APPENDIX 6

NATURAL HERITAGE REPORT

Carlisle Water Storage Municipal Class EA and Conceptual Design

Natural Heritage Report

March 8, 2024

Prepared by:

RVA | ECOLOGICAL SERVICES
Innovative solutions for complex challenges

Prepared for:

Hamilton

Carlisle Water Storage Municipal Class EA and Conceptual Design

Natural Heritage Report

City of Hamilton

RVA 215933

March 8, 2024

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

APPENDICIES

1.0 Project Overview

R.V. Anderson Associates Limited (RVA) has been retained by the City of Hamilton (the City) to provide engineering services for the Carlisle Water Storage Facility Municipal Class Environmental Assessment (EA) and Conceptual Design (the Project).

In support of the conceptual design and EA requirements, this report summarizes the results of the background review, field investigations, Species at Risk (SAR) screening, and highlights significant or sensitive natural heritage features that should be considered during the facility siting and design.

1.1 Study Area

The Study Area is comprised of four properties located within the Carlisle Rural Settlement Area (RSA), hereafter collectively referred as the Study Areas. Location A is located at Tower Park (40, 42, and 46 Woodend Drive), Location B is on a privately owned parcel of land located at 1535 Centre Road, Location C is directly north of the Carlisle Community Centre Park (1496 Centre Road) within the existing baseball diamonds, and Location D is also within the Carlisle Community Centre Park area, south of the community centre near the tennis court (Map 1). Location B was added to the Study Area following field work and was assessed through desktop screening only as described below.

1.2 Project Scope

The objectives of this Natural Heritage Report include:

- High level identification of sensitive or significant natural heritage features and their functions within the Study Areas;
- Identification and review of applicable environmental legislation, municipal planning policies, and natural heritage considerations relevant to the Study Areas; and
- Identification of natural heritage features that require additional consideration for the implementation of the preferred Project design.

Carlisle Water Storage Facility Municipal Class EA and Conceptual Design
City of Hamilton

Natural Heritage Report

Map 1: Study Area Overview

0 50 100 150 200 m

Scale: 1:4,000

Date: 2/26/2024 | Page 1

RVA: 215933 | Draft By: KW

Legend

Alternative Locations for Proposed Carlisle Water Storage Facility

Data Source: Esri Community Maps Contributors, City of Hamilton, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS, NRCan, Parks Canada, Town of Oakville, Maxar, Microsoft

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2.0 Background Review

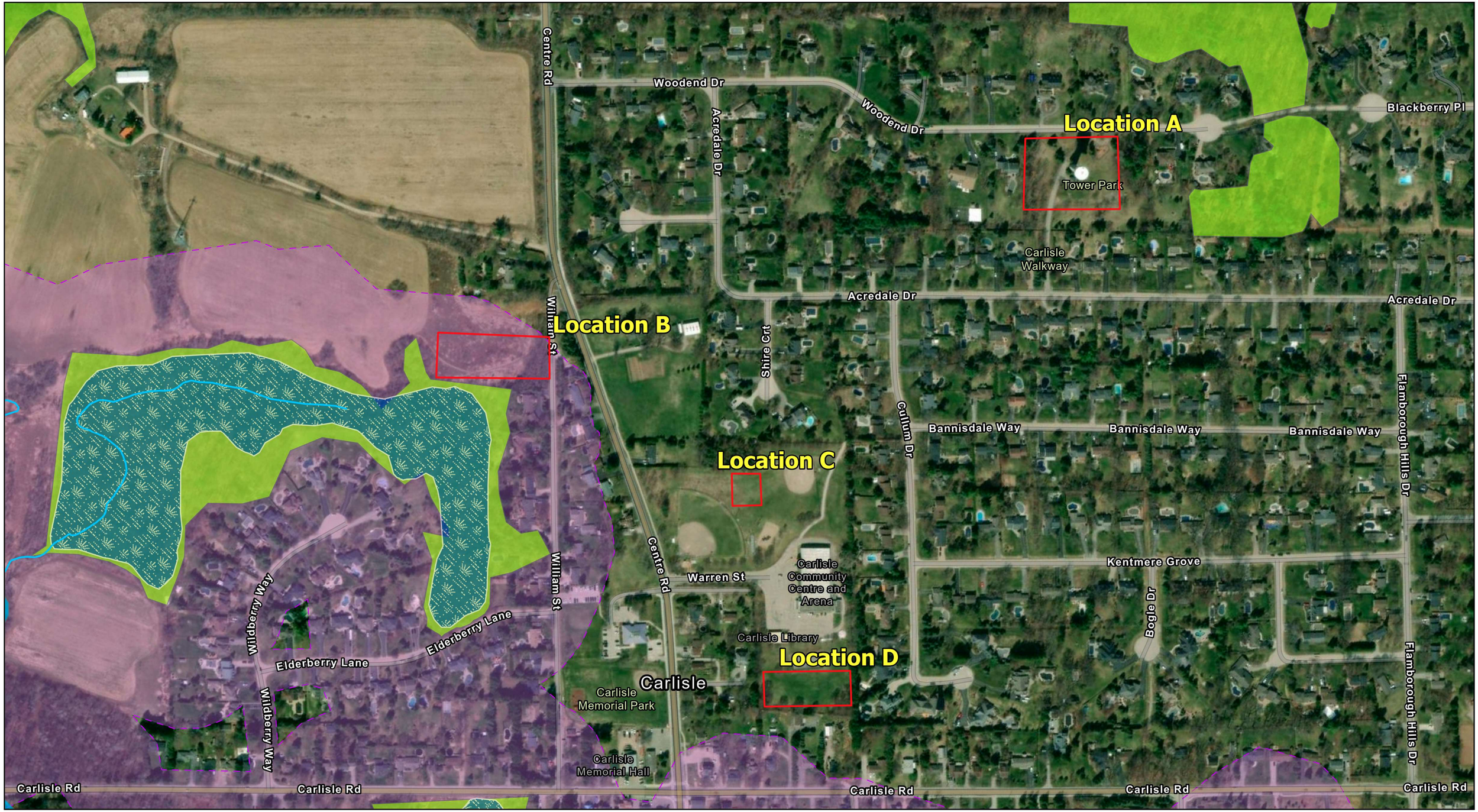
A desktop review was completed to identify natural environment components that are found within and adjacent to the Study Areas (Map 2).

2.1 Background Review Sources

The preliminary desktop review included an examination of publicly available information, related to geological and natural environment components within the Study Areas, that included public databases, published reports, and agency consultation. The information reviewed is listed in Table 2.1.

Table 2.1 – Summary of Information Sources

Source	Data Reviewed
City of Hamilton	› Rural Hamilton Official Plan (City of Hamilton 2021) › Carlisle Rural Settlement Area Plan (City of Hamilton 2021)
Ministry of Natural Resources and Forestry (MNRF)	› Natural Heritage Information Centre (NHIC) database › Land Information Ontario (LIO) Mapping (Ministry of Natural Resources and Forestry 2023)
Conservation Halton (CH)	› Planning and Permits GIS Mapping
Ministry of Agriculture, Food and Rural Affairs (OMAFRA)	› AgMaps Mapping (Ontario Ministry of Agriculture Food and Rural Affairs 2023)
Other Publicly Available Data	› Ontario Breeding Bird Atlas (OBBA, Cadman *et al.* 2007) › Ontario Nature – Ontario Reptile and Amphibian Atlas (ORAA, Ontario Nature 2020) › iNaturalist (screened to include Research Grade and Threatened species up to 2023) › Ontario Moth Atlas (Kaposi *et al.* 2023 › Ontario Butterfly Atlas (MacNaughton *et al.* 2023) › Ontario Freshwater Fishes Life History Database, Robert J. Eakins (1999-2023)



Carlisle Water Storage Facility Municipal Class EA and Conceptual Design
City of Hamilton

Natural Heritage Report

Map 2: Overview of Natural Heritage

0 50 100 150 200 m
Scale: 1:4,000

Date: 2/27/2024 | Page 1

RVA: 215933 | Draft By: KW

Legend

- Alternative Locations for Proposed Carlisle Water Storage Facility
- Watercourse
- Woodland
- Evaluated Wetland
- Conservation Halton Regulation Limit (Approximate)

Data Source: Esri Community Maps Contributors, City of Hamilton, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS, NRCan, Parks Canada, Town of Oakville, Maxar, Microsoft, Ontario GeoHub, Conservation Halton, RVA

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2.2 Select Legislative Review

There are multiple federal and provincial environmental regulations and permitting processes in place to protect components of the biotic environment. Based on the location and nature of the Project, there are four main pieces of legislation that pertain to the Project.

2.2.1 Federal Legislation

Migratory Birds Convention Act

The *Migratory Birds Convention Act* (MBCA) is enforced through the Migratory Birds Regulations administered by Environment and Climate Change Canada. Together the MBCA and Migratory Birds Regulations serve to protect most migratory birds, their nests, and eggs anywhere they are found in Canada.

2.2.2 Provincial Legislation

Endangered Species Act

On provincially regulated lands in Ontario, Species at Risk (SAR) and their habitats are protected under the *Endangered Species Act* (ESA, Government of Ontario 2007) which is administered by the Ministry of Environment, Conservation and Parks (MECP). Section 9(1) of the ESA prohibits the impacts to individuals of protected species, while Section 10(1) prohibits damaging or destroying their habitat which varies across species. Projects which propose impacts to SAR, or their habitat require a permit or other process (e.g., registration) to proceed without contravening the Act.

Fish and Wildlife Conservation Act

The *Fish and Wildlife Conservation Act* (Government of Ontario 1997) sets policies and regulations concerning the use of fish and wildlife resources in Ontario, including fishing and hunting, trapping, wildlife in captivity and the sale and purchase of wildlife and/or parts. This legislation also applies to persons handling wildlife for the purposes of salvage/relocation.

Conservation Authorities Act

Section 28(1) of the Conservation Authorities Act empowers Conservation Authorities with the ability to make regulations governing development that can have an impact on watercourses and water bodies, including wetlands. The Study Area is located within the Conservation Halton (CH) watershed, and sections are regulated under the Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses,

Ontario Regulation 162/06. CH may grant permission to modify lands within their regulation limit under conditions outlined in the regulation.

2.3 Summary of Background Information

Review of the information sources listed in Section 2.1 indicated that several SAR are found or are potentially found within the vicinity of the Carlisle Water Storage Study Areas. The MNRF Make-a-Map: Natural Heritage Areas application identified significant natural heritage features adjacent to the Study Areas including Woodlands, Unevaluated Wetlands, and Locally Significant Wetlands. A section of the Location B Study Area is within the regulation limit of Conservation Halton under the *Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses, Ontario Regulation* (O. Reg.) 162/06 (Government of Ontario 1990).

3.0 Field Review

Terrestrial field investigations were conducted during the 2023 field season including a single season floral inventory, Ecological Land Classification (ELC) community delineation, and incidental wildlife observations within the Study Areas (Table 3.1).

Table 3.1 – Field Investigations Schedule

Survey Type	Date	Weather	RVA Staff
Single-season site review/ELC; Incidental Wildlife Observations	October 3, 2023	Sunny, clear, light breeze	Zachary Anderson and Paul Mikoda

4.0 Existing Site Conditions

4.1 Vegetation and Vegetation Communities

A single-season floral inventory and ELC community survey was completed for the Study Areas. The field visit was completed during the fall inventory window for plants and protocols for ELC were completed as per Lee *et al*. (1998).

Vegetation surveys were restricted to within the Study Areas and the immediate surrounding areas. Surveys were completed during a single site visit by walking transects throughout the parklands, wooded features, and areas where property access was granted. Areas exhibiting variation in floral or topographical composition, such as ditches or vegetation clumps, were reviewed in further detail. Species not readily identifiable in the

field were sampled and identified later utilizing Michigan Flora Online (Reznicek *et al.* 2011). Vegetation communities identified within the Study Area are described in Table 4.1.

Table 4.1 – Carlisle Water Storage Study Area Vegetation Communities

ELC Code	ELC Vegetation Community	Description
CUM1-1	Mineral Cultural Meadow Ecosite	Meadow and grassland communities that have a history of anthropogenic influence. Non-native floral species are often the most dominant vegetation form.
FOD4	Dry-Fresh Deciduous Forest Ecosite	Typically a young forