APPENDIX F

Natural Heritage Assessment

TO: Jack Thompson; Jordan Frost; Carolyn Ryall
FROM: Don McKinnon
cc: Ministry of Transportation
DATE: November 12, 2018
SUBJECT: Casablanca Boulevard & GO Access EA: Natural Heritage Assessment Summary
OUR FILE: File #18-7650

1.1 Natural Environment Baseline Conditions

This section provides a summary of natural environment baseline conditions and includes a summary description of:

- Fisheries and Aquatic Habitat;
- Terrestrial Resources; and
- Species at Risk.

In developing the description of baseline conditions a variety of data sources were considered including provincial data sets from Ministry of Natural Resources and Forestry (MNRF), Municipal Official Plans, Niagara Peninsula Conservation Authority (NPCA) data, and from field surveys completed within the Focused Natural Environment Study Area (herein referred to as the 'Focused Study Area' as shown in **Figure 1**).

1.1.1 Fisheries and Aquatic Habitat

The Focused Study Area is located within the NPCA designated Lake Ontario South Shore sub-watershed and the Niagara Peninsula Source Protection Area (NPSP; NPCA 2004 and NPCA 2013). The drainage basin of the sub-watershed covers approximately 40% of the Niagara Peninsula Source Protection Area, and has a drainage area of 598 km^2 (NPCA 2012; NPCA 2013). The northern portion of the study area (Casablanca & Queen Elizabeth Way [QEW] Interchange) is located within the floodplain of the Lake Ontario Tributary 39; floodplain mapping for this tributary is currently being completed by the NPCA.

A review of base mapping provided by the NPCA indicates that one (1) water body feature (i.e. a drainage feature) is located within the Focused Study Area (NPCA 2018). Additional online mapping indicates that a drain classification has not been assigned to the drainage feature by the Department of Fisheries and Oceans Canada (DFO) (OMAFRA 2018). The drainage feature runs parallel to Casablanca Boulevard to the west and becomes more defined with riparian features east of Casablanca Boulevard north of Vine Road, the CN railway and residential lands. Surface flows associated with the drainage feature flow north before eventually discharging in to Lake Ontario. The location of the drainage feature is illustrated on **Figure 1**.

In response to Dillon's information request, NPCA acknowledged that fish species and other water quality information associated with the drainage feature (including the sub- watershed and Lake Ontario) were limited and not available. Similarly, the MNRF also acknowledged that it did not have any detailed fisheries information for the drainage feature. Furthermore, the drainage feature is not

mapped by the DFO as critical habitat and/or a feature in which Species at Risk (SAR) are known to occur (DFO 2018).

SAR are defined as those listed as *Endangered* or *Threatened* under the *Endangered Species Act* (ESA), 2007. Species of Conservation Concern (SCC) are defined as species listed as *Threatened* or *Endangered* under the federal *Species at Risk Act* (SARA) 2002, but not under the provincial ESA; species that are provincially rare/tracked (i.e., have a Sub-national (provincial) Rank of S1 – Critically Imperiled, S2 – Imperiled or S3 – Vulnerable) and/or are designated as Special Concern (SC) under the ESA.

CASABLANCA ESR

Figure 1
Natural Heritage Features

- Casablanca Boulevard & Go Station Focused Natural Environment Study Area
- Grimsby Go Transit Station Area
- Study Area
- Arterial Road
- Highway
- Railway (CN)
- Watercourse
- Life Science Area of Natural and Scientific Interest

Niagara Escarpment

- Escarpment Natural Area
- Escarpment Protection Area

0 75 150 225 m

N W E S

MAP DRAWING INFORMATION:
ESRI IMAGERY (2013), MNRF

MAP CREATED BY: SFG / LK
MAP CHECKED BY: CV
MAP PROJECTION: NAD 1983 CSRS UTM Zone 17N

FILE LOCATION: G:\cad\GIS\187650\MXD\Natural Heritage Features.mxd

DILLON CONSULTING

PROJECT: 187650
STATUS: DRAFT
DATE: 2018-11-13

An aquatic assessment of the drainage feature was completed on August 7, 2018 by a Dillon aquatic biologist. A summary of observations resulting from the assessment are provided below. Refer to photos 1 through 9 in Table 1 of **Appendix A** for representative site photos.

Drainage Feature (Casablanca Boulevard)
The drainage feature along the west side of Casablanca Boulevard, starting at Main Street West, was dry at the time of the site investigation for approximately 330 m. Just south of Elgin Street, the drainage feature ends at a driveway where a culvert appears to convey flow to the east side of Casablanca Boulevard (**Photo 1**). The drainage feature starts again north of the driveway. In this stretch, its main function appears to be conveyance of stormwater flow since the drainage feature ended at a catch basin (**Photos 2 and 3**).

Approximately 330 m north of Main Street West, in between Elgin Street and James Street, flow originating from a corrugated steel pipe (CSP) culvert was observed in the drainage feature. The origin of the culvert was not identified during the field investigation but it appeared to come from below the upstream sections of the drainage feature (**Photo 4**). From this point, the drainage feature maintained flow in a northerly direction until Vine Road where it flowed east into a culvert under Casablanca Boulevard before exiting into a swale in association with a residential property. It exhibited flat morphology with predominantly clay substrate with some silt.

The mean bankfull width of the drainage feature channel was approximately 4.0 m and the mean bankfull depth was approximately 2.5 m. At the time of the field survey, the wetted width was approximately 0.30 m and the mean depth was approximately 0.02 m. The drainage feature was covered by emergent vegetation throughout and shaded by trees for approximately 1-30% of the area. Further, the banks were well vegetated and protected (**Photos 5 and 6),** but had areas that appeared to have exposed soil, vulnerable to erosion. The riparian zone along the right upstream bank was scrubland due to the fencerows along the property lines and lawn along the left upstream bank. Beyond the direct riparian zone, the road ditch was surrounded by residential homes, roads and agricultural fields. Watercress (*Nasturtium officinale*) was observed downstream of the southern culvert, where flow originated, suggesting potential groundwater input (**Photo 7**).

Green Frogs (*Lithobates clamitans*) were observed within the drainage feature at the Vine Road culvert where the water was deeper. Duckweed (*Lemna minor*) and an Arrowhead species (*Sagitarria sp.*) were also observed in this part of the drainage feature (**Photo 8**). North of Vine Road and up to the rail line, the drainage feature contained standing water and appeared to convey water towards the Vine Road culvert to the south (**Photo 9**).

1.1.1.1 Permitting Requirements

Following the review of background material and the results of the 2018 aquatic assessment, there is strong evidence to suggest that the drainage feature is used for flow conveyance and does not provide suitable fish habitat. As such, it is not anticipated that the proposed road widening activities at Casablanca Boulevard and subsequent proposed entrapment of the drainage feature will cause serious harm to fish or fish habitat as per Section 35 of the *Fisheries Act* (R.S.C., 1985, c. F-14). As a result, it is not anticipated that a Fisheries Assessment or a Request for Review under the DFO be required. This will be confirmed during detail design.

As the drainage feature is mapped by the NPCA, additional consultation and permitting may be required under *Ontario Regulation 155/06* prior to commencing the proposed road widening activities on Casablanca Boulevard.

1.1.2 Terrestrial Resources

Adjacent land-use to the Focused Study Area along Casablanca Boulevard is primarily residential, agriculture and commercial business. There are no natural heritage features located within the Focused Study Area, however, the Escarpment Natural Area, the Escarpment Protection Area as well as the Niagara Section Escarpment Life Science Area of Natural and Scientific Interest (ANSI) are located immediately south of the Focused Study Area which are shown on **Figure 1** (MNRF 2018).

Numerous sources were consulted to characterize baseline conditions. These are summarized below.

Ministry of Natural Resources and Forestry

An Information Request was sent to the MNRF Guelph District Office on August 30, 2018. Comments and received from the MNRF (September 26, 2018) indicated that none of the following significant natural features are located within the Focused Study Area:

- Wildlife Concentration Areas;
- Areas of Natural and Scientific Interest (ANSI); and
- Provincially Significant Wetlands (PSW).

No unevaluated, locally significant and/or provincially significant wetlands (PSW) are located within the Focused Study Area.

NHIC Database records (i.e. 1 km data squares 17PH1384, 17PH1484, 17PH1383, and 17PH1483 that intersect with the Focused Study Area) indicate there are no potential significant vegetation communities within the study area (MNRF, 2018). Furthermore, no significant vegetation communities were identified during the field studies that were completed within the Focused Study Area.

Niagara Peninsula Conservation Authority

An information request was sent to the NPCA on August 30, 2018. NPCA response (received on November 5, 2018) was consistent with information provided by MNRF; there are no PSWs, or other natural heritage features (e.g., woodlands, ANSIs, etc.) known to occur within the Focused Study Area.

NPCA online mapping indicates that the Focused Study Area falls within lands designated as Significant Groundwater Recharge Areas, and areas of Highly Vulnerable Aquifer (NPCA 2018). NPCA outlines planning guidelines for Significant Groundwater Recharge Areas and Highly Vulnerable Aquifer areas in the Policies, Procedures and Guidelines for the Administration of Ontario Regulation 155/06 and Land Use Planning Policy Document (2011). These planning guidelines shall be considered in the development of alternatives for the study area.

Local Municipal and Regional Official Plans were also consulted to characterize baseline conditions along the corridor. This is described below.

Niagara Region Official Plan – Natural Systems

The Niagara Region Official Plan (OP) outlines the Core Natural Heritage System containing environmental features and functions of special importance to the Region's ecosystem. Schedule C of the OP maps these features (**Appendix A**).

Within the Casablanca Blvd focus area for the study, there are no significant Core Natural Heritage features.

Adjacent to the focus area and within the study area, there is:

- a Fish Habitat, approximately 300m west of Casablanca Blvd leading north and feeding into Lake Ontario (also a designated fish habitat);
- an Environmental Conservation Area, approximately 300m west of Casablanca Blvd, and approximately 200m south of the South Service Road; and,
- an Environmental Protection Area, approximately 100m south of the intersection of Main Street and Casablanca Blvd.

These policies are outlined in **Section 7.B** of the OP.

Town of Grimsby Official Plan – Natural Systems

The Town of Grimsby's Official Plan (OP) outlines policies for Environmental Management and Sustainability (**Section 4.0**), specifically containing policies to protect Grimsby's ecological health and environmental sustainability. Appendices 1 through 5 of the OP, maps these features.

Within the Casablanca Blvd focus area for the study, there are no significant Natural Heritage Features or Hydrological Features. Per Appendix 5 of the OP, the western extent of the South Service Road and Casablanca Blvd between the South Service Road, and approximately 50m south of the CN Rail, is an area of high aquifer vulnerability.

