP permits development or site alteration within 30 m of a wetland, provided it complies with the following where applicable:

- Maintain, and where possible, increase or improve fish habitat in the wetland, and any adjacent riparian areas;
- To the extent possible, enhance the ecological features and functions associated with the wetland;
- Minimize erosion, sedimentation, and the introduction of excessive nutrients or other pollutants and utilize planning, design, and construction practices that maintain and improve water quality; and
- Integrate landscaping and habitat restoration into the design of the proposal to enhance the ability of native plants and animals to use the area as both wildlife habitat and a movement corridor.

There are potential impacts to the Black Ash Mineral Deciduous Swamp (SWD2-1) in the southeast corner of the Site (Figure 4). A portion of this wetland system and 30 m minimum vegetation protection zone falls within LSRCA jurisdiction. The laneway and a small portion of the parking area developed in this area (Figure 2) cleared approximately 0.5 ha of this wetland, creating a gravelled laneway through the area. There was evidence of impoundment on the south side of the laneway, with a minor amount also observed on the north side, near a small Reed Canary Grass opening in the woodland. Though there was a small amount of impoundment, there was no evidence of damage to trees observed within the elevated ponding area. However, sustained impoundment has the potential to drown the root system of trees and associated vegetation within the ponded area. To mitigate the impacts to this wetland, a Mitigation Plan to minimize the potential for impacts due to laneway development is discussed under a separate cover (WSP, 2015).

There are potential impacts to the Open Water Pond system that is part of the Allingham Creek Swamp wetland system (Figure 3). This Pond system and 30 m minimum vegetation protection zone fall within LSRCA jurisdiction. Development of the Project placed a gravelled pad directly south of Pond 1, and as

such there were disturbances within the LSRCA buffer of Pond 1. Potential impacts to the ponds include erosion and sedimentation during construction. During the Site Investigation, it was observed that a sedimentation and erosion control fence had been erected on the south side of the pond, and no significant impacts were anticipated in this area from the Site alterations. By association, impacts to the unevaluated wetland/Allingham Wetland system to the east of the Site are also not anticipated. Mitigation proposed for the Open Pond System is discussed under a separate cover (WSP, 2015).

The existing laneway that exists east of Line 8 and south of the Allingham Creek Swamp wetland system had been re-gravelled and falls within the 30 m minimum vegetation protection zone (Figure 3). As the laneway was pre-existing, was not widened, and a permeable fill was used, associated impacts are predicted to be negligible and mitigation was not considered necessary. There are no other observed or predicted impacts to wetlands associated with the project, on Site or off Site.

8.5 SIGNIFICANT WILDLIFE HABITAT

Wildlife habitat is defined as areas where plants, animals, and other organisms live and find adequate amounts of food, water, shelter, and space needed to sustain their populations. Specific wildlife habitats of concern may include areas where species concentrate at a vulnerable point in their annual life cycle and areas that are important to migratory or non-migratory species (OMMAH, 2014). Wildlife habitat is referred to as significant if it is ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or Natural Heritage System (OMMAH, 2014). Development and site alteration within significant wildlife habitat is not permitted under the PPS (OMMAH, 2014), County of Simcoe Official Plan (2015), and the Township of Oro-Medonte Official Plan (2007).

Guidelines and criteria for the identification of significant wildlife are detailed in the Significant Wildlife Habitat Technical Guide (OMNR, 2000), Significant Wildlife Habitat Ecoregion 6E Criterion Schedule (OMNR, 2012), and the Natural Heritage Reference Manual (OMNR, 2010). Significant wildlife habitat is described under four main categories:

- Seasonal concentrations of animals;
- Rare vegetation communities or specialized habitats for wildlife;
- Wildlife movement corridors; and
- Habitats of species of conservation concern.

Discussions on the four main categories of significant wildlife habitat are provided below.

8.5.1 SEASONAL CONCENTRATION AREAS

Areas of seasonal concentrations of animals are defined as “areas where animals occur in relatively high densities at specific periods in their life cycle and/or particular seasons.” At these times, species are vulnerable to ecological interferences or weather impacts. Areas of seasonal concentration are typically small in comparison to the larger habitat areas used by species at other times of the year. The identification of habitats associated with seasonal concentrations of species is typically based on known occurrences (OMNR, 2000).

An assessment was carried out to determine the potential for wildlife concentration areas on or within 120 m of the Site. Resources and protocols outlined in the OMNR Significant Wildlife Habitat: Technical Guide (OMNR, 2000) and the Significant Wildlife Habitat Criterion Schedule for Ecoregion 6E (OMNR,

2012) were utilized to evaluate the potential for species concentration area occurrence. Seasonal concentration areas with the potential to be on or within 120 m of the Site are examined in Table 5, below.

Table 5 Seasonal Concentration Areas within 120 m of the Site

HABITAT TYPE	CANDIDATE SWH CRITERIA AND SITE INVESTIGATION RESULTS
Waterfowl Stopover and Staging Areas (Terrestrial)	Habitat is not present. Meadows or agricultural fields of a suitable size that hold sheet water in the spring were not identified on or within 120 m of the Site.
Waterfowl Stopover and Staging Areas (Aquatic)	Water bodies of a suitable size to qualify as candidate habitat were not identified within 120 m of the Site.
Shorebird Migratory Stopover Area	Habitat was not identified and shorebirds were not observed. Un-vegetated shoreline habitats, mudflats, and sandbars were not present surrounding the water features within 120 m of the Site.
Raptor Wintering Area	Habitat is not present. A mixture of fields and woodlands were present on the Site, however the fields consisted primarily of sod. Preferred sites have undisturbed or fallow fields in conjunction with large woodlots. The surrounding area provides similar habitat to that which is found on the Site.
Bat Hibernacula	Habitat is not present. No caves, mine shafts, underground foundations or karsts were found on or within 120m of the Site.
Bat Maternity Roosting Habitat	Candidate habitat is not present. The wooded areas on the Site were relatively fragmented, indicative of second growth and lacking in suitable mature trees.
Bat Migratory Stopover Area	Criteria are not available at this time; therefore no evaluation is possible.
Turtle Wintering Areas	Candidate habitat is not present. The waterbodies on the Site lacked a suitable soft and muddy substrate. Further, turtles were not identified during the site investigation.
Reptile Hibernacula	Suitable areas of bedrock and deep rock fissures were not identified within 120 m of the Site, nor were caves or talus slopes. Conifer or shrub swamps or other suitable wetland types were not identified on the Site. While reptiles find habitat on the Site, they likely hibernate singly or in small numbers throughout the landscape.
Colonially-nesting Bird Breeding Habitat (Bank/Cliff)	Habitat is not present. Exposed sand piles, eroding banks, or borrow pits were not identified during the site investigation.
Colonially-nesting Bird Breeding Habitat (Tree/Shrub)	Habitat is not present. Nests within live or dead trees, shrubs or emergent vegetation that would signify the area is used by colonial tree/shrub-nesting birds were not observed within wetland areas located on or within 120 m of the Site.
Colonially-nesting Bird Breeding Habitat (Ground)	Habitat is not present. The Site does not contain areas with rocky islands or peninsulas that are suitable for colonial ground-nesting birds such as gulls and terns. In addition, preferred nesting habitat for Brewer's Blackbird (*Euphagus cyanocephalus*), which includes agricultural fields close to clear, flowing water is not present.
Migratory Butterfly Stopover Areas	Habitat is not present. The Site is not located within 5 km of the Lake Ontario shoreline.
Landbird Migratory Stopover Areas	Habitat is not present. The Site is not located within 5 km of the Lake Ontario shoreline.
Deer Yarding Areas	Habitat is not present. During the information request, LSRCA provided the location of relevant SWH in the vicinity of the Site. The closest deer yarning area was located approximately 600 m northwest of the Site.

Seasonal concentration areas were not identified on or within 120 m of the Site.

8.5.2 RARE VEGETATION COMMUNITIES OR SPECIALIZED HABITATS

Rare or specialized habitats include rare vegetation communities or concentrations of rare plant species. These specialized areas may also support rare animal species. The Site lacked significant old growth forest features which, if present, might provide specialized habitats and food sources for other species dependent on these features. The vegetation communities identified on or within 120 m of the Site were not designated as rare or threatened in Ontario. An assessment of the presence/absence of rare vegetation communities and specialized wildlife habitat for this ecoregion is provided in Tables 6 and 7, below.

Table 6 Rare Vegetation Communities within 120 m of the Site

HABITAT TYPE	CANDIDATE SWH CRITERIA AND SITE INVESTIGATION RESULTS
Cliffs and Talus Slopes	Habitat is not present. Exposed cliffs or talus slopes were not observed on or within 120 m of the Site.
Sand Barren	Habitat is not present. Areas of sandy soil and characteristic sand barren plant species and landforms were not observed on or within 120 m of the Site.
Alvar	Habitat is not present. Calcareous bedrock is not present in this area. Furthermore, areas of exposed bedrock were not observed on or within 120 m of the Site.
Old Growth Forest	Habitat is not present. Forests in and within 120 m of the Site were not characterized by heavy mortality of mature over-storey trees resulting in a mosaic of gaps and multi-layered canopy. The Site is primarily agricultural land, and surrounding forested areas are fragmented and representative of secondary growth.
Tallgrass Prairie	Habitat is not present. Tallgrass Prairie and associated plant species were not identified on or within 120 m of the Site.
Savannah	Habitat is not present. Tallgrass prairie habitat with 25-60% tree cover was not observed on or within 120 m of the Site.

Table 7 Specialized Wildlife Habitats within 120 m of the Site

HABITAT TYPE	CANDIDATE SWH CRITERIA AND SITE INVESTIGATION RESULTS
Waterfowl Nesting Area	Habitat is not present. Suitably sized wetlands flanked by grassy or shrubby fields were not present within 120 m of the Site.
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	Habitat is not present. Nests were not observed within forest communities directly adjacent to wetlands within 120 m of the Site. Additionally, suitable open wetlands and rivers which would provide foraging habitat were not present within 120 m of the Site. Further, Bald Eagle or Osprey was not observed during the site investigation.
Woodland Raptor Nesting Habitat	Candidate habitat is not present. Woodland stands were present on the Site; however, none were greater than 30 ha in size with over 10 ha of interior forest (200 m buffer from woodland edge). While raptors likely breed in the vicinity of the Site, there were no nests identified on or within 120 m of the Site. Additionally, candidate raptor species were not identified during the site investigation.
Turtle Nesting Areas	Candidate habitat was not identified. Turtles were not found during the site investigation. Sand and gravel within the vicinity of the Site consisted of municipal or provincial road embankments, which do not qualify as Significant Wildlife Habitat. Sandy or gravelly areas adjacent to wetlands and away from roads were not observed within 120 m of the Site.
Forested Seep / Spring	Candidate habitat was not identified. Forested headwaters of streams were not located within 120 m of the Site.

HABITAT TYPE	CANDIDATE SWH CRITERIA AND SITE INVESTIGATION RESULTS
Amphibian Breeding Habitat (Woodland)	Candidate habitat is present. The Open Water Ponds located near the north Site boundary along 8 Line S supported a high number of Spring Peepers. A single Wood Frog was also heard from this wetland. Additional wetlands within 120 m of the Site did not have concentrations of the candidate amphibian species that reached the threshold to define the area as Significant Wildlife Habitat. This would require observance of over 20 breeding individuals of any of the candidate species.
Amphibian Breeding Habitat (Wetlands)	Habitat is not present within 120 m of the Site. Wetlands located at least 120 m from the edge of a woodland were not identified during the site investigation.

Candidate amphibian breeding habitat (woodland) was identified from the Open Water Ponds located near the north Site boundary along 8 Line. Additional rare vegetation communities or specialized habitats were not identified on or within 120 m of the Site.

8.5.3 SPECIES OF CONSERVATION CONCERN

Species of Conservation Concern include those that have been listed as S1 to S3 by the NHIC or are listed as Special Concern by SARO or COSEWIC, but not listed on the *Endangered Species Act, 2007* (Ontario, 2007). While these species are currently not afforded protection under the *Endangered Species Act*, species of conservation concern are tracked and monitored for changes in their populations and distributions. The NHIC maintains lists of all species found in Ontario. Provincial "S" ranks are used by the NHIC to set protection priorities for rare species and natural communities within Ontario. By comparing global "G" and provincial "S" ranks, the status, rarity, and the urgency of conservation needs can be ascertained. The NHIC evaluates provincial ranks on a continual basis and produces updated lists at least annually. The SARO and COSEWIC classification of "Special Concern" means the species lives in the wild in Ontario, is not considered endangered or threatened, but may become threatened or endangered due to a combination of biological characteristics and identified threats. The observance of a species of conservation concern on-site does not necessarily define the area as Significant Habitat; this is determined using the guidelines and criteria identified above.

As part of a desktop review, a review of the NHIC database (MNRF, 2015a) was conducted to determine the existence and approximate location of recorded occurrences of species of conservation concern in the Site. Six (6) one square kilometre (1 km^2) quadrats (17PK1625, 17PK1725, 17PK1825, 17PK1726, 17PK1826, and 17PK1926) surrounding the Site were checked to ensure potential species of conservation concern were accounted for in the search. In each quadrat, there were species occurrences for species tracked by the NHIC, including: Green-striped Darner (*Aeshna verticalis*) and Jefferson X Blue-spotted Salamander (*Ambystoma* hybrid pop. 1). Table 8 outlines element occurrence data for species of conservation concern with the potential to be in the Site based on data maintained by the NHIC (MNRF, 2015a).

Table 8 NHIC Element Occurrence Records for the Site

Species	Scientific Name	GRank[1]	SRank[1]	COSEWIC[2]	SARO[3]
Green-striped Darner	*Aeshna verticalis*	G5	S3	-	-
Jefferson X Blue-spotted Salamander	*Ambystoma* hybrid pop. 1	G5	S3	-	-

[1] Nature Conservancy conservation concern rankings (MNRF, 2015b): G - Global Level, S - Sub-national Rank (Ontario), 1 - Critically Imperiled, 2 - Imperiled, 3 - Vulnerable, 4 - Apparently Secure, 5 – Secure, B - Breeding, N – Non-breeding, '?' – Rank Uncertain.
[2] COSEWIC - Committee on the Status of Endangered Wildlife in Canada; [3] SARO - Species at Risk in Ontario; END – Endangered, THR – Threatened, SC – Special Concern, NAR – Not at Risk, "-" – Not listed.

In addition to the NHIC database search, the Ontario Breeding Bird Atlas (OBBA) (Bird Studies Canada *et al.*, 2006) and Ontario Reptile and Amphibian Atlas (Ontario Nature, 2015) were consulted to determine if there were species of Special Concern known to be present within the vicinity of the Site. The OBBA uses 100 km by 100 km blocks, further subdivided into 10 km by 10 km squares to compartmentalize geographical areas. The Site lies in the square identified as 17PK12. Common Nighthawk (*Chordeiles minor*), Red-headed Woodpecker (*Melanerpes erythrocephalus*), Olive-sided Flycatcher (*Contopus cooperi*), Eastern Wood-Pewee, Wood Thrush and Golden-winged Warbler (*Vermivora chrysoptera*) had breeding evidence values within these blocks. Provincially listed Special Concern reptile or amphibian species with records from the general vicinity includes Snapping Turtle and Milksnake (*Lampropeltis triangulum*), according to the Ontario Reptile and Amphibian Atlas. A copy of the search results from the Ontario Breeding Bird Atlas is provided in Appendix C.

Information requests were sent to the MNRF and LSRCA to identify potential species of Special Concern which could be present on or within 120 m of the Site. MNRF identified the potential for Red-headed Woodpecker, Common Nighthawk, Eastern Wood-pewee, Snapping Turtle (*Chelydra serpentina*), Milksnake, and Wood Thrush within the general vicinity of the Site. Documentation of MNRF and LSRCA correspondence can be found in Appendix A.

Based on a review of aerial photographs and available habitat types within the general area, there is potential for several species of Special Concern, including Canada Warbler (*Cardellina canadensis*) and Monarch Butterfly (*Danaus plexippus*). An assessment of the habitat potential for the above-mentioned species of conservation concern on the Site is provided in Table 9 below. These species were given special consideration during the site investigation.

Table 9 Potential Species of Conservation Concern and Habitat Assessment

SPECIES	SARO[1]	COSEWIC[2]	HABITAT POTENTIAL	HABITAT DESCRIPTION	FIELD OBSERVATIONS
Canada Warbler	SC	THR	Low-Moderate	The species is found in a variety of forest types, but is most abundant in wet, mixed deciduous-coniferous forests with a well-developed shrub layer. Also found in riparian shrub forests.	This species was not observed during the site investigation. Suitable habitat was not identified on or within 120 m of the Site.
Common Nighthawk	SC	THR	Low	The species nests in areas with little to no ground vegetation, such as logged or burned-over areas, forest clearings, open rock barrens, etc.	This species was not observed during the site investigation. Candidate habitat was not identified on or within 120 m of the Site.
Eastern Wood-Pewee	SC	SC	High	Eastern Wood-pewees prefer deciduous and mixedwood forests. They are often observed sallying to capture flying insects from an exposed perch high in the canopy.	Eastern Wood-Pewees were commonly found throughout the woodlands on and within 120 m of the Site.
Golden-winged Warbler	SC	THR	Low	Golden-winged Warblers are found in shrubby areas surrounded by woodland, such as utility right-of-ways, field edges, and logged areas.	This species was not observed during the site investigation. Candidate habitat was not identified on or within 120 m of the Site.
Green-striped Darner	-	-	Low-Moderate	This species breeds in open marshy areas, but can be found feeding in swarms above open fields far from water.	This species was not observed during the site investigation. Candidate habitat was not identified on or within 120 m of the Site.
Jefferson X Blue-spotted Salamander (*Ambystoma* hybrid pop. 1).	-	-	Low-Moderate	This hybrid species population prefers mature deciduous or mixed woodland, in relatively close proximity to fishless wetlands or vernal ponds.	This hybrid species population was not observed. Candidate habitat was not identified on or within 120 m of the Site.

SPECIES	SARO[1]	COSEWIC[2]	HABITAT POTENTIAL	HABITAT DESCRIPTION	FIELD OBSERVATIONS
Milksnake	SC	SC	Moderate -High	Milksnakes can be found in a range of habitats including deciduous woodland edges, abandoned fields, rocky outcrops and alvars; often near water.	Species was not observed. Suitable habitat exists throughout woodlands, wetlands, and edge habitat throughout the Site.
Monarch Butterfly	SC	SC	Low-Moderate	The species is commonly found in abandoned fields, along roadsides and in other habitats where Milkweed, Goldenrod, Asters and Purple Loosestrife exist.	The species was not observed. Marginal habitat exists along the roadsides in the area; however large patches of Common Milkweed and other host plants were not identified during the site investigation.
Olive-sided Flycatcher	SC	THR	Low	The species lives in forest openings and edges, particularly where tall snags and dead trees can be used for foraging perches. Breeding habitat is frequently located along wooded riparian corridors or wetlands.	This species was not observed during the site investigation. Suitable habitat was not identified within 120 m of the Site.
Red-headed Woodpecker	SC	THR	Low	Red-headed Woodpeckers are found in open deciduous or mixed woodlands, preferring areas with many dead trees including golf courses, cemeteries and parks.	This species was not observed during the site investigation. Suitable habitat was not identified within 120 m of the Site.
Snapping Turtle	SC	SC	Moderate	The species is generally associated with shallow ponds, shallow lakes and streams with abundant vegetation. Suitable nesting habitat includes gravely or sandy areas along streams, gravel shoulders along roadsides, dams and aggregate pits.	This species was not observed. Suitable habitat was not identified within 120 m of the Site. There are historical records of Snapping Turtle within the general area and it is likely that Snapping Turtles pass through the site occasionally.

SPECIES	SARO[1]	COSEWIC[2]	HABITAT POTENTIAL	HABITAT DESCRIPTION	FIELD OBSERVATIONS
Wood Thrush	SC	THR	High	This species is strongly associated with woodlands containing tall trees. They are typically found in deciduous forests but may be found in mixedwood forests as well. The presence of a thick understory is usually a prerequisite for site occupancy.	Wood Thrushes were encountered in woodland north of point count BC06 near the northeast Site corner and near point count BC07.

Eastern Wood-Pewee and Wood Thrush were encountered during the site investigation. Based on this assessment there is moderate or high potential for Milksnake and Snapping Turtle within 120 m of the Site. As species of Special Concern (formerly Vulnerable) on the SARO list, these species do not receive habitat protection under the *Endangered Species Act* (Government of Ontario, 2007). Recommendations to reduce the potential for negative impacts to these species are discussed in Section 9.3 of this report.

In addition to the species and habitats identified above, species of conservation concern are often associated with specific habitat types. The presence/absence of specific habitats for species of conservation concern within Ecoregion 6E (OMNR, 2012) is provided in Table 10.

Table 10 Habitats of Species of Conservation Concern within 120 m of the Site

HABITAT TYPE	CANDIDATE SWH CRITERIA AND SITE INVESTIGATION RESULTS
Marsh Breeding Bird Habitat	Candidate habitat was not identified within 120 m of the Site. Wetland areas on the Site did not contain shallow water with abundant emergent aquatic vegetation. None of the candidate species were observed during the site investigation.
Woodland Area-Sensitive Bird Breeding Habitat	Large, mature forest stands/woodlots greater than 30 ha in size were not identified on the Site. While Yellow-bellied Sapsucker, Ovenbird and Veery were encountered, the majority of the candidate species were not observed during the site investigation.
Open Country Bird Breeding Habitat	Habitat is not present. Savannah Sparrow was the only candidate species (out of six total) found on the Site. Most open fields on the Site consisted of sod fields, while grassland and pasture areas on the Site were not of a suitable size to be considered candidate habitat.
Terrestrial Crayfish	Candidate habitat such as meadows at the edge of shallow marshes was not identified within 120 m of the Site.
Shrub Early Successional Bird Breeding Habitat	Habitat is not present. In addition, bird species associated with early successional habitat were not observed during the site investigation.
Habitat for Special Concern or Rare Wildlife Species	Candidate habitat for Eastern Wood-Pewee and Eastern Milksnake is present on the Site. Additionally, there is high or moderate potential for Milksnake and Snapping Turtle on the Site.

8.5.4 ANIMAL MOVEMENT CORRIDORS

The Natural Heritage Reference Manual (OMNR, 2010) describes animal movement corridors as habitats that link two or more wildlife habitats that are critical to the maintenance of a population, species, or group of species, or habitats with a key ecological function to enable wildlife to move, with minimum mortality between areas of SWH or core natural areas. The Significant Wildlife Habitat Technical Guide (OMNR, 2000) further describes animal movement corridors as elongated, naturally vegetated parts of the landscapes used by animals to move from one habitat to another. Examples may include riparian zones

and shorelines, wetland buffers, stream and river valleys, woodlands, and anthropogenic features including hydro and pipeline corridors, abandoned road and rail allowances, and fencerows and windbreaks. The presence/absence of amphibian and cervid (deer-like species) movement corridors within 120 m of the Site is provided in Table 11.

Table 11 Animal Movement Corridors

HABITAT TYPE	CANDIDATE SWH CRITERIA AND SITE INVESTIGATION RESULTS
Amphibian Movement Corridors	Amphibian movement corridors are only determined if amphibian breeding habitat (wetlands) is confirmed as SWH. As no candidate areas of amphibian breeding habitat (wetlands) were identified on or within 120m of the Site, amphibian movement corridors do not apply.
Cervid Movement Corridors	Candidate cervid movement corridors are only determined if deer wintering habitat, moose aquatic feeding areas, or mineral licks are confirmed as SWH. As no candidate areas were identified within 120 m of the Site, cervid movement corridors do not apply.

8.6 SIGNIFICANT WOODLANDS

Woodlands are defined as “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, the 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” (OMMAH, 2014). The PPS (OMMAH, 2014), Lake Simcoe Protection Plan (Ontario, 2009), County of Simcoe Official Plan (2015), and Township of Oro-Medonte Official Plan (2007) provide further guidance for the identification of woodlands.

The PPS (OMMAH, 2014), Lake Simcoe Protection Plan (Ontario, 2009), County of Simcoe Official Plan (2015), and the Township of Oro-Medonte Official Plan (2007) also provide protection to Significant Woodlands. In regard to woodlands, these four documents define ‘significant’ as “ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or economically important due to site quality, species composition, or past management history”.

The MNRF Natural Heritage Areas Mapping (2015a) and Lake Simcoe Protection Plan (Ontario, 2009) do not identify the Dry – Fresh Sugar Maple – Beech (FOD5-2) Deciduous Forest in the southeast corner of the Site as a Significant Woodland (Figure 3). The development of more specific criteria for the assessment of significant woodlands is the responsibility of the local planning bodies, in this case the County of Simcoe and the Township of Oro-Medonte. Woodland significance is typically determined by evaluating key criteria which relate to woodland size, ecological function, uncommon woodland species, and economic and social value.

At the County level, Schedule 5.1 of the County of Simcoe Official Plan designates the Site as Agricultural land within the Simcoe Uplands. Significant Woodlands in the Simcoe Uplands have a minimum threshold of 10.0 hectares. At greater than 10 ha (30.2 ha), the Dry – Fresh Sugar Maple – Beech (FOD5-2) Deciduous Forest (Figure 3) is defined as part of the Greenlands system, and qualifies as a Significant Woodland.

At the Town level, Significant Woodlands include any woodlots identified on Schedule B (Township of Oro-Medonte, 2007), thus the woodland in the southeast of the Site (Figure 3) meets the definition of Significant Woodland for the Town. The Town holds the Strategic Objective of protecting Significant Woodlands and

the Wildlife Habitat and Ecological Functions they provide from incompatible development (Oro-Medonte, 2007).

Therefore, this area is considered a Significant Woodland, and development of the laneway has removed 1.3 ha of woodland area. To mitigate for the removal of trees, a mitigation and tree compensation plan has been developed under a separate cover (WSP, 2015). Through compensation, the Site will add and enhance areas of the Oro-Medonte Natural Heritage Network and Regional Greenlands System. A proposal to add this Significant Woodland to the Township of Oro-Medonte Natural Heritage System is presented in Section 9.2.

8.7 SIGNIFICANT VALLEYLANDS

The PPS (OMMAH, 2014) and Lake Simcoe Protection Plan (Ontario, 2009) describe valleylands as “a natural area that occurs in a valley or other landform depression that has water flowing through or standing for some period of the year”. To be considered significant, valleylands must be ecologically important in terms of representation or amount, and must contribute to the quality and diversity of an identifiable geographic area or natural heritage system (OMMAH, 2014). Development and site alteration may be permitted in significant valleylands if it has been demonstrated that there will be no negative impacts on the feature or its ecological function. The County of Simcoe Official Plan (2015) also considers areas within Conservation Authority Regulation Limits to be valleylands.

Review of MNRF Natural Heritage Areas Mapping (2015a) did not identify the presence of valleylands on or within 120 m of the Site. Site visits confirmed that there were no valleylands, significant or otherwise, noted on or within 120 m of the Site. Burl’s Creek is within the Regulation Limits of the Lake Simcoe Region Conservation Authority (LSRCA). The reach of Burl’s Creek within the Site is not identified as a Key Valleyland Feature on Figure 6-6 of the Oro and Hawkstone Creeks Subwatershed Plan (LSRCA, 2013); however, ecological data provided by the LSRCA for the project (Appendix A) does identify the Reed-Canary Grass Mineral Meadow Marsh west of the racetrack/speedway as Apparent Valleylands (Figure 3). The project will not approach this area or its 30 m minimum vegetation protection zone and therefore, no mitigation specific to valleylands is proposed.

8.8 KEY HYDROLOGIC FEATURES

Key hydrologic features include wetlands, lakes and their littoral zones, permanent and intermittent streams, kettle lakes, seepage areas and springs, and the Lake Simcoe Shoreline. These features are described under Section 2.3 of the PPS (OMMAH, 2014) (see Section 2.1 of this document), Section 3.13.19 of the County of Simcoe Official Plan (2015), and Section 6.22-DP of the LSPP (Ontario, 2009). Further guidelines to protect and maintain the ecological integrity of key hydrologic features and their functions are provided in Section 3.13.13 of the County of Simcoe Official Plan (2015), and Section 6.9-DP of the LSPP (Government of Ontario, 2009):

> *“The alteration of the shore of Lake Simcoe, other lakes or any permanent or intermittent stream for the purpose of establishing or altering drainage works such as those works under the Drainage Act, infrastructure or for stabilization, erosion control or protection purposes shall only be permitted if it is demonstrated that natural shoreline treatments (e.g. planting of natural vegetation, bioengineering) that maintain the natural contour of the shoreline will be used where practical, and a vegetative riparian area will be established to the extent feasible. In relation of such works, lands used for agricultural purposes do not require the establishment of a vegetative riparian area if the land is, and will continue to be, used for agricultural purposes.”*

Burl's Creek bisects the Site, extending north-south from the woodlot at the northwest corner to the middle of the Site, where bends east, then south to exit the Site. This creek has been previously diverted into a drainage canal, presumably to accommodate agricultural operations. The permanency ranges from permanent to intermittent further downstream on Site and is therefore subject to the LSPP requirement quoted above.

This feature is described in detail under Section 7.4 of this report. Impacts to Burl's Creek include replacement of two culverts in the central portion of the Site to improve the drainage pattern of the Creek. To mitigate the impacts to Burl's Creek, a mitigation plan has been developed to compensate for culvert replacement activities (WSP, 2015).

The County of Simcoe's Official Plan (2015) has adopted the standards outlined in the LSPP (Ontario, 2009) and has further defined requirements such that the development and site alteration shall not:

- Result in negative effect on the key natural heritage features or key hydrologic features and functions;
- Alter connectivity between the key natural heritage and hydrologic features be maintained or enhanced;
- Remove unidentified key features should be avoided; and,
- Disturb more than 25% of the site and the impervious surface shall not exceed 10% of the total developable area.

The majority of the Site alteration is meant to improve existing conditions and serve as low-intensity recreational area for staging outdoor events. Areas disturbed as part of the construction of the permanent features is largely limited to upgrades to existing structures and permeable sod and gravel surfaces, yet where additional disturbances were required, they will be restored or improved from existing condition. Permanent structures and impervious surfaces must not exceed a total area of 57.1 ha (141.1 acres) in order to conform to the LSPP policies. The total area of existing and planned both previous and impervious surfaces equates to approximately 23.3 ha and therefore meets this condition (C.C. Tatham, 2015).

8.9 SIGNIFICANT FEATURE SUMMARY

A summary of the significant Natural Heritage Features identified on or adjacent to the Site are provided in Table 12. This summary is based on ten (10) site visits and a review of available documentation pertaining to the Site and adjacent lands. In order to minimize the effects of the development on these natural features, mitigation measures are considered for work conducted on the Site.

Table 12 Significant Feature Summary

FEATURE	PRESENT	COMMENT
Fish Habitat	Yes	Burl's Creek and the Open Water Pond system on Site have the potential to be Fish Habitat.
Significant ANSI or Natural Areas	No	There are no known ANSI's or defined Natural Areas on or adjacent to the Site.
Threatened or Endangered Species Habitat	Yes	Butternut was observed in multiple locations on Site. Barn Swallow and Eastern Meadowlark were observed during Site Visits, and the Site provides possible habitat.
Significant Wetland	No	There were no known significant wetlands identified on or adjacent to the Site.
Wetlands (LSPP)	Yes	There are wetlands on Site, which are protected under the Lake Simcoe Protection Plan.

FEATURE	PRESENT	COMMENT
Significant Wildlife Habitat	Yes	Habitat for species of Special Concern such as Eastern Wood-Pewee, Wood Thrush, Snapping Turtle and Milksnake is found on the Site.
Significant Woodland	Yes	There is a Significant Woodland found in the southeast corner of the Site.
Significant Valleyland	Yes	LSRCA designated Valleylands are found associated with Burl's Creek (Figure 3). There are no anticipated impacts to this area from the Project.
Key Hydrologic Features (other than wetlands)	Yes	Burl's Creek crosses the Site and has permanent and intermittent reaches.

9 IMPACT AND MITIGATION MEASURE DISCUSSION

The objective of Burl's Creek Event Grounds Inc. in undertaking the Site enhancements was to highlight and integrate the Site within the rural character of the region while minimizing the impacts on Natural Heritage Features. An Environmental Impact Study must determine the potential for negative impacts to significant natural features or their ecological functions on or within 120 m of the Site. In addition, suggestions for preventative, mitigation or remedial measures must also be provided. Environmental effects can be direct, where impacts are immediately incurred as a result of site preparation or construction, such as vegetation removal, the loss of habitat, or erosion. Alternatively, environmental effects that are not immediately detected or occur adjacent to the development may be considered indirect impacts. Long term effects on surface drainage, introduction of invasive species, and increasing anthropogenic pressures from pets, noise, and light are just a few examples.

An assessment of the potential for negative impacts associated with the proposed development, and suggestions for the mitigation of these impacts are discussed below. Potential direct impacts to Endangered or Threatened Species and their Habitat, Significant Woodlands and vegetation, and to Significant Wildlife Habitat are discussed at the Site level (Sections 9.1 to 9.4). Additionally, general mitigation measures for the proposed development and site operation are proposed. The potential for the Site alteration activities to have incurred indirect impacts is considered negligible.

The LSRCA has identified several specific impacts that relate to Ontario Regulation 179/06 and the area within their jurisdiction. These impacts include:

- Loss of Wetland within the Significant Woodland;
- Potential impacts related to culvert replacements along Burl's Creek; and
- Potential impacts related to construction of the gravel pad south of the Open Water Ponds.

These potential impacts to LSRCA regulated areas are discussed under a separate cover (WSP, 2015). The discussion includes identification of the potential impacts to the Key Natural Heritage Features found within each of these areas, and the proposed mitigation and compensation to minimize the adverse effect on these features and their ecological functions. Key Natural Heritage Features discussed include Fish Habitat and Key Hydrologic Features, impacts to Significant Woodlands and Vegetation, and impacts to Wetlands.

A review of the LSPP policies relevant to EIS/Natural Heritage Evaluation has been conducted (Appendix F) to ensure conformity to the extent possible. A table listing the relevant policies and the location where those policies are addressed within the EIS and associated Mitigation Plan (WSP, 2015) is presented in tabular form for reference.

9.1 THREATENED OR ENDANGERED SPECIES HABITAT

9.1.1 BUTTERNUT

As the Site contains several identified Butternut trees, there is the potential for impacts to this species from the Site alterations. During construction, a large Butternut was identified among a Fencerow near Line 7, as an entrance to a camping area was planned beside the tree. Once identified, work was halted and topsoil was replaced near the tree. No other work was conducted or is planned near that particular tree. Any future development within fencerows on Site presents the potential to disturb other Butternuts. The development of the laneway in the southeast corner of the Site also had the potential to disturb Butternut within the Significant Woodland (Figure 3). The locations of observed Butternut were towards the woodland interior and at elevated portions of the local topography. Based on this evidence, there is a low potential that clearing of the laneway affected Butternut on the Site.

To mitigate for any potential or future impacts to Butternut, the following mitigation is proposed:

- Prior to any future tree removal on Site, tree identification should be completed by a qualified Butternut Health Assessor (BHA), and a Health Assessment be conducted of any identified Butternut proposed for removal;
- If possible, Butternut should be incorporated as a species in the tree planning program proposed under a separate cover (WSP, 2015).

9.1.2 BARN SWALLOW

Barn Swallows were observed during each of the three breeding bird surveys on May 31, June 11 and June 26, 2015. Most observations were from the centre of the Site and included sightings of birds foraging over open fields. Additionally, four Barn Swallows were encountered flying over open fields south of point count BC02 near the southwest Site corner during the June 26, 2015 survey (Figure 3). Barn Swallow was assigned a breeding code of “Possible” due to the association of individuals in suitable breeding habitat.

Barn Swallows can 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. Existing structures on the Site were surveyed for the presence of Barn Swallow nests. Nests were not identified, and it is likely that the Barn Swallows are using the Site as a foraging ground and breeding somewhere nearby. To mitigate for any potential future impacts, if Barn Swallows are found nesting on structures located on the Site including buildings and culverts, work should be halted within the immediate vicinity of the nest to minimize disturbances. Once found, the project biologist should be contacted to assess and propose a course of action in consultation with the MNRF.

9.1.3 EASTERN MEADOWLARK

A male Eastern Meadowlark was observed singing from west of 8 Line S, east of the racetrack/speedway during the breeding bird survey on June 26, 2015 (Figure 2). It was assigned a breeding code of “Possible” due to the observation of a singing male. The ELC code for the area where the Eastern Meadowlark was identified has been classed as Commercial and Institutional-Light Industry (CVC-2) and provides low quality breeding habitat for Eastern Meadowlark. While development in this area is not currently proposed, there

may be potential for future impacts to Eastern Meadowlark in the area. To mitigate for any potential or future impacts to Eastern Meadowlark, the following measures are proposed:

- Ongoing land uses within the area near the racetrack/speedway should remain compatible with Eastern Meadowlark presence.
- If development is proposed in this area in the future, a survey by a qualified biologist should determine the extent of the suitable habitat for Eastern Meadowlark. If it is demonstrated that Eastern Meadowlark occurs in this area, the conditions of Section 23.6 of Endangered Species Act Regulation 242/08 must be met. This section requires that prior to development that a Notice of Activity be submitted to the Minister of Natural Resources and Forestry. Other requirements in Section 23.6 include the development, approval and implementation of a Habitat Compensation Plan. This plan is to include compensation for any habitat lost. Ongoing monitoring requirements are also listed in Section 23.6. As this area is under 30 ha, an Authorization Permit under the *Endangered Species Act, 2007* is not required if development is proposed in this area, provided that the conditions of Section 23.6 of Endangered Species Act Regulation 242/08 is met.
- As per Section 23.6 of Endangered Species Act Regulation 242/08, development of this area should not occur during the Eastern Meadowlark breeding season, defined as April 1 to July 31 of any year.

With the implementation of the above measures, suitable habitat for Butternut, Barn Swallow and Eastern Meadowlark will be maintained and enhanced on-site, and there will be no adverse effects to this Key Natural Heritage Feature and its associated ecological functions.

9.2 SIGNIFICANT WOODLANDS AND VEGETATION

As discussed in Section 8.6, the wooded area covering the southeastern portion of the Site has been identified on Schedule B of the Township of Oro-Medonte Official Plan (2007) as Significant Woodland (Figure 3). To accommodate the laneway linking the Site to the lands on Line 9, tree removal within the Significant Woodland was required. Approximately 1.3 ha of woodland and 0.5 ha of forested swamp was cleared to create this laneway. Mitigation and compensation for this Significant Woodland is discussed under a separate cover (WSP, 2015).

No further development is planned for this Significant Woodland. It is proposed and supported by the proponent that this Significant Woodland be elevated to an Environmental One designation and reflected on Schedule A of the Township of Oro-Medonte Official Plan (2007) as such. Designation as Environmental One land use would limit permissible activities within the Significant Woodland to Conservation and Passive Recreational uses. Any development required for such activities would be subject to an activity-specific EIS and Management Plan, requiring approval by Oro-Medonte Council and the appropriate agencies, including the LSRCA.

The removal of other trees on the property must be completed in accordance with the local municipal or regional tree protection by-laws, specifically the County of Simcoe Forest Conservation By-law No. 5653 (County of Simcoe, 2015) and should be performed by properly trained and accredited individuals. Exemptions 4 and 5 under Section 6.1 of the By-law allow for "the injuring or destruction of trees imposed after December 31, 2002 as a condition of the approval of a site plan, a plan of sub-division, or a consent under section 41, 51 or 53, respectively, of the Planning Act or as a requirement of a site plan agreement or subdivision agreement entered into under those sections" and the "the injuring or destruction of trees imposed after December 31, 2002 as a condition to a development permit by regulation made under section 70.2 of the Planning Act, or as a requirement of an agreement entered into under the regulation", respectively.

Regular maintenance activities on Site do not generally require a site plan or development permit, and tree clearing would be considered part of general forest management and the County of Simcoe Forest Conservation By-law would apply. To protect trees within the Site from future maintenance and clearing activities, applications and Tree Protection Plans that conform to the County of Simcoe Forest Conservation By-law will be created and implemented.

With the implementation of the above measures and those presented under a separate cover (WSP, 2015), effects to Significant Woodlands on Site will be compensated and mitigated for, and there will be no further adverse effects to this Key Natural Heritage Feature and its associated ecological functions.

9.3 SIGNIFICANT WILDLIFE HABITAT

An assessment of the potential for specialized wildlife habitats on and within 120 m of the Site indicated that candidate amphibian breeding habitat (woodland) is present. The Green Ash Mineral Deciduous Swamp (SWM2-2) wetland near amphibian point count AMPH09 (Figure 3) provided habitat for Spring Peeper. During all three surveys Spring Peepers were identified, and a maximum of approximately 30 were encountered during the amphibian survey on May 11, 2015. In addition, a single Wood Frog was heard during the April 20, 2015 survey and a single Green Frog was vocalizing during the April 20 and May 11, 2015 surveys.

Impacts to amphibian breeding habitat (woodland) generally include direct impact to the defined ELC polygons of the wetland/woodland. To prevent negative impacts to Spring Peepers and other amphibian species, development should not occur within the Green Ash Mineral Deciduous Swamp (SWM2-2) located near the north Site boundary east of 8 Line S (Figure 4).

Additional areas of candidate amphibian breeding habitat (woodland) were not identified on or within 120 m of the Site.

9.3.1 HABITAT FOR SPECIAL CONCERN OR RARE SPECIES

An assessment of the habitat potential for species of conservation concern is provided in Section 8.5.3 of this report. Eastern Wood-Pewees were commonly found throughout the woodlands on and within 120 m of the Site. Wood Thrushes were encountered in woodland north of point count BC06 near the northeast Site corner and near point count BC07. While Snapping Turtle and Milksnake were not encountered during the site investigation, both species are known to occur within the general area and may occur on or within 120 m of the Site. Snapping Turtle may occur in the Open Water Ponds (OAW) near the north Site boundary, or may occasionally travel through the Site, particularly during the turtle nesting season from late May until early July. Habitat for Eastern Milksnake includes woodland edges and riparian zones of Burl's Creek and Allingham Creek.

Eastern Wood-Pewee, Wood Thrush, Snapping Turtle and Milksnake are currently listed as species of Special Concern the SARO List (MNRF, 2015c). As Special Concern species on the SARO List these species do not receive habitat protection under the *Endangered Species Act* (Government of Ontario, 2007), but Eastern Wood-Pewee and Wood Thrush are protected under the federal Migratory Birds Convention Act (Government of Canada, 1994). Vegetation removal poses the greatest risk to these species. Currently, additional development within the woodlands on the Site is not proposed, and impacts to Wood Thrush or Eastern Wood-Pewee habitat is not anticipated. Additionally, the general mitigation measures outlined within Section 9.4 will provide sufficient protection for Eastern Wood-Pewee, Wood Thrush, Snapping Turtle and Milksnake.

9.4 GENERAL MITIGATION MEASURES

In addition to the mitigation measures outlined above, general mitigation measures for future works on the Site should include the following:

- To limit the entry of wildlife into any future construction area, fencing should be secured around the perimeter of the work area and lined with siltation fencing where practical. Wildlife observed during construction activities should be gently removed from the construction area if it can be done safely. Photos for identification should be taken of animals observed onsite, if possible.
- To reduce the potential for negative impacts to breeding birds on the Site including Species at Risk, vegetation removal should be restricted during their most vulnerable period, i.e. the breeding bird season (April 15th to July 31st), unless a survey by a qualified individual, with knowledge of bird biology and habitat, confirms that there are no active nests within the vegetation to be removed. If nests are confirmed then vegetation removal would have to be postponed until the end of the breeding window.
- During Site alteration, the Site should be monitored for Species at Risk as described in this report. If Species at Risk are identified, MNRF and the project biologist should be contacted immediately.

10 CONCLUSIONS AND RECOMMENDATIONS

The improvements made at the Burl's Creek Event Grounds have increased the operational effectiveness of the existing event space, while minimizing disturbance to the extent possible. Recommendations outlined within this report strive to eliminate or minimize the potential for impacts to the natural environment on and within 120 m of the Site; however, where residual impacts remain, recommendations have been made for compensation.

This EIS demonstrates that with the implementation of the proposed mitigations, the development design provides conformity with the policies and requirements of the Provincial Policy Statement (OMAHH, 2014), Lake Simcoe Protection Plan (Ontario, 2009), Township of Oro-Medonte (2007) and County of Simcoe (2015) Official Plans, and requirements of the LSRCA.

Following the background review and site investigations conducted on the Site, the following conclusions and recommendations can be made:

- The Site is located at 180 Line 8 South, Township of Oro-Medonte, Ontario. The primary land use of the Site was event space for special events, and has been expanded and improved to accommodate larger events.
- Site alteration work consisted primarily of improving and expanding laneways and minor grading and sodding at grade throughout the Site. Other work included installation of tile drains in a limited portion of the sod area and improvements to existing structures. No new permanent structures have been constructed and the lands retain a rural agricultural appearance.
- To protect Butternut from future work, tree identification should be completed and a Health Assessment by a qualified Butternut Health Assessor prior to commencing.
- If possible, Butternut should be incorporated as a species in the tree planning program proposed under a separate cover (WSP, 2015).

