PART A: LAUZON PARKWAY

NATURAL ENVIRONMENT - EXISTING CONDITIONS

The proposed improvement works for the Lauzon Parkway will occur between the E.C. Row Expressway to the north and Highway 3 to the south[1]. A description of the improvement works is presented in Section A.6 of the ESR.

Field surveys of the corridor were conducted in 2011 and 2012 to characterize existing conditions and to identify species and habitats of conservation concern. The field surveys were conducted on the existing road right-of-way and on adjacent lands for which permission to enter had been granted. The surveys were conducted on optimal dates to document resident plants, butterflies, dragonflies, damselflies, reptiles, amphibians, birds, and mammals. Fish communities in the study corridor were characterized with reference to DFO, OMNR, and Essex Region Conservation Authority records.

A description of field protocols and field chronology are presented in PART D of this appendix. A summary of the Species at Risk, provincially rare species (S1-S3), and area sensitive birds, that were recorded within the study corridor is presented below.

Fifteen Species at Risk and sixteen provincially rare species (S1-S3) were documented within the study corridor (Exhibit F-1), including one SAR insect, four SAR reptiles, seven SAR birds, and, three SAR plants.

The distribution and abundance of the species of conservation concern within the corridor are presented in the following exhibits: Exhibit F-2 (plants), Exhibit F–3 (insects), Exhibit F–4 (reptiles), Exhibit F-5 (birds), and, Exhibit F-6 (fish). The botanical survey units within the study corridor are shown on Exhibit F-7. The wildlife habitat units within the study corridor are shown on Exhibit F-8. The watercourse crossings are shown on Exhibit F-9.

As noted in Section A.4.4 of the ESR, the following Significant Natural Heritage features (ERCA 2008, ERCA 2011) occur within the study corridor (Exhibits F-7, F-8 and F-9):

- CNHS #10 “Shaughnessy Cohen Woods” (Significant Woodland, Significant Valleyland) (located adjacent to the study corridor, north of E.C. ROW Expressway);
- CNHS #39 “Windsor Airport Woodlands” (Significant Woodland)
- Windsor Airport Swamps PSW (generally coincides with CNHS # 39)
- CNHS #40 “Sundrop Bend”

[1] The study area within which potential alignments were generated expanded through the course of the EA study from that originally defined for purposes of undertaking ecological field investigations. As a result, there is a small portion of the Lauzon Parkway alignment near Sexton Sideroad that will require follow up field investigations during detailed design in order to confirm existing conditions, impacts and mitigation. Areas requiring further work are limited to roadside environments where conditions are expected to be similar to all other roadside environs that have been investigated.

- CNHS #43 “Ireland Farm Woods”
- CNHS #44 “Wagon Wheel Woods”
- CNHS #45 “Baseline Woods”
- Tecumseh NHS Site #16 “McCarthy Woods” (Significant Woodland)

Exhibit F-1: PART A Lauzon Parkway Study Corridor - Summary of Species at Risk, S1-S3 Species and Area Sensitive Bird Species

Life Form	Common Name	Scientific Name	GRank	NRank	SRank	COSEWIC	COSSARO	SAR Status	Area Sensitive
Insect (Butterfly)	Monarch	*Danaus plexippus*	G4	NZB	S4	SC	SC	SC	
Insect (Butterfly)	Duke's Skipper	*Euphyes dukesi*	G3	-	S2				
Insect (Butterfly)	Giant Swallowtail	*Papilio cresphontes*	G5	N2N3	S2				
Insect (Butterfly)	Common Sootywing	*Pholisora catullus*	G5	N3N4	S3S4				
Insect (Butterfly)	Delaware Skipper	*Anatrytone logan*	G5	N4	S3S4				
Insect (Butterfly)	Little Glassywing	*Pompeius verna*	G5	N4	S3S4				
Insect (Damselfly)	River Bluet	*Enallagma anna*	G5	-	S2				
Insect (Damselfly)	Double-striped Bluet	*Enallagma basidens*	G5	-	S3				
Insect (Dragonfly)	Unicorn Clubtail	*Arigomphus villosipes*	-	-	S2S3				
Insect (Dragonfly)	Mottled Darner	*Aeshna clepsydra*	G4	-	S3				
Reptile (Turtle)	Northern Map Turtle	*Graptemys geographica*	G5	N4	S3	SC	SC	SC	
Reptile (Turtle)	Snapping Turtle	*Chelydra serpentina*	G5	N5	S3	SC	SC	SC	
Reptile (Snake)	Eastern Foxsnake (Carolinian and Great Lakes/St. Lawrence)	*Elaphe gloydi*	G3	N3	S3	END	END	END	
Reptile (Snake)	Butler's Gartersnake	*Thamnophis butleri*	G4	N2	S2	END	END	END	
Bird	Barn Swallow	*Hirundo rustica*	G5	N5B	S5B, SZN	THR	THR	THR	
Bird	Bobolink	*Dolichonyx oryzivorus*	G5	N5B	S4B, SZN	THR	THR	THR	
Bird	Chimney Swift	*Contopus virens*	G5	N5B	S5B, SZN	THR	THR	THR	
Bird	Eastern Meadowlark	*Sturnella magna*	G5	N5B	S5B, SZN	THR	THR	THR	
Bird	Common Nighthawk	*Chordeiles minor*	G5	-	S5B, SZN	THR	SC	SC	
Bird	Wood Thrush	*Hylocichla mustelina*	G5	N5B	S5B, SZN	THR			
Bird	Eastern Wood-pewee	*Contopus virens*	G5	N5B	S5B, SZN	SC			
Bird	American Redstart	*Setophaga ruticilla*	G5	N5B	S5B, SZN				Y

Life Form	Common Name	Scientific Name	GRank	NRank	SRank	COSEWIC	COSSARO	SAR Status	Area Sensitive
Bird	Blue-gray Gnatcatcher	*Polioptila caerulea*	G5	N4B	S4B, SZN				Y
Bird	Cooper's Hawk	*Accipiter cooperii*	G5	N4B N4N	S4B, SZN				Y
Bird	Northern Harrier	*Circus cyaneus*	G5	N5B, 4N4	S4B, SZN				Y
Bird	Hairy Woodpecker	*Picoides villosus*	G5	N5	S5				Y
Bird	Least Flycatcher	*Empidonax minimus*	G5	N5B	S5B, SZN				Y
Bird	Savannah Sparrow	*Passerculus sandwichensis*	G5	N5B	S5B, SZN				Y
Bird	Scarlet Tanager	*Piranga olivacea*	G5	N5B	S5B, SZN				Y
Bird	White-breasted Nuthatch	*Sitta carolinensis*	G5	N5	S5				Y
Plant	Shumard Oak	*Quercus shumardii*	G5	N3	S3	SC	SC	SC	
Plant	Climbing Prairie Rose	*Rosa setigera*	G5	N3	S3	SC	SC	SC	
Plant	Riddell's Goldenrod	*Solidago riddellii*	G5	N2	S3	SC	SC	SC	
Plant	Compass Plant	*Silphium laciniatum*	G5	N?	S1				
Plant	Illinois Greenbrier	*Smilax illinoensis*	G4?	N?	S2?				
Plant	Hairy-fruited Sedge	*Carex trichocarpa*	G4	N3	S3				
Plant	Big Shellbark Hickory	*Carya laciniosa*	G5	N3	S3				
Plant	Winged Lythrum	*Lythrum alatum*	G5	N3	S3				
Plant	Stiff Goldenrod	*Solidago rigida*	G5T5	N?	S3				
Plant	Missouri Ironweed	*Vernonia missourica*	G4G5	N1N3	S3?				
Plant	Tall Boneset	*Eupatorium altissimum*	G5	N?	SE1				

Exhibit F-2: PART A Lauzon Parkway Study Corridor - Summary of Plant Species of Conservation Concern

Common Name	Scientific Name	GRANK	NRANK	SRANK	COSEWIC	COSSARO[4]	SARA Status	Unit 1	Unit 6	Unit 7	Unit 8	Unit 9	Unit 10	Unit 11	Unit 12	Unit 13	Unit 14	Unit 15	Unit 18	Unit 21	Unit 22	Unit 23	Unit 24	Unit 25
Shumard Oak	*Quercus shumardii*	G5	N3	S3	SC	SC	SC		3	2	3			3										
Climbing Prairie Rose	*Rosa Setigera*	G5	N3	S3	SC	SC	SC	3 patches; 2, 3, and 4 stems	32 stems distributed through unit 2 patches with high density: 20m^2 and 4m^2	3 small patches: 4m^2 , 18m^2 and 4m^2	1 small patch: 4m^2				Approx. 65 stems distributed along 22m of roadside		10 stems	2mx3m	Approx. 60 stems	1 large patch: 1125 m^2	Approx. 120 stems			4 stems distributed through unit 2 patches with high density: 12m^2 each
Riddell's Goldenrod	*Solidago riddellii*	G5	N2	S3	SC	SC	SC														3 patches: 60m^2 , 225m^2 and 375m^2	distributed along 750m of roadside		
Compass Plant	*Silphium laciniatum*	G5	N?	S1																				18 leaves
Illinois Greenbrier	*Smilax illinoensis*	G4?	N?	S2?											12 stems									
Hairy-fruited Sedge	*Carex trichocarpa*	G4	N3	S3																	1 large patch: 120 m^2			
Big Shellbark Hickory	*Carya laciniosa*	G5	N3	S3											18 stems						4 stems			
Winged Lythrum	*Lythrum alatum*	G5	N3	S3												1 small patch: 0.5m^2								
Stiff Goldenrod	*Solidago rigida*	G5T5	N?	S3								3 stems												
Missouri Ironweed	*Vernonia missourica*	G4G5	N1N3	S3?				90 stems distributed through unit 2 patches with high density: 20m^2 and 100m^2	5 stems			Approx. 75 stems			3 stems		6 stems	15 stems			Approx. 1,475 stems			
Tall Boneset	*Eupatorium altissimum*	G5	N?	SE1								1 large patch: 120 m^2												Approx. 90 stems
Counts (number of species)		**11**	**11**	**11**	**3**	**3**	**3**	**2**	**2**	**1**	**1**	**3**	**0**	**0**	**4**	**1**	**2**	**2**	**1**	**1**	**4**	**1**	**0**	**3**

- Stem counts were conducted where densities of plants were low and where plant structure allowed
- Areas were calculated where densities or were such that individual stems counts were not feasible
- Linear length were used within roadside areas where plants distribution was narrow (<2m)

Exhibit F-3: PART A Lauzon Parkway Study Corridor - Summary of Insect Species of Conservation Concern

Common Name	GRANK	SRANK	COSEWIC	MNR	SARA Status	Schedule	Unit 1	Unit 3	Unit 4	Unit 5	Unit 7	Unit 8	Unit 9	Unit 10	Unit 21	Unit 22	Unit 23	Unit 24	Unit 25	Unit 26	Unit 27
Monarch	G4	S4	SC	SC	SC	1		1		3	3	8	2					5	1		
Duke's Skipper	G3	S2										32					5				
Giant Swallowtail	G5	S2					2		1	3		9					1	2			
River Bluet	G5	S2								5	3										
Unicorn Clubtail	G5	S2S3							1												
Double-striped Bluet	G5	S3										1									
Mottled Darner	G4	S3															1				
Common Sootywing	G5	S3S4										1									
Delaware Skipper	G5	S3S4																	1		
Little Glassywing	G5	S3S4										3									
Counts (number of species)	**10**	**10**	**1**	**1**	**1**	**1**	**1**	**1**	**2**	**3**	**2**	**6**	**1**	**0**	**0**	**0**	**3**	**2**	**2**	**0**	**0**

Exhibit F-4: PART A Lauzon Parkway Study Corridor - Summary of Reptile and Amphibian Species of Conservation Concern

Common Name	GRANK	SRANK	COSEWIC	MNR	SARA Status	Schedule	MNR Area Sensitive	NHIC Tracked	Unit 1	Unit 3	Unit 4	Unit 5	Unit 7	Unit 8	Unit 9	Unit 10	Unit 21	Unit 22	Unit 23	Unit 24	Unit 25	Unit 26	Unit 27
Snapping Turtle	G5	S3	SC	SC	No Status	No schedule		N			1			1									
Northern Map Turtle	G5	S3	SC	SC	SC	1	X	Y			1												
Eastern Foxsnake (Carolinian and Great Lakes/St.Lawrence)	G3	S3	END	END	END	1		Y															1
Butler's Gartersnake	G4	S2	END	END	END	1		Y												1	2		
Counts (number of species)	**4**	**4**	**4**	**4**	**4**	**3**	**1**	**3**	**0**	**0**	**2**	**0**	**0**	**1**	**1**	**0**	**0**	**0**	**0**	**1**	**1**	**0**	**1**

Exhibit F-5: PART A Lauzon Parkway Study Corridor - Summary of Bird Species of Conservation Concern