Adjacent to the focus area and within the study area, there is:

- a Key Hydrological Feature and Fish Habitat, approximately 300m west of Casablanca Blvd leading north and feeding into Lake Ontario; and,
- areas of High Aquifer Vulnerability primarily around the outer boundary of the study area.

Policies for High Aquifer Vulnerability areas are outlined in **Section 4.2** of the OP. Relevant policies include:

- Development and site alteration shall be restricted in the vicinity of significant groundwater recharge, surface water features and areas of high aquifer vulnerability along with ground water features of importance to municipal water supplies so that the safety, quality and quantity of ground water will be protected or improved or restored.
- More detailed hydrogeological studies shall be required, through secondary plan studies and prior to approval of any site specific applications for Official Plan Amendment or rezoning, to identify and refine groundwater recharge /discharge areas and areas of high aquifer

vulnerability, to assess impact from development and to protect the hydrological integrity of significant groundwater recharge and discharge functions.

- The hydrogeological studies completed at a secondary plan stage shall assess the sensitivities of an area, identify critical areas, define the influence boundaries, ensure the hydrological integrity of the areas are protected, provide recommendations for mitigation measures, set out policies on permitted uses or lot restrictions and identify criteria to assess subsequent applications. Where applicable, water balances will be provided to demonstrate that wetland features can be maintained or improved. A subsequent study shall be required in support of a development application to refine the impact assessment with more detailed recommendations for site design and mitigation measures. Such studies shall be completed to the satisfaction of the Town in consultation with the Niagara Peninsula Conservation Authority.
- Development and site alteration shall only be permitted if it will have no negative impacts, including cross-jurisdictional and cross-watershed impacts, on:
    - The quantity and quality of surface and ground water;
    - The functions of ground water recharge and discharge areas, aquifers and headwaters;
    - The natural hydrologic characteristics of watercourses such as base flow;
    - Surface or ground water resources adversely impacting on natural features or ecological functions of the Natural Heritage System or its components;
    - Natural drainage systems, stream forms and shorelines; and
    - Flooding or erosion.

Mitigative measures and/or alternative development approaches may be required in order to protect, improve, or restore similar surface water features, sensitive ground water features and their hydrologic functions.

Results of Field Investigations

Field investigations to confirm background information were completed within the Focused Study Area on June 8, August 7, and October 23. The Focused Study Area primarily consists of anthropogenic areas in association with urban and rural developments. Observations of vegetation communities made during the field investigations are consistent with background information provided in agency feedback received from submitted Information Requests and MNRF and NPCA online mapping (MNRF 2018; NPCA 2018).

Detailed information pertaining to the field investigations are presented in the following sections.

1.1.3 Ecological Land Classification and Botanical Surveys

Vegetation communities were assessed using Ecological Land Classification (ELC) for Southern Ontario (Lee et al. 1998) to identify and assess potential natural heritage features within the study area. During the field investigations, vegetation was characterized using ELC in order to classify and map ecological communities to the vegetation level. The ecological community boundaries were determined through the review of aerial photography and then further refined during field investigations. ELC was completed for the study area during field investigations on August 7, 2018.

The ELC protocol recommends that a vegetation community be a minimum of 0.5 ha in size before it is defined. Based on the composition of vegetation communities within the study area, patches of vegetation less than 0.5 ha or disturbed/planted vegetation can be described, provided they clearly fit within an ELC vegetation type.

Spring (June 8), summer (August 7) and fall (Oct 23) botanical surveys were conducted using wandering transects to determine species presence, richness and abundance. Species nomenclature is based on the Ontario Plant List (Newmaster et al., 1998).

Results

ELC mapping completed in 2018 is illustrated in **Figure 2.** Resulting ELC communities mapped within the Focused Study Area were found to be comparable to vegetation communities previously mapped by NPCA (NPCA 2018). Refer to photos 10 through 21 in Table A-1 of **Appendix A** for representative site photos.

Within the Focused Study Area, immediately adjacent to Casablanca Boulevard includes low density residential (CVR_1), transportation roadways (CVI_1), open agriculture (OAG) and annual row crops (OAGM1).

Business Sector (CVC_1) areas comprise of the majority of lands present along the portion of South Service Road located west of Casablanca Boulevard. Vegetation cover along a portion of the South Service Road consists of Dry - Fresh Mixed Meadow/ Gray Dogwood Deciduous Shrub Thicket complex (MEMM3/THDM2-4).