- If Barn Swallows are observed during future development, work should halt and the project biologist contacted to develop a course of action.
- If future work is planned on Site, the potential to impact Eastern Meadowlark should be assessed and plans implemented to meet Endangered Species Act Regulation 242/08.
- The Significant Woodland in the southeast corner of the Site should be designated as Environmental One lands under the Township of Oro-Medonte Official Plan, and activities limited according to that designation.
- To protect Spring Peeper habitat, the Green Ash Mineral Deciduous Swamp in the northeast corner of the Site should be restricted and no activity should be planned for that area.
- As additional development into the woodlands is not proposed, no additional impacts to Wood Thrush or Eastern Pewee habitat are anticipated.
- All proposals for future Site alterations should also incorporate the recommendations outlined in Section 9.4.
- The mitigations and compensation proposed under a separate cover (WSP, 2015) should be implemented.

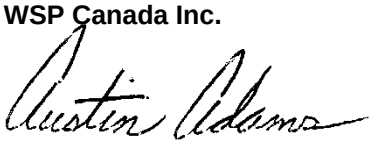
This report is based upon a review of background materials, discussions with appropriate regulating agencies and the client, and site visits to document the biophysical features present on the Site, and is written to outline conditions on the Site during the time of the investigations.

11 CLOSURE

This report has been prepared by WSP Canada Inc. The assessment represents the conditions at the subject property only at the time of the assessment, and is based on the information referenced and contained in the report. The conclusions presented herein respecting current conditions represent the best judgment of the assessors based on current environmental standards. WSP attests that to the best of our knowledge, the information presented in this report is accurate. The use of this report for other projects without written permission of the client and WSP is solely at the user's own risk.

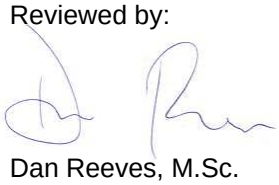
Thank you for the opportunity to complete this report. We trust that this information is satisfactory for your current requirements. Please contact us if we can be of further assistance.

Report prepared by:
WSP Canada Inc.



Austin Adams, B.Sc., EP
Biologist

Reviewed by:



Dan Reeves, M.Sc.
Project Biologist

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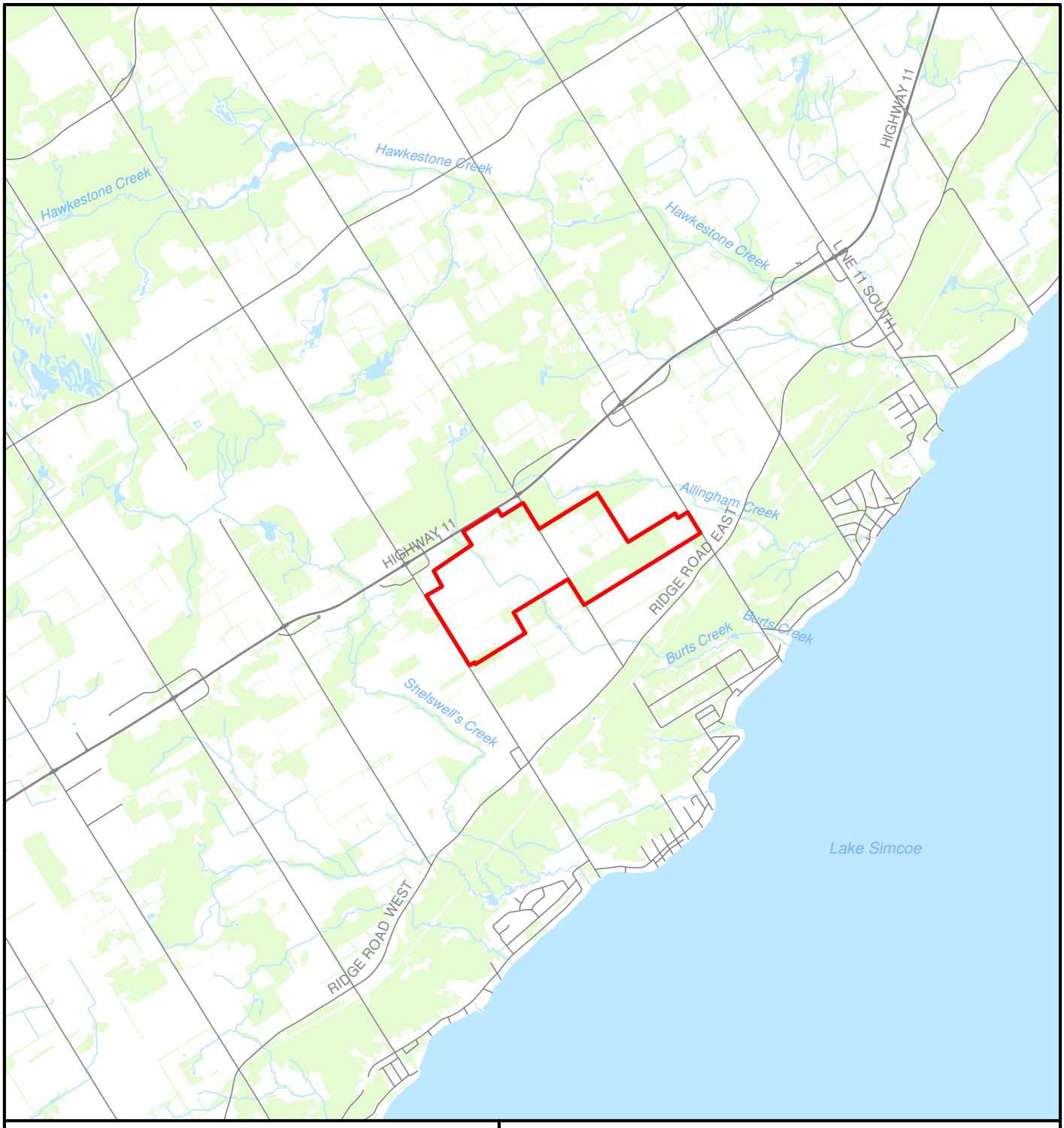
Figures



LEGEND

SITE BOUNDARY

Data Source: Ministry of Natural Resources, Ontario Base Mapping, March 2014.

N
W E
S

600 300 0 600 Metres

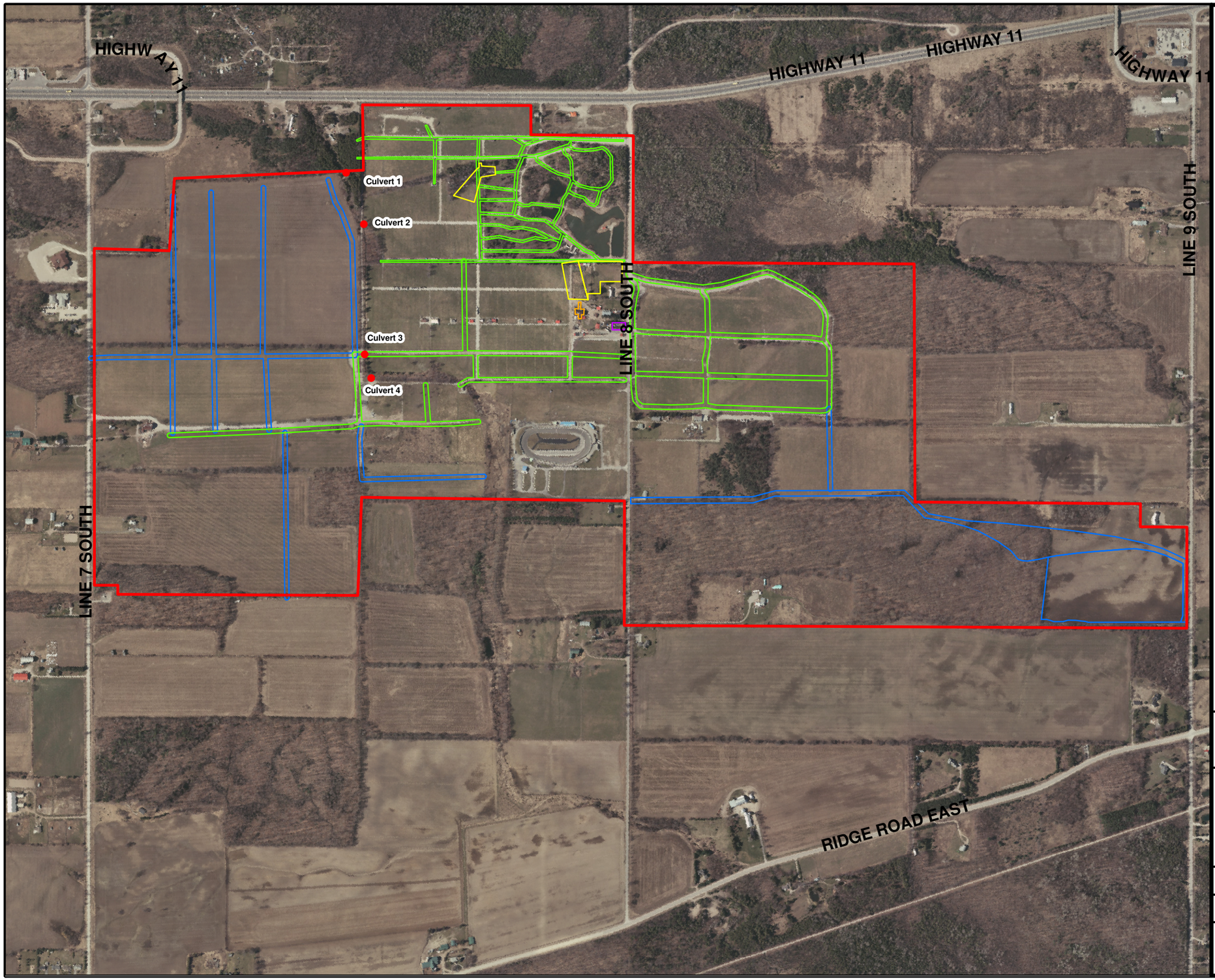
SITE LOCATION

ENVIRONMENTAL IMPACT STUDY
BURL'S CREEK EVENT GROUNDS
Oro-Medonte, Ontario
For Burl's Creek Event Grounds Inc.

DATE: DECEMBER 2015	SCALE: 1:60000
PROJECT: 151-03995-00 123	FILE. NO.:151-03995-00 123 F1

WSP

FIGURE 1



LEGEND

- SITE BOUNDARY
- BARN
- SITE OFFICE
- GRAVEL PADS
- IMPROVED LANEWAYS
- NEW LANEWAYS
- CULVERT LOCATIONS

Data Source: Ministry of Natural Resources, Ontario Base Mapping, March 2014.
Imagery, County of Simcoe, 2011.

0 300 m

N

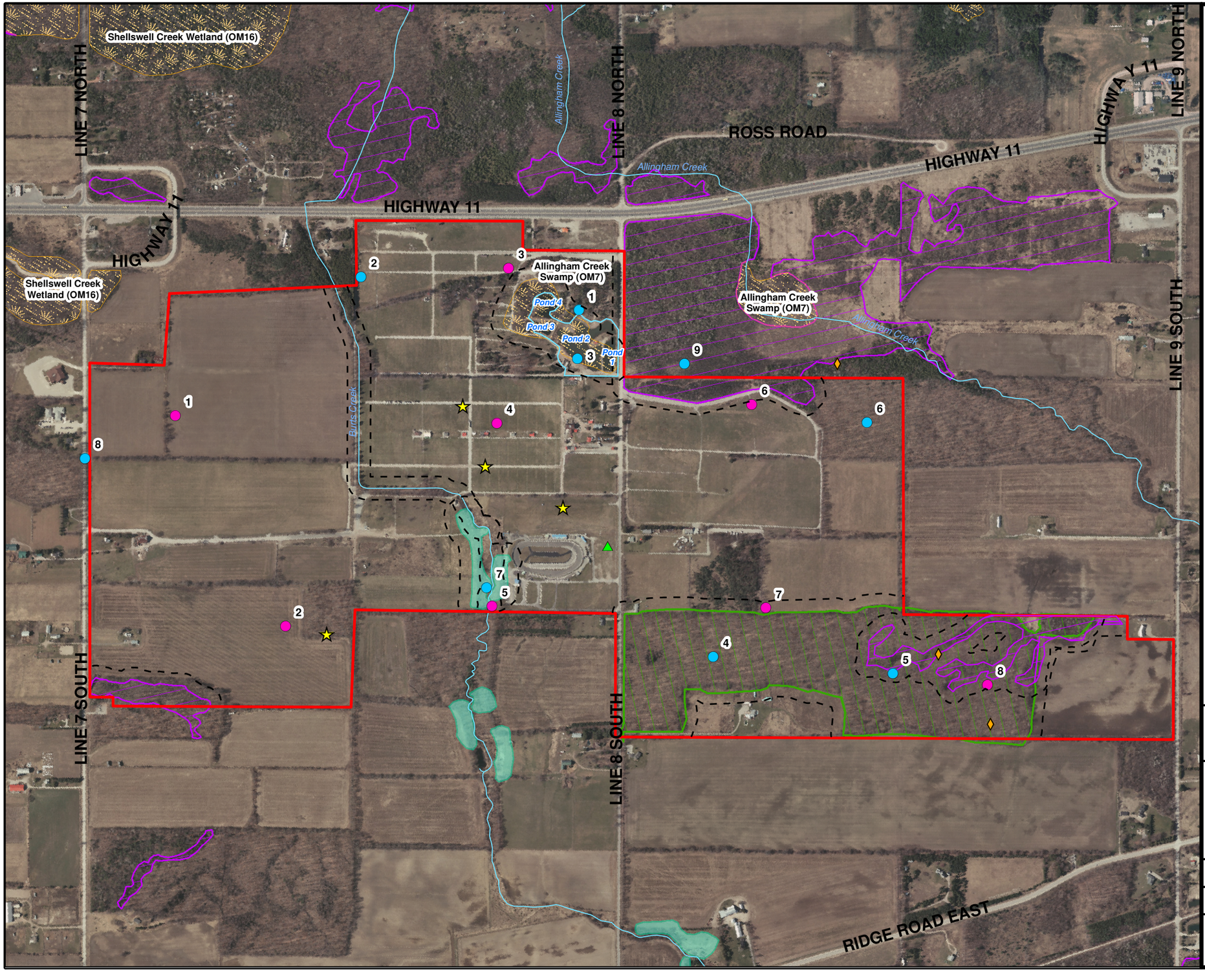
DEVELOPMENT PLAN

ENVIRONMENTAL IMPACT STUDY
BURL'S CREEK EVENT GROUNDS
Oro-Medonte, Ontario
For Burl's Creek Event Grounds Inc.

DATE: DECEMBER 2015	SCALE: 1:10000
PROJECT: 151-03995-00 123	FILE. NO.:151-03995-00 123 F2

WSP

FIGURE 2



LEGEND

- SITE BOUNDARY
- WATERCOURSE
- APPARENT VALLEYLANDS WITH
- SIGNIFICANT WOODLAND
- UNEVALUATED WETLAND
- EVALUATED WETLAND - LOCALLY
- OPEN WATER POND SYSTEM
- LSRCA MINIMUM VEGETATION PROTECTION ZONE (30 m)
- AMPHIBIAN POINT COUNT
- BREEDING BIRD POINT COUNT LOCATIONS

SPECIES AT RISK

- BARN SWALLOW
- EASTERN MEADOWLARK
- WOOD THRUSH

Data Source: Ministry of Natural Resources, Ontario Base Mapping, March 2014. Imagery, County of Simcoe, 2011.

0 300 m

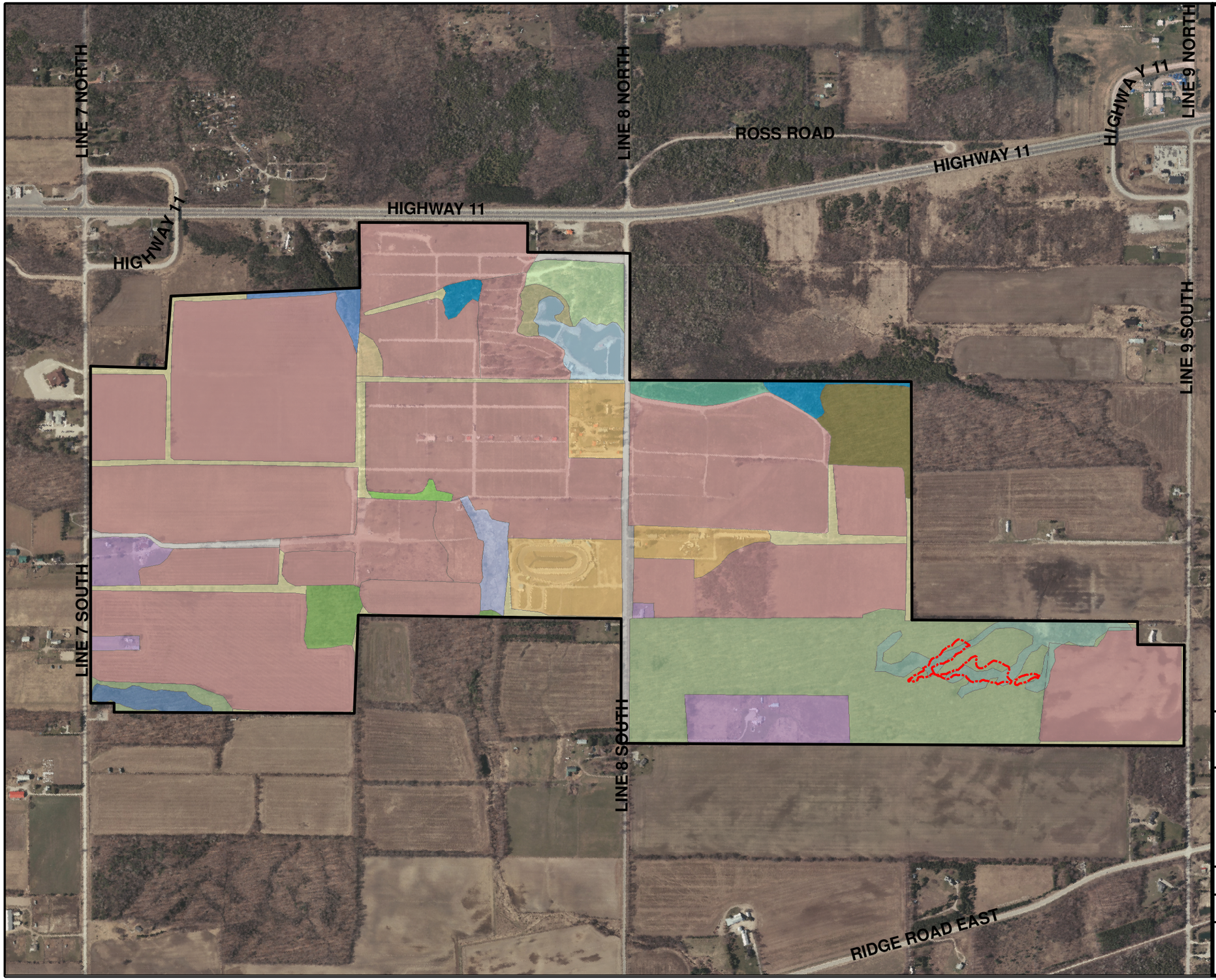
NATURAL HERITAGE FEATURES

ENVIRONMENTAL IMPACT STUDY
BURL'S CREEK EVENT GROUNDS
Oro-Medonte, Ontario
For Burl's Creek Event Grounds Inc.

DATE: DECEMBER 2015	SCALE: 1:10000
PROJECT: 151-03995-00 123	FILE. NO.:151-03995-00 123 F3

WSP

FIGURE 3



LEGEND

- SITE BOUNDARY
- WETLANDS CAPTURED BY GPS

ANTHROPOGENIC FEATURES

- GREENLANDS-RECREATION (CGL-4)
- SUGAR MAPLE DECIDUOUS PLANTATION (CUP1-1)
- COMMERCIAL & INSTITUTIONAL-LIGHT INDUSTRY (CVC-2)
- TRANSPORTATION-ROADS (CVI-1)
- RESIDENTIAL RURAL PROPERTY (CVR-4)
- FENCEROWS (TAGM5)

UPLANDS

- DRY-FRESH SUGAR MAPLE DECIDIUOUS FOREST (FOD5-1)
- DRY-FRESH SUGAR MAPLE DECIDIUOUS FOREST (WITH RIPARIAN INCLUSION) (FOD5-1 W/I)
- DRY-FRESH SUGAR MAPLE-BEECH DECIDIUOUS FOREST(FOD5-2)
- DRY-FRESH SUGAR MAPLE-IRONWOOD DECIDIUOUS FOREST (FOD5-4)
- FRESH-MOIST WHITE ELM LOWLAND DECIDUOUS FOREST (FOD7-1)
- FRESH-MOIST WHITE CEDAR-HARDWOOD MIXED FOREST (FOM7-2)

WETLANDS

- REED-CANARY GRASS MINERAL MEADOW MARSH (MAM2-2)
- BLACK ASH MINERAL DECIDUOUS SWAMP (SWD2-1)
- GREEN ASH MINERAL DECIDUOUS SWAMP (SWD2-2)
- RED MAPLE MINERAL DECIDUOUS SWAMP (SWD3-1)
- WHITE CEDAR-HARDWOOD MINERAL MIXED SWAMP (SWM1-1)
- POPLAR-CONIFER MINERAL MIXED SWAMP (SWM3-2)
- OPEN WATER PONDS (OAW)

Data Source: Ministry of Natural Resources, Ontario Base Mapping, March 2014.
Imagery, County of Simcoe, 2011.

0 300 m

N

ECOLOGICAL LAND CLASSIFICATION

ENVIRONMENTAL IMPACT STUDY
BURL'S CREEK EVENT GROUNDS
Oro-Medonte, Ontario
For Burl's Creek Event Grounds Inc.

DATE: DECEMBER 2015	SCALE: 1:10000
PROJECT: 151-03995-00 123	FILE. NO.:151-03995-00 123 F4
WSP	FIGURE 4

Appendices

Appendix A

AGENCY CORRESPONDENCE

From: Lisa-Beth Bulford [mailto:L.Bulford@lsrca.on.ca]
Sent: Wednesday, March 4, 2015 12:30 PM
To: Leigh, Andria
Cc: Beverley Booth; Charles Burgess; Taylor Stevenson; Shauna Fernandes
Subject: Burls Creek - EIS TOR

Andria,

As discussed, this is the scope of work that our Ecologist has put together to guide the completion of the Environmental Impact Study for the Burls Creek Development proposal:

The Natural Heritage information can be contained within one report that includes the mitigation and compensation plan, however the details should be provided in the report.

We have prepared a proposed Terms of Reference for the Environmental Impact Study (EIS) required to assess the features on-site, the appropriateness of the development and the potential impacts to these features. Through a background review of the study area, there are several Key Natural Heritage Features present including significant woodlands, unevaluated wetlands, evaluated non-PSW wetlands, 2 watercourses, potential Significant Valleylands and potential habitat for Endangered and Threatened Species.

On this basis, the following is suggested:

Background Information

- *Collect and assess applicable background information and environmental mapping for the Natural Heritage System in which the property is located.*

Data Collection, Inventories and Analysis for Entire Property

- *Evaluate existing vegetation communities; complete using Ecological Land Classification for Southern Ontario (Lee et al. 1998. Ecological land classification for Southern Ontario: first approximation and its applications. SCSS Field Guide FG-02) to Vegetation Type.*

- *Conduct amphibian surveys; three evening surveys (as per the Marsh Monitoring Protocol).*

- *Undertake a Species at Risk screening and inventory under the Endangered Species Act, 2007 and assess for potential habitat (contact local Ontario Ministry of Natural Resources (MNR) District office)*

- *Conduct an inventory of vascular plants during the early summer to provide a single season plant survey.*

- *Conduct three breeding bird surveys in the during the appropriate window.*

- *Identify watercourses on the property and complete aquatic habitat assessments.*

- *Record observations of wildlife occurrences and assess wildlife habitat function including significant wildlife habitat. Where applicable, complete the appropriate Significant Wildlife Habitat surveys.*

Impact Assessment and Natural Heritage Features and System Evaluation

- *Identify, assess and include detailed descriptions of the natural heritage features and functions on the property and the broader natural heritage system that it is within.*

- *Map natural heritage features (KNHFs and KHFs), vegetation communities, other environmental features (e.g. wildlife habitat, top of bank) and proposed development on current high quality ortho-air photos.*

- *Provide an assessment of the potential impacts of the proposed development on the natural heritage system and its features along with their related ecological and hydrologic functions (feature water balances will be required).*

- *Demonstrate conformity with the applicable policies of Provincial Policy Statement, Lake Simcoe Protection Plan, Simcoe County Official Plan, Town of Oro-Medonte Official Plan and the Conservation Authorities Act.*

- *Develop and provide an appropriate avoidance, mitigation, restoration and enhancement strategy to address the potential impacts.*

- *Provide five (5) hard copies and one (1) electronic copy of the final report for review which includes a CV of all qualified practionners.*

Please let me know if any further clarification is required.

Sincerely,

Lisa

Lisa-Beth Bulford M.Sc.
Development Planner
LSRCA 120 Bayview Parkway, Box 282, Newmarket, Ontario L3Y 4X1
905.895.1281 x 239 | 1.800.465.0437
l.bulford@LSRCA.on.ca | www.LSRCA.on.ca

Sent Via E-mail: gbarker@ipsconsultinginc.com

June 24, 2015

IMS File Nos.: RPCLF 100003; RPMAR100095 and RPCOMR10010

Innovative Planning Solutions
150 Dunlop Street, Suite 201
Barrie, Ontario.
L4M 1B1
Attention: Mr. Greg Barker, Senior Planner

Dear Mr. Barker:

Re: Ontario Regulation 179/06
Burls Creek Events Ground Inc.
Part of Lots 22 & 23, Concession 9; and Part of Lots 21 & 22, Concession 8
Township of Oro-Medonte, County of Simcoe

This letter is in regard to the three (3) applications submitted to the Lake Simcoe Region Conservation Authority (LSRCA) for permission under Ontario Regulation 179/06 to undertake a variety of development activities on various portions of the property as outlined below. The areas correspond to a drawing prepared by your firm illustrating the land parcels which comprise Burls Creek Events ground Inc.

- Area 1 – 329 Line 8 South – Lot 23, Con 9 – woodland clearing for fill placement for a laneway;
- Area 3 – 180 Line 8 South – Lot 22, Con 8 – fill placement, concrete pad, replace 2 culverts;
- Area 6 – 241 Line 7 South/240 Line 8 South, Lot 22, Concession 8 – bridge crossing.

It should be noted that the applications in areas 1 and 3 are retroactive applications, as the work has commenced without a permit in contravention of Ontario Regulation 179/06. The applications submitted by Burl's Creek Events Ground Inc. were received prior to June 1, 2015. For this reason, they will be subject to the Authority's Watershed Development Policies. A copy of this document is attached for your reference.

The LSRCA has reviewed each of the applications submitted and we provide the following general comments for your consideration. Each of the applications noted above has been deemed incomplete by the LSRCA, as they have not been accompanied by the necessary drawings, reports/studies and background information. The drawings that have been submitted with these applications do not provide all of the necessary detail. In general, drawings are needed for each

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of the applications which provide the location and dimensions of all work proposed, setback distances to watercourses/wetlands, cross-sectional drawings showing the difference between original grades and proposed grades. When culverts are being replaced, the diameter and length of the proposed culvert as well as the diameter and length of the new culvert are required. The applicant must also demonstrate that the proposed culverts have been appropriately sized to convey flood flows. Further these drawings need to be prepared by a qualified professional engineer. These general requirements apply to all applications.

In addition to the general comments noted above the following specific comments apply to the individual applications as follows:

Area 1 – 329 Line 8 South – Lot 23, Con 9 Township of Oro-Medonte

This parcel is partially regulated by LSRCA for a watercourse that traverses the north east part of the property and its associated meanderbelt (erosion hazard) as well as an unevaluated wetland.

All development which has taken place on this parcel has taken place without the necessary approvals from the LSRCA under Ontario Regulation 179/06.

The drawings submitted with the application do not appear to match the work that was observed at this location on May 5, 2015. The original site contained an unevaluated wetland and a watercourse. The watercourse and wetland features have been destroyed at this location.

Please note that the Lake Simcoe Protection Plan (LSPP) Policy 6.23-DP specifies that development and site alteration is not permitted within a key natural heritage feature, a key hydrologic feature and within a related vegetation protection zone. Permits issued by the LSRCA under Ontario Regulation 179/06 are prescribed instruments under the LSPP. This information was previously communicated in a letter from the LSRCA to the Township of Oro-Medonte regarding a zoning by-law amendment (2014-ZBA-02) dated May 8, 2015.

As the development undertaken at this portion of the property is contrary to the LSRCA's Watershed Development Policies and the LSPP, the LSRCA requires the removal of all fill placed

within the wetland and watercourse and the restoration of these features to their original condition.

As an option, the LSRCA may consider a compensation strategy for the features that have been damaged and destroyed. The LSRCA would require the preparation of a natural heritage evaluation in accordance with the guidelines outlined in Policy 6.26 – DP of the LSPP and the preparation of a compensation strategy prepared to the satisfaction of the LSRCA. In accordance with the LSRCA's Watershed Development Policies (Policy 11.4.3) – the LSRCA may require that an area of wetland be created at a 3:1 ratio (wetland area created : wetland area lost).

The LSRCA will also require the following:

- Submission of an Environmental Impact Study (EIS) in order to assess the roads potential impact on the wetland feature. This study is also to include a hydrologic study to demonstrate that the hydrological function of adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the wetland as a result of the fill placement.
- Detailed grading/drainage plan prepared by an Ontario Land Surveyor or Registered Professional Engineer.
- Detailed drawings for the culvert installation prepared by a qualified professional consultant.
- A planting plan consisting of native, non-invasive vegetation for the areas immediately adjacent to the wetland and watercourses. The planting buffers are to be a minimum of 15 metres in width.
- Certification that all fill brought into the property is clean fill and meets MOEE Table 1 requirements.

Area 3 – 180 Line 8 South – Lot 22, Con 8, Township of Oro-Medonte

This parcel is partly regulated by LSRCA for a watercourse that traverses down the western property line and its associated floodplain and meanderbelt (erosion hazard). There is also a Ministry of Natural Resources and Forestry (MNRF) locally significant wetland at the north east corner of the property.

The LSRCA requires the submission of the following information:

- an Environmental Impact Study (EIS) to demonstrate that the hydrological function of adjacent lands has been evaluated and it has been demonstrated through the submission of a hydrologic study that there will be no negative impacts on the wetland as a result of the fill placement;
- a detailed grading/drainage plan prepared by an Ontario Land Surveyor or Registered Professional Engineer for the fill placement/site grading within the regulated area;
- A planting plan consisting of native, non-invasive vegetation for the areas immediately adjacent to the wetland.

Based on a site meeting of January 8, 2015, the LSRCA understands that you also intend to install a replacement culvert at the south west corner of the property. This area is regulated by LSRCA for floodplain and meanderbelt, which are both natural hazards associated with Burl's Creek. The following additional information is required for this application:

- Detailed drawings prepared by a qualified professional consultant (e.g. professional engineer, engineering technologist). The culvert is to be designed so that it is sized appropriately to convey flows;
- The installation of open bottom culverts is preferred;
- Demonstrate that will be no impact or increases to upstream flooding as a result of the culvert replacement;
- A planting plan consisting of native, non-invasive vegetation for the areas immediately adjacent to the watercourse (Burl's Creek).

Area 6 – 241 Line 7 South/240 Line 8 South, Lot 22, Concession 8, Township of Oro-Medonte

It is my understanding from a discussion with Mr. Ryan Howes, (Vice President, Venue Operations & Business Development – Burl's Creek Event Grounds) that the proposal to construct a bridge over Burls Creek in area 6 has been abandoned.

This property is partly regulated by LSRCA for a watercourse and its associated floodplain, meanderbelt, and apparent valleyland/steep slopes.

Should you decide to pursue this application, the LSRCA will require the following:

- Detailed drawings prepared by a professional engineer. The bridge is to span the floodplain and valley system associated with Burl's Creek.
- Geotechnical Investigation identifying stable top of bank and appropriate construction practices so that the location of the bridge and associated footings will not aggravate slope stability or erosion.

If you have any questions, please do not hesitate to contact the undersigned.

Regards,

Beverley G. Booth
Manager, Planning, Regulations & Enforcement

cc. Andria Leigh, Director, Development Services, Township of Oro-Medonte E-mail aleigh@oro-medonte.ca
Tammi Taylor, Venue Operations & Community Relations, Burl's Creek E-mail tammi@burlscreek.com
Lisa-Beth Bulford, Development Planner, LSRCA E-mail l.bulford@lsrca.on.ca
Evan MacDonald, Environmental Compliance Officer, LSRCA E-mail e.macdonald@lsrca.on.ca
Taylor Stevenson, Environmental Analyst, LSRCA E-mail t.stevenson@lsrca.on.ca

H:\BeverleyB\Correspondence\Burls Creek June 2015docx

Lake Simcoe Region
conservation authority

A Watershed for Life

August 5, 2015

IMS No.: ADSA127

WSP Canada Inc.
160 Don Hillock Drive, Unit 2
Aurora, Ontario
L4G 0G9

Attention: Joshua Vandermeulen

Dear Mr. Vandermeulen:

Re: Information Request: Burl's Creek, Oro-Medonte

Please find enclosed the following information on the DVD:

- Fisheries Data along with Location Map
- Natural Heritage Feature Data PDF's: ELC, Floodplain, Wetland, Natural Heritage Policy Levels, Aquatic Stewardship Opportunities, Significant Wildlife Habitat, and Apparent Valleyland.

Please also see attached the Data License Agreement and the Invoice.

Should you have any specific questions, please contact the undersigned.

Thanking you,

Frank Pinto
Infrastructure Regulations Analyst

Adams, Austin

From: Robinson, Suzanne (MNRF) <suzanne.robinson@ontario.ca>
Sent: Thursday, July 02, 2015 12:41 PM
To: Adams, Austin
Subject: FW: Request for Information - Burl's Creek Campground, Oro-Medonte
Attachments: NHA Map_zoomed in.pdf; Site Map.pdf; LSRCA TOR for EIS.docx; NHIC Search Area.pdf; Licence to Collect fish (June 30, 2015).pdf

Follow Up Flag: Follow up
Flag Status: Completed

Categories: Red Category

From: Robinson, Suzanne (MNRF)
Sent: July-02-15 12:38 PM
To: 'austin.adams@wspgroup.cpm'
Cc: 'Jaclyn.Rodo@wspgroup.com'; Snelleman, Anne (MNRF); Benvenuti, Jodi (MNRF); 'l.bulford@LSRCA.on.ca'
Subject: FW: Request for Information - Burl's Creek Campground, Oro-Medonte

Good afternoon Austin

Further to your email below, we have reviewed the natural heritage information available at this time for the above-noted property and provide the following:

Species at Risk

MNRF was notified of the presence of Butternut on the subject lands on June 23, 2015.

In addition to the species you listed in your email below, we would also suggest the following species be considered as they are known in the general area:

American Ginseng (END)*
Northern Long-eared Bat (END)
Little Brown Bat (END)
Eastern Small-footed Bat (END)
Whippoorwill (THR)
Barn Swallow (THR)
Snapping Turtle (SC)
Milksnake (SC)
Wood Thrush (SC)
Red-headed Woodpecker (SC)
Eastern Wood –Pewee (SC)
Common Nighthawk (SC)

*This is a sensitive species and if located should not be reported in any publically available documents.

For future information requests, this district also requires that proponents and consultants include a habitat-based assessment of the species that have the potential to be in the area above and beyond the known records from the

NHIC. We recommend that other references, such as the Breeding Bird Atlas, Ontario Herp Atlas, local species lists, local knowledge and species distribution be reviewed above and beyond the NHIC data, as the NHIC information is limited to observations that have been reported and are not an exhaustive list of the species likely to be found in the area.

For a complete list of species at risk in Ontario please review the information at the following link:
http://www.mnr.gov.on.ca/en/Business/Species/2ColumnSubPage/276722.htm

Should an observation of a species at risk or rare species occur, please report the information to the Natural Heritage Information Centre (NHIC) http://nhic.mnr.gov.on.ca/nhic_.cfm and to the Midhurst District MNR office. Endangered and threatened species and their habitat are protected under the Endangered Species Act. It is the proponent's responsibility to ensure that these species and their habitat will not be killed, harmed or harassed, damaged or destroyed as a result of the proposed activities. If you have questions regarding the protection of these species, please do not hesitate to contact our office. In addition, species at risk may also be afforded protection under other provincial policies, such as the Provincial Policy Statement under the Planning Act, or other provincial plans.

Natural Heritage Features

No additional information available at this time.

Fisheries

Burl's Creek (Thermal Regime : cool)

Site: 479
Date: June 24th, 2004
Fish Species: Brook Trout, White Sucker, Johnny Darter, Fathead Minnow, River Chub, Longnose Dace, Blacknose Dace, Northern Redbelly Dace, Mottled Sculpin, Common Shiner, Bluntnose Minnow

---

Site: 480
Date: June 24th, 2004
Fish Species: Longnose Dace, Fathead Minnow, Northern Redbelly Dace, Blacknose Dace, Brook Stickleback, Creek Chub

---

Site: 481
Date: June 24th, 2004
Fish Species: Bluntnose Minnow, Brook Stickleback, Northern Redbelly Dace

Site: 482
Date: June 24th, 2004
Fish Species: Creek Chub, Northern Redbelly Dace, Central Mudminnow, Brook Stickleback

Allingham Creek (Thermal Regime: Cold)

Fish Species	Collected	Source	External Reference
S- Brook Trout	1996	Anecdotal	(CF, 1996)
B- White Sucker	1996	Anecdotal	(CF, 1996)
B- Rainbow Smelt	1996	Anecdotal	(CF, 1996)

Please do not hesitate to contact us if you have any additional questions

Regards,

Suzanne Robinson
Management Biologist
Midhurst District

From: Rodo, Jaclyn [mailto:Jaclyn.Rodo@wspgroup.com]
Sent: June-30-15 8:41 AM
To: Snelleman, Anne (MNRF)
Cc: Findlay, Graham (MNRF); Benvenuti, Jodi (MNRF); Adams, Austin
Subject: FW: Request for Information - Burl's Creek Campground, Oro-Medonte

Hi Anne,

We are currently in the process of completing an EIS to establish existing conditions associated with Burl's Creek Event Grounds. We submitted an information request earlier this month (see below).

I have attached an application for a Licence to Collect Fish, which we will only use to sample where background information is lacking.

If you have any questions, do not hesitate to contact me.

Thank you,

Jaclyn Rodo, B.Sc., EPt.
Biologist

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From: Adams, Austin
Sent: Monday, June 29, 2015 4:11 PM
To: Rodo, Jaclyn
Subject: FW: Request for Information - Burl's Creek Campground, Oro-Medonte

Cheers,
Austin

WSP Canada Inc.
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C +1 289-221-8999

From: Adams, Austin
Sent: Monday, June 08, 2015 11:42 AM
To: Jodi Benvenuti (jodi.benvenuti@ontario.ca)
Cc: Vandermeulen, Joshua
Subject: Request for Information - Burl's Creek Campground, Oro-Medonte

Hello Jodi,

WSP has been retained to complete an Environmental Impact Statement for the upgrading development of the Burl's Creek Campground and Festival venue in Oro-Medonte, east of Barrie. We are seeking any additional MNRF data on the Site that you may be able to provide, beyond what is available online. We are requesting information from the MNRF regarding any specific concerns with respect to this property, including records of Species at Risk, fish community records, wildlife records, or any general information that would be relevant to the Project. Note that we have a working Terms of Reference (ToR) with the LSRCA, who have already been contacted for data as well.

The property is located at 180 8th Line South, Oro-Medonte. The legal address includes Lot 21 and 22, Concession 8, and Parts of Lots 22 and 23, Concession 9, Township of Oro-Medonte, starting south from Highway 11. There is a MNRF map of the general area attached to this email (NHA_Map_zoomed in.pdf) and a rough sketch of the area (please do not include "Area 6" in your consideration – it was dropped from the Project).

The campground owns the land and is seeking rezoning for a number of the parcels, and therefore an EIS is required. The purpose is to accommodate more camping and parking opportunities for large summer festivals. The majority of the Site is already dedicated to that purpose, and actively managed agricultural lands. There are also several Woodlands on the property, and a large unevaluated wetland including a central provincially non-significant portion (the Allingham Swamp [OM7]?), borders the northeast of the Property. The larger woodlands also contain portions of forested swamps.

A preliminary search of NHIC data in the MNRF Natural Heritage Areas online mapping function turned up the following (6 km grids, attached):

- Green-Striped Darner (S3) pre-1941; (1 EO for all 6 grids)
- Jefferson X Blue-spotted Salamander (S2) 1989; (1 EO for all 6 grids)
- Henslow's Sparrow (SHB) 1949; (1 EO for all 6 grids)
- Bobolink (S4B) Henslow's Sparrow (SHB) 1997-2009; (21 EOs in the 2 easternmost grids)
- Eastern Meadowlark (S4B) 1997-2009; (11 EOs in the 2 easternmost grids)
- Allingham Swamp Natural Area (OM7); (2 NW grids)
- Shellswell Creek Wetland Natural Area (OM16); SW Grid – west of Site

I have been on site (vegetation surveys), and will be returning in the summer; our team is also surveying for amphibians, breeding birds and wildlife as per the attached ToR. Our wildlife biologist has not yet observed any of the above species. I am surveying trees as part of the terrestrial work; no Butternut trees or other rare species have been observed on the property.

Thank you in advance for your assistance in this matter. If you have any questions regarding the information requested or the project area please feel free to contact me.

Cheers,
Austin Adams

Austin Adams, B.Sc., EP
Biologist

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www.wspgroup.com

Adams, Austin

From: Leigh, Andria <aleigh@oro-medonte.ca>
Sent: Tuesday, June 30, 2015 8:44 AM
To: Adams, Austin
Cc: Lisa-Beth Bulford (l.bulford@lsrca.on.ca)
Subject: RE: Burl's Creek Campground Project
Attachments: PDF-2015-06-30-0841.pdf

Good Morning Austin,

In addition to the LSRCA requirements, please find attached the requirements contained in the Township's Official Plan for completion of the EIS.

Thanks,

Andria Leigh, MCIP, RPP
Director, Development Services
Township of Oro-Medonte

Township of Oro-Medonte
Proud Heritage, Exciting Future

P: (705) 487-2171
F: (705) 487-0133

148 Line 7 South
Oro-Medonte, ON L0L2E0
www.oro-medonte.ca

From: Adams, Austin [mailto:Austin.Adams@wspgroup.com]
Sent: Monday, June 8, 2015 10:19 AM
To: Leigh, Andria
Subject: Burl's Creek Campground Project

Good Morning Andria,

It is my understanding that Lisa-Beth Bulford (LSRCA) has forwarded this Terms of Reference to you (March 4th) for the Burl's Creek Campground upgrades project. I'm reaching out to you to ask if you have any comments on the ToR, and ask if they are acceptable to you as well. Please let me know if you need any more information about the project or the required EIS.

Additionally, any unique data you may have for the area would be appreciated. Note that we are already using data gleaned through our own research and field work, and data from the LSRCA and MNRF.

Cheers,
Austin Adams

Austin Adams, B.Sc., EP
Biologist

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Please consider the environment before printing...

Appendix B

SPECIES LISTS

Appendix B - Species Lists

Table 1: Bird Observations

Scientific Name	Common Name	GRank[1]	SRank[1]	COSEWIC[2]	SARO[3]	Breeding[4]
Actitis macularius	Spotted Sandpiper	G5	S5	-	-	POSS
Agelaius phoeniceus	Red-winged Blackbird	G5	S4	-	-	PROB
Anas platyrhynchos	Mallard	G5	S5	-	-	POSS
Bombycilla cedrorum	Cedar Waxwing	G5	S5B	-	-	POSS
Branta canadensis	Canada Goose	G5	S5	-	-	POSS
Carduelis tristis	American Goldfinch	G5	S5B	-	-	PROB
Cathartes aura	Turkey Vulture	G5	S5B	-	-	NONE
Catharus fuscescens	Veery	G5	S5B	-	-	PROB
Charadrius vociferus	Killdeer	G5	S5B, S5N	-	-	CONF
Colaptes auratus	Northern Flicker	G5	S4B	-	-	POSS
Contopus virens	Eastern Wood-Pewee	G5	S4B	SC	SC	PROB
Corvus brachyrhynchos	American Crow	G5	S5B	-	-	POSS
Corvus corax	Common Raven	G5	S5	-	-	CONF
Cyanocitta cristata	Blue Jay	G5	S5	-	-	POSS
Dumetella carolinensis	Gray Catbird	G5	S4B	-	-	PROB
Geothlypis trichas	Common Yellowthroat	G5	S5B	-	-	PROB
Hirundo rustica	Barn Swallow	G5	S4B	THR	THR	POSS
Hylocichla mustelina	Wood Thrush	G5	S4B	THR	SC	PROB
Icterus galbula	Baltimore Oriole	G5	S4B	-	-	POSS
Larus argentatus	Herring Gull	G5	S5B, S5N	-	-	NONE
Larus delawarensis	Ring-billed Gull	G5	S5B, S4N	-	-	NONE
Megaceryle alcyon	Belted Kingfisher	G5	S4B	-	-	POSS
Melospiza georgiana	Swamp Sparrow	G5	S5B	-	-	PROB
Melospiza melodia	Song Sparrow	G5	S5B	-	-	PROB
Molothrus ater	Brown-headed Cowbird	G5	S4B	-	-	POSS
Myiarchus crinitus	Great Crested Flycatcher	G5	S4B	-	-	PROB
Parkesia noveboracensis	Northern Waterthrush	G5	S5B	-	-	PROB
Passerculus sandwichensis	Savannah Sparrow	G5	S4B	-	-	CONF
Passerina cyanea	Indigo Bunting	G5	S4B	-	-	POSS
Petrochelidon pyrrhonota	Cliff Swallow	G5	S4B	-	-	POSS
Pheucticus ludovicianus	Rose-breasted Grosbeak	G5	S4B	-	-	PROB
Picoides villosus	Hairy Woodpecker	G5	S5	-	-	POSS
Poecile atricapillus	Black-capped Chickadee	G5	S5	-	-	CONF
Pooecetes gramineus	Vesper Sparrow	G5	S4B	-	-	PROB
Quiscalus quiscula	Common Grackle	G5	S5B	-	-	POSS
Sayornis phoebe	Eastern Phoebe	G5	S5B	-	-	PROB
Seiurus aurocapilla	Ovenbird	G5	S4B	-	-	PROB
Setophaga petechia	Yellow Warbler	G5	S5B	-	-	PROB
Setophaga ruticilla	American Redstart	G5	S5B	-	-	PROB
Sitta carolinensis	White-breasted Nuthatch	G5	S5	-	-	PROB
Sphyrapicus varius	Yellow-bellied Sapsucker	G5	S5B	-	-	POSS
Spizella passerina	Chipping Sparrow	G5	S5B	-	-	CONF
Sturnella magna	Eastern Meadowlark	G5	S4B	THR	THR	POSS
Sturnus vulgaris	European Starling	G5	SNA	-	-	CONF
Toxostoma rufum	Brown Thrasher	G5	S4B	-	-	POSS
Troglodytes aedon	House Wren	G5	S5B	-	-	PROB
Turdus migratorius	American Robin	G5	S5B	-	-	PROB
Tyrannus tyrannus	Eastern Kingbird	G5	S4B	-	-	PROB
Vireo gilvus	Warbling Vireo	G5	S5B	-	-	PROB
Vireo olivaceus	Red-eyed Vireo	G5	S5B	-	-	PROB
Zenaida macroura	Mourning Dove	G5	S5	-	-	POSS

[1] Nature Conservancy conservation concern rankings (NHIC, 2010): G - Global Level, S - Sub-national Rank (Ontario), B - Breeding, N – Non-breeding, 1 - Critically Imperiled, 2 - Imperiled, 3 - Vulnerable, 4 - Apparently Secure, 5 - Secure.

Protection status: [2]COSEWIC - Committee on the Status of Endangered Wildlife in Canada; [3]SARO - Species at Risk in Ontario; END – Endangered, THR – Threatened, SC – Special concern, "-" – Not listed. [4]Ontario Breeding Bird Atlas breeding evidence (Bird Studies Canada, 2006): CONF – Confirmed, PROB – Probable, POSS - Possible

Table 2: Incidental Wildlife Observations

Family	Scientific Name	Common Name	GRank[1]	SRank[1]	COSEWIC[2]	SARO[3]
Mammals						
Sciuridae	*Marmota monax*	Woodchuck	S5	S5	-	-
Sciuridae	*Tamias striatus*	Eastern Chipmunk	G5	S5	-	-
Sciuridae	*Tamiasciurus hudsonicus*	Red Squirrel	G5	S5	-	-
Amphibians						
Hylidae	*Hyla versicolor*	Gray Treefrog	G5	S5	-	-
Ranidae	*Lithobates clamitans*	Green Frog	G5	S5	-	-
Ranidae	*Lithobates sylvaticus*	Wood Frog	G5	S5	-	-
Ranidae	*Lithobates pipiens*	Northern Leopard Frog	G5	S5	-	-
Reptiles						
Emydidae	*Chrysemys picta*	Painted Turtle	G5	S5	-	-

[1] Nature Conservancy conservation concern rankings (NHIC, 2010): G - Global Level, S - Sub-national Rank (Ontario), B - Breeding, N – Non-breeding, 1 - Critically Imperiled, 2 - Imperiled, 3 - Vulnerable, 4 - Apparently Secure, 5 - Secure.
Protection status: [2]COSEWIC - Committee on the Status of Endangered Wildlife in Canada; [3]SARO - Species at Risk in Ontario; END – Endangered, THR – Threatened, SC – Special concern, "-" – Not listed.

Table 3: Plant Observations

Family	Scientific Name	Common Name	CC[1]	CW[2]	GRank[3]	SRank[3]
Pinaceae	*Abies balsamea*	Balsam Fir	5	-3	S5	G5
Aceraceae	*Acer platanoides*	Norway Maple	0	5	SE5	G?
Aceraceae	*Acer rubrum*	Red Maple	4	0	S5	G5
Aceraceae	*Acer saccharinum*	Silver Maple	5	-3	S5	G5
Aceraceae	*Acer saccharum*	Sugar Maple	4	3	S5	G5
Asteraceae	*Achillea millefolium*	Common Yarrow	0	3	SE	G5
Ranunculaceae	*Actaea rubra*	Red Baneberry	5	5	S5	G5
Hippocastanaceae	*Aesculus hippocastanum*	Horse Chestnut	0	5	SE2	G?
Poaceae	*Agrostis* sp.	Bent Grass Species				
Brassicaceae	*Alliaria petiolata*	Garlic Mustard	0	0	SE5	G?
Liliaceae	*Allium tricoccum*	Wild Leek	7	2	S5	G5
Rosaceae	*Amelanchier alnifolia*	Saskatoon Berry	8	2	S4?	G5
Ranunculaceae	*Anemone canadensis*	Canada Anemone	3	-3	S5	G5
Apocynaceae	*Apocynum androsaemifolium*	Spreading Dogbane	3	5	S5	G5
Araliaceae	*Aralia nudicaulis*	Wild Sarsaparilla	4	3	S5	G5
Asteraceae	*Arctium minus*	Common Burdock	0	5	SE5	G?
Araceae	*Arisaema triphyllum*	Jack-in-the-pulpit	5	-2	S5	G5
Rosaceae	*Aronia melanocarpa*	Black Chokeberry	7	-3	S5	G5
Aristolochiaceae	*Asarum canadense*	Wild Ginger	6	5	S5	G5
Asclepiadaceae	*Asclepias incarnata*	Swamp Milkweed	6	-5	S5	G5
Asclepiadaceae	*Asclepias syriaca*	Common Milkweed	0	5	S5	G5
Asteraceae	*Aster laevis* var. *laevis*	Smooth Aster	7	5	S5	G5
Asteraceae	*Aster sp.*	Aster Species				
Dryopteridaceae	*Athyrium filix-femina*	Northern Lady Fern	4	0	S5	G5
Betulaceae	*Betula alleghaniensis*	Yellow Birch	6	0	S5	G5
Betulaceae	*Betula papyrifera*	White Birch	2	2	S5	G5
Brachytheciaceae	*Brachythecium starkei*	Moss			S5	
Brassicaceae	*Brassica rapa*	Wild Turnip	0	5	SE5	G?
Poaceae	*Bromus inermis*	Smooth Brome	0	5	SE5	G4G5

Family	Scientific Name	Common Name	CC[1]	CW[2]	GRank[3]	SRank[3]
Poaceae	*Calamagrostis canadensis*	Canada Blue-joint	4	-5	S5	G5
Convolvulaceae	*Calystegia sepium*	Hedge Bindweed	2	0	S5	G5
Cyperaceae	*Carex crinita*	Fringed Sedge	6	-4	S5	G5
Cyperaceae	*Carex gracillima*	Graceful Sedge	4	3	S5	G5
Cyperaceae	*Carex hystericina*	Porcupine Sedge	5	-5	S5	G5
Cyperaceae	*Carex intumescens*	Bladder Sedge	6	-4	S5	G5
Cyperaceae	*Carex lupulina*	Common Hop Sedge	6	-5	S5	G5
Cyperaceae	*Carex plantaginea*	Plantain-leaved Sedge	7	5	S5	G5
Cyperaceae	*Carex rosea*	Stellate Sedge	5	5	S5	G5
Cyperaceae	*Carex* sp.	Sedge Species				
Cyperaceae	*Carex tenera*	Slender Straw Sedge	4	-1	S5	G5
Juglandaceae	*Carya cordiformis*	Bitternut Hickory	6	0	S5	G5
Berberidaceae	*Caulophyllum thalictroides*	Blue Cohosh	6	5	S5	G5
Chenopodiaceae	*Chenopodium album*	Lamb's Quarters	0	1	SE5	G5
Asteraceae	*Chrysanthemum leucanthemum*	Ox-eye Daisy	0	5	SE5	G?
Onagraceae	*Circaea lutetiana*	Cda. Enchanter's Nightshade	3	3	S5	G5
Asteraceae	*Cirsium arvense*	Canada Thistle	0	3	SE5	G?
Cornaceae	*Cornus alternifolia*	Alt.-leaved Dogwood	6	5	S5	G5
Cornaceae	*Cornus rugosa*	Round-leaved Dogwood	6	5	S5	G5
Cornaceae	*Cornus stolonifera*	Red-osier Dogwood	2	-3	S5	G5
Betulaceae	*Corylus cornuta*	Beaked Hazelnut	5	5	S5	G5
Rosaceae	*Crataegus monogyna*	One-seeded Hawthorn	0	5	SE5	G5
Apiaceae	*Daucus carota*	Wild Carrot	0	5	SE5	G?
Caryophyllaceae	*Dianthus armeria*	Deptford Pink	0	5	SE5	G?
Dryopteridaceae	*Dryopteris carthusiana*	Spinulose Wood Fern	5	-2	S5	G5
Cyperaceae	*Eleocharis acicularis*	Needle Spike-rush	5	-5	S5	G5
Poaceae	*Elymus repens*	Quack Grass	0	3	SE5	G5
Poaceae	*Elymus* sp.	Wild Rye Species				
Onagraceae	*Epilobium angustifolium*	Fireweed	3	0	S5	G5
Equisetaceae	*Equisetum arvense*	Field Horsetail	0	0	S5	G5
Equisetaceae	*Equisetum fluviatile*	Water Horsetail	7	-5	S5	G5
Equisetaceae	*Equisetum hyemale*	Scouring Rush	2	-2	S5	G5
Equisetaceae	*Equisetum sylvaticum*	Woodland Horsetail	7	-3	S5	G5
Asteraceae	*Erigeron philadelphicus*	Philadelphia Fleabane	1	-3	S5	G5
Brassicaceae	*Erysimum cheiranthoides*	Wormseed Mustard	0	3	SE5	G5
Liliaceae	*Erythronium americanum*	Yellow Trout Lily	5	5	S5	G5
Brachytheciaceae	*Eurhynchium riparioides*	Moss			S5	
Fagaceae	*Fagus grandifolia*	American Beech	6	3	S4	G5
Rosaceae	*Fragaria vesca*	Woodland Strawberry	4	4	S5	G5
Oleaceae	*Fraxinus americana*	White Ash	4	3	S5	G5
Oleaceae	*Fraxinus nigra*	Black Ash	7	-4	S5	G5
Oleaceae	*Fraxinus pennsylvanica*	Red Ash (syn Green Ash)	3	-3	S5	G5
Lamiaceae	*Galeopsis tetrahit*	Ironwort	0	5	SE5	G?
Rubiaceae	*Galium aparine*	Cleavers	4	3	S5	G5
Rubiaceae	*Galium trifidum*	Small Bedstraw	5	-4	S5	G5
Rubiaceae	*Galium triflorum*	Fragrant Bedstraw	4	2	S5	G5
Geraniaceae	*Geranium robertianum*	Herb Robert	0	5	SE5	G5
Geraniaceae	*Geranium* sp.	Crane's-bill Species				
Rosaceae	*Geum canadense*	White Avens	3	0	S5	G5
Rosaceae	*Geum rivale*	Water Avens	7	-5	S5	G5
Lamiaceae	*Glechoma hederacea*	Ground Ivy	0	3	SE5	G?
Poaceae	*Glyceria grandis*	American Glyceria	5	-5	S4S5	G5
Poaceae	*Grass* sp.	Grass Species				
Dryopteridaceae	*Gymnocarpium dryopteris*	Common Oak Fern	7	0	S5	G5
Brassicaceae	*Hesperis matronalis*	Dame's Rocket	0	5	SE5	G4G5
Asteraceae	*Hieracium caespitosum*	Field Hawkweed	0	5	SE5	G?
Hydrophyllaceae	*Hydrophyllum virginianum*	Virginia Water-leaf	6	-2	S5	G5
Clusiaceae	*Hypericum perforatum*	Common St. John's-wort	0	5	SE5	G?

Family	Scientific Name	Common Name	CC[1]	CW[2]	GRank[3]	SRank[3]
Balsaminaceae	*Impatiens capensis*	Spotted Jewel-weed	4	-3	S5	G5
Iridaceae	*Iris* sp.	Iris Species				
Juglandaceae	*Juglans cinerea*	Butternut	6	2	S3?	G4
Juglandaceae	*Juglans nigra*	Black Walnut	5	3	S4	G5
Juncaceae	*Juncus tenuis*	Path Rush	0	0	S5	G5
Lemnaceae	*Lemna minor*	Lesser Duckweed	2	-5	S5	G5
Asteraceae	*Leontodon autumnalis*	Fall Hawkbit	0	5	SE5	G?
Lamiaceae	*Leonurus cardiaca*	Motherwort	0	5	SE5	G?
Caprifoliaceae	*Lonicera* sp.	Honeysuckle Species				
Fabaceae	*Lotus corniculatus*	Bird's-foot Trefoil	0	1	SE5	G?
Liliaceae	*Maianthemum canadense*	Canada Mayflower	5	0	S5	G5
Liliaceae	*Maianthemum racemosum*	False Solomon's Seal	4	3	S5	G5
Liliaceae	*Maianthemum stellatum*	St. False Solomon's Seal	6	1	S5	G5
Rosaceae	*Malus* sp.	Crabapple Species				
Dryopteridaceae	*Matteuccia struthiopteris*	Ostrich Fern	5	-3	S5	G5
Fabaceae	*Medicago lupulina*	Black Medick	0	1	SE5	G?
Fabaceae	*Melilotus alba*	White Sweet-clover	0	3	SE5	G5
Lamiaceae	*Mentha* sp.	Mint Species				
Lamiaceae	*Monarda fistulosa*	Wild Bergamot	6	3	S5	G5
Brassicaceae	*Nasturtium officinale*	Water-cress	0	-5	SE	G?
Dryopteridaceae	*Onoclea sensibilis*	Sensitive Fern	4	-3	S5	G5
Poaceae	*Oryzopsis* sp.	Rice Grass Species				
Betulaceae	*Ostrya virginiana*	Ironwood	4	4	S5	G5
Oxalidaceae	*Oxalis stricta*	Uprt. Yellow Wood-sorrel	0	3	S5	G5
Vitaceae	*Parthenocissus quinquefolia*	Virginia Creeper	6	1	S4?	G5
Poaceae	*Phalaris arundinacea*	Reed Canary Grass	0	-4	S5	G5
Poaceae	*Phleum pratense*	Timothy	0	3	SE5	G?
Poaceae	*Phragmites australis*	Common Reed	0	-4	S5	G5
Pinaceae	*Picea abies*	Norway Spruce	0	5	SE3	G?
Pinaceae	*Picea glauca*	White Spruce	6	3	S5	G5
Pinaceae	*Pinus resinosa*	Red Pine	8	3	S5	G5
Plantaginaceae	*Plantago lanceolata*	Ribgrass	0	0	SE5	G5
Plantaginaceae	*Plantago major*	Common Plantain	0	-1	SE5	G5
Berberidaceae	*Podophyllum peltatum*	Mayapple	5	3	S5	G5
Polygonaceae	*Polygonum amphibium*	Water Smartweed	5	-5	S5	G5
Polygonaceae	*Polygonum convolvulus*	Black Bindweed	0	1	SE5	G?
Polygonaceae	*Polygonum* sp.	Smartweed Species				
Dryopteridaceae	*Polystichum acrostichoides*	Christmas Fern	5	5	S5	G5
Salicaceae	*Populus balsamifera*	Balsam Poplar	4	-3	S5	G5
Salicaceae	*Populus tremuloides*	Trembling Aspen	2	0	S5	G5
Potamogetonaceae	*Potamogeton gramineus*	Grass-leaved Pondweed	4	-5	S5	G5
Rosaceae	*Potentilla norvegica*	Rough Cinquefoil	0	0	S5	G5
Rosaceae	*Potentilla recta*	Rough-fruited Cinquefoil	0	5	SE5	G?
Lamiaceae	*Prunella vulgaris*	Heal-all	5	5	S5	G5
Rosaceae	*Prunus serotina*	Black Cherry	3	3	S5	G5
Rosaceae	*Prunus virginiana*	Choke Cherry	2	1	S5	G5
Dennstaedtiaceae	*Pteridium aquilinum*	Eastern Bracken Fern	2	3	S5	G5
Pyrolaceae	*Pyrola* sp.	Pyrola Species				
Fagaceae	*Quercus macrocarpa*	Bur Oak	5	1	S5	G5
Fagaceae	*Quercus muehlenbergii*	Chinquapin Oak	9	5	S4	G5
Ranunculaceae	*Ranunculus acris*	Tall Buttercup	0	-2	SE5	G5
Brassicaceae	*Raphanus raphanistrum*	Wild Radish	0	5	SE3	G?
Rhamnaceae	*Rhamnus cathartica*	Common Buckthorn	0	3	SE5	G?
Anacardiaceae	*Rhus radicans*	Poison-ivy	0	0	S5	G5
Anacardiaceae	*Rhus typhina*	Staghorn Sumac	1	5	S5	G5
Grossulariaceae	*Ribes glandulosum*	Skunk Currant	6	-3	S5	G5
Grossulariaceae	*Ribes triste*	Swamp Red Currant	6	-5	S5	G5
Rosaceae	*Rubus allegheniensis*	Common Blackberry	2	2	S5	G5

Family	Scientific Name	Common Name	CC[1]	CW[2]	GRank[3]	SRank[3]
Rosaceae	*Rubus idaeus*	Wild Red Raspberry	0	-2	S5	G5
Rosaceae	*Rubus pubescens*	Dwarf Raspberry	4	-4	S5	G5
Polygonaceae	*Rumex crispus*	Curly Dock	0	-1	SE5	G?
Polygonaceae	*Rumex* sp.	Dock Species				
Salicaceae	*Salix alba*	White Willow	0	-3	SE4	G5
Salicaceae	*Salix bebbiana*	Bebb's Willow	4	-4	S5	G5
Salicaceae	*Salix* sp.	Willow Species				
Caprifoliaceae	*Sambucus racemosa*	Red-berried Elderberry	5	2	S5	G5
Cyperaceae	*Scirpus atrovirens*	Black Bulrush	3	-5	S5	G5?
Cyperaceae	*Scirpus microcarpus*	Small-fruited Bulrush	4	-5	S5	G5
Cyperaceae	*Scirpus validus*	Softstem Bulrush	5	-5	S5	G?
Cucurbitaceae	*Sicyos angulatus*	One-seed. Bur Cucumber	5	-2	S5	G5
Caryophyllaceae	*Silene noctiflora*	Night-flowering Catchfly	0	5	SE5	G?
Caryophyllaceae	*Silene vulgaris*	Bladder Campion	0	5	SE5	G?
Solanaceae	*Solanum dulcamara*	Bittersweet Nightshade	0	0	SE5	G?
Asteraceae	*Solidago* sp.	Goldenrod Species				
Asteraceae	*Sonchus arvensis*	Perennial Sow-thistle	0	1	SE5	G?
Asteraceae	*Sonchus* sp.	Sow-thistle Species				
Rosaceae	*Sorbus americana*	American Mountain-ash	8	-1	S5	G5
Caryophyllaceae	*Stellaria longifolia*	Long-leaved Chickweed	2	-4	S5	G5
Caryophyllaceae	*Stellaria* sp.	Chickweed Species				
Caprifoliaceae	*Symphoricarpos occidentalis*	Wolfberry	0	5	SE3	G5
Oleaceae	*Syringa vulgaris*	Common Lilac	0	5	SE5	G?
Asteraceae	*Taraxacum officinale*	Common Dandelion	0	3	SE5	G5
Cupressaceae	*Thuja occidentalis*	Eastern White Cedar	4	-3	S5	G5
Saxifragaceae	*Tiarella cordifolia*	Foamflower	6	1	S5	G5
Tiliaceae	*Tilia americana*	Basswood	4	3	S5	G5
Liliaceae	*Tofieldia glutinosa*	Sticky False Asphodel	10	-5	S4?	G5
Fabaceae	*Trifolium hybridum*	Alsike Clover	0	1	SE5	G?
Fabaceae	*Trifolium repens*	White Clover	0	2	SE5	G?
Liliaceae	*Trillium grandiflorum*	White Trillium	5	5	S5	G5
Liliaceae	*Trillium* sp.	Trillium Species				
Pinaceae	*Tsuga canadensis*	Eastern Hemlock	7	3	S5	G5
Asteraceae	*Tussilago farfara*	Coltsfoot	0	3	SE5	G?
Typhaceae	*Typha angustifolia*	Narrow-leaved Cattail	3	-5	SE5	G5
Ulmaceae	*Ulmus americana*	American Elm	3	-2	S5	G5?
Scrophulariaceae	*Verbascum thapsus*	Common Mullein	0	5	SE5	G?
Verbenaceae	*Verbena urticifolia*	White Vervain	4	-1	S5	G5
Caprifoliaceae	*Viburnum opulus*	Eur. Highbush Cranberry	0	0	SE4	G5
Fabaceae	*Vicia cracca*	Cow Vetch	0	5	SE5	G?
Violaceae	*Viola adunca*	Hooked-spur Violet	8	1	S4S5	G5
Violaceae	*Viola arvensis*	Field Pansy	0	5	SE4	G?
Violaceae	*Viola* sp.	Violet Species				
Vitaceae	*Vitis riparia*	Riverbank Grape	0	-2	S5	G5

[1] CC - Coefficient of Conservatism: From 0 – 10, “10” being most conservative, or only found only in relatively undisturbed habitats. [2] CW - Coefficient of Wetness: From -5 – 5, “-5” being obligate wetland species, “5” being obligate upland species. [3] Nature Conservancy conservation concern rankings (NHIC, 2010): G - Global Level, S - Sub-national Rank (Ontario), E – Exotic, 1 - Critically Imperiled, 2 - Imperiled, 3 - Vulnerable, 4 - Apparently Secure, 5 - Secure.

Appendix C

OBBA RESULTS

Square Summary (17PK12)

#species (1st atlas)				#species (2nd atlas)				#hours		#pc done	
poss	prob	conf	total	poss	prob	conf	total	1st	2nd	road	offrd
47	20	21	88	36	26	16	78	42	32	21	4

Region summary (#13: Simcoe County)

#squares	#sq with data		#species		#pc done	target #pc
	1st	2nd	1st	2nd		
68	63	65	181	190	2075	850

Target number of point counts in this square: 21 road side, 4 off road (2 in deciduous forest, 1 in coniferous forest, 1 in mixed forest). Please try to ensure that each off-road station is located such that the entire 100m radius circle is within the prescribed habitat.

SPECIES	Code		%	
	1st	2nd	1st	2nd
Canada Goose	FY	H	58	95
Trumpeter Swan †			0	43
Wood Duck	FY	H	76	78
Gadwall ‡		P	6	4
American Wigeon			6	12
American Black Duck			44	47
Mallard	FY	FY	93	95
Blue-winged Teal	FY	H	79	53
Northern Shoveler			11	10
Northern Pintail			14	7
Green-winged Teal		H	0	18
Redhead †			3	1
Ring-necked Duck			4	21
Lesser Scaup ‡			1	1
Hooded Merganser			25	30
Common Merganser			36	46
Red-breast Merganser			9	20
Gray Partridge ‡			0	1
Ring-necked Pheasant			15	10
Ruffed Grouse	S	FY	92	81
Wild Turkey		H	0	81
Common Loon		H	28	52
Pied-billed Grebe			22	32
Double-crest Cormorant §			11	27
American Bittern	H		50	44
Least Bittern †			12	23
Great Blue Heron §	H		77	63
Great Egret †			0	1
Green Heron §	H	H	84	70

SPECIES	Code		%	
	1st	2nd	1st	2nd
Black-crown N.-Heron † §			12	9
Yellow-crn N.-Heron †			0	0
Turkey Vulture	H		77	84
Osprey			42	53
Northern Harrier	H		76	66
Sharp-shinned Hawk	H		50	60
Cooper's Hawk			17	47
Northern Goshawk	H		15	27
Red-should Hawk †			17	44
Broad-winged Hawk	H	T	58	66
Red-tailed Hawk	H		92	81
American Kestrel	P	H	85	76
Merlin ‡			1	21
Yellow Rail †			3	3
King Rail †			3	3
Virginia Rail			36	47
Sora		T	31	43
Common Moorhen			17	12
American Coot			15	12
Coot/Moorhen			0	0
Sandhill Crane ‡			0	21
Killdeer	DD	H	96	96
Rock Dove	P	H	87	84
Spotted Sandpiper	H		95	78
Upland Sandpiper	D		60	38
Common Snipe	H		79	61
American Woodcock	S		79	72
Ring-billed Gull §			6	33
Herring Gull §			49	38

SPECIES	Code		%	
	1st	2nd	1st	2nd
Caspian Tern †			1	3
Black Tern † §			30	21
Common Tern §			34	23
Forster's Tern † §			0	1
Mourning Dove	P	T	95	95
Yellow-billed Cuckoo			6	18
Black/Yell-billed Cuckoo			0	18
Black-billed Cuckoo	S	S	58	75
Eastern Screech-Owl		S	12	49
Great Horned Owl	H	H	74	55
Barred Owl			20	49
Long-eared Owl ‡			3	4
Short-eared Owl †			1	4
North Saw-whet Owl	S		9	12
Common Nighthawk	H		63	40
Whip-poor-will	S		60	38
Chimney Swift	H		63	32
Ruby-thr Hummingbird	H	H	88	95
Belted Kingfisher	P	T	95	92
Red-headed Woodpecker †	H		65	29
Yellow-bellied Sapsucker		S	80	95
Downy Woodpecker	H	T	95	96
Hairy Woodpecker	S	T	95	93
Northern Flicker	AE	AE	98	95
Pileated Woodpecker	FY	H	80	93
Olive-sided Flycatcher	S	H	22	20
Eastern Wood-Pewee	S	S	96	96
Alder Flycatcher		T	47	76
Willow Flycatcher	S	S	42	55

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Ontario Breeding Bird Atlas - Summary Sheet for Square 17PK12 (page 2 of 3)

SPECIES	Code 1st	Code 2nd	% 1st	% 2nd
Least Flycatcher	P		88	89
Eastern Phoebe	S	T	95	96
Gr Crested Flycatcher	S	T	98	96
Eastern Kingbird	NY	FY	98	95
Loggerhead Shrike †			15	3
Yellow-throated Vireo ‡			30	26
Blue-headed Vireo			9	38
Warbling Vireo	S	S	92	93
Philadelphia Vireo ‡			1	4
Red-eyed Vireo	S	S	93	96
Blue Jay	NY	FY	96	96
American Crow	P	FY	98	96
Common Raven			7	55
Horned Lark	H		68	47
Purple Martin	AE		61	27
Tree Swallow	P	AE	98	96
North Rgh-wing Swallow	H		68	56
Bank Swallow §	A		88	58
Cliff Swallow §	H		82	63
Barn Swallow	NY	H	96	95
Black-capped Chickadee	CF	A	96	96
Tufted Titmouse †	S		1	0
Red-breast Nuthatch			52	90
White-breast Nuthatch	H	S	87	93
Brown Creeper		H	55	60
Carolina Wren ‡			1	6
House Wren		S	87	95
Winter Wren		FY	68	95
Sedge Wren			19	20
Marsh Wren	S		42	33
Golden-crown Kinglet			7	21
Ruby-crown Kinglet			6	7
Blue-gr Gnatcatcher ‡			14	24
Eastern Bluebird	H		57	73
Veery	H	S	95	96
Swainson's Thrush	P		14	20
Hermit Thrush			39	69
Wood Thrush		S	90	92
American Robin	NY	CF	98	96
Gray Catbird	CF	T	98	96
Northern Mockingbird			6	18
Brown Thrasher	P		96	92
European Starling	FY	FY	98	96
Cedar Waxwing	NE	T	98	96
Blue-winged Warbler			4	24
Golden-winged Warbler		S	30	43
Blue/Gold-wing Warbler ‡			0	15
Brewster's Warbler †			0	3
Nashville Warbler		T	74	84
Northern Parula			12	21
Yellow Warbler	A	S	98	92
Chestn-sided Warbler	H	T	68	95
Magnolia Warbler			20	58
Black-thr Blue Warbler			22	63
Yellow-rumped Warbler			41	78
Black-thr Green Warbler		T	34	90
Blackburnian Warbler			28	58
Pine Warbler			26	80
Kirtland's Warbler †			1	0
Prairie Warbler †			6	9
Bay-breasted Warbler ‡			1	3
Cerulean Warbler †			12	16
Black-white Warbler		T	84	93
American Redstart	P	S	85	90
Ovenbird	S	T	98	96
North Waterthrush			61	86
Mourning Warbler		S	63	81
Common Yellowthroat	S	T	92	95
Canada Warbler			46	56
Eastern Towhee			53	73
Chipping Sparrow	NY	FY	96	96
Clay-colored Sparrow			14	36
Field Sparrow		T	84	87
Vesper Sparrow	S		84	70
Savannah Sparrow	H	S	88	81
Grasshopper Sparrow			38	41
Song Sparrow	NE	AE	98	96
Swamp Sparrow	S	T	84	86
White-throat Sparrow	P	T	95	87
Dark-eyed Junco			25	21
Scarlet Tanager	H	S	79	86
Northern Cardinal	FY	T	66	84
Rose-breast Grosbeak	S	CF	95	93
Indigo Bunting	P	S	90	93
Bobolink	P	T	87	83
Red-wing Blackbird	NU	CF	96	96
Eastern Meadowlark	H	S	88	83

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Ontario Breeding Bird Atlas - Summary Sheet for Square 17PK12 (page 3 of 3)

SPECIES	Code		%	
	1st	2nd	1st	2nd
Western Meadowlark ‡			6	1
Yellow-h Blackbird †			1	0
Rusty Blackbird ‡			1	1
Brewer's Blackbird ‡			3	7
Common Grackle	NY	CF	96	96
Brown-head Cowbird	P	D	98	95
Orchard Oriole ‡			0	1
Baltimore Oriole	A	FY	96	96
Purple Finch			66	73
House Finch			3	72
Red Crossbill ‡			7	1
White-winged Crossbill ‡			1	3
Pine Siskin			17	18
American Goldfinch	P	T	98	96
Evening Grosbeak			15	15
House Sparrow	P	H	88	75

This list includes all species found during the Ontario Breeding Bird Atlas (1st atlas: 1981-1985, 2nd atlas: 2001-2005) in the region #13 (Simcoe County). Underlined species are those that you should try to add to this square. They have not yet been reported during the 2nd atlas, but were found during the 1st atlas in this square or have been reported in more than 50% of the squares in this region during the 2nd atlas so far. In the species table, "BE 2nd" and "BE 1st" are the codes for the highest breeding evidence for that species in square 17PK12 during the 2nd and 1st atlas respectively. The % columns give the percentage of squares in that region where that species was reported during the 2nd and 1st atlas (this gives an idea of the expected chance of finding that species in region #13). Rare/Colonial Species Report Forms should be completed for species marked: § (Colonial), ‡ (regionally rare), or † (provincially rare). Current as of 12/08/2015. An up-to-date version of this sheet is available from http://www.birdsontario.org/atlas/summaryform.jsp?squareID=17PK12

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Appendix D

DATA SHEETS

WSP Field Survey Form	Property: Burl's Creek	
	Project Number: 151-03995-00	
	Surveyor Name: Josh Vandermeulen	
	Assistant Name:	
Date: Apr. 20/15	Survey Start Time: 7:35 PM	Survey End Time: 11:35 PM

Weather Conditions:

Temperature	11 °C check one: ☐ measured OR ☐ estimated
Beaufort Wind Scale	**0** Calm (0-2 km/h) **1** Light air (2-6 km/h) **2** Light breeze (6-11 km/h) **3** Gentle breeze (12-19 km/h) **4** Moderate breeze (20-28 km/h) **5** Fresh breeze (29-38 km/h) **6** Very windy (39+ km/h)
Precipitation	None/dry ___ Damp ✓ Haze ___ Fog ___ Drizzle ___ Rain ___
Cloud Cover (10ths)	90

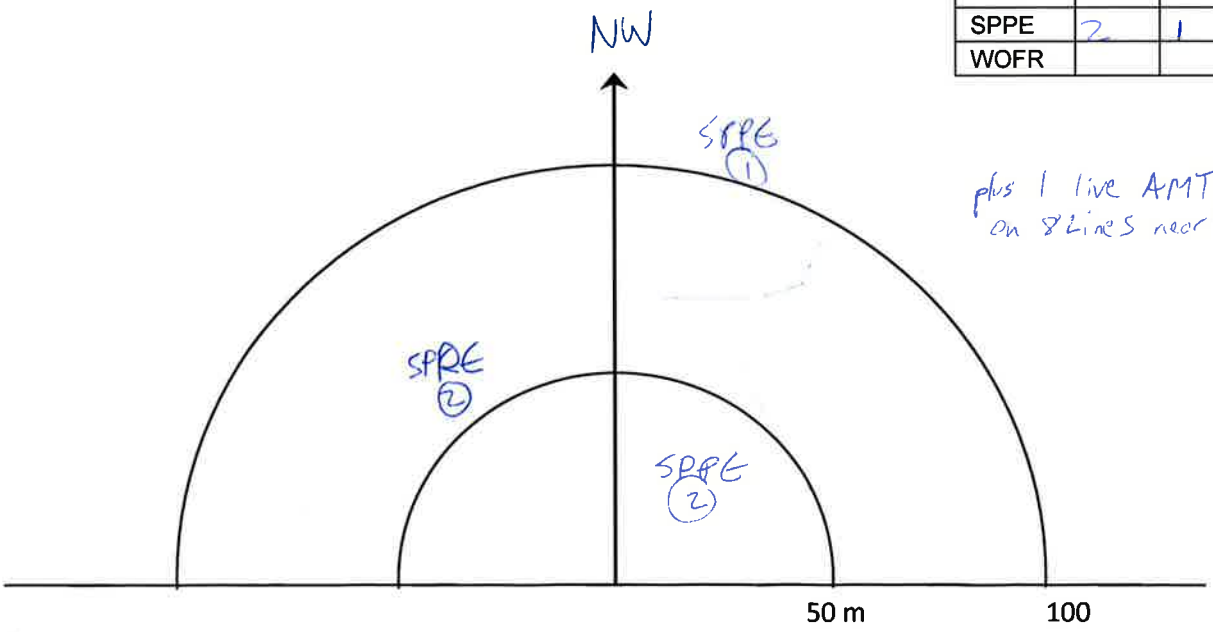
RWBL
AMRO
MMWD
EUST

Station: AMPH03 UTM: 617895, 4926406

Start Time: 8:43 PM

Noise Code: 1

Species	In	Out
AMTO		
BCFR		
BULL		
CHFR		
CGTR		
FOTO		
GRTR		
GRFR		
MIFR		
NLFR		
PIFR		
SPPE	2	1
WOFR		



plus 1 live AMTO on 8 Lines near here

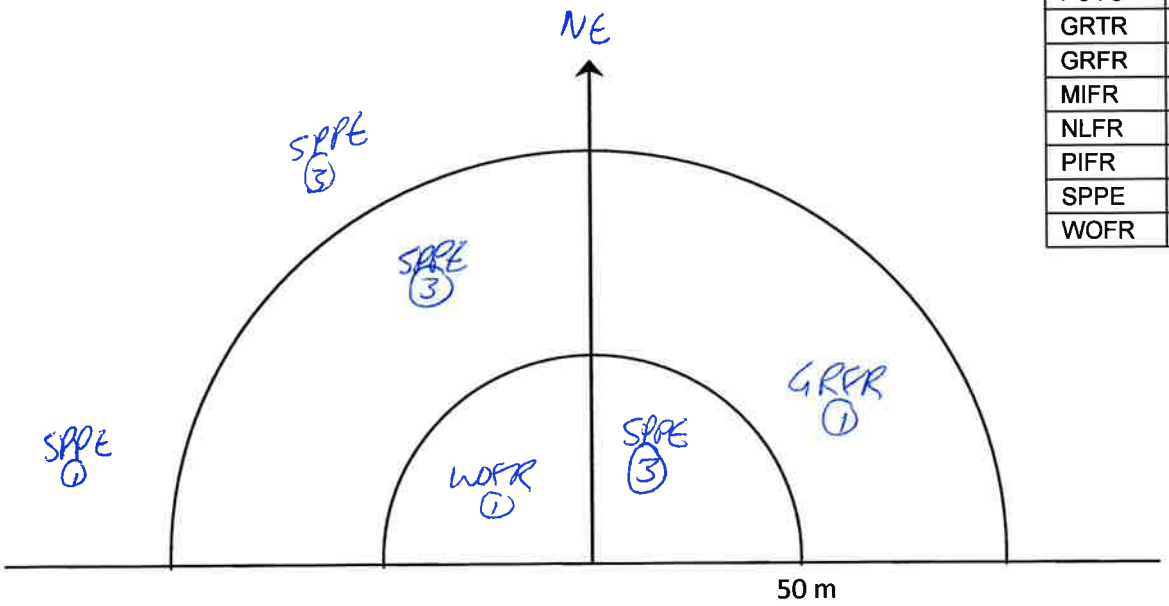
Property: Burls Creek **Surveyor:** Josh Vandermeulen **Date:** Apr 20/15

Station: AMPH09 UTM: 618137, 4926542

Start Time: 9:01 PM

Noise Code: 1

Species	In	Out
AMTO		
BCFR		
BULL		
CHFR		
CGTR		
FOTO		
GRTR		
GRFR	1	
MIFR		
NLFR		
PIFR		
SPPE	3	3
WOFR	1	

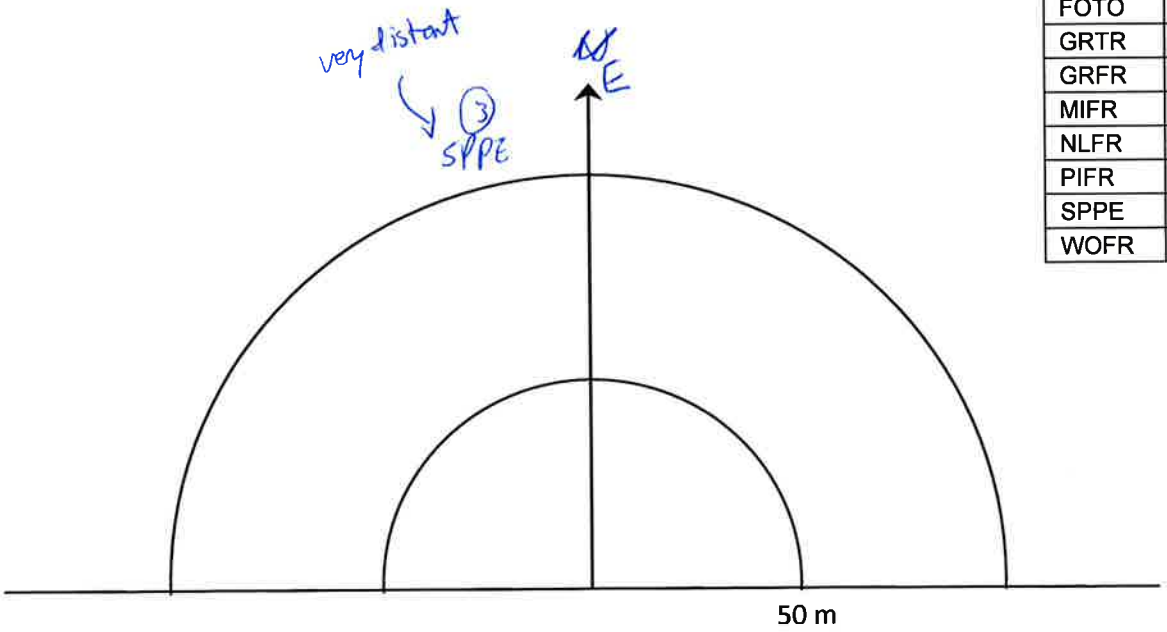


Station: AMPH06 UTM: 618619, 4926664

Start Time: 9:20 PM

Noise Code: 1

Species	In	Out
AMTO		
BCFR		
BULL		
CHFR		
CGTR		
FOTO		
GRTR		
GRFR		
MIFR		
NLFR		
PIFR		
SPPE		3
WOFR		



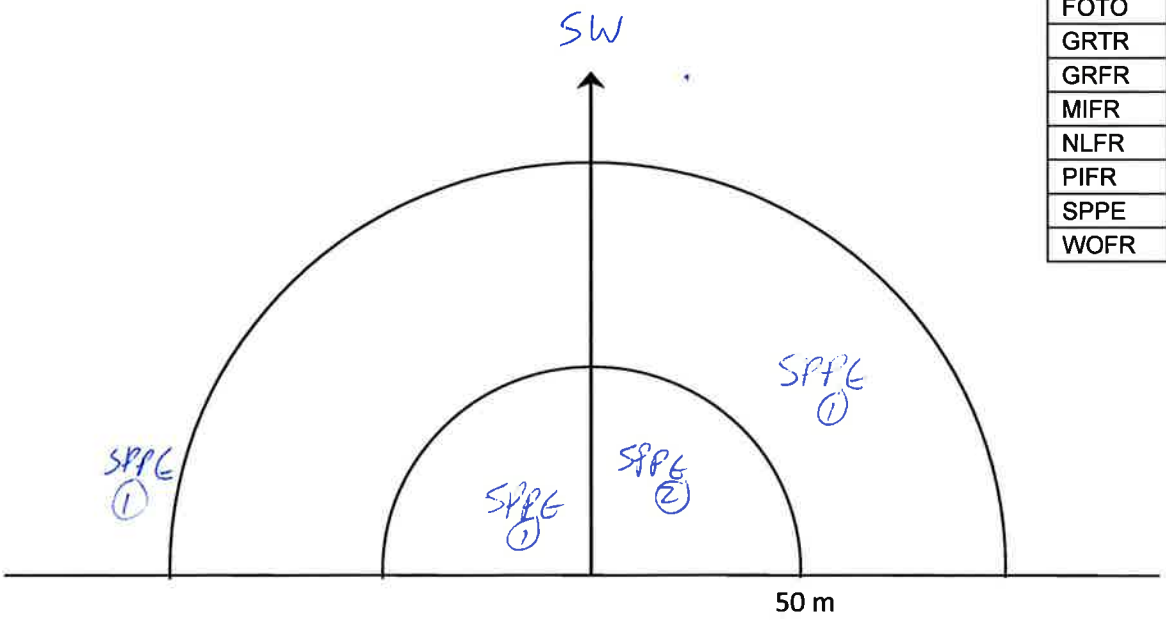
Property: Burls Creek **Surveyor:** Josh Vandermeulen **Date:** Apr 20/15

Station: AMPH01 UTM: 617831, 4926515

Start Time: 9:42 PM

Noise Code: 2

Species	In	Out
AMTO		
BCFR		
BULL		
CHFR		
CGTR		
FOTO		
GRTR		
GRFR		
MIFR		
NLFR		
PIFR		
SPPE	2	1
WOFR		

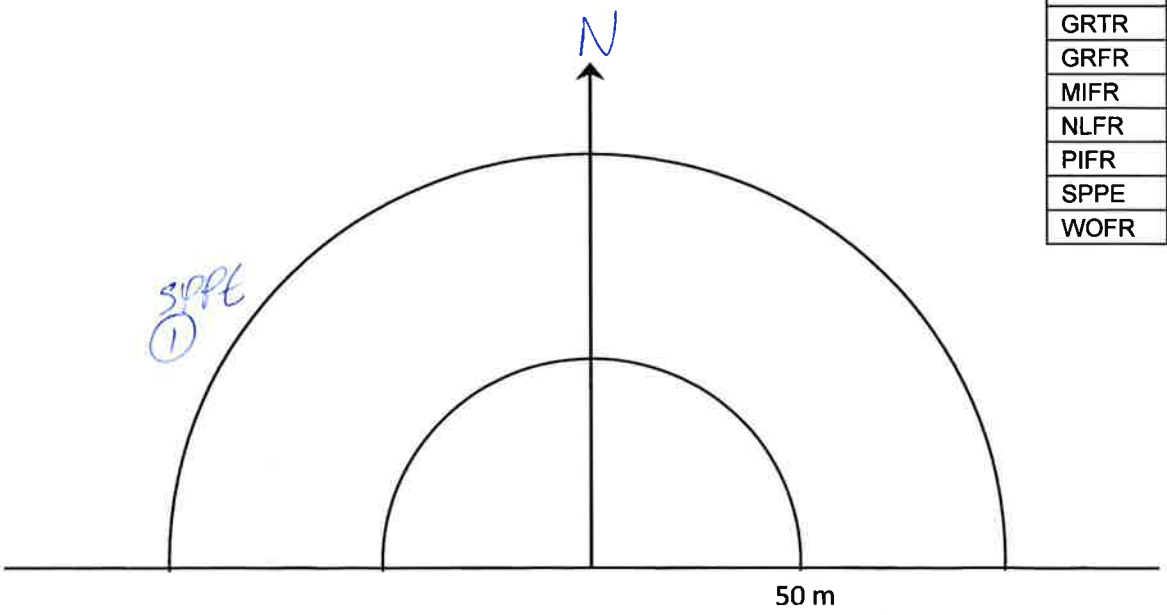


Station: AMPH02 UTM: 617307, 4926288

Start Time: 10:16 PM

Noise Code: 2

Species	In	Out
AMTO		
BCFR		
BULL		
CHFR		
CGTR		
FOTO		
GRTR		
GRFR		
MIFR		
NLFR		
PIFR		
SPPE		1
WOFR		



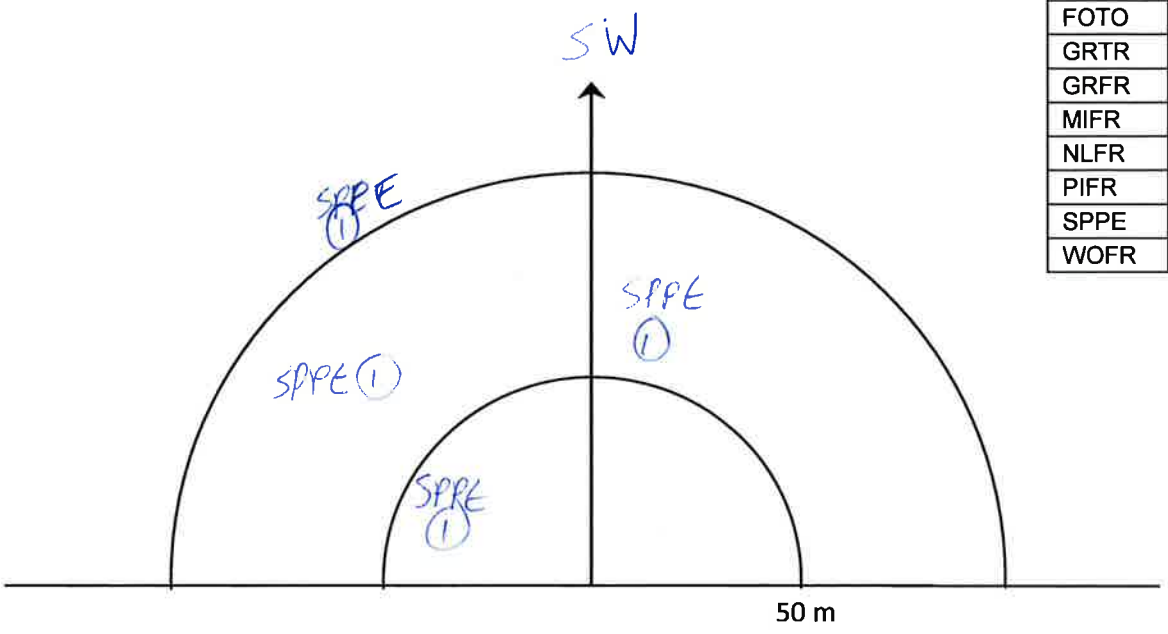
Property: Burls Creek **Surveyor:** Josh Vandermeulen **Date:** Apr 20/15

Station: AMPH07 UTM: 618009, 4925779

Start Time: 10:38 PM

Noise Code: 1

Species	In	Out
AMTO		
BCFR		
BULL		
CHFR		
CGTR		
FOTO		
GRTR		
GRFR		
MIFR		
NLFR		
PIFR		
SPPE	1	1
WOFR		

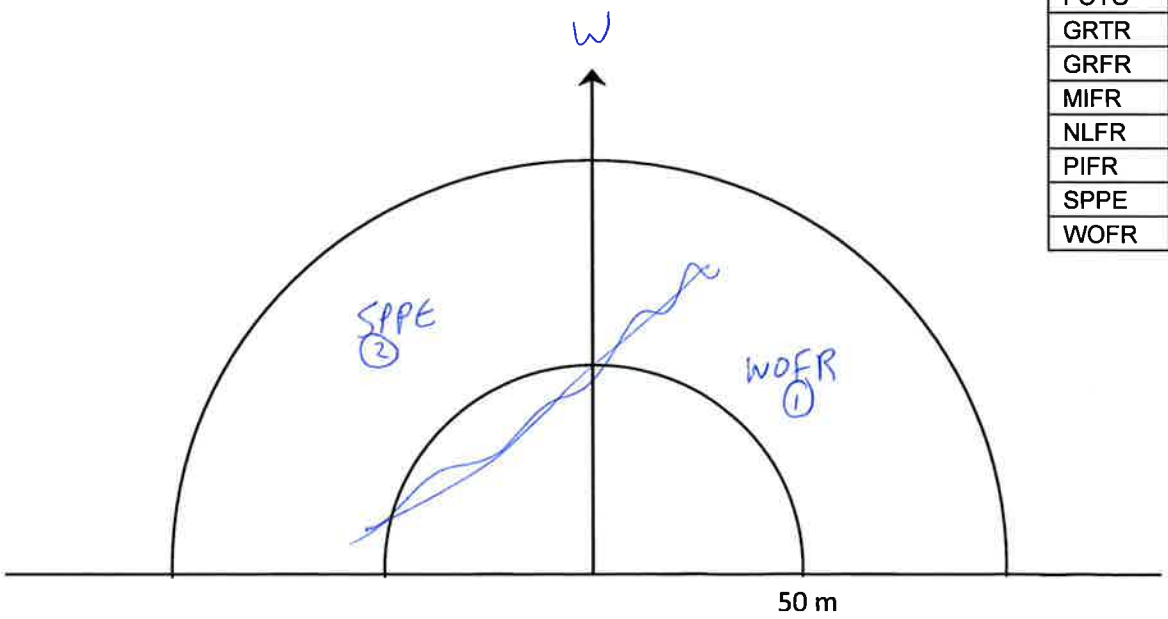


Station: AMPH04 UTM: 618602, 4925939

Start Time: 10:55 PM

Noise Code: 1

Species	In	Out
AMTO		
BCFR		
BULL		
CHFR		
CGTR		
FOTO		
GRTR		
GRFR		
MIFR		
NLFR		
PIFR		
SPPE	2	
WOFR	1	



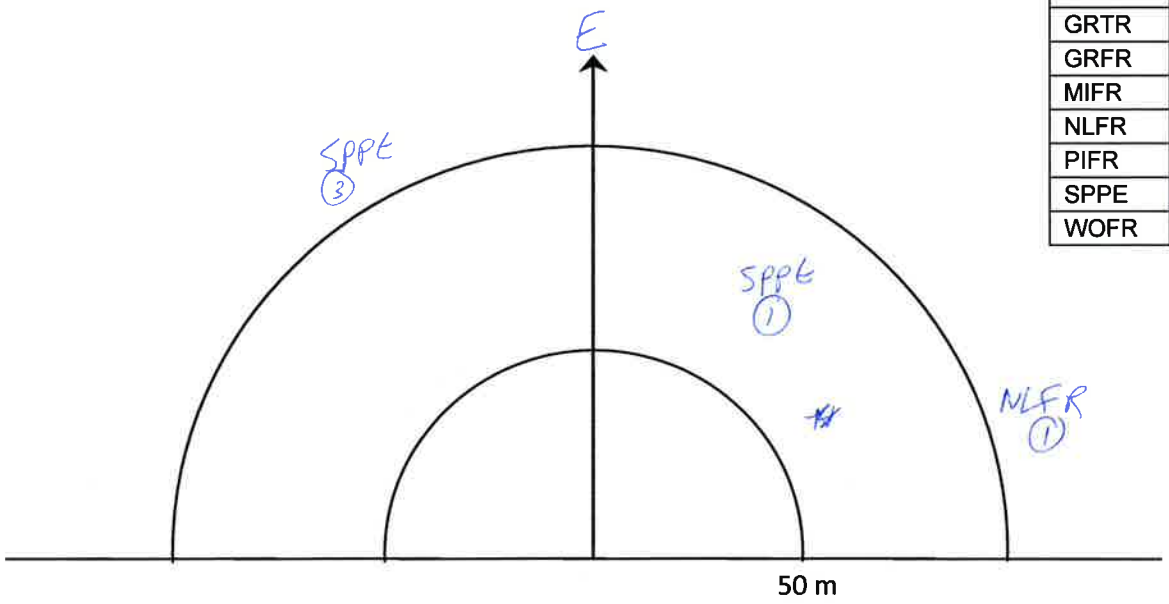
Property: Burl's Creek **Surveyor:** Josh Vandemeulen **Date:** Apr 20/15

Station: AMPH05 UTM: 619020, 4926149

Start Time: 11:10 PM

Noise Code: 1

Species	In	Out
AMTO		
BCFR		
BULL		
CHFR		
CGTR		
FOTO		
GRTR		
GRFR		
MIFR		
NLFR		1
PIFR		
SPPE	1	3
WOFR		

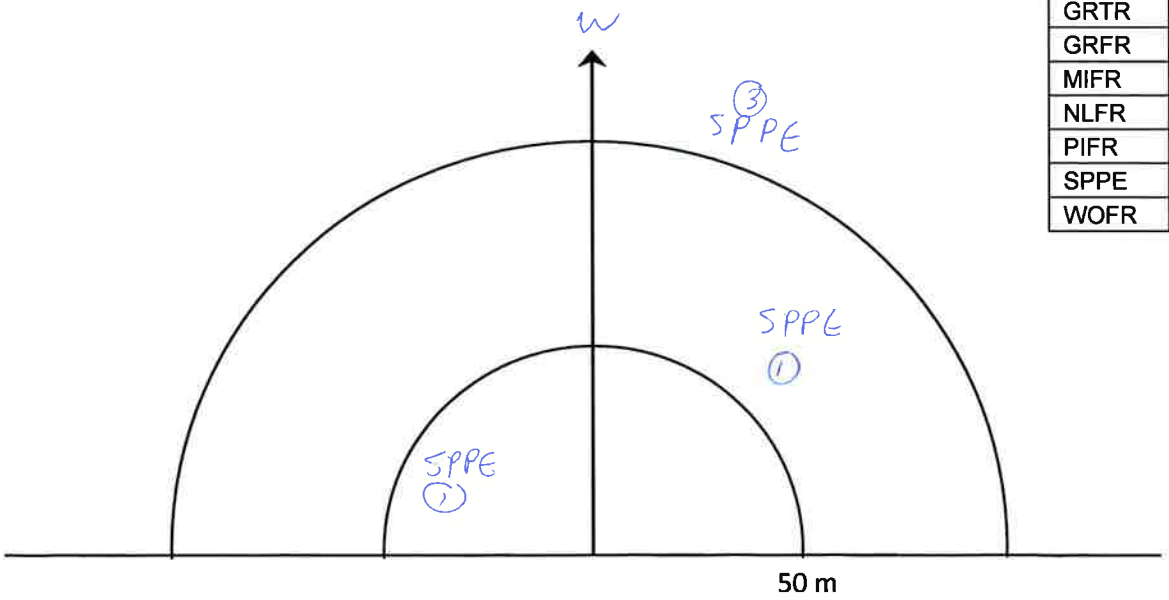


Station: AMPH08 UTM: 616949, 4925511

Start Time: 11:31 PM

Noise Code: 1

Species	In	Out
AMTO		
BCFR		
BULL		
CHFR		
CGTR		
FOTO		
GRTR		
GRFR		
MIFR		
NLFR		
PIFR		
SPPE	1	3
WOFR		



WSP Field Survey Form	Property: Burl's Creek	
	Project Number: 151-03995-00	
	Surveyor Name: Josh Vandermeulen	
	Assistant Name: —	
Date: May 11, 2015	Survey Start Time: 8:00 AM	Survey End Time: 11:30 PM

Weather Conditions:

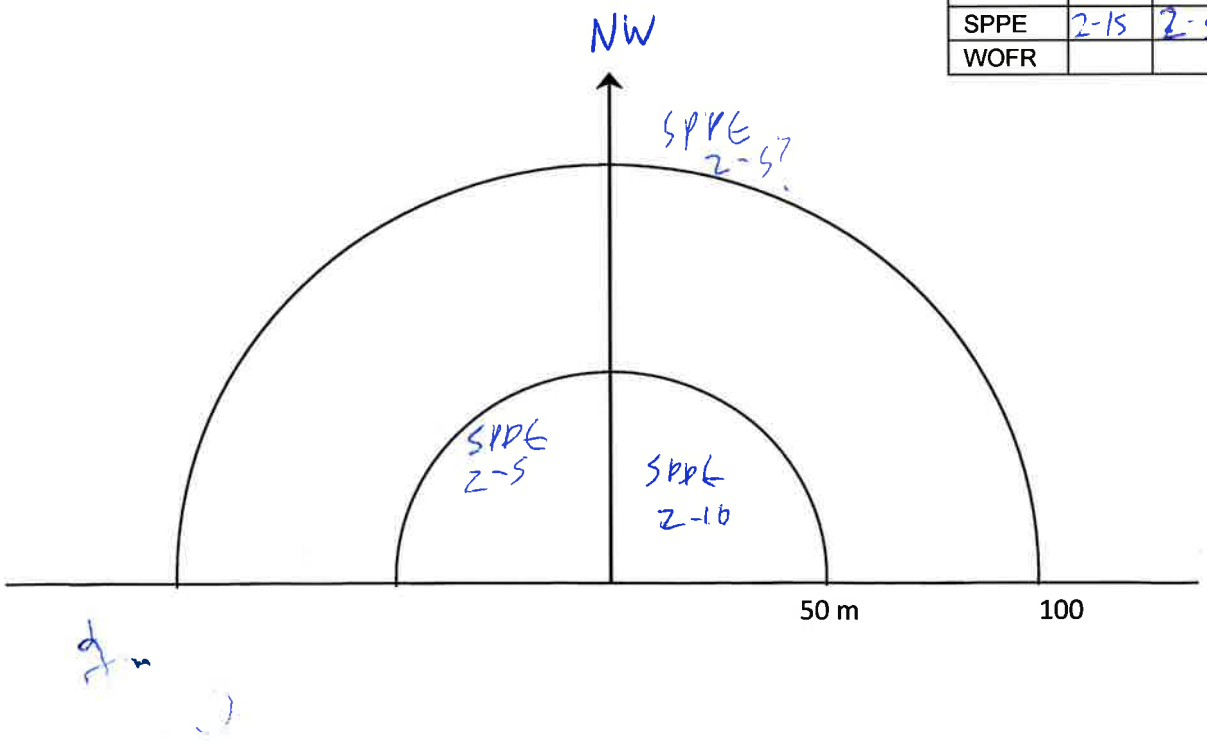
Temperature	18 °C check one: ☐ measured OR ☐ estimated
Beaufort Wind Scale	**0** Calm (0-2 km/h) **1** Light air (2-6 km/h) **2** Light breeze (6-11 km/h) **3** Gentle breeze (12-19 km/h) **4** Moderate breeze (20-28 km/h) **5** Fresh breeze (29-38 km/h) **6** Very windy (39+ km/h)
Precipitation	None/dry ___ Damp ___ Haze ___ Fog ___ Drizzle ___ Rain ___
Cloud Cover (10ths)	100 rain started around 10:00 PM

Station: AMPH03 UTM: (617895, 4926406)

Start Time: 10:25 PM

Noise Code: 1

Species	In	Out
AMTO		
BCFR		
BULL		
CHFR		
CGTR		
FOTO		
GRTR		
GRFR		
MIFR		
NLFR		
PIFR		
SPPE	2-15	2-5
WOFR		



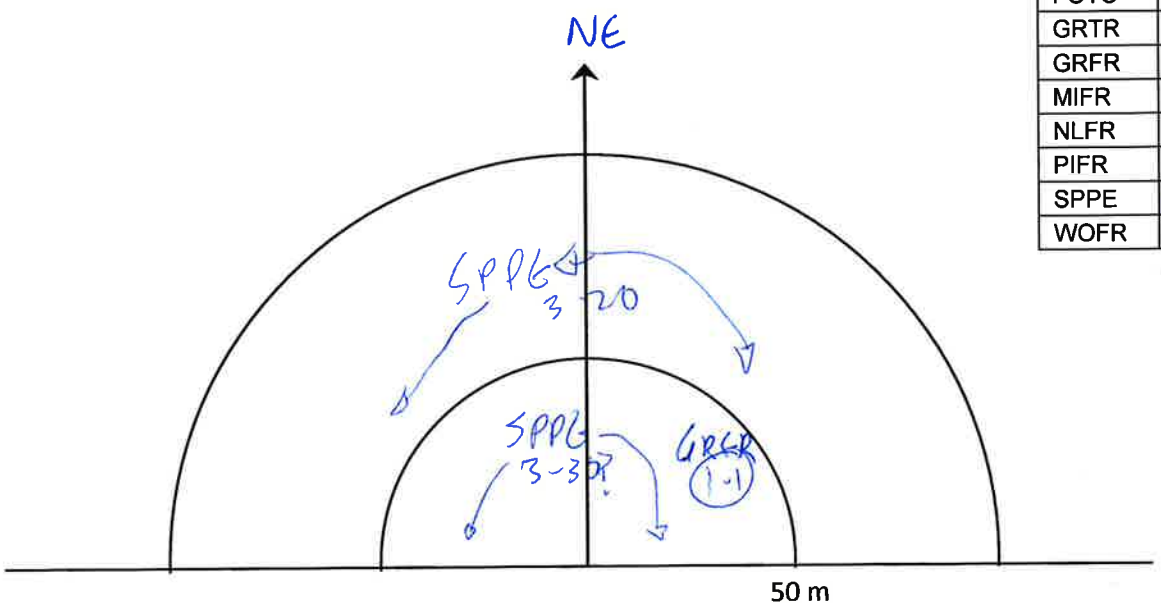
Property: Burls Creek **Surveyor:** Josh Vandermeulen **Date:** May 11, 2015

Station: AMPH09 UTM: (618137, 4926542)

Start Time: 9:05 PM

Noise Code: 0

Species	In	Out
AMTO		
BCFR		
BULL		
CHFR		
CGTR		
FOTO		
GRTR		
GRFR	1-1	
MIFR		
NLFR		
PIFR		
SPPE	3-30	3-20
WOFR		

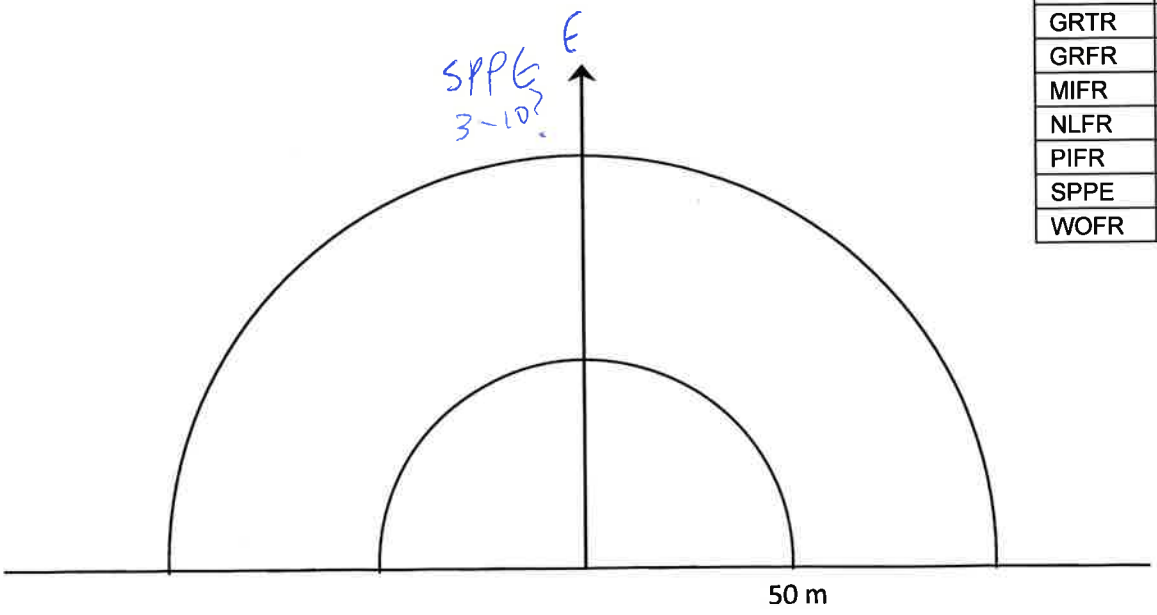


Station: AMPH06 UTM: (618619, 4926664)

Start Time: 9:20 PM

Noise Code: (3)

Species	In	Out
AMTO		
BCFR		
BULL		
CHFR		
CGTR		
FOTO		
GRTR		
GRFR		
MIFR		
NLFR		
PIFR		
SPPE		3-10
WOFR		



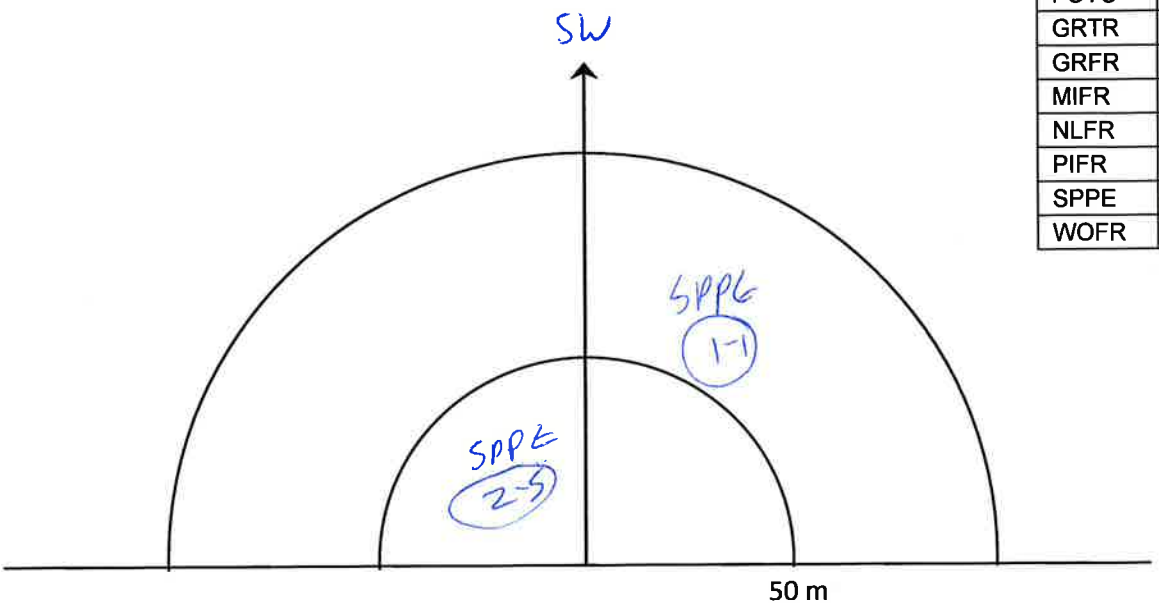
Property: Burls Creek **Surveyor:** Josh Vandemeulen **Date:** ~~Apr~~ May 11, 2015

Station: AMPH01 UTM: (617831, 4926515)

Start Time: 10:34 PM

Noise Code: 1

Species	In	Out
AMTO		
BCFR		
BULL		
CHFR		
CGTR		
FOTO		
GRTR		
GRFR		
MIFR		
NLFR		
PIFR		
SPPE	2-5	1-1
WOFR		

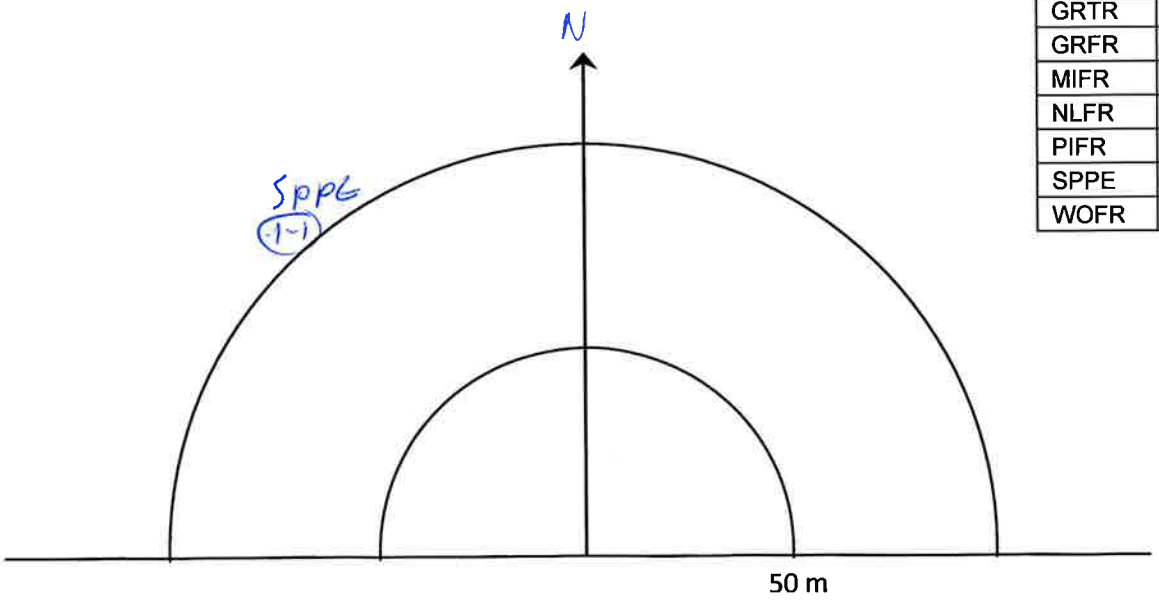


Station: AMPH02 UTM: (617307, 4926288)

Start Time: 10:49 PM

Noise Code: 1

Species	In	Out
AMTO		
BCFR		
BULL		
CHFR		
CGTR		
FOTO		
GRTR		
GRFR		
MIFR		
NLFR		
PIFR		
SPPE		1-1
WOFR		



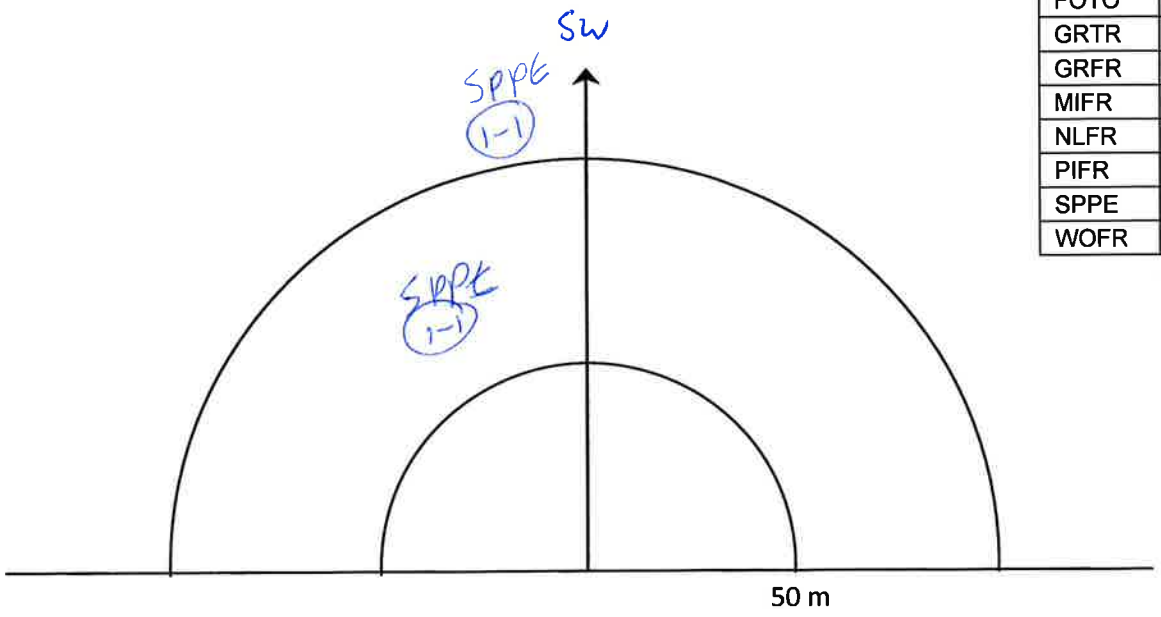
Property: Burls Creek **Surveyor:** Josh Vandamenter **Date:** May 11, 2015

Station: AMPH07 UTM: (618009, 4925779)

Start Time: 11:06 PM

Noise Code: 0

Species	In	Out
AMTO		
BCFR		
BULL		
CHFR		
CGTR		
FOTO		
GRTR		
GRFR		
MIFR		
NLFR		
PIFR		
SPPE		1-2
WOFR		

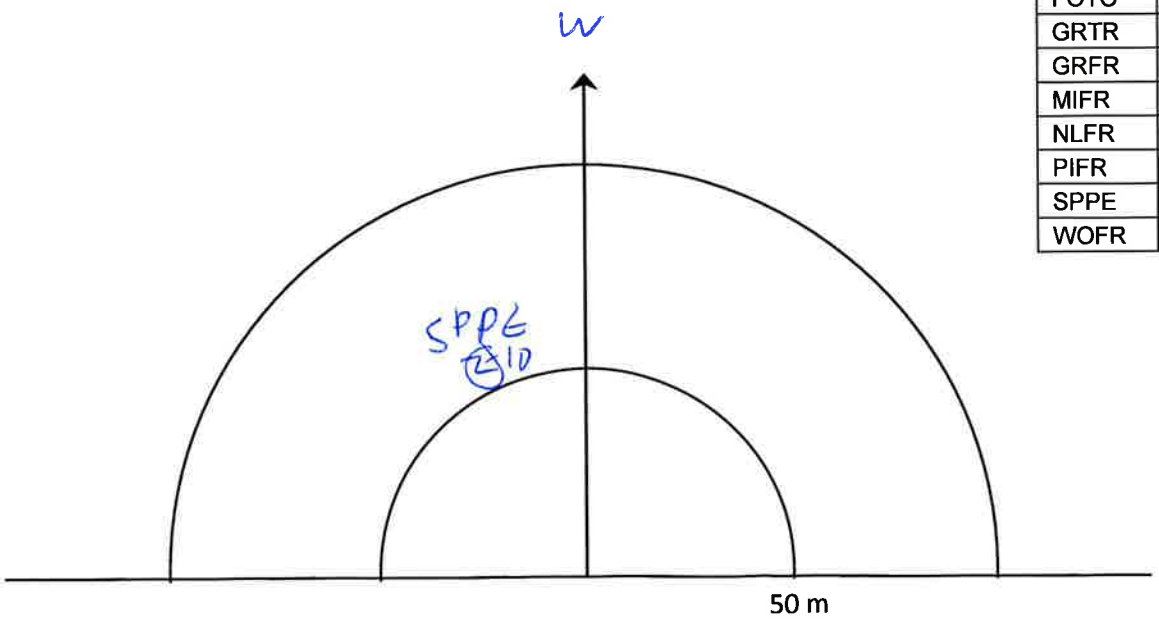


Station: AMPH04 UTM: (618602, 4925939)

Start Time: 9:55 PM

Noise Code: 0

Species	In	Out
AMTO		
BCFR		
BULL		
CHFR		
CGTR		
FOTO		
GRTR		
GRFR		
MIFR		
NLFR		
PIFR		
SPPE		2-10
WOFR		



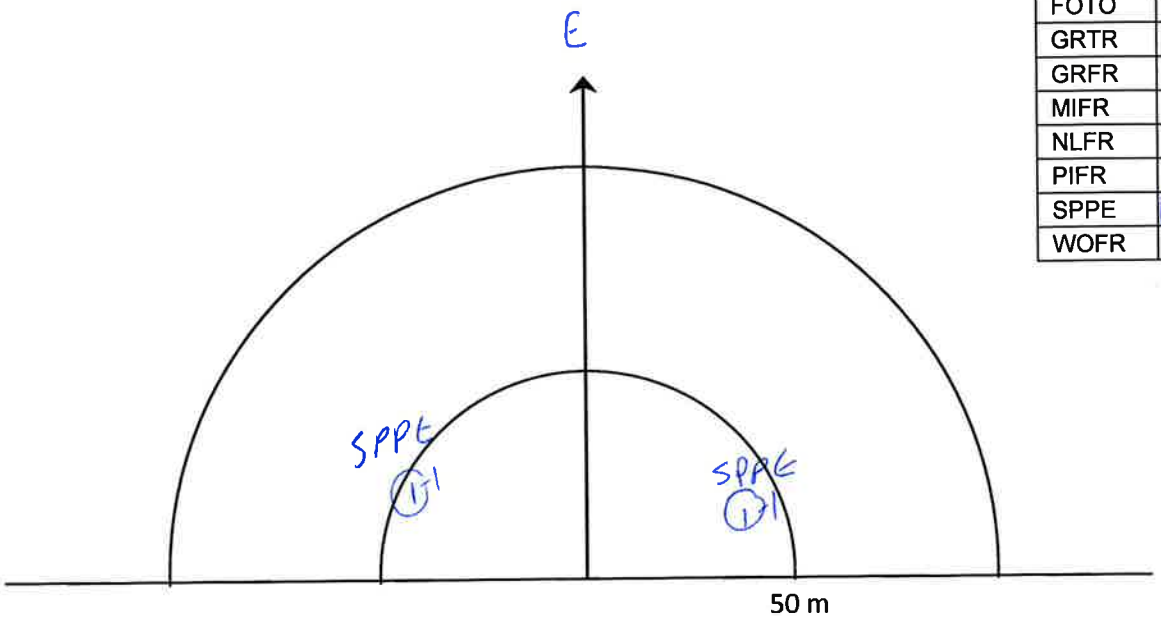
Property: Burks Creek Surveyor: Josh Vandermolen Date: May 11, 2015

Station: AMPH05 UTM: (619020, 4926149)

Start Time: 9:38 PM

Noise Code: 0

Species	In	Out
AMTO		
BCFR		
BULL		
CHFR		
CGTR		
FOTO		
GRTR		
GRFR		
MIFR		
NLFR		
PIFR		
SPPE	1-2	
WOFR		

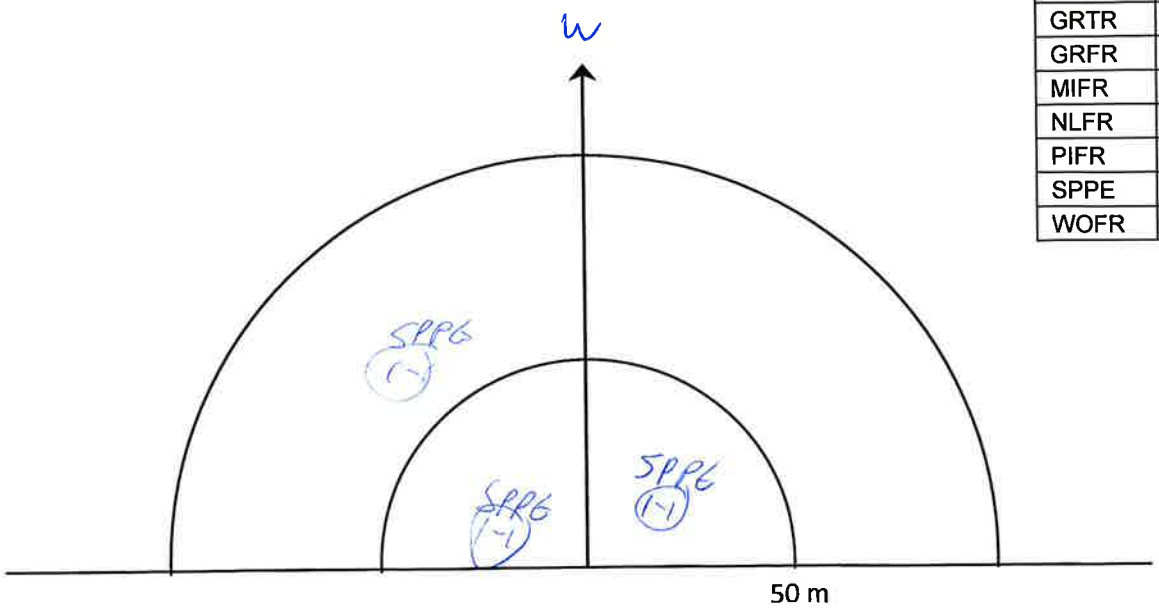


Station: AMPH08 UTM: ~~(618)~~ (616949, 4925511)

Start Time: 11:20 PM

Noise Code: 2 - raining heavily

Species	In	Out
AMTO		
BCFR		
BULL		
CHFR		
CGTR		
FOTO		
GRTR		
GRFR		
MIFR		
NLFR		
PIFR		
SPPE	1-2	1-1
WOFR		



WSP Field Survey Form	Property: Burls Creek	
	Project Number: 151-03995-00	
	Surveyor Name: JDV	
	Assistant Name: /	
Date: June 14/15	Survey Start Time: 9:30 PM	Survey End Time: 12:15 AM

Weather Conditions:

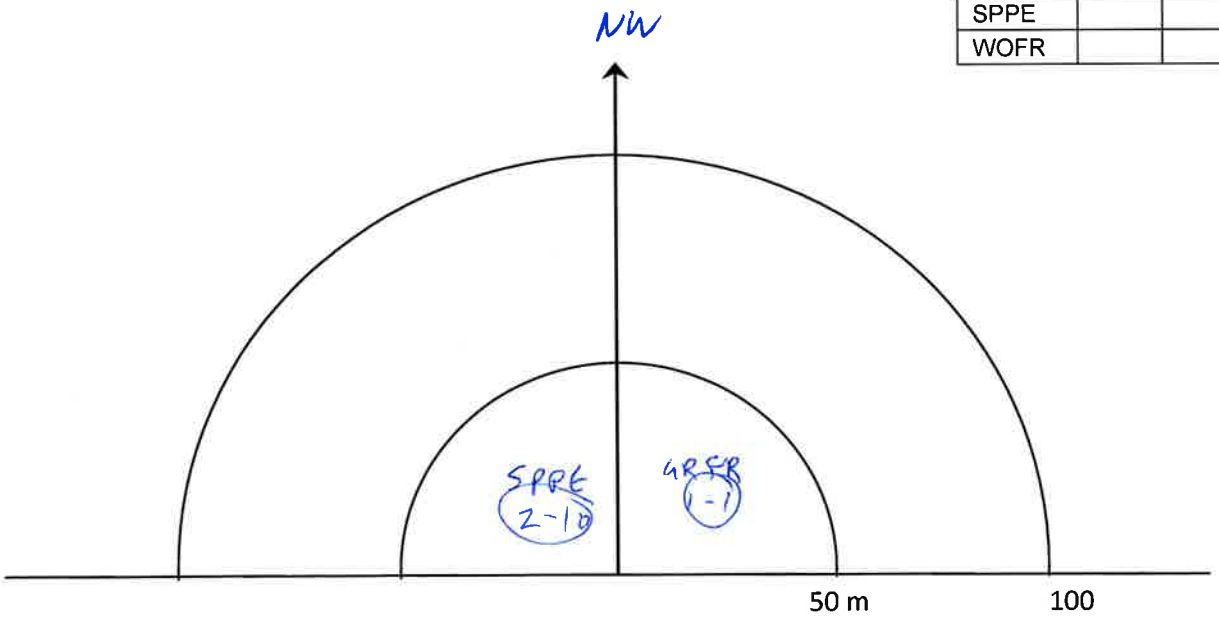
Temperature	20 °C check one: ☐ measured OR ☐ estimated
Beaufort Wind Scale	**0** Calm (0-2 km/h) **1** Light air (2-6 km/h) **2** Light breeze (6-11 km/h) **3** Gentle breeze (12-19 km/h) **4** Moderate breeze (20-28 km/h) **5** Fresh breeze (29-38 km/h) **6** Very windy (39+ km/h)
Precipitation	None/dry ____ Damp ✓ Haze ____ Fog ____ Drizzle ____ Rain ____
Cloud Cover (10ths)	100

Station: AMPH03 UTM: 617895, 4926406

Start Time: 9:33 PM

Noise Code: 1

Species	In	Out
AMTO		
BCFR		
BULL		
CHFR		
CGTR		
FOTO		
GRTR		
GRFR		
MIFR		
NLFR		
PIFR		
SPPE		
WOFR		



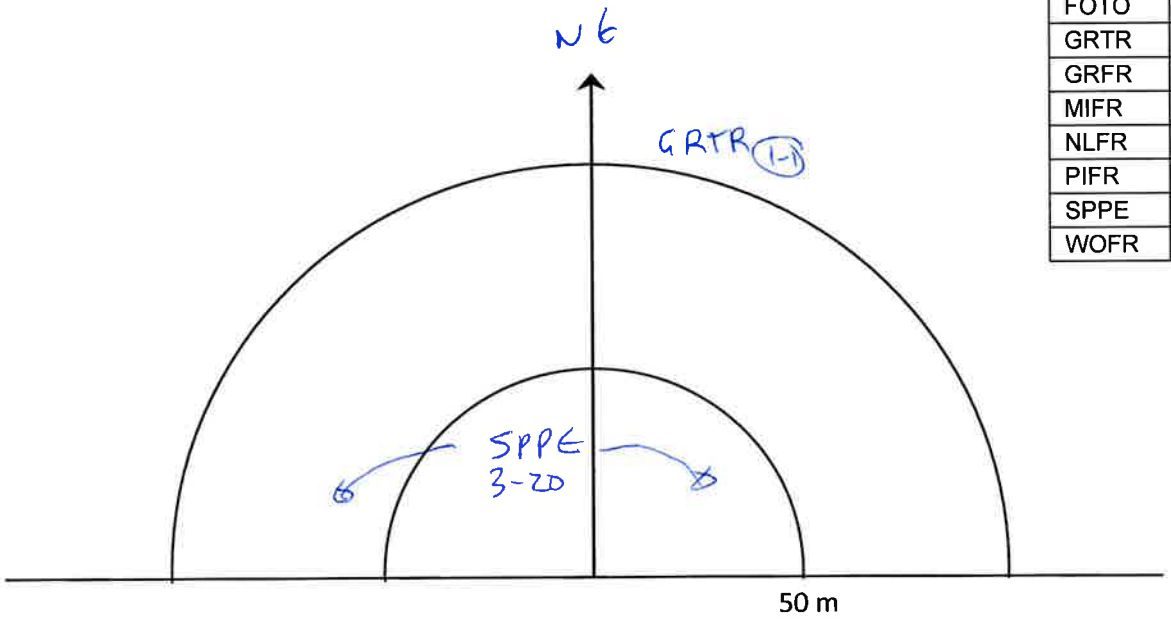
Property: Burls Creek Surveyor: JDV Date: June 14/15 Page 2 of 5

Station: AMPH09 UTM: 618137, 4926542

Start Time: 9:49 PM

Noise Code: 1

Species	In	Out
AMTO		
BCFR		
BULL		
CHFR		
CGTR		
FOTO		
GRTR		
GRFR		
MIFR		
NLFR		
PIFR		
SPPE		
WOFR		

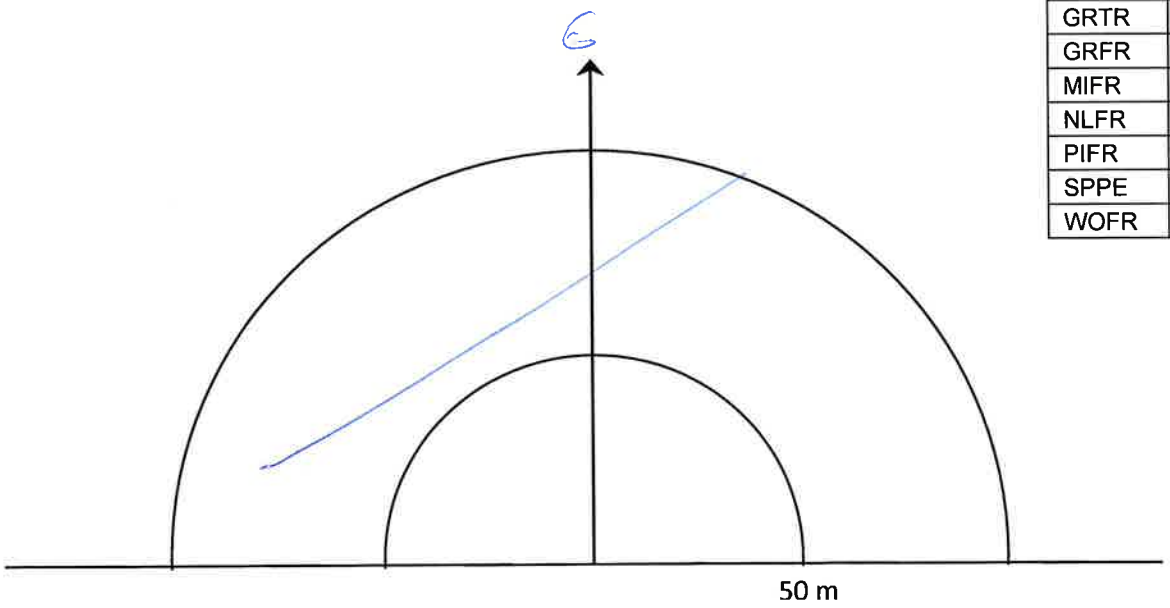


Station: AMPH06 UTM: 618619, 4926664

Start Time: 10:09 PM

Noise Code: 1

Species	In	Out
AMTO		
BCFR		
BULL		
CHFR		
CGTR		
FOTO		
GRTR		
GRFR		
MIFR		
NLFR		
PIFR		
SPPE		
WOFR		



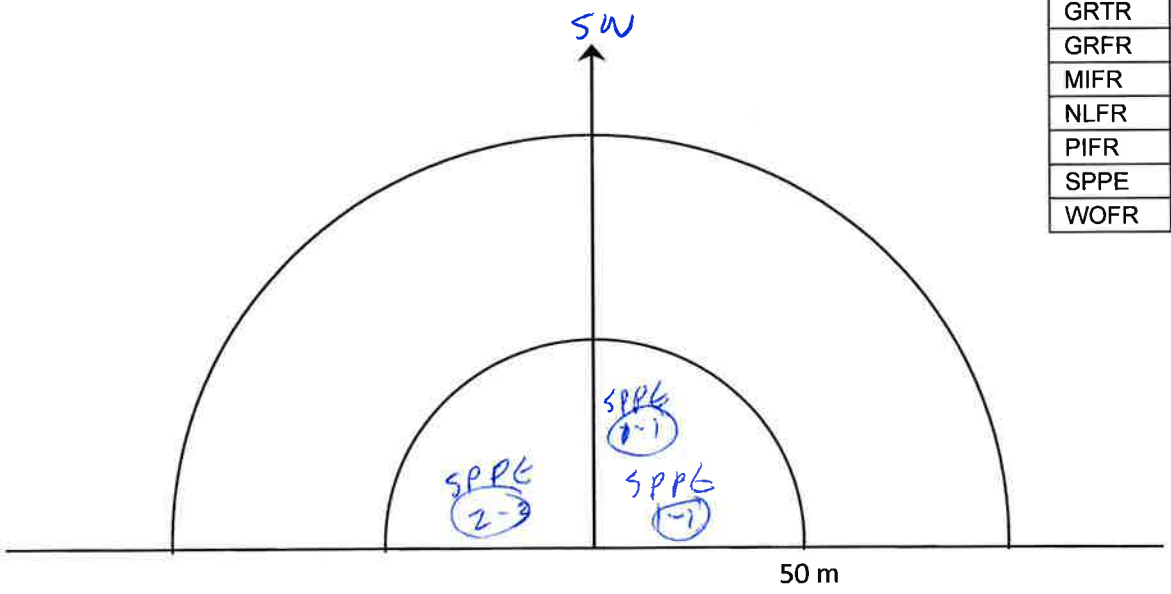
Property: Burls Creek **Surveyor:** JDV **Date:** June 14/15 Page 3 of 5