Common Name	Scientific Name	GRANK	SRANK	COSEWIC	MNR	SARA Status	Schedule	MNR Area Sensitive	Breeding Status	Unit 1	Unit 3B	Unit 4	Unit 5	Unit 7	Unit 8	Unit 9	Unit 10	Unit 21	Unit 22	Unit 23	Unit 24	Unit 25	Unit 26	Unit 27
										Highest #	Highest #	Highest #	Highest #	Highest #	Highest #	Highest #	Highest #	Highest #	Highest #	Highest #	Highest #	Highest #	Highest #	Highest #
Barn Swallow	*Hirundo rustica*	G5	S5B, SZN	THR	THR	No Status	No schedule		Confirmed	4	2	6	10	2	2	2					6	5		2
Bobolink	*Dolichonyx oryzivorus*	G5	S4B, SZN	THR	THR	No Status	No schedule		Probable				2	7	8									
Chimney Swift	*Chaetura pelagica*	G5	S5B, SZN	THR	THR	THR	1		Probable		2	4	1			4			1		15	2		
Eastern Meadowlark	*Sturnella magna*	G5	S5B, SZN	THR	THR	No Status	No schedule		Probable													1	1	
Common Nighthawk	*Chordeiles minor*	G5	S4B, SZN	THR	SC	THR	1		Possible															
Wood Thrush	*Hylocichla mustelina*	G5	S5B, SZN	THR					Probable									1	1	3				
Eastern Wood-pewee	*Contopus virens*	G5	S5B, SZN	SC					Probable	1			2	1	2			1		3		1		
American Redstart	*Setophaga ruticilla*	G5	S5B, SZN					X	Probable										1	1				1
Blue-gray Gnatcatcher	*Polioptila caerulea*	G5	S4B, SZN					X	Probable						2					2				
Cooper's Hawk	*Accipiter cooperii*	G5	S4B, SZN					X	Confirmed	2			1		1									
Hairy Woodpecker	*Picoides villosus*	G5	S5					X	Probable						1									
Least Flycatcher	*Empidonax minimus*	G5	S5B, SZN					X	Possible											1				
Northern Harrier	*Circus cyaneus*	G5	S4B, SZN					X	Possible					1										
Savannah Sparrow	*Passerculus sandwichensis*	G5	S5B, SZN					X	Confirmed	1		1			3							1	1	
Scarlet Tanager	*Piranga olivacea*	G5	S5B, SZN					X	Possible											1				
White-breasted Nuthatch	*Sitta carolinensis*	G5	S5					X	Probable										1					
Counts (number of species)		**16**	**16**	**7**	**5**	**2**	**2**	**9**	**N/A**	**4**	**2**	**3**	**5**	**4**	**7**	**2**	**0**	**2**	**4**	**6**	**2**	**5**	**2**	**2**

Exhibit F-6: PART A Lauzon Parkway Study Corridor - Watercourse Crossing Summary (from north to south)

Waterbody	Draft DFO Drain Classification & Flow (P/I/E)	Location of Drain Investigated	Channel Description Summary	Substrate Type	Vegetation (Riparian & In-stream)	Thermal Regime (Warm/ Cool/ Cold)	MNR Interpretation of the Fish and Fish Habitat Sensitivity (Low, Moderate, High or Unknown)	MNR Specified In-water Timing Window for Construction	Directly Support a Fishery (Direct, Indirect or None) & Type	Fish Species Present
Russette Drain	F Class – Channelization Intermittent or Ephemeral	West and east of the South Service Road crossing and at the outlet into the Little River *City of Windsor*	Flows east around a Coco Paving equipment yard and crosses under South Service Road before entering the E.C. ROW Parkway right-of-way where it receives additional flow associated with highway drainage. The drain continues east under on and off ramps before discharging over a series of rip-rap step pools with vertical drops of ~0.2m into the Little River. Dense vegetation was present in-stream and along the channel banks. The channel was ~2.3m wide and 0.15m deep. There was an abundant amount of refuse in channel with an oily sheen on the water surface by the Coco Paving yard.	Clay/silt with rip-rap at Little River outlet	Riparian: willows, *phragmites sp.*, grass In-stream: *phragmites sp.*	Warm	Low	July 1 – Mar 15		None observed at crossing due to turbid water.
McGill Outlet (Drain)	F Class – Channelization Intermittent or Ephemeral	Lauzon Parkway crossing South of railroad crossing to north of Munich Drive crossing *City of Windsor*	The drain flows east under Lauzon Parkway in a defined channel in a hedgerow between agricultural fields with woody riparian vegetation along the banks. Morphology is primarily 'flat' with woody debris and minor bank erosion present. The channel was ~2.2m wide and 0.2m deep. South of railroad crossing the drain flows in a defined channel in a hedgerow between to two agricultural fields with dense herbaceous vegetation present in-stream and along the channel banks. The channel was ~2.5m wide and 0.2m deep. North of railroad crossing the drain flows in defined channel between the railroad and an industrial park with dense in-stream vegetation and eroding banks (slumping). The channel was ~1.5m wide and 0.1m deep. The drain receives additional flow from an unknown drain that flows north along the hydro plant, crosses the railroad tracks and continues west before discharging into the McGill Outlet. The McGill Outlet discharges into the Little River north of Munich Drive.	Clay/sand/silt Clay/silt	Riparian: grass, meadow sp., ash, dogwood, hawthorn, *phragmites sp.* In-stream: sedges Riparian-grass, willows, meadow sp. In-stream: *phragmites sp.*, grass, cattails, sedges	Warm	Low	July 1 – Mar 15	Direct (background data) baitfish	Fish observed during field investigations – north of Railroad. Fathead Minnow Creek Chub Central Mudminnow
Unknown Drain – Tributary of McGill Outlet	Not classified on map	North from the hydro plant to the railroad crossing, west in the railroad ditch on north side to the outlet into the McGill Outlet *City of Windsor*	The drain flows north under the railroad tracks and then continues west to the outlet into the McGill Outlet. The channel consisted of minimal flow through dense vegetation with a width of ~0.25m and a depth of 0.03m. At the culvert outlet under the railroad crossing, the channel has been lined with gabion baskets filled with rip-rap.	Silt/clay/ gravel	Riparian: grass, meadow sp., red osier dogwood In-stream: grass, *phragmites sp.*	Warm	Low	July 1 – Mar 15		None observed.
Rivard Drain	F Class – Channelization Intermittent or Ephemeral	West of Lauzon Parkway crossing to the outlet at Little River *City of Windsor*	The drain flows east under Lauzon Parkway in a newly excavated channel within the parkway ROW before it outlets into the Little River. No vegetation was present as the new channel as it is lined with rip-rap. Upstream and downstream of right-of-way, the drain consists of a narrow defined channel through an elm forest with little understory vegetation. Sparse in-stream vegetation and moderate woody debris was present. The morphology consists of riffle/run due to low flow conditions. The channel was ~1.5m wide and 0.1m deep.	Clay/silt/ cobble/ boulder	Riparian: elm, dogwood In-stream: sparse submergents	Warm	Low	July 1 – Mar 15		None observed.

WATERBODY	DRAFT DFO DRAIN CLASSIFICATION & FLOW (P/I/E)	LOCATION OF DRAIN INVESTIGATED	CHANNEL DESCRIPTION SUMMARY	SUBSTRATE TYPE	VEGETATION (RIPARIAN & IN-STREAM)	THERMAL REGIME (WARM/ COOL/ COLD)	MNR INTERPRETATION OF THE FISH AND FISH HABITAT SENSITIVITY (LOW, MODERATE, HIGH OR UNKNOWN)	MNR SPECIFIED IN-WATER TIMING WINDOW FOR CONSTRUCTION	DIRECTLY SUPPORT A FISHERY (DIRECT, INDIRECT OR NONE) & TYPE	FISH SPECIES PRESENT
North Townline Highway Drain	F Class – Channelization Intermittent or Ephemeral	Drain origin east along County Road 42 to the outlet into the Little River *City of Windsor*	The drain flows east in the ditch along the south side of County Road 42 to the Little River past active agricultural fields, residential and commercial properties with numerous of entrance culverts. The riparian vegetation consists of trees, shrubs and herbaceous vegetation. Dense in-stream vegetation was present in sections of the drain. The channel was ~1.2m wide and 0.2m deep.	Clay/silt/ sand/gravel/muck	Riparian: grass, willows, shrubs, coniferous trees, meadow sp. In-stream: *phragmites sp.*, cattails, rush	Warm	Low	July 1 – Mar 15		None observed in drain due to turbid water.
Watson Drain	C Class – Channelization Permanent	North from Highway 401 to outlet into the Little River *City of Windsor*	Flows in the ditch along the north side of10th Concession to County Road 42 crossing. North of County Road, 42 it flows through a hedgerow between an agricultural field and a landscaping business storage yard to the Little River. South of County Road 42 the drain flows in the road side ditch. Morphology consists of 'flats' with sparse in-stream vegetation. The channel was ~1.5m wide and 0.15 deep. North of County Road 42 the drain flows in the ditch along the north side of County Road 42 for approximately 80m before flowing north to the Little River. Morphology is dominated by 'flats' with a few riffles over woody debris. The channel has dense herbaceous bank vegetation (east flow) but transitions to woody (trees) in hedgerow (north flow) with steep muddy banks to the Little River. The channel was ~2.8m wide and 0.3m deep.	Clay/silt/ sand/ detritus	Riparian: grass, *phragmites sp.*, meadow sp., ash, oak, poplar, Manitoba maple In-stream: cattail, *phragmites sp.*	Warm	Low	July 1 – Mar 15		None observed at crossing due to turbid water.
Little River	E Class – Channelization Permanent	Twin Oaks Drive Crossing to EC ROW Parkway *City of Windsor*	The river flows north in a wide defined channel through an industrial park. Overhanging and in-stream vegetation line the channel. Morphology is mainly 'flat' with a single riffle at EC ROW Parkway crossing. The channel was ~3.5m wide and 0.5m deep.	Sand/ gravel/ clay/silt	Riparian: grass, meadow sp., willow, red osier dogwood, *phragmites sp.* In-stream: cattail, *phragmites sp.*	Warm	Low	July 1 – Mar 15	Direct (background data) bait and panfish	Bluegill Bluntnose Minnow Central Mudminnow Common Carp Common Shiner Creek Chub Gizzard Shad Pumpkinseed Rock Bass White Sucker Yellow Bullhead
	E Class – Channelization Permanent	Lauzon Road Crossing *City of Windsor*	The river flows west to east under Lauzon Road through a defined channel between residential properties and scrub/agricultural land. Two weirs are present under the bridge with vertical drops of ~0.15m. Downstream of the crossing, morphology primarily consisted of riffle/pool/flat while upstream, morphology was 'flat'. Overhanging vegetation was present with little in-stream vegetation. A single erosion point upstream along the outside bank at a bend in the channel. The river appears to experience flashy flows as evidence of past flooding was present. The channel was ~3m wide and 0.3m deep.	Sand/ gravel/ cobble (rip-rap)/silt	Riparian-willow, grass, meadow sp. In-stream: rushes	Warm	Low	July 1 – Mar 15	Direct (background data) bait, pan and sportfish	Banded Killifish Bluntnose Minnow Central Mudminnow Common Carp Creek Chub Emerald Shiner Fathead Minnow Green Sunfish Pumpkinseed Round Goby Spottail Shiner Striped Shiner White Sucker Yellow Perch

WATERBODY	DRAFT DFO DRAIN CLASSIFICATION & FLOW (P/I/E)	LOCATION OF DRAIN INVESTIGATED	CHANNEL DESCRIPTION SUMMARY	SUBSTRATE TYPE	VEGETATION (RIPARIAN & IN-STREAM)	THERMAL REGIME (WARM/ COOL/ COLD)	MNR INTERPRETATION OF THE FISH AND FISH HABITAT SENSITIVITY (LOW, MODERATE, HIGH OR UNKNOWN)	MNR SPECIFIED IN-WATER TIMING WINDOW FOR CONSTRUCTION	DIRECTLY SUPPORT A FISHERY (DIRECT, INDIRECT OR NONE) & TYPE	FISH SPECIES PRESENT
Little River	E Class – Channelization Permanent	Watson Drain Outlet *City of Windsor*	The river flows north between agricultural fields in a defined channel. Morphology is dominated by 'flats'. Abundant woody debris and refuse is present along the banks. The channel was well shaded with trees resulting in no herbaceous understory. Bank erosion consisting of exposed tree roots was present. The river appears to experience flashy flows as evidence of past flooding over the banks was present. The channel was ~5.5m wide and >1m deep.		Riparian: cottonwood, Manitoba maple, oak, ash, elm In-stream: channel was flooded	Warm	Low	July 1 – Mar 15	Direct (background data)	None observed at crossing due to turbid water.
	E Class – Channelization Permanent	Lauzon Parkway Crossing *City of Windsor*	The river flows east through the crossing in a wide defined channel with vegetated banks but with no in-stream vegetation. Morphology is dominated by 'flats' with one riffle under the bridge crossing. Woody debris and undercut banks were present to provide cover. The river appears to experience flashy flows as evidence of past flooding over the banks was present. The channel was ~4m wide and 0.4m deep.	Sand/clay/ silt/cobble/ boulder	Riparian: dogwood, trees, grass, meadow sp. In-stream: none	Warm	Low	July 1 – Mar 15	Direct (background data)	None observed at crossing due to turbid water.
	E Class – Channelization Permanent	County Road 42 Crossing *City of Windsor*	The river flows north through the crossing in a defined channel between agricultural fields and the airport lands with woody riparian vegetation and bank erosion present. Morphology is dominated by 'flats' with no in-stream cover. It appears that high flows have cleared the channel of all structures as the channel has an empty u-shape. The river appears to experience flashy flows as evidence of past flooding was present. The channel was ~3.4m wide and 0.3m deep.	Consolidated clay/sand/ gravel/silt	Riparian: willow, ash Manitoba maple, hawthorn, elm, rose In-stream: none	Warm	Low	July 1 – Mar 15	Direct (background data and field investigations) bait and panfish	Banded Killifish Bluntnose Minnow Central Mudminnow Creek Chub Fathead Minnow Rock Bass Spotfin Shiner Striped Shiner White Sucker
Little 10th Concession Drain	F Class – Channelization Intermittent or Ephemeral	North of County Road 42 to outlet into Little River along Lauzon Road *City of Windsor*	From County Road 42 the drain flows north in ditch along east side of Lauzon Road to the Little River. The channel contains dense vegetation in channel with little flow and refuse present. The channel was ~0.9m wide and 0.1m deep.	Clay/silt/ Gravel/sand	Riparian: meadow sp., shrubs, few trees In-stream: cattails, *phragmites sp.*, duckweed	Warm	Low	July 1 – Mar 15	Direct baitfish	Fish observed in ditch north of County Road 42 during field investigations.
Sullivan Creek Drain	F Class – Channelization Intermittent or Ephemeral	10th Concession Road crossing *Town of Tecumseh*	At the 10th Concession road crossing the drain flows north in a defined channel between agricultural fields. Morphology is 'flat'. Cattails were present in the channel with moderate riparian vegetation (woody dominated). Woody debris was sparse with the channel which was ~2.5m wide and 0.2m deep.	Clay/sand/ silt	Riparian: grass, spruce, apple, cedar, Manitoba maple, red osier dogwood, hawthorn, ash, elm In-stream: cattails	Warm	Low	July 1 – Mar 15	Direct baitfish	Fish observed during field investigations – North Talbot Road and Highway 3.
		North Talbot Road crossing *Town of Tecumseh*	At the North Talbot road crossing the drain flows north in a defined channel between agricultural fields. Morphology is 'flat'. Dense woody riparian vegetation was present along channel banks with sparse cattails and woody debris present in the channel. The channel was ~2.3m wide and 0.17m deep.	Clay/sand/ gravel/silt	Riparian: meadow sp., hawthorn, ash, elm, sumac In-stream: cattails, grass					
		Highway 3 crossing *Town of Tecumseh*	At the Highway 3 crossing the drain flows north in a defined channel with diffuse flow through dense in-stream vegetation between agricultural fields. Some trees and shrubs were present along the banks but mostly herbaceous species dominated the riparian vegetation. The channel was ~0.4m wide and 0.1m deep.	Clay/sand/ gravel/silt	Riparian: dogwood, maple, cottonwood, grass, meadow sp. In-stream: cattails, *phragmites sp.*					

Waterbody	Draft DFO Drain Classification & Flow (P/I/E)	Location of Drain Investigated	Channel Description Summary	Substrate Type	Vegetation (Riparian & In-stream)	Thermal Regime (Warm/ Cool/ Cold)	MNR Interpretation of the Fish and Fish Habitat Sensitivity (Low, Moderate, High or Unknown)	MNR Specified In-water Timing Window for Construction	Directly Support a Fishery (Direct, Indirect or None) & Type	Fish Species Present
Unknown Drain – Tributary of Sullivan Creek Drain	Not classified on map	East of Sexton Road at drain origin *Town of Tecumseh*	Likely flows east (flow not detected) from the drain origin near Sexton Side Road. The drain consisted of a defined channel in a hedgerow between agricultural fields with dense woody and herbaceous vegetation in the channel. The channel was ~2m wide and 0.15m deep.	Detritus/ muck/clay	Riparian: dogwood, trees, grass, meadow sp. In-stream: cattail, *phragmites sp.*, dogwoods	Warm	Low	July 1 – Mar 15		None observed.
Gzowski Drain	F Class – Channelization Intermittent or Ephemeral	Drain origin at the Highway 3 crossing *Town of Tecumseh*	The drain originates ~15m south of Highway 3 as runoff from agricultural fields converges with highway drainage. The drain flows north through a defined channel with dense *phragmites sp.* in the highway right-of-way but with sparse in-stream vegetation north of the right-of-way as dense woody riparian vegetation shades the channel. Abundant woody debris and refuse present in the channel which consisted of flat morphology. The channel was ~2m wide and 0.15m deep.	Clay/sand/ silt/detritus	Riparian: maple, hawthorns In-stream: *phragmites sp.*	Warm	Low	July 1 – Mar 15	Direct baitfish	Fish observed during field investigations.
Unknown Drain – Tributary of Gzowski Drain	F Class – Channelization Intermittent or Ephemeral	North to Highway 3 and then east along Highway 3 *Town of Tecumseh*	The drain flows north in a defined channel between an agricultural field and a residential property before discharging into the ditch along the south side of Highway 3. The channel contains minimal flow through dense cattails with moderate woody riparian vegetation. The channel was ~1.3m wide and 0.08m deep. Along the south side of Highway 3, the ditch contained minimal flow and was ~0.75m wide with a depth of 0.02m. The water flow dries up approximately 200m to the east as the ditch becomes a manicured lawn.	Clay/silt	Riparian: crops, grass, spruce cedar, elm, meadow sp. In-stream: cut grass, cattails	Warm	Low	July 1 – Mar 15		None observed in drain due to turbid water.

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Legend

- Lauzon Parkway Study Area
- Botanical Survey
- Windsor Airport Swamps PSW
- Permanent Streams/Drains
- Intermittent Streams/Drains
- Designated Natural Heritage Sites

CNHS #10 Shaughnessy Cohen Woods
CNHS #39 Windsor Airport Woodlands
CNHS #40 Sundrop Bend
CNHS #41 Fairbairn Woods
CNHS #43 Ireland Farm Woods
CNHS #44 Wagon Wheel Woods
CHNS #45 Baseline Woods
NHS #16 McCarthy Woods (Tecumseh)

Lauzon Road
Lauzon Pkwy
Souillere Drain
Little 10th Concession Drain
St. Louis Drain
10th Concession Drain
Watson Drain
Watson Drain (Reicher Drain)
Russette Drain
McGill Ouvet
Rivard Drain
CNHS #10
CNHS #39
CNHS #40
CNHS #43
CNHS #44
CNHS #45
Sullivan Creek Drain
Hurley Relief Drain
Sexton Sideroad
10th Concession
9th Concession
401

Lauzon Parkway Improvements Class EA Study
PART A - Lauzon Parkway Study Corridor
Botanical Survey Units

ecoplans
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0 250 500
meters
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N

Date: August 2013
Project No: 3211012
Exhibit No: F-7

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Legend

- Lauzon Parkway Study Area
- Wildlife Survey Units
- Windsor Airport Swamps PSW
- Permanent Streams/Drains
- Intermittent Streams/Drains
- Designated Natural Heritage Sites

CNHS #10 Shaughnessy Cohen Woods
CNHS #39 Windsor Airport Woodlands
CNHS #40 Sundrop Bend
CNHS #41 Fairbairn Woods
CNHS #43 Ireland Farm Woods
CNHS #44 Wagon Wheel Woods
CHNS #45 Baseline Woods
NHS #16 McCarthy Woods (Tecumseh)

Lauzon Road
Lauzon Pkwy
Souillere Drain
St. Louis Drain
Little 10th Concession Drain
10th Concession Drain
Watson Drain
Watson Drain (Reicher Drain)
Russette Drain
McGill Outlet
Rivard Drain
Baseline Rd
10th Concession
Little River
Sullivan Creek Drain
Hurley Relief Drain
Sexton Sideroad
CNHS #10
CNHS #39
CNHS #40
CNHS #43
CNHS #44
CNHS #45
NHS #16
117
42
17
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ecoplans
A member of MMM GROUP

Lauzon Parkway Improvements Class EA Study
PART A - Lauzon Parkway Study Corridor
Wildlife Survey Units

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Date: August 2013
Project No: 3211012
Exhibit No: F-8

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Legend

- Lauzon Parkway Study Area
- Natural Heritage (City of Windsor OPA #60)
- OpenSpace (City of Windsor OPA #60)
- Provincially Significant Wetlands (Ministry of Natural Resources)
- Drainage
- Piped Section of Drain (Investigated)
- Approximate Drain Location Investigated
- Pond Habitat (Investigated)

Lauzon Road
Lauzon Pkwy
Souillere Drain
Little 10th Concession Drain
St. Louis Drain
10th Concession Drain
Watson Drain
Watson Drain (Reicher Drain)
Russette Drain
McGill Ouellet Drain
Rivard Drain
Sullivan Creek Drain
Hurley Relief Drain
Little River
Sexton Sideroad
10th Concession
9th Concession

CNHS #10
CNHS #39
CNHS #40
CNHS #41
CNHS #43
CNHS #44
CNHS #45

St. Louis Woods
East Perimeter Woods
Sun Drop Bend
Ireland Farm Woods
Baseline Woods
Wagon Wheel Woods

17
42
401
3

Lauzon Parkway Improvements Class EA Study
PART A - Lauzon Parkway Study Corridor
Watercourse Crossings

CNHS #10 Shaughnessy Cohen Woods
CNHS #39 Windsor Airport Woodlands
CNHS #40 Sundrop Bend
CNHS #41 Fairbarin Woods
CNHS #43 Ireland Farm Woods
CNHS #44 Wagon Wheel Woods
CHNS #45 Baseline Woods
NHS #16 McCarthy Woods (Tecumseh)

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meters
1:15,000

N

Date: August 2013
Project No: 3211012
Exhibit No: F-9

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PART B: COUNTY ROAD 42

EXISTING CONDITIONS

The proposed County Road 42 improvement works will occur between Walker Road in the west and East Puce Road (County Road 25) in the east. A description of the improvement works is presented in Section B.6 of the ESR.

Field surveys of the corridor were conducted in 2011 and 2012 to characterize existing conditions and to identify species and habitats of conservation concern. The field surveys were conducted on the existing road right-of-way and on adjacent lands for which permission to enter had been granted. The surveys were conducted on optimal dates to document resident plants, butterflies, dragonflies, damselflies, reptiles, amphibians, birds, and mammals. Fish communities in the study corridor were characterized with reference to DFO and OMNR records.

A description of the field protocols and field chronology are presented in PART D of this appendix. A summary of the Species at Risk, provincially rare species (S1-S3), and area sensitive birds, that were recorded within the study corridor is presented below.

Thirteen Species at Risk and ten provincially rare species were documented within the study corridor (Exhibit F-10), including one SAR insect, two SAR reptiles, seven SAR birds, two SAR plants, and, one SAR fish.

The distribution and abundance of the species of conservation concern within the corridor are presented in the following exhibits: Exhibit F-11 (plants), Exhibit F-12 (insects), Exhibit F-13 (reptiles), Exhibit F-14 (birds), Exhibit F-15 (fish). The botanical survey units within the study corridor are shown on Exhibit F-16. The wildlife habitat units within the study corridor are shown on Exhibit F-17. The watercourse crossings are shown on Exhibit F-18. DFO records indicate that Grass Pickerel (S3, SC) is present in four drains within the corridor (east of Manning Road): Kerr Drain, Pike Creek Drain, Chauvin Drain and 10th Concession Drain.

As noted in Section B.4.4 of the ESR, the following Significant Natural Heritage features (ERCA 2008) occur within the study corridor in the South Sandwich Secondary Plan Area (Exhibits F-16, F-17 and F-18):

- CNHS #39 “Windsor Airport Woodlands” (Significant Woodland)
- Windsor Airport Swamps PSW (coincides with CNHS # 39)
- CNHS #41 “Fairbairn Woods” (Significant Woodland)

The following Natural Heritage features (ERCA 2011) occur within the study corridor in the Town of Tecumseh:

- NHS Site #4 (Pike Creek Valley) (Significant Valleyland)

The following Significant Natural Heritage features (ERCA 2007) occur within the study corridor in the Town of Lakeshore:

- NHS Site #5 (Significant Valleyland)
- NHS Site #18 (South) (Significant Woodland, Significant Valleyland).

