STRASBURG ROAD EXTENSION DETAILED DESIGN

WILDLIFE HABITAT AND COMMUNITIES

prepared for

SNC-LAVALIN INC.

on behalf of

CITY OF KITCHENER

by

LGL LIMITED
environmental research associates

NOVEMBER 2012
LGL PROJECT TA4907

STRASBURG ROAD EXTENSION DETAIL DESIGN

WILDLIFE HABITAT AND COMMUNITIES

prepared by:

Digital signature

J. Arnel Fausto, M.Sc.
VICE PRESIDENT

Digital signature

Allison Featherstone, B.Sc.
PLANNING ECOLOGIST

Digital signature

LYNETTE RENZETTI, B.Ed., B.Sc.
Planning Ecologist

LGL Limited
environmental research associates
445 Thompson Drive, Unit 2
Cambridge, Ontario N1T 2K7
Tel: 519-622-3300 Fax: 519-622-3310
Email: cambridge@lgl.com
URL: www.lgl.com

NOVEMBER 2012
LGL PROJECT TA4907

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF ACRONYMS

BCR – Bird Conservation Region

BSC – Bird Studies Canada

CA – Contract Administration or Construction Administration

COSEWIC – Committee on the Status of Endangered Wildlife in Canada

CWS – Canadian Wildlife Service

DD – Detailed Design

EA – Environmental Assessment

ELC – Ecological Land Classification

END - Endangered

ESA – Endangered Species Act, 2007

ESPA – Environmentally Sensitive Policy Area

FWCA – Fish and Wildlife Conservation Act, 1997

LGL – LGL Limited

MMP – Marsh Monitoring Program

MNR (or **OMNR**) – (Ontario) Ministry of Natural Resources

NHIC – Natural Heritage Information Centre Database

OBBA – Ontario Breeding Bird Atlas

PIF – Partners in Flight

PSW- Provincially Significant Wetland

SAR – Species at Risk

SARO – Species at Risk in Ontario

SC – Special Concern

SLI – SNC-Lavalin Inc.

SWH – Significant Wildlife Habitat

SWHTG – Significant Wildlife Habitat Technical Guide

THR – Threatened

1.0 INTRODUCTION

The following provides a summary of findings to date of field work conducted in support of the Strasburg Road Extension detail design project area. LGL Limited has been retained as a sub-consultant to SNC-Lavalin Inc. (SLI) in support of the Strasburg Road extension in the City of Kitchener. LGL's role is to assess wildlife habitat and communities as part of the detail design process. LGL is also part of the same project team that is completing the Strasburg Road Environmental Assessment (EA) extension from the termination of Strasburg Road outlined in this study, to New Dundee Road. Currently, Strasburg Road terminates just past Rush Meadow Street. This project is grouped into two parts:

- Schedule C Municipal Class Environmental Assessment for Strasburg Road from 500 metres north of Stauffer Drive to New Dundee Road, (addressed as a separate study report); and,
- Detail Design and Contract Administration for Strasburg Road from Rush Meadow Street to Robert Ferrie Drive (addressed herein).

The detail design project road alignment has been determined through previous planning efforts that extend from 1981 until 2010, as summarized in Table 1.

Table 1: Chronology of Strasburg Road Extension South of Huron Road (Provided by SLI)

June 1981	Based on *Transportation Planning and Engineering Study – Huron Industrial Development* and related public consultation during January 1981, the future extension of Strasburg Road was established from south of Bleams Road to Reidel Drive.
June 1982	The "New" Strasburg Road alignment from Huron Road to a point approximately 1.6 km south, was established in the City's Official Plan Amendment (OPA) No. 8 and the findings of the *Transportation Planning and Engineering Study – Huron Industrial Development* were subsequently approved by the Region of Waterloo.
December 1982	City Planning Committee approved the Huron Business Park Secondary Plan and related transportation engineering studies for Huron Road and Strasburg Road reconfirming the alignment of Strasburg Road from Huron Road, southerly to approximately 500 m north of Stauffer Drive.
February 1983	City Council approved the alignment of Strasburg Road, from Huron Road southerly to approximately 500 m north of Reidel Drive. Strasburg Road was classified as a 'Secondary Arterial' with a right-of-way width of 26 m.
September 1983	Regional Council approved the alignment of the Strasburg Road alignment from Huron Road southerly to approximately 500 m north of Stauffer Drive, including its classification and proposed right-of-way.
September 1989 – January 1990	*Brigadoon Community Plan* (adopted through City OPA 98), established the collector road arrangement within the Brigadoon Community and reconfirmed the Strasburg Road Extension following the previously approved alignment, southerly to 500 m north of Stauffer Drive.

1992 - 1994	*Doon South – Brigadoon Transportation Network and Corridor Study* confirmed the need for the new Strasburg Road corridor south of Huron Road in a process consistent with Phases 1 and 2 of the MEA Class EA, including government agency and public consultation. An addendum to the report recommended that Strasburg Road be extended within its planned alignment as a 4-lane roadway from south of Huron Road to New Dundee Road.
1999	Region of Waterloo *Transportation Master Plan* included the proposed alignment of the Strasburg Road Extension from Huron Road to north of Stauffer Drive.
2002-2005	Construction of Strasburg Road Extension from Huron Road to west of Rush Meadow Street (2002-2003). Construction of Strasburg Creek Main Branch culvert and trunk sanitary sewer/water main in Strasburg Road Extension corridor west of Rush Meadow Street (2004-2005).
January 2003/ March 2009	*Doon South Community Plan* reconfirmed the proposed extension of Strasburg Road as a Secondary Arterial Road south of Huron Road to north of Stauffer Drive. Doon South Community Plan Phase II indicates connection between Stauffer Drive and New Dundee Road.
2004 - 2005	City Council approved the *2004 Development Charge Background* study and the *Brigadoon Community Plan*, which reconfirmed the Strasburg Road alignment from Huron Road to approximately 500 m north of Stauffer Road.
June 2010	Updated Region of Waterloo *Transportation Master Plan* is endorsed by Regional Council (Notice of Completion scheduled for September 2010). TMP includes the alignment of proposed 4-lane Strasburg Road Extension from Rush Meadow Street to proposed widening of New Dundee Road (from 2 to 4 lanes).

1.1 STUDY AREA

The detail design study area is located in a section of Kitchener undergoing transformation from a rural to urban landscape, planned for residential and commercial development. Existing designated natural areas in the project area include:

- Strasburg Creek Provincially Significant Wetland (PSW); and,
- Features identified as Core Environmental Features according the Council Adopted Region of Waterloo Regional Official Plan (2009) (under appeal) including wetlands and woodlots.

2.0 METHODOLOGY

2.1 AGENCY CONSULTATION

The project team was mobilized shortly after the project was awarded in April 2010. The following methodology was developed through agency consultation, mostly limited to telephone and letter correspondence with the Guelph District Ministry of Natural Resources, and a meeting with Grand River Conservation Authority (May 7, 2010). The email correspondence between Mr. G. Buck, Species at Risk Biologist, Guelph Ministry of Natural Resources (MNR) and LGL Staff is provided in Appendix A as background consultation for assessing species at risk habitat in the project area.

Additional consultation was completed with MNR on February 23, 2011 regarding the balance of field work planned for 2011, including a brief discussion of the unreleased protocol for the field survey of SAR.

Species at risk screenings were conducted based on input to the project team by the MNR (Letter from April Nix, MNR Planning Intern, June 24, 2010), as outlined in Section 3.7. This species list has since been updated by LGL to reflect the current status of species and to include species that have been re-assessed as Threatened or Endangered, since the time of the letter, under the *Endangered Species Act*.

2.2 BACKGROUND INFORMATION REVIEW

Available background information was reviewed, including:

- South Strasburg Gravity Trunk Sewer Schedule "B" Class Environmental Assessment –Final Report (Stantec, 2008);
- Doon Phase 2 Official Plan Amendment. City of Kitchener Collector Road Municipal Class Environmental Assessment Study Report (Ecoplans *et al*., 2008);
- Background information in support of the Doon Phase 2 Official Plan Amendment (some of this information could not be released to the project team and so the information was summarized and condensed into the above referenced report);
- Huron Road Improvements Class EA, City of Kitchener (only partial files available);
- Ministry of Natural Resources Biodiversity Database (accessed April 2010);
- Doon Creek Subdivision Environmental Impact Report (Ecoplans, Sept. 2004), North of Stauffer Dr., West of Tilt Dr.;
- Doon South Lands Environmental Impact Report (Ecoplans, April 2006);
- Hallman – Groh Property Environmental Impact Study (Ecoplans, Sept 2003);

- Hallman – Groh Property Stage 2 Lands Blair Creek Watershed Environmental Impact Report (Ecoplans, Dec. 2004);
- Hallman/Gubler Subdivision Lands West of Tilt Drive Environmental Impact Report (Ecoplans, April 2006);
- Stauffer Drive Residential Development South of Stauffer Dr., West of Groh Dr. Stage 1 Environmental Impact Report (Ecoplans, Nov. 2006);
- Stauffer Woods Subdivision South of Stauffer Dr. between Reidel Dr, New Dundee Rd., Groh Dr., and Dodge Dr. Phases 2-4 Environmental Impact Report (Ecoplans, June 2008); and,
- Strasburg Creek Flood Control Class Environmental Assessment Draft Environmental Study Report (Stantec Draft May 2012)

Information from the available background records is summarized in the wildlife list included as Appendix B. It is noted that with the exception of the South Strasburg Gravity Sewer EA (Stantec 2008), the study areas within the reviewed background reports do not directly overlap with the detail design project area. However, they provide data collected in reasonable proximity to the project area, and were therefore included in background review. Background review reveals the potential for species at risk such as Jefferson Salamander (*Ambystoma jeffersonianum*) given the character of the woodlots in the project area and current records in the south Kitchener area, as well as the potential for turtle species at risk.

In order to characterize the wildlife habitats and communities in sufficient detail for the Environmental Impact Study, LGL completed amphibian surveys (frog calling, salamander trapping), breeding bird surveys, area searches for wildlife including basking surveys, cover board placement and natural cover search, and deployed wildlife infrared cameras along watercourses/landform features. The details of the methods and results are in the following sections.

2.3 AMPHIBIANS – FROG CALLING

A breeding amphibian survey was completed using the Marsh Monitoring Program (MMP) protocol established through the Canadian Wildlife Service (CWS) and Bird Studies Canada (BSC). The protocol uses aural surveys to detect the presence/absence of calling amphibians (frogs and toads). During April, May and early June many frogs become active, calling to establish breeding territories and mates. Under the MMP protocol, sampling is to occur at least 15 days apart, three times between April and July 5th, when minimum temperatures are 5 ^{0}C, 10 ^{0}C and 17 ^{0}C. Each survey event is to begin one half hour after sunset and end before midnight. A three (3) minute survey is conducted at each monitoring station with a 30 second delay to account for any disturbance (i.e., approaching the site).

The following call level codes were assigned to all frog and toad species during the surveys, as per MMP protocol:

- Level 1-indicated individuals whose calls did not overlap such that calling individuals could be counted;
- Level 2-indicated calls of individuals with some overlap such that individuals could be estimated; and,
- Level 3-indicated when there was a continuous overlap of calls such that individuals could not be counted.

An initial desk-top analysis of aerial photography identified natural features within the study area suitable for supporting viable amphibian populations, including meadow marsh, thickets, old field, woodlots and agricultural fields. LGL Limited completed frog call surveys on April 6, 2010; May 27, 2010 and June 28, 2010. The first two surveys in 2010 were conducted along roadsides incorporating a broader area, while the third survey focused more on the features that had been identified as a result of the desk-top analysis. Additional site investigations in early 2011 also contributed to confirming early spring calling species, including dates of April 6, 10, 15 and 16, and June 14, 15, 2011. These surveys were supplemented by general observations of amphibians made during the wildlife field investigations in the project area.

2.4 AMPHIBIANS – AMBYSTOMID SALAMANDERS

The area south of Stauffer Drive and east of Reidel Drive has been well studied for 7 or more years by other consulting firms in support of the Doon South community development. During those studies, Jefferson Salamander (*Ambystoma jeffersonianum*) was confirmed in the woodlots of Stauffer Woods and the woodlots south of Stauffer Drive and east of Reidel Drive. Jefferson Salamander is a species at risk (SAR), regulated provincially under the ESA, with its current listing as Endangered. Consequently, draft habitat regulations now exist for the salamander, including confirmed breeding ponds and potential dispersal ponds. The character of the woodlots in the detail design project area is similar to the woodlots in the EA portion, and also elsewhere in the City where other salamander populations have been documented. As such, the woodlots in the project area were targeted for habitat assessment, and where possible, trapping for Ambystomid salamanders.

Due to the timing of project commencement (April 21, 2010) in relation to salamander breeding activity, no permits were secured to use trapping methods for confirmation of breeding ponds within the study area in the Spring of 2010. Instead, 2010 field investigations were limited to the identification of potential breeding ponds, visual searches for egg masses, and characterization of the habitat and ponds in the project area.

In 2011 and in 2012, permits under the *Fish and Wildlife Conservation Act*, 1997 (FWCA) and under the *Endangered Species Act,* 2008 (ESA) were obtained to complete trapping of potential breeding ponds in the project area. In order to obtain the necessary approvals and permits, an animal care protocol was prepared and approved by the MNR Animal Care Committee. Currently, standard practice for confirming presence/absence of breeding salamanders is achieved through trapping and therefore, necessary permits were obtained from MNR to set traps at 3 ponds within the detail design study area in the spring of 2011 and 2012 - Ponds 10, 13 and 14. Traps were set late in the evening and checked first thing in the morning, according to the permit conditions. Data recorded for salamanders found within the traps was proposed to include specimen number, date, observer, pond number, trap number, length (snout to vent, and snout to tip), photo number and general comments regarding health or behaviour.

2.5 REPTILES

Reptiles were documented through habitat searches in appropriate weather conditions including, but not limited to, wandering transects through representative habitat and visual searches with binoculars of potential basking sites of ponds. Snakes were further documented by placing 48 cover boards (1m by 0.6m in size) in various locations (Figure 1) around the project area (including both the EA and DD project area), and through habitat searches in available habitat, beneath debris or other cover materials.

Background information from the Ministry of Natural Resources indicated that a reptile species at risk, Blanding's Turtle (*Emydoidea blandingii*), may occur within the project area. Effort was made to review potential habitat for this species with targeted searches during appropriate weather conditions. In early 2012, the approved protocol for assessing the presence/absence of Blanding's Turtle was released by the MNR (OMNR May 2012). Although field visits conducted prior to this (2010 and 2011) did not follow all aspects of the published protocol, all effort was made to document the species in potential habitat under conditions favourable to basking behaviour. Furthermore, additional visits were conducted in early 2012 to comply with current protocol standards.

Considerable discussion regarding Blanding's Turtle has taken place with the City of Kitchener (pers. comm. Josh Shea, Natural Areas Coordinator City of Kitchener) and the MNR through various project team meetings. At the time of this updated report, the most current reporting occurrence for Blanding's Turtle was within the Huron Natural Area ponds in June 2012 (pers. comm., G. Buck, SAR Biologist, Guelph District MNR).

2.6 MAMMALS

Mammals were documented according to incidental sightings including sight, smell, scat, trails, tracks, road kill or other evidence of presence within the project area. Additional mammal investigations were conducted along the watercourse branches of the South Strasburg Creek tributaries using infrared cameras during July and August 2011.

2.7 BIRDS

Breeding birds were surveyed according to the Ontario Breeding Bird Atlas (OBBA) Protocol, where 5 minute point counts were completed in representative habitat areas. Figure 1 indicates the locations of the point counts that were undertaken, and Table 2 lists the dates the surveys were conducted. In addition, area searches for avifauna were conducted; and, those identified (visually or auditory) were included within the running wildlife table listing for the project area (Appendix B). Appendix B also includes reference to the unit in which each of the identified species was observed.

Surveys for Whip-poor-whil (*Caprimulgus vociferous),* Common Nighthawk (*Chordeiles minor*) and Chimney Swift (*Chaetura pelagic*), following the Bird Studies of Canada protocols (or appropriate modifications of the protocols) were initiated on June 8, 2011 to assess the presence/absence of each of these species in the project area. A Chimney Swift habitat assessment (chimney assessment) was completed on June 8, 2011, while Common Nighthawk and Whip-poor-will surveys were targeted for the week of June 15th, 2011 to coincide with appropriate meteorological conditions to best detect these species. Additional site visits were completed on September 16, October 6 and 16, 2011, where potential Chimney Swift swarming activity was targeted.

Table 2: Summary of Wildlife Field Investigations 2010-2011

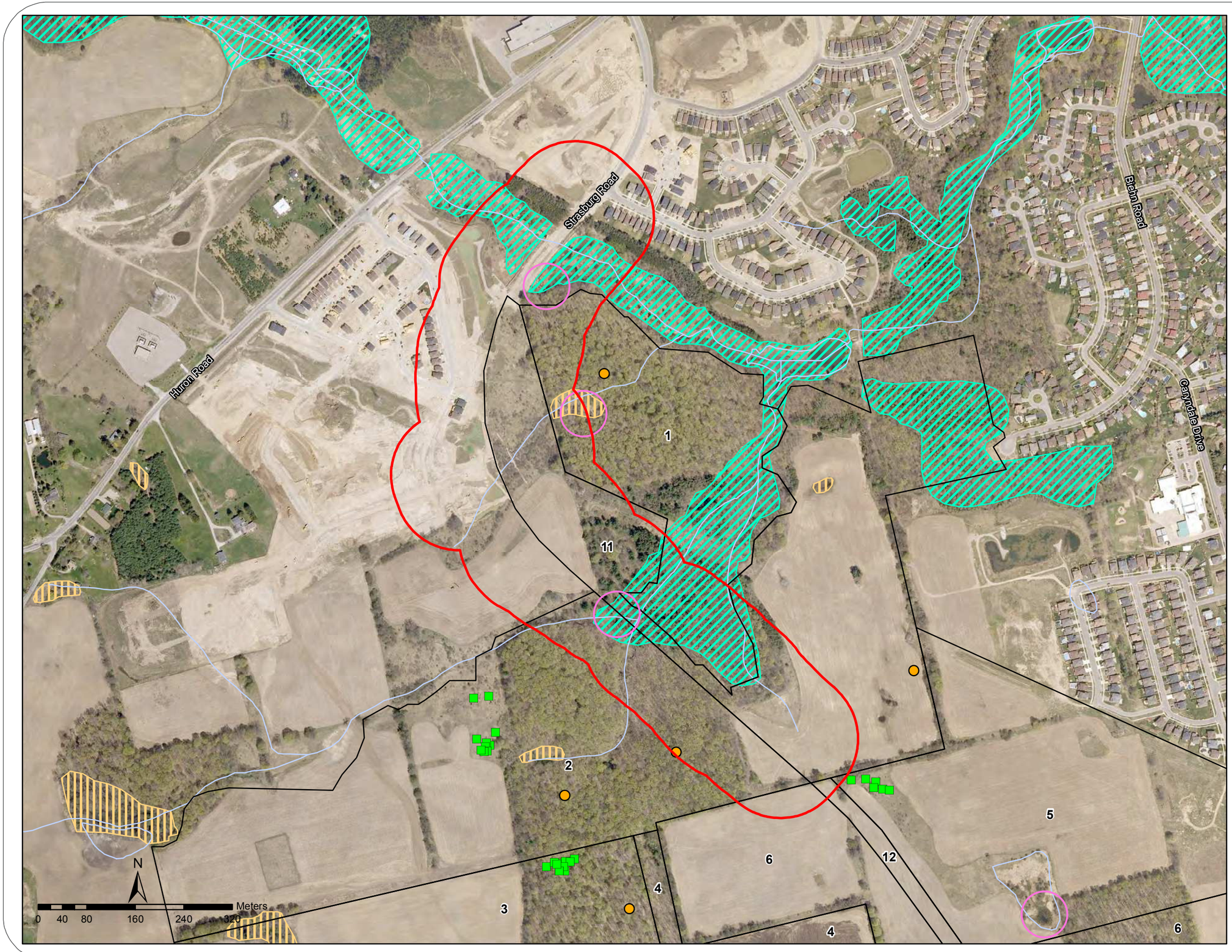
Date		Observers	Focus of field efforts	
2010	April 6 20:00 – 22:00	AF	Frog monitoring/reconnaissance	Marsh Monitoring Protocol for documenting calling anurans; Documentation of incidental wildlife
	April 16 20:30 – 23:00	AF	Frog monitoring	Marsh Monitoring Protocol for documenting calling anurans
	April 21, 22, 23, 24, 25, 29 Daily approx 08:00-15:00	AF, DS, LR	Frog monitoring, amphibian surveys, early reptile surveys for hibernacula, egg mass surveys	Marsh Monitoring Protocol for documenting calling anurans; Area searches visually using binoculars and on foot; Area searches to lift available natural cover; **Cover boards were placed**.
	May 17 21:00 – 23:50	AF	Frog monitoring.	Marsh Monitoring Protocol for documenting calling anurans
	May 21 18:00 -22:30	AF	Frog monitoring.	Marsh Monitoring Protocol for documenting calling anurans
	June 2 Approx 05:30-11:00	DM, LW	Breeding birds	Area searches to document any and all species use; Point counts as per the Ontario Breeding Bird Atlas protocol
	June 3 13:30-17:30	AF	General wildlife surveys including cover boards and target cover searches.	Area searches; lifting of cover boards and other natural cover
	June 7 Approx 05:30-11:00	DM, LW	Breeding birds	Area searches to document any and all species use; Point counts as per the Ontario Breeding Bird Atlas protocol
	June 11 18:00-22:00	AF	General wildlife surveys (cover boards, cover searches)	Area searches; lifting of cover boards and other natural cover
	June 17 Approx 05:30-11:00	DM, LW	Breeding birds, incidental wildlife	Area searches to document any and all species use; lifting of cover boards and other natural cover
	June 23 Approx 05:30-11:00	DM, LW	Breeding birds, incidental wildlife	Point counts as per the Ontario Breeding Bird Atlas protocol; lifting of cover boards and other natural cover
	June 28 21:00-23:30	MK, LR	Frog monitoring	Marsh Monitoring Protocol for documenting calling anurans
	July 22 Approx. 08:00-15:00	DM, LW	Targeted SAR surveys for turtles.	Area searches using binoculars; pedestrian survey on foot
	July 26 Approx. 08:00-15:00	DM, LW	Targeted SAR surveys for turtles.	Area searches using binoculars; pedestrian survey on foot
	July 29 Approx. 08:00-15:00	DM, LW	Targeted SAR surveys for turtles.	Area searches using binoculars; pedestrian survey on foot
	August 26 09:00-14:00	AF, MK	General wildlife (cover boards, cover searches)	Area searches using binoculars; pedestrian survey on foot; flipping of cover boards and other available natural cover
2011	March 17	AF	Reconnaissance visit to monitor snow levels and search for potential ponds.	Area searches on foot.
	April 6/7, 10/11, 15/16, 16/17 Evening: 20:00-23:00 Morning 06:30-9:00	AF, VK, LR	Salamander surveys (setting and checking traps)	As per Approved Animal Care Protocol; Scientific Wildlife Collectors Permit; ESA Permit conditions.

Date		Observers	Focus of field efforts	
	June 2 10:00-14:00	LR	Monitoring of ponds, general wildlife	Area searches using binoculars; pedestrian survey on foot; flipping of cover boards and other available natural cover; Observations of pond habitat
	June 8 09:00-13:00	AF	Chimney swift survey (daytime)	Documentation of chimneys or potential habitat in project area; Observational periods as per modified BSC Chimney Swift protocol (Bird Studies Canada 2009)
	June 14, 15 20:00-24:00 Moon phase: Full moon on June 15	AF	Whip-poor-will/ Nighthawk/Chimney swift Survey (dusk, early evening)	As per modified BSC protocol (Bird Studies Canada 2011) for Whip-poor-will
	June 27 20:00-24:00 Moon phase: Waning moon	AF	Whip-poor-will/ Nighthawk/Chimney swift Survey (dusk, early evening)	Observational periods as per modified BSC Chimney Swift protocol (Bird Studies Canada 2009)
	September 16 20:00-22:00	AF	Chimney swift swarming survey (dusk)	Observational periods as per modified BSC Chimney Swift protocol (Bird Studies Canada 2009)
	October 6, 16 20:00-22:00	AF	Chimney swift swarming survey (dusk)	Observational periods as per modified BSC Chimney Swift protocol (Bird Studies Canada 2009)
2012	March 21, 28; April 1, 3 and 10 Evening: 20:00-23:00 Morning 06:30-9:00	VK, AF, DTS, LC	Salamander surveys (setting and checking traps)	As per Approved Animal Care Protocol; Scientific Wildlife Collectors Permit; ESA Permit conditions.
	April 24 14:40-16:40	AF	Basking surveys	Area searches using binoculars; pedestrian survey on foot
	May 1 18:00-20:00	AF	Basking surveys	Area searches using binoculars; pedestrian survey on foot
	May 10 14:00-16:00	AF	Basking surveys Set wildlife camera	Area searches using binoculars; pedestrian survey on foot
	May 16 18:30-20:00	AF	Basking surveys Re-set wildlife camera	Area searches using binoculars; pedestrian survey on foot
	May 30 12:30-14:30 Air temp 20C; Water temp 20C in shallow edge of pond.	AF	Basking surveys Picked up wildlife camera	Area searches using binoculars; pedestrian survey on foot

AF – Allison Featherstone, LGL Limited
LR – Lynette Renzetti, LGL Limited
DS – Dave Smith, LGL Limited
DTS- Dana Summach, LGL Limited
LC- Lisa Coburn, LGL Limited
VK – Victoria Kennedy, LGL Limited
MK – Melissa Kiddie, LGL Limited (former employee)
DM – Dave Martin, subconsultant to LGL
LW – Linda Wlardarski, subconsultant to LGL

2.8 OTHER WILDLIFE

Additional wildlife, including odonates and butterflies, were documented as incidental encounters during other field visits.



LEGEND

- Breeding Bird Point Count Location (LGL)
- Cover Board Sampling Location
- Frog Monitoring Location (LGL)
- 2 Property ID Number
- Detailed Design Study Area
- Watercourse
- Property Boundary
- Provincially Significant Wetland (MNR)
- Unevaluated Wetland (MNR)

Orthophotography source: GRCA

Strasburg Road Extension Detailed Design

Existing Conditions & Site Investigation

LGL LIMITED
environmental research associates

Project	TA4907	**Figure**	1
Date	October, 2012	**Prepared By:**	KC
Scale	1:6,000	**Verified By:**	AHF

3.0 RESULTS

Details regarding the dates, personnel and effort involved in field investigations are outlined in Table 2. The following subsections provide a brief description of wildlife habitat and communities documented as a result of background review and field efforts to determine species presence/absence and habitat features. A running list of wildlife documented in the area is included in Appendix B.

3.1 AMPHIBIANS – FROG CALLING

The calling amphibian species observed within the study area are considered common and widespread throughout Ontario (Appendix B). None of the species were identified as species of special concern, threatened, vulnerable, extirpated or endangered by the Species at Risk in Ontario (SARO) and the Committee on the Status of Wildlife in Canada (COSEWIC).

The Strasburg Road detail design study area includes a crossing of the Strasburg Creek Main Branch corridor, that is currently maintained as a roughed in road allowance. The areas on each side of the road allowance consist of wetland habitat that supports the bulk of the breeding frog activity in the detail design study area. Other small wetland pockets (such as the small wetland inclusion in the woodlot identified as pond 10) are not utilized to a high extent by breeding amphibians, but are part of the upland habitat important to species such a Spring Peeper. The dominant species calling in this detail design portion of the study area is limited to Spring Peeper, Green Frog and Leopard Frog. The wetland areas within the hydro corridor portion of the project area were not documented to retain surface water other than for a very short period in early spring; and, as a result, were not widely used as frog breeding habitat. When these areas were visually searched outside of breeding season frogs were documented foraging in the area.

The stormwater management ponds associated with the Huron Woods subdivision and also at the Hearthwood Park area (off Hearthwood Drive) were well utilized by breeding frogs of common and secure species such as Spring Peeper and Grey Tree Frog, but species such as Wood Frog which tend to be considered a more sensitive woodland species were not documented calling in these ponds.

Screen capture of Hearthwood Park stormwater management ponds (Source: Google Maps).

Screen capture of Huron Woods stormwater management ponds (Source: Google Maps).

Although background data (Stantec Draft May 2012, Ecoplans *et al*., 2008) included records for Chorus Frog *(Pseudacris triseriata)* within the Blair Creek and Strasburg Creek corridors, this species was not detected during LGL field investigations in 2010/2011 or early spring visits in 2012, in any portion of the detail design project area.

3.1.1 Species at Risk

No frog species at risk were documented by LGL Limited during the 2010/2011 field investigations.

3.2 AMPHIBIANS – AMBYSTOMID SALAMANDERS

The Jefferson Salamander, a type of Ambystomid salamander, is an endangered species according to the SARO and COSEWIC. Provincially, it is regulated by the *Endangered Species Act*, 2007 (ESA) and specific habitat regulations have been written for the species. Studies conducted to date by other project teams have documented Jefferson Salamanders and regulated habitat in the southern project area limits (part of the EA study area); however, at the time of reporting, no known areas of regulated habitat were identified within the detail design project area.

Background data review from secondary source information, as well as consultation with MNR (Appendix A), was completed prior to field work conducted by LGL to determine the limit and extent of confirmed and potential salamander breeding habitat in the project area. Potential habitat was generally identified as ponds or depressional areas that hold water in early spring (vernal pools or ephemeral pools). These areas were groundtruthed in March and April of 2010 and ponds were selected for sampling in consultation with MNR in February 23, 2011. During consultation with MNR, new information provided to the project team indicated that a pond previously identified as regulated habitat, and located just outside of the detail design project area limits, had since been removed from regulations. In order to prevent potential interference with the species, pond locations identified for sampling in 2011 and 2012 are not identified on figures included in this report.

Ponds identified on orthophotography but determined in subsequent field groundtruthing to be no longer present include:

- Pond 7 - identified by the MNR to no longer be part of the regulated habitat for Jefferson Salamander as a result of data obtained by other consultants in the EA project area;
- Pond 8 - identified through orthophotography review but found not to exist (presumed to be ploughed under) as confirmed in April 2010;
- Pond 9 - appeared to be a dug agricultural pond through orthophotography review, but was confirmed to be ploughed over in March 2011; and,

Pond 15 - similarly identified as a dug agricultural pond since ploughed over, as confirmed in April 2010.

Ponds where permits were obtained from the MNR for sampling/trapping in the detail design portion of the project area include:

- Ponds 13 and 14, which are online ponds along the Strasburg Creek corridor; and,
- Pond 10, which is a depressional wet area within the deciduous forest community.

Photo of Pond 14 (taken on April 6, 2011).

Photo of Pond 13 (taken on June 8, 2011).

Photo (composite panorama) of Pond 10 (taken on April 6, 2011).

3.2.1 2011 Salamander Trapping Results

Trapping of potential Ambystomid breeding habitat was completed in the spring of 2011 when trapping surveys were conducted (according to Permit #1062226 MNR Wildlife Scientific Collector's Authorization and with a permit under the ESA). Any incidental species found within the trap were also identified and documented in field notes, as summarized in Table 3.

Table 3: Results for trapping efforts at 3 ponds located within the project area targeted as potential breeding habitat for salamanders (by-catch shown in parenthesis) in 2011.

Date	Weather Conditions	Pond 10	Pond 13	Pond 14
April 5/6, 2011	Daytime max 3.5C, 0mm precipitation	0	0 (minnows, water beetles)	0 (minnows, water beetles)
April 10/11, 2011	Daytime max 23.2C, 3.8mm precipitation	0	0 (minnows, water beetles)	0 (minnows, water beetles)
April 15/16, 2011	Daytime max 6.7C, 0mm precipitation	0	0 (minnows, water beetles)	0 (minnows, water beetles)
April 16/17, 2011	Daytime max 8.1C, 15.1mm precipitation	0	0 (minnows, water beetles)	0 (minnows, water beetles)

Pond locations not shown.
Weather information from www.theweathernetwork.com

Previous investigations by LGL Limited indicated that salamander movement in Waterloo Region may begin as early as the last few days in March, and typically peaks in the first few days in April. Weather conditions in 2011 were such that ice and snow cover persisted until early April with the first heavy rainfall occurring in mid-April (April 16th). While the sampling dates in April confirmed salamander movement in the EA project area on April 6, 10, and 16th, no salamanders were detected in the detail design project area. These results confirmed that had salamanders been using the ponds surveyed within the detail design project area in 2011, LGL had reasonable expectation to detect them within the timeframe surveyed; therefore, April 16th comprised the final sampling date for 2011.

No Ambystomid salamanders were documented during field investigations in 2011, nor were any captured as a result of trapping in the detail design project area.

3.2.2 2012 Salamander Trapping Results

A second round of surveys of potential Ambystomid breeding habitat was completed in the spring of 2012 when trapping was conducted (according to Permit #1067464 MNR Wildlife Scientific Collector's Authorization and with a permit under the ESA). The same 3 ponds within the detail design study area were monitored/trapped in 2012- Ponds 10, 13 and 14. Any incidental species found within the trap were also identified and documented in field notes, as summarized in Table 4.

Table 4: Results for trapping efforts at 3 ponds located within the project area targeted as potential breeding habitat for salamanders (by-catch shown in parenthesis)

Date	Weather Conditions	Pond 10	Pond 13	Pond 14
March 21/22 2012	Overnight temperature low near 7C. Clear night.	*Not trapped (dry)*	0 (minnows, tadpoles)	0 (minnows, tadpoles)
March 28/29 2012	Cool, light rain, windy (30-40km/h – Env. Canada), overnight low 1C	*Not trapped (dry)*	0 (minnows, Green Frog)	0 (minnows)
April 1/2 2012	Cool, 7C, rain during day	*Not trapped (dry)*	0 (minnows)	0 (minnows)
April 3/4 2012	Warm, 13C, scattered clouds, little rain during day	*Not trapped (dry)*	0 (minnows, tadpoles)	0 (minnows, tadpole)
April 10/11 2012	Cool, rain, light snow, 4C	*Not trapped (dry)*	0 (minnows, sunfish)	0 (minnows, tadpole)

Pond locations not shown.
Weather information from www.theweathernetwork.com and LGL observations.

No Ambystomid salamanders were documented during field investigations, nor were any captured as a result of trapping in the detail design project area in 2012. An early spring warming trend resulted in ponds being ice-free, such that trapping was conducted as early as March 21 and extended until April 10. In the EA project area, Ambystomid salamanders were documented on the March 21 and April 3 sampling dates. Of note, Pond 10 was not sampled in 2012 as it was dry for the duration of the trapping surveys.

3.3 REPTILES

Few species of reptiles were documented within the project area by LGL Limited from 2010 to 2012, with species limited to the common and secure Garter Snake (*Thamnophis sirtalis*), Dekay's Brown Snake (*Storeria dekayi*), and Painted Turtle (*Chrysemys picta marginata*) (Appendix B). Snapping Turtle (special concern) is reported to occur in the Strasburg Creek online ponds, and was confirmed in the area of Wards Pond and Huron Natural Area ponds by others. LGL confirmed this species in the online ponds adjacent to the proposed road alignment of the main Strasburg Creek during spring 2012 surveys conducted using wildlife cameras. Ward's Pond and Huron Natural Area ponds are known areas for overwintering of this species. These ponds are contiguous with the Strasburg Creek corridor; however, well removed from the detail design project area. Other areas of overwintering are possible in the study area within the online ponds, but have not been confirmed.

3.3.1 Species at Risk Blanding's Turtle

Blanding's Turtle (*Emydoidea blandingii*) is a provincially and federally threatened species. No individuals of this species were previously documented in the project area by others (including in areas where multi-year studies have occurred), nor were any documented during the 2010 to 2012 surveys conducted by LGL Limited. However, in June 2012 a reported occurrence of Blanding's Turtle was documented in Huron Natural Area (G. Buck, pers. comm., SAR Biologist, Guelph District MNR).

Although no Blanding's Turtles were confirmed in the project area during early spring 2012 basking surveys conducted according to the current MNR protocols, there is potential for this species to occur in the project area, in light of the recently confirmed record for the species in Huron Natural Area and given the distances the species is known to travel (ROM 2012, Ross and Anderson 1990, OMNR 2012).

3.3.1.1 Overwintering habitat

Potential overwintering habitat is typically described as the mud bottom of permanent waterbodies, where overwintering would occur from late October to end of April. The main branch of Strasburg Creek in the project area contains small size on-line ponds (ponds 13 and 14 as discussed in reference to Ambystomid salamanders), with soft substrates and a water depth likely greater than 1m at the deepest portions. These ponds are presumed to be a result of beaver activity along the creek corridor, but have remained relatively constant from 2008 to the present based on personal knowledge of the project area. The Strasburg Creek channel has an average wetted width of 1.2m and depths averaging 0.2 to 0.4m in the flats, with 0.8m in the pools (SLI Draft 2012). No evidence of overwintering of Blanding's Turtles has been identified in the project area; however, early emerging Painted Turtles are presumed to overwinter in the project area. During the reconstruction of Ward's Pond, in August 2010, Painted and Snapping Turtles were documented by consultants conducting a fish and wildlife rescue during pond draw down; however, Blanding's Turtles were not found during the fish/turtle recovery program conducted as part of that effort. Large ponds and waterbodies are present both up and downstream of the project area, larger than those at the proposed road right of way, as well it is more likely that ponds of the size and structure found in the Huron Natural Area would be utilized by this species for overwintering purposes.

3.3.1.2 Spring and Early Summer Habitat, Nursery

Blanding's Turtle is typically highly active in the spring and early summer months, where they prefer shallow water in marshes, wetlands, bogs, lakes and vernal pools, rich in nutrients and dense with vegetation and foraging opportunity (species such as crayfish, tadpoles, etc.) (ROM 2012, Ross and Anderson 1990, OMNR 2012). The online ponds downstream of the culvert do not support dense vegetation, with the smaller of the two ponds having a higher density of algae. Potential food sources include tadpoles and minnows which were visually observed and documented during salamander trapping. In general, these ponds are open water with little vegetation with some foraging opportunities present. Ponded areas downstream of Huron Road and upstream the proposed Strasburg Extension crossing, are small in size and temporary or ephemeral as a result of beaver activity, changing year to year. They do not have the dense vegetation typically associated with preferred foraging ponds of Blanding's Turtle. There is little to no in-water vegetation cover to provide cover for hatchlings in the ponds either up or downstream of the proposed extension road allowance.

3.3.1.3 Oviposition

Oviposition sites include beaches, shoulders of roads, sandpits, etc. preferring sparsely vegetated, sunlit areas in cobblestone, gravel and sand (ROM 2012, Ross and Anderson 1990, OMNR 2012). Habitat of this type is not present naturally in the project area, but may occur within the roughed in road allowance of Strasburg Road. A single excavation was noted in the gravel areas in 2012, but could not be confirmed as a turtle nest. No turtles were observed nesting in the existing road base during any of the 2010 to 2012 field investigations. Areas of exposed sands are common in the Huron Natural Area, where numerous sand deposits occur in close proximity to the open water areas. Sandy areas of this type were not documented in the detail design project area and no areas of turtle nesting were confirmed. Future road designs need to ensure that the substrates utilized do not attract turtles, including Blanding's Turtle, to road edges for nesting.

3.3.1.4 Aestivation

Individuals aestivate in forest or forest edge habitat under leaf litter, grassy vegetation, logs or brush (ROM 2012, Ross and Anderson 1990, OMNR 2012). Potential aestivation habitat occurs along the edge of the Strasburg Creek floodplain; however, the road right of way largely abuts the deciduous swamp component of the ELC communities identified. The existing crossing area of the Strasburg Road corridor and proposed grading limits would intersect a small portion of potential forest edge habitat.

3.3.1.5 Summary

Blanding's Turtles have not been observed in the detail design project area, but due to the recent confirmation of the species in the Huron Natural Area, and due to the contiguous nature of the Strasburg Creek corridor, the corridor may be considered dispersal/migratory movement habitat for the species to other areas in the watershed. While some of the habitat may support some of the life processes of the species (i.e. aestivation), the aquatic habitat itself is not typical of the size and condition (dense vegetation) preferred by the species. It will be important to ensure that the design of Strasburg Road incorporates ecopassages to facilitate the movement of the species through the project area, and to exclude the species from the road surface, as road mortality is identified as a threat to the species (ROM 2012).

3.3.2 Species at Risk Other Reptiles

LGL staff confirmed Milksnake (*Lampropeltis triangulum*) in the project area in 2009, in the area adjacent to the existing open road allowance of Strasburg Road at the Main Branch of Strasburg Creek. This species was not documented again in the 2010, 2011 or 2012 investigations. Although habitat for this species is considered present, it may be diminished (and diminishing) through the conversion of agricultural areas to residential homes.

Snapping Turtle has been identified in the watercourse and online ponds (Wards Pond) associated with Strasburg Creek, and was confirmed in the project area by LGL in 2012. It is a species of Special Concern both federally and provincially.

3.4 MAMMALS

A total of 17 mammal species were documented in the project area during 2010 to 2012 surveys and those previously completed by other project teams; 6 of which were confirmed through field investigation by LGL (Appendix B). All of these mammals are common and secure in Ontario, and species that are tolerant of human presence and disturbance, commonly found in urban and urbanizing landscapes. Not included on the list is Black Bear (*Ursus americanus*), which was reported towards New Dundee as an incidental observation in 2010. This species is not expected to regularly inhabit the urban fringes of the City, but may occur as a rare visitor, as reported in 2010. It was not confirmed through field investigations conducted within the project area during 2010 or 2011.

No areas of sensitive mammal habitat, such a deer overwintering yards were documented in the project area; however, deer overwintering habitat is reported in areas downstream of Dodge Drive (Ecoplans *et al*. 2008). Mr. Art Timmerman (Area Biologist, Guelph District MNR) was contacted on October 9th and October 26th 2012 to discuss the status of deer wintering or yarding areas in the project area. Mr Timmerman indicated that the MNR has not undertaken any analysis of deer congregation areas in the project area.

The tributaries of the South Strasburg Creek branches were identified as potential wildlife movement corridors and confirmed as deer movement corridors through the use of infrared cameras and review of deer tracks. However, movement was confirmed during the summer months and did not constitute an analysis of winter movement corridors. Very low numbers of deer tracks were observed, and only a single deer was documented using the watercourse at a given time during the deployment of infrared cameras in the summer months of 2011. Of the two tributaries, the eastern branch was observed to be under more frequent use. In both cases, animal movement was identified as local and resident deer during the summer season. During March 2011 and 2012 field surveys, deer were flushed from the forest edges in low numbers (2 maximum). No evidence of deer congregation, deer bedding areas or high density of deer was noted.

3.4.1 Species at Risk

No mammal species at risk or potential habitat were documented in the project area.

3.5 BIRDS

A total of 94 bird species were documented in the larger area though a review of background information and field investigations. During 2010 bird surveys, a total of 58 birds were documented in the subject properties that contain the detail design project area, most with breeding evidence but a few as migrants.

Of species documented in the subject properties of the detail design project area by LGL Limited in 2010:

- 5 are regulated under the *Fish and Wildlife Conservation Act* as Game or Protected species;
- 45 are regulated under the *Migratory Birds Convention Act*; and,
- 14 are considered Regionally Significant in Waterloo Region.

Area sensitive bird species habitats typically coincide with interior habitat 100m in from forest edges. Area sensitive species in the project area include American Redstart (*Setophaga ruticilla*) (as a migrant in the area), Brown Creeper (*Certhia americana*), Hairy Woodpecker (*Picoides villosus*), Ovenbird (*Seiurus aurocapilla*), Pileated Woodpecker (*Dryocopus pileatus*), Pine Warbler (*Dendroica pinus*), Red-breasted Nuthatch (*Sitta canadensis*), White-breasted Nuthatch (*Sitta carolinensis*).

3.5.1 Partners in Flight

Ontario Partners in Flight (PIF) and the Ontario Landbird Conservation Plan identify bird species of conservation concern in the Lower Great Lakes/St. Lawrence Region (Bird Conservation Region 13 or BCR 13). The purpose of the plan is to "guide landbird conservation efforts in order to sustain the distribution, diversity and abundance of birds in this settled landscape" (Ontario Partners in Flight 2008). PIF species documented within the subject properties for detail design include Baltimore Oriole (*Icterus galbula)*, Bank Swallow (*Riparia riparia*), Belted Kingfisher (*Ceryle alcyon*), Black-billed Cuckoo (*Coccyzus erythropthalmus*), Brown Thrasher (*Toxostoma rufum*), Eastern Kingbird (*Tyrannus tyrannus*), Eastern Wood Pewee (*Contopus virens*), Field Sparrow (*Spizella pusilla*), Northern Flicker (*Colaptes auratus*), Rose-breasted Grosbeak (*Pheucticus ludovicianus*), Vesper Sparrow (*Pooecetes gramineus*) and Wood Thrush (*Hylocichla mustelina*).

3.5.2 Species at Risk

Background information obtained from the MNR Natural Heritage Information Centre (NHIC) Database (before transitioning to the new biodiversity database) reported Cerulean Warbler (*Dendroica cerulean*), a species identified as Threatened provincially and Endangered nationally, south and east of the project area, near Roseville Swamp PSW. However, suitable habitat is very limited to non-existent within the project area limits, as no super canopy white oak type habitat feature is present. This species was not documented in the project area during 2010 field investigations.

In spring 2010, LGL Limited documented Whip-poor-will (*Caprimulgus vociferous)* 600m outside of the EA project area. In-season surveys for Whip-poor-whil, Common Nighthawk (*Chordeiles minor*) and Chimney Swift (*Chaetura pelagic*) were conducted in 2011. None of these 3 species were confirmed in the detail design project area. MNR has asked for additional discussion regarding the Whip-poor-will confirmation in the larger project area of Doon South, yet not confirming breeding evidence. LGL encountered a Whip-poor-will while conducting early spring evaluations of wildlife habitat in the project area, and while placing cover boards. The sighting area ended up being just over 600m east of the EA project boundary study area, when the EA study area become defined later in 2010. Details of the sighting will be provided under separate cover to the MNR. LGL conducted crepuscular surveys following the Bird Studies Canada Protocol for detecting the presence of the Whip-poor-will during the breeding season. Two consecutive night surveys under appropriate weather and moon conditions did not detect the presence of breeding Whip-poor-will in the detail design or EA project areas. It is our opinion that given the early documentation, the April 29, 2010 observation represents a migrant bird moving through the project area.

3.6 OTHER

A total of 27 invertebrate species are documented for the project area, of which all but one are considered common and secure in Ontario.

3.6.1 Species at Risk

A single species at risk was identified for invertebrates documented in the project area, namely the Monarch (*Danaus plexippus)*, a species of special concern both federally and provincially.

3.7 SPECIES AT RISK SCREENING SUMMARY (MNR LIST)

A short list of wildlife species at risk according to SARO status was provided to the project team by MNR (Appendix A) and identified as potentially occurring in the Waterloo Region. This list has been modified in Table 5 to address only the wildlife species (removing fish, plant or tree species), as LGL's scope on the current project pertains only to wildlife. All SAR wildlife species listed in Table 5 were considered in review of background documentation for the project area. Additional field studies, where warranted, were completed as part of the determination of potential presence/absence of each species, as summarized below in Table 5.

The MNR has noted in comments provided on the draft January 2012 version of this report (Dave Marriot, Aug 30, 2012, District Planner Guelph MNR), that species are being assessed by the Committee on the Status of Species at Risk in Ontario (COSSARO) for up-listing, including Eastern Wood Pewee (*Contopus virens*) and Wood Thrush (*Hylocichla mustelina*), both of which were documented in the project area. In future, should COSSARO determine that the status of these species has changed, they could receive species and habitat protection under the Endangered Species Act.

Table 5: Region of Waterloo Known Species-at-Risk (as provided by MNR)

Species	Habitat Description	How addressed during project work	Results
Endangered Species			
Acadian Flycatcher	A songbird that requires large tracts of mature, shady, maple-beech forest (www.rom.on.ca)	Breeding bird surveys to detect potential presence/absence.	Not detected
American Badger	Remnant tallgrass prairie species, sand barrens, farmland (www.rom.on.ca).	Prairie habitat not present in project area. Area searches to detect presence of potential den sites.	Not detected
Henslow's Sparrow (Historical - no recent records)	Old field, pastures and wet meadows (www.rom.on.ca).	Large patches of suitable habitat not present in project area. Breeding bird surveys to detect potential presence/absence.	Not detected
Loggerhead Shrike (Historical - no recent records)	Known areas of breeding habitat are near Lindsay, Kingston and Ottawa. Prefer short grasses, utilize thorny trees for feeding/impaling food.	Habitat not present in study area Breeding bird surveys to detect potential presence/absence.	Not detected
Jefferson Salamander*	Confirmed habitat in the EA project area forests.	Trapping in 2011 and 2012, visual searches.	Not detected, likely that the 3 ponds identified for trapping are not ideal habitat given the presence of fish in the two online ponds along Strasburg Creek corridor. Pond 10, which is located within the woodlot, was not trapped in 2012 as it did not contain water. The results of the 2012 trapping summary will be provided to MNR under separate cover in order to satisfy permit requirements.
Northern Bobwhite (Historical - no recent records)	Edge and grassland habitat, including non-intensively farmed habitat (www.rom.on.ca)	Breeding bird surveys and area searches to detect potential presence/absence.	Not detected
Threatened Species			
Blanding's Turtle	Lakes, streams, and wetlands, shallow wetland areas with abundant vegetation (www.rom.on.ca).	Ponds were searched during optimal weather conditions to detect presence absence of basking turtles. Information was collected and review from City of Kitchener and MNR.	Not detected in the project area limits; however, this species was confirmed upstream of the project area in the Huron Natural Area in June 2012 (pers. comm.. G. Buck, SAR Biologist MNR). As a result, the project area may become a migratory corridor or suitable movement corridor to other areas along Strasburg Creek. Potential for the species to occur in the project area as a result.
Chimney Swift	Tree cavity nester in natural habitat. Typically nests in chimneys or other man-made structures.	Surveys for potential suitable chimneys, presence/absence of swifts. Breeding bird surveys to detect potential presence/absence.	Not detected
Least Bittern	Large, quiet marshes (www.rom.on.ca).	Wetland habitat in the project area is not of the size expected to support this species. Breeding bird surveys to detect potential presence/absence.	Not detected.

Species	Habitat Description	How addressed during project work	Results
Queen Snake	Aquatic snake that lives in clear, small rivers with good rock cover and abundant prey (crayfish) (www.rom.on.ca).	Although the species has been reported in some marsh habitat areas (Gillingwater 2011). Areas in and around Strasburg Creek were surveyed on foot on numerous occasions from 2010 through to 2012, including flipping cover habitat and walking through grasses in searches for other species at risk (such as Ribbonsnake).	Strasburg Creek in the project area is largely comprised of soft bottom substrates throughout the project area and through the proposed road alignment (SLI Draft 2012). No areas of abundant rock are noted in any areas, nor have crayfish been noted in the project area (where numerous hours of minnow trapping have been conducted in online ponds of Strasburg Creek). Within the other 2 branches of Strasburg Creek (north and south branches), flow is limiting to fish habitat (SLI Draft 2012), and these branches are very small in size and not likely to support Queensnake. No rock cover is present in these two branches. No snakes were observed by LGL in conducting field work along these watercourses. In numerous other areas, area searches of marsh habitat and edges of aquatic features, this species was not detected. Not likely to be found in project area due to lack of **typical** suitable habitat (rocky shores and rivers).
Cerulean Warbler*	Large, undisturbed tracks of mature, semi-open deciduous forest.	Breeding bird surveys to detect potential presence/absence.	Some habitat present in project area, but better habitat and reported presence of species in large habitat units outside of project area. Not detected
Whip-poor-will	Mix of open and forested areas.	Targeted Whip-poor-whil surveys in June 2011 during appropriate conditions.	Not detected in the detail design project area. An early migrant individual was detected 600m east of the EA project area limits.
Barn Swallow*	The Barn Swallow is a specialized aerial insectivore that nests in man-made structures (COSSARO June 2011).	Targeted breeding bird surveys to detect presence/absence of the species.	Detected foraging in project area. Nesting habitat not identified. No barn or barn structures within the proposed road alignment.
Eastern Meadowlark*	The Eastern Meadowlark is a grassland bird that is known to inhabit natural grasslands and also those used for agricultural purposes (hay, pasture). It is known to utilize perches for establishing territory and is a typically a very conspicuous bird in the landscape.	Breeding bird surveys to detect potential presence/absence.	Not detected
Bobolink*	The Bobolink is a grassland bird often found in hayfields where it may nest colonially with several pairs present in the same field.	Breeding bird surveys to detect potential presence/absence.	Not detected. Hayfields, cultural meadows or grasslands of a size typical to support this species (greater than 50ha, OMNR 2000) are absent from project area.

Species	Habitat Description	How addressed during project work	Results
Special Concern Species			
Bald Eagle	Large water bodies or riverine systems. They build large, obvious stick nests.	Likely to visit the project area given the close proximity of the Grand River.	Not detected
Black Tern	Cattail marshes, often of large size.	Not suitable habitat in the project area.	Not detected
Milksnake	A habitat generalist, often found near farm buildings.	Area searches of potential habitat. Cover board surveys.	Detected in 2009
Common Nighthawk	Open and semi-open areas such as farmland, woodlands, clearcuts, burns, rock outcrops, bogs, fens, prairies, gravel pits and urban rooftops (www.rom.on.ca)	Breeding bird surveys to detect potential presence/absence, including surveys during evening hours to detect foraging species.	Not detected
Eastern Ribbonsnake	Usually close to water, marshes, hunts frogs and small fish.	Area searches in wetland habitat. Cover board surveys.	Not detected
Hooded Warbler	Mature and deciduous forest, and in ravines (www.rom.on.ca).	Breeding bird surveys to detect potential presence/absence.	Not detected
Louisiana Waterthrush	Steep, forested ravines with fast-flowing streams (www.rom.on.ca)	Breeding bird surveys to detect potential presence/absence.	Not detected
Monarch	Found where there are milkweed plans and wildflowers (www.rom.on.ca)	Present in project area.	Present in project area
Northern Map Turtle	Large lakes and rivers, often bask together (www.rom.on.ca).	No suitable habitat present. All ponds and wetland habitats were part of area searches for detection of turtles.	Not detected.
Snapping Turtle	Large freshwater turtle, in a variety of aquatic habitat.	Surveys conducted for basking turtles using wildlife cameras.	Present in project area. Confirmed in project area in Strasburg Creek corridor.
Yellow-breasted Chat (Historical - no recent records)	Thickets an scrub habitat.	Breeding bird surveys to detect potential presence/absence.	Not detected

*reflects addition to the list or status update by LGL in October 2012.

4.0 EVALUATION OF SIGNIFICANT WILDLIFE HABITAT

As defined in the Significant Wildlife Technical Guide, wildlife habitat is considered significant where 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." (MNR 2000).*

An evaluation of significance has been completed for natural features identified as wildlife habitat within the project location through background review and site investigation, to determine if the wildlife habitat is significant in accordance with the criteria from the Significant Wildlife Habitat Technical Guide (SWHTG) and the draft addendum schedules.

As part of the screening for the presence of significant habitat, criteria from the SWHTG draft addendum schedules for Ecoregion 6E were used to determine if any of the wildlife habitat types present within the project study area met the criteria to be considered as significant. The categories for significant wildlife habitat (SWH) are:

- Seasonal Concentration Areas;
- Rare vegetation communities;
- Specialized habitat;
- Habitat of species of conservation concern; and,
- Animal movement corridors.

LGL Limited has not conducted an analysis of rare vegetation communities as it is outside the scope of work for this project. SLI provided shapefiles of the vegetation communities to LGL that were used as part of the SWH evaluation. A map of the Ecological Land Classification (ELC) data used in the evaluation is provided in Appendix D.

4.1 RESULTS

4.1.1 Seasonal Concentration Areas

Seasonal concentration areas are areas where wildlife species may gather in large numbers, often on an annual and/or seasonal basis. An evaluation summary is included in Table 6. The only Candidate SWH that has been identified is amphibian breeding habitat for both woodland and wetland. It is likely that pond and wetland features in the project area may be used in some or most years by several of the listed criteria species.

Table 6: Evaluation Summary for Seasonal Concentration Areas

Wildlife Habitat	ELC Ecosite Codes	ELC present in Study Area (Unit # as per Appendix D)	Criteria[1]	Habitat Characteristics related to Criteria	Candidate Significant Wildlife Habitat (yes/no)
Waterfowl Stopover and Staging Areas (terrestrial)	CUM1	3	Evidence of annual spring flooding from melt water or run-off within these ecosites. 100 or more of any one listed species and 2-3 birds/ha for 7-20 days. If sedge wren, marsh wren, sandhill crane, yellow rail, black tern present refer to criteria[1]	None of the indicator bird species for significant wildlife have been found in the study area, nor are birds present in numbers that would suggest these meadow/thicket areas are used for stopover purposes.	No
	CUT1	5			
		8			
Waterfowl Stopover and Staging Areas (aquatic)	MAM1	None	Annual use of habitat is documented from information sources or field studies. 100 or more of any sited species for 7days.	Birds were not documented in the numbers to indicate these areas are used for stopover purposes, nor were any documented in meetings with the District MNR or in background reports reviewed.	No
	MAM2	None			
	MAM3	None			
	MAM4	None			
	MAM5	None			
	MAM6	None			
	MAS1	None			
	MAS2	None			
	MAS3	None			
	SAS1	None			
	SAF1	None			
	SAM1	None			
	SWD1	None			
	SWD2	None			
	SWD3				
	SWD4	2			
		11			
	SWD5				
	SWD6				
	SWD7				
Shorebird Migratory Stopover Area	BBO1	None	Presence of 3 or more of listed species and > 1000 Shorebird Use Days during spring or fall migration period, or any site with >100 Whimbrel stop briefly (<24h) during spring migration, any site with >100 Whimbrel used for 3 years or more would be considered significant.	None of the listed ELC within the study area. Shorebirds were not documented in the study area in numbers that would suggest the study area includes a migratory route, nor were any such routes identified in consultation with the District MNR.	No
	BBO2	None			
	BBS1	None			
	BBS2	None			
	BBT1	None			
	BBT2	None			
	SDO1	None			
	SDS2	None			
	SDT1	None			
	MAM1	None			
	MAM2	None			
	MAM3	None			
	MAM4	None			
	MAM5	None			

Wildlife Habitat	ELC Ecosite Codes	ELC present in Study Area (Unit # as per Appendix D)	Criteria[1]	Habitat Characteristics related to Criteria	Candidate Significant Wildlife Habitat (yes/no)
Raptor Wintering	CUM	3	Raptor Wintering sites need to be > 20ha with a combination of forest and upland.	None of the adjacent forest and upland areas is > 20 ha. In consultation with the Guelph MNR biologist no raptor wintering habitat was identified, nor was there any indication of such habitat or associated species documented in any of the background studies reviewed.	No
	CUS1	None			
	CUT	5			
		6			
		8			
	CUW	None			
	FOC	None			
	FOD	4			
		10			
		12			
	FOM	7			
Bat Hibernacula	CCR1	None	Hibernacula may be found in caves, mine shafts, underground foundations and Karsts.	Bat monitoring studies were not completed. No evidence of bat concentrations or known areas of bat concentration reported for the project area. Ontario's Renewable Energy Atlas documents Guelph as known bat hibernacula in closest proximity to the study area. No suitable habitat found within the study area.	No
	CCR2	None			
	CCA1	None			
	CCA2	None			
Bat Maternity Colonies	Forested Ecosites: FOD	4	Maternal colonies can be found in tree cavities, vegetation and often buildings. Maternity Colonies with confirmed use by; • >20 Northern Myotis • >10 Big Brown Bats • >20 Little Brown Myotis • >5 Adult Female Silver-haired Bats	Bat monitoring studies were not completed. No significant bat habitat was identified in available background studies or were identified by MNR.	No.
		10			
		12			
	FOM	7			
Bat Migratory Stopover Area	No specific ELC types	n/a	Long distance migratory bats typically migrate during late summer and early fall from summer breeding habitats throughout Ontario to southern wintering areas.	The confirmation criteria and habitat areas for this SWH are still being determined by MNR.	n/a

Wildlife Habitat	ELC Ecosite Codes	ELC present in Study Area (Unit # as per Appendix D)	Criteria[1]	Habitat Characteristics related to Criteria	Candidate Significant Wildlife Habitat (yes/no)
			Their annual fall migrations concentrate these species of bats at stopover areas. The location and characteristics of stopover habitats are generally unknown.		
Turtle Wintering	SW	2	Criteria Species: Midland Painted Turtle, Northern Map Turtle, and Snapping Turtle. For most turtles, wintering areas are in the same general area as their core habitat. Water has to be deep enough not to freeze and have soft mud substrates. Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate Dissolved Oxygen.	Strasburg Creek online ponds have soft muddy bottoms and may provide suitable overwintering habitat. Snapping Turtle and Painted Turtle (including early emerging Painted Turtle) were documented in online ponds.	Yes – Candidate SWH identified for Turtle Wintering Habitat.
		9			
		11			
	MA	None			
	OA	None			
	SA	None			
	FEO	None			
	BOO	None			
Snake Hibernaculum	Existence of rock piles or slopes, stone fences, and crumbling foundations would identify Candidate SWH.	Talus, Rock Barren, Crevice and Cave, and Alvar sites may be directly related to these habitats. Rock piles or slopes, stone fences, and crumbling foundations assist in identifying candidate SWH. .	Observation of congregations (5+) of snakes on sunny warm days in the spring or fall.	Cover boards were placed in areas of potential habitat. Individual snakes were observed in the study area on occasion (Brown Snake and Eastern Gartersnake); however, no congregations of snakes or hibernacula were identified in field visits to the area. No hibernacula were identified by landowners, MNR District staff, or in any of the background reports reviewed for the study area.	No

Wildlife Habitat	ELC Ecosite Codes	ELC present in Study Area (Unit # as per Appendix D)	Criteria[1]	Habitat Characteristics related to Criteria	Candidate Significant Wildlife Habitat (yes/no)
Colonial Nesting Bird Breeding Habitat (Bank/ Cliff)	BLS1	None	Any site or areas with exposed soil banks, undisturbed or naturally eroding that is not licensed/permitted aggregate area. Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles.	Cliff swallows not documented in background material reviewed, nor were they observed during breeding bird surveys conducted in the project area. Bank Swallows not documented in the threshold numbers (>50) to qualify as SWH.	No
	BLT1	None			
	CLO1	None			
	CLS1	None			
	CLT1	None			
	CUM1	3			
	CUS1	None			
	CUT1	5			
		6			
		8			
Colonial Nesting Bird Breeding Habitat (tree/shrub)	SWM2	None	Presence of 5 or more active nests of any of the listed species.	Ponds and wetlands were visited on several occasions in the spring for monitoring of amphibians. No heron or egret nesting sites were observed during those site visits.	No
	SWM3	9			
	SWM5	None			
	SWM6	None			
	SWD1	None			
	SWD2	None			
	SWD3	None			
	SWD4	2			
		11			
	SWD5	None			
	SWD6	None			
	SWD7	None			
	FET1	None			
Colonial Nesting Bird Breeding Habitat (Ground)	MAM1-6	None	Any (rocky) island or peninsula (natural or artificial) within a lake or large river. Close proximity to watercourses in open fields or pastures with scattered trees or shrubs (Brewer's Blackbird).	Open water within the study area is not of adequate size to support colonies of nesting birds. Brewer's Blackbird not documented in background material reviewed, nor were they observed during breeding bird surveys conducted in the project area.	No
	MAS1-3	None			
	CUM	3			
	CUT	5			
		6			
		8			
	CUS	None			

Wildlife Habitat	ELC Ecosite Codes	ELC present in Study Area (Unit # as per Appendix D)	Criteria[1]	Habitat Characteristics related to Criteria	Candidate Significant Wildlife Habitat (yes/no)
Butterfly Migratory	CUM	3	A butterfly stopover area will be a minimum of 10 ha in size with a combination of field and forest habitat present, and will be located within 5 km of Lake Ontario.	The project area is not located within 5 km of Lake Ontario.	No
	CUP	1			
	CUS	None			
	CUT	5			
		6			
		8			
	FOC	None			
	FOD	4			
		10			
		12			
	FOM	7			
Landbird Migratory Stopover Area	COM	None	Woodlots need to be >10 ha in size and within 5 km of Lake Ontario.	The project area is not located within 5 km of Lake Ontario.	No
	FOC	None			
	FOD	4			
		10			
		12			
	SWC	None			
	SWM	9			
	SWD	2			
		11			
Deer Yarding Areas	MNR to determine this habitat.		No deer wintering areas were identified in the project area in consultation with the MNR District Biologist		No
Deer Winter Congregation Areas	FOC	None	Woodlots will typically be >100 ha in size. Woodlots <100ha may be considered as significant based on MNR studies or assessment.	No woodlots >100ha within the study area. No deer wintering areas were identified in the project area in consultation with the MNR District Biologist. During late March visits (in advance of salamander trapping), no evidence of deer congregation areas were noted by LGL.	No
	FOM	7			
	FOD	4			
		10			
		12			
	SWC	None			
	SWM	9			
	SWD	2			
		11			

1. Criteria are summarized from Ministry of Natural Resources (MNR) (February 2012 Draft) Significant Wildlife Habitat Ecoregion Criteria Schedules Addendum to Significant Wildlife Habitat technical Guide. Please refer to the full schedule for full text of criteria.

4.1.2 Specialized Habitat for Wildlife

The MNR (2000) identifies specialized habitat for wildlife as:

- Areas that support species with highly specific habitat requirements;
- Areas with high species diversity or community diversity; and,
- Areas that provide habitat that are significant to species' survival.

An evaluation summary of specialized habitat for wildlife is provided in Table 7.

Table 7: Summary of Evaluation of Specialized Habitat for Wildlife

Specialized Wildlife Habitat	ELC Ecosite Codes	ELC present in Study Area (Unit # as per Appendix D)	Criteria[1]	Habitat Characteristics related to Criteria	Candidate Significant Wildlife Habitat (yes/no)
Waterfowl Nesting Habitat	Upland habitat adjacent to the following wetland ELC ecosites:	FOM, FOD Units 4, 7, 10, and 12	A waterfowl nesting area extends 120 m from a wetland (> 0.5 ha) or a cluster of 3 or more small (<0.5 ha) wetlands within 120 m of each other where waterfowl nesting is known to occur. Upland areas should be at least 120 m wide so that predators such as racoons, skunks, and foxes have difficulty finding nests. Presence of 3 or more nesting pairs for listed species (except Mallard), or 10 or more nesting pairs for listed species including Mallard. Any active nest of American Black Duck is considered significant.	Potential habitat within the project area consists of wetlands and small ponds. No sites of waterfowl nesting were observed in the vicinity of these ponds during monitoring of wetlands. Of the listed waterfowl species, only Mallard was observed during breeding bird studies conducted by LGL in 2010. This species was not found in numbers used to determine SWH.	No
	MAS1	None			
	MAS2	None			
	MAS3	None			
	SAS1	None			
	SAM1	None			
	SAF1	None			
	MAM1	None			
	MAM2	None			
	MAM3	None			
	MAM4	None			
	MAM5	None			
	MAM6	None			
	SWT1	None			
	SWT2	None			
	SWD1	None			
	SWD2	None			
	SWD3	None			
	SWD4	2			
		11			
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	Forest communities directly adjacent to large water bodies.	None suitable	Presence of 1 or more active Osprey or Bald Eagle nests. Survey all forested land adjacent to a lake, pond, wetland 10 ha or greater in size, and all islands. Nests located on man-made objects are not to be included as SWH.	No evidence of Osprey or Bald Eagle nesting in project area. Wetlands of shape and size not ideal for these species.	No
Woodland Raptor Nesting Habitat	FOM	7	All natural or conifer plantation forest stands >30 ha in size with > 10ha of interior habitat (200m buffer from edge). Presence of 1 or more active nests from species list.	This predominately maple beech forest was surveyed during the spring of 2010 and 2011. Of the listed species none were observed during breeding bird surveys conducted in the area by LGL Ltd. in 2010. Two of the listed species were documented in Environmentally Sensitive Policy Areas (ESPAs) well east of the study area	No
	FOC	None			
	FOD	4			
		10			
		12			
	SWC	None			
	SWM	9			
	SWD	2			
		11			
	CUP3	1			

Specialized Wildlife Habitat	ELC Ecosite Codes	ELC present in Study Area (Unit # as per Appendix D)	Criteria[1]	Habitat Characteristics related to Criteria	Candidate Significant Wildlife Habitat (yes/no)
				(Cooper's Hawk in edge areas bordering the Blair Creek valley (ESPA33), and sharp-shinned hawk in Doon South Woods (ESPA34)). No woodland raptor nesting habitat was identified within the project area by MNR District staff.	
Turtle Nesting Areas	FEO1	None	Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers that provide sand and/or gravel that turtles are able to dig in. Presence of 1 or more Northern Map Turtle or Snapping Turtle nesting, or 5 or more nesting Midland Painted Turtles.	Painted Turtle was documented in the project area by LGL Limited. Snapping Turtle is confirmed in the Strasburg Creek by LGL. No turtle nesting sites were documented within the project area.	No.
	BOO1	None			
	MAM1	None			
	MAM2	None			
	MAM3	None			
	MAM4	None			
	MAM5	None			
	MAM6	None			
	SAS1	None			
	SAF1	None			
	SAM1	None			
Seeps and Springs	Seeps/Springs are areas where ground water comes to the surface. Any forested Ecosite within the headwater areas of a stream could have seeps/springs.		Presence of a site with >2 seeps/springs confirmed by studies should be considered SWH. The seeps/springs will be present even during dry summers.	Although groundwater input occurs within tributaries of Strasburg Creek associated with the mixed swamp (ELC#9), no areas of seeps or springs were documented in the study area.	No
Amphibian Breeding Habitat (woodland)	FOC	None	Presence of a wetland, lake, or pond within or adjacent (within 120m) to a woodland (no minimum size), presence of breeding population of 1 or more of the listed species with at least 20 individuals (adults, juveniles, eggs/larval masses).	Monitoring of amphibians LGL Limited in spring of 2010/11 identified American Toad, Spring Peeper, Green Frog, Northern Leopard Frog, Gray Treefrog, and Eastern Red-backed Salamander, within the study area.	Yes – wetlands (ELC#2) adjacent to woodland are utilized by 2 of the listed frog species for breeding.
	FOD	4			
		10			
		12			
	FOM	7			
	SWC	None			
	SWM	9			
	SWD	2			
		11			

Specialized Wildlife Habitat	ELC Ecosite Codes	ELC present in Study Area (Unit # as per Appendix D)	Criteria[1]	Habitat Characteristics related to Criteria	Candidate Significant Wildlife Habitat (yes/no)
Amphibian Breeding Habitat (wetland)	SW	2	Wetlands and pools (including vernal pools) >500m^2 (about 25m diameter) isolated from woodlands (>120m), and supporting high species diversity are significant. Presence of breeding population of 1or more of the listed salamander species, or 3 or more of the listed frog or toad species and with at least 20 breeding individuals (adults, juveniles, eggs/larval masses) or; any wetland with confirmed breeding by American Bullfrogs.	Monitoring of amphibians LGL Limited in spring of 2010/11 identified American Toad, Spring Peeper, Green Frog, Northern Leopard Frog, Gray Treefrog, and Eastern Red-backed Salamander, within the study area.	Yes, wetlands (ELC Unit #2) are used by 3 or more of the listed frog species at various times of the year.
		9			
		11			
	MA	None			
	FE	None			
	BO	None			
	OA	None			
	SA	None			

1. Criteria are summarized from Ministry of Natural Resources (MNR) (February 2012 Draft) Significant Wildlife Habitat Ecoregion Criteria Schedules Addendum to Significant Wildlife Habitat technical Guide. Please refer to the full schedule for full text of criteria.

4.1.3 Habitat of Species of Conservation Concern

Species listed as Special Concern (SC) provincially, species that are considered rare/declining or are a specially considered species are used to identify SWH for species of conservation concern. This excludes habitat of species that are designated as Threatened or Endangered, as their habitat is considered under separate policies. An evaluation summary of potential habitat for species of conservation concern within the project area is provided in Table 8.

Table 8: Summary of Evaluation of Habitat of Species of Conservation Concern

Wildlife	ELC Ecosite Codes	Criteria[1]	Habitat Characteristics related to Criteria	Candidate Significant Wildlife Habitat (yes/no)
Marsh Bird Breeding Habitat	Species including: American Bittern, Virginia Rail, Sora, Common Moorhen, American Coot, Pied-billed Grebe, Marsh Wren, Sedge Wren, Common Loon, Sandhill Crane, Green Heron, Trumpeter Swan	All wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present. Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren **or** 1 pair of Sandhill Cranes; **or** breeding by any combination of 5 or more of the listed species.	No criteria species identified.	No

Wildlife	ELC Ecosite Codes	Criteria[1]	Habitat Characteristics related to Criteria	Candidate Significant Wildlife Habitat (yes/no)
	Special Concern: Black Tern, Yellow Rail ELC Ecosites including: MAM1, MAM2, MAM3, MAM4, MAM5, MAM6, SAS1, SAM1, SAF1, FEO1, BOO1 For Green Heron: All SW, MA and CUM1 sites.	Note: any wetland with breeding of 1 or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWH		
Woodland Area Sensitive Bird Breeding Habitat	Species include: Yellow-bellied Sapsucker Red-breasted Nuthatch Veery Blue-headed Vireo Northern Parula Black-throated Green Warbler Blackburnian Warbler Black-throated Blue Warbler Ovenbird Scarlet Tanager Winter Wren <u>Special Concern:</u> Cerulean Warbler Canada Warbler Community ecosite types: FOC, FOM, FOD, SWC, SWM, SWD	Woodlots>30h; typically 60 years old or older, deep interior habitat >200m from edge.	Forested ecosites in the project area do not have interior habitat that meets the definition provided in the Ecoregion 6E Schedule (>200m from forest edge).	No
Open Country Bird Breeding Habitat	Upland Sandpiper Grasshopper Sparrow Vesper Sparrow Northern Harrier Savannah Sparrow Special Concern: Short-eared Owl CUM1 and CUM2 Ecosites, of size >30ha, not under active agricultural use in the last 5 years.	Large grassland areas (includes natural and cultural fields and meadows) >30 ha. Grasslands not Class 1 or 2 agricultural lands, and not being actively used for farming (i.e. no row cropping or intensive hay or livestock pasturing in the last 5 years). Grassland sites considered significant should have a history of longevity, either abandoned fields, mature hayfields and pasturelands that are at least 5 years or older. The Indicator bird species are area sensitive requiring larger grassland areas than the common grassland species.	No grassland habitat of this size present in the project area.	No

Wildlife	ELC Ecosite Codes	Criteria[1]	Habitat Characteristics related to Criteria	Candidate Significant Wildlife Habitat (yes/no)
Shrub/Early Successional Bird Breeding Habitat/ Declining Guild Shrubland Birds	Indicator Spp: Brown Thrasher Clay-coloured Sparrow Common Spp. Field Sparrow Black-billed Cuckoo Eastern Towhee Willow Flycatcher Special Concern: Yellow-breasted Chat Golden-winged Warbler CUT1 CUT2 CUS1 CUS2 CUW1 CUW2 Patches of shrub ecosites can be complexed into a larger habitat for some bird species Areas >10ha in size.	Large field areas succeeding to shrub and thicket habitats>10ha in size. Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (i.e. no row-cropping, haying or live-stock pasturing in the last 5 years). Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species. Shrub and thicket habitat sites considered significant should have a history of longevity, either abandoned fields or pasturelands.	Brown Thrasher (indicator species) and Black-billed Cuckoo were documented in SWM habitat. Field sparrow was documented in SWM habitat as well, or outside of the study area limits (no ELC available).	No
Terrestrial Crayfish	Chimney or Digger Crayfish (*Fallicambarus fodiens*), Devil Crawfish or Meadow Crayfish (*Cambarus Diogenes*): MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 MAS1 MAS2 MAS3	Meadow and edges of shallow marshes (no minimum size) identified should be surveyed for terrestrial crayfish. Constructs burrows in marshes, mudflats, meadows, and the ground can't be too moist. Can often be found far from water. Both species are a semi-terrestrial burrower which spends most of its life within burrows consisting of a network of tunnels. Usually the soil is not too moist so that the tunnel is well formed.		
Special Concern and Rare Wildlife Species	Rare wildlife species (including S1 to S3, SH and SC species) documented in the project area include: Milksnake, Snapping Turtle, and Monarch.	When an element occurrence is identified for a Special Concern or rare species, mapping of the habitat on the site needs to be completed to ELC Vegetation Type	Milksnake was documented by LGL Limited within the proposed road alignment.	Yes - Candidate SWH (no polygon assigned)
			Snapping Turtle has been confirmed in the pond associated with the main branch of Strasburg Creek and is known to overwinter in Wards Pond.	Yes – Candidate SWH associated with Strasburg Creek corridor.

Wildlife	ELC Ecosite Codes	Criteria[1]	Habitat Characteristics related to Criteria	Candidate Significant Wildlife Habitat (yes/no)
			Individuals have access to the tributaries associated with the creek.	
			Monarch butterfly is observed frequently throughout southern Ontario. Larvae utilize milkweed. Milkweed is present in many areas of the project limits - along road edges, edge of farm fields, woodlot edges, within cultural meadows and as part of the ground cover in hedgerows. No areas of monarch concentration or areas of concentrated milkweed are identified in the project limits.	No, species present but no areas of concentrated milkweed habitat were noted (no polygon assigned).

1. Criteria are summarized from Ministry of Natural Resources (MNR) (February 2012 Draft) Significant Wildlife Habitat Ecoregion Criteria Schedules Addendum to Significant Wildlife Habitat technical Guide. Please refer to the full schedule for full text of criteria.

Snapping Turtle has been confirmed in ELC unit 2 in the area of Ward's Pond, and the tributary of Strasburg Creek associated with ELC unit 2. As such, ELC Unit 2 is identified as Candidate SWH. Ward's Pond occurs outside of the 120m study area, but is contiguous to the Strasburg Creek corridor.

Milksnake has been confirmed in the project area, along the edge of the open road allowance for Strasburg Road. Milksnake is a habitat generalist species that is often found near buildings or residences including barns, sheds, debris piles, old foundations and basements of homes. Other natural and semi-natural features in the project area may serve as forage, movement, and breeding habitat. It is extremely difficult to specify a polygon of habitat for Milksnake in the project area due to the very generalist habitat use by this species. A discrete polygon has not been assigned.

The Monarch Butterfly (*Danaus plexippus*) can be found in Ontario wherever there are milkweed plants for its caterpillars and wildflowers for a nectar source. Monarchs are often found on abandoned farmland and roadsides, but also in city gardens and parks. Although Monarch Butterflies are a Special Concern Species, there is no formal protection for this species in Ontario. Among the key management strategies have been identified to protect the Monarch Butterfly in Ontario is to protect milkweed patches through removal from the Noxious Weed Act. Monarch was observed in the project area; however, no monarch caterpillars were observed. No areas of concentrated milkweed patches were noted. No specific polygons have been delineated as Candidate SWH for Monarch.

4.1.4 Animal Movement Corridors

Animal movement corridors can occur at various scales, from deer moving between summer and winter grounds across a landscape, to amphibians moving between breeding habitat and feeding areas within a single vegetation unit. No large scale animal movement corridors for deer have been identified through a review of background documentation, consultation with MNR or field work conducted to date. The area does not contain large valleys or ridges that would serve to concentrate animal movement. As a result, movement corridors within the project area are limited to those that serve local and resident animal movement; in particular, amphibian movement from upland habitat to breeding habitat are considered to be significant in the project area. An evaluation summary of animal movement corridors is provided in Table 9.

It is anticipated that amphibians will move within and throughout the deciduous swamp, ELC unit 2 (ELC in Appendix D) and between upland forest habitat to the swamp The proposed road alignment bisects the forest and swamp ELC polygons, such that it has potential to impact movement and/or dispersal corridors. Suitable mitigation measures will need to address any potential for impacting movement corridors.

Table 9: Summary of Evaluation of Animal Movement Corridors

Habitat	ELC Ecosite Codes	ELC present in Study Area (Unit # is shown in figure within Appendix D)	Criteria[1]	Habitat Identified within Study Area related to Criteria	Candidate Significant Wildlife Habitat (yes/no)
Amphibian Movement Corridors	Not ELC specific, movement corridors between breeding habitat and summer habitat.	n/a	Movement corridors must be determined when Amphibian breeding habitat is confirmed as SWH.	Breeding Habitat in the form of woodlands and wetlands is identified in Table 6 as Candidate Significant Wildlife Habitat. ELC unit #2 (Appendix D) was determined to be a contiguous deciduous swamp habitat utilized as a movement corridor.	Yes- it is anticipated that amphibians utilize the deciduous swamp associated with the Strasburg Creek tributary as a movement corridor.
Deer Movement Corridors	Movement corridor between summer and winter range, typically follow riparian areas, woodlots and/or physical geography.	n/a	A deer yard identified by an OMNR office as SWH will have corridors that the deer use during fall migration and spring dispersion.	No deer wintering areas or associated movement corridors were identified in consultation with the MNR District	No

1. Criteria are summarized from Ministry of Natural Resources (MNR) (February 2012 Draft) Significant Wildlife Habitat Ecoregion Criteria Schedules Addendum to Significant Wildlife Habitat technical Guide. Please refer to the full schedule for full text of criteria.

5.0 IMPACT ASSESSMENT AND MITIGATION RECOMMENDATIONS

The following sections review impacts associated with road construction and operation and the anticipated impacts on wildlife habitat and communities in the detail design project area. Impacts to wildlife habitat and communities are considered to be of two types:

- Construction Related; and,
- Operational.

While impacts directly related to construction will be shorter in duration, they constitute the bulk of the wildlife habitat removal in the project area. Conversely, operational impacts will be more indirect, however effects have the potential to be spread over a longer time period. As well, operational impacts have the potential to extend from the project footprint up to 120m into the existing natural features that remain post-construction. These impacts are considered against the general wildlife habitat function of the project area, where mitigation takes into consideration local and resident wildlife communities often comprised of the most urban tolerant species. Additional consideration is provided for areas considered to be sensitive wildlife habitat or Candidate SWH.

5.1 CONSTRUCTION RELATED IMPACTS

Table 10 below summarizes potential construction related impacts and recommended mitigation measures. Construction related impacts refer to the impacts associated with the construction component of installation where earth is graded and vegetation is removed. In all, construction mitigation monitoring should occur through the presence of an on-site independent environmental monitor for both aquatic and terrestrial habitats.

Table 10: Summary of Construction Related Impacts and Mitigation Recommendations

Construction Related Impact	Type of Impact/Receptor	Potential Mitigation Options
Grading, vegetation removal, grubbing.	-direct removal of available habitat for local and resident species;	-minimize habitat removal through minimization of access, staging, storaging and grading footprints -utilize rural road design where feasible to minimize road footprint when crossing within natural features -ensure that temporary areas are adequately restored with native vegetation post-construction, and monitor the effectiveness of restoration making adjustments as necessary
	-construction disturbance to adjacent habitat/communities;	-implement construction timing windows that limit disturbance during sensitive timing windows for breeding amphibians (specific to the main crossing of the Strasburg Creek corridor which is the key area of frog breeding identified in the detail design project area)

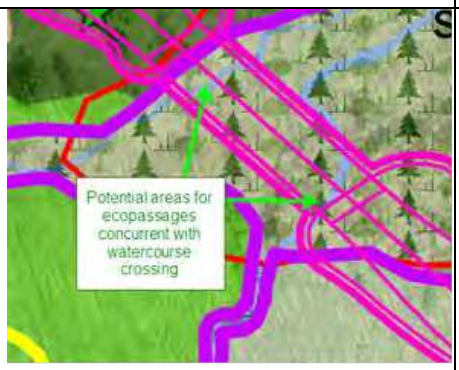
Construction Related Impact	Type of Impact/Receptor	Potential Mitigation Options
		-construction activities must adhere to the *Migratory Birds Convention Act*
	-potential for incidental killing or harm to local and resident wildlife species; and	-implement construction timing windows that limit disturbance during sensitive timing windows for breeding amphibians (April to June) and overwintering turtles along Strasburg Creek corridor and wetlands (winter months when turtles may be hibernating) -construction activities must adhere to the Migratory Birds Convention Act -ensure the construction areas are delineated by fencing can serve to exclude wildlife from entering the work areas
	-potential for silt/sediment to enter aquatic habitat communities through overland transport of silt and sediment, and potential for deleterious substances to enter aquatic habitat	-ensure that construction storage, staging and refuelling areas are away from aquatic habitat to prevent accidental spills from entering habitat -ensure that construction activities are adequately contained with appropriate silt/sediment and erosion control measures -ensure that disturbed soils are restored and stabilized as soon as possible after disturbance -provide construction monitoring on site by an independent environmental monitor to ensure that erosion and sediment controls are working effectively
Recommendations specific to Blanding's Turtle	-as above	-prior to installation of silt fencing, coffer dams, or any in-water work, bank areas should be visually searched for wildlife species by a qualified biologist who has been provided with site specific training regarding Blanding's Turtle; -construction zone should be walked at a slow pace to flush any animals out of the area prior to silt fence installation; -silt fencing should be installed in a manner to ensure a complete barrier to animal movement into the construction zone; -workers should be trained on the potential for SAR species to move through the project area and should remain vigilant and alert to the presence of wildlife in the work area; -all construction vehicle movement should be at a slow pace to avoid trampling; -should any turtles be encountered in the construction zone, a trained biologist should follow procedures as outlined in the Ontario Species at Risk Handling Manual to safely remove the species from the project area; -construction should be halted until all turtles have left or been removed from the construction zone; -any SAR species encounters should be reported to the MNR office.

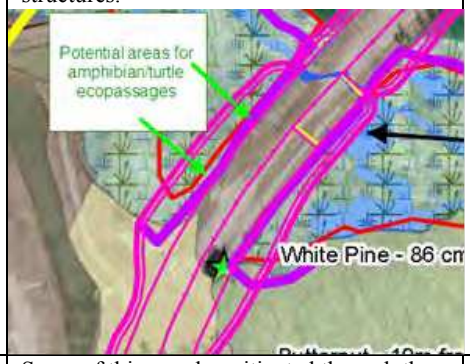
5.2 OPERATIONAL IMPACTS

Operational impacts refer to the long term and induced impacts as they relate to the creation of a road through a natural feature. They can occur at different scales, and may extend 100 to 120m away from the road edge. Roads may impact the overland flow of water and alter hydrology, increase erosion, or have disturbance impacts to adjacent aquatic or terrestrial wildlife habitat. Table 11 outlines some of the potential impacts to wildlife habitat and communities in the project area, and provides mitigation recommendations.

Table 11: Summary of Operational Related Impacts and Mitigation Recommendations

Operational Related Impact	Type of Impact/Receptor	Potential Mitigation Options	Monitoring Recommendations
Water quantity	Alteration of hydrology, flow patterns that may affect hydroperiod of amphibian breeding habitat/wetlands; Increased erosion.	Maintain existing flow patterns to avoid changing character of vegetation communities and breeding habitat function	Community monitoring (photo plot) of SWD4-1 (Unit 2); Frog calling monitoring.
Water quality	Alteration of water quality entering wetlands or aquatic habitat from road surfaces (deleterious substances, temperature effects, road salt or de-icing agents).	Create a salt management plan that identifies sensitive areas adjacent to natural vegetation communities where de-icing agents should be minimized, avoided or switched to less harmful substances where possible; Provide pre-treatment for discharged water prior to release to existing wetlands or aquatic habitat.	None recommended at this time.
Lighting	Artificial lighting can change animal behaviour (nocturnal foraging, migration movements, light attraction or repulsion, social interactions, etc.)	Minimize the use of artificial lighting; Use low brightness options; Use directional lighting to restrict light to where needed.	None recommended at this time.
Animal-vehicle conflicts/Effects on Connectivity	Animal-vehicle conflicts may occur where there are existing migratory corridors; Along linear landscape features such as valleys; where wetlands/forest interfaces occur; and also anywhere with low topographic complexity.	Installation of ecopassages or structures that facilitate animal movement. ***South Branches of Strasburg Creek*** Animal movement is proposed to be facilitated through the use of a multi-span bridge crossing of the South Branch crossings of Strasburg Creek. Since these crossings will accommodate watercourses, they also are the best opportunity to accommodate larger animal movement. Design of these multi-span crossings should also provide a variety of substrates/cover to allow for multi-species use. It is ideal that the approach to the multispan bridge use a combination of appropriate cover/substrates to encourage deer and other animal use, and also funnel or preventative fencing to discourage animal access to road surface.	Frog calling monitoring/road kill monitoring for effectiveness of ecopassages. Monitoring of the effectiveness of exclusionary fencing, with the opportunity to retrofit if required based on revised animal movement pathways post-construction.

Operational Related Impact	Type of Impact/Receptor	Potential Mitigation Options	Monitoring Recommendations
		 ***Main Branch of Strasburg Creek*** The existing box culvert at this location is small in size with limited vertical clearance and is not expected to be utilized by deer. The maintenance of this structure as the key hydrologic conveyance structure is limiting to the opportunities for ecopassages for larger species in this area. As a result, road crossing signs (i.e., Deer crossing) may be warranted, as deer will be forced to cross at the road surface for travel along Strasburg Creek corridor. The proposed flow control structure at Huron Road on Strasburg Creek was identified for the consideration of small animal movement (CH2M Hill and North South Environmental Inc., 2008), and the recommendations for the Strasburg Road crossing is in line with those recommendations, providing crossing opportunities to maintain the connectivity along the Strasburg Road corridor. Small mammals may be expected to use both the road surface area and existing box culvert for crossing. Directional/wing walls are encouraged for incorporation into the road design such that small animals, including frogs and turtles would be excluded from the road surface and directed to the box culvert or other culverts along this section, as described below. Exclusionary fencing will be important for reducing the potential for turtle mortality at road surfaces, which is a common cause of mortality of Blanding's Turtle. Further consideration should be given to adding culvert or additional ecopassage structures in the floodplain area to facilitate amphibian and reptile movement along the Strasburg Creek corridor and wetland communities. Some small mammal movement would likely be accommodated by these structures as well.	

Operational Related Impact	Type of Impact/Receptor	Potential Mitigation Options	Monitoring Recommendations
		Amphibian and reptile ecopassages are typically less than 1.5m in height or width, and may also serve as equalization culverts for seasonal cross drainage for the wetland. Provision of natural surfaces in the structures is important for movement by a variety of amphibian and reptile species. Exclusionary and directional fencing is recommended for use with these ecopassage structures. 	
Reduction in habitat quality	Habitat adjacent to a new road may decline in quality through increase of invasive plants, damage from salt spray, noise effects, and lighting effects combined. The road bisects a single habitat unit, and will result in two smaller habitat patches than currently exist.	Some of this may be mitigated through the restoration of the community edge to minimize edge effects extending into the community. However, this cannot be fully mitigated. In addition to the footprint loss, some decline in bird and other wildlife communities is anticipated as a result of the new road installation adjacent to those communities.. The road will bisect a woodland and wetland complex that currently provides habitat for area sensitive breeding bird species. It is possible that these species will consider foraging and utilizing the available habitats, but breeding success may be reduced in smaller habitat patches.	None proposed.

6.0 SUMMARY

The information provided herein summarizes the results to date of background review and field investigations of wildlife habitat and communities within the EA project area. Wildlife documented to date in the project area comprises a mix of highly tolerant urban species, with some area sensitive bird species. The Strasburg Creek corridor, which provides upland and aquatic habitat, proves to be some of the most significant wildlife habitat in the project area. Forest habitat further provides habitat suitable for area sensitive species, and the proposed road extension will reduce the connectivity of the available habitat patches and will reduce habitat patch size such that interior habitat function will be reduced.

The evaluation of SWH provides information on components of the natural heritage system within the study area. Of these, the following meet the criteria for significance:

- Strasburg Creek corridor - Candidate SWH for Woodland breeding amphibians and wetland breeding amphibians and as Candidate SWH for species of special concern (Snapping Turtle); and,
- Movement corridors associated with the above.

New wildlife species at risk documented during the 2010-2012 field investigations was limited to Monarch and Snapping Turtle. LGL staff has confirmed the presence of Milksnake in 2009 within the existing road allowance at Strasburg Creek.

Species at risk reported for the larger area (including Blanding's Turtle and Cerulean Warbler) were not confirmed in 2010-2012 for the immediate project area, Based on consultation with MNR in September 2012, Blanding's Turtle is considered to be possible in the project area where the habitat is likely to serve largely as dispersal/migratory habitat.

No Ambystomid salamanders were documented in the project area during targeted breeding surveys in 2011 or 2012, nor were any encountered incidentally during field investigations. Potential habitat for this group was limited to an isolated pond with a limited hydroperiod (pond 10), and online ponds with less than suitable conditions (ponds 13 and 14). No breeding habitat was identified within the EA study area for Ambystomid salamanders.

7.0 REFERENCES

Bird Studies Canada. March 2009. Chimney Swift (*Chaetura pelagic*) Monitoring Protocol. In partnership with: Canadian Wildlife Service, The Ontario Ministry of Natural Resources, Species at Risk, The Ontario Trillium Foundation and McIlwraith Field Naturalists.

Bird Studies Canada. May 2011. Whip-poor-will Roadside Survey Participant's Guide.

Cadman, M.D., P.F.J Eagles, & F.M. Helleiner, 1987. Atlas of the Breeding Birds of Ontario. University of Waterloo Press, Waterloo.

Cadman, M.D. D.A. Sutherland, G.G. Beck, D. LePage, and A.R. Couturier (eds.). 2007. Atlas of the Breeding Birds of Ontario, 2001-2005. Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature, Toronto.

CH2M Hill and North South Environmental Inc. 2008. Upper Strasburg Creek Class Environmental Assessment FINAL REPORT. As accessed at http:// http://www.grandriver.ca/CurrentStudies/Strasburg-EA-Summary_Jan08.pdf and http://www.grandriver.ca/CurrentStudies/Strasburg-EA-Sec6_Jan08.pdf.

Committee on the Status of Species at Risk in Ontario (COSSARO). June, 2011. Final. COSSARO Candidate Species at Risk Evaluation Form for Barn Swallow (*Hirundo rustica*).

Doon Creek Subdivision North of Stauffer Dr., West of Tilt Dr., City of Kitchener. Environmental Impact Report September 2004. Ecoplans.

Doon Phase 2 Official Plan Amendment, City of Kitchener Collector Road Municipal Class Environmental Assessment, Environmental Study Report. November 2008. Ecoplans Ltd., MTE Consultants, MHBC Planning, Paradigm Ltd.

Doon South Lands Environmental Impact Report. April 2006. Ecoplans Ltd.

Gillingwater, Scott. D. 2011. Recovery Strategy for the Queensnake (*Regina septemvittata*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. vi + 34 pp.

Hallman – Groh Property Environmental Impact Study. September 2003. Ecoplans Ltd.

Hallman – Groh Property Stage 2 Lands, Blair Creek Watershed Environmental Impact Report December 2004. Ecoplans Ltd.

Hallman/Gubler Subdivision Lands West of Tilt Drive Environmental Impact Report. April 2006. Ecoplans Ltd.

Ontario Ministry of Natural Resources (OMNR). 2009. Natural Heritage Reference Manual for Natural Heritage Policies for the Provincial Policy Statement 2005 Working Draft Second Edition. Accessed on May. 12, 2010 from website http://publicdocs.mnr.gov.on.ca/View.asp?Document_ID=12714&Attachment_ID=32290

Ontario Ministry of Natural Resources (OMNR) (February 2012 Draft) Significant Wildlife Habitat Ecoregion Criteria Schedules Addendum to Significant Wildlife Habitat technical Guide.

Ontario Ministry of Natural Resources (OMNR). 2000. Significant Wildlife Habitat Technical Guide (and Decision Support System .zip)

Ontario Ministry of Natural Resources (OMNR). 2012. Blanding's Turtle (Emydoidea blandingii) Fact Sheet. Accessed online at: http://www.mnr.gov.on.ca/stdprodconsume/groups/lr/@mnr/@species/documents/document/stdprod_070894.pdf on October 5, 2012.

Ontario Partners in Flight. 2008. Ontario Landbird Conservation Plan: Lower Great Lakes/St. Lawrence Plain, North American Bird Conservation Region 13. Ontario Ministry of Natural Resources, Bird Studies Canada, Environment Canada. Draft Version 2.0. Available online at: http://www.bsc-eoc.org/PIF/PIFOBCR13Plan.pdf.

Region of Waterloo. 2001. ESPA 24 Technical Data Sheet Doon South Woods

Region of Waterloo. 2001. ESPA 39 Technical Data Sheet Roseville Swamp.

Ross, D.A. and R.K. Anderson. 1990. Habitat Use, Movements, and Nesting of *Emydoidea blandingii* in

Central Wisconsin. Journal of Herpetology (24):6-12.

Royal Ontario Museum (ROM). Ontario's Biodiversity: Species at Risk website. http://www.rom.on.ca/ontario/risk.php. Accessed June 2011.

Royal Ontario Museum (ROM). Ontario's Biodiversity: Species at Risk website. Accessed online at: http://www.rom.on.ca/ontario/risk.php?doc_type=fact&id=317 on October 5, 2012.