Station: AMPH01 UTM: 617831, 4926515

Start Time: 10:27 PM

Noise Code: 1

Species	In	Out
AMTO		
BCFR		
BULL		
CHFR		
CGTR		
FOTO		
GRTR		
GRFR		
MIFR		
NLFR		
PIFR		
SPPE		
WOFR		

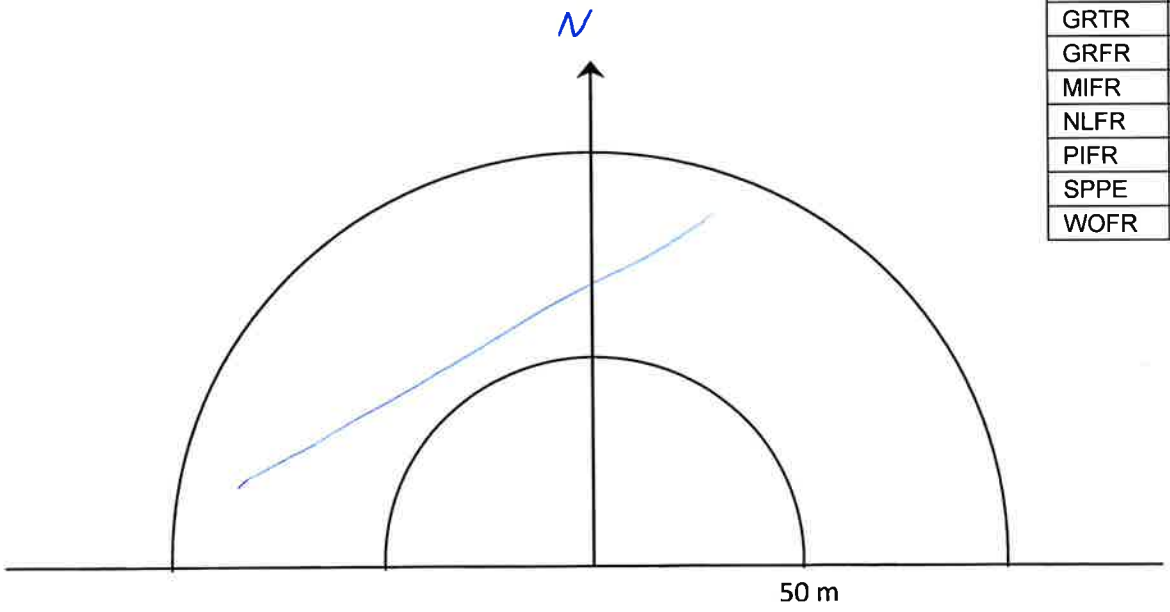


Station: AMPH02 UTM: 617307, 4926288

Start Time: 10:58 PM

Noise Code: 1

Species	In	Out
AMTO		
BCFR		
BULL		
CHFR		
CGTR		
FOTO		
GRTR		
GRFR		
MIFR		
NLFR		
PIFR		
SPPE		
WOFR		



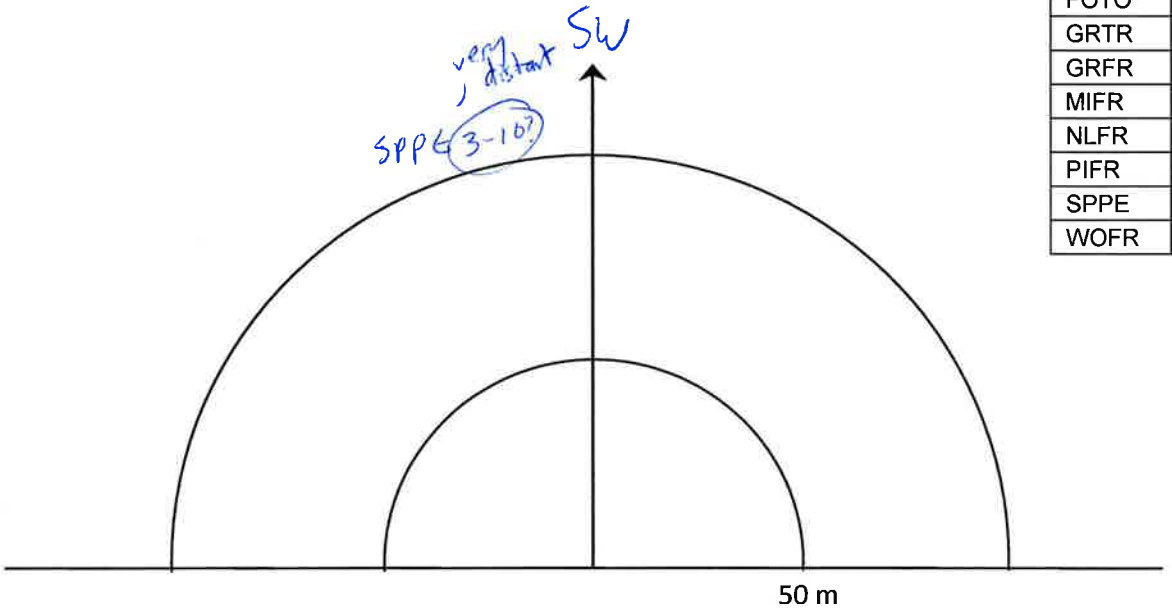
Property: Burk Creek **Surveyor:** JDV **Date:** June 14/15 Page 4 of 5

Station: AMPH07 UTM: 618009, 4925779

Start Time: 11:17 PM

Noise Code: 1

Species	In	Out
AMTO		
BCFR		
BULL		
CHFR		
CGTR		
FOTO		
GRTR		
GRFR		
MIFR		
NLFR		
PIFR		
SPPE		
WOFR		

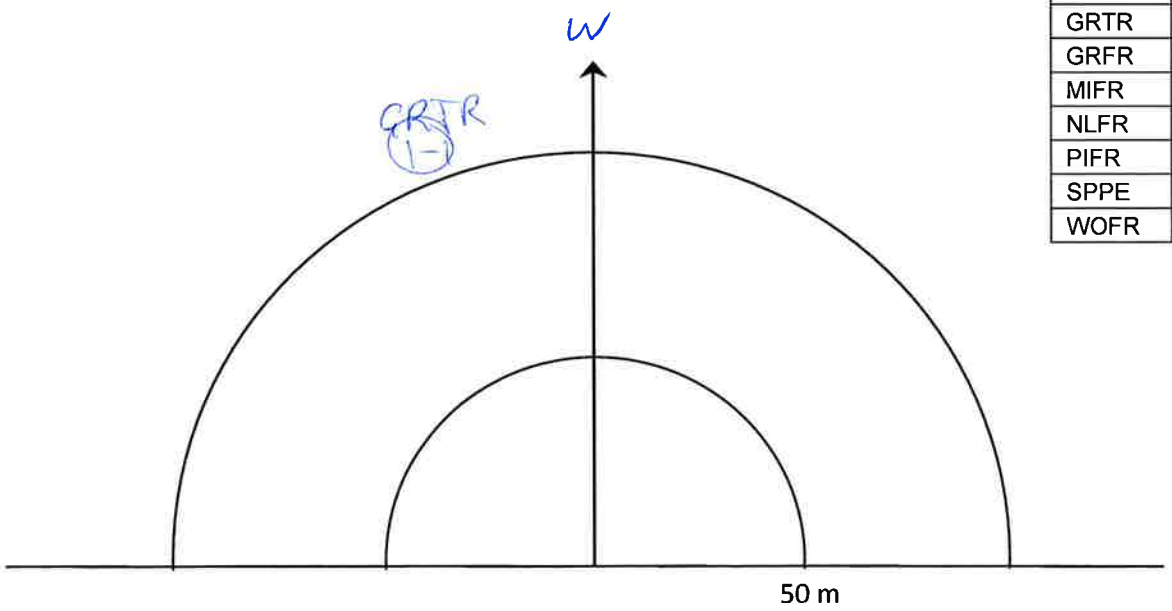


Station: AMPH04 UTM: 618602, 4925939

Start Time: 11:33 PM

Noise Code: 1

Species	In	Out
AMTO		
BCFR		
BULL		
CHFR		
CGTR		
FOTO		
GRTR		
GRFR		
MIFR		
NLFR		
PIFR		
SPPE		
WOFR		



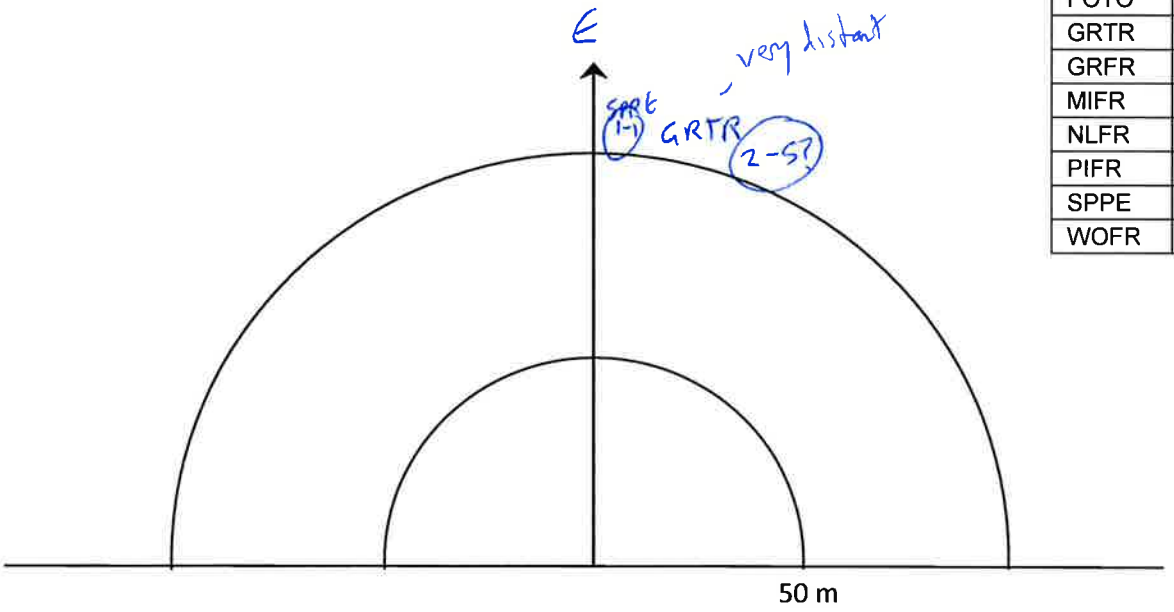
Property: Burls Creek **Surveyor:** JDV **Date:** June 14/15 Page 5 of 5

Station: AMPHOS UTM: 619020, 4926149

Start Time: 11:45 PM

Noise Code: 1

Species	In	Out
AMTO		
BCFR		
BULL		
CHFR		
CGTR		
FOTO		
GRTR		
GRFR		
MIFR		
NLFR		
PIFR		
SPPE		
WOFR		

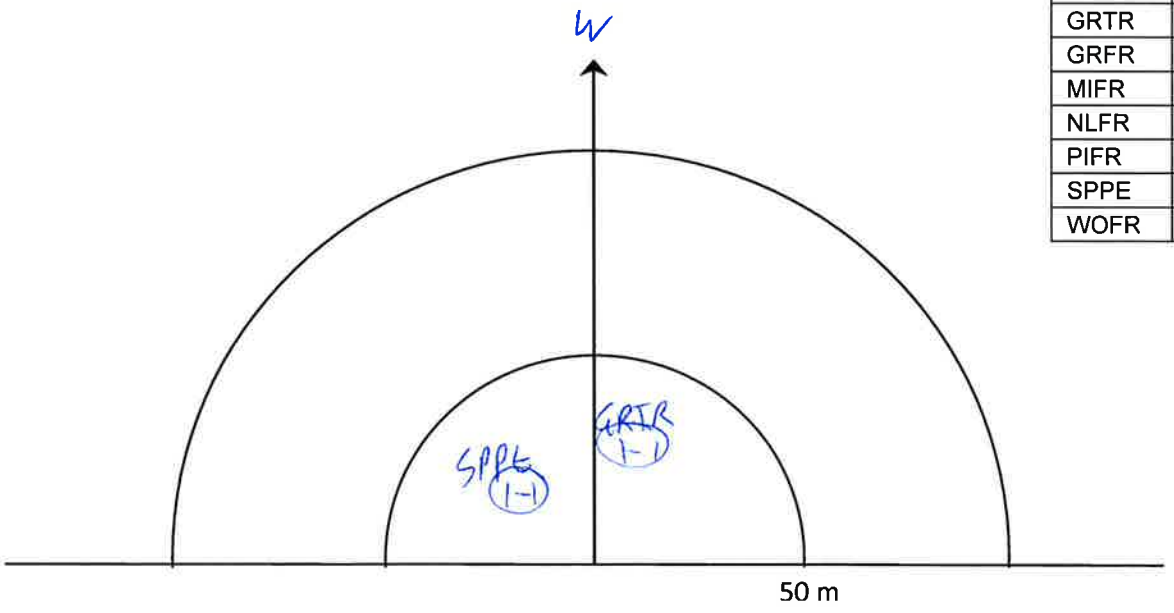


Station: AMPHO8 UTM: 616949, 4925511

Start Time: 12:06 AM

Noise Code: 1

Species	In	Out
AMTO		
BCFR		
BULL		
CHFR		
CGTR		
FOTO		
GRTR		
GRFR		
MIFR		
NLFR		
PIFR		
SPPE		
WOFR		



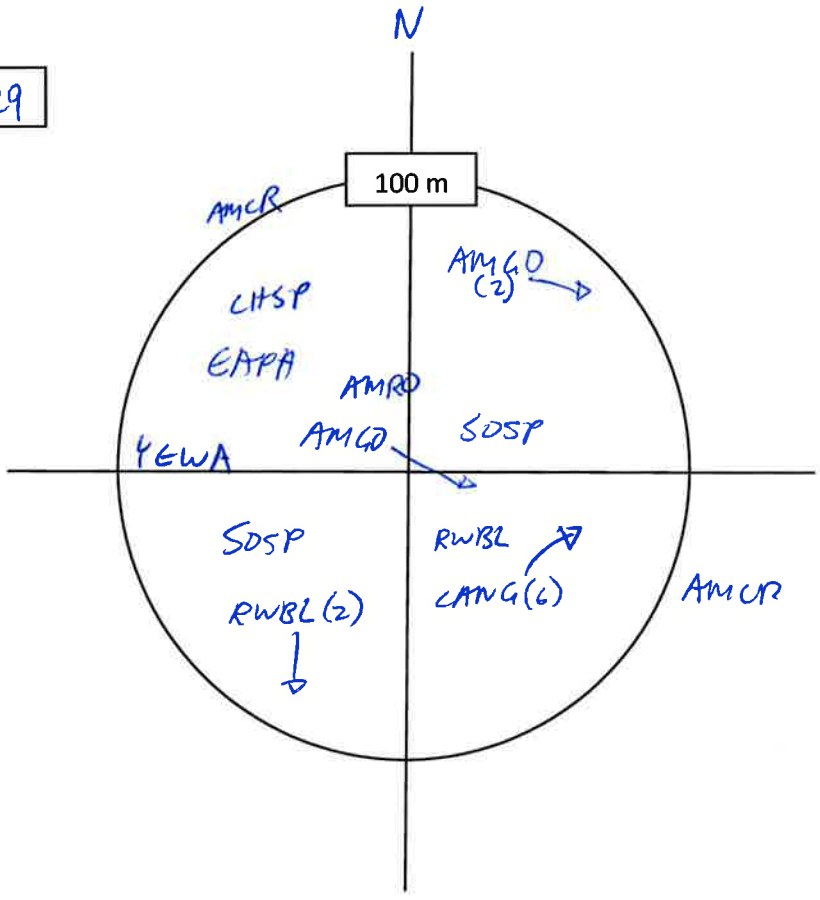
WSP Field Survey Form	Property: Burl's Creek	
	Project Number:	
	Surveyor Name: JDV	
	Assistant Name: —	
Date: May 31, 2015	Survey Start Time: 7:50 AM	Survey End Time: 11:35 AM

Weather Conditions:

Temperature	11 °C check one: ☐ measured OR ☐ estimated
Beaufort Wind Scale	**0** Calm (0-2 km/h) **1** Light air (2-6 km/h) **2** Light breeze (6-11 km/h) **3** Gentle breeze (12-19 km/h) **4** Moderate breeze (20-28 km/h) **5** Fresh breeze (29-38 km/h) **6** Very windy (39+ km/h)
Precipitation	None/dry ___ Damp ✓ Haze ___ Fog ___ Drizzle ___ Rain ___
Cloud Cover (10ths)	100% light rain at start of survey, ~~clear through fog~~ none the rest of the survey.

Time: 8:01	
Station #: BC01	UTM: 617089, 4925729

Species	< 100 m	>100 m



Species list for entire survey

EAPH	SOSP	AMGO	RBGR	AMRO	AMCR
CEDW	CHSP	AMCR	CANG	WOTH	EUST
RWBL	VESP	SAVS	COGR	BHCO	RBGU
BLJA	WAVI	AMRE	YEWA	GRCA	REVI
EAKI	INBU	ALFL	BLJA	BCCH	CORA
TUVU	BARS	HOWR	COYE	HAWO	

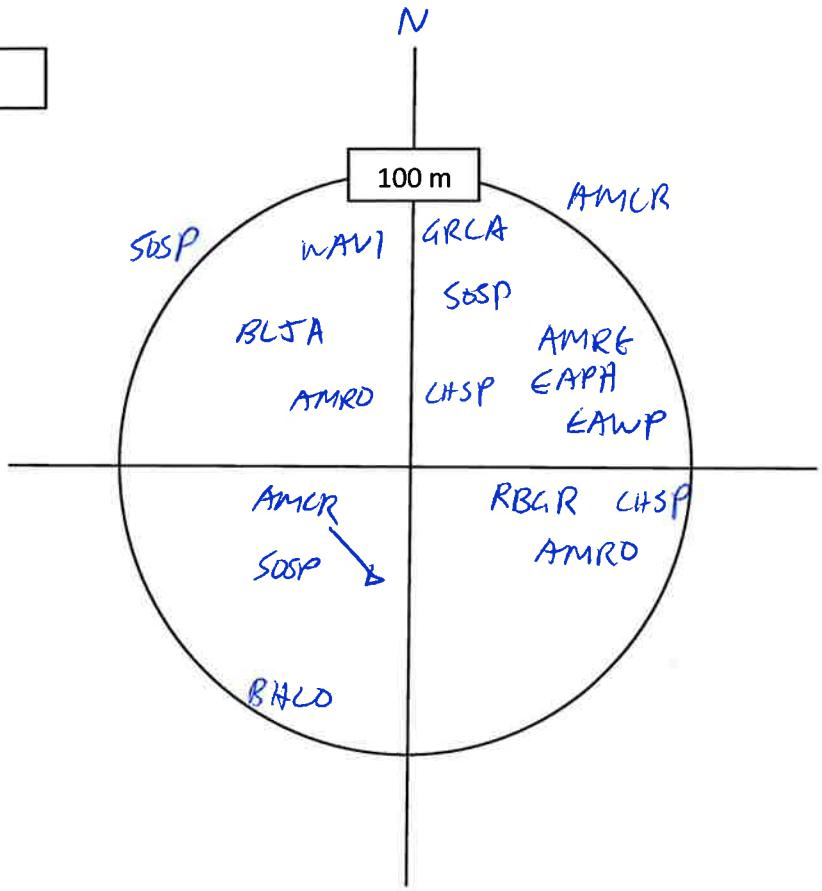
* BARS: single bird flying over field N. of racetrack b/w BC04 + BC05

- nest found on silo S. of site @ Ridgoro Farm (250 Ridge Rd. E)

Property: Burl's Creek **Surveyor:** JDV **Date:** May 31, 2015

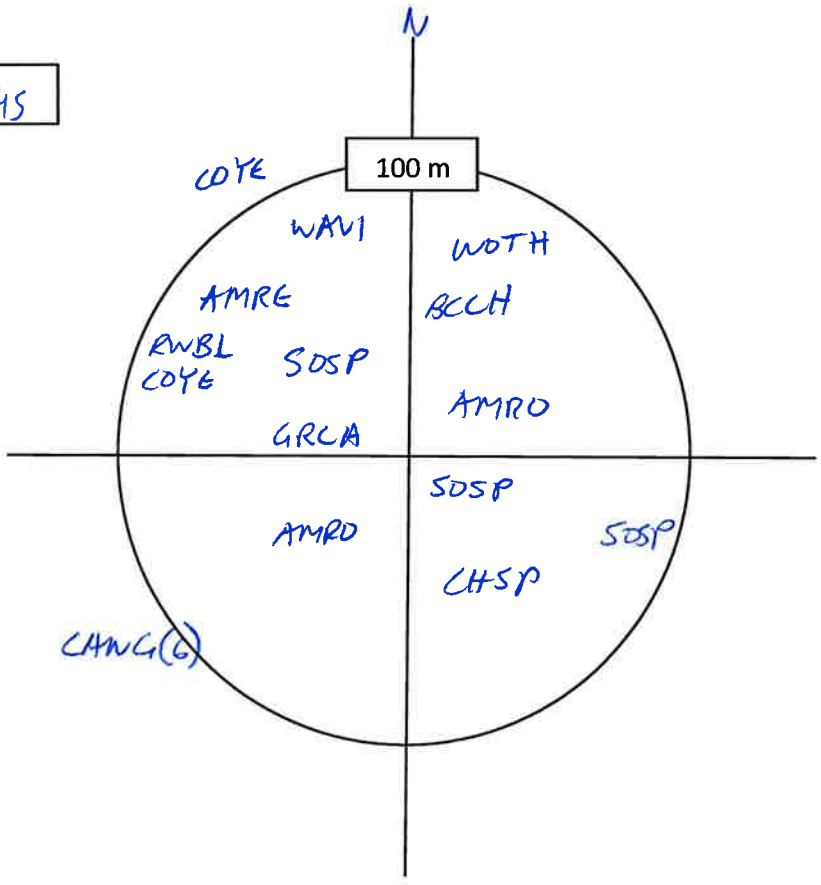
Time: 8:29	
Station #: BC02	UTM: 617620, 4925419

Species	< 100 m	>100 m



Time: 8:58	
Station #: BC06	UTM: 618341, 4926545

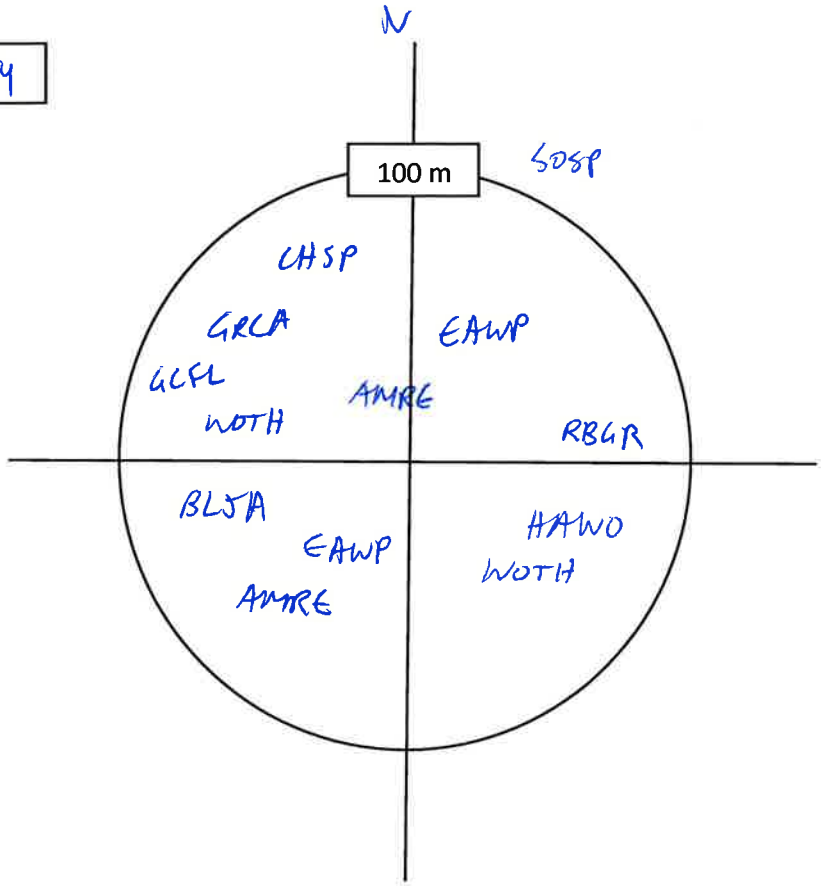
Species	<100 m	>100 m



Property: Bird's Creek **Surveyor:** JDV **Date:** May 31, 2015

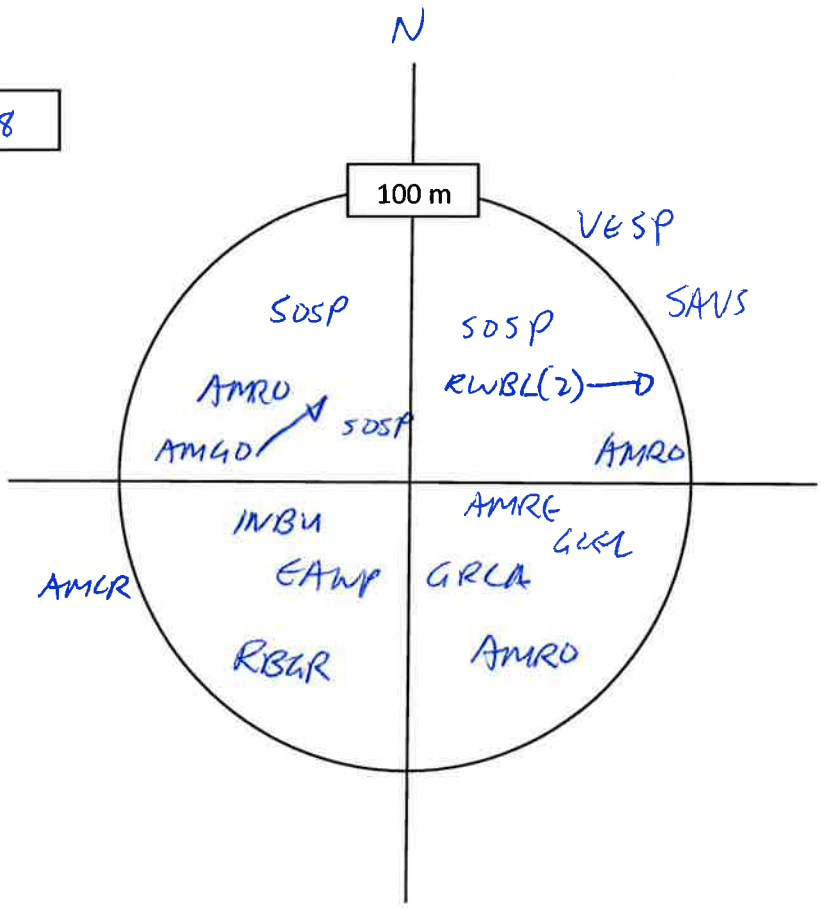
Time: 9:33	
Station #: BC08	UTM: 619244, 4926254

Species	< 100 m	>100 m



Time: 9:52	
Station #: BC07	UTM: 618651, 4926118

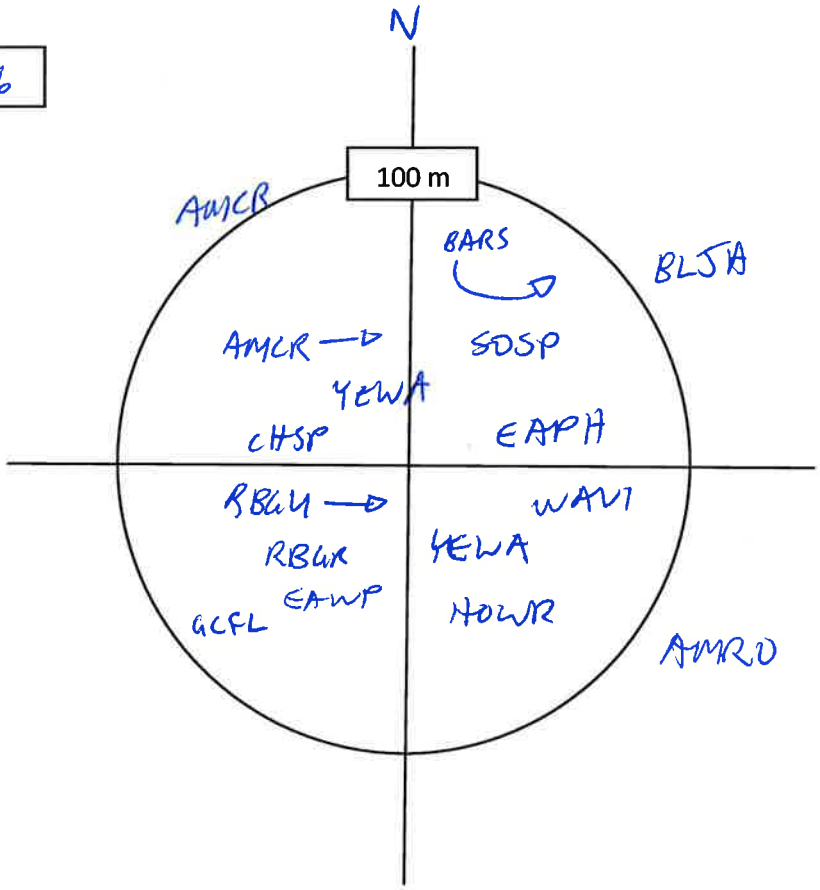
Species	<100 m	>100 m



Property: Burl's Creek **Surveyor:** JDV **Date:** May 31, 2015

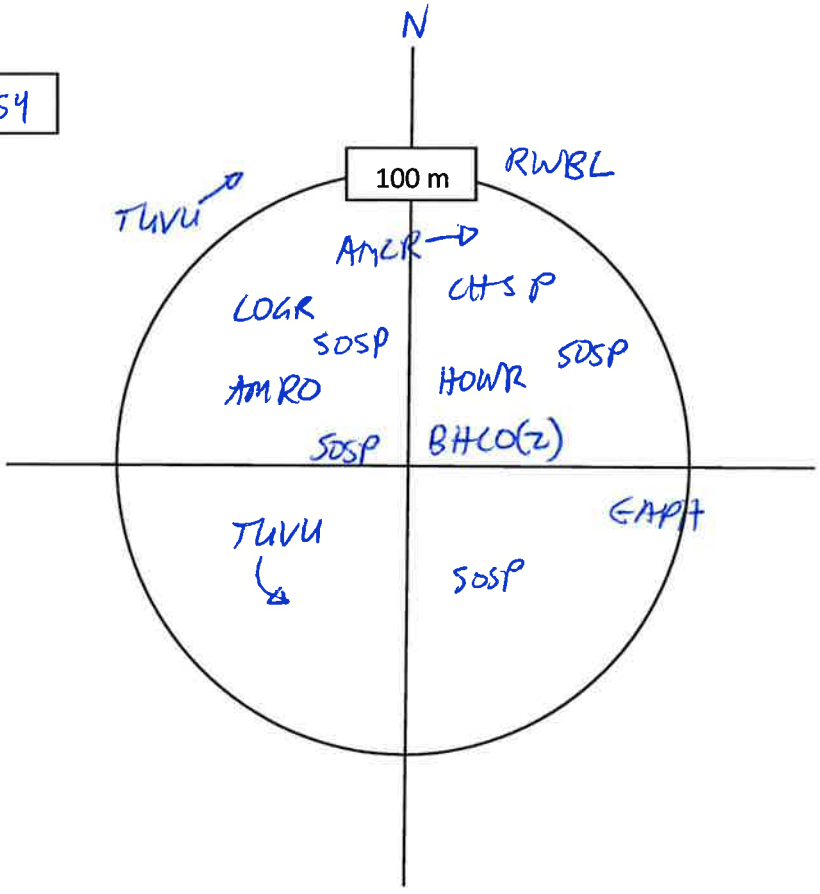
Time: 10:15	
Station #: BC05	UTM: 618046, 4925746

Species	< 100 m	>100 m



Time: 10:39	
Station #: BC04	UTM: 617806, 4926154

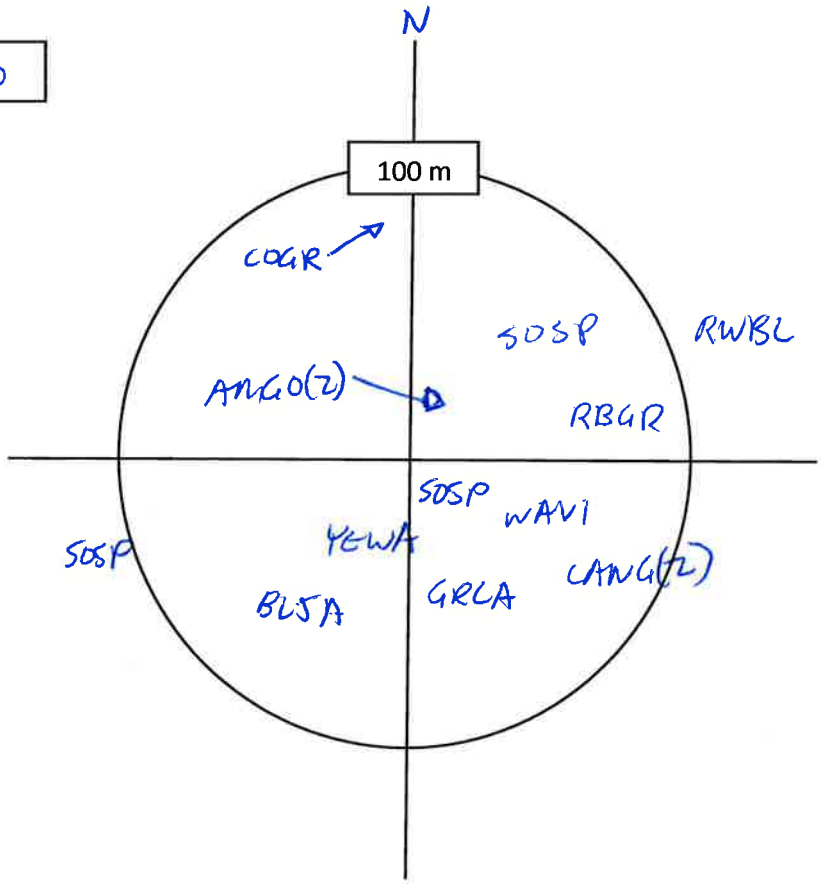
Species	<100 m	>100 m



Property: Bull's Creek **Surveyor:** JDV **Date:** May 31, 2015

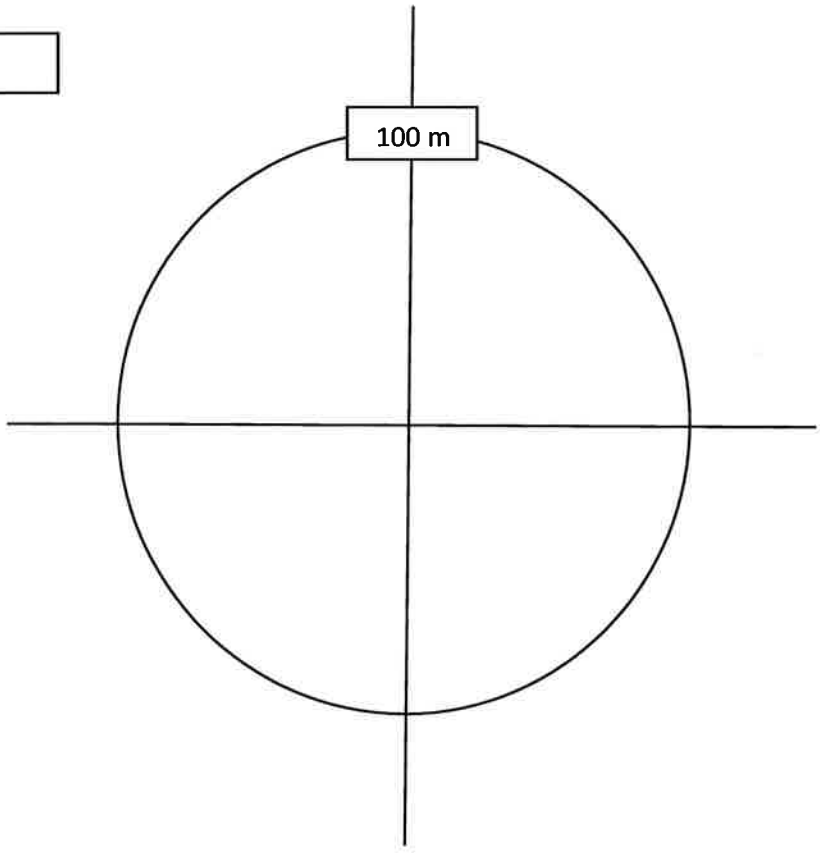
Time: 11:08	
Station #: BC03	UTM: 617619, 4926510

Species	< 100 m	>100 m



Time:	
Station #:	UTM:

Species	<100 m	>100 m



WSP Field Survey Form	Property: Burl's Creek	
	Project Number: 151-03995-00	
	Surveyor Name: DJR	
	Assistant Name:	
Date: June 11, 2015	Survey Start Time: 6 30 am	Survey End Time: 11:30 am

Weather Conditions:

Temperature	11 °C check one: ☐ measured OR ☑ estimated
Beaufort Wind Scale	0 Calm (0-2 km/h) 1 Light air (2-6 km/h) (2) Light breeze (6-11 km/h) 3 Gentle breeze (12-19 km/h) 4 Moderate breeze (20-28 km/h) 5 Fresh breeze (29-38 km/h) 6 Very windy (39+ km/h)
Precipitation	None/dry ✓ Damp ____ Haze ____ Fog ____ Drizzle ____ Rain ____
Cloud Cover (10ths)	30%

AMCR
SOSP
RWBB
RBGU
AMRO
HEGU
VESP
COGR
CHSP
KILL
AMGO
SAVS
EUST
REVI
CAGO
BEKI
CEWA
GCFL
MIALL
MODO
SPSA
EAKB
MAWA
YEWA
BRSW
NOFL
GRCB

TUVU
EAWP
NOWA
HOWR
WEEK
OVEN
RBGR
YBSA
EAPH
SWSP
CYTH
WAVI

Mammals

RESQ
GRHG

Species AT Risk

Barn Swallow
1: (617840, 4426043)
drinking water from puddle
3 individuals

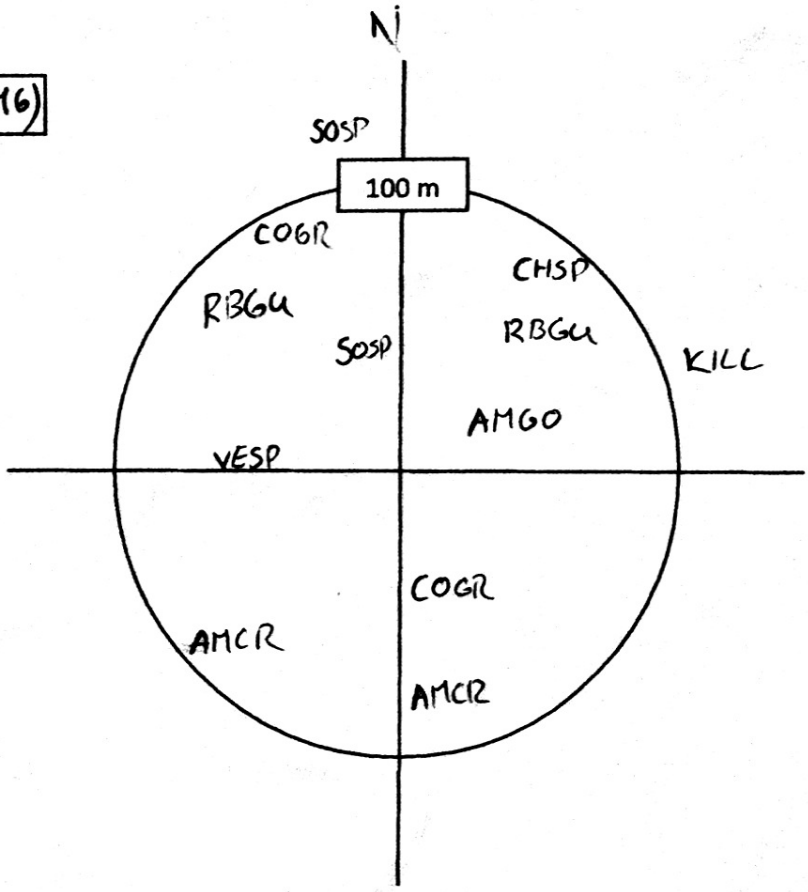
WSP Field Survey Form	Property: Burl's Creek	
	Project Number: 151-03995-00	
	Surveyor Name: DJR	
	Assistant Name:	
Date: June 11, 2015	Survey Start Time: 6:30 am	Survey End Time: 11:30 am

Weather Conditions:

Temperature	11 °C check one: ☐ measured OR ☑ estimated
Beaufort Wind Scale	**0** Calm (0-2 km/h) **1** Light air (2-6 km/h) **(2)** Light breeze (6-11 km/h) **3** Gentle breeze (12-19 km/h) **4** Moderate breeze (20-28 km/h) **5** Fresh breeze (29-38 km/h) **6** Very windy (39+ km/h)
Precipitation	None/dry ✓ Damp ____ Haze ____ Fog ____ Drizzle ____ Rain ____
Cloud Cover (10ths)	30%

Time: 6:42 am	
Station #: 1	UTM: (617071, 4925746)

Species	< 100 m	>100 m
Killdeer	1	1
Ring-billed Gull		
American Crow	4	
Song Sparrow	1	1
Vesper Sparrow	1	
Chipping Sparrow	1	
Common Grackle	2	
American Goldfinch	2	

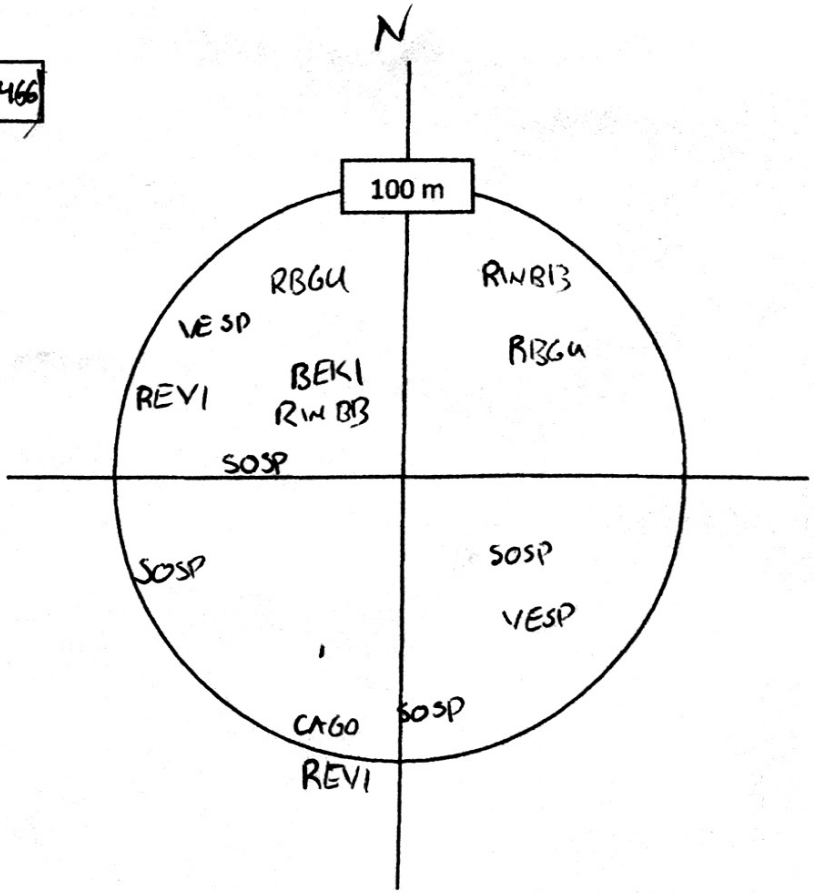


Property: Burt's Creek Surveyor: DJR Date: June 11, 2015 Page 1 of 4

Time: 7:07

Station #: 2 UTM: (617629, 4925466)