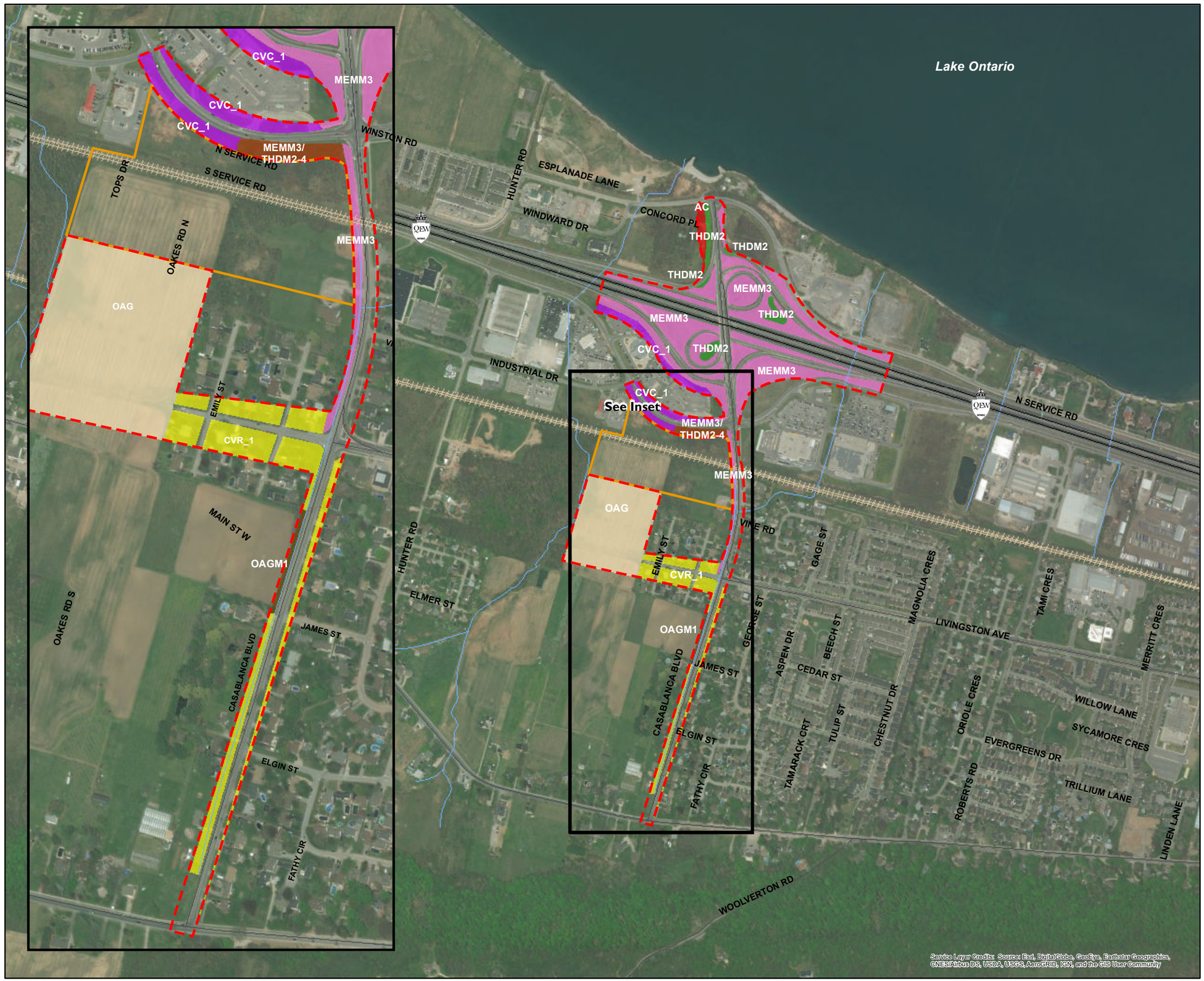
With respect to the Casablanca Boulevard and QEW interchange associated with the Focused Study Area, the primary vegetation cover consists of Dry-Fresh Mixed Meadow (MEMM3). The Dry-Fresh Mixed Meadow (MEMM3) areas also contain smaller, interspersed sections of Dry-Fresh Deciduous Shrub Thicket (THDM2). In addition to the QEW (CVI_1), anthropogenic land uses such as business sector areas (CVC_1) and active construction (AC) are mapped within the Focused Study Area northwest and southwest of the Casablanca Boulevard and QEW Interchange. The aforementioned communities are further described in **Table 1.**

TABLE 1: ECOLOGICAL LAND CLASSIFICATION

ELC Community	Area within Study Area	Vegetation	Photo (Appendix A)
MEMM3 Dry – Fresh Mixed Meadow	8.95 ha	This community was present within both the maintained road right-of-ways adjacent to Casablanca Boulevard as well as the Casablanca Boulevard and QEW interchange. There were two distinctive areas present consisting of both managed and unmanaged segments. Managed areas occurred adjacent to either a roadway or	10 - 12

ELC Community	Area within Study Area	Vegetation	Photo (Appendix A)
		road interchange and were frequently mown. The unmanaged areas had not been actively managed (mown) and were left in a more natural state. These communities were dominated by several species of grass and disturbance tolerant forbs such as Wild Carrot (*Daucus carota*), Cow Vetch (*Vicia cracca*), and Birdsfoot Trefoil (*Lotus corniculatus*).	
THDM2 Dry - Fresh Deciduous Shrub Thicket	0.67 ha	This area consisted of small areas of tall shrubs and low trees mainly located within or adjacent to the interchange associated with the QEW. Dominant species consisted of common upland trees and shrubs associated with higher levels of disturbance such as Common Buckthorn (*Rhamnus cathartica*), Russian Olive (*Elaeagnus angustifolia*), Tatarian honeysuckle (*Lonicera tatarica*), Staghorn Sumac (*Rhus Typhina*), Gray Dogwood (*Cornus racemosa*) and Multiflora Rose (*Rosa Multiflora*).	13 - 14
MEMM3 THDM2-4 Complex - Dry - Fresh Mixed Meadow / Gray Dogwood Deciduous Shrub Thicket	0.22 ha	This community consisted of a complex of a gray dogwood dominated deciduous thicket with inclusions of mixed meadow. Dominant vegetation was composed of a mixture of tall shrubs and low trees consisting primarily of Gray Dogwood (*Cornus racemosa*), Green Ash (*Fraxinus pennsylvanica*), Common Buckthorn (*Rhamnus cathartica*), Hawthorn (*Crataegus sp.*), Apple (*Malus spp*.) and Tatarian honeysuckle (*Loncera tatarica*).Groundcover consisted mainly of disturbance tolerant uplands species such as Wild Carrot (*Daucus carota*), Canada Goldenrod (*Solidago canadensis*), Eastern Late Goldenrod (*Solidago altissima*), Riverbank Grape (*Vitis riparia*), Teasel (*Dipsacus sylvestris*) and several species of grasses (*Poaceae spp.*) and sedges (*Carex spp.).* In	15