Exhibit F-10: PART B County Road 42 Study Corridor - Summary of Species at Risk, S1-S3 Species, and Area Sensitive Bird Species

Life Form	Common Name	Scientific Name	GRank	NRank	SRank	COSEWIC	COSSARO	SAR Status	Area Sensitive
Insect	Monarch	*Danaus plexippus*	G4	NZB	S4	SC	SC	SC	
Insect	Giant Swallowtail	*Papilio cresphontes*	G5	N2N3	S2				
Insect	Common Sootywing	*Pholisora catullus*	G5	N3N4	S3S4				
Reptile	Northern Map Turtle	*Graptemys geographica*	G5	N4	S3	SC	SC	SC	
Reptile	Snapping Turtle	*Chelydra serpentina*	G5	N5	S3	SC	SC	SC	
Bird	Barn Swallow	*Hirundo rustica*	G5	N5B	S5B, SZN	THR	THR	THR	
Bird	Bobolink	*Dolichonyx oryzivorus*	G5	N5B	S4B, SZN	THR	THR	THR	
Bird	Chimney Swift	*Contopus virens*	G5	N5B	S5B, SZN	THR	THR	THR	
Bird	Wood Thrush	*Hylocichla mustelina*	G5	N5B	S5B, SZN	THR			
Bird	Eastern Wood-pewee	*Contopus virens*	G5	N5B	S5B, SZN	SC			
Bird	Eastern Meadowlark	*Sturnella magna*	G5	N5B	S5B, SZN	THR	THR	THR	
Bird	American Redstart	*Setophaga ruticilla*	G5	N5B	S5B, SZN				Y
Bird	Blue-gray Gnatcatcher	*Polioptila caerulea*	G5	N4B	S4B, SZN				Y
Bird	Cooper's Hawk	*Accipiter cooperii*	G5	N4B N4N	S4B, SZN				Y
Bird	Hairy Woodpecker	*Picoides villosus*	G5	N5	S5				Y
Bird	Least Flycatcher	*Empidonax minimus*	G5	N5B	S5B, SZN				Y
Bird	Savannah Sparrow	*Passerculus sandwichensis*	G5	N5B	S5B, SZN				Y
Bird	White-breasted Nuthatch	*Sitta carolinensis*	G5	N5	S5				Y
Bird	White-eyed Vireo	*Vireo griseus*	G5	N2B	S2B, SZN				
Plant	Climbing Prairie Rose	*Rosa setigera*	G5	N3	S3	SC	SC	SC	
Plant	Riddell's Goldenrod	*Solidago riddellii*	G5	N2	S3	SC	SC	SC	
Plant	Hairy-fruited Sedge	*Carex trichocarpa*	G4	N3	S3				
Plant	Big Shellbark Hickory	*Carya laciniosa*	G5	N3	S3				
Plant	Stiff Goldenrod	*Solidago rigida*	G5T5	N?	S3				
Plant	Missouri Ironweed	*Vernonia missourica*	G4G5	N1N3	S3?				
Fish	Grass Pickerel	*Esox americanus*	G5	N3N4	S3	SC	SC	SC	

Exhibit F-11: PART B County Road 42 Study Corridor - Summary of Plant Species of Conservation Concern

Common Name	Scientific Name	GRANK	NRANK	SRANK	COSEWIC	COSSARO	SARA Status	Unit 26	Unit 27	Unit 28	Unit 29	Unit 30	Unit 31	Unit 32	Unit 33	Unit 34	Unit 35	Unit 36	Unit 37	Unit 38	Unit 39	Unit 40	Unit 41	Unit 42	Unit 43	Unit 44
Climbing Prairie Rose	*Rosa Setigera*	G5	N3	S3	SC	SC	SC					8 stems														
Riddell's Goldenrod	*Solidago riddellii*	G5	N2	S3	SC	SC	SC			Distributed along 8m of roadside							5 patches with 1-5 stems	1 patch: $4m^2$	1 patch: $20m^2$	Approx. 47 stems long 10m of roadside	1 patch of 7 stems		3 patches of 1 -3 stems		1 patch	1 patch
Hairy-fruited Sedge	*Carex trichocarpa*	G4	N3	S3				1 patch: 30 m^2	1 patch: 40 m^2	4 patches: $2m^2$, $20m^2$, 36 m^2 and $56m^2$																
Big Shellbark Hickory	*Carya laciniosa*	G5	N3	S3											1 stem											
Stiff Goldenrod	*Solidago rigida*	G5T5	N?	S3													Approx. 140 stems									
Missouri Ironweed	*Vernonia missourica*	G4G5	N1N3	S3?								15 stems			2 stems				Approx. 80 stems							
Tall Boneset	*Eupatorium altissimum*	G5	N?	SE1					2 patches: $20m^2$, and $110m^2$																	
Counts (number of species)		**7**	**7**	**7**	**2**	**2**	**2**	**1**	**2**	**2**	**0**	**2**	**0**	**0**	**2**	**0**	**2**	**1**	**2**	**1**	**1**	**0**	**1**	**0**	**1**	**1**

- Stem counts were conducted where densities of plants were low and where plant structure allowed
- Areas were calculated where densities or were such that individual stems counts were not feasible
- Linear length were used within roadside areas where plants distribution was narrow (<2m)

Exhibit F-12: PART B County Road 42 Study Corridor - Summary of Insect Species of Conservation Concern

Common Name	GRANK	SRANK	COSEWIC	COSSARO	SARA Status	Schedule	NHIC Tracked	Unit 18	Unit 19	Unit 20	Unit 21	Unit 30	Unit 31	Unit 32	Unit 33	Unit 34	Unit 35	Unit 36	Unit 37	Unit 38	Unit 39	Unit 40	Unit 41	Unit 42
Monarch	G4	S4	SC	SC	SC	1	Y							4									1	1
Giant Swallowtail	G5	S2					Y									1	1						1	1
Common Sootywing	G5	S3S4					Y										1							
Counts (number of species)	**3**	**3**	**1**	**1**	**1**	**1**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**2**	**0**	**0**	**0**	**0**	**0**	**1**	**1**

Exhibit F-13: PART B County Road 42 Study Corridor - Summary of Reptile Species of Conservation Concern

Common Name	GRANK	SRANK	COSEWIC	MNR	SARA Status	Schedule	MNR Area Sensitive	NHIC Tracked	Unit 18	Unit 19	Unit 20	Unit 21	Unit 30	Unit 31	Unit 32	Unit 33	Unit 34	Unit 35	Unit 36	Unit 37	Unit 38	Unit 39	Unit 40	Unit 41	Unit 42
Northern Map Turtle	G5	S3	SC	SC	SC	1	X	Y																	13
Snapping Turtle	G5	S3	SC	SC	No Status	No schedule		N								1									
Counts (number of species)	**2**	**2**	**2**	**2**	**1**	**1**	**1**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**

Exhibit F-14: PART B County Road 42 Study Corridor - Summary of Bird Species of Conservation Concern

Common Name	GRANK	SRANK	COSEWIC	MNR	SARA Status	Schedule	MNR Area Sensitive	Breeding Status	Unit 19	Unit 20	Unit 21	Unit 30	Unit 31	Unit 32	Unit 33	Unit 34	Unit 35	Unit 36	Unit 37	Unit 39	Unit 41	Unit 42
									Highest #	Highest #	Highest #	Highest #	Highest #	Highest #	Highest #	Highest #	Highest #	Highest #	Highest #	Highest #	Highest #	Highest #
Barn Swallow	G5	S5B, SZN	THR	THR	No Status	No schedule		Confirmed	1	10					2	6	7	4		10		
Bobolink	G5	S4B, SZN	THR	THR	No Status	No schedule		Probable		1								2				
Chimney Swift	G5	S5B, SZN	THR	THR	THR	1		Probable		2									3			
Wood Thrush	G5	S5B, SZN	THR					Probable			1								2			
Eastern Wood-pewee	G5	S5B, SZN	SC					Probable			1					2						1
American Redstart	G5	S5B, SZN					X	Probable											2			
Blue-gray Gnatcatcher	G5	S4B, SZN					X	Probable								1			1			
Cooper's Hawk	G5	S4B, SZN					X	Confirmed								2			1			
Hairy Woodpecker	G5	S5					X	Probable								1						
Least Flycatcher	G5	S5B, SZN					X	Possible											1			
Savannah Sparrow	G5	S5B, SZN					X	Confirmed		3								2		1		2
White-breasted Nuthatch	G5	S5					X	Probable											1			
White-eyed Vireo	G5	S2B, SZN						Possible							1							
COUNTS (number of species)	**13**	**13**	**5**	**3**	**1**	**1**	**7**	**N/A**	**1**	**4**	**2**	**0**	**0**	**0**	**2**	**5**	**1**	**3**	**7**	**2**	**0**	**2**

Exhibit F-15: PART B County Road 42 Study Corridor - Watercourse Crossing Summary (from west to east)

WATERBODY	DRAFT DFO DRAIN CLASSIFICATION & FLOW (P/I/E)	LOCATION OF DRAIN INVESTIGATED	CHANNEL DESCRIPTION SUMMARY	SUBSTRATE TYPE	VEGETATION (RIPARIAN & IN-STREAM)	THERMAL REGIME (WARM/ COOL/ COLD)	MNR INTERPRETATION OF THE FISH AND FISH HABITAT SENSITIVITY (LOW, MODERATE, HIGH OR UNKNOWN)	MNR SPECIFIED IN-WATER TIMING WINDOW FOR CONSTRUCTION	DIRECTLY SUPPORT A FISHERY (DIRECT, INDIRECT OR NONE) & TYPE	FISH SPECIES PRESENT
7th Street Drain	F Class – Channelization Intermittent or Ephemeral	North along 7th Concession Road to the outlet into 6th Concession Drain *City of Windsor*	South of the outlet into 6th Concession Drain the drain flows in the road side ditch with minimal flow over manicured grass. North of the outlet into the 6th Concession Drain there is no channel or ditch. Instead, catch basins were present along the edge of the road and the drain flows underground in a pipe which outlets into the 6th Concession Drain inside the 6th Concession Drain culvert crossing.		Riparian: meadow sp., cut grass, *phragmites sp.* In-stream: cut grass, *phragmites sp.*	Warm	Low	July 1 – Mar 15	Undetermined	None observed.
6th Concession Drain	E Class – Channelization Permanent	7th Concession Road east to the outlet at Little River *City of Windsor*	The drain flows east in a defined channel in a hedgerow between agricultural fields and residential properties before flowing into the south ditch along Baseline Road. The drain appears to experience flashy flows. Morphology is dominated by 'flats'. The drain receives additional flow from Hayes, 7th, 8th and 9th Concession Drains as well as tile drains from the adjacent fields. Sparse in-water cover with moderate overhead and overhanging vegetation present. The section of drain upstream of Baseline Road by the residential homes had a width of ~1.5m and a depth of 0.25m.	Clay/silt/ sand/ cobble (rip-rap)	Riparian: *phragmites sp.*, walnut, elm, maple, shrubs, meadow sp., grass In-stream: sparse grass	Warm	Low	July 1 – Mar 15	Undetermined	None observed at crossing due to turbid water.
North Townline Highway Drain	F Class – Channelization Intermittent or Ephemeral	From drain origin along County Road 42 east to drain outlet into the Little River *City of Windsor*	The drain flows east in the ditch along the south side of County Road 42 to the Little River past active agricultural fields, residential and commercial properties with numerous of entrance culverts. The riparian vegetation consists of trees, shrubs and herbaceous vegetation. Dense in-stream vegetation was present in sections of the drain. The channel was ~1.2m wide and 0.2m deep.	Clay/silt/ sand/gravel/muck	Riparian: grass, willows, shrubs, coniferous trees, meadow sp. In-stream: *phragmites sp.*, cattails, rush	Warm	Low	July 1 – Mar 15	Undetermined	None observed in drain due to turbid water.
Rivard Drain	F Class – Channelization Intermittent or Ephemeral	West of Lauzon Parkway crossing to the outlet at Little River *City of Windsor*	The drain flows east under Lauzon Parkway in a newly excavated channel within the parkway ROW before it outlets into the Little River. No vegetation was present as the new channel is lined with rip-rap. Upstream and downstream of ROW, the drain consists of a narrow defined channel through an elm forest with little understory vegetation. Sparse in-water vegetation and moderate woody debris was present. The morpphology appears to consist of riffle/run habitat due to low flow conditions. The channel was ~1.5m wide and 0.1m deep.	Clay/silt/ cobble/ boulder	Riparian: elm, dogwood In-stream: sparse submergent vegetation	Warm	Low	July 1 – Mar 15	Undetermined	None observed.
Little River	E Class – Channelization Permanent	Lauzon Parkway Crossing *City of Windsor*	The river flows east through the crossing in a wide defined channel with vegetated banks but with no in-stream vegetation. Morphology is dominated by 'flats' with one riffle under the bridge crossing. Woody debris and undercut banks were present to provide cover. The river appears to experience flashy flows as evidence of past flooding was present. The channel was ~4m wide and 0.4m deep	Sand/clay/ silt/cobble/ boulder	Riparian: dogwood, trees, grass, meadow sp. In-stream: none	Warm	Low	July 1 – Mar 15	Direct (background data)	None observed at crossing due to turbid water.