SNC Lavalin Inc. (SLI). 2012. **Draft**. EIS Aquatic Existing Conditions and Impacts Part B.

South Strasburg Gravity Trunk Sanitary Sewer Schedule "B" Class Environmental Assessment- Final Report, Appendix B: Natural Environment Report. September 2008. Stantec Consulting Ltd.

Stantec Consulting Ltd. (Stantec). Draft May 2012. Strasburg Creek Flood Control Class Environmental Assessment Draft Environmental Study Report. Prepared for City of Kitchener.

Stauffer Drive Residential Development South of Stauffer Dr., West of Groh Dr. Stage 1 Environmental Impact Report. November 2006. Ecoplans Ltd.

Stauffer Woods Subdivision South of Stauffer Dr. between Reidel Dr, New Dundee Rd., Groh Dr., and Dodge Dr. Phases 2-4 Environmental Impact Report. June 2008. Ecoplans Ltd.

APPENDIX A
MNR CORRESPONDENCE

Allison Featherstone

From: Buck, Graham (MNR) [Graham.Buck@ontario.ca]
Sent: Friday, April 09, 2010 1:26 PM
To: Allison Featherstone
Subject: strasburb road

Hi Allison,

In my opinion I think the salamander minnow trapping season is passed or passing. This week I have noticed a significant drop off in minnow trap captures. Last week we caught 21 and this week 1. I think they are leaving the ponds or becoming less active in the ponds. I have also heard of mortality, perhaps due to water temps heating up.

But you are not too late for egg mass surveys, provided you do not enter the pond or handle the egg masses, you don't need an ESA permit. This could give you a sense if there is salamander breeding.

As for the Strasburg Road extension, can you send me a map of the area, so I can check into the habitat regulation for this area?

Graham Buck
Species at Risk Biologist
Ministry of Natural Resources - Guelph District
1 Stone Road West,
Guelph ON
N1G 4Y2
P:519 826 4505
F: 519 826 4929
graham.buck@ontario.ca

Allison Featherstone

From: Buck, Graham (MNR) [Graham.Buck@ontario.ca]
Sent: Thursday, April 15, 2010 4:36 PM
To: Allison Featherstone
Subject: RE: strasburb road

Hi Allison,

Thank you for providing the map. The area is certainly a priority for evaluating habitat for Jefferson Salamander. There are confirmed breeding ponds east of the proposed road, north and south of Stauffer road. There are also 1 suitable breeding pond west of the proposed road, within 1 kilometer of the known breeding pond. This means the proposed road would destroy regulated habitat of the species, which means the activity must be permitted if it is going to continue which makes them part of regulated habitat.

This year, without an ESA permit you can evaluate the suitability of the ponds within the study area. What is required for a pond to be suitable, if within 1 kilometer of a known breeding pond are (all 4 criteria must be met):

1. Water retention duration: There is water in the pond long enough for the Jefferson Salamander larvae to develop and emerge, in an average or wet year. Since Jefferson's Salamander is long lived and it will return to the pond every year a dry pond one year does not rule out breeding. Therefore if the survey is done in a dry year, or after a low amount of snow the preceding winter it may take more than 1 year to determine this. Unfortunately we might be having one of those years this year.
2. There is any amphibian breeding (consider to be any of: mating, calling, eggs, larvae) occurring in the pond.
3. There are no predatory fish in the pond. Small fish, such as sticklebacks are not considered to be predators on salamander eggs and larvae.
4. There are egg attachment sites.

You can also complete egg mass surveys, but without entering the pond or handling the egg masses. I recommend you go soon, because they maybe very close to hatching now.

This data will help you verify ponds that you may need to sample next year.

Very soon we will be sharing the habitat regulation mapping for this area, and another, with the City of Kitchener, so they understand the implications and the processes clearer.

Graham Buck
Species at Risk Biologist
Ministry of Natural Resources - Guelph District
1 Stone Road West,
Guelph ON
N1G 4Y2
P:519 826 4505
F: 519 826 4929
graham.buck@ontario.ca

From: Allison Featherstone [mailto:afeatherstone@lglburlington.com]
Sent: April 9, 2010 1:46 PM
To: Buck, Graham (MNR)
Subject: RE: strasburb road

Hi Graham,

Thanks so much for your help. I did suspect we were missing the timing window for trapping. In 2008 it ended very abruptly around April 18 for trapping – but it was a later start with peak movement around April 13 in Kitchener.

Here is a map of the preliminary list of properties we are requesting permission to enter. This may not be a final list. We are just barely kicking off with this project. We are a sub-consultant to SNC Lavelin for the City of Kitchener Strasburg Road Extension (DD and Schedule C EA – two portions of the extension are at different levels of study)—City's Project Manager is Binu Korah and SNC Lavelin is Ian Upjohn. You can see the road allowance and small easement (see #12) and the proposed route then continues down Reidl Drive (based on the RFP Study Area) – the hand drawn purple line is very approximate.

Thanks,
Allison

Allison Featherstone, B.Sc. (Hons.)
Planning Ecologist

LGL Limited
3365 Harvester Road
Burlington, ON CANADA
L7N 3N2
(905) 333-1667 x30
(905) 333-2660 fax
afeatherstone@lgl.com
www.lgl.com

From: Buck, Graham (MNR) [mailto:Graham.Buck@ontario.ca]
Sent: Friday, April 09, 2010 1:26 PM
To: Allison Featherstone
Subject: strasburb road

Hi Allison,

In my opinion I think the salamander minnow trapping season is passed or passing. This week I have noticed a significant drop off in minnow trap captures. Last week we caught 21 and this week 1. I think they are leaving the ponds or becoming less active in the ponds. I have also heard of mortality, perhaps due to water temps heating up.

But you are not too late for egg mass surveys, provided you do not enter the pond or handle the egg masses, you don't need an ESA permit. This could give you a sense if there is salamander breeding.

As for the Strasburg Road extension, can you send me a map of the area, so I can check into the habitat regulation for this area?

Graham Buck
Species at Risk Biologist
Ministry of Natural Resources - Guelph District
1 Stone Road West,
Guelph ON
N1G 4Y2
P:519 826 4505
F: 519 826 4929
graham.buck@ontario.ca

Ministry of Natural Resources

Guelph District
1 Stone Road West
Guelph, Ontario
N1G 4Y2

Ministère des Richesses naturelles

Telephone: (519) 826-4955
Facsimile: (519) 826-4929

Ontario

June 24, 2010

James Harris
Senior GIS Analyst/ Terrestrial Biologist
Environment Division - SNC-Lavalin Inc.
400 Carlingview Drive
Toronto, Ontario
Canada M9W 6N9

Dear Mr. Harris

Re: **Class EA Strasburg Road Extension and Detailed Design**
City of Kitchener Region of Waterloo

Thank you for your recent circulation of the above-noted matter. In this regard, we offer the following comments for your consideration.

It is understood that SNC-Lavalin Inc. (SLI) has been retained by the City of Kitchener to prepare the detailed design for extending Strasburg Road from Rush Meadow Street to its intersection with the future westerly extension of Robert Ferrie Drive, as well conduct the Environmental Assessment for further extension of Strasburg Road from 500 m north of Stauffer Drive to New Dundee Road. With respect to associated natural heritage studies SLI is responsible for the preparation of fisheries, habitat/vegetation assessment and delineation, while LGL has been retained for wildlife studies. We trust you will share these comments with LGL to help inform the development of their work plans.

Ministry staff note that the Provincially Significant Strasburg Creek Wetland, the Provincially Significant Roseville Swamp - Cedar Creek Wetland are both within the area of study and appear to be crossed by the proposed Strasburg Road extension. Wetland mapping in this area has been revised through 2008-09, however detailing field study may result in modifications to the boundaries. Ministry staff also notes that there are several small wetlands in the area that are classified by MNR as unevaluated.

There are fisheries records available associated with Strasburg Creek (main and south branches) and Blair Creek. Please refer to the attached map, showing the location of the fisheries records. Please contact Art Timmerman, Management Biologist – Guelph Area to make arrangements to access these records at art.timmerman@ontario.ca or 519-826-4935.

As you may be aware this area has occurrences for several species-at-risk (SAR) including, Blanding's Turtle (threatened) associated with Strasburg Creek, and known habitat for Jefferson Salamander (threatened). It should also be noted that there is potential for regulated habitat of Jefferson Salamander within the study area. It is also recommended that you also check for information available from The Natural Heritage Information Centre (NHIC), if you have not already done so.

Based on the potential route and study area for the Strasburg Rd extension and given the potential for SAR to occur within this area, natural heritage surveys should include SAR investigations where there is species-appropriate habitat.
Ministry staff recommends using the following process for identifying species-appropriate habitats and determining the presence of species at risk:

I. Botanical Inventory

It is recommended that a comprehensive botanical inventory of the natural heritage features within the study area be undertaken to inform the development of a map of all vegetation communities within these boundaries. The vegetation communities should be classified as per the "Ecological Land Classification for Southern Ontario" system, to either the "Ecosite" or "Vegetation Type" level, depending on the habitat specificity of potential SAR within the study area.

II. Potential SAR on the property

A list of species at risk that have the potential to occur on the property can be produced by cross-referencing the Vegetation Types described during the botanical inventory with the habitat descriptions of SAR known to occur in the Region of Waterloo. A list of SAR known to occur within the Region of Waterloo is attached. The species-specific COSEWIC status reports (www.cosewic.gc.ca) are a good source of information on SAR habitat needs and will be helpful in determining the suitability of the property's Vegetation Types for a given species.

III. SAR surveys

Ministry staff is of the opinion that a survey for each of the SAR identified under Step II should be undertaken, regardless of whether or not the species has been previously recorded on the property. The survey report should describe how each SAR was surveyed for, and provide a rationale for why certain species, if any, appearing on the list provided were not the subject of the survey (e.g. no surveys for Wavy-rayed Lampmussel were conducted because there are no flowing watercourses within the study area).

If there are any questions or concerns on these comments, please contact me at (519) 826-4939 or by email at: april.nix@ontario.ca

Sincerely,

April Nix

Planning Intern
Ministry of Natural Resources, Guelph District
1 Stone Road West
Guelph, ON, N1G 4Y2
(519) 826-4939

Region of Waterloo Known Species-at-Risk
Endangered Species
Acadian Flycatcher
American Badger
American Chestnut
Butternut
False Hop Sedge (Historical - no recent records) **
Henslow's Sparrow (Historical - no recent records) **
Loggerhead Shrike (Historical - no recent records) **
Northern Bobwhite (Historical - no recent records)
Wavy-rayed Lampmussel
Threatened Species
Black Redhorse
Blanding's Turtle
Chimney Swift**
Jefferson Salamander
Least Bittern
Queen Snake
Rainbow Mussel
Whip-poor-will**
Special Concern Species
Bald Eagle
Black Tern
Cerulean Warbler
Common Nighthawk
Eastern Ribbonsnake
Green Dragon
Hooded Warbler
Louisiana Waterthrush
Milksnake
Monarch
Northern Map Turtle
Silver Shiner
Snapping Turtle
Yellow-breasted Chat (Historical - no recent records)

** ESA (2007) Schedule 1 Species: Currently receive General Habitat Protection.

APPENDIX B
RUNNING WILDLIFE LIST

Type	Scientific Name	Common Name	Within DD study area Documented by LGL in 2010/2011/2012											Documented by Others in Larger Area (east of Reidel Drive and south of Strasburg Creek)	G Rank	S Rank	COSEWIC	MNR	SARA	SARO	FWCA	MBCA	GRCA	Waterloo Region
			1a	1b	1c	2a	2b	3a	3b	5/6a	5b	11	15	Documented within DD study area (Refer Appendix D for ELC codes)										
Amphibian		Ambystomid salamanders												2										
Amphibian	*Bufo americanus*	American Toad	x			x					x			approx. 5 nonbreeding in ELC#2	1,10,12,13,14,15, 17	G5	S5								
Amphibian	*Ambystoma laterale*	Blue-spotted Salamander													14,15										
Amphibian	*Pseudacris maculata*	Boreal Chorus Frog													10,11,12,13, 17	G5	S5								
Amphibian	*Notophthalmus viridescens*	Eastern (Red-spotted) Newt													14,15	G5T5	S5								
Amphibian	*Thamnophis sirtalis*	Eastern Gartersnake													9, 17	G5T5	S5								
Amphibian	*Plethodon cinereus*	Eastern Red-backed Salamander	x			x				x					9,14,15	G5	S5					P			
Amphibian	*Hyla versicolor*	Gray Treefrog	x	x										>20 in ELC#2	1,10,12,14,15, 17	G5	S5					P			
Amphibian	*Rana clamitans*	Green Frog									x	x	x	>20 in ELC#2	1,13,14,15, 17	G5	S5								
Amphibian	*Ambystoma jeffersonianum*	Jefferson Salamander													6,14,15	G4	S2	END	END	END	END	P			
Amphibian	*Ambystoma hybrid pop. 1*	Jefferson Salamander x Blue-spotted Salamander, Jefferson genome dominates													5,6,14,15	GNA	S2								
Amphibian	*Rana pipiens*	Northern Leopard Frog	x								x		x	>20 in ELC#2	1,9,10,12,13,14,15, 17	G5	S5	NAR	NAR						
Amphibian	*Ambystoma maculatum*	Spotted Salamander													9,14,15	G5	S4								
Amphibian	*Pseudacris crucifer*	Spring Peeper												>20 in ELC#2 1-3 in ELC#4	1,9,10,11,12,13,14,15, 17	G5	S5								
Amphibian	*Pseudacris triseriata*	Western Chorus Frog													2,14,15	G5	S4	THR		THR					
Amphibian	*Rana sylvatica*	Wood Frog													1,9,10,11,12,13,14,15, 17	G5	S5								
Bird	*Anas rubripes*	American Black Duck													13	G5	S5B						X		
Bird	*Corvus brachyhrynchos*	American Crow	x	x		x		x							1,9,10,11,12,13,14,15, 17	G5	S5B								
Bird	*Carduelis tristis*	American Goldfinch	x	x	x	x	x	x		x	x	x	x		1,9,10,11,12,13,14,15, 17	G5	S5B						X	CP	
Bird	*Falco sparverius*	American Kestrel													14,15	G5	S5B					P		CP	
Bird	*Setophaga ruticilla*	American Redstart		m											17	G5	S5B						X	CP	RS
Bird	*Turdus migratorius*	American Robin	x		x	x		x		x	v	x	x		1,9,10,11,12,13,14, 17	G5	S5B						X		
Bird	*Spizella arborea*	American Tree Sparrow													13	G5	S5B						X		
Bird	*Scolopax minor*	American Woodcock													10,13,14,15	G5	S5B								
Bird	*Icterus galbula*	Baltimore Oriole	x			x	x			x					9,10,12,14,15, 17	G5	S5B,SZN						X		
Bird	*Riparia riparia*	Bank Swallow									v		v		1,14,15	G5	S5B,SZN						X	CP	
Bird	*Hirundo rustica*	Barn Swallow									v				1,10,12,13,14,15	G5	S5B,SZN		THR		THR		X	CP	
Bird	*Dendroica castanea*	Bay-breasted Warbler	m													G5	S5B,SZN						X		
Bird	*Ceryle alcyon*	Belted Kingfisher													9,15, 17	G5	S5B,SZN								
Bird	*Ceryle alcyon*	Belted Kingfisher									x		x		13,14	G5	S5B,SZN					P			RS
Bird	*Coccyzus erythropthalmus*	Black-billed Cuckoo		x											1,15	G5	S4B,SZN						X	CP	RS

Type	Scientific Name	Common Name	Within DD study area Documented by LGL in 2010/2011/2012											Documented by Others in Larger Area (east of Reidel Drive and south of Strasburg Creek)	G Rank	S Rank	COSEWIC	MNR	SARA	SARO	FWCA	MBCA	GRCA	Waterloo Region
			1a	1b	1c	2a	2b	3a	3b	5/6a	5b	11	15	Documented within DD study area (Refer Appendix D for ELC codes)										
Bird	*Poecile atricapillus*	Black-capped Chickadee	x	x		x		x		x		x			1,9,10,11,12,13,14,15, 17	G5	S5						X	CP	
Bird	*Cyanocitta cristata*	Blue Jay	x			x	x	x		x		x	x		1,9,10,11,12,13,14,15, 17	G5	S5					P			
Bird	*Polioptila caerulea*	Blue-gray Gnatcatcher													14,15	G5	S4B,SZN						X	CP	RS
Bird	*Dolichonyx oryzivorus*	Bobolink													9	G5	S4B		THR		THR				
Bird	*Certhia americana*	Brown Creeper	x			x						x				G5	S5B,SZN						X	CP	RS
Bird	*Toxostoma rufum*	Brown Thrasher		x											1,13,14,15	G5	S5B,SZN						X	CP	RS
Bird	*Molothrus ater*	Brown-headed Cowbird	x				x				x				1,9,10,12,14,15	G5	S5B,SZN								
Bird	*Branta canadensis*	Canada Goose													10,12,13,14,15, 17	G5	S5B,SZN						X		
Bird	*Aimophila cassinii*	Cassin's Sparrow*													15										
Bird	*Bombycilla cedrorum*	Cedar Waxwing	x			x	x			x	v		x		9,10,11,12,13,14, 15, 17	G5	S5B,SZN						X		
Bird	*Dendroica pensylvanica*	Chestnut-sided Warbler													15	G5	S5B,SZN						X	CP	RS
Bird	*Spizella passerina*	Chipping Sparrow									x				9,10,12,13,14,15	G5	S5B,SZN						X		
Bird	*Quiscalus quiscula*	Common Grackle	x				x				v				1,10,12,13,14,15, 17	G5	S5B,SZN								
Bird	*Geothlypis trichas*	Common Yellowthroat	x		x		x					x	x		1,9,10,11,12,13,14,15, 17	G5	S5B,SZN						X		
Bird	*Accipiter cooperii*	Cooper's Hawk													14,15	G5	S4B,SZN	NAR	NAR			P		CP	RS
Bird	*Junco hyernalis*	Dark-eyed Junco													14,15	G5	S5B,SZN						X	CP	
Bird	*Picoides pubescens*	Downy Woodpecker	x			x		x				x			1,9,10,11,12,13,14,15	G5	S5						X		
Bird	*Tyrannus tyrannus*	Eastern Kingbird	x								v		x		1,10,12,13,14,15, 17	G5	S5B,SZN						X	CP	
Bird	*Sternella magna*	Eastern Meadowlark													14,15	G5	S5B,SZN		THR		THR		X	CP	
Bird	*Sayornis phoebe*	Eastern Phoebe													13,14,15	G5	S5B,SZN						X	CP	
Bird	*Otus asio*	Eastern Screech-Owl													14,15	G5	S5	NAR	NAR			P			
Bird	*Pipilo erythrophthalmus*	Eastern Towhee													15	G5	S4B,SZN						X	CP	
Bird	*Contopus virens*	Eastern Wood Pewee	x			x		x		x		x			1,9,10,12,13,14,15	G5	S5B,SZN						X		
Bird	*Sturnus vulgaris*	European Starling	x								v				1,9,10,11,12,13,14,15, 17	G5	SE								
Bird	*Spizella pusilla*	Field Sparrow		x	x		x				x				1,9,10,11,12,13,14,15, 17	G5	S5B,SZN						X	CP	
Bird	*Regulus satrapa*	Golden crowned Kinglet													15	G5	S5B,SZN						X	CP	RS
Bird	*Dumetella carolinensis*	Gray Catbird	x	x						x					1,9,10,12,13,14,15, 17	G5	S5B,SZN						X	CP	