ELC Community	Area within Study Area	Vegetation	Photo (Appendix A)
		addition, in lower topographic areas several species of rushes (*Juncaceae spp.*), Reed Canary Grass (*Phalaris arundinacea*) and Purple Loosestrife (*Lythrum salicaria*) were also observed. One area to the south of the rail tracks, west of Casablanca Blvd. was observed to contain a small; area dominated by Reed Canary Grass.	
OAG Open Agriculture (Fallow Field)	4.95 ha	A former agricultural field, this community has been left fallow and is now dominated by weedy species such as Wild Carrot (*Daucus carota)*, Goldenrods (*Solidago sp.)* and Chicory (*Cichorium intybus*).	16
OAGM1 Annual Row Crop	0.1 ha	This area consists of agricultural row crops.	17
CVR_1 Low Density Residential	2.05 ha	This area consisted of single family residential dwellings.	18
CVC_1 Business Sector	1.35 ha	This area consisted of commercial and industrial buildings	19
CVI_1 Transportation	8.82 ha	These areas consist of Municipal roads and Highways.	20
AC Active Construction	0.3 ha	This area consists of an active construction site.	21



CASABLANCA ESR

Figure 2
Ecological Land Classification

- Casablanca Boulevard & Go Station Focused Natural Environment Study Area
- Grimsby Go Transit Station
- Arterial Road
- Highway
- Railway (CN)
- Watercourse

Ecological Land Classification

- AC - Active Construction
- CVC_1 - Business Sector
- CVR_1 - Low Density Residential
- MEMM3 - Dry - Fresh Mixed Meadow
- MEMM3 - Dry - Fresh Mixed Meadow/ THDM2-4 Gray Dogwood Deciduous Shrub Thicket
- OAG - Open Agriculture (Fallow Field)
- OAGM1 - Annual Row Crops
- THDM2 - Dry - Fresh Deciduous Shrub Thicket

0 75 150 225 m

N W E S

MAP DRAWING INFORMATION:
ESRI IMAGERY (2013), MNRF

MAP CREATED BY: SFG / LK
MAP CHECKED BY: CV
MAP PROJECTION: NAD 1983 CSRS UTM Zone 17N

FILE LOCATION: G:\cad\GIS\187650\MXD\Ecological Land Classification.mxd

DILLON CONSULTING

PROJECT: 187650
STATUS: DRAFT
DATE: 2018-11-13

A total of 41 botanical species were documented within the Focused Study Area during the 2018 botanical surveys.

Of the 41 species, five (5) could not be identified to species. Fifteen (15) of the plant species are listed a *Secure* or *Apparently Secure* (i.e. SRank of S5 and/or S4) in the province. The remaining 21 species are listed as non-native, status unknown or not suitable targets for conservation activities (i.e. SRank of SE, SU or SNA).

None of the 41 species observed are considered Special Concern under the ESA and/or SCC. The Co-efficient of Conservatism (CC) provides additional information on the nature of the vegetation communities within the Focused Study Area. The CC values range from 0 to 10 and represent an estimated probability that a plant is likely to occur in a landscape that is relatively unaltered or is in a pre-settlement condition. For example, a CC of 0 is given to plants such as Manitoba Maple (*Acer negundo*) that demonstrate little fidelity to any remnant natural community (i.e. may be found almost anywhere). Similarly, a CC of 10 is applied to plants like Shrubby Cinquefoil (*Potentilla fructicosa*) that are almost always restricted to a pre-settlement remnant (i.e. high quality natural area). Introduced plants were not part of the pre-settlement flora, so no CC values have been applied to these species.

Of the 41 botanical species identified within the study area, none had a CC value of seven (7) or greater. The mean CC value for the site is 1.78, indicating an altered landscape. This is typical of an urban environment as compared to naturally occurring environments. A full list of the botanical species observed within the study area has been included in **Appendix A**; Table A-2.

1.1.4 Species at Risk

Feedback received from the MNRF Guelph District (September 26, 2018) included a list of 34 species that have the potential to occur within the Town of Grimsby; this list was reduced through completing a review of secondary source information, including NHIC database records of the Focused Study Area. In total, 14 SAR and 5 SCC were determined to have the potential to occur within 1 km of the Focused Study Area. The resulting list includes species specifically identified by comments provided by the MNRF to be potentially impacted within the Focused Study Area.

A habitat assessment was then completed for the Focused Study area to determine which SAR have the potential to be impacted by the proposed road widening activities for Casablanca Boulevard. This was done by identifying each SAR's habitat requirements and comparing those to the conditions and ELC communities observed within the Focused Study Area. The assessment determined that habitat requirements for the following three (3) SAR and one (1) SCC have the potential to be in the Focused Study Area:

- Barn Swallow (THR)
- Eastern Meadowlark (THR)
- Bobolink (THR)
- Monarch (SC)

Results of the assessment are presented in **Appendix A**; Table A-3. Future follow-up work is recommended to confirm the presence or absence of species (and/or habitat) at the detailed design stage. None of the aforementioned species have regulated habitat under *Ontario Regulation 242/08*.