WATERBODY	DRAFT DFO DRAIN CLASSIFICATION & FLOW (P/I/E)	LOCATION OF DRAIN INVESTIGATED	CHANNEL DESCRIPTION SUMMARY	SUBSTRATE TYPE	VEGETATION (RIPARIAN & IN-STREAM)	THERMAL REGIME (WARM/ COOL/ COLD)	MNR INTERPRETATION OF THE FISH AND FISH HABITAT SENSITIVITY (LOW, MODERATE, HIGH OR UNKNOWN)	MNR SPECIFIED IN-WATER TIMING WINDOW FOR CONSTRUCTION	DIRECTLY SUPPORT A FISHERY (DIRECT, INDIRECT OR NONE) & TYPE	FISH SPECIES PRESENT
	E Class – Channelization Permanent	County Road 42 Crossing *City of Windsor*	The river flows north through the crossing in a defined channel between agricultural fields and the airport lands with woody riparian vegetation and bank erosion present. Morphology is dominated by 'flats' with no in-stream cover. It appears that high flows have cleared the channel of all structures as the channel has an empty u-shape. The river appears to experience flashy flows as evidence of past flooding was present. The channel was ~3.4m wide and 0.3m deep.	Consolidated clay/sand/ gravel/silt	Riparian: willow, ash Manitoba maple, hawthorn, elm, rose In-stream: none	Warm	Low	July 1 – Mar 15	Direct (background data and field investigations) bait and panfish	Banded Killifish Bluntnose Minnow Central Mudminnow Creek Chub Fathead Minnow Rock Bass Spotfin Shiner Striped Shiner White Sucker
Watson Drain	C Class – Channelization Permanent	North from Highway 401 to outlet into the Little River *City of Windsor*	Flows north in the ditch along 10th Concession to County Road 42 crossing. North of County Road 42 it flows in a hedgerow between an agricultural field and a landscaping business storage yard to the Little River. South of County Road 42 the drain flows in the ditch with morphology that is primarily 'flat' and sparse in-water vegetation. The channel was ~1.5m wide and 0.15 deep. North of County Road 42 the drain flows in the ditch along the north side of County Road 42 for approximately 80m and then flows north to the Little River. Morphology is primarily 'flat' with a few riffles over woody debris. The channel has dense herbaceous bank vegetation (east flow) but transitions to woody vegetation (trees) in a hedgerow (north flow) with steep muddy banks to the Little River. The channel was ~2.8m wide and 0.3m deep.	Clay/silt/ sand/ detritus	Riparian: grass, *phragmites sp.*, meadow sp., ash, oak, poplar, Manitoba maple In-stream: cattail, *phragmites sp.*	Warm	Low	July 1 – Mar 15	Undetermined	None observed at crossing due to turbid water.
Little 10th Concession Drain	F Class – Channelization Intermittent or Ephemeral	North from origin at Quick Drain to outlet into Little River along Lauzon Road *City of Windsor*	From the origin of the drain at the Quick Drain, it flows north in a hedgerow, crosses under County Road 42 and continues north in the ditch along east side of Lauzon Road to the Little River. South of County Road 42 the channel is well shaded with overhead trees and no in-stream vegetation. Morphology is 'flat'. The channel was ~1.3m wide and 0.12m deep. North of County Road 42 there is dense in-stream vegetation with minimal diffuse flow through the vegetation. The channel was ~1m wide and 0.15m deep.	Clay/silt Clay/silt/ gravel/sand	Riparian: elm, ash, hawthorn In-stream: none Riparian: meadow sp., shrubs, few trees In-stream: cattails, *phragmites sp.*, duckweed	Warm	Low	July 1 – Mar 15	Direct baitfish	Fish observed in ditch north of County Road 42 during field investigations.
St. Louis Drain (There are two parts of the drain as there is no culvert connection under County Road 42.)	F Class – Channelization Intermittent or Ephemeral	West along the south side of County Road 42 to Little 10th Concession Drain outlet. North from County Road 42 to the outlet into Soulliere Drain *City of Windsor*	The drain flows west in the ditch along the south side of County Road 42 in front of residential homes. Flow enters a catch basin in front of a Mosque and outlets into the Little10th Concession Drain through a pipe ~150m downstream. The channel was ~1.2m wide and 0.15m deep with minimal flow. The drain flows north from County Road 42 in swale between an agricultural field and a residential property. The channel contained stagnant water with algae and was ~0.9m wide with a water depth of 0.1m.	Clay/silt/ detritus	Riparian: grass, cut grass In-stream: cattails, *phragmites sp.*, duckweed, grass Riparian: grass, crops, meadow sp. In-stream: grass	Warm	Low	July 1 – Mar 15	Undetermined	None observed.

WATERBODY	DRAFT DFO DRAIN CLASSIFICATION & FLOW (P/I/E)	LOCATION OF DRAIN INVESTIGATED	CHANNEL DESCRIPTION SUMMARY	SUBSTRATE TYPE	VEGETATION (RIPARIAN & IN-STREAM)	THERMAL REGIME (WARM/ COOL/ COLD)	MNR INTERPRETATION OF THE FISH AND FISH HABITAT SENSITIVITY (LOW, MODERATE, HIGH OR UNKNOWN)	MNR SPECIFIED IN-WATER TIMING WINDOW FOR CONSTRUCTION	DIRECTLY SUPPORT A FISHERY (DIRECT, INDIRECT OR NONE) & TYPE	FISH SPECIES PRESENT
Soulliere Drain	F Class – Channelization Intermittent or Ephemeral	West from the drain origin in an agricultural field at the east study boundary to a 90^{o} bend in the channel where the drain continues to flows north to the Little River (no permission to enter north of the 90^{o} bend) *City of Windsor*	The east/west section of the drain flows west from the drain origin at the east study boundary through a defined channel between active agricultural fields. Morphology was primarily 'flat' with minimal flow present. The drain receives additional flow contributions from other drains located in hedgerows between fields and the St. Louis Drain. Sections of drain have dense in-stream vegetation with sparse woody riparian vegetation as most of the large trees have been cut down and left in the drain. The channel was ~2.5m wide and 0.4m deep. The drain outlets into the Little River over a vertical drop barrier of ~0.3m even with the elevated water levels in Little River at time of investigation. The height of the vertical drop barrier is likely to increase as water level in the Little River decreases, resulting in a barrier to the upstream movement of fish.	Clay/silt/ detritus	Riparian: grass, cottonwood, dogwood, elm, meadow sp. In-stream: *phragmites sp.*, cattails, rush, grass, dogwood	Warm	Low	July 1 – Mar 15	Undetermined	None observed.
Unknown Drain – Tributary of Desjardins Drain	F Class – Channelization Intermittent or Ephemeral	Drain originates north of Odessa Drive in agricultural field as a swale *Town of Tecumseh*	The drain flows north (determined from mapping) from its origin in an active agricultural field located north of Odessa Drive. The narrow channel contained stagnant water with algae present. The channel was ~1.6m wide and 0.15m deep.	Clay/muck/ silt	Riparian: crops, grass, greater water dock In-stream: grass	Warm	Low	July 1 – Mar 15	Undetermined	None observed.
Manning Road Drain (East Townline Road Drain)	F Class – Channelization Intermittent or Ephemeral	North and south of the County Road 42 crossing *Town of Tecumseh*	The drain flows in the ditch along the east side of Manning Road. Flow direction was not discernible, but the drain likely south to Pike Creek. The channel section of the drain enters a catch basin ~50m north of County Road 42. South of County Road 42 there is ~50m of open channel before flow enters a catch basin that likely discharges into Pike Creek ~150m further south. Open channel sections contain dense vegetation and refuse. The channel was ~1.6m wide and 0.1m deep.	Muck/clay/silt	Riparian: grass, lawn, meadow sp. In-stream: *phragmites sp.*, grass	Warm	Low	July 1 – Mar 15	Undetermined	None observed.
10th Concession Drain	F Class – Channelization Intermittent or Ephemeral	Not investigated	Flows north along 10th Concession Road and through a hedgerow before discharging into Pike Creek Drain.			Warm	Low	July 1 – Mar 15	Undetermined	
Pike Creek Drain	E Class – Channelization Permanent	County Road 42 crossing *Town of Tecumseh* Manning Road crossing *Town of Tecumseh*	At the County Road 42 crossing, the creek flows north under Country Road 42 through a define channel with steep, eroding vegetated banks. Under the bridge, the channel bed was lined with gabion baskets filled with rip-rap. The morphology consists of riffles, pools and flats. The channel was ~4.2m wide and 0.3m deep and receives additional flow from the Chauvin Drain. The creek appears to experience flashy flows with abundant organic debris being washed down from upstream reaches and deposited on the floodplain. At the Manning Road crossing, the creek has a wide shallow channel with steep banks vegetated mainly by trees which shaded the channel. Riffle, pool and flat morphology was present. The creek receives additional flow from ditch on the southeast side. The channel was ~5m wide and 0.2m deep	Clay/sand/ gravel/ cobble (rip-rap) Gravel/sand/ cobble/ boulder/silt	Riparian: elm, willow, Manitoba maple, rose, *phragmites sp.* In-stream: none Riparian: ash, elm, Manitoba maple, dogwood, rose, poplar In-stream: none	Warm	Low	July 1 – Mar 15	Direct (background data and field investigations) bait, pan and sportfish	Bluntnose Minnow Brown Bullhead Common Carp Emerald Shiner Freshwater Drum Largemouth Bass Pumpkinseed Rock Bass Spottail Shiner White Crappie White Sucker

WATERBODY	DRAFT DFO DRAIN CLASSIFICATION & FLOW (P/I/E)	LOCATION OF DRAIN INVESTIGATED	CHANNEL DESCRIPTION SUMMARY	SUBSTRATE TYPE	VEGETATION (RIPARIAN & IN-STREAM)	THERMAL REGIME (WARM/ COOL/ COLD)	MNR INTERPRETATION OF THE FISH AND FISH HABITAT SENSITIVITY (LOW, MODERATE, HIGH OR UNKNOWN)	MNR SPECIFIED IN-WATER TIMING WINDOW FOR CONSTRUCTION	DIRECTLY SUPPORT A FISHERY (DIRECT, INDIRECT OR NONE) & TYPE	FISH SPECIES PRESENT
Chauvin Drain	F Class – Channelization Intermittent or Ephemeral	Along County Road 42 between Pike Creek and Kerr Drain	The drain is located in the south ditch along Country Road 42. Along the drain, there is a high point resulting in the drain to flow east to the Kerr Drain and west to Pike Creek. There is dense vegetation in the channel with residential properties and agricultural fields along the south bank. The channel was ~1.1m wide and 0.05m deep. There are a number of vertical drops (barriers) in the drain at the outlet into Pike Creek, ~0.2-0.35m.	Clay/silt	Riparian: cut grass, meadow sp. In-stream: cattails, rush, grass, *phragmites sp.*	Warm	Low	July 1 – Mar 15	Undetermined	None observed.
Kerr Drain	E Class – Channelization Permanent	North and south of the County Road 42 crossing	Flows north in a defined channel between agricultural fields and a commercial property. Well vegetated banks with no in-stream vegetation and erosion occurring along both banks. Morphology is primarily 'flat' with some riffles and pools. Moderate woody debris and refuse present in the channel. The Chauvin Drain discharges into the drain through perched culvert (0.6m). The channel was ~1.7m wide and 0.15m deep.	Sand/ gravel/ cobble/silt/ boulder	Riparian: grass, meadow sp., ash, hawthorn, Manitoba maple, walnut, sumac In-stream: none	Warm	Low	July 1 – Mar 15	Undetermined	None observed at crossing due to turbid water.
8th Concession Centre Line Drain	E Class – Channelization Permanent	North and south of County Road 42 crossing	Flows north in a hedgerow between two agricultural fields and crosses County Road 42. Steep vegetated banks are treed downstream of the crossing and consist of herbaceous plants and shrubs upstream. Morphology is dominated by 'flats'. The drain appears to experience flashy flows and there is abundant organic debris deposited downstream along the banks. The channel was ~2.7m wide and 0.25m deep.	Clay/silt/ gravel/ cobble	*North of County Road 42:* Riparian - grasses, *phragmites sp.*, sparse trees/shrubs In-stream – Upstream of County Road 42: rush, *phragmites sp.*, South of County Road 42: Riparian - cottonwood, elm, honeysuckle, dogwood, ash, meadow sp. In-stream – none	Warm	Low	July 1 – Mar 15	Direct baitfish	Fish observed during field investigations.
8th Concession Drain (in the east)	C Class – Channelization Permanent	North along Concession 8 (Lakeshore Road 103), west along County Road 42 and north to convergence with 8th Concession Centre Line Drain	Flows north in ditch along Concession 8 to County Road 42 and then west along south ditch before crossing County Road 42 and continuing north. Straight channel in ditch but meanders between agricultural fields north of County Road 42 crossing. Riffle, pool and flat morphology present. Steep vegetated banks with woody debris present in the channel. The river appears to experience flashy flows and there is abundant organic debris deposited along the banks. The channel was ~1.5m wide and 0.15m deep.	Clay/silt/ sand/ gravel/ boulder	Riparian: meadow sp., grasses along ditch; Manitoba maple, elm, ash, apple, grape vine, grass along meandering channel In-stream: grass, sedge in ditch; none in meandering channel (well shaded)	Warm	Low	July 1 – Mar 15	Direct (field investigations) bait and sportfish	Bluegill Common Carp Gizzard Shad Largemouth Bass (dead) Rock Bass
Leffler Drain	TBD - Class Channelization	North of County Road 42	Flows north in the ditch from County Road 42 along west side of Patillo Road. Water was present in the channel but there was no flow. The channel was ~1.3m wide and 0.1m deep. There is no culvert connection between Leffler Drain and Baseline Drain under County Road 42.	Clay/silt Iron precipitate present	Riparian: grass, meadow sp., crops In-stream: cattail, duckweed	Warm	Low	July 1 – Mar 15	Undetermined	None observed.

Waterbody	Draft DFO Drain Classification & Flow (P/I/E)	Location of Drain Investigated	Channel Description Summary	Substrate Type	Vegetation (Riparian & In-stream)	Thermal Regime (Warm/ Cool/ Cold)	MNR Interpretation of the Fish and Fish Habitat Sensitivity (Low, Moderate, High or Unknown)	MNR Specified In-water Timing Window for Construction	Directly Support a Fishery (Direct, Indirect or None) & Type	Fish Species Present
Baseline Drain	F Class – Channelization Intermittent or Ephemeral	East along County Road 42 from west of Patillo Road to outlet into the Puce River	The drain flows east in the ditch along the south side of County Road 42 to the Puce River with minimal flow and dense vegetation in the channel. The channel was ~1.4m wide and 0.15m deep.	Consolidated clay/silt	Riparian: meadow sp., shrubs, few trees In-stream: cattails, sedges, grass, *phragmites sp.*, rush	Warm	Low	July 1 – Mar 15	Direct (background data) bait and panfish	Banded Killifish Central Mudminnow Fathead Minnow Green Sunfish White Sucker
Wallace Line Drain	F Class – Channelization Intermittent or Ephemeral	North from County Road 42 along Wallace Line Road (no culvert connection under County Road 42 to Baseline Drain)	The drain originates at the intersection of Wallace Line Road and County Road 42 and continues north along west side of Wallace Line Road in the ditch. The ditch contains dense vegetation and was dry during field investigations.		Riparian: cedar hedge, coniferous trees, grass In-stream: cattail, *phragmites sp.*	Warm	Low	July 1 – Mar 15	Undetermined	No fish observed, dry channel.
6th Concession Drain North Middle Road	F Class – Channelization Intermittent or Ephemeral	North along Concession 6 (Lakeshore Road 107) to the outlet into Baseline Drain at County Road 42	The drain flows north in the ditch along the west side of Concession 6 with dense vegetation in the channel. The channel was ~0.7m wide and 0.1m deep.		Riparian: meadow sp. In-stream: cattail, grass	Warm	Low	July 1 – Mar 15	Undetermined	None observed.
West Puce South Branch of Road Drain	F Class – Channelization Intermittent or Ephemeral	North from County Road 42 along west side of West Puce Road	The drain flows south in the ditch along west side of West Puce Road with dense vegetation in the channel. The drain outlets to Baseline Drain through a culvert located under County Road 42. The channel was dry during field investigations.		Riparian: grass, meadow sp. In-stream: grass	Warm	Low	July 1 – Mar 15	Undetermined	No fish observed, dry channel.
Puce River	E Class – Channelization Permanent	North and south of County Road 42 crossing	The river flows north under Country Road 42 through a defined channel with steep, eroding vegetated banks. The channel is lined with gabion baskets filled with rip-rap under bridge. Flat and pool morphology dominated with a single riffle under the bridge. The channel was ~6m wide and 0.5m deep. The river receives additional flow from the Baseline Drain and the Lower Portion of the Standish Drain.	Sand/gravel/ cobble/ boulder	Riparian: willow, elm, Manitoba maple, grass In-stream: none	Warm	Low	July 1 – Mar 15	Direct (field investigations)bait and sportfish	Centrarchid sp. Common Carp Gizzard Shad Pumpkinseed Rock Bass Yellow Bullhead Yellow Perch
Lower Portion of the Standish Drain	E Class – Channelization Permanent	West from east of Puce Road crossing to outlet into the Puce River	The drain flows west in the south roadside ditch to the Puce River. Flat-dominated morphology with few pools and one riffle. The channel is well shaded with overhead and overhanging vegetation resulting in minimal in-water vegetation. The channel was ~1m wide and 0.2m deep.	Clay/silt/ sand/gravel/ cobble	Riparian: red osier dogwood, sumac, elm, ash, grape vine, meadow sp., grass In-stream: cattails	Warm	Low	July 1 – Mar 15	Direct, baitfish	Fish observed during field investigations.

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Legend

- County Road 42 Study Area
- Windsor Airport Swamps PSW
- Permanent Streams/Drains
- Intermittent Streams/Drains
- Designated Natural Heritage Sites
  - CNHS #39 Windsor Airport Woodlands
  - CHNS#40 Sundrop Bend
  - CNHS #41 Fairbairn Woods
  - NHS #4 Town of Tecumseh
  - NHF #5 Town of Lakeshore
  - NHF #18 Town of Lakeshore (South)

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Lauzon Parkway Improvements Class EA Study
PART B - County Road 42 Study Corridor
Botanical Survey Units

0 250 500
meters
1:20,000

N

Date: August 2013
Project No: 3211012
Exhibit No: F-16

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Legend

- County Road 42 Study Area
- Windsor Airport Swamps PSW
- Permanent Streams/Drains
- Intermittent Streams/Drains
- Designated Natural Heritage Sites
  - CNHS #39 Windsor Airport Woodlands
  - CHNS#40 Sundrop Bend
  - CNHS #41 Fairbairn Woods
  - NHS #4 Town of Tecumseh
  - NHF #5 Town of Lakeshore
  - NHF #18 Town of Lakeshore (South)

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Lauzon Parkway Improvements Class EA Study
PART B - County Road Study Corridor
Wildlife Survey Units

0 250 500
meters
1:20,000

N

Date: August 2013
Project No: 3211012
Exhibit No: F-17

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Lappan Drain
Jefferson Woods
McGill Drain
CNHS #39
CNHS #39
St. Louis Woods
Little 10th Concession Drain
Souillere Branch
Desjardin Drain
McAuliffe Woods
Riviera Drain
East Perimeter Woods
Watson Drain
St Louis Drain
North Townline Highway Drain
42
CNHS #41
Four Barn Woods
6th Concession Drain
Sun Drop Bend
CNHS #40
Quick Drain
10th Concession Drain
Baseline Road
Wagon Wheel Woods
Watson Drain (Tributary)
Baseline Woods
7th Concession
7th Concession Drain
Concession Drain
Ray Road Drain
W Drain
Concession
Elmstead
Pike Creek Wetlands (ER 26)
NHS #4
21
East Townline
Road Drain
Manning Road Drain
Kerr Drain
Pike Creek Wetlands (ER 26)
Leffler Drain
Patillo Road Drain
Wallace Line Drain
West Puce South Branch of Road Drain
Pike Creek
Chauvin Drain
42
Elmstead Road
NFS #5
Pike Creek Wetlands (ER 26)
19
Manning Road
Concession 10
10th Concession Drain
Beausoleil Drain
Kerr Drain
9th Concession Drain
Concession 9
8th Concession Centre Line Drain
8th Concession Drain
Concession 8
7th Concession Road Branch Drain
Concession 7
6th Concession North Middle Road
Concession 6
Baseline Drain
NFS #18
Lower Portion of the Standish Drain
25
Puce River
East Puce Road
Puce Road Drain W
Puce Road Drain E

Legend

- County Road 42 Study Area
- Natural Heritage (City of Windsor OPA #60)
- OpenSpace (City of Windsor OPA #60)
- Provincially Significant Wetlands (Ministry of Natural Resources)
- Drainage
- Piped Section of Drain (Investigated)
- Approximate Drain Location Investigated
- Pond Habitat (Investigated)

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Lauzon Parkway Improvements Class EA Study
PART B - County Road 42 Study Corridor
Watercourse Crossings

CNHS #39 Windsor Airport Woodlands
CNHS #41 Fairbarin Woods
NHS #4 Town ofTecumseh
NHF #5 Town of Lakeshore
NHF #18 Town of Lakeshroe (South)

0 250 500
meters
1:20,000

N

Date: August 2013
Project No: 3211012
Exhibit No: F-18

PART C: EAST-WEST ARTERIAL

EXISTING CONDITIONS

The East-West Arterial Road will be constructed between Walker Road in the west and County Road 17 in the east[2]. A description of the works for this part of the undertaking is presented in Section C.6 of the ESR.

Field surveys in the study corridor were conducted in 2011 and 2012 to characterize existing conditions and to identify species and habitats of conservation concern. The surveys were conducted on the existing road right-of-way and on adjacent lands for which permission to enter had been granted. . The surveys were conducted on optimal dates to document resident plants, butterflies, dragonflies, damselflies, reptiles, amphibians, birds, and mammals. Fish communities in the study corridor were characterized with reference to DFO OMNR, and Essex Region Conservation Authority records.

A summary of the Species at Risk, provincially rare species (S1-S3), and area sensitive birds, that were recorded within the study corridor is presented below.

Seven Species at Risk, three provincially rare species, and one area sensitive bird species, were documented within the study corridor (Exhibit F-19), including one SAR insect, three SAR birds, and two SAR plants.

The distribution and abundance of the species of conservation concern within the corridor are presented in the following tables: Exhibit F-20 (plants), Exhibit F-21 (insects), Exhibit F-22 (birds), and Exhibit F-23 (fish). The botanical survey units within the study corridor are shown on Exhibit F-24. The wildlife habitat units within the study corridor are shown on Exhibit F-25. The watercourse crossings are shown on Exhibit F-26.

As noted in Section C.4.4 of the ESR, there are no Significant Natural Heritage features (ERCA 2008) within the study corridor.

[2] The study area within which potential alignments were generated expanded through the course of the EA study from that originally defined for purposes of undertaking ecological field investigations. As a result, there is a portion of the East-West alignment west of Little River that may require follow up field investigations during detailed design in order to confirm existing conditions, impacts and mitigation. Areas requiring further work are limited to cultivated agricultural fields.

Exhibit F-19: PART C East-West Arterial Study Corridor - Summary of Species at Risk, S1-S3 Species, and Area Sensitive Bird Species

Life Form	Common Name	Scientific Name	GRank	NRank	SRank	COSEWIC	COSSARO	SAR Status	Area Sensitive
Butterfly	Monarch	*Danaus plexippus*	G4	NZB	S4	SC	SC	SC	
Damselfly	River Bluet	*Enallagma anna*	G5	?	S2				
Bird	Barn Swallow	*Hirundo rustica*	G5	N5B	S5B, SZN	THR	THR	THR	
Bird	Bobolink	*Dolichonyx oryzivorus*	G5	N5B	S4B, SZN	THR	THR	THR	
Bird	Eastern Wood-pewee	*Contopus virens*	G5	N5B	S5B, SZN	SC			
Bird	Northern Harrier	*Circus cyaneus*	G5	N5B, N4N	S4B				X
Plant	Shumard Oak	*Quercus shumardii*	G5	N3	S3	SC	SC	SC	
Plant	Climbing Prairie Rose	*Rosa setigera*	G5	N3	S3	SC	SC	SC	
Plant	Illinois Greenbrier	*Smilax illinoensis*	G4?	N?	S2?				
Plant	Big Shellbark Hickory	*Carya laciniosa*	G5	N3	S3				
Plant	Missouri Ironweed	*Vernonia missourica*	G4G5	N1N3	S3?				

Exhibit F-20: PART C East-West Arterial Corridor - Summary Plant Species of Conservation Concern

Common Name	Scientific Name	GRANK	NRANK	SRANK	COSEWIC	COSSARO	SARA Status	Unit 11	Unit 12	Unit 14	Unit 15
Shumard Oak	*Quercus shumardii*	G5	N3	S3	SC	SC	SC	2			
Climbing Prairie Rose	*Rosa Setigera*	G5	N3	S3	SC	SC	SC	3 small patches: $4m^2$, $18m^2$ and $4m^2$	Approx. 65 stems distributed along 22m of roadside		
Illinois Greenbrier	*Smilax illinoensis*	G4?	N?	S2?					12 stems		
Big Shellbark Hickory	*Carya laciniosa*	G5	N3	S3					18		
Missouri Ironweed	*Vernonia missourica*	G4G5	N1N3	S3?					3 stems		
Counts (number of species)		**5**	**5**	**5**	**2**	**2**	**2**	**2**	**4**	**0**	**0**

- Stem counts were conducted where densities of plants were low and where plant structure allowed
- Areas were calculated where densities or were such that individual stems counts were not feasible
- Linear length were used within roadside areas where plants distribution was narrow (<2m)

Exhibit F-21 PART C East-West Arterial Study Corridor - Summary Insect Species of Conservation Concern

Common Name	Scientific Name	GRANK	SRANK	COSEWIC	MNR	SARA Status	Schedule	NHIC Tracked	Unit 7
Monarch	*Danaus plexippus*	G4	S4	SC	SC	SC	1	Y	3
River Bluet	*Enallagma anna*	G5	S2					Y	3
Counts (number of species)		**2**	**2**	**1**	**1**	**1**	**1**	**2**	**2**

Exhibit F-22: PART C East-West Arterial Study Corridor - Summary Bird Species of Conservation Concern

Common Name	Scientific Name	GRANK	SRANK	COSEWIC	MNR	SARA Status	Schedule	MNR Area Sensitive	Breeding Status	Unit 7
										Highest #
Barn Swallow	*Hirundo rustica*	G5	S5B, SZN	THR	THR	No Status	No schedule		Confirmed	2
Bobolink	*Dolichonyx oryzivorus*	G5	S4B, SZN	THR	THR	No Status	No schedule		Probable	7
Eastern Wood-pewee	*Contopus virens*	G5	S5B, SZN	SC					Probable	1
Northern Harrier	*Circus cyaneus*	G5	S4B, SZN					X	Possible	1
Counts (number of species)		**4**	**4**	**3**	**2**	**0**	**0**	**1**	**N/A**	**4**

Exhibit F-23: PART C East-West Arterial Study Corridor - Watercourse Crossing Summary (from west to east)

WATERBODY	DRAFT DFO DRAIN CLASSIFICATION & FLOW (P/I/E)	LOCATION OF DRAIN INVESTIGATED	CHANNEL DESCRIPTION SUMMARY	SUBSTRATE TYPE	VEGETATION (RIPARIAN & IN-STREAM)	THERMAL REGIME (WARM/ COOL/ COLD)	MNR INTERPRETATION OF THE FISH AND FISH HABITAT SENSITIVITY (LOW, MODERATE, HIGH OR UNKNOWN)	MNR SPECIFIED IN-WATER TIMING WINDOW FOR CONSTRUCTION	DIRECTLY SUPPORT A FISHERY (DIRECT, INDIRECT OR NONE) & TYPE	FISH SPECIES PRESENT
7th Street Drain Diversion	Not classified on map	Within the proposed East/West Connector study area (drain origin to the outlet into the 7th Concession Drain).	From the origin of the drain at a culvert outlet under the railroad tracks, the drain flows east through an excavated drainage channel to the outlet at the 7th Concession Drain. Dense vegetation was present in the channel with herbaceous vegetation along the banks. The channel was ~2.1m wide and 0.1m deep.	Clay/muck/ silt	Riparian: meadow sp., grass In-stream: cattails, *phragmites sp.*	Warm	Low	July 1 – Mar 15	Undetermined	None observed.
7th Concession Drain	F Class – Channelization Intermittent or Ephemeral	Within the proposed East/West Connector ROW	The drain flows north from Highway 401 to 6th Concession Drain in a defined channel between agricultural fields. The east bank was treed with crops present along the west bank. Dense in-stream vegetation was present and the channel was ~1.8m wide and 0.2m deep.	Clay/silt/sand	Riparian: meadow sp., treed hedgerow on east bank In-stream: cattail, *phragmites sp.*	Warm	Low	July 1 – Mar 15	Undetermined	None observed.
8th Concession Drain (in the west)	F Class – Channelization Intermittent or Ephemeral	Within the proposed East/West Connector study area.	The drain flows north in the ditch along west side of the 8th Concession. There were numerous inflowing tile drains from the adjacent agricultural fields. Woody riparian vegetation was sparse herbaceous vegetation was dominant along with dense in-stream vegetation. It is a very flashy drain as it was at bankfull capacity (depth of ~1m) during a rain event while two weeks earlier during previous field investigations, no flow was present (~0.25m wide ar 0.02m deep).	Clay/silt	Riparian: meadow sp. grass, woody shrubs and trees In-stream: cattails, *phragmites sp.*	Warm	Low	July 1 – Mar 15	Undetermined	None observed.
Hayes D&W Drain	F Class – Channelization Intermittent or Ephemeral	Within the proposed East/West Connector study area.	The drain flows north through the East/West Connector in a defined channel between active agricultural fields. Water was present but was barely flowing. The drain banks were treed with in-stream vegetation ranging from dense to absent in sections. All flat habitat with lots of woody and vegetation debris in the channel. The channel was ~1.9m wide and 0.1m deep. In the East/West Connector study area there was a large pond (30m X 260m and 0.7m deep) present in the agricultural field to the west of the drain which was connected to the drain by an overflow channel. The pond receives flow from field runoff by means of an inflowing channel located in a hedgerow southwest of the pond. The riparian vegetation consisted of woody and herbaceous species while the pond devoid of vegetation.	Clay/silt/ sand/detritus <u>Pond:</u> sand/clay/silt	Riparian: grape vine, hawthorn, rose, ash, dogwood, sumac, willows, meadow sp., grass In-stream: cattails, grass, *phragmites sp.* <u>Pond</u> Riparian: rose, hawthorn, sumac, dogwood, meadow sp. In pond: none	Warm	Low	July 1 – Mar 15	Undetermined	Campground owner said drain is dry in summer except for rain events. None observed at crossing due to turbid water.

Waterbody	Draft DFO Drain Classification & Flow (P/I/E)	Location of Drain Investigated	Channel Description Summary	Substrate Type	Vegetation (Riparian & In-stream)	Thermal Regime (Warm/ Cool/ Cold)	MNR Interpretation of the Fish and Fish Habitat Sensitivity (Low, Moderate, High or Unknown)	MNR Specified In-water Timing Window for Construction	Directly Support a Fishery (Direct, Indirect or None) & Type	Fish Species Present
9th Concession Drain	E Class – Channelization Permanent	Within the proposed East/West Connector Road study area.	The drain flows north in the ditch along the west side of 9th Concession between the road and agricultural fields/residential homes. All flat habitat with sparse in-stream vegetation with riparian vegetation consisting of woody (trees and shrubs) and herbaceous species. The channel was ~2m wide and 0.2m deep but at bankfull capacity with a depth of 1m after a rain event.	Sand/ gravel/ clay/silt	Riparian: meadow sp., grasses, maple, shrubs In-stream: cattails	Warm	Low	July 1 – Mar 15	Direct (background data) bait, pan and sportfish	Banded Killifish Black Crappie Bluegill Bluntnose Minnow Central Mudminnow Common Carp Creek Chub Emerald Shiner Fathead Minnow Gizzard Shad Goby family Golden Shiner Goldfish Green Sunfish Largemouth Bass Mooneye family Northern Pike Pumpkinseed Rock Bass Spotfin Shiner Striped Shiner Tadpole Madtom white crappie White Sucker Yellow Perch
Little River Drain	C Class – Channelization Permanent	Within the proposed East/West Connector Road study area	The river flows north in a defined channel between agricultural fields with dense riparian vegetation. Flat dominated habitat with some riffles and pools caused by debris jams. There were numerous inflowing tile drains from the adjacent fields. The width of channel varied greatly with an average width of ~1.4m and a depth of 0.15m.	Clay/muck/ silt/sand	Riparian: red osier dogwood, elm, ash, rose, meadow sp., hawthorn, Manitoba maple In-stream: cattails, grass, *phragmites sp.*	Warm	Low	July 1 – Mar 15	Direct (background data)	None observed at crossing due to turbid water.
Watson Drain	C Class – Channelization Permanent	Within the proposed East/West Connector Road study area.	The drain flows north in the west ditch along the 10th Concession through the East/West Connector Road study area. There were numerous entrance culverts for residential properties present along the drain. The flow in ditch consisted of all flat habitat with sparse in-stream vegetation. The channel was ~1.5m wide and 0.15 deep.	Clay/silt/ sand/detritus	Riparian: grass, cattails, *phragmites sp.*, meadow sp., poplar, Manitoba maple In-stream: cattail, grass, *phragmites sp.*	Warm	Low	July 1 – Mar 15	Undetermined	None observed at crossing due to turbid water.

Waterbody	Draft DFO Drain Classification & Flow (P/I/E)	Location of Drain Investigated	Channel Description Summary	Substrate Type	Vegetation (Riparian & In-stream)	Thermal Regime (Warm/ Cool/ Cold)	MNR Interpretation of the Fish and Fish Habitat Sensitivity (Low, Moderate, High or Unknown)	MNR Specified In-water Timing Window for Construction	Directly Support a Fishery (Direct, Indirect or None) & Type	Fish Species Present
10th Concession Drain	F Class – Channelization Intermittent or Ephemeral	Within the proposed East/West Connector study area.	At the East/West Connector ROW the drain flows north through a defined channel in woody vegetated hedgerow. There was minimal flow present along with moderate woody debris and in-stream vegetation. The drain receives inflow from numerous tile drains and was ~2.9m wide and 0.7m deep.	Clay/silt/ detritus	Riparian: meadow sp., ash, grape vine, elm, hawthorn, rose In-stream: grass, meadow sp., *phragmites sp.*, cattails, sedges	Warm	Low	July 1 – Mar 15	Undetermined	None observed at crossing due to turbid water.

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Legend

- East West Arterial Study Area
- Botanical Survey
- Permanent Streams/Drains
- Intermittent Streams/Drains

ecoplans
A member of MMM GROUP

Lauzon Parkway Improvements Class EA Study
PART C - E-W Arterial Study Corridor
Botanical Survey Units

0 250 500
meters
1:15,000

N

Date: August 2013
Project No: 3211012
Exhibit No: F-24

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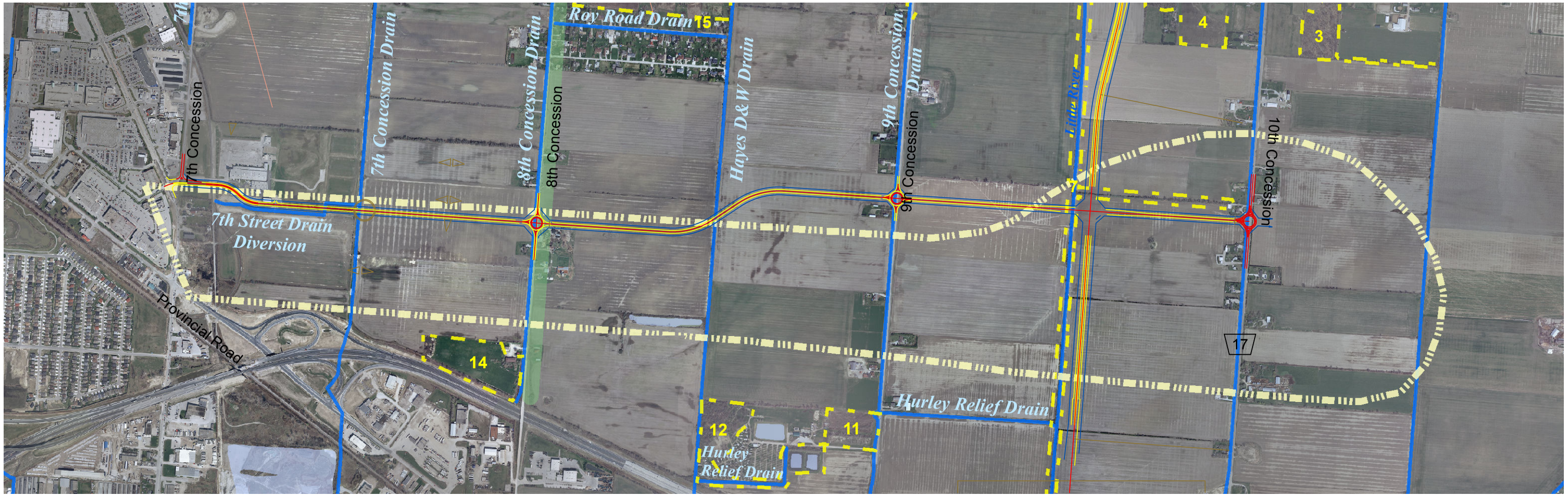

Legend

- East West Arterial Study Area
- Habitat Areas (Ecoplans fieldwork)
- Permanent Streams/Drains
- Intermittent Streams/Drains

ecoplans
A member of MMM GROUP

Lauzon Parkway Improvements Class EA Study
PART C - E-W Arterial Study Corridor
Wildlife Survey Units

0 250 500
meters
1:15,000

N

Date: August 2013
Project No: 3211012
Exhibit No: F-25

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Legend

- EW Arterial Study Area
- Natural Heritage (City of Windsor OPA #60)
- OpenSpace (City of Windsor OPA #60)
- Provincially Significant Wetlands (Ministry of Natural Resources)
- Drainage
- Piped Section of Drain (Investigated)
- Approximate Drain Location Investigated
- Pond Habitat (Investigated)

ecoplans
A member of MMM GROUP

Lauzon Parkway Improvements Class EA Study
PART C - E-W Arterial Study Corridor
Watercourse Crossings

0 250 500
meters
1:15,000

N

Date: August 2013
Project No: 3211012
Exhibit No: F-26

PART D. METHODOLOGIES FOR CONDUCTING FIELD SURVEYS

Field surveys of the three study corridors were conducted in 2011 and 2012 to characterize existing conditions and to identify species and habitats of conservation concern. The field surveys were conducted on the existing road right-of-way and on adjacent private lands for which permission to enter had been granted. The surveys were conducted on optimal dates to document resident plants, butterflies, dragonflies, damselflies, reptiles, amphibians, birds, and mammals. Fish communities in the study corridors were characterized with reference to DFO, OMNR, and Essex Region Conservation Authority records.