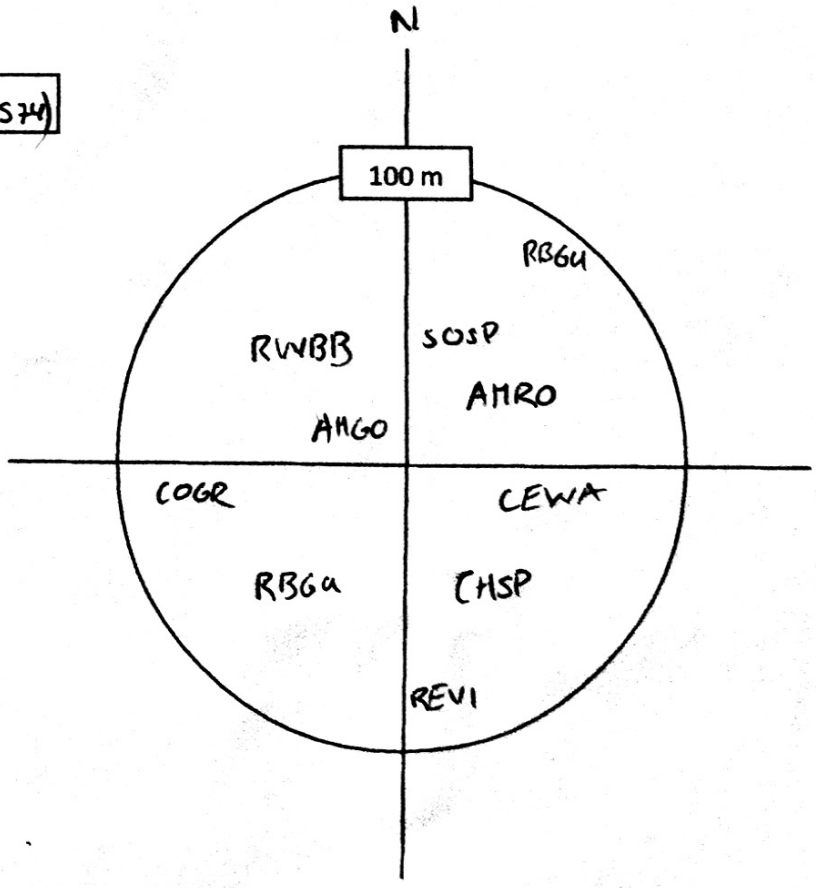
Species	< 100 m	>100 m
Canada Goose	30	
Ring-billed Gull	6	
Belted Kingfisher	2	
Red-eyed Vireo	1	1
Song Sparrow	4	
Vesper Sparrow	2	
Red-winged Blackbird	2	



Time: 7:47

Station #: 3 UTM: (617638, 4926574)

Species	<100 m	>100 m
Ring-billed Gull	4	
Red-eyed Vireo	1	
Cedar Waxwing	3	
American Robin	1	
Song Sparrow	1	
Chipping Sparrow	1	
Common Grackle	1	
American Goldfinch	3	
Red-winged Blackbird	2	

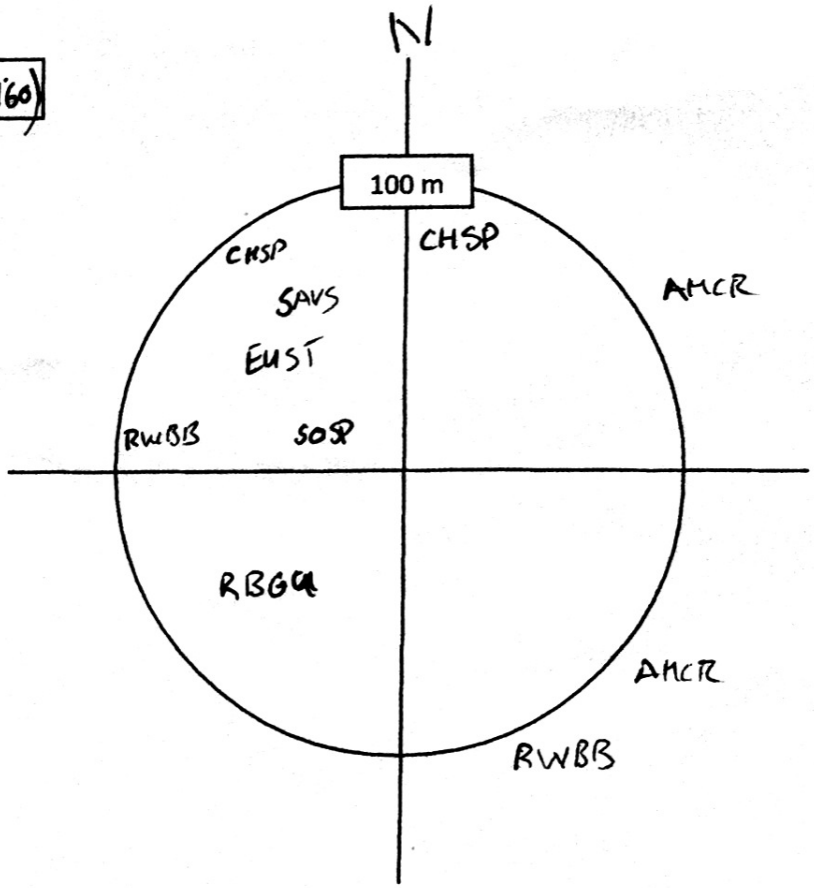


Property: Burls Creek **Surveyor:** VDJR **Date:** June 11, 2015

Time: 8:16 am

Station #: 4 UTM: (617765, 4926160)

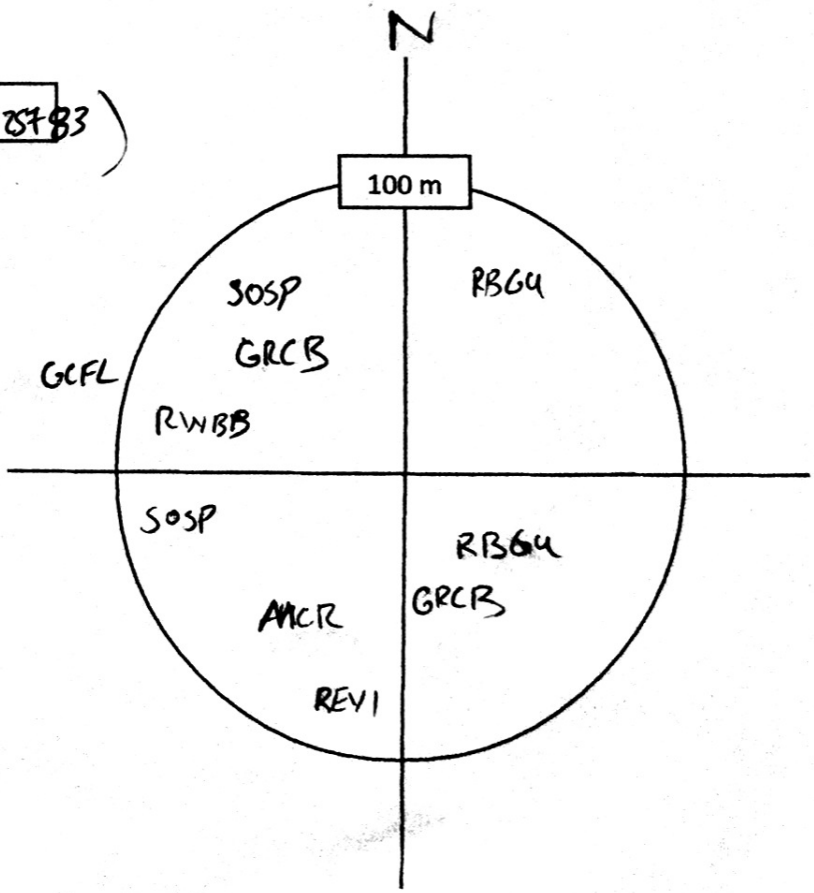
Species	< 100 m	>100 m
Ring-billed Gull	20	
American Crow		2
European Starling	2	
Chipping Sparrow	2	
Song Sparrow	1	
Savannah Sparrow	1	
Red-winged Blackbird	2	1



Time: 9:10

Station #: 5 UTM: (618081, 4925783)

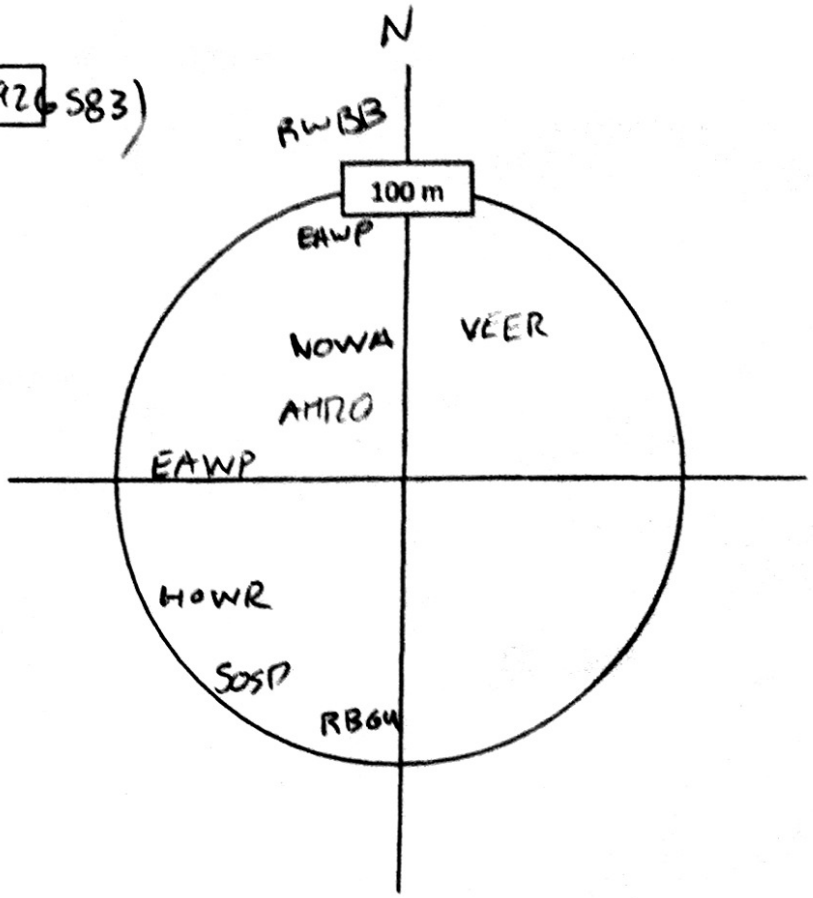
Species	<100 m	>100 m
Ring-billed Gull	5	
Great-crested Flycatcher		1
American Crow	1	
Gray Catbird	2	
Red-eyed Vireo	1	
Song Sparrow	2	
Red-winged Blackbird	1	



Property: Burl's Creek Surveyor: DJR Date: June 11, 2015 Page 3 of 4

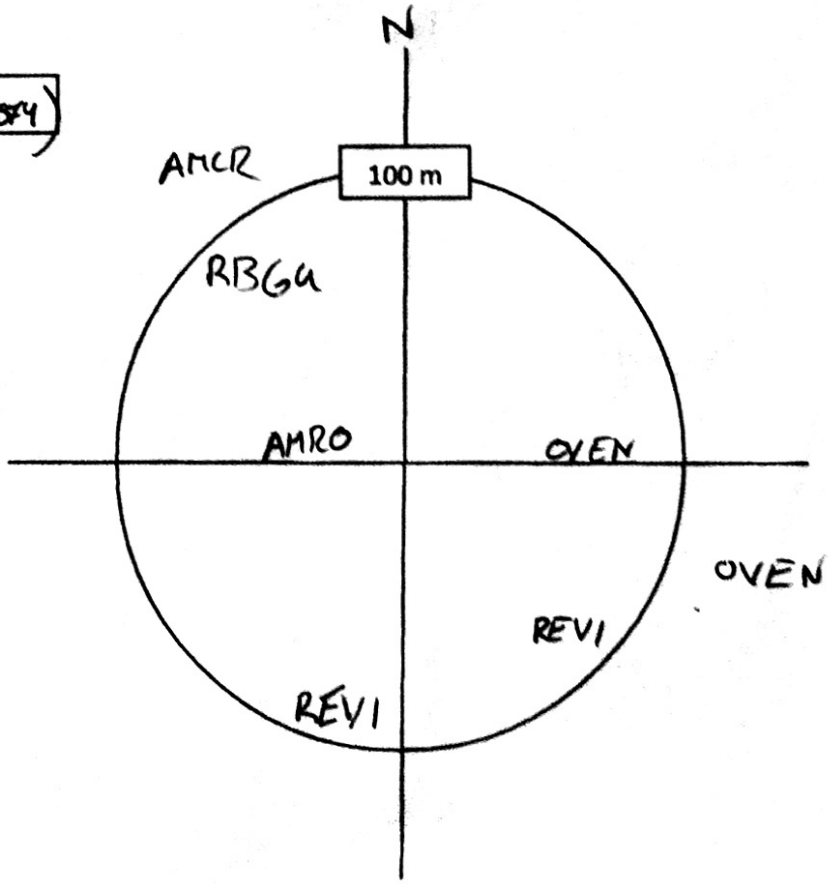
Time: 9:35 am
Station #: 6 UTM: (618308 4926583)

Species	< 100 m	>100 m
Ring-billed Gull	1	
Eastern Wood-Pewee	2	
Veery	1	
American Robin	1	
House Wren	1	
Northern Waterthrush	1	
Song Sparrow	1	
Red-winged Blackbird	#	1



Time: 10:00 am
Station #: 7 UTM: (618657, 4926054)

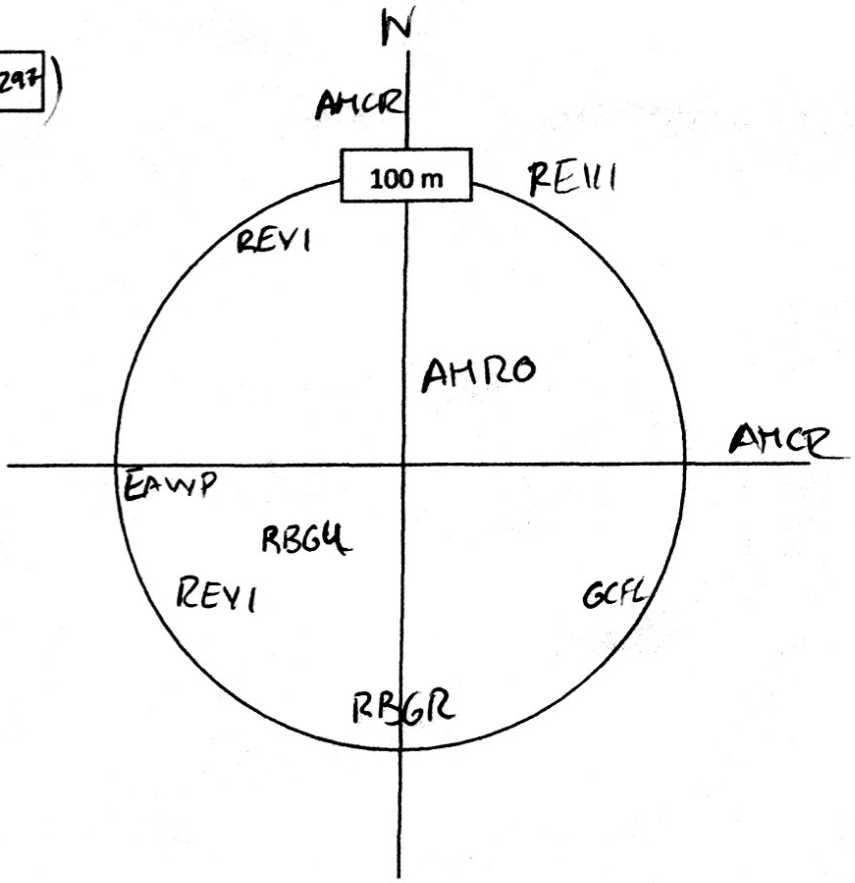
Species	<100 m	>100 m
Ring-billed Gull	1	
American Crow		1
Red-eyed Vireo	2	
American Robin	2	
Ovenbird	1	1



Property: Burl's Creek **Surveyor:** DJR **Date:** June 11, 2015 Page 4 of 4

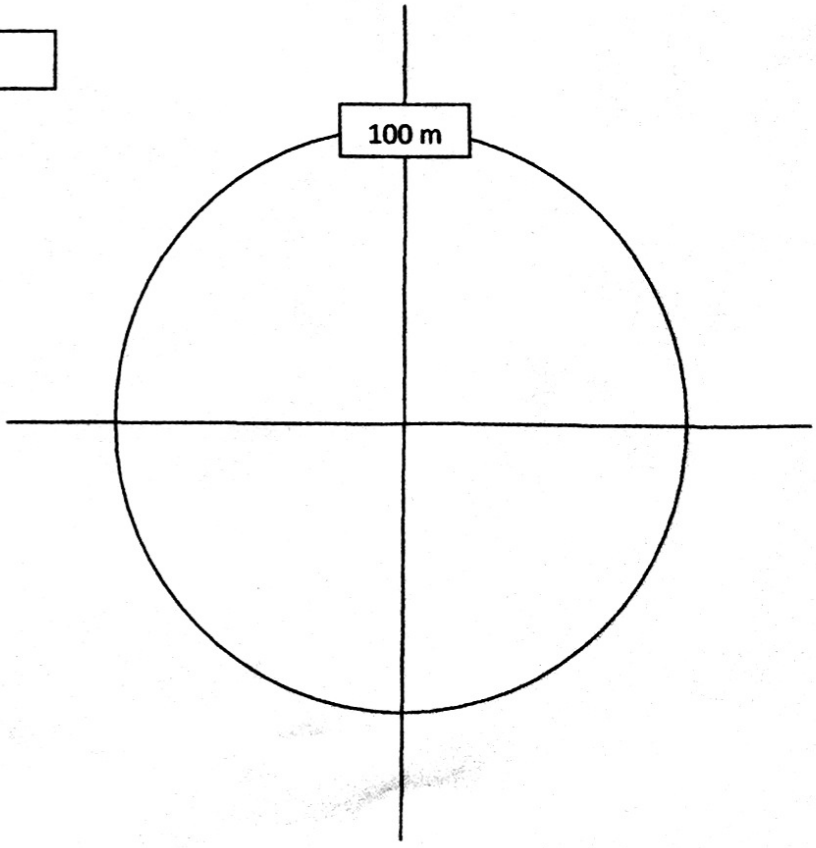
Time: 10:20	
Station #: 8	UTM: (6 192388 4926297)

Species	< 100 m	>100 m
Ring-billed Gull	1	
Great-crested Flycatcher	1	
American Crow		2
Eastern Wood-Pewee	1	
Red-eyed Vireo	2	1
American Robin	1	
Rose-breasted Grosbeak	1	



Time:	
Station #:	UTM:

Species	<100 m	>100 m



Vegetation Survey Data Sheet

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WSP

Field Survey Form

Property: Burke Creek - Area 1 - Plot 1		
Project Number: 151-03995-00		
Surveyor Name: AA		
Assistant Name: -		
Date: May 22/15	Survey Start Time: 09:45	Survey End Time: 11:40

Size Class / Layers: 1 = < 0.5 m; 2 = 0.5 – 2 m; 3 = 2 – 10 m; 4 = > 10 m
Abundance Codes: R - Rare; O – Occasional; A – Abundant; D - Dominant

Species Name / Code	Size Class 1	2	3	4
American Beech				co D
Sugar Maple				D
Tilia AMER			R	
Maple > A. Beech				
Sug. Maple	R	R		
Am. Beech	R	O		
"Ash" (Ph. 6)	R-O	O		R
ALT - Dogwood (CORNALT)	O			
Ironwood		R		
RIBETRI (low Area)	R			
BRAC SAL (logs)				

FRAXPEN

low Areas

Species Name / Code	Size Class 1	2	3	4
Grass sp. (clumps)	R			
CARE PLAN	O			
"Sword" grass	R			
CARE GRAC	R-O			
Christmas fern	R (only 2 clumps)			
OAK FERN	R			
Jack-in-the-pulpit (ARISTRI)	O			Ph. 12, 2
~~Hdy~~ Wild leek (ALLITRI)	A			
~~Wild Sarsaparilla (lobed)~~ (Ph. 4-5)	A-D	CAULTHA		Ph. 4, 5
Bane berry (ACTA RUB)	O			
Trillium sp. (likely T. GRE)	O		T. GRAND	
LADY fern	R			
MAIA STE	R			
OSTRICH Fern	R			
Sens. Fern (ONOCSEN) (Ph. 7, 8)	O (A in low Areas)			
VINE - Wild Cucumber	O	(Ph 9, 10)		
EQUI HYE	R			
FRAG VES	R			
TROUT LILY	R-O			
Ph. 12 - Parasites?	R!	PODOPEL		

6-A in low Area

low Areas = swampy - dry now - EQUI Evidence

Lower Area

Notes:

Open forest (60-70%) w/ little ground cover (open soils) → quite sandy
↳ Because it's been raked!!
- further in - covered in Maple/Beech leaves
- Has lower, swampy Areas that likely carry spring runoff - tree cover not Altered
- Areas of ponded water (ph 11) - not a watercourse, ephemeral
↳ throughout wooded area = SWAMP

Vegetation Survey Data Sheet

Page 1 of 1

WSP

Field Survey Form

Property: Burl's Creek - Area 1 - Plot 2		
Project Number: 151-03995-00		
Surveyor Name: AA		
Assistant Name: –		
Date: May 22/15	Survey Start Time: 11:45	Survey End Time: 12:00

Size Class / Layers: 1 = < 0.5 m; 2 = 0.5 – 2 m; 3 = 2 – 10 m; 4 = > 10 m
Abundance Codes: R - Rare; O – Occasional; A – Abundant; D - Dominant

Species Name / Code	Size Class 1	2	3	4
Grass (seeded)	D			
TARAOFF	R			
EQUISYL	O			
STELLARIA sp.	O			
BRASS RAP	R			
Wild Buckwheat (check WofC)	R			
POLYCON ✓				

Notes:

PH 13 - SW from Road
- looks like might have been a cereal crop, but now seeded (camping area?)

Vegetation Survey Data Sheet

Page 1 of 1

WSP

Field Survey Form

Property: Burl's Creek - Area 3 - Plot 4		
Project Number: 151-03995-00		
Surveyor Name: AA		
Assistant Name: —		
Date: May 22/15	Survey Start Time: 12:25	Survey End Time: 12:25

Size Class / Layers: 1 = < 0.5 m; 2 = 0.5 – 2 m; 3 = 2 – 10 m; 4 = > 10 m

Abundance Codes: R - Rare; O – Occasional; A – Abundant; D - Dominant

Species Name / Code	Size Class 1	2	3	4

None - Gravelled

Species Name / Code	Size Class 1	2	3	4

Notes: Con - Area P-14 to 16

↳ has been graded + Paved. Barn rebuilt

Some area freshly sodded

* Sugar Maples Remain

Vegetation Survey Data Sheet

Page 1 of 1

WSP

Field Survey Form

Property:	Burl's Creek - Area 1 - Plot 3
Project Number:	~~[illegible]~~ 151-03995-00
Surveyor Name:	AA
Assistant Name:	—
Date: May 22/15	Survey Start Time: 12:00 / Survey End Time: 12:15

Size Class / Layers: 1 = < 0.5 m; 2 = 0.5 – 2 m; 3 = 2 – 10 m; 4 = > 10 m
Abundance Codes: R - Rare; O – Occasional; A – Abundant; D - Dominant

Species Name / Code	Size Class 1	2	3	4
G. Elm (ULMUAME)				O
TILL AME				O
Malus sp.			O	
Prunus VIR (Choke)			O	
FRAX AMER			R	R-O
STH. SUMAC			R	
SYMPOCC	R			
RUBU IDA	O			
CORN ALT		O		
SUG. MAPLE		R		
CORN STO	A			

Species Name / Code	Size Class 1	2	3	4
DAUC CAR *				
~~Carrots: (red)~~ *	R - escaped *			
ALLI PET	R-O			
FRAG VES	O			
EQUI SYL	R-O			
EB violet	R			
GEUM RIV	R			
VICI —	R			
TARA OFF	R			
GRAPE - VITIRIP	R-O			
SOLI SP.	D-A			

Notes:

HR - Stones from fields under trees

Vegetation Survey Data Sheet

WSP

Field Survey Form

Property: Burl's Creek - Area 3 - Plot 5	
Project Number: 151-03995-00	
Surveyor Name: AA	
Assistant Name: —	
Date: May 22/15	Survey Start Time: 12:30 — Survey End Time: 13:00

Size Class / Layers: 1 = < 0.5 m; 2 = 0.5 – 2 m; 3 = 2 – 10 m; 4 = > 10 m

Abundance Codes: R - Rare; O – Occasional; A – Abundant; D - Dominant

Species Name / Code	Size Class 1	2	3	4
W spruce ~~IIII~~ ~~IIII~~ II			All HCFS ↓	
Bur oak I				
QUER MUE IIII				
→ ~~Butternut~~ III (Butternut Hickory)				
choke cherry III				
SALI ALBA I				
STH. Sumac I				
Red Pine III				
~~SALI BEB~~				
SALI BEB	R			
CORN STO	R			

(Landscaping)

Species Name / Code	Size Class 1	2	3	4
TYPH ~~LAT~~ other	O			
SCHO TAB (RR.)	O			
CARE GRA	R			
Grass sp.	D			
ELEO ACI	R			
JUNC TEN	R ~~A~~			
SOLI SP.	R-O			
LEMN MIN (pond)	R			
BRAS RAP	R	more towards Dist.		
SOLI sp.	A			
TRIF REP	A			
GALI TRI	R			
PLAN ~~MAJ(?)~~ LAN	R			
RUMEX sp	R-O			
GLEC HED	R			
~~"Rhubarb" - PETA?~~	R-O	BURDOCK		
VICI —	R			
POTA GRA (in water)	O			
EQUI ARV	R-O			

Notes:

- structure has been removed from island - filled + gravelled
- landscape trees remain + Beds
- Created ponds?

-CAGO Nest on island (abandonded - 2 eggs)

Vegetation Survey Data Sheet Page 1 of 1

WSP

Field Survey Form

Property:	Burl's Creek ~ Area 2 - Plot 6
Project Number:	151-03995-00
Surveyor Name:	AA
Assistant Name:	—
Date: May 22/15	Survey Start Time: 13:05 / Survey End Time:

Size Class / Layers: 1 = < 0.5 m; 2 = 0.5 – 2 m; 3 = 2 – 10 m; 4 = > 10 m
Abundance Codes: R - Rare; O – Occasional; A – Abundant; D - Dominant

Species Name / Code	Size Class 1	2	3	4
Tremb. Aspen				O-A
FRAX PENN				D
ABIE BAL			R	
FRAX >> TA >> Fir				
RIBE TRI	R			
T. Aspen		R		
PRUN VIR	O			
CORN STO	O			
Sugar maple	O			
Alder ? (Photos 17/18)		R		
RUBU IDA	O			
W. Elm		R		
Red Maple		R		
TILL AME	R			
EURH PUL (on logs)	R			

Species Name / Code	Size Class 1	2	3	4
CARE GRA	D			
CARE INT (P. 19-21)	O-A			
CARE ROS	R-O			
(Ph. 22) Jack-in-the-Pulpit	R			
sensitive fern	A			
SOLI sp.	O-A			
EQUI ARV	D			
TARA OFF.	R			
FRAG VES	O	Dense in places		
~~EQUI ARV~~	—			
GeRA. sp.	R			
GEUM RIV	R			
Ozk fern	R			
Grape VITIRIP	R			
Ostrich fern	R			
V. Creeper	R			
Wintergreen sp.	R			
EB Violets	R			

Notes:

- Frax penn forest - no sign of EAB
- Wood chip walking trail intersects polygon
- Similar to Plot 1, low areas in forest where water would pool (ephemeral); SWAMP
- Recent woodpecker damage
- Hearing lots of crows

Photo 24 looks south @ Plot 6 from Plot 7

Vegetation Survey Data Sheet

Page 1 of 1

WSP

Field Survey Form

Property:	Burl's Creek – Area 2 – plot 7
Project Number:	151-03995-00
Surveyor Name:	AA
Assistant Name:	–
Date: May 22/15	Survey Start Time: / Survey End Time:

Size Class / Layers: 1 = < 0.5 m; 2 = 0.5 – 2 m; 3 = 2 – 10 m; 4 = > 10 m

Abundance Codes: R - Rare; O – Occasional; A – Abundant; D - Dominant

Species Name / Code	Size Class 1	2	3	4
Grass sp	D			
Carex?	? D			
Plan maj	R			
TARA OFF	O			
TRIF REP	O			
FRAG VES	O			

Notes:

Pk. 23 looks west

- North side remains sodded but most of area is newly graded & seeded (not taking well)

Vegetation Survey Data Sheet

WSP Field Survey Form	Property: Burl's Creek - Area 2 - Plot 8
	Project Number: 151-03995-00
	Surveyor Name: AA
	Assistant Name: —
Date: May 22/15	Survey Start Time: / Survey End Time:

Size Class / Layers: 1 = < 0.5 m; 2 = 0.5 – 2 m; 3 = 2 – 10 m; 4 = > 10 m
Abundance Codes: R - Rare; O – Occasional; A – Abundant; D - Dominant

Species Name / Code	Size Class 1	2	3	4
T. Aspen				A
Sugar Maple		O		O
WHITE ELM				A
FRAX PENN		R	O	O
EW Cedar	R	R		O
PRUN VIR		R		~~O~~ A
~~[illegible]~~ A				
T. Aspen > W. Elm > EWC, others				
↓ forms clusters				
CORN STOL		O		
RUBU IDA		O		
CRAT MONO (P. 26/27)	R			
EURH PUL (on logs)	R			
BRAC SAL " "	R			

Species Name / Code	Size Class 1	2	3	4
CARE GRA	D			
SOLI Sp.	A			
FRAG VES	O			
GERA sp.	O			
GEUM RIV	R			
EB Violet	R			
Wintergreen sp. (Ph. 28)	R-O			
TARA OFF	R-O			
GALI TRI	R			
RUBU PUB	O-A			
Grape VITI RIP	R			
oak fern	R			
TROUT LILY	R-O			
EQUI ARV	R			
V. Creeper	R			
E. Nightshade	R			

likely PYRO ASA (margin note, pointing to Wintergreen sp.)

V. Creeper (arrow to left column)

× Plot #1 - ~~AQUI BREV ??~~ CAULTHA

Notes:

- Photo 25 looks NE @ plot 8 from Plot 7
- like plot 6 + 1, interiors have areas where H_2O ponds (FF more open)
- Wetland to N Fringed w/ ~~thicket of~~ Dense EWC (no FF)

Vegetation Survey Data Sheet

Page 1 of 1

WSP **Field Survey Form**	Property: Burl's Creek - Area 2 - Plot 9	
	Project Number: 151-03995-00	
	Surveyor Name: AA	
	Assistant Name: –	
Date: May 22/15	Survey Start Time:	Survey End Time:

Size Class / Layers: 1 = < 0.5 m; 2 = 0.5 – 2 m; 3 = 2 – 10 m; 4 = > 10 m
Abundance Codes: R - Rare; O – Occasional; A – Abundant; D - Dominant

Species Name / Code	Size Class 1	2	3	4
Sugar Maple	O-A	D		D
Ironwood (OSTR VIR)				R
Blk. Cherry				R
CORN STO	R			
RIBE TRI	R			
PRUN VIR	R			
BRAC SAL (on stump/logs)	R			

Species Name / Code	Size Class 1	2	3	4	
CARE GRA	R				
LEEK (ALLITRI)	D				
TRILL GRAND	O				
MAIA STE	R				
~~AQUI~~ (2) Plot 1 Pics	O				CAULTHA
~~ost~~ SPIN. Wood fern	R				
Bearberry ACTARUB	R				

Notes:

~~X Very similar to Plot 1 (Sug. Maple forest) – No Beech~~ – Not similar @ all ~~X~~ except Sug. Maple.
– much Drier – no low areas
– Very Sug. Maple Dominant

Vegetation Survey Data Sheet

WSP

Field Survey Form

Property:	Burls Creek - Area 2 - Plot 10
Project Number:	151-03995-00
Surveyor Name:	AA
Assistant Name:	—
Date: May 22/15	Survey Start Time: / Survey End Time:

Size Class / Layers: 1 = < 0.5 m; 2 = 0.5 – 2 m; 3 = 2 – 10 m; 4 = > 10 m

Abundance Codes: R - Rare; O – Occasional; A – Abundant; D - Dominant

Species Name / Code	Size Class 1	2	3	4
Sugar Maple	R-O			
~~Grass~~ PHALARU (RCG)	D			
TRIF REP	D			
PLAN MAJ	R			
TARA OFF	O			
GALI APA (Cleavers)	O			
BRAS RAP	R			

Notes:

Pasture / Camping
Scene : Ph. 29-31

Vegetation Survey Data Sheet

WSP

Field Survey Form

Property:	Burl's Creek - Area 2 - Plot 11
Project Number:	151-03995-00
Surveyor Name:	AA
Assistant Name:	–
Date: May 22/15	Survey Start Time: / Survey End Time:

Size Class / Layers: 1 = < 0.5 m; 2 = 0.5 – 2 m; 3 = 2 – 10 m; 4 = > 10 m

Abundance Codes: R - Rare; O – Occasional; A – Abundant; D - Dominant

Species Name / Code	Size Class 1	2	3	4
Sugar Maple	R-O			O-A
PRUN SER	R			O
FRAX PENN		R		O
C. Horse chestnut	R			
SORB AME	R			
Malus (on S. side)				R
Lonicera sp	R			
RIBES GLA	R			
RUBU IDA	R-O			

Equal mix → more Maple?

Species Name / Code	Size Class 1	2	3	4
Grass				
Grape VITI RIP	O			
TARA OFF	O			
ALLI PET	O			
~~"Rhubarb"~~ BURDOCK	R			
GEUM RIV	R			
SOLI sp	R			
VICI —	R			
E. Nightshade	R			
W. leek ALLI TRI	R			
MAIA CAN	R-O			
MAIA STE	R-O			
SOLI. sp.	R			

Notes:

H.Row - Rocks Piled under trees

Vegetation Survey Data Sheet

Page 1 of 1

WSP

Field Survey Form

Property: Burl's Creek - Area 2 - Plot 12		
Project Number: 151-03995-00		
Surveyor Name: AA		
Assistant Name: —		
Date: May 22 / 15	Survey Start Time:	Survey End Time:

Size Class / Layers: 1 = < 0.5 m; 2 = 0.5 – 2 m; 3 = 2 – 10 m; 4 = > 10 m
Abundance Codes: R - Rare; O – Occasional; A – Abundant; D - Dominant

Species Name / Code	Size Class 1	2	3	4

Species Name / Code	Size Class 1	2	3	4
Grass (RCG)	D			
TARA OFF	O			
PLAN MAJ	O			
TRIF REP	O			
FRAG VES	R			

Notes:

- Pasture or Recreational
- Mowed
- Soil stockpiles in SE corner

Vegetation Survey Data Sheet

WSP

Field Survey Form

Property:	Burl's Creek - Area 2 - Plot 13
Project Number:	151-03995-00
Surveyor Name:	AA
Assistant Name:	–
Date: May 22/15	Survey Start Time: / Survey End Time:

Size Class / Layers: 1 = < 0.5 m; 2 = 0.5 – 2 m; 3 = 2 – 10 m; 4 = > 10 m
Abundance Codes: R - Rare; O – Occasional; A – Abundant; D - Dominant

Species Name / Code	Size Class 1	2	3	4
Grass sp.	D			
Plan MAJ	O			
TRIF REP	A			
FRAG VES	O			
mint sp	R			
Cleavers GALIAPA	O-A			

Notes:

Mowed – pasture or recreation

Vegetation Survey Data Sheet

WSP

Field Survey Form

Property:	Burl's Creek - Area 3 - Plot 14
Project Number:	151-03995-00
Surveyor Name:	AA
Assistant Name:	-
Date: May 22/15	Survey Start Time: / Survey End Time:

Size Class / Layers: 1 = < 0.5 m; 2 = 0.5 – 2 m; 3 = 2 – 10 m; 4 = > 10 m
Abundance Codes: R - Rare; O – Occasional; A – Abundant; D - Dominant

Species Name / Code	Size Class 1	2	3	4
W. Elm				D
FRAX PEN				O
Sug. Maple				D
THUJ OCC				O
BETU ALL				R
TILL AME				R
POPU TRE				R
ELC:				
W. Elm > Sug. Maple > Frax Penn, others				
RUBU IDA	R			
PRUN VIR	R			
RIBE TRI	R			
CORN STO	R			
BRAC SAL (on logs)	R			

Species Name / Code	Size Class 1	2	3	4
Grass Carex sp.	O			
RCG on fringes	R			
ARAL NUD	O			
Sens. Fern	A			
ALLI PET	A			
~~"Rudbeck"~~ Burdock	O			
TARA OFF	O			
GERA sp.	R			
PLAN MAJ	R			
FRAG VES	R			
BRAS sp.	R			
EQUI ARV	O			
TIAR COR (H.L. foamflwr)	R			
Spinulose fern	R			
E. Night Shade	R			

Notes:

- Forest w/ strips for camping - some stress, but def still woodland
- FF has been cleared here for (leaf blowers) FF = Forest Floor

Vegetation Survey Data Sheet

Page 1 of 1

WSP

Field Survey Form

Property:	Burl's Creek - Area 2 - Plot 15
Project Number:	151-03995-00
Surveyor Name:	AA
Assistant Name:	—
Date: May 22/15	Survey Start Time: / Survey End Time:

Size Class / Layers: 1 = < 0.5 m; 2 = 0.5 – 2 m; 3 = 2 – 10 m; 4 = > 10 m
Abundance Codes: R - Rare; O – Occasional; A – Abundant; D - Dominant

Species Name / Code	Size Class 1	2	3	4
St. H. Sumac			O	
CORN STO	O			
SALI BEB	O			
FRAX PEN	R			
BETU PAP		R (1)		
RUBU IDA	R			

Species Name / Code	Size Class 1	2	3	4
Phragmites (Inv.)		O		
TYPA		O		
TUSS FAR	A			
Dandelion-type aster (Ph.38)	A			
EQUI SYL	D			
Fireweed	D-A			
TRIF REP	O			
* PETA ~~SAG~~	~~O~~			
TARA OFF	D			
BRAS RAP	R			
EQUI SCI	R-O			

Notes:

- RWBB's using Pond & fringes
- Turtle (Ph. 37) sunning on W. shore of upper pond (Near SH Sumac) - Red+Black stripes on upper shell, white stripes along face. ~20 cm top-tail.
- W. edge built up w/chips
* Minnows seen in upper pond (lots!) - N. side

Vegetation Survey Data Sheet

Page 1 of 1

WSP

Field Survey Form

Property:	Burls Creek - Plot 16
Project Number:	
Surveyor Name:	AA
Assistant Name:	—
Date: 7/7/15	Survey Start Time: / Survey End Time:

Size Class / Layers: 1 = < 0.5 m; 2 = 0.5 – 2 m; 3 = 2 – 10 m; 4 = > 10 m
Abundance Codes: R - Rare; O – Occasional; A – Abundant; D - Dominant

Species Name / Code	Size Class 1	2	3	4
Nor. Spruce (HR)				R
Acer (sugar) + Norway		(HR)		A
Malus sp.			R	
THUJ OCC				A
BETU (Yellow)				R
POPU TRE				R
TSUG CAN				R
FRAX AME			R	R-O
BETU PAP			R	R
PICE GLA			R	
ULMU AME				R
JUGL NIG			R	R
Beaked Hazelnut (HR)		R		
BRAC SAL	+			

Species Name / Code	Size Class 1	2	3	4
TARAOFF	R			
Cockle SILENE	R			
Heal-all	R-O			
OXAL STR	R			
PLAN LAN	O			
POTE NOR	R			
PLAN MAT	O			
STEL latifolia	R-O			
TRIF REP	O-A			
RANU ACR	R			
LOTU COR	R			
FRAG VES	R			
ATHY FIL	R			
GRASS SP.	D			

Notes:

NOT forest! - Too developed (camping) to be considered, FF maintained + mowed - Not trees too thin (only wolves) + HRs

Vegetation Survey Data Sheet

WSP Field Survey Form	Property:
	Project Number:
	Surveyor Name:
	Assistant Name:
Date:	Survey Start Time: / Survey End Time:

Size Class / Layers: 1 = < 0.5 m 2 = 0.5 – 2 m 3 = 2 – 10 m 4 = > 10 m
Abundance Codes: R - Rare O – Occasional A – Abundant D - Dominant

Species Name / Code	Size Class				Species Name / Code	Size Class			
	1	2	3	4		1	2	3	4

Notes:

Vegetation Survey Data Sheet

Page 1 of 1

WSP

Field Survey Form

Property: Burl's Creek Plot 17	
Project Number:	
Surveyor Name: AA	
Assistant Name:	
Date: 7/7/15	Survey Start Time: 12:45 / Survey End Time:

Size Class / Layers: 1 = < 0.5 m; 2 = 0.5 – 2 m; 3 = 2 – 10 m; 4 = > 10 m
Abundance Codes: R - Rare; O – Occasional; A – Abundant; D - Dominant

Species Name / Code	Size Class 1	2	3	4
FRAX AME				O
THUJ OCC		O	O	A
ACER RUB				R
~~CASTDEN~~				
BETU PAP				R
ACER SILVER	R			
↳ ULMU AME		R		O
FRAX NIG				A
SALIX SP	R-O			
VIBU OPU / OPU	R	R		
VITI RIP	R			
RHAM CAT	R			
APOC AND	R	R		
CORN RUG		R		
Black berry	R			

Species Name / Code	Size Class 1	2	3	4
OXAL STR	R-O			
~~Het~~ GERA ROB	O			
TARA OFF	R-O			
STEL LATIFOLIA	R			
SONC (ARV)	R			
FRAG VES	R			
* ONOC SEN	D			
IRIS SP	R			
TRIL SP.	R			
Enc. Nightshade	O			
Yellow mustard	R	bolted Petals		
Nightshade (Horse weed)	O	SALADUL		
Lady fern	O			
SPLE NOV	R			
RANU ACR	R			
ASTER LAE	R-O			
CRYS L	R			
QED seeded Grass	D	- trails only		
CARE SP.	O			
Grass sp. (ELYM?)	O			
PLAN LAN	R-O			
DAUC CAR	R-O			
BRAS sp.	R			
SMARTWEED	R	(POLY—)		
Lamb's 1/4	R	CHEN ALB		
Burdock	R			

Notes:

- Wetland? EWC/Hardwood/Black Ash Remnant?
- Access Runs through - Recommend Closure? (Unneeded) w/ New Roads
- Dumped Boulders
- Nothing but duff under dense EWC

Vegetation Survey Data Sheet Page ______ of ______

WSP Field Survey Form	Property: Plot 18 – H Row	
	Project Number:	
	Surveyor Name:	
	Assistant Name:	
Date:	Survey Start Time:	Survey End Time:

Size Class / Layers:	1 = < 0.5 m	2 = 0.5 – 2 m	3 = 2 – 10 m	4 = > 10 m
Abundance Codes:	R - Rare	O – Occasional	A – Abundant	D - Dominant

Species Name / Code	Size Class 1	2	3	4
FRAX AME				A
ACER SUGAR				D
~~CORN ALT~~ C. Cherry		R		
SASK ? (PL HA)		R		
Yes, AMEL ALN				

Species Name / Code	Size Class 1	2	3	4
TARA OFF	O			
Plath... sp?	R			
Heal - all	R			
Buckwheat	R			
SILE VUL	R			
HEIR sp (Yellow)	R	A, C AE		
CRYS LEU	R			
PLAN LAN	R			
GERA ROB	R			
Aster LAE	R			
RANU ACR	R			
SOD	D			
AGRO sp.	R-O			

Notes:

Ground Mowed – open – can get tractor through trees

Vegetation Survey Data Sheet

Page ______ of ______

WSP

Field Survey Form

Property: Plot 19

Project Number:

Surveyor Name:

Assistant Name:

Date:

Survey Start Time:

Survey End Time:

Size Class / Layers: 1 = < 0.5 m; 2 = 0.5 – 2 m; 3 = 2 – 10 m; 4 = > 10 m

Abundance Codes: R - Rare; O – Occasional; A – Abundant; D - Dominant

Species Name / Code	Size Class 1	2	3	4
ACER Sugar				D
THUJ OCC				O-A
FRAX AME			R-O	
Malus sp.				R-O
ULMU AME		R		
STH SUMAC			R	
Virg. Creeper	R			
Service berry? (Ph. 16)	R		AMELALN	
RUBU IDA	R-O			
Rd Dogwood	R			
SALI BEB	R			
APOC AND	R			
VITI RIP	R-O			

Creek =

Species Name / Code	Size Class 1	2	3	4
VIOL sp	A			
Rumex sp	O			
FRAG VES	O			
TARA OFF	R			
Ostrich Fern	D - surround B. Creek			
Gera RoB	O			
Burdock	R			
ALLI PET	R-O			
"Wet succulent"	A	IMPACAP		
OXAL STR	R			
Brown-eyed susans	R	HELI ANN		
DRYO CAR	R			
SOLI sp	R-O			
Water milkweed	R-O	(ASCL INC)		
Nightshad weed	R			
DAUC CAR	R			
Grass sp	A			
RC Grass	D - in spots by creek			
Timothy	R-O			
ORIZ sp (Ph 17)	R			
St. J-W ~~Yellow Eyed Grass?~~	R	(Ph 18-19)		
CHRYS LEU	R-O			
HYPEPER				

Notes:

* Nat Cover heavily dist – Mowed,
- Plot contains Burl's Creek – heavily incised (~1.5m)
- Builders mark Creek set back (Recom. more!)
- Ph 25 - Upst. Burl's creek from Bridge
" 26 Downstr. " " "

Vegetation Survey Data Sheet

Page _____ of _____

WSP Field Survey Form	Property: Burls Creek · Plot 20	
	Project Number:	
	Surveyor Name:	
	Assistant Name:	
Date:	Survey Start Time:	Survey End Time:

Size Class / Layers: 1 = < 0.5 m 2 = 0.5 – 2 m 3 = 2 – 10 m 4 = > 10 m
Abundance Codes: R - Rare O – Occasional A – Abundant D - Dominant

Species Name / Code	Size Class 1	2	3	4
THUJ OCC				A
Tremb. Aspen				A
FRAX NIG			O-A	
POPU BAL				O-A
BETU PAP				R
Red-o Dogwood		O		
Virg. Creeper	O			
VITI RIP	O			
RUBU IDA	R			
SALI BEB		R-O		
RHAM CAT		R		
BRAC SAL · (logs)	R			

Species Name / Code	Size Class 1	2	3	4
Water Milkweed		A-D	ASCL INC	
"Wet succulent"	A	IMPACAP		
EQUI SP	O	(long) - E. ARV		
ONOC SEN	R-O			
ASTER sp	R			
Aster LAE	R			
SOLI SP.	A-O	-A		
PINK (B417)	R		DIAN ARM	
TYPH ANG	R			
LOTU COR	R			
B.C. Eyed susans	R			
RC Grass	D	D		
CAREX "BIG"		O	CARE LUP	
Bulrush (PH 20-24)		R	SCIR ATR	

Notes:

- BURL's Creek Buffer
- Trees to 8 rings
- Poplars & EWC shore dom. → trade-off in clumps.