No SAR were observed in association with the 2018 field investigations. In the event the project has the potential to impact Barn Swallow, Eastern Meadowlark and/or Bobolink habitat, the project can be registered under Section 23.5 (Barn Swallow) or Section 23.6 (Bobolink, Eastern Meadowlark) of Ontario Regulation 242/08, respectively. So long as the project is registered, and the rules in the regulation are followed, the project is exempt from Section 9 (species protection) and Section 10 (habitat protection) under the ESA.

1.1.5 Candidate Significant Wildlife Habitat

Significant Wildlife Habitats (SWHs) are types of natural heritage features that are identified for protection by provincial policy. They consist of wildlife habitats, including vegetation communities, that are ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or a Natural Heritage System. SWHs are identified on the basis of ELC communities using applicable criteria specific to a region.

In order to identify candidate SWH within the Focused Study Area, ELC communities were compared to those listed in the *Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E* (MNRF, January 2015). Following the review of ELC communities and SWH Criteria Schedules, it was determined that no criteria were met for Candidate SWH to exist within the Focused Study Area.

References

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APPENDIX A:

Natural Heritage Supplementary Data

TABLE A-1: SITE PHOTOS

Photo 1 August 7, 2018 Facing north – downstream, culvert conveying flow east, under Casablanca Boulevard	
Photo 2 August 7, 2018 Facing north – downstream, drainage feature in upstream segment with no flow.	

Photo 3 August 7, 2018 Facing south – catch basin within the drainage feature.	
Photo 4 August 7, 2018 Facing south – upstream, culvert where flow originates.	

Photo 5 August 7, 2018 Facing north – downstream, abundant emergent vegetation within drainage feature.	
Photo 6 August 7, 2018 Facing north – upstream, abundant emergent vegetation within drainage feature.	

Photo 7 August 7, 2018 Abundant watercress (*Nasturtium officinale*).	
Photo 8 August 7, 2018 Arrowheads within roadside drainage feature.	

Photo 9 August 7, 2018 Facing north – downstream of Vine Road culvert, towards railroad. Standing water present in drainage feature.	
Photo 10 August 7 2018 Recently mown area of mixed meadow (MEMM3) adjacent to Casablanca Blvd.	

Photo 11 August 7 2018 Recently mown area of mixed meadow (MEMM3) within the interchange of the QEW.	
Photo 12 August 7 2018 Unmaintained area of mixed meadow (MEMM3) adjacent to Casablanca Blvd.	

Photo 13 August 7 2018 Shows a Dry - Fresh Deciduous Shrub Thicket (THDM2) adjacent to Casablanca Blvd	
Photo 14 August 7 2018 Shows a Dry - Fresh Deciduous Shrub Thicket (THDM2) within the QEW interchange	

Photo 15 August 7 2018 Shows the Dry - Fresh Mixed Meadow / Gray Dogwood Deciduous Shrub Thicket (MEMM3 THDM2-4**)** adjacent to the railway tracks.	
Photo 16 August 7 2018 Shows the Open Agriculture (Fallow Field; OAG) community	

Photo 17 August 7 2018 Shows the Annual Row Crop (OAGM1) community.	
Photo 18 August 7 2018 Drainage feature adjacent to area of low density residential development (CVR_1).	

Photo 19 August 7 2018 Business Sector (CVC_1) adjacent to QEW Interchange.	
Photo 20 August 7 2018 Transportation roads (CVI_1) adjacent to business sector (CVC_1) areas.	

Photo 21 August 7 2018 Area of active construction (AC) adjacent to areas of Deciduous Shrub Thicket (THDM2) and QEW interchange.	

Table A-2: Plant List

Scientific Name	Common Name	SARA[1]	ESA[2]	SRank[3]	CC[4]
Acer negundo	Manitoba Maple	---	---	S5	0
Arctium minus	Common Burdock	---	---	SNA	---
Asclepias syriaca	Common Milkweed	---	---	S5	0
Carex sp.	Sedge Species	---	---	---	---
Cichorium intybus	Chicory	---	---	SNA	---
Cirsium arvense	Canada Thistle	---	---	SNA	---
Cornus racemosa	Gray Dogwood	---	---	S5	2
Crataegus sp.	Hawthorn Species	---	---	---	---
Daucus carota	Wild Carrot	---	---	SNA	---
Dipsacus fullonum	Fuller's Teasel	---	---	SE5	---
Elaeagnus angustifolia	Russian Olive	---	---	SNA	---
Fraxinus pennsylvanica	Green Ash	---	---	S4	3
Inula helenium	Elecampane	---	---	SNA	---
Linaria vulgaris	Butter-and-eggs	---	---	SNA	---
Lonicera tatarica	Tartarian Honeysuckle	---	---	SNA	---
Lotus corniculatus	Garden Bird's-foot Trefoil	---	---	SNA	---
Lythrum salicaria	Purple Loosestrife	---	---	SNA	---
Malus sp.	apple species	---	---	---	---
Medicago lupulina	Black Medic	---	---	SNA	---
Phalaris arundinacea	Reed Canary Grass	---	---	S5	0
Phragmites australis ssp. americanus	Common Reed	---	---	S4?	---
Plantago major	Common Plantain	---	---	S5	---
Rhamnus cathartica	Common Buckthorn	---	---	SNA	---
Rhus hirta	Staghorn Sumac	---	---	S5	1
Rosa multiflora	Multiflora Rose	---	---	SNA	---
Salix alba	White Willow	---	---	SNA	---
Solidago altissima ssp. altissima	Eastern Late Goldenrod	---	---	S5	1
Solidago canadensis var. canadensis	Canada Goldenrod	---	---	S5	1