Vascular Plants: The field surveys for vascular plants were conducted by walking the lengths of existing rights of way and through areas of remnant natural vegetation on private lands for which permission to enter had been granted. The presence and abundance of species of conservation concern and representative species were recorded within 46 vegetation survey units established for the survey. Each unit represented a segment of roadway, riparian zone or hedgerow. The UTM coordinates (NAD83) of SAR and S1-S3 species were recorded by a hand-held Garmin Vista HCx GPS unit. Regionally rare species (ERCA 2008) were recorded when present. Voucher specimens were taken to document species of conservation concern and plants that could not be readily identified in the field. The surveys were on 14 survey dates during June, July and August 2011, and, February 2012 (refer to Exhibit F-27, Field Chronology).

The timing of the 2011 field surveys ensured that flowers and/or fruits were available to correctly identify Climbing Prairie Rose (*Rosa setigera*) (S3, Special Concern). In 2011, Shumard Oak was provisionally identified based on leaf and bark characters. A winter survey was subsequently conducted in 2012 to collect leaves, twigs and fruit to confirm the identification of apparent Shumard Oak. This material was subsequently reviewed and identified by a recognized authority on oak species in Ontario, Dr. Peter Ball, University of Toronto at Mississauga (February 9, 2012).

The conservation status of plant species has been evaluated using *ERCA 2007, 2008, 2011* for regional significance; Oldham and Bricker (2009) for provincial significance (S-Ranks S1-S3)); the OMNR *Species At Risk in Ontario List* (current at time of report preparation) for SAR status. Nomenclature follows the *Ontario Plant list* (Newmaster et al. 1998).

Butterflies, Skippers, Damselflies and Dragonflies*:* Targeted field surveys for Lepidoptera (butterflies and skippers) and Odonata (damselflies and dragonflies) surveys were completed on two dates (August 4, 2011 and August 10, 2011), with supplemental observations on more than twenty-separate dates from March – August 2011 (refer to Exhibit 23, Field Chronology). The surveys were undertaken by qualified staff under suitable conditions, through a range of seasons and survey times (i.e. morning/afternoon). Where possible, survey locations were selected to maximize habitat diversity, to target specialized habitats where present (e.g. pond, old field, sedge meadow) and to maximize observation potential (e.g. ecotones were favoured over dense woodland). To the extent possible, dates of surveys were selected to maximize detection of odonates and butterflies. As different species have varying flight periods, surveys were spread over the course of the summer such that early and late flying species would be detected.

The field surveys were conducted within 33 wildlife survey units based on broad functional habitat characteristics and continuity. Where permission to enter was available, surveys were carried out by random transects through survey units and/or coverage of ecotones and feature edges. Otherwise, edge surveys were completed from roadsides.

The conservation status and abundance of Lepidoptera and Odonata species has been evaluated using the following:

- *NHIC Ontario Odonata atlas*
- *Butterfly Atlas of Ontario*
- The *Butterflies of Canada* webpage
- Range and abundance descriptions derived from reference literature (e.g. *Butterflies through Binoculars* (Glassberg 1999); *Damselflies of the Northeast* (Lam, 2004))
- *Odonata of Southern Ontario* webpage (Pratt)
- *Checklist of the Odonates of Oxford County* (Holdsworth and Skevington, 2011)
- *Checklist of the Butterflies of Oxford County* (Holdsworth and Skevington, 2009)
- *Checklist of the Butterflies of Middlesex County* (Martin et al, 2000)
- Professional expertise and field experience

Reptiles and Amphibians: A field protocol for the passive emergence surveys for Butler's Gartersnake was developed with reference to recent MRC road improvement experience in the Sarnia area and in consultation with OMNR SAR Biologist (Ron Gould, formerly OMNR Aylmer office). The protocol has been successfully applied to identify occurrences of Butler's Gartersnake and to develop appropriate mitigation measures to protect these species during construction of adjacent road works. This protocol was subsequently verified by OMNR for use in this study (OMNR meeting September 27, 2011).

We subsequently completed a preliminary assessment of suitable habitat through air photo interpretation which was later refined through ground-truthing in the field. We then undertook passive surveys on nine dates from March 18 (scoping) through May 17, 2011 (totaling approximately 100 hours in field), to detect newly emerged Butler's Gartersnake in roadside ditches, drains and other potentially suitable hibernacula areas.

As these were passive surveys in which no animals were handled or disturbed, no Endangered Species Act (ESA) permit was required, per MNR direction.

In addition to the targeted emergence surveys, we completed supplemental surveys on more than 40 dates between March and August 2011, recording any wildlife evidence, when noted (including observations, vocalizations, tracks, trails etc.). Surveys covered multiple seasons including different herpetofaunal life cycle components (e.g. reptile emergence, basking and amphibian 'calling').

Birds: Avifaunal field surveys were completed under appropriate weather conditions on 16 separate dates from April 29, 2011 through July 27, 2011 with a total in-field effort of approximately 65 person hours). Refer to Exhibit 23, Field Chronology, for additional details.

The study area was partitioned into thirty-three (33)[3] Wildlife Survey Units (WSUs), based on broad functional habitat characteristics and continuity. These areas were thoroughly covered by walking random transects[4] and recording presence, abundance and level of breeding evidence (using *Ontario Breeding Bird Atlas* [OBBA] protocols). Additional evidence of breeding activity was recorded during other field surveys, when noted.

The conservation status of avifaunal species has been evaluated using:

- The NHIC / MNR website for provincial rarity ranks (i.e. S-Ranks);
- The *Significant Wildlife Habitat Technical Guide* (OMNR 2000) – list of 'Area Sensitive' bird species;
- `Habitat use`, based on *Landscape ecology of birds breeding in temperate forest fragments*. Freemark, K. and Collins, B. 1989*;*
- The *Species At Risk in Ontario* list (MNR – current list at time of report preparation) for provincial status designations;
- The national *Species At Risk* list (COSEWIC – current list at time of report preparation) for national status designations.

Mammals: Mammals were surveyed incidentally during other field surveys from March through December 2011 by recording all species observations and sign (e.g. tracks / trails, scat, burrows, dens, browse, vocalizations).

2.0 FIELD CHRONOLOGY

A chronology of field activities is presented in Exhibit F-27.

[3] Note that WSUs were numbered 1 through 42, based on initial assignment prior to field work. Based on field surveys, WSUs were refined, consolidated or eliminated based on field truthing, but the original numbering convention retained for data continuity. Also, some unit numbers were retained, though these units were not surveyed because we did not have permission to enter.

[4] With the exception of WSUs 2, 11, 14, 26, 35, 36 and 39, where permission to enter had not been granted – reconnaissance level / edge surveys were completed all remaining areas.

Exhibit F-27: Field Chronology for Plant and Wildlife Surveys, 2011-2012

Date	Staff	Level of Effort (total person hours in field)	Task Description
March 18, 2011	JH	8.5	**Wildlife field survey:** roadside / scoping
April 13, 2011	JH, GG	18.0	**Wildlife field survey:** aerial recon + meeting [Phil Roberts]
April 29, 2011	JH	7.0	**Wildlife field survey:** focus Snakes + incidental fauna; breeding birds
April 30, 2011	JH	10.5	**Wildlife field survey :** focus Snakes + incidental fauna; breeding birds
May 4, 2011	JH, GG	16.0	**Wildlife field survey:** focus Snakes + incidental fauna; breeding birds
May 5, 2011	JH, GG	17.0	**Wildlife field survey :** focus Snakes + incidental fauna; breeding birds
May 9, 2011	JH	7.5	**Wildlife field survey :** focus Snakes + incidental fauna; breeding birds
May 10, 2011	JH	8.0	**Wildlife field survey :** focus Snakes + incidental fauna; breeding birds
May 17, 2011	JH	7.25	**Wildlife field survey :** focus Snakes + incidental fauna; breeding birds
May 24, 2011	JH	7.5	**Wildlife field survey :** breeding birds + incidental fauna; breeding birds
May 27, 2011	JH	6.5	**Wildlife field survey :** breeding birds + incidental fauna; breeding birds
June 2, 2011	BD	6.0	**Vegetation field survey:** BD#1, #3; study area orientation
June 3, 2011	BD	6.0	**Vegetation field survey:** BD#4, #5, #6,
June 6, 2011	JH	10.5	**Wildlife field survey :** breeding birds + incidental fauna

Date	Staff	Level of Effort (total person hours in field)	Task Description
June 7, 2011	JH	6.0	**Wildlife field survey :** breeding birds + incidental fauna
June 13, 2011	RS	7.0	**Wildlife field survey :** breeding birds + incidental fauna
June 15, 2011	RS	7.0	**Wildlife field survey :** breeding birds + incidental fauna
June 24, 2011	JH, RS	14.0	**Wildlife field survey :** breeding birds + incidental fauna
July 14, 2011	JH	6.5	**Wildlife field survey :** breeding birds + incidental fauna
July 27, 2011	JH	6.0	**Wildlife field survey :** breeding birds + incidental fauna
July 28, 2011	BD	6.0	**Vegetation field survey:** BD#1, #2, #3E, #4,
July 29, 2011	BD	6.0	**Vegetation field survey:** BD#7, #8
August 2, 2011	BD	6.0	**Vegetation field survey:** BD#2, BD#3, Lauzon Pkwy, OH lands
August 3, 2011	BD	10.0	**Vegetation field survey:** BD#10, #11, #12, #13, #14, #15, #16
August 4, 2011	BD, JH	16.5	**Vegetation field survey:** BD#4, #12, #17, #18, #19, #20 **Wildlife field survey :** odonata and butterflies
August 5, 2011	BD	6.0	**Vegetation field survey:** BD#v 4, #6
August 8, 2011	BD	6.0	**Vegetation field survey:** LP#1, #2, #3, #4, #5, #6, SR #B1, B#2
August 9, 2011	BD	10.0	**Vegetation field survey:** RR42#1, #2, #3, #4, #5, #6

Date	Staff	Level of Effort (total person hours in field)	Task Description
August 10, 2011	BD, JH	12.0	**Vegetation field survey:** RR42#7, #8, #9 **Wildlife field survey :** odonata and butterflies
August 17, 2011	BD	7.5	**Vegetation field survey:** field check LP#1 for rare *Carex*; windshield survey Baseline Road
November 7, 2011	AS, TP	15.5	**Aquatic Field Survey:** investigating aquatic features within the study area
November 8, 2011	AS, TP	22	**Aquatic Field Survey:** investigating aquatic features within the study area
November 9, 2011	AS, TP	20	**Aquatic Field Survey:** investigating aquatic features within the study area
November 10, 2011	AS, TP	8	**Aquatic Field Survey:** investigating aquatic features within the study area
November 11, 2011	AS, TP	20	**Aquatic Field Survey:** investigating aquatic features within the study area
November 28, 2011	AS, TP	19.5	**Aquatic Field Survey:** investigating aquatic features within the study area
November 29, 2011	AS, TP	12	**Aquatic Field Survey:** investigating aquatic features within the study area
November 30, 2011	AS, TP	20	**Aquatic Field Survey:** investigating aquatic features within the study area
December 1, 2011	AS, TP	19.5	**Aquatic Field Survey:** investigating aquatic features within the study area
February 1, 2012	BD	9	**Vegetation field survey:** Shumard Oak twig/fruit collection BD#6, BD#4
February 2, 2012	BD	9.5	**Vegetation field survey:** Shumard Oak twig/fruit collection BD#7, BD#8, BD#11, BD#12, 10th Concession roadside trees
February 3, 2012	BD	8.25	**Vegetation field survey:** Shumard Oak twig/fruit collection BD#20, BD#16