Type	Scientific Name	Common Name	Within DD study area Documented by LGL in 2010/2011/2012											Documented by Others in Larger Area (east of Reidel Drive and south of Strasburg Creek)	G Rank	S Rank	COSEWIC	MNR	SARA	SARO	FWCA	MBCA	GRCA	Waterloo Region
			1a	1b	1c	2a	2b	3a	3b	5/6a	5b	11	15	Documented within DD study area (Refer Appendix D for ELC codes)										
Bird	*Ardea herodias*	Great Blue Heron												1,9,13,15	G5	S5B,SZN						X	CP	RS
Bird	*Myiarchus crinitus*	Great Crested Flycatcher	x			x	x			x		x		1,9,10,11,12,13,14,15, 17	G5	S5B,SZN						X		
Bird	*Bubo virginianus*	Great Horned Owl												9,14,15	G5	S5								
Bird	*Butorides virescens*	Green Heron												13	G5	S4B,SZN								
Bird	*Picoides villosus*	Hairy Woodpecker	x									x		1,10,12,14,15	G5	S5						X		RS
Bird	*Catharus guttatus*	Hermit Thrush												14,15	G5	S5B,SZN						X	CP	
Bird	*Eremophila alpestris*	Horned Lark							x					1,14,15	G5	S5B,SZN						X	CP	
Bird	*Carpodacus mexicanus*	House Finch									v			10,11,12,15	G5	SE						X		
Bird	*Passer domesticus*	House Sparrow									v			1,10,12,13,14,15	G5	SE								
Bird	*Troglodytes aedon*	House Wren	x			x	x	x		x			x	1,9,10,11,12,13,14,15, 17	G5	S5B,SZN						X		
Bird	*Limosa haemastica*	Hudsonian Godwit	x	x	x	x	x			x	x	x	x		G4	S2S3B								
Bird	*Passerina cyanea*	Indigo Bunting	x		x	x	x	x		x	x			1,9,10,11,12,13,14,15, 17	G5	S5B,SZN						X		
Bird	*Charadrius vociferus*	Killdeer							x		x			1,9,10,12,13,14,15	G5	S5B,SZN						X		
Bird	*Melospiza lincolnii*	Lincoln's Sparrow												13	G5	S5B,SZN						X		
Bird	*Dendroica magnolia*	Magnolia Warbler												17 (August 2000)	G5	S5B						X	CP	RS
Bird	*Anas platyrhynchos*	Mallard									v	x		1,13,14,15, 17	G5	S5B,SZN						X		
Bird	*Zenaida macroura*	Mourning Dove	x								v			1,9,10,11,12,14,15, 17	G5	S5B,SZN						X		
Bird	*Cardinalis cardinalis*	Northern Cardinal	x	x	x	x				x		x		1,9,10,11,12,13,14,15, 17	G5	S5						X		
Bird	*Colaptes auratus*	Northern Flicker	x					x		x	v		x	1,9,10,12,13,14,15, 17	G5	S5B,SZN						X		
Bird	*Stelgidopteryx serripennis*	Northern Rough-winged Swallow									x				G5	S5B,SZN						X	CP	
Bird	*Seiurus aurocapilla*	Ovenbird										x		14,15	G5	S5B,SZN						X	CP	RS
Bird	*Dryocopus pileatus*	Pileated Woodpecker	x											1,9,10,12,14,15	G5	S4S5						X	CP	RS
Bird	*Dendroica pinus*	Pine Warbler	x									x		1,9,14,15	G5	S5B,SZN						X	CP	RS
Bird	*Melanerpes carolinus*	Red-bellied Woodpecker	x											1,14,15	G5	S4						X	CP	RS
Bird	*Sitta canadensis*	Red-breasted Nuthatch												9,13,14,15, 17	G5	S5B,SZN								
Bird	*Vireo olivaceus*	Red-eyed Vireo	x			x		x		x		x		1,9,14,15, 17	G5	S5B,SZN						X		
Bird	*Buteo jamaicensis*	Red-tailed Hawk	v						v	v				1, 9,10,12,13,14,15	G5	S5B,SZN	NAR	NAR			P			
Bird	*Agelaius phoeniceus*	Red-winged Blackbird									x		x	1,9,10,11,12,13,14,15, 17	G5	S5B,SZN								
Bird	*Columba livia*	Rock Dove (Pigeon)												14,15	G5	SE								
Bird	*Pheucticus ludovicianus*	Rose-breasted Grosbeak	x			x		x		x				1,9,10,12,14,15	G5	S5B,SZN						X		

Type	Scientific Name	Common Name	Within DD study area Documented by LGL in 2010/2011/2012											Documented by Others in Larger Area (east of Reidel Drive and south of Strasburg Creek)	G Rank	S Rank	COSEWIC	MNR	SARA	SARO	FWCA	MBCA	GRCA	Waterloo Region
			1a	1b	1c	2a	2b	3a	3b	5/6a	5b	11	15	Documented within DD study area (Refer Appendix D for ELC codes)										
Bird	*Archilochus colubris*	Ruby-throated Hummingbird	x			x									10,12,15	G5	S5B,SZN						X	CP	RS
Bird	*Bonasca umbellus*	Ruffed Grouse													13	G5	S5					G	X	CP	
Bird	*Passerculus sandwichensis*	Savannah Sparrow													1,14,15	G5	S5B,SZN						X	CP	
Bird	*Piranga olivacea*	Scarlet Tanager													14,15	G5	S5B,SZN						X	CP	RS
Bird	*Accipiter striatus*	Sharp-shinned Hawk													9, 17	G5	S5B,SZN								
Bird	*Tringa solitaria*	Solitary Sandpiper									m					G5	S4B								
Bird	*Melospiza melodia*	Song Sparrow													1,9,10,11,12,13,14,15	G5	S5B,SZN						X		
Bird	*Actitis macularius*	Spotted Sandpiper									x				1,13	G5	S5B,SZN						X	CP	
Bird	*Melospiza georgiana*	Swamp Sparrow											x		13	G5	S5B,SZN						X	CP	RS
Bird	*Tachycineta bicolor*	Tree Swallow											x		1,9,10,12,14,15, 17	G5	S5B,SZN						X		
Bird	*Cathartes aura*	Turkey Vulture									v				1,10,12,13,14,15, 17	G5	S4B,SZN					P		CP	RS
Bird	*Pooecetes gramineus*	Vesper Sparrow					x		x		x				14,15	G5	S4B,SZN						X	CP	RS
Bird	*Vireo gilvus*	Warbling Vireo													10,12,14,15	G5	S5B,SZN								
Bird	*Sitta carolinensis*	White-breasted Nuthatch	x			x				x		x			1,10,12,13,14,15	G5	S5						X		
Bird	*Zonotrichia albicollis*	White-throated Sparrow													14,15	G5	S5B,SZN						X	CP	RS
Bird	*Maleagris gallopavo*	Wild Turkey				x				x					13,14,15	G5	S4					G	X		
Bird	*Troglodytes troglodytes*	Winter Wren													13,15	G5	S5B,SZN						X		RS
Bird	*Aix sponsa*	Wood Duck													1,13,14,15	G5	S5B,SZN						X		
Bird	*Hylocichla mustelina*	Wood Thrush	x			x				x					1,14,15	G5	S5B,SZN						X		
Bird	*Dendroica petechia*	Yellow Warbler	x		x										1,9,10,12,14,15, 17	G5	S5B,SZN						X		
Bird	*Sphyrapicus varius*	Yellow-bellied Sapsucker													14,15	G5	S5B,SZN						X	CP	RS
Bird	*Coccyzus americanus*	Yellow-billed Cuckoo													14,15	G5	S4B,SZN						X		
Invertebrates	*Lethe appalachia*	Appalachian Brown													17	G4	S4								
Invertebrates	*Euphydryas phaeton*	Baltimore Checkerspot													9,13	G4	S4								
Invertebrates	*Tramea lacerata*	Black Saddlebags									x					G5	S4								
Invertebrates	*Papilio polyxenes*	Black Swallowtail													9	G5	S5								
Invertebrates	*Pieris rapae*	Cabbage White	x	x	x		x				x		x		9,10,11,12,13, 17	G5	SNA								
Invertebrates	*Colias philodice*	Clouded Sulphur													10,12, 17	G5	S5								
Invertebrates	*Anax junius*	Common Green Darner											x			G5	S5								
Invertebrates	*Coenonympha tullia*	Common Ringlet					x				x				17	G5	S5								
Invertebrates	*Plathemis lydia*	Common Whitetail	x	x	x	x	x				x		x			G5	S5								
Invertebrates	*Cercyonis pegala*	Common Wood Nymph													9,13	G5	S5								
Invertebrates	*Ischnura verticalis*	Eastern Forktail	x										x			G5	S5								

Type	Scientific Name	Common Name	Within DD study area Documented by LGL in 2010/2011/2012											Documented by Others in Larger Area (east of Reidel Drive and south of Strasburg Creek)	G Rank	S Rank	COSEWIC	MNR	SARA	SARO	FWCA	MBCA	GRCA	Waterloo Region
			1a	1b	1c	2a	2b	3a	3b	5/6a	5b	11	15	Documented within DD study area (Refer Appendix D for ELC codes)										
Invertebrates	*Papilio glaucus*	Eastern Tiger Swallowtail											x		13, 17	G5	S4S5								
Invertebrates	*Calopteryx maculata*	Ebony Jewelwing	x		x							x				G5	S5								
Invertebrates	*Thymelicus lineola*	European Skipper				x	x				x				9,13	G5	SNA								
Invertebrates	*Ancyloxypha numitor*	Least Skipper											x		17	G5	S5								
Invertebrates	*Megisto cymela*	Little Wood-Satyr	x	x			x					x			10,12	G5	S5								
Invertebrates	*Aglais milberti*	Milbert's Tortoiseshell									x				17	G5	S5								
Invertebrates	*Danaus plexippus*	Monarch			x						x				9,10,12,13, 17	G5	S4B, S2N	SC	SC	SC	SC				
Invertebrates	*Nymphalis antiopa*	Mourning Cloak													11	G5	S5								
Invertebrates	*Colias eurytheme*	Orange Sulphur													17	G5	S5								
Invertebrates	*Polygonia interrogationis*	Question Mark		x												G5	S5								
Invertebrates	*Vanessa atalanta*	Red Admiral					x	x			x				13	G5	S5								
Invertebrates	*Limenitis arthemis astyanax*	Red-spotted Purple	x				x								9	G5T5	S5								
Invertebrates	*Sympetrum rubicundulum*	Ruby Meadowhawk									x					G5	S5								
Invertebrates	*Celastrina ladon*	Spring Azure													10,12	G5	S5								
Invertebrates	*Celastrina neglecta*	Summer Azure													10,12	G5	S5								
Invertebrates	*Libellula pulchella*	Twelve-spotted Skimmer	x	x			x				x	x	x		9,11, 17	G5	S5								
Invertebrates	*Limenitis archippus*	Viceroy													9,10,12	G5	S5								
Invertebrates	*Argia fumipennis violacea*	Violet Dancer											x			G5T5	S5								
Mammals	*Castor canadensis*	Beaver	x										x		13, 17	G5	S5					F			
Mammals	*Canis latrans*	Coyote													13	G5	S5					F			
Mammals	*Peromyscus maniculatus*	Deer Mouse													9,11	G5	S5								
Mammals	*Tamias striatus*	Eastern Chipmunk	x			x		x		x					1,9,11, 17	G5	S5					P			
Mammals	*Sylvilagus floridanus*	Eastern Cottontail													9,11, 17	G5	S5					G			
Mammals	*Sciurus carolinensis*	Eastern Gray Squirrel											x		1,9,10,11,12,13, 17	G5	S5					G			
Mammals	*Marmota monax*	Groundhog													10,12,13	G5	S5								
Mammals	*Myotis lucifuga*	Little Brown Bat													10,12,13	G5	S5								
Mammals	*Microtus pennsylvanicus*	Meadow Vole													10,12	G5	S5								
Mammals	*Ondatra zibethicus*	Muskrat											x		13, 17	G5	S5					F			
Mammals	*Procyon lotor*	Northern Raccoon											x		1,9,10,11,12,13, 17	G5	S5					F			
Mammals	*Vulpes vulpes*	Red Fox													11,13	G5	S5					F			
Mammals	*Tamiasciurus hudsonicus*	Red Squirrel													1,9,13	G5	S5					F			
Mammals	*Mephitis mephitis*	Striped Skunk													1,10,12,13	G5	S5					F			
Mammals	*Didelphis virginiana*	Virginia Opossum													13	G5	S4					F			
Mammals	*Odocoileus virginianus*	White-tailed Deer	x				x				x		x		1,9,10,11,12,13, 17	G5	S5					G			
Reptile	*Storeria dekayi*	Dekay's Brown Snake					x									G5	S5	NAR	NAR						
Reptile	*Thamnophis sirtalis*	Eastern Gartersnake				x	x				x				14,15	G5T5	S5								
Reptile	*Lampropeltis triangulum*	Milksnake												1 juvenile within existing road allowance	3,8	G5	S3	SC	SC	SC	SC	P			

Type	Scientific Name	Common Name	Within DD study area Documented by LGL in 2010/2011/2012											Documented by Others in Larger Area (east of Reidel Drive and south of Strasburg Creek)	G Rank	S Rank	COSEWIC	MNR	SARA	SARO	FWCA	MBCA	GRCA	Waterloo Region
			1a	1b	1c	2a	2b	3a	3b	5/6a	5b	11	15	Documented within DD study area (Refer Appendix D for ELC codes)										
Reptile	*Chrysemys picta marginata*	Northern (Midland) Painted Turtle									?		x	approx. 4 in ELC#2	1,9, 17	G5T5	S5					P			
Reptile	*Chelydra serpentina*	Snapping Turtle											x		7,14, 16, 17	G5	S3	SC	SC	SC	SC	G			

*sightings in Ontario are rare, as the province is well outside of the normal breeding and migration range (southwest United States and Mexico) for this species

STATUS LEGEND
Column 1 – Wildlife group
Column 2 – Scientific name
Column 3- Common name
Column 4 – property and project area locations as shown in Figure 1 pertaining to the north/detail design portion of the project area.

- x - species present; for birds it indicates likely breeding as it was found in suitable breeding habitat or observed breeding behaviour
- **x (bolded) -** indicates species is a visitor using the foraging, roosting, resting, drinking, etc, but not likely breeding in area
- v- visitor to area
- m-migrant

Strasburg North (see Figure 1 Appendix D of this report for parcel limits)

1a	woodlot on property 1
1b	thickets / old field /agricultural lands to west of 1a on property 1
1c	hydro corridor that splits the woodland on property 1
2a	woodlot on property 2
2b	thickets / old field / agricultural lands to west of 2a on property 2
3a	woodlot on property 3
3b	thickets / old field / agricultural lands to west of 3a on property 3.
5/6a	woodlot
5b	includes the old field to the east of woodlot 5/6, and the agricultural lands and the meadow marsh/ reed marsh/old field on hill to west of woodlot 5/6
11	woodlot and retention pond on property 11
15	wetlands and wetland buffer along Strasburg Creek where existing Strasburg Road dead ends at very north end of study area

Column 5 –Wildlife records documented by others, such as previous studies by landowners, subwatershed studies, environmental assessments, background information provided by agencies such as Ministry of Natural Resources, and personal knowledge of the project area by team members.

Reference No.	Citation
1	South Strasburg Gravity Trunk Sanitary Sewer Schedule "B" Class Environmental Assessment- Final Report, Appendix B: Natural Environment Report (Sept. 2008) Stantec Consulting Ltd.
2	Doon Phase 2 Official Plan Amendment, City of Kitchener Collector Road Municipal Class Environmental Assessment, Environmental Study Report (Nov. 2008) Ecoplans Ltd, MTE Consultants, MHBC Planning, Paradigm Ltd.
3	LGL Staff. September 2009. Pers. comm. Milksnake documented within existing unopened road allowance of Strasburg Road at Strasburg Creek (Detail Design portion of study area).
4	Background information provided to the project team regarding regulated species at risk habitat.
5	Region of Waterloo. 2001. ESPA 24 Technical Data Sheet Doon South Woods
6	Region of Waterloo. 2001. ESPA 39 Technical Data Sheet Roseville Swamp
7	Pers. Comm.. Landowner
8	Pers. Comm. Landowner
9	Doon Creek Subdivision Environmental Impact Report (Sept. 2004), North of Stauffer Dr., West of Tilt Dr., City of Kitchener, Ecoplans Ltd.
10	Doon South Lands Environmental Impact Report (April 2006), Ecoplans Ltd.
11	Hallman – Groh Property Environmental Impact Study (Sept 2003) Ecoplans Ltd.
12	Hallman – Groh Property Stage 2 Lands Blair Creek Watershed Environmental Impact Report (Dec. 2004) Ecoplans Ltd.
13	Hallman/Gubler Subdivision Lands West of Tilt Drive Environmental Impact Report (April 2006), Ecoplans Ltd.
14	Stauffer Drive Residential Development South of Stauffer Dr., West of Groh Dr. Stage 1 Environmental Impact Report (Nov. 2006) Ecoplans Ltd.
15	Stauffer Woods Subdivision South of Stauffer Dr. Between Reidel Dr, New Dundee Rd., Groh Dr., and Dodge Dr. Phases 2-4 Environmental Impact Report (June 2008) Ecoplans Ltd.
16	turtles documented as part of wildlife/fish rescue in Aug 2010 when Ward's Pond was taken offline (email, B. Steiner, City of Kitchener, January 2011)
17	Strasburg Creek Flood Control Structure Class EA Draft ESR (Stantec Draft May 2012), Table 3 observations specific to flood control structure 2000-2008

Column 6 – G- Rank

G1- extremely rare; usually 5 or fewer occurrences in the overall range or very few remaining individuals or because of some factor (s) making it especially vulnerable
G2-very rare; usually between 5 and 20 occurrences in the overall range or with many individuals in fewer occurrences or because of some factor (s) making it vulnerable to extinction
G3- rare to uncommon; usually between 20 and 100 occurrences; may have fewer occurrences but with a large number of individuals in some populations or may be susceptible to large-scale disturbances
G4-common; usually more than 100 occurrences, usually not susceptible to immediate threats
G5-very common; demonstrably secure under present conditions
GH-historic; no records in the past 20 years
GU-status uncertain; often because of low search effort or cryptic nature of species, more data needed
GX-globally extinct; no records despite specific searches
?-denotes inexact numeric rank
G- means that a global rank has not been obtained from the Nature Conservancy
G?-unranked; or if following a ranking the rank is tentatively assigned
Q-denotes taxonomic status of species, subspecies or variety as questionable
T-denotes the rank applies to a subspecies or variety

Column 7 – S-Rank

S Rank
SX-presumed extirpated; species or community is believed to be extirpated from the nation or state/province, not located despite intensive searches of historical sites and other appropriate habitat and virtually no likelihood it will be rediscovered
SH-possibly extirpated (historical); species or community occurred historically in the nation or state/province and three is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20-40 years
S1-critically imperilled; critically imperilled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor (s) such as very steep declines making it especially vulnerable to extirpation from the state/province
S2-imperilled; imperilled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines or other factors making it very vulnerable to extirpation from the nation or state/province
S3-vulnerable; vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines or other factors making it vulnerable to extirpation
S4-apparently secure; uncommon but not rare; some cause for long-term concern due to declines or other factors
S5-secure; common, widespread and abundant in the nation or state/province
SNR-unranked; nation or state/province conservation status not yet assessed
SU- unrankable; currently unrankable due to lack of information or due to substantially conflicting information about status or trends
SNA- not applicable; a conservation status rank is not applicable because species is not a suitable target for conservation activities
S#S#-range rank; a numeric range rank is used to indicate any range of uncertainty about the status of the species or community
C-captive/cultivated; existing in the province only in a cultivated state; introduced population not yet fully established and self-sustaining
S?-not ranked yet- species rank not yet assigned
SA-accidental; accidental or casual occurrence in the province; far outside its normal range, some species may occasionally breed in the province

SAB- breeding accidental
SAN- non-breeding accidental
SE-exotic; not believed to be a native component of Ontario's flora
SR-reported for Ontario; no persuasive documentation which would provide a basis for either accepting or rejecting the report
SRF-reported falsely in Ontario
SX-apparently extirpated from Ontario with little likelihood of rediscovery
SZ-not of practical conservation concern; no clearly definable occurrences
SZB-breeding migrants/vagrants
SZN-non-breeding migrants/vagrants

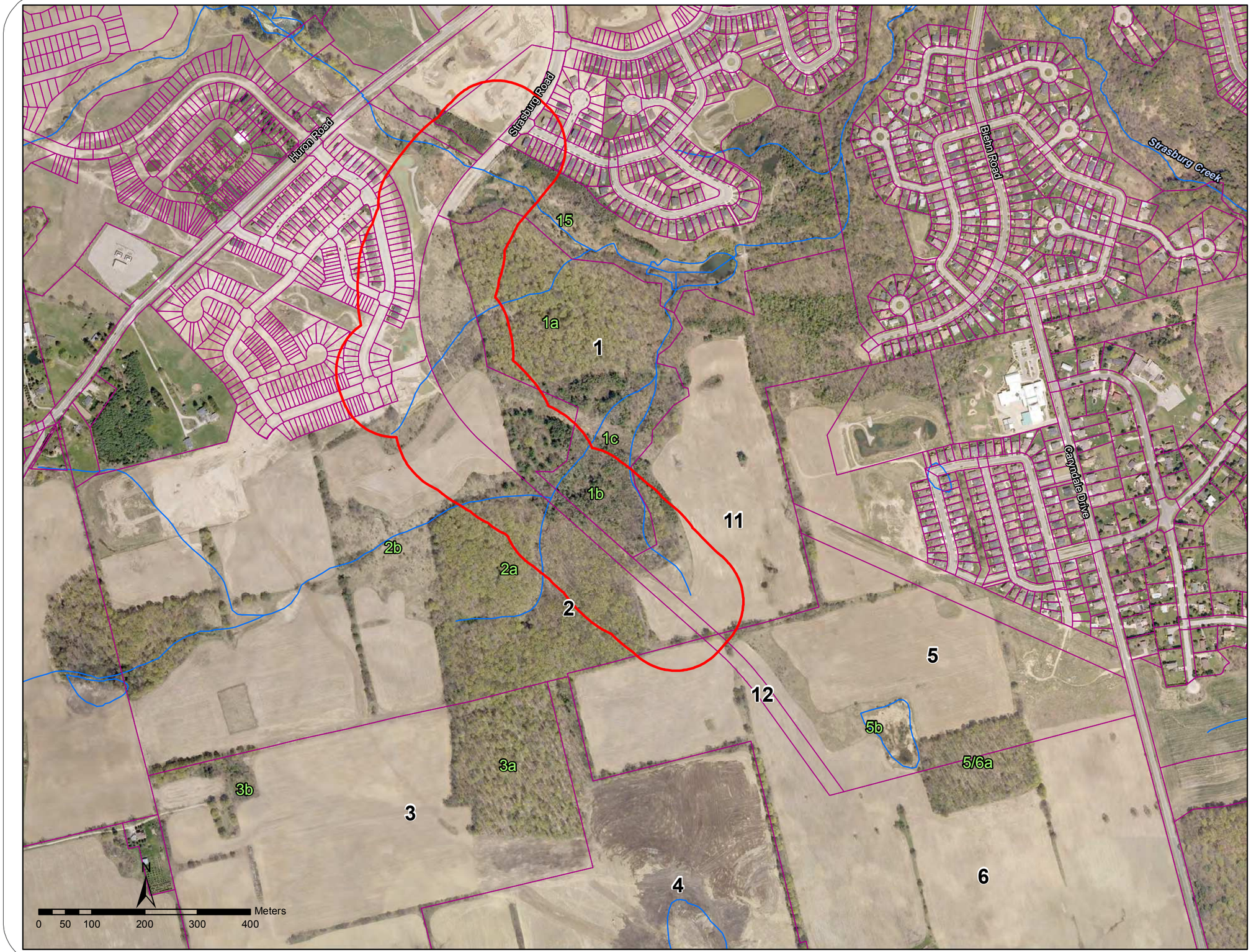
Column 8 – COSEWIC
NAR- not at risk; a wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances
THR-threatened; a wildlife species likely to become endangered if limiting factors are not reversed
END-endangered; a wildlife species facing imminent extirpation or extinction
EXT-extirpated; a species no longer existing in the wild in Canada but occurring elsewhere
SC-special concern; a wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats
DD-data deficient; a wildlife species for which there is in adequate information to make a direct, or indirect, assessment of its risk of extinction

Column 9 – MNR
EXT-extinct; a species that no longer exists anywhere
EXP-extirpated; a species that no longer exists in the wild in Ontario but still occurs elsewhere
END-R- endangered regulated; a species facing imminent extinction or extirpation in Ontario which has been regulated under Ontario's endangered Species Act
END-endangered; a species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's Endangered Species Act
THR-threatened; a species that is at risk of becoming endangered in Ontario if limiting factors are not reversed
SC-special concern; a species with characteristics that make it sensitive to human activities or natural events
NAR- not at risk; a species that has been evaluated and found to be not at risk
DD- data deficient; a species for which there is insufficient information for a provincial status recommendation

Column 10- SARA – Species at Risk Act
Schedule 1- official list of wildlife species at risk
THR-threatened; a wildlife species likely to become endangered if limiting factors are not reversed
END-endangered; a wildlife species facing imminent extirpation or extinction
EXT-extirpated; a species no longer existing in the wild in Canada but occurring elsewhere
SC-special concern; a wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats

Column 11- SARO –Species at Risk in Ontario
END-Endangered; a species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's ESA
EXP-Extirpated; a species that no longer exists in the wild in Ontario but exists elsewhere
THR-Threatened; a species that is at risk of becoming endangered in Ontario if limiting factors are not reversed
SC-Special Concern; a species with characteristics that make it sensitive to human activities or natural events

Column 12- FWCA –Wildlife species regulated under the Fish and Wildlife Conservation Act, P = protected, G = game
Column 13 – MBCA –Birds regulated under the Migratory Birds Convention Act
Column 14 - GRCA – Conservation Priority Species as identified by the GRCA
Column 15 – Waterloo Region – Regionally significant species as identified by the Region of Waterloo.



LEGEND

- Detailed Design Area
- Watercourse
- Parcels
- 2 — Property ID Number

1a	woodlot of property 1
1b	thickets / old field / agricultural lands to west of 1a on property 1
1c	hydro corridor that splits the woodland on property 1
2a	woodlot on property 2
2b	thickets / old field / agricultural lands to west of 2a on property 2
3a	woodlot on property 3 (including sliver of woodlot in property 4)
3b	thickets / old field / agricultural lands to west of 3a on property 3
5/6a	woodlot
5b	includes the old field to the east of woodlot 5/6, and the agricultural lands and the meadow marsh / reed marsh / old field on hill to west of woodlot 5/6
11	woodlot and retention pond on property 11
15	wetlands and wetland buffer along Strasburg Creek where existing Strasburg Road dead ends at very north end of study area

Strasburg Road Extension Detailed Design

Project Area

LGL LIMITED
environmental research associates

Project	TA4907	**Figure**	
Date	November, 2012	**Prepared By:**	KC
Scale	1:7,000	**Verified By:**	AHF

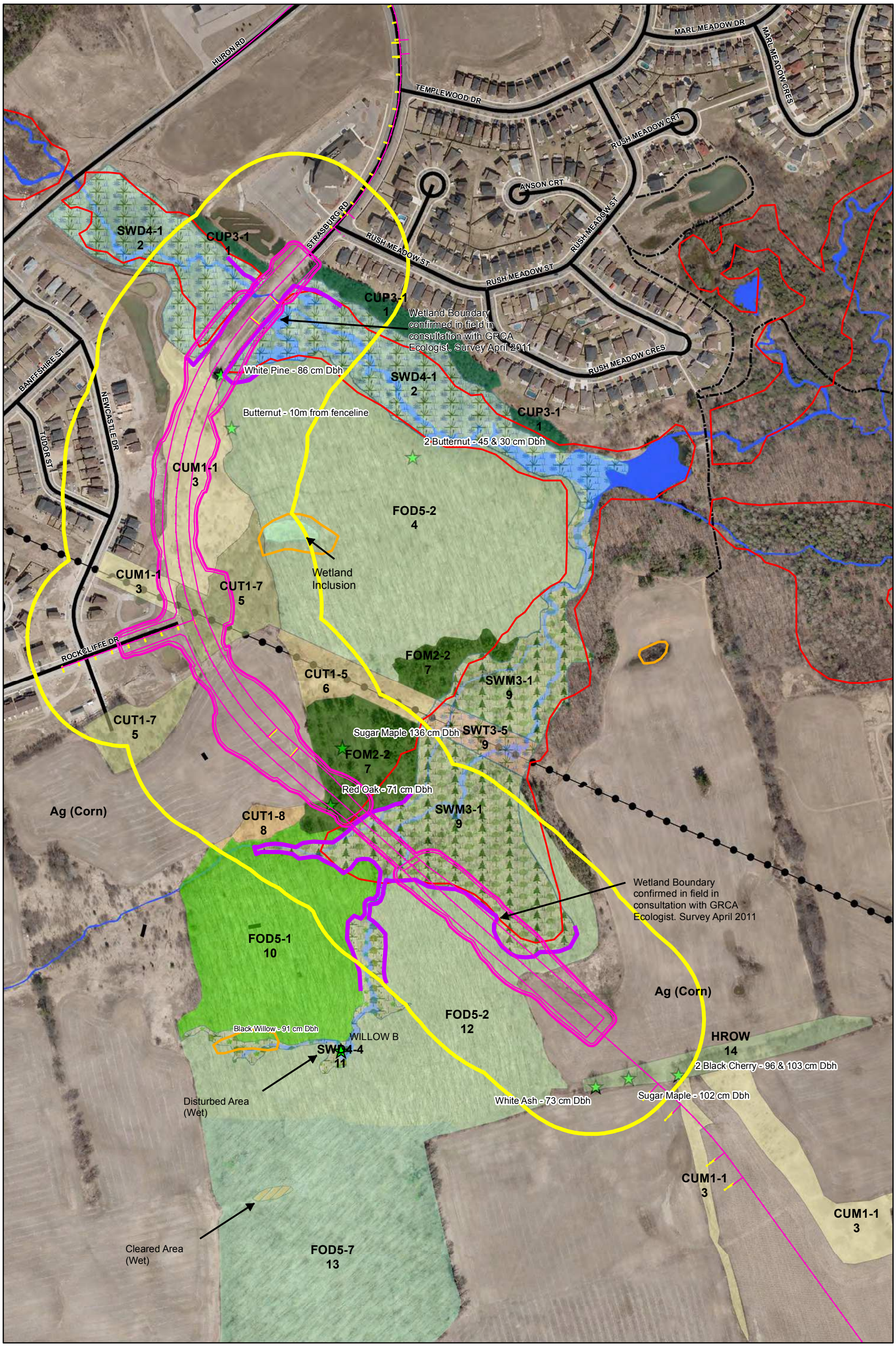
APPENDIX C
POND SUMMARY TABLE

Description of ponds investigated within project area

Pond ID	Description/Photo	2011/2012 Trapping Results
7 – Marsh just west of woodlot	This marsh area contained a small section of open water on April 22, 2010. On July 22, 2010, this pond was reduced to a 10 by 3m patch of shallow open water. Leopard Frog and Painted Turtle were documented at this site.  Photo taken April 22, 2010.	This pond was not trapped as it was removed from regulated habitat by MNR as per information received February 2011. Other species: Painted Turtle, Spring Peeper, Wood Frog, Grey Tree Frog, Green Frog
8- Potential breeding pond within woodlot (identified by LGL Limited through ortho photos)	n/a	LGL confirmed in April 2010 that this pond no longer exists (presumed to be ploughed under).
9- dug pond surrounded by agricultural field (identified by LGL Limited through ortho photos)	n/a	LGL confirmed in March 2011 that this pond no longer exists (ploughed over).
10 – Wet depression within woodlot	 Photo taken April 6, 2010.	No salamanders were trapped in this pond. Other species: Spring Peeper calling in low numbers (1 to 3 individuals)

Pond ID	Description/Photo	2011/2012 Trapping Results
13 – online pond along Strasburg Creek tributary	 Photo taken June 2, 2011.	No salamanders were trapped in this pond. Other species: Painted Turtle, Leopard Frog, Green Frog, minnows, Snapping Turtle, muskrat, beaver..
14 – online pond along Strasburg Creek tributary	 Photo taken April 6, 2010.	No salamanders were trapped in this pond. Other species: Leopard Frog, Green Frog, minnows.
15- dug agricultural pond (identified by LGL Limited through ortho photos)	n/a	LGL confirmed in April 2010 that this pond no longer exists.

APPENDIX D
ELC DATA USED IN EVALUATION OF SIGNIFICANT WILDLIFE HABITAT



Legend

- Study Area
- Proposed Road Design
- Removals Limits
- PSW Boundary Survey 2011
- Significant Tree

MNR Wetland Designations

- Provincially Significant Wetland (PSW)
- Un-Evaluated Wetland

Ecological Land Classification Designations

- FOD5-1 (Dry Fresh Sugar Maple Deciduous)
- FOD5-2 (Dry Fresh Sugar Maple Beech Deciduous)
- FOD5-7 (Dry Fresh Sugar Maple Black Cherry Deciduous)
- FOM2-2 (Dry Fresh White Pine Sugar Maple)
- SWM3-1 (Yellow Birch Conifer Mixed Swamp)
- SWD4-4 (Yellow Birch Mineral Deciduous Swamp)
- SWD4-1 (Willow Mineral Deciduous Swamp)
- SWT3-5 (Red-osier Dogwood Organic Thicket Swamp)
- CUP3-1 (Dry Fresh Red Pine Plantation)
- CUT1-5 (Red Raspberry Cultural Thicket)
- CUT1-7 (Hawthorn Buckthorn Cultural Thicket)
- CUT1-8 (Black Walnut-Elm-White Ash Cultural Thicket)
- CUM1-1 (Fresh Moist Cultural Meadow)
- HROW (Deciduous Hedgerow)

N

0 20 40 80 120 160 M

Scale: 1:4000

SNC·LAVALIN

Strasburg Road Extension
Natural Environment
Ecological Land Classification (ELC)

Date: September, 2010	File Number: 331650	Sub Code: ENVR
Figure Number: 2		Rev. 0

Path: H:\Arcview\Miscellaneous\331650StrasburgRoad\MXD\North_DD_Report\Strasburg_B_ELC_Sept2011.mxd

APPENDIX E
2012 TURTLE BASKING SURVEY RESULTS

Table 1: 2012 Blanding's Turtle field work effort and results summary (LGL Limited)

Date	Staff and Description of Effort	Summary
April 24 2:40pm	AHF Basking surveys	• No turtles observed during site visit.
May 1 6pm	AHF Basking surveys	• No turtles observed during site visit.
May 10 2pm	AHF Basking surveys Set wildlife camera	• No turtles observed during site visit;
May 16 6:30pm	AHF Basking surveys Re-set wildlife camera	• No turtles observed during site visit; • Other species visually observed include Green Frog, evidence of recent beaver activity, tadpoles; • 46 Camera files reviewed, species documented included deer.
May 30 12:30pm Air temp 20C; Water temp 20C in shallow edge of pond.	AHF Basking surveys Picked up wildlife camera	• No turtles observed during site visit; • 2870 camera photos reviewed – photos dated May 16 to May 29; • In review of camera files, a single turtle was observed and was identified as a Snapping Turtle foraging (See Photo 1 below); • In review of camera files, no basking turtles observed; • Other species documented in camera files muskrat, Green Frog, dragon fly, sandpiper, beaver, deer.

AHF – Allison Featherstone, Hons. B.Sc., Sr. Planning Ecologist

Basking surveys - Area of investigation limited to online ponds on main Strasburg Creek channel. Ponds were searched with binoculars during sunny conditions. All banks, shores, emergent vegetation and debris were searched visually (with binoculars) for basking turtles. It is noted that the previous documentation of basking Painted Turtles is in an area that tends to only get late day sun (after 2pm).

Wildlife Camera – Moultrie Brand, Game Spy, Infrared Camera (no flash).

Wildlife camera representative images

Image 1 – Snapping Turtle

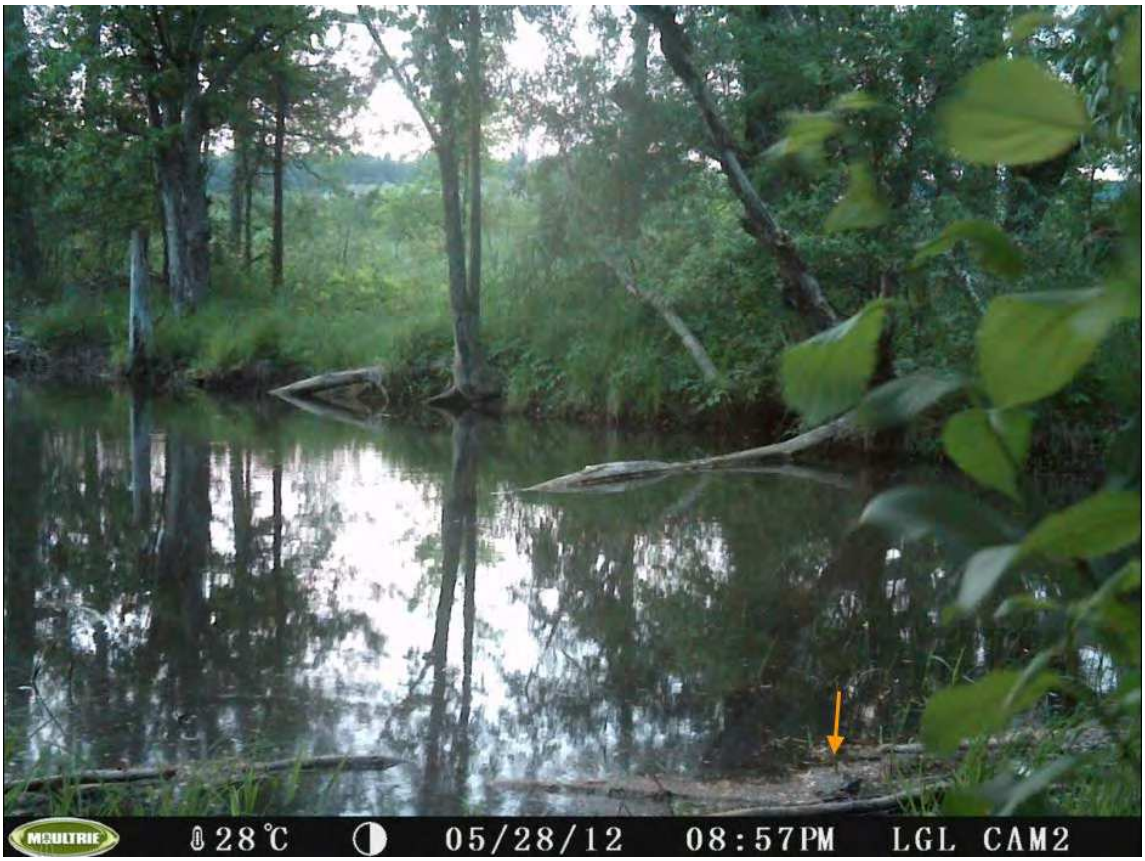


Image 2 – Green Frog