Symphyotrichum novae-angliae	New England Aster	---	---	S5	2
Symphyotrichum pilosum var. pilosum	Old Field Aster	---	---	S5	4
Taraxacum officinale	Common Dandelion	---	---	SNA	---
Tilia americana	American Basswood	---	---	S5	4
Trifolium pratense	Red Clover	---	---	SNA	---
Trifolium repens	White Clover	---	---	SNA	---
Tussilago farfara	Colt's-foot	---	---	SNA	---
Typha angustifolia	Narrow-leaved Cattail	---	---	SNA	3
Verbena hastata	Blue Vervain	---	---	S5	4
Vicia cracca	Tufted Vetch	---	---	SNA	---
Vitis riparia	Riverbank Grape	---	---	S5	0
Poacea sp.	Grass species	---	---	---	---
Juncaceae sp.	Rush species	---	---	---	---

[1]FEDERAL SPECIES AT RISK ACT (SARA), [2]PROVINCIAL ENDANGERED SPECIES ACT, 2007 (ESA), [3]PROVINCIAL CONSERVATION RANKING WHERE SNA= NOT APPLICABLE, SE= NON-NATIVE SPECIES, S1= EXTREMELY RARE, S2= VERY RARE, S3= RARE, S4= APPARENTLY SECURE AND S5= SECURE, [4]=COEFFICIENT OF CONSERVATISM

Table A-3: Species at Risk (SAR) with the potential to occur within the study area for Casablanca Boulevard

Scientific Name	Common Name	SARA Status [1]	ESA Status [2]	SRank[3]	Information Source[4]	Regulated Habitat	Habitat Requirements[2,5,6]	Potential Habitat in the Study Area	Rationale for Potential to Occur
Insects									
Danaus plexippus	Monarch	SC	SC	S2N,S4B	OBA	No	Caterpillars feed on milkweed plants and are confined to meadows and open areas where milkweed grows. Adult butterflies can be found in more diverse habitats where they feed on nectar from a variety of wildflowers. Monarchs spend the winter in Oyamel Fir forests found in central Mexico.	Yes	Open Agriculture areas (OAG) may provide suitable breeding and foraging habitat for this species.
Birds									
Cardellina canadensis	Canada Warbler	THR	SC	S4B	MNRF CONSULTATION	No	Breeds in a range of deciduous and coniferous, usually wet forest types, all with a well- developed, dense shrub layer. Dense shrub and understory vegetation help conceal Canada Warbler nests that are usually located on or near the ground on mossy logs or roots, along stream banks or on hummocks.	No	Suitable habitat requirements have not been observed in the Study Area.
Chaetura pelagica	Chimney Swift	THR	THR	S4B,S4N	OBBA	No	Commonly found in urban areas near buildings; nests in hollow trees, crevices of rock cliffs, chimneys; highly gregarious; fees over open water.	No	Suitable habitat requirements have not been observed in the Study Area.
Hirundo rustica	Barn Swallow	THR	THR	S4B	OBBA, MNRF CONSULTATION	No	Farmlands or rural areas; cliffs, caves, rock niches; buildings or other man-made structures for nesting; open country near body of water.	Yes	Commercial buildings (CVC_1) and residential homes (CVR_1) within study area may provide suitable nesting habitat for this species. Open Agriculture (OAG) areas, and Annual Row Crop (OAGM1) within the study area may provide suitable foraging habitat for this species.
Riparia riparia	Bank Swallow	THR	THR	S4B	OBBA, MNRF CONSULTATION	No	Sand, clay or gravel river banks or steep riverbank cliffs; lakeshore bluffs of easily crumbled sand or gravel; gravel pits, road-cuts, grassland or cultivated fields that are close to water; nesting sites are limiting factor for species presence..	No	Suitable habitat requirements have not been observed in the Study Area.

Scientific Name	Common Name	SARA Status [1]	ESA Status [2]	SRank[3]	Information Source[4]	Regulated Habitat	Habitat Requirements[2,5, 6]	Potential Habitat in the Study Area	Rationale for Potential to Occur
Dolichonyx oryzivorus	Bobolink	THR	THR	S4B	OBBA, MNRF CONSULTATION	No	Large, open expansive grasslands with dense ground cover; hayfields, meadows or fallow fields; marshes; requires tracts of grassland >50 ha.	Yes	Open Agriculture areas (OAG) may provide suitable nesting and foraging habitat for this species.
Sturnella magna	Eastern Meadowlark	THR	THR	S4B	NHIC, OBBA, MNRF CONSULTATION	No	Open, grassy meadows, farmland, pastures, hayfields or grasslands with elevated singing perches; cultivated land and weedy areas with trees; old orchards with adjacent, open grassy areas >10 ha in size.	Yes	Open Agriculture areas (OAG) may provide suitable nesting and foraging habitat for this species.
Contopus virens	Eastern Wood-pewee	SC	SC	S4B	OBBA	No	Open, deciduous, mixed or coniferous forest; predominated by oak with little understory; forest clearing, edges; farm woodlots, parks.	No	Suitable habitat requirements have not been observed in the Study Area.
Hylocichla mustelina	Wood Thrush	END	SC	S4B	OBBA	No	Carolinian and Great Lakes-St. Lawrence forest zones; undisturbed moist mature deciduous or mixed forest with deciduous sapling growth; near pond or swamp; hardwood forest edges; must have some trees higher than 12m.	No	Suitable habitat requirements have not been observed in the Study Area.
Mammals									
Urocyon cinereoargenteus	Gray Fox	THR	THR	S1	MWH	No	Hardwood forests with a mix of fields and woods; swamps; wooded, brushy or rocky habitats; woodland farmland edge; old fields with thickets; dens in hollow log or tree; individual has numerous winter dens throughout its range which is > 40 ha.	No	Suitable habitat requirements have not been observed in the Study Area.
Microtus pinetorum	Woodland Vole	SC	SC	S3?	MWH	No	Mature deciduous forest in the Carolinian forest zone, with loose sandy soil and deep humus; grasslands, meadows and orchards with groundcover of duff or grass.	No	Suitable habitat requirements have not been observed in the Study Area.

Scientific Name	Common Name	SARA Status [1]	ESA Status [2]	SRank[3]	Information Source[4]	Regulated Habitat	Habitat Requirements[2,5,6]	Potential Habitat in the Study Area	Rationale for Potential to Occur
Myotis leibii	Eastern Small-footed Myotis	---	END	S2S3	MWH	No	Roosts in caves, mine shafts, crevices or buildings that are in or near woodland; hibernates in cold dry caves or mines; maternity colonies in caves or buildings; hunts in forests.	No	Suitable habitat requirements have not been observed in the Study Area.
Myotis lucifugus	Little Brown Myotis	END	END	S4	MWH	No	Uses caves, quarries, tunnels, hollow trees or buildings for roosting; winters in humid caves; maternity sites in dark warm areas such as attics and barns; feeds primarily in wetlands, forest edges.	No	Suitable habitat requirements have not been observed in the Study Area.
Myotis septentrionalis	Northern Myotis	END	END	S3	MWH	No	Hibernates during winter in mines or caves; during summer males roost alone and females form maternity colonies of up to 60 adults; roosts in houses, manmade structures but prefers hollow trees or under loose bark; hunts within forests, below canopy.	No	Suitable habitat requirements have not been observed in the Study Area.
Pipistrellus subflavus	Tri-colored Bat	END	END	S3?	MWH	No	Can be found in a variety of forested habitats. They form day roosts and maternity colonies in older forest and occasionally in barns or other structures, and overwinter in caves. They forage over water and along streams in the forest.	No	Suitable habitat requirements have not been observed in the Study Area.
Plants									
Betula lenta	Cherry Birch	END	END	S1	NHIC	No	Found on moist, well-drained clay loam soil over limestone bedrock with White Oak, Red Oak, Eastern Hemlock, Sugar Maple and other deciduous trees. The single population of Cherry Birch in Canada is isolated at two sites on the Niagara peninsula in southern Ontario.	No	This species was not detected during botanical surveys, and suitable habitat requirements have not been observed in the Study Area.
Magnolia acuminata	Cucumber Tree	END	END	S2	NHIC	No	Generally grows in rich, well-drained soils in deciduous forest habitats	No	This species was not detected during botanical surveys, and suitable habitat requirements have not been observed in the Study Area.

Scientific Name	Common Name	SARA Status [1]	ESA Status [2]	SRank[3]	Information Source[4]	Regulated Habitat	Habitat Requirements[2,5, 6]	Potential Habitat in the Study Area	Rationale for Potential to Occur
Cornus florida	Eastern Flowering Dogwood	END	END	S2?	NHIC, MNRF CONSULTATIO N	Yes	Eastern Flowering Dogwood grows under taller trees in mid-age to mature deciduous or mixed forests. It most commonly grows on floodplains, slopes, bluffs and in ravines, and is also sometimes found along roadsides and fencerows. It can only be found in southern Ontario in the Carolinian Zone (the small area of Ontario southwest of Toronto to Sarnia down to the shores of Lake Erie).	No	This species was not detected during botanical surveys, and suitable habitat requirements have not been observed in the Study Area.
Morus rubra	Red Mulberry	END	END	S2	NHIC	No	Generally grows in moist forest habitats. In Ontario, these include slopes and ravines of the Niagara Escarpment, and sand spits and bottom lands; Can grow in open areas such as hydro corridors.	No	This species was not detected during botanical surveys, and suitable habitat requirements have not been observed in the Study Area.

1 – Status identified by the Committee on the Status of Endangered Wildlife in Canada under the federal SARA, 2002; 2 – SAR in Ontario List under the provincial ESA, 2007; 3 – Ontario SRank; S5 = secure; S4= apparently secure; S3 = vulnerable; S2 = imperilled; SX = Extirpated; SH = Possibly Extirpated; SNA = non-native or exotic species to Ontario; 4 – NHIC = MNRF Natural Heritage Information Centre; MNRF Consult. = MNRF Consultation, OBBA = Ontario Breeding Bird Atlas, MWH = Digital Distribution Maps of the Mammals of the Western Hemisphere, version 3.0, OBA = Ontario Butterfly Atlas; CBC = Christmas Bird Count; 5 – MNRF Significant Wildlife Technical Guide - Appendix G (2000), 6 – Ministry of Natural Resources and Forestry Guelph District Office (2018).