Vegetation Survey Data Sheet

Page ______ of ______

WSP

Field Survey Form

Property: Plot 21	
Project Number:	
Surveyor Name:	
Assistant Name:	
Date:	Survey Start Time: / Survey End Time:

Size Class / Layers: 1 = < 0.5 m; 2 = 0.5 – 2 m; 3 = 2 – 10 m; 4 = > 10 m

Abundance Codes: R - Rare; O – Occasional; A – Abundant; D - Dominant

Species Name / Code	Size Class 1	2	3	4
ACER Sugar		R	O	A-D
FRAX AME	O		R	O-A
~~JUGL NIG~~			R	R
TILI AME				O-A
SH SUMAC		R		
ULMU AME		R (1)		
* JUGL CIN			R	R
VIRG. Creeper	R-D			
VITI RIP	R-A			
RUBU IDA	R-O			
RIBE TRI	R			
RHAM CAT	R			
Plot (6X) shrub	R	= ARAN MEL		

Species Name / Code	Size Class 1	2	3	4
GERA ROB	O			
TARA OFF	O			
SILE VUL	O-A			
Ench. Night-shade	O-A		CIRC LUT	
C. BURDOCK	R		ARCT MIN	
White Avens	R-O		GEUM CAN	
Virginia waterleaf	R		HYDR VIR	
Nightshade weed	R		SOLA DUL	
B. RAP? Tall, light Green Mustard	R	(Ph 27)		
* wild Ginger	O	*	ASAR CAN	
FRAG VES	R			
Wild leek	R		ALLI TRI	
CHRY LEU	R			
STEL (Ph 30)	R		= MAIA RAC	
ERIG PHI	R			
VICI CRA	R			
DAUC CAR	R			
RANU ACR	R			
OXAL STR	R			
BROM INE	A			
RC Grass	R			
VIOL ARV ? ~~CAN. ORCHID~~?	R	(Ph 32-33)		
↳ line N. Edge				
Small Yellow Mustard	R	(Ph 34) = ERYS CHE		
↳ Alt, lance leaved				
??? (Photo 35)	R-O			
Lambs 1/4 CHEN ALB	O-A	(C-Last)		
POTE ~~SUP~~ REC	R			
PLAN LAN	R-O			
Mulein VERB THA	R			
~~Mallow White~~ CALY SEP	R	(Ph 36)		

Notes:

- lots of Boulders (farm practice)
- GINGER – GPS + Ph. 28-29 – 1 clump of ~20 plants
- GINGER 2 – ~400 Plants (1 clump) – Ph. 31

Vegetation Survey Data Sheet

WSP **Field Survey Form**	Property:	
	Project Number:	
	Surveyor Name:	
	Assistant Name:	
Date:	Survey Start Time:	Survey End Time:

Size Class / Layers:	1 = < 0.5 m	2 = 0.5 – 2 m	3 = 2 – 10 m	4 = > 10 m
Abundance Codes:	R - Rare	O – Occasional	A – Abundant	D - Dominant

Species Name / Code	Size Class				Species Name / Code	Size Class			
	1	2	3	4		1	2	3	4

Notes:

Vegetation Survey Data Sheet

Page _____ of _____

WSP Field Survey Form	Property: Burls Creek - Plot 22
	Project Number:
	Surveyor Name:
	Assistant Name:
Date: July 10/15	Survey Start Time: / Survey End Time:

Size Class / Layers: 1 = < 0.5 m; 2 = 0.5 – 2 m; 3 = 2 – 10 m; 4 = > 10 m
Abundance Codes: R - Rare; O – Occasional; A – Abundant; D - Dominant

Species Name / Code	Size Class 1	2	3	4
THUJ OCC				D
POPU BAL				A
FRAX AME		O	R	A
POPU TRE		O		R
ACER Sug		O		
TSUG CAN	R			R-O
ULMU AME		R	R	
SORB AME	R			
VITI RIP	R			
VIRGINIA Creeper	R			
DAME's Rocket	R	HESTMAT		

Species Name / Code	Size Class 1	2	3	4
TUSS FAR	D			
LOTU COR	R			
TARA OFF	R			
EQUI ARV	O			
DAUC CAR	R			
PTER AQU	O			
ONOC SEN	O			
RUME CRI	R			
ASTE LAE	R			
GAL trifidum	R			
CHRY LEU	R			
PLAN LAN	R-O			
ACHI MIL	R			
Heal-all	R			
RANU ACR	R			
LEON AUT	R			
~~VERB (ALT)~~	R	HYPEPER		
En. N-S	R			
JEWEL WEED (Spot)	O			
C. Burdock	R			
Grass sp. (BROMINE?)	O-A			
Timothy	O			
CARE TEN	R			
RC Grass	R-O			
GERA ROB	O			
LEON CAR	R			
CIRS ~~sp.~~ ARV	R			
ALLI PET	R			
VICI CRA	R			
TRIF HYB	R			
VERB URT	O			
ASCL SYR	R			
OXAL STR	R			

Notes:

- EWC > PB > EA forest w/ roads & Camping stalls. - Impr. incl. road leveling/gravelling & placing mulch. Mulch should protect FF decently
- interiors include a lot of Brushing debris

Vegetation Survey Data Sheet

Page _____ of _____

WSP Field Survey Form	Property: Burl's Creek Plot 23
	Project Number:
	Surveyor Name:
	Assistant Name:
Date: JULY 16/15	Survey Start Time: / Survey End Time:

Size Class / Layers: 1 = < 0.5 m; 2 = 0.5 – 2 m; 3 = 2 – 10 m; 4 = > 10 m
Abundance Codes: R - Rare; O – Occasional; A – Abundant; D - Dominant

Species Name / Code	Size Class 1	2	3	4
PICEGLA				A
PICE ~~NOR~~ ABI				R
QUER RUB			R	R
MALUS sp.				O
FRAX AME		R	D	
ULMU AME	R	R		R
→ BIG trees!				
* ACER (Sug) HR on other side of path. Typical what already seen. Lots of Arg. Boulders & old board fencing				
** JUGLCIN			R	
CORN STO				
SALI BEB				
WILD Cucumber ☐ SICY ANG				
APOC AND				
VITIRIP				
PRUN VIR			R	
Virg. Creeper				
B.E Susans (Pt 39-41)	R			
ASTE LAE	R			
GALI Trifidum	R			
☐ Bergamot MONA FIS	R			
ANEM CAN	R			

Species Name / Code	Size Class 1	2	3	4
DAUC CAR	R			
SOLI sp.	A			
SONC ARV	R			
CIRS ~~CAN~~ ARV	R-O			
ERYS CHE	R			
GALI TET	R			
SILE NOC	R			
POLY AMP	R			
NAST OFF	R			
TARA OFF	A			
Sp. Jewelweed	D	IMPACAP		
C. Burdock ARCTMIN	R			
CHRY LEU	R			
ASCL ~~INC~~ (H2O)	O-A			
~~DAUC CAR~~	~~R~~			
HYDR VIR	R			
~~SOLI Sp.~~				
RANU ACR	R			
POTE ~~SUL~~ REC	R-O			
OXAL STR	R			
St. J.-W	R-O			
VERB URT	R			
ACHI MIL	R-O			
VICI CRA	O			
PLAN LAN	R			
SILE VUL	R			
ASCL SYR	R			
LOTU COR	R-O			
AGRO STO	R			
Timothy	R-O			
ELYM REP	R			
RC Grass	A	A		
BROMINE	A	A		

Notes:

→ Pt 37 (UP) 38 (DOWN)

1) Trees along Burl's Creek Channel are planted. South culvert (perpendicular) will remove a QR & SALI BEB, Pot affecting a Sw (N side) - lots of RCG, other weeds
* Recom. Nat. Seed Mix (rip) + choice of trees
2) N. Culvert (diagonal): (Plot 19 sp. list) - Replacement may affect 1 Maples sp. (S. side) + 6 small FA & 2 small TA (S. Side).
* Recom. ACER (sug), (ULMU AME?), CORN STO & SALI BEB. + Nat. Seed Mix (riparian)
3) JUGLCIN on W. HR by turnaround. Both <5m, one w/sig. loss (smaller). Pt. 42-43. Both covered in VITIRIP. Some sooty canker evident on both trees. Sp. conf. by pith (Pt. 46/47).

Vegetation Survey Data Sheet

Page _____ of _____

WSP **Field Survey Form**	**Property:** Plot 24
	Project Number:
	Surveyor Name:
	Assistant Name:
Date: JULY 10/15	**Survey Start Time:** / **Survey End Time:**

Size Class / Layers: 1 = < 0.5 m; 2 = 0.5 – 2 m; 3 = 2 – 10 m; 4 = > 10 m
Abundance Codes: R - Rare; O – Occasional; A – Abundant; D - Dominant

Species Name / Code	Size Class 1	2	3	4
PICE ~~NOR~~ AB)		R		A
ACER (Sug)		R		A-D
** JUGL CIN (Ph. 48)		R		
FRAX AME		R	O	
POPU TRE			R-O	
Malus sp			O	
TILI AME			O	
PINU RES				R
RUBU IDA	R-O			
VITI RIP	R			
SALI ~~PLA~~ sp.		R		
SALIBEB		R-O		
CORNSTO		R		

Species Name / Code	Size Class 1	2	3	4
RAPH RAP	R			
TARA OFF	O			
RUME CRI (red)	R			
PLAN MAJ	O			
ASTE LAE	O			
DAUC CAR	O			
ARCT MIN	R			
TRIF ~~AG~~ REP	R			
LOTU COR	R-O			
St. J-W	R			
GERA ROB	R			
SOLI Sp.		D		
MEDI ~~MIC~~ LUP	R			
CHRYLEU	R-O			
POLY AMP	R			
POTE ~~SOL~~ REC	R			
RANU ACR	R			
FRAG VES	R			
PLAN LAN	R			
VICI CRA	R			
S. Jewelweed IMPA CAP	R-O			
ASCL SYR	R			
SILE VUL	R			
GALI trifidum	R			
ASCL ~~INC~~ (H2O)	R-O			
SCIR MIC	R			
RC Grass		D		
Timothy		O-A		
AGRO STO	O			

Notes:

N. side is planted Nor. spruce, S. is (taller) Sug. Maple

Ph. 49 – Downstream from culvert

Vegetation Survey Data Sheet

Page _____ of _____

WSP

Field Survey Form

Property:	Plot 25
Project Number:	
Surveyor Name:	
Assistant Name:	
Date:	Survey Start Time: / Survey End Time:

Size Class / Layers: 1 = < 0.5 m; 2 = 0.5 – 2 m; 3 = 2 – 10 m; 4 = > 10 m
Abundance Codes: R - Rare; O – Occasional; A – Abundant; D - Dominant

Species Name / Code	Size Class 1	2	3	4
ACER (SUG)	O			D (N)
FRAX AME			O	
PICE GLA (Planted)			R	
Beech FAGU AME				R
OSTR VIR				R-O
TSUG CAN				R
POPU TRE			R-O	R-O
PICE GLA			R	
SALI BEB		O	R	
RUBU IDA	R			
CORN STO	R			
W. Cucumber	R			

Species Name / Code	Size Class 1	2	3	4
Ostrich fern MATT STR	O			
ASCL				
TUSS FAR	O			
TRILLIUM sp	R			
B. Cocosh CAUL THA	R			
E. N-S	O			
S. Jewelweed IMPCAP	A-D			
ALLI PET	R			
CHRY LEU	R			
GALI trifidum	R			
SOLI Sp.	D			
DAUC CAR	R			
ONOC SEN	O			
ASCL INC (H_2O)	D			
EQUI ARV (longer)	O-A			
EQUI FLU	O			
VICI CRA	R			
ASCL SYR	R			
CARE HYS	R			
CALA CAN	R			
SCIR ATR	O			
RC Grass	D			

Notes:

① South ~~West~~ side similar to plot 24 – ACER (sug)/FRAXAme forest (Plot 1).

② – West side – open RG/SOLI marsh w/ POPUTRE/OSTRVIR

Vegetation Survey Data Sheet Page _____ of _____

WSP **Field Survey Form**	Property: Burls Creek Plot 26	
	Project Number:	
	Surveyor Name:	
	Assistant Name:	
Date: July 10/15	Survey Start Time:	Survey End Time:

Size Class / Layers: 1 = < 0.5 m 2 = 0.5 – 2 m 3 = 2 – 10 m 4 = > 10 m
Abundance Codes: R - Rare O – Occasional A – Abundant D - Dominant

Species Name / Code	Size Class 1	2	3	4
ACER Sug		A	D	D
POPU TRE	O			R
FRAX AME	R			R
ULMU AME	R			R
TILI AME				R
PRUN VIR	O			

Fringe

Species Name / Code	Size Class 1	2	3	4
TRIL SP.	O			
GERA ROB	R			
E. N-S	R			
Leek	O			
B. Cocosh	O			
FRINGE				
GERA ROB	A			
mullein		R-O		
ASTE LAE	~~A~~	D		
(G) ~~RGR~~ RC Grass		D		
CIRS ARV	R			
ASCL SYR	R			
TARA OFF	R			
RUME CRI (red)	R			
POTE NOR	R			
BRAS RAP	R-O			
DAUC CAR	O			
PLAN MAJ	O			
SOLI SP.		A		
MELI ALB.		R		
St. J-W	R			
ARCT MIN	R-O			
(S) RUBU IDA	R			
(V) VITI RIP	R			
POTE ~~SUL~~ REC	R			
DEP. "PINK"	R			
* TOXI RAD - RHUS RYD	O →	Dense in SW Corner		
FRAG VES	R-O			
B.E. Susan	R			
* Hawthorn (SL?) (RA Sp-53)	R	CRATMON		

Notes:

- ACER (SUG) forest → regenerating itself. Other tree sp. primarily only on fringes
- FF very dense leaves. Very different from weedy fringe.
- Mowing dump in NW corner + SE corner + SW corner ↳ typical of other HR
- Some very tall TILIAME middle of polygon ↳ forest remains
- Many rotting stumps - area might have been Sel. logged? "pure"

Vegetation Survey Data Sheet

WSP

Field Survey Form

Property:	Plot 27
Project Number:	
Surveyor Name:	
Assistant Name:	
Date: July 10/15	Survey Start Time: / Survey End Time:

Size Class / Layers: 1 = < 0.5 m; 2 = 0.5 – 2 m; 3 = 2 – 10 m; 4 = > 10 m

Abundance Codes: R - Rare; O – Occasional; A – Abundant; D - Dominant

Species Name / Code	Size Class 1	2	3	4

Species Name / Code	Size Class 1	2	3	4

Notes:

Vegetation Survey Data Sheet

Page ______ of ______

WSP

Field Survey Form

Property: Plot 28
Project Number:
Surveyor Name:
Assistant Name:
Date: July 10/15
Survey Start Time:
Survey End Time:

Size Class / Layers:	1 = < 0.5 m	2 = 0.5 – 2 m	3 = 2 – 10 m	4 = > 10 m
Abundance Codes:	R - Rare	O – Occasional	A – Abundant	D - Dominant

Species Name / Code	Size Class 1	2	3	4
ACER (SUG)	O-A	R	A	D
TILI AME				R
FRAX AME	R			R
Beech	R			R-O
ACER RUB	R-O			R-O
↳ Swamp?				
RIBE TRI				
SOLA DUL	R			

Species Name / Code	Size Class 1	2	3	4
TRILL sp.	R-O			
Leek	R			
Lady fern	R			
E. N-S	R-O			
B. Cocosh	R			
GERA ROB	R-O			
• ONOC SEN	O			
• SICYANG	O			
• CARE CRI	R			
• GLYC GRA	R			
• CARE INT	R			
~~Grass~~ CARE sp.	R			

• = excl. to wetland Areas

Notes:

Use LSRCA Boundary for SWAMP inclusion – low points Dry. Marginal ~~Appr.~~ Δ in Veg. (Soggy though)
– Sug. Maple forest (similar to 26) – many rotting stumps here too
– Dense leaf litter!

– Ph. 54 – Stump of "Ent" – 3 gigantic stems, failed in opp. dir.

Vegetation Survey Data Sheet

Page _____ of _____

WSP Field Survey Form	Property: Plot 27
	Project Number:
	Surveyor Name:
	Assistant Name:
Date: July 10/15	Survey Start Time: / Survey End Time:

Size Class / Layers: 1 = < 0.5 m; 2 = 0.5 – 2 m; 3 = 2 – 10 m; 4 = > 10 m
Abundance Codes: R - Rare; O – Occasional; A – Abundant; D - Dominant

Species Name / Code	Size Class 1	2	3	4
TILI AME				A
FRAX AME				A
~~ACER (SUG)~~ OK				D →
MALUS SP			R	
* JUGL CIN			A	O
CORNALT			R	
Lilac SYRI VUL	R	R		
SH Sumac	R-O			
VITI RIP	R			
Virg. Creeper	O			
RHAM CAT	R			
RIBE TRI	R			
SAMB RAC		R		

Species Name / Code	Size Class 1	2	3	4
Lamb's 1/4	O			
GERA ROB	O			
TARA OFF	R			
E. N-S	O-A			
OXAL STR	R			
DAUC CAR	R-O			
GALE TET	R-O			
Field Mustard	R	BRAS RAP		
CHRY LEU	O			
SOLI sp.	A			
Pote SUL REC	R			
St. J-W	R			
ASTE LAE	O-A			
POTE NOR	R			
Blue Cocash	R-O			
RUME CRI red	R			
ARCT MIN	R			
ASCL SYR	R			
VICI CRA	R			
Virginia waterleaf	R			
AGRO STO	R			
RC Grass	R →			
BROMINE	D →			

Notes:

BN in HR - one very tall + 1 sapling : 5 - tall : 6 - 2 ea w/3 stems : 7 = Stump
8 - Sapling ; 9 - Mid size ; 10 - 3 Big ones ; 11 - one in yard, one in HR ; 12 - in Yard (Mid)

WSP Field Survey Form	Property:	
	Project Number:	
	Surveyor Name:	
	Assistant Name:	
Date:	Survey Start Time:	Survey End Time:

13 - small - 2 trunk, some soot

14 - large - soots on Brks, 1 small v. sick, 1 mid to w (hidden)

Sug Maple/Tilia HR w/ RHAMCAT, BROMINE, RCG, CHRYS LEV FRAXAME ~~RUBUIDA~~ ~~BLK Berry~~, SUMAC, SORB (red)R)

WSP **Field Survey Form**	Property:	
	Project Number:	
	Surveyor Name:	
	Assistant Name:	
Date:	Survey Start Time:	Survey End Time:

WSP Field Survey Form	Property: Burls Creek	
	Project Number: 151-	
	Surveyor Name: AA	
	Assistant Name: ~~A~~	
Date: 7/7/15	Survey Start Time: 09:30	Survey End Time: 11:00

Area 1 Swamp Assessment

- Channel evident on N side of new road. RCG dominated Marsh fringed by Pt & Fblack - some water impoundment, likely H_2O did move towards south - intermittent channel

Photo 1/2: view of N side, towards field to North

Photo 3/4: view of Road edge on N. side

Photo 5: view across road - widest point here (to accom. dampness issues?). (toll-booth ??)

Area 1 - Wetland 1: GPS'd polygon - veg assessment from spring valid - lots of FRAXNIG
↳ (Photos 6-8) - Swampy depressions dry, but soil still moist - were holding water in spring - Swamp acting as it should mostly.

*USE LSRCA polygons for other inclusions?

Area 1 - Wetland 2: Wetland 2 - GPS'd Polygon - Bounded by high points in topography including a ridge in mid-south of polygon (running gen. E↔W??), water drains from all points to low topography. water (impounded?) towards road - lowest points, will hold water most of year

Photos 9-12 from Road

BUT - Not a channel? - water flow is not apparent.

Polygon 1: South of wetland are many Butternuts. Most appear in poor shape w/ lots of canker (lots of root flare canker in particular). Many downed trees.

* Recommend BHA assessment if any further development.

*Add to EIS

WSP Field Survey Form	Property:	
	Project Number:	
	Surveyor Name:	
	Assistant Name:	
Date:	Survey Start Time:	Survey End Time:

Appendix E

SITE PHOTOS

Photo 1. SWM Pond 1. From south facing north east showing unstable engineered concrete bank.

Photo 2. SWM Pond 1. From south facing west, showing south engineered concrete block bank and western gravel causeway with naturalized bank.

Photo 3. SWM Pond 1. Close up of south bank showing engineered concrete block bank and algae bloom.

Photo 4. SWM Pond 2. Photo from east facing west.

Photo 5. SWM Pond 2. Photo from east facing northwest.

Photo 6. SWM Pond 2. Photo from south facing north east showing gravel causeway between SWM Pond 2 and 1.

Photo 7. SWM Pond 2, north arm. Photo from south facing north.

Photo 8. SWM Pond 2, north arm. Photo of twin culvert outlet to 8th Line.

Photo 9. SWM Pond 2, north arm. Close up of twin culvert outlet to 8th Line.

Photo 10. SWM Pond 2, north arm. Photo of culvert inlet from north.

Photo 11. SWM Pond 2. Photo from north facing southwest.

Photo 12. SWM Pond 2. Photo of inlet on west bank.

Photo 13. SWM Pond 2. Photo of inlet on west bank where it enters pond.

Photo 14. SWM Pond 3. Photo from east facing west.

Photo 15. SWM Pond 3. Photo from south facing north.

Photo 16. SWM Pond 3. Photo from south facing east.

Photo 17. SWM Pond 4. Photo from east facing south and west. Camp grounds visible at far west.

Photo 18. SWM Pond 4. Photo from south showing north east arm and bedrock outcrop.

Photo 19. SWM Pond 4. Photo from south facing north.

Photo 20. SWM Pond 4. Photo from south facing north east showing a beaver lodge and beaver activity in the area.

Photo 21.Burl’s Creek, photo of downstream face of Culvert 1. Photo from south looking northwest at the property boundary (fence in background). No photo of upstream face of culvert 1 as it is outside of property boundaries.

Photo 22.Burl’s Creek, photo of creek downstream of Culvert 1. Photo from north facing south.

Photo 23. Burl's Creek, photo of upstream face of Culvert 2. Photo from upstream (north) facing downstream (south).

Photo 24.Burl's Creek, photo of downstream face of Culvert 2. Photo from downstream (south) looking upstream (north).

Photo 25.Burl's Creek, photo facing downstream from Culvert 2. Excess gravel noted in this area.

Photo 26. Burl's Creek, photo approximately 44 m downstream from northern property boundary. Pool area with algae bloom.

Photo 27. Burl's Creek, photo facing downstream (south) toward Bridge 1. Approximately 87 m from northern property boundary. Foot bridge visible.

Photo 28. Burls Creek, approximately 96 m from northern property boundary.

Photo 29. Burl's Creek, upstream of bridge 2 located approximately 108 m from northern property boundary.

Photo 30. Burl's Creek, photo of downstream from foot bridge approximately 112 m from northern property boundary.

Photo 31. Burl's Creek, photo of upstream face of bridge 3 approximately 185 m from northern property boundary.

Photo 32. Burl's Creek, photo of downstream from bridge located approximately 185 m from northern property boundary.

Photo 33. Burl's Creek. Photo looking upstream approximately 210 m from northern property boundary.

Photo 34. Burl's Creek. Photo looking downstream toward Bridge 4 approximately 210 m from northern property boundary.

Photo 35. Burl's Creek, photo of left bank of Bridge 4 located approximately 265 m from northern property boundary.

Photo 36. Burl's Creek, photo of right bank of Bridge 4 located approximately 265 m from northern property boundary.

Photo 37. Burl's Creek, photo of upstream face of Culvert 3 located approximately 341 m from northern property boundary.

Photo 38. Burl's Creek, photo of downstream face of twin Culverts 3a and 3b, located approximately 348 m from the northern property boundary.

Photo 39. Burl's Creek. Downstream view from Twin Culverts 3a and 3b.

Photo 40. Burl's Creek, photo of upstream face of Culvert 4. Located approximately 414 m from the northern property boundary.

Photo 41. Burl's Creek, photo facing upstream from Culvert 4.

Photo 42. Burl's Creek. Photo of downstream face of Culvert 4. Located approximately 448 m from the northern property boundary.

Photo 43. Burl’s Creek, photo facing downstream from Culvert 4.

Photo 44. Burl’s Creek, approximately 550 m from the northern property boundary.

Not pictured:

- Rock Spillway at approximately 555 m from northern property boundary. Creek bed dry at the time of site investigation.
- Bridge 5 approximately 592 m from northern property boundary. Creek has water depth of approx. 5 cm at the time of site investigation
- Bridge 6 at approximately 693 m from northern property boundary. Creek has water depth of 15-20 cm at the time of site investigation. Barbed wire running under bridge has high-water debris approximately 1.2m from creek bed.

Appendix F

LSPP CONCORDANCE TABLE

LSPP Policy #	Policy Text	Applicability / Conformity
1.1-DP	In relation to any matter affected by a policy in this Plan, the boundary of the *Lake Simcoe watershed* that applies to the matter is the boundary that was in effect at the time the matter is commenced. Whether a matter is considered commenced shall be determined in accordance with the rules specified in the *General Regulation* under the Lake Simcoe Protection Act, 2008.	The Burl's Creek Event Grounds are located approximately 2 km north of the northwest shores of Lake Simcoe, off Highway 11 between Barrie and Orilla. The Site is within the boundary of the Lake Simcoe Watershed and subject to applicable policies of the Lake Simcoe Protection Plan.
6.9-DP	The alteration of the shore of Lake Simcoe, other *lakes* or any *permanent or intermittent stream* for the purpose of establishing or altering drainage works such as those works under the *Drainage Act, infrastructure* or for stabilization, erosion control or protection purposes shall only be permitted if it is demonstrated that natural shoreline treatments (e.g. planting of natural vegetation, *bioengineering*) that maintain the natural contour of the shoreline will be used where practical, and a vegetative *riparian area* will be established to the extent feasible. In relation of such works, lands used for agricultural purposes do not require the establishment of a vegetative *riparian area* if the land is, and will continue to be, used for agricultural purposes.	Planting plans related to Burl's Creek are described in Section 3.3.2 of the Mitigation Plan (WSP, 2015).
6.10-DP	Where, in accordance with the policies of the Plan, *development* or *site alteration* is permitted within 120 metres of the *Lake Simcoe shoreline* , other *lakes* in the *Lake Simcoe watershed* , or any *permanent or intermittent stream* or a *wetland* , the *development* or *site alteration* should be integrated with and should not constrain ongoing or planned stewardship and remediation efforts.	Integration of Site stewarship activities near Burl's Creek and the Open Water Ponds is Described in Section 2.3.2 of WSP, 2015.
6.11-DP	Where, in accordance with the policies of this Plan, a proposal for *development* or *site alteration* is permitted within 30 metres of the *Lake Simcoe shoreline* , other *lakes* in the *Lake Simcoe watershed* , or a *permanent or intermittent stream* or *wetland* outside of settlement areas and the Greenbelt area and Oak Ridges Moraine area, the proposal for *development* or *site alteration* shall comply with the following where applicable: a. maintain, and where possible, increase or improve *fish habitat* in the Lake, stream or *wetland* , and any adjacent *riparian areas* ; b. to the extent possible, enhance the ecological features and functions associated with the Lake, stream or *wetland* ; c. minimize erosion, sedimentation, and the introduction of excessive nutrients or other pollutants and utilize planning, design, and construction practices that maintain and improve water quality; and d. integrate landscaping and habitat restoration into the design of the proposal to enhance the ability of native plants and animals to use the area as both *wildlife habitat* and a movement corridor.	Site alterations have occurred to the Open Water Ponds on Site, and culvert replacement is planned for 2 locations on Burl's Creek. (a & b) Works to improve shoreline habitat (specifically planting plans, culvert replacement proceedures, and future work controls) for the Open Water Ponds and Burl's Creek, including fish habitat and ecological fuctions are described in Sections 3.3.1 and 3.3.2 of the Mitigation Plan (WSP, 2015). Mitigation for wetlands is Described in Section 2.3.1 of the Mitigation Plan (WSP, 2015). c) Work proceedures and controls for erosion and sedimentation control near the Open Water Ponds are described in Section 8.4. Controls for future work are described in Section 3.3.1 of the Mitigation Plan (WSP, 2015). d) Planting plans that will enhance the Site for wildlife use are described in Sections 2.3.2, 3.3.1 and 3.3.2 of the Mitigation Plan (WSP, 2015).
6.20–DP	Policies 6.20 – 6.29 apply to those areas outside of *existing settlement areas* and outside of the Greenbelt area and Oak Ridges Moraine area.	The Burl's Creek Event Grounds are outside an Existing Settlement Area, the Greenbelt Area, and the Oak Ridges Moraine Area. Policies 6.20 – 6.29 apply.
6.21-DP	Key natural heritage features are *wetlands, significant woodlands, significant valleylands* , and natural areas abutting Lake Simcoe.	This Policy applies to the Burl's Creek Event Grounds, and the relevant Natural Heritage Features are considered in the EIS, and Mitigation Plan (WSP, 2015).
6.22-DP	Key hydrologic features are *wetlands, permanent and intermittent streams* , and *lakes* other than Lake Simcoe.	This Policy applies to the Burl's Creek Event Grounds, and the relevant Key Hydrologic Features are considered in the EIS, and Mitigation Plan (WSP, 2015).
6.23-DP	*Development* or *site alteration* is not permitted within a key natural heritage feature, a key hydrologic feature and within a related vegetation protection zone referred to in policy 6.24, except in relation to the following: a. Forest, fish, and wildlife management; b. Stewardship, conservation, restoration and remediation undertakings; c. *Existing uses* as specified in policy 6.45; d. Flood or erosion control projects but only if the projects have been demonstrated to be necessary in the public interest after all alternatives have been considered; e. Retrofits of existing *stormwater management works* (i.e. improving the provision of stormwater services to existing *development* in the watershed where no feasible alternative exists)but not new *stormwater management works* ; f. New *mineral aggregate operations* and wayside pits and quarries pursuant to policies 6.41 – 6.44; g. *Infrastructure* , but only if the need for the project has been demonstrated through an Environmental Assessment of other similar environmental approval and there is no reasonable alternative; and h. Low-intensity recreational uses that require very little terrain or vegetation modification and few, if any, buildings or structures, including but not limited to the following: i. non-motorized trail use; ii. natural heritage appreciation; iii. unserviced camping on public and institutional land; and iv. accessory uses to existing buildings or structures.	Mitigation for site alterations as noted by the LSRCA in a letter to Innovative Planning Solutions Consulting Inc. dated June 24, 2015, in relation to this policy are discussed in Sections 2.0 and 3.0 of the Mitigation Plan (WSP, 2015). This policy is further addressed in the Planning Justification Report for the Site (Innovative Planning Solutions, 2015).
6.24-DP	The minimum vegetation protection zone for all key natural heritage features and key hydrologic features is the area within 30 metres of the key natural heritage feature and key hydrologic feature, or larger if determined appropriate by an evaluation required by policy 6.25.	This Policy applies to the Burl's Creek Event Grounds, and the relevant Minimum Vegetation Protection Zones are considered in the EIS, and Mitigation Plan (WSP, 2015).
6.25-DP	An application for *development* or *site alteration* within 120 metres of a key natural heritage feature or key hydrologic feature shall be accompanied by a natural heritage evaluation meeting the requirements of policy 6.26, unless the *development* or *site alteration* is for a purpose specified by policy 6.23.	This EIS provides the Natural Heritage Evaluation for site alteration within 120 metres of a key natural heritage features and key hydrologic features. Proposed mitigation specific to Policy 6.23-DP is provided in WSP, 2015.

LSPP Policy #	Policy Text	Applicability / Conformity
6.26-DP	A natural heritage evaluation referred to in policies 6.3 and 6.25 shall be carried out in accordance with guidelines developed by the MNR and shall: a. demonstrate that the *development* or *site alteration* applied for will have no *adverse effects* on the key natural heritage feature, key hydrologic feature, Lake Simcoe and its associated vegetation protection zone, or on the related *ecological functions* ; b. identify planning, design and construction practices that will maintain and, where feasible, improve or restore the health, diversity and size of the key natural heritage feature or key hydrologic feature and its *connectivity* with other key natural heritage features or key hydrologic features as well as *connectivity* and linkages to natural heritage systems identified in Provincial Plans or by municipalities, the LSRCA or MNR; c. demonstrate how *connectivity* within and between key natural heritage features and key hydrologic features will be maintained and, where possible, improved or restored before, during and after construction to allow for the effective dispersal and movement of plants and animals; d. determine if the minimum vegetation protection zone is sufficient to protect the *ecological functions* of the feature and the area being evaluated, in particular where this feature or area is adjacent to a coldwater stream, headwaters, freshwater estuaries, steep slope or is acting as or has been identified as a wildlife corridor to ensure that the area will continue to effectively act and function as a wildlife corridor; e. determine if the minimum vegetation protection zone is sufficient to protect areas adjacent to existing features that would be appropriate for restoration or renaturalization to enhance the ecological functioning of that feature, such as lands that provide for rounding out or filling of gaps in *significant woodlands;* and f. if the minimum vegetation protection zone is not sufficient to protect the function of the feature or protect opportunities for feature enhancement, specify the dimensions of the required vegetation protection zone.	The EIS and Mitigation Plan (WSP, 2015) provide the Natural Heritage Evaluation for the Site. a) Section 9.0 of the EIS describes the effects of site alteration related to the project on Natural Features. The Mitigation Plan (WSP, 2015) decribes the proposed mitigation to address the impacts related to Policy 6.23-DP. b) The Mitigation Plan (WSP, 2015) Sections 2.0 and 3.0 describe the planning and design of proposed mitigation that will maintain, improve and restore Natural Features within the Site. c) The limited site alteration is predicted to have a negligible effect on connectivity. Planting Plans Described in Sections 2.3.2 and 3.3.2 of WSP, 2015 will improve the connectivity of the Site. d) The project will not appreciably alter the existing ecological functions of Burl's Creek and the Open Water Ponds. Mitigation for wetlands within the Significant Forest are described in Section 2.3.1 of WSP, 2015. e) Opportunities for restoration adjacent to Burl's Creek and the Open Water Ponds is described in Section 3.3.2 of WSP, 2015. f) Not applicable
6.27-DP	A proposal for new *development* or *site alteration* within 120 metres of the *Lake Simcoe shoreline* , a key natural heritage feature or a key hydrologic feature shall provide for the establishment and maintenance of *natural self-sustaining vegetation* to the extent and width of the associated vegetation protection zone required by the policies in this Chapter, except in relation to uses and structures in the vegetation protection zone that are permitted by the policies of this Chapter.	The planting plans described in Sections 2.3.2, 3.3.1 and 3.3.2 of the Mitigation Plan (WSP, 2015) all recommend only native species, with sizes and techniques designed for the establishment of natural self-sustaining vegetation. Planting will be done to the extent practical, balancing with the exisiting Site uses.
6.28-DP	Where, through an application for *development* or *site alteration* , a buffer or vegetation protection zone is required to be established as a result of the application of the policies in this Plan, the buffer or vegetation protection zone shall be composed of and maintained as *natural self-sustaining vegetation* .	The planting plans described in Sections 2.3.2, 3.3.1 and 3.3.2 of the Mitigation Plan (WSP, 2015) all recommend only native species, with sizes and techniques designed for the establishment of natural self-sustaining vegetation. Planting will buffer the natural features to the extent practical, balancing with the exisiting Site uses.
6.29-DP	If the *natural self-sustaining vegetation* is removed along the *Lake Simcoe shoreline* , from a key natural heritage feature, a key hydrologic feature or from any related vegetation protection zone, as a result of any *development* or *site alteration* permitted under policies 6.1, 6.23, 6.43 and 6.45, the *natural self sustaining vegetation* shall be re-established to the extent feasible following completion of that activity.	The planting plans described in Sections 2.3.2, 3.3.1 and 3.3.2 of the Mitigation Plan (WSP, 2015) all recommend only native species, with sizes and techniques designed for the establishment of natural self-sustaining vegetation. Planting will be done to the extent practical, balancing with the exisiting Site uses.

Appendix G

CURRICULUM VITAE

AUSTIN ADAMS, B.Sc., EP

BIOLOGIST AND ARBORIST, ENVIRONMENT

AREAS OF PRACTICE

Natural Sciences

LANGUAGES

English and French

PROFILE

Austin Adams is an experienced Environmental Scientist, Vegetation Ecologist and Manager with 15 years of environmental consulting and municipal experience in Ontario and Alberta. His skills include the management, senior technical review, data analysis, report writing and quality control of small to large-scale environmental assessment projects. He is an experienced vegetation ecologist, particularly in Boreal forest and urban environments for the oil sands, mining, power transmission and municipal market sectors. An accomplished field biologist, Austin has expertise in leading and coordinating field surveys for impact assessments and permitting.

Project types Austin has completed include environmental impact assessments for vegetation and wetlands resources, facility applications and conservation and reclamation planning, ecological land classifications, biological inventories, rare plant/Species at Risk surveys, weed assessments, biophysical impact assessments, pre-disturbance assessments, analysis of the effects of air emissions on ecological receptors, environmental protection plans, forestry baselines, Canadian Environmental Assessment Act screenings, and hearing preparation for environmental assessments.

EDUCATION

B.Sc., Environmental Science (Geography), University of Calgary	2001
M.Sc. Candidate, Environment and Management, Royal Roads University	Expected 2015

PROFESSIONAL DEVELOPMENT

Ecological Land Classification Certification, Ontario Ministry of Natural Resources and Forestry	2015
Butternut Health Assessors Certification, Ontario Ministry of Natural Resources and Forestry – BHA #571	2015
The 7 Habits for Managers, Franklin Covey	2014
Improving Management Effectiveness, Canadian Management Centre	2013
Pleasure Craft Operator Certificate, Transport Canada	2013
Plant Identification Workshop, Alberta Society of Professional Biologists	2012
Project Management Bootcamp, PSMJ Resources Inc.	2011
Power System Basics for Non-Engineers, EUCI	2010
Effective Communications and Human Relations, Dale Carnegie	2008

Boreal Lichen Identification Workshop, Prairie & Northern Plant Diversity Centre	2004

AWARDS

Dean's list, University of Calgary	1999 – 2000

PROFESSIONAL ASSOCIATIONS

International Society of Arboriculture (ISA) – Certified Arborist	ISA #ON-2000A
ECO Canada – Certified Environmental Professional in Energy, Natural Resource Management and Fish and Wildlife	EP

CAREER

Biologist and Arborist, Environment, WSP	2015 – Present
Manager, Natural Environment, Town of Richmond Hill, Richmond Hill, Ontario, Canada	2013 – 2014
Senior Environmental Scientist, Environmental Assessment and Permitting Group, EBA, a Tetra Tech Company, Calgary, Alberta, Canada	2010 – 2013
Vegetation Ecologist, Biophysical Resources Team, Golder Associates Ltd., Calgary, Alberta, Canada	2001 – 2009
Sample Technician, Norwest Labs, Calgary, Alberta, Canada	2000 – 2001
Air Quality Technician, Jacques Whitford Environment Ltd., Calgary, Alberta, Canada	1997

PROFESSIONAL EXPERIENCE

Environmental Impact Assessment

- Seaton Municipal Transmission Station Class EA Schedule B, Pickering, Ontario (2015): Coordinated the selection of a transmission station based on Natural Heritage Feature constraints. Conducted a Class EA for the selected location. Client: Veridian Connections Inc.
- Jackpine Mine Expansion and Pierre River Mine Project, Fort McMurray, Alberta (2006-2008):* Served as the vegetation and wetlands resources component manager for this environmental impact assessment. This large-scale project with two discrete areas required management of a multi-year field program involving three separate teams. Project Mapping involved integrating mine closure and reclamation plans with those of surrounding mine sites within two separate Alberta natural subregions. In addition to the vegetation and wetlands resources component, a wetlands protection plan was developed, and a forestry baseline inventory and an assessment of air emission effects on vegetation were conducted. Client: Shell Canada Ltd. Components Value: >$1,000,000.

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- Surmont Expansion Project Environmental Assessments, Conklin, Alberta (2008):* Overall terrestrial coordinator for impact assessments related to the SAGD project expansion, including managing wildlife, vegetation, soils, and biodiversity components, including senior direction and technical review of the vegetation, forestry and wetlands components. Planning was required to coordinate the client's phased expansion approach into an integrated assessment. Client: ConocoPhillips Canada. Terrestrial Components Value: > $2,000,000.
- Oil Sands Environmental Impact Assessment Projects, Alberta, Canada (2001-2009):* In addition to the above feature projects, other oil sands EIA Projects were conducted, gaining approvals for large-scale open pit and in-situ mining operations. Roles on these projects progressed from field data collection, data analysis and reporting, through component and field leadership roles, to overall terrestrial component coordination, senior technical direction and review. Vegetation and Wetland Resources components included impact analysis, mapping, ecological land classification, species inventory, species at risk assessments, and cumulative effects assessment. Forestry baseline analysis involved inventory interpretation to assess species present and volumes to be cleared. A method for predicting the potential impacts of air emissions on biological receptors from mining operations was also developed. Projects include:
  - Canadian Natural Resources Limited
    - Horizon Project, Fort McMurray, Alberta
    - Kirby Project, Conklin, Alberta
    - Primrose East Project, Bonnyville, Alberta
    - Primrose and Wolf Lake (PAW) Project, Bonnyville, Alberta
  - EnCana Corporation
    - Christina Lake Thermal Project, Conklin, Alberta
  - MEG Energy Ltd.
    - Christina Lake Regional Project
    - Christina Lake Regional Expansion Project
  - OPTI Canada Inc./Nexen Canada Ltd.
    - Long Lake Project, Conklin, Alberta
  - Petro-Canada Ltd.
    - Meadow Creek Project, Anzac, Alberta
  - Shell Canada Ltd.
    - Jackpine Mine – Phase 1 Project, Fort McMurray, Alberta
    - Muskeg River Mine Expansion Project, Fort McMurray, Alberta
  - Suncor Energy Inc., Oil Sands
    - Firebag Stage 4 to 6 Project, Fort McMurray, Alberta
    - Project Voyageur, Fort McMurray, Alberta

        - South Tailings Pond Project, Fort McMurray, Alberta
        - Voyageur South Project, Fort McMurray, Alberta
    - SURE Energy
        - Grosmont Venture, Wabasca, Alberta
    - TOTAL E&P Canada Ltd.
        - Joslyn Creek South Baseline Studies, Fort McMurray, Alberta
    - Upside Engineering Ltd.
        - Enbridge Pipeline, Fort McMurray, Alberta

- ATCO Electric Ltd. Facility Applications, northern and central Alberta (2010-2013):* These projects reported the impact assessment criteria required for the permitting and approval of electrical transmission line developments. Work included the project management and overall coordination of these facility applications, including conservation and reclamation planning. Also involved in coordinating and reviewing detailed environmental field reporting (EFR) for several of these projects. Projects include:
    - Green Stocking Substation, Fort McMurray, Alberta
    - Fort McMurray Area Reinforcement Project, Fort McMurray, Alberta
    - North Fort McMurray Transmission Development, Fort McMurray, Alberta
    - Northwest Loop Transmission Development, Fort McMurray, Alberta
    - Bonnyville to Bourque Project, Bonnyville, Alberta
    - Bonnyville to Medley River Project, Bonnyville, Alberta
    - Cold Lake Reinforcement Project, Cold Lake, Alberta
    - Quigley Substation, Conklin, Alberta
    - Engstrom Substation, Conklin, Alberta
    - Norberg Transmission Project, St. Paul, Alberta
    - St. Paul Decommissioning Project, St. Paul, Alberta
- Altalink L.C. Public Consultation Programs for Facility Applications, northern and central Alberta (2010-2013):* Public Consultation is a required part of the Facility Application process for electrical developments in Alberta. Acted as project manager for these programs, including reporting, personnel coordination, training and health and safety aspects. Projects include:
    - 902L Restringing Project, Wabamun, Alberta
    - Christina Lake and Sunday Creek Projects, Conklin, Alberta
    - Heartland Modification Project, Fort Saskatchewan, Alberta
    - Underwood Project, Conklin, Alberta
- Livock Substation Environmental Screening, Wabasca, Alberta (2011):* Conducted a Canadian Environmental Assessment Act (CEAA) screening level assessment for a communications tower. Work included a field study of the

expanded substation footprint for vegetation, wildlife and species at risk. An impact assessment was also completed for approval. Client: ATCO Electric Ltd.

- Project Environmental Application Hearing Activities, Alberta (2001-2013):* Participated in the preparation of supplemental information responses (SIR) for directly affected stakeholders. Hearing preparation activities also included providing research, summary documentation and support to “front row” personnel. Clients and projects included:
  - Altalink L.C.
    - 902L Restringing Project, Wabamun, Alberta
  - ATCO Electric Ltd.
    - Oakland to Lanfine Project, Oakland, Alberta
  - Canadian Natural Resources Limited
    - Horizon Project, Fort McMurray, Alberta
    - Primrose East Project, Bonnyville, Alberta
  - MEG Energy Ltd.
    - Christina Lake Regional Project, Conklin, Alberta
  - Petro-Canada Ltd.
    - Meadow Creek Project, Anzac, Alberta
  - Shell Canada Ltd.
    - Jackpine Mine – Phase 1 Project, Fort McMurray, Alberta
    - Muskeg River Mine Expansion Project, Fort McMurray, Alberta
  - Suncor Energy Inc.
    - South Tailings Pond Project, Fort McMurray, Alberta
    - Voyageur Project, Fort McMurray, Alberta
- Contaminated Sites CEAA Screenings, CFB Suffield, Alberta (2007):* Terrestrial coordinator of the federal environmental assessments for four contaminated sites on a tactical weapons range. Client: Defence Construction Canada.
- Mackenzie Valley Pipeline Project, MacKenzie Valley, Northwest Territories (2005):* Participated as the technical and style editor for the biophysical components of the impact assessment. Client: TransCanada Pipelines.

Pre-Development Assessment

- Hamilton Three Bridges Natural Heritage Feature Inventory, Hamilton, Ontario (2015): The project involved the inventory of Natural Heritage Features for incorporation into required planning for replacement of aging infrastructure. Conducted fieldwork and reporting for vegetation components and coordinated overall reporting and integration, including project management. Client: City of Hamilton, Transportation.
- Highway 63 Aggregate Quarries, Conklin, Alberta (2013):* Site approvals for these gravel quarries required pre-development business plans, including

conservation and reclamation plans. As project manager, the coordination of fieldwork, mapping, reporting and senior review was completed. Also led the vegetation component lead for these projects. Client: LF Consulting Ltd.

- Surmont Phase 2 Expansion Central Plant Facility Project, Conklin, Alberta (2006-2008):* Project Manager for the plant expansion pre-disturbance assessment. Provided senior direction and technical review, and coordinated soils, vegetation, wildlife, and closure and reclamation components. Presented mitigation options to senior management and coordinated facility location options with the client. Client: ConocoPhillips Canada. Component Budget: ~$75,000.
- Foster Creek and Christina Lake Projects, Bonnyville, Alberta (2008):* PDAs were conducted for expansions to these projects. Provided senior direction and technical review for the terrestrial vegetation and wetlands sections of these reports. Client: EnCana FCCL Oil Sands Ltd.
- Primrose East Project PDA, Bonnyville, Alberta (2006):* Participated as vegetation component and field lead for a pre-disturbance assessment for the initial phases of this project. Surveyed specific wellpad, pipeline and infrastructure locations for rare plants and potential development problems. Presented mitigation options to senior management for approval by the client. Client: Canadian Natural Resources Ltd.

Natural Heritage Evaluation and Biophysical Assessment

- 340 Ridge Road Natural Heritage Evaluation, Aurora, Ontario (2015): The project involved subdividing a residential lot to build an additional home. Conducted a Natural Heritage Evaluation to satisfy the requirements of the Oak Ridge Moraine Conservation Plan. Client: Frank Luciani.
- 13165-75 Keele Street Natural Heritage Evaluation and Environmental Impact Statement, King City, Ontario (2015): The project involved the development of a townhome complex on two large residential lots, Conducted fieldwork, reporting and project management. Client: Brutto Consulting.
- Fernbrook Properties Natural Heritage Evaluation for 13859-13887 Yonge Street, Aurora, Ontario (2015): The project involved creating a subdivion from 3 rural residential lots. The NHE was required to satisfy the requirements of the Oak Ridge Moraine Conservation Plan. Conducted fieldwork, reporting and project management. Client: Brutto Consulting.
- Henderson Memorial Community Park Natural Heritage Evaluation, Bradford West-Gwillimbury, Ontario (2015: Henderson Memorial Park is a multi-use outdoor facility to be developed on existing agricultural land. Project design enhances and protects existing natural features. Conducted vegetation fieldwork and reporting, coordinated overall reporting, and project management. Client: Landscape Planning Ltd.
- Burl's Creek Event Grounds, Oro-Medonte, Ontario (2015). The project involved the expansion and upgrades to an existing outdoor event facility. Conducted vegetation fieldwork and reporting, coordinated overall reporting and project management. Developed specific mitigations to satisfy the Lake Simcoe Region Conservation Authority (LSRCA). Client: Burl's Creek Event Grounds Ltd.

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- 125 Klein's Ridge (2015): The development of a replacement home required an Environmental Impact Statement, as part of the property is Toronto and Region Conservation Authority (TRCA) valleylands, Completed a scoped EIS in consultation with the TRCA, determining the developable limits from the valley, and recommended. Conducted fieldwork, reporting, and project management Client: Martella Consulting Inc.
- 13373 McCowan Road, Whitchurch-Stouffville, Ontario (2015); The project involved the development of a home on a former rural lot. Conducted a Natural Heritage Evaluation to satisfy the requirements of the Oak Ridge Moraine Conservation Plan. Conducted fieldwork, coordinated overall reporting and project management. Client: RS Geomatics Inc.
- 10 Cranborn Chase, Whitchurch-Stouffville, Ontario (2015): The homeowners wished to build a pool in their backyard. Conducted a Natural Heritage Evaluation to satisfy the requirements of the Oak Ridge Moraine Conservation Plan. Conducted fieldwork, coordinated overall reporting and project management. Mitigations were developed to preserve a large sugar maple on the property. Client: The Pool Craft Company Ltd.
- 24 Brookside Road, Richmond Hill, Ontario (2015): The project involved the creation of a medical office building next to Toronto and Region Conservation Authority (TRCA) valleylands. Coordinated between the client and the TRCA to define the developable limits within the property. Client: Waterton Engineering Management Ltd.
- Richmond Hill Ecological Land Classification, Richmond Hill, Ontario (2013):* Managed a program to collect a complete a comprehensive and current Ecological Land Classification of the Town of Richmond Hill's natural areas. The program involved coordination with the Toronto and Region Conservation Authority (TRCA).
- Rocky Ridge Recreation Centre, Calgary, Alberta (2012-2013):* The work included the preliminary property development studies for a proposed recreation centre, a Public-Private Partnership (P3) project. Studies included biophysical impact assessment, wetlands delineation and health assessment, geotechnical, hydrogeology, Phase I environmental site assessment, stormwater management, site servicing, transportation impact assessment and historical resource impact assessment. As the project manager, provided senior direction, client liaison, and subconsultant coordination of the above components. Biophysical Impact Assessment fieldwork and reporting was also conducted, including the delineation of environmentally sensitive areas to guide the placement of facilities on the property. Client: City of Calgary. Project Value: Approximately $350,000.
- Highway 547 Bridge Replacement, Gleichen, Alberta (2012-2013):* Led the environmental assessment of this project on the Siksika Reserve. Components included vegetation, wildlife and fish compensation planning. Participated in the mitigation of impacts through bridge design and placement. Client: Read Jones Christoffersen Ltd.
- McHugh Bluffs Stairs Preliminary Natural Site Assessment, Calgary Alberta (2012):* A biological overview for a planned pathway staircase was conducted, identifying potential biological and slope stability issues. Client: City of Calgary.

- South Lethbridge Biophysical Impact Assessment, Lethbridge, Alberta (2012):* Lands for a proposed subdivision were inventoried, including a native grassland and rattle snake habitat assessment. Coordinated fieldwork, synthesized information from historical air photos and prepared the assessment, detailing mitigation appropriate to the area. Client: Hasegawa Engineering Ltd.
- Greenbriar Phase I Biophysical Impact Assessment, Calgary, Alberta (2012):* The project is a residential subdivision in the Bow River valley. Conducted fieldwork and reporting for the impact assessment, which described the potential impacts and mitigations for biophysical, geotechnical, hydrological, cultural, historical and visual resources in the project area. Client: Parkside Developments Inc.
- East Stoney Development Wetland Assessment, Calgary, Alberta (2012):* Performed a wetland delineation and sensitivity assessment for a proposed subdivision. Client: WAM Developments Ltd.
- Patterson Point Biophysical Impact Assessment, Calgary, Alberta (2011):* The project was a multi-family residential development on the Bow River escarpment. As project manager, described the potential impacts and mitigations for biophysical, geotechnical, hydrological, cultural, historical and visual resources in the project area. Conducted fieldwork and synthesized multiple historical reports into the impact assessment. Client: Kellam Berg Engineering and Surveys Ltd.
- Environmental Overview – Sections 18/19 27-28 W4M, Rocky View County, Alberta (2011):* Project was for a development application of two sections of land. The reporting described the biophysical features and sensitivities in the project area. Conducted fieldwork and reporting for the overview. Coordinated reporting requirements with the client and the regulator. Client: 1549598 Alberta Ltd.
- Aquifer Thermal Energy Storage (ATES) Demonstration Project, Lethbridge, Alberta (2011):* The Project will provide alternative heating sources for a condominium development. Coordinated a CEAA screening, including senior technical review and direction. Client: Science Applications International Corporation.
- Great Plains Biophysical Impact Assessment, Calgary, Alberta (2010):* The work involved two biophysical impact assessments for road bridge development, describing the potential impacts and mitigations for biophysical resources. Conducted fieldwork and reporting for the impact assessment. Client: Kellam Berg Engineering and Surveys Ltd.
- Diamond View Powerline Burial, Calgary, Alberta (2007-2008):* The work involved a biophysical field inventory of a 300 m length of City of Calgary property along an escarpment. The inventory assessed species at risk and wildlife habitat, identifying conflicts and suggesting solutions. Client: EnMax Power Corporation.
- Silverwing Golf Course, Calgary, Alberta (2006):* Conducted a Canadian Environmental Assessment Act (CEAA) screening level assessment for a golf course on federal airport lands. The assessment and proposed mitigation was required to balance mitigation alternatives with federal airport safety regulations. Client: Windmill Golf Group.
- Bowmont Natural Environment Park Biophysical Impact Assessment, Calgary, Alberta (2007):* The project included restoring undesignated trails, regeneration of balsam poplar in the floodplain and invasive species management. Led the

preparation of a biophysical impact assessment and a restoration plan for these proposed projects. Client: City of Calgary.

- Gull Lake Windfarm Project, Gull Lake, Saskatchewan (2003):* Conducted a bird mortality field survey. Survey involved radial transects at all turbine locations. Also prepared a review of legislation and guidelines concerning windfarms. Client: Sunbridge Wind Power Partnership.
- Fish Creek Biophysical Assessment, Calgary, Alberta (2001):* Participated in the preparation of a biophysical assessment of Fish Creek Park. Conducted natural area mapping and the delineation of native grassland areas. Client: City of Calgary.

Tree Inventory, Protection Planning and Planting Plans

- Finch-Islington Watermain Replacement, Toronto, Ontario (2015). The project involved the replacement of an old water watermain, with areas along municipal property and valleylands. Participated in the tree inventory fieldwork for the development of a tree protection plan and arborist report. Client: City of Toronto.
- Tree Planting Plan for 2364 Taunton Road, Hampton, Ontario (2015): Development of a fuel bar and coffee shop required compensation for the loss of vegetated area due to the installation of a septic field. Developed a tree planting plan for a portion of the current gravel parking lot, to become contiguous with the adjacent Natural Heritage System. The plan was required to satisfy the Central Lake Ontario Conservation Authority (CLOCA). Client: Wally Gupta.
- Tree Inventory and Protection Plan for 5th Line Sewer and Watermain Construction, Milton, Ontario (2015): The project involved the installation of a sewer line and watermain, paired with eventual road widening, Conducted a tree inventory and protection plan for 10 locations along the route, recommending mitigation or removal as required. The plan was designed to satisfy the requirements of Conservation Halton. Client: Halton Region. Budget: $10,000.
- Tree Inventory for 13165-75 Keele Street, King City, Ontario (2015): The project involved the development of a townhome complex on two large residential lots, Conducted a tree inventory and protection plan to accommodate the development while preserving established street trees and maintaining a buffer between Toronto and Region Conservation Authority (TRCA) valleylands. Client: Brutto Consulting.
- Lily Lake Tree Inventory and Assessment, Peterborough, Ontario (2015). The project is a proposed subdivision on Lily Lake Road. Surveyed and revised existing reporting to satisfy new requirements of the City of Peterborough for a proposed subdivision. Trees between 7.5 and 10 cm were surveyed for the revision. Client: 2131222 Ontario Inc.
- Harris Farm Bridge Replacement, Mississauga, Ontario (2015), The project involved the twinning of a sewer main, requiring the replacement of a single lane bridge and related construction works. The tree impact assessment surveyed and detailed the ecological condition of the trees in the project area, recommended mitigation or removal as required and proposed a tree planting and restoration plan, Coordinated with the Credit Valley Conservation Authority (CVCA). Client Region of Peel.

- Rogers Telecommunication Site C4362, Milton, Ontario (2015). A Tree Preservation Plan was required for the development of a communications compound and access road. Conducted a tree inventory and developed a protection plan and arborist report. The assessment was required to satisfy the requirements of both the Region of Halton and Conservation Halton. Client: Rogers Communications.

Environmental Monitoring and Wetlands Monitoring

- Biological Monitoring Programs, Richmond Hill, Ontario (2013):* These programs are designed to survey the ecological health of natural systems within Richmond Hill. Surveys included amphibians, goose management, flora and invasive plant species surveys. As manager, led the redesign of the monitoring protocols in order to gather more applicable and measurable data.
- Pipeline Germination Assessment, Strathmore, Alberta (2012-2013):* This study assessed the effects of buried pipelines on crop quality. Led the field team and was responsible for team coordination, safety and data collection standards. Conducted data quality assurance and preparation for analysis. Client: EnCana Corporation.
- Ghost River Cadet Camp Vegetation Monitoring, Waiparous, Alberta (2012):* Designed and conducted a vegetation health monitoring program for an effluent irrigation project. The study analysed the growth and health of trees and understory species, measuring against nearby control sites. The program was used as a “real-world” training tool for summer student staff. Client: Department of National Defence via Aquatech Canadian Water Services Inc.
- Lichen Biomonitoring Program, Bonnyville, Alberta (2006-2008):* Designed a lichen biomonitoring program for the Foster Creek in situ project. The program is designed to provide due diligence and provide an assessment of the potential effects of air emissions from the Project. Program design was required to be both practical for field collection, and scientifically and statistically valid. Client: EnCana FCCL Oil Sands Ltd
- DeBeers Vegetation Monitoring Program, Northwest Territories, Canada (2006):* Established a vegetation monitoring program for the Snap Lake diamond mine. The program was designed to serve multiple potential future goals by established permanent monitoring plots, species inventories and mapping ecological land classifications. Client: DeBeers Canada Mining Inc.
- Waterton South 3D Seismic Project, Pincher Creek, Alberta (2007):* The project was a seismic survey of the eastern front ranges of the Rocky Mountains. As a program monitor, participated in developing real-time mitigation strategies, seismic crew environmental education, program reporting, and rare plant reporting. Client: Shell Canada Limited.
- Wetlands Monitoring Project, Fort McMurray, Alberta (2005):* Wetlands near the Firebag ETS Project site are monitored for ongoing changes in health. Prepared an annual report for this ongoing wetlands monitoring project. Also conducted the monitoring fieldwork, including an additional culvert drainage study. Client: Suncor Energy Inc.

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Reclamation and Restoration

- Community Stewardship Program, Richmond Hill, Ontario (2013):* Oversaw the program, which implements tree planting, stream restoration, invasive species pulls and land stewardship activities on Town-owned lands. Redesigned the restoration monitoring program in order to gather more reportable and understandable data. Town of Richmond Hill.
- Land Treatment Facility Biophysical Benchmarking, Drayton Valley, Alberta (2012-2013):* Coordinated baseline biophysical surveys and reporting to use as benchmarks for the reclamation of a land treatment facility. Conducted the vegetation surveys and reporting, including designing survey protocols for ongoing monitoring. Participated in ongoing consultation with regulators, and in the overall reclamation design of the facility, including selection of land preparation treatments, vegetation species, and planting densities. Client: Newalta Corporation.
- Millennium Mine Reclamation Health Surveys, Fort McMurray, Alberta (2006):* Conducted a tree stem density and health survey of the Millennium oil sands reclamation areas. Also completed a seed collection program of white birch, Alberta rose and blueberry for integration into a reclamation seed bank. Client: Suncor Energy Inc.
- Participated in the Conservation and Reclamation planning and design portion of Environmental Impact Assessments for several oil sands mining project in northern Alberta.*

Invasive Species Management and Assessment

- Emerald Ash Borer (EAB) Management Strategy, Richmond Hill, Ontario (2013):* Managed the implementation of the strategy which included pesticide treatment, regional collaboration and resident communication and education.
- Highway 1 Message Sign Weed Assessment, Calgary, Alberta (2012):* A weed assessment including mitigation strategies was completed as part of the installation of a variable message sign location along Highway 1 west of Calgary. Work included sites assessment and developing a management plan for the control of weeds pre and post installation. Client: a joint Alberta Transportation/Parks Canada Project.
- Crosspointe Industrial Park, Calgary, Alberta (2012):* Prepared a weed management plan for an industrial park to be developed in northeast Calgary. Recommended management options based on overall species composition. Client: Kellam Berg Engineering and Surveys Ltd.
- Participated in several other weed assessment activities throughout southern Alberta.*

* denotes projects completed with previous employers

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PUBLICATIONS AND PRESENTATIONS

Publications

- Adams, A., Gilchrist, I., and B. Wilson. "Regional Landsat Mapping of the Oil Sands Region, Alberta, Canada". *IAIA conference 2004 Poster Presentation,* 2004. Vancouver, BC.

Presentations

- Adams, A., Farrugia, A. "EAB Invades Richmond Hill! A presentation on the management of Emerald Ash Borer in Richmond Hill". American Public Works Association (APWA) Conference, Toronto, ON. August 18, 2014.

JOSHUA D. VANDERMEULEN, B.Sc.

BIOLOGIST

AREAS OF PRACTICE

Natural Sciences

PROFILE

Mr. Joshua Vandermeulen has over 7 years of field experience in the area of wildlife and terrestrial ecology. Joshua's experience includes Environmental Impact Assessments, including projects involving ecosystem and vegetation mapping, radio telemetry with reptiles, reptiles and amphibian surveys, breeding bird surveys, and tree inventories. Work history paired with educational background has given him a well-rounded knowledge of scientific methods, an understanding of the scientific process, and solid communication skills.

EDUCATION

B.Sc., Ecology, University of Guelph, ON	2012

PROFESSIONAL DEVELOPMENT

WHMIS	2014
Species at Risk Training	2011

CAREER

Biologist, Environment, WSP	2014 - Present
Biologist, Environment, GENIVAR (now named WSP)	2013
Biologist, AMEC Environment and Infrastructure	2011 - 2012
Field Technician, University of Waterloo	2012
Biologist, LGL Limited	2010

PROFESSIONAL EXPERIENCE

Natural Sciences

- 2014 Northeastern Region Aggregate Source Investigations, North Bay, Matheson, Massey, Thessalon, Shining Tree, Gogama, and Britt (2014): Field surveys for eight potential aggregate sites were completed to document natural heritage features, significant wildlife habitat, and species at risk. Specific species at risk surveys included basking surveys for Blanding's Turtle, gestation and hibernation habitat surveys for Massasauga Rattlesnake, and evening surveys for Eastern Whip-poor-will. Client: Ministry of Transportation of Ontario.
- Yorktech Drive Extension – Class C Environmental Assessment, Markham, Ontario (2014): As part of a Schedule C Class EA, a Natural Heritage Existing Conditions report was completed. Work on the project included consultation with appropriate regulating agencies, a full field program for vegetation, wildlife, and potential species at risk in the area, and an impact assessment for the alternative routes. Client: City of Markham.

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- McCowan Road EIS, East Gwillimbury, ON (2014). An environmental impact study was completed for a site located within the Oak Ridges Moraine. Work included the collection of background information, consultation with regulatory agencies, completing a field program, and reporting. The field program focused on identification of natural heritage features and completing breeding bird and amphibian surveys. Client: Larkin Associates.
- 2013 Northeastern Region Aggregate Source Investigations, Sudbury, Wawa, Mattawa, North Bay, and Timmins, ON (2013): Conducted surveys for natural heritage features and species at risk for several proposed aggregate sites in Northeastern Ontario. Specific surveys included morning breeding bird surveys, evening amphibian surveys, and evening Eastern Whip-poor-will surveys on all sites. Prepared Level 1 and Level 2 Natural Environment Technical Reports for the sites. Client: Ministry of Transportation of Ontario.
- Minto Mine Project, Shining Tree, ON (2013): Conducted surveys for natural heritage features and species at risk in support of an advanced exploration mining permit for a mining exploration company. Work included the collection of background information, consultation with appropriate regulating agencies, field investigations, and reporting. Client: Creso-Nichromet.
- Innisfil Closed Landfill Remediation, Innisfil, ON (2013): The County of Simcoe was tasked with remediating a historic closed landfill site. The landfill was located within a mapped Provincially Significant Wetland, as well as within some sensitive natural areas. Work included the collection of background information, consultation with appropriate regulating agencies, completing the field program including breeding bird and amphibian surveys, and developing mitigation and planting plans for the site to ensure that the surrounding natural environment was not negatively impacted by the refuse removal. Client: County of Simcoe.
- Ramara Closed Landfill Remediation, Ramara, ON (2013): The County of Simcoe was tasked with remediating a historic closed landfill. The landfill was located within a large wetland complex, as well as within some sensitive natural areas. Provided an existing conditions report, applied for appropriate permitting, and developed a mitigation and planting plan for the site to ensure that the surrounding natural environment was not negatively impacted by the refuse removal. Client: County of Simcoe.
- Pickering Sewer Re-routing, Class Environmental Assessment, City of Pickering, ON (2013): Conducted surveys of breeding birds and natural heritage features as part of a Class B Environmental Assessment for the re-routing of three sanitary sewer systems in the City of Pickering. An existing conditions report was prepared, focusing on the terrestrial environment including vegetation and wildlife species and their habitat. Client: Regional Municipality of Durham.
- Carlisle Well (FDC06) and Water Tower Class Environmental Assessment, City of Hamilton, ON (2013). A description of existing conditions and natural heritage features, including species at risk and their habitat, must be considered in initial stages of a Class Environmental Assessment. Surveys for breeding birds and general natural heritage features were completed for three proposed well locations, and a Natural Heritage Existing Conditions Report was prepared. Client: City of Hamilton.

- Existing Conditions Reports, Two Bridge Sites, Hamilton, ON (2013): A survey of existing conditions and potential for species at risk was conducted as part of a roster assignment for the City of Hamilton. Surveys were conducted for flagged species at risk in the study area, including bird, fish, plant, mammal, and herptile species. Client: City of Hamilton.
- Breeding bird and amphibian surveys, Rainy River Resources, Fort Frances, ON (2012):* General biological inventories of plant, reptile, amphibian and bird species were conducted for a proposed gold mine site in Northwestern Ontario, with emphasis on Species at Risk birds. Species specific surveys included evening Eastern Whip-poor-will and Common Nighthawk surveys for 5 sites. Client: Ontario Ministry of Transportation.
- Breeding bird and amphibian surveys, Department of National Defence, Upsala, ON (2012):* General biological inventories of bird species were completed for a proposed firing range northwest of Thunder Bay. Point counts to detect breeding bird species were conducted daily. Additionally, evening surveys were done to detect the presence of Eastern Whip-poor-will and Common Nighthawk. Client: Department of National Defence, Canada.
- Windsor-Essex Parkway, Windsor, ON (2011):* A long term survey for two Species-At-Risk snakes, the Eastern Foxsnake and Butler's Gartersnake, was continued as part of the larger Environmental Impact Assessment for the Windsor Essex Parkway project. Coverboard surveys for the targeted species were completed daily. Snakes found in the highway footprint were relocated to suitable habitat in the vicinity. Additionally, radio telemetry was conducted with the targeted species several times daily to determine home ranges and crucial birthing and foraging areas. This was the first time that telemetry had been conducted on Butler's Gartersnakes. Scientific Collector's Permits and approved Animal Care Protocols were required for live-capture trapping, PIT-tagging, and implanting radio telemeters for Eastern Foxsnake and Butler's Gartersnake. Breeding bird surveys were also undertaken at various locations over the site. Client: Ontario Ministry of Transportation.
- Windsor-Essex Parkway, Windsor, ON (2010):* A Mark-recapture study was completed with the federally endangered Butler's Gartersnake, within the footprint of the proposed Windsor-Essex Parkway. Additionally, an earthworm survey was designed and implemented to determine crucial feeding areas for the Butler's Gartersnake. Scientific Collector's Permits and approved Animal Care Protocols were required for live-capture trapping, PIT-tagging, and implanting radio telemeters for Butler's Gartersnake. Client: Ontario Ministry of Transportation.

Waste Management

- Severn Pines Quarry, County of Simcoe, ON (2014-present): As part of the monitoring program, a monthly field program was completed. Compliance monitoring related tasks include groundwater levels, groundwater sampling, surface water sampling, surface water flows, monitor repair, and data collation. Client: Walker Aggregates Inc.
- Bruman Quarry, Nipissing District, ON (2014-present). A monthly monitoring program included compliance monitoring related tasks such as groundwater levels, groundwater sampling, surface water sampling, surface water flows, monitor repair, and data collection. Client: Bruman Construction Inc.

- Bracebridge Landfill, District of Muskoka, ON (2013): Compliance monitoring related tasks included groundwater levels, groundwater sampling, surface water sampling, surface water flows, topographic surveying, monitor repair, methane monitoring, benthic sampling, and data collation. Client: The District Municipality of Muskoka.
- Region of Durham, Various Locations, ON (2013): Brock Landfill, Port Perry Landfill. Compliance monitoring related tasks include groundwater levels, groundwater sampling, surface water sampling, surface water flows, and data collation. Client: Regional Municipality of Durham.

Field Technician Experience

- Bird Migration surveys for M.Sc. Candidate Kenneth G. Burrell, Point Pelee National Park, Ontario (2010):* Migration surveys were completed daily at the southern tip of Point Pelee National Park to assist with understanding the phenomena of "reverse migration", the focus of Mr. Burrell's M.Sc. thesis (University of Waterloo).
- Shorebird surveying in southern James Bay, near Moosonee, ON (2012):* Surveys of migrant shorebird species were conducted in this globally significant stopover site. Additionally, surveys were done for the endangered "*rufa*" subspecies of Red Knot. Individual Red Knots were identified based on unique colored flags that had been attached to them as part of a long term banding project. This project is a partnership with the Canadian Wildlife Service, the Ministry of Natural Resources, the Moose Cree First Nation, and the Royal Ontario Museum.
- Bruce Peninsula herpetofauna surveying, Northern Bruce Peninsula, ON (2008 and 2009):* Species at Risk reptiles were surveyed. Targeted species included Eastern Massasauga, Queen Snake, Spotted Turtle, Eastern Milksnake, and Northern Ribbonsnake. Additionally, tissue samples of Northern Brownsnake and Northern Redbelly Snake were taken to assist researchers.
- Georgian Bay Spotted Turtle surveying, near Saugeen Shores, ON (2008 and 2009):* Spotted Turtles were surveyed for at known breeding locations, as part of a mark recapture project for M.Sc. candidate Megan Rasmussen.
- Pelee Island herpetofauna surveying, Pelee Island, ON (2007 and 2008):* Species-at-risk reptiles were surveyed for with biologists Jeff Hathaway and Steve Marks. Targeted species included Blue Racer, Eastern Foxsnake, Lake Erie Watersnake, Blanding's Turtle, and Small-mouthed Salamander.

*denotes projects completed with previous employers

MARGARET PUGH (MARTIN), M.Sc.

TERRESTRIAL AND AQUATIC ECOLOGIST

AREAS OF PRACTICE

Environmental Management and Consulting

Ministry of Transportation Class Environmental Assessments

Environmental Site Assessments and Remediation

PROFILE

Margaret Pugh (formerly Martin) is an ecologist who specializes in terrestrial, wetland and aquatic ecosystems. She holds a Master of Science degree in biology and has worked as an ecologist throughout northern and southern Ontario since 2004. Margaret is an experienced project manager in Renewable Energy, Environmental Impact Statements, Provincial Environmental Assessments, Ministry of Transportation Class EA and Species at Risk. She has negotiated permits under the *Conservation Authorities Act, Fisheries Act, Endangered Species Act* and routinely works with both provincial and federal legislation mandates. Margaret is MTO RAQS qualified for Natural Science, Fisheries Assessment and Fisheries Contract Specialist. She is a seasoned field biologist with expertise in wetland evaluation (OWES qualified), ecological land classification (ELC certified) and Butternut Health Assessment (BHA qualified), Species at Risk (SAR) habitat assessment, flora and fauna inventories, mammal tracking, bird migration and breeding studies, bat habitat and acoustic monitoring, amphibian and reptile surveys, rare species monitoring programs and sediment/ erosion control.

EDUCATION

Master of Science, Biology, University of Waterloo, Waterloo, ON	2007
Bachelor of Science, Honours Biology, Co-op Program, University of Waterloo, Waterloo, ON	2004

PROFESSIONAL ASSOCIATIONS

Thunder Bay Field Naturalists	TBFN
Society of Canadian Limnologists	SCL

CERTIFICATIONS AND TRAINING

Butternut Health Assessor	2015
MTO RAQS Natural Science Specialist	2015
MTO RAQS Fisheries Contract Specialist	2015
Certified Inspector of Sediment & Erosion Control Training	2015
Ontario Wetland Evaluation System Training	2013
MTO RAQS Fisheries Assessment Specialist	2013
Nature Conservancy of Canada Reptile & Amphibian Training	2013
Environmental Monitoring for Construction Projects, Vancouver Island University	2012
Ontario Benthic Biomonitoring Network Certification	2012
Warblers of Eastern Canada, University of Guelph Arboretum	2012

MTO Fisheries Protocol Training	2012
Species at Risk and Renewable Energy Approvals, OMNR	2012
Ecological Flow Regulation, Grand River Conservation Authority	2011
Class 1 Electrofishing Certification	2011
Ecological Land Classification Certification	2009
Owl Identification, University of Guelph Arboretum	2009
Winter Tree Identification, University of Guelph Arboretum	2009

CAREER

Terrestrial & Aquatic Ecologist, WSP (formerly GENIVAR)	2011 - present
Sessional Lecturer, Lakehead University, Department of Anthropology, Thunder Bay, ON (Climate Change & Northern Culture)	2013
Adjunct Professor, Algoma University, Department of Biology & Chemistry, Sault Ste. Marie, ON	2010 - 2011
Terrestrial & Wetland Biologist, Natural Resource Solutions Inc., Waterloo, ON	2007 - 2011
Wetland Paleo-Ecologist, University of Waterloo, Department of Biology, Waterloo, ON	2004 - 2007

PROFESSIONAL EXPERIENCE

Environmental Management and Consulting

As an Ecologist, Margaret has prepared and submitted designs for ecologically sound development of natural areas, including wetlands, shorelines, woodlots and lakes. This work has included conducting Environmental Assessments (EA) and Environmental Impact Studies (EIS), as well as extensive liaison with agency staff to ensure protection of natural resources. Specific examples include:

- Ganaraska Wind Power Project *Conservation Authorities Act* permitting, Ganaraska Ontario, (2015). Preparation of documentation to support construction of wind project components (access roads, collector line systems, staging and construction footprints) within regulated lands. Permits were negotiated in accordance with Ontario Regulation 172/06, *Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*. Review and comment of detailed designs for erosion and sediment control plan measures, liaison with agency personnel and permit application package preparation. Client: Capstone Power Development, Ganaraska Nominee Ltd.
- Grey Highlands Clean Energy Wind Power Project *Conservation Authorities Act* permitting, Grey Highlands, Ontario, (2015). Preparation of documentation to support construction of wind project components (access roads, collector line systems, staging and construction footprints) within regulated lands. Permits were negotiated in accordance with Ontario Regulation 172/06, Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses. Review and comment of detailed designs for erosion and sediment

control plan measures, liaison with agency personnel and permit application package preparation. Client: Capstone Power Development, Grey Highlands Clean Energy Development Limited Partnership

- Grey Highlands Zero Emissions People (ZEP) Wind Power Project Conservation Authorities Act permitting, Grey Highlands, Ontario, (2015). Preparation of documentation to support construction of wind project components (access roads, collector line systems, staging and construction footprints) within regulated lands. Permits were negotiated in accordance with Ontario Regulation 172/06, Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses. Review and comment of detailed designs for erosion and sediment control plan measures, liaison with agency personnel and permit application package preparation. Client: Capstone Power Development, Grey Highlands Nominee (No. 1) Ltd.
- Snowy Ridge Wind Power Project Conservation Authorities Act permitting, Kawartha, Ontario, (2015). Preparation of documentation to support construction of Wind Project components (access roads, collector line systems, staging and construction footprints) within regulated lands. Permits were negotiated in accordance with Ontario Regulation 172/06, Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses. Review and comment of detailed designs for erosion and sediment control plan measures, liaison with agency personnel and permit application package preparation. Client: Capstone Power Development.
- Trans-Northern Pipeline Inc. (TNPI) Annual Site Sensitivity Screenings (2014/2015) Site screenings are completed to support pipeline maintenance work and include desktop review and scoping of field requirements as they relate to *Conservation Authorities Act* permitting (O. Reg. 172/06), species at risk, environmental impact studies and environmental protection plans. WSP is currently retained to complete one hundred eighty six (186) pipeline maintenance site sensitivity screenings across southern Ontario and Quebec. The screenings require review of agency mapping and databases, and consultation with the respective conservation authority and Ministry of Natural Resources and Forestry district offices.
- Parkdale Subdivision Environmental Impact Statement, Thunder Bay, ON (2013): Natural Sciences Project Manager. Proposal and Terms of Reference preparation, work plan and budget preparation. Agency liaison, interim and final report composition (Natural Sciences). Field work included identification and evaluation of natural heritage features, Ecological Land Classification, wetland boundary delineation, vegetation inventories, mammal track survey. Preparation of compensatory measures to minimize impacts to adjacent Provincially Significant Wetland. Client: Bruno's Contracting.
- 234 Thompson Road Environmental Impact Statement, Thunder Bay, ON (2013): Project Manager. Proposal, Terms of Reference and budget preparation. Agency liaison, interim and final report composition. Identification and evaluation of natural heritage features, wetland boundary delineation and wetland habitat assessment, vegetation inventory, incidental fauna records. Preparation of compensatory measures to minimize impacts to adjacent Provincially Significant Wetland. Client: Mr. Antonio Bennardo (private land owner)

- Big Thunder Windfarm, Thunder Bay, ON (2013): Project Manager. Acoustic monitoring of bats. Clients: Horizon Wind/Natural Resource Solutions.
- Hydroelectric Impoundments on the Fredrickhouse and Ivanhoe Rivers, Near Timmins, ON (2009-2010): Field work crew leader. Pre-construction environmental surveys. Monitoring for Hydroelectric impoundments on the Fredrickhouse and Ivanhoe Rivers, near Timmins Ontario. Field work included identification and evaluation of natural heritage resources such as fish community assessment, walleye spawning surveys, game fish mercury sampling, Lake Sturgeon surveys, water quality sampling, riparian habitat assessment, rivershore vegetation inventories, forest ecosystem classification, wetland evaluation, rare species inventories, breeding and migration bird studies. Client: Xenica Power.
- Arkell Road Environmental Impact Statement, Guelph, ON (2009-2010): Project Manager. Proposal and Terms of Reference preparation, work plan and budget Agency liaison, interim and final report composition. Field work included identification and evaluation of natural heritage features, Ecological Land Classification, wetland boundary delineation, vegetation inventories, breeding bird studies, Anuran monitoring, rare flora and fauna searches and deer surveys. Preparation of compensatory measures to minimize impacts to adjacent Provincially Significant Wetland. Client: City of Guelph.
- Markham Minotar Environmental Impact Statement, Markham, ON (2009-2010): Project Manager. Agency liaison, interim and final report composition. Field work included identification and evaluation of natural heritage resources including vegetation inventories, breeding bird studies, Anuran monitoring and rare flora and fauna searches. Preparation of compensatory measures to minimize impacts to adjacent wetlands. Client: Minotar Holdings.
- Cormorant Road Environmental Impact Statement, Ancaster, ON. (2009): Project Manager. Proposal and Terms of Reference preparation, work plan, budgets and scheduling for project team. Agency liaison, interim and final report composition. Field work included identification and evaluation of natural heritage features, Ecological Land Classification, wetland boundary delineation, fish habitat assessment, vegetation inventories, breeding bird studies, Anuran monitoring, snake surveys and rare flora and fauna searches. Preparation of compensatory measures to minimize impacts to fish habitat onsite. Client: Valary Homes
- Mica Bay Windfarm, Pre-Construction Bat Monitoring, Batchewana Bay, ON (2008-2009): Project Manager and Field Coordinator. Proposal and Terms of Reference preparation, work plans, budgets, schedules project team management, agency liaison, interim and final report composition. Comprehensive identification and evaluation of natural heritage resources as they relate to bat habitat throughout the proposed project area. Supervision of field research including radar and acoustic monitoring of bats. Clients: Gilead Power/Stantec.
- Prince Windfarm Post Construction Monitoring, Sault Ste. Marie, ON (2007-2009): Field work crew leader. Bird and bat mortality monitoring, bird migration and breeding monitoring. Client: Brookfield Power.

Ministry of Transportation Class Environmental Assessments

Margaret has worked on 18 MTO Class Environmental Assessments for Bridge/Culvert projects in various locations throughout Northwestern Ontario. She completed Terrestrial and Fisheries Habitat Assessments under the supervision of

MARGARET PUGH, M.Sc.

RAQS qualified Natural Science and Fisheries Assessment Specialists. Margaret has completed or assisted in the completion of the technical documentation for each of the 18 assessments, including the Transportation Environmental Study Report, Environmental Screening Document, Environmental Synopsis, Summary of Environmental Conditions and Summary of Environmental Concerns and Commitments. Margaret has completed or assisted in the completion of public consultation for each of the above mentioned MTO projects as per MTO guidelines for the applicable Class EA. Specific MTO projects include:

- MTO Agreement No. 6010-E-0027 (2011-2012)
  - McLeod's Creek Bridge, Wabigoon Lake Drive: Removal of a timber structure and associated abutments and piers. Replacement with a new modular structure.
  - Pelican River Bridge, Haukeness Road: Removal of a three span timber structure and associated abutments and piers. Replacement with a new modular three span structure.
  - Kaministiquia River Bridge, Silver Falls Road: Removal of a timber structure and associated abutments and piers. Replacement with a new single span modular structure.
- MTO Agreement No. 6010-E-0012 (2011-2014)
  - GWP 6026-07-00, Kenel Creek Culvert, Hwy 17: Removal of a CSP arch and replacement with an open bottom structure consisting of steel sheet piling walls and precast roofing.
  - GWP 6026-07-00, Alder Creek Culvert, Hwy 17: Removal of a CSP arch and replacement with an open bottom structure consisting of steel sheet piling walls and precast roofing.
  - GWP 6045-08-00, Hawkeye Creek Bridge, Hwy 589: Removal of a timber bridge and associated abutments and replaced with a larger precast concrete box girder deck and H-piles.
  - GWP 6045-08-00, Hawkeye Creek Tributary Bridge, Hwy 589: Removal of a timber bridge and associated abutments and replaced with a larger precast concrete box girder deck and H-piles.
  - GWP 6045-08-00, Surprise Lake Narrows Bridge, Hwy 589: Rehabilitation of the existing bridge, including superstructure replacement and rehab work at the abutments.
  - GWP 6941-10-00, Little Rest Creek Twin Culverts, Hwy 17: Removal of the twin CSP culverts and replacement with an open bottom structure consisting of steel sheet piling walls and precast roofing.
  - GWP 6942-10-00, Bug River Bridge, Hwy 105: Removal of the existing six span timber bridge and associated abutments and piers. Replacement with a single span structure consisting of precast concrete girders and sheet piling.
  - GWP 489-00-00, Medcalf Lake Narrows Bridge, Hwy 599: Rehabilitation of the existing bridge, including removal and replacement of the concrete deck and work at the abutments.

- GWP 6109-10-00, Elbow Creek Bridge, Hwy 599: Replacement of the existing single span bridge and associated abutments and timber cribbing. Design options in progress.
- GWP 6082-09-00, Sturgeon River Bridge, Hwy 599: Replacement of the existing single span bridge and associated abutments and timber cribbing. Design options in progress.
- GWP 6096-10-00, Vermilion Lake Narrows Bridge, Hwy 664: Rehabilitation of the existing bridge, including superstructure replacement and substructure repairs.
- GWP 6092-10-00, Off Lake Bridge, Hwy 615: Replacement of the existing seven span timber bridge and associated piers and abutments. Design options in progress. Recommended to be replaced with a precast concrete box girder system on steel H-piles.
- GWP 6094-10-00, Pinewood River Bridge, Hwy 617: Replacement of the existing five span timber bridge and associated piers and abutments. Design options in progress. Recommended to be replaced with a precast concrete box girder system on steel H-piles.
- GWP 6100-10-00, Revell River Bridge, Hwy 17: Replacement of the existing concrete slab bridge and abutments. Design options in progress. Recommended to be replaced with a precast concrete box girder system on steel H-piles.

→ Agreement No. 6011-E-0035

- Sibley Creek Bridge, Hwy 587: Replacement of the existing two span timber bridge and associated piers and abutments. Structure is located over a sensitive, coldwater brook trout, coast7er brook trout, rainbow trout and Coho salmon tributary to Lake Superior. Structure to be replaced with a wider, single span bridge; two design options are currently under review.

Environmental Site Assessment and Remediation

Margaret has conducted 25 Phase 1 Environmental Site Assessments in accordance with CSA 768-01. As part of each assessment extensive background information was collected, field investigation were competed and subsequent reports completed for the client, including final recommendations regarding the necessity of a Phase 2 Environmental Site Assessment. Environmental Site Assessment experience includes:

→ Bell Mobility

- Griff Communications Tower. Griff Township, District of Thunder Bay, ON (2012): Project Manager.
- Harris Hill Communications Tower, Township of Sifton, District of Rainy River, ON (2012): Project Manager.
- Minahico Communications Tower, Township of Morson, District of Rainy River, ON (2012): Project Manager.
- North Branch North Communications Tower, Township of Spohn, District of Rainy River, ON (2012): Project Manager.

- Big Bend Communications Tower, Township of Mcout Lake, ON (2012): Project Manager.
- Garneau Lake Communications Tower, Township of Hodgson, District of Kenora, ON (2012): Project Manager.
- Horse Collar Communications Tower, Wild Potato Lake Area District of Rainy River, ON (2012): Project Manager.
- Skull Lake Communications Tower, Township of Bridges, ON (2012): Project Manager.
- Fort Frances Water Tank Communications Tower, Town of Fort Frances, District of Rainy River, ON (2012): Project Manager.
- Dorian Communications Tower, Township of Dorion, District of Thunder Bay, ON (2012): Project Manager.
- Kam West Communications Tower, Township of Forbes, District of Thunder Bay, ON (2012): Project Manager.
- Creekside Communications Tower, Thunder Bay, ON (2012): Project Manager.
- North Neebing Communications Tower, Township of Oliver Paipoonge, ON (2012): Project Manager.
- McCluskey's Communications Tower, Township of Oliver Paipoonge, ON (2012): Project Manager.

→ 543 Wilson Road, Private Residence, Dryden, ON (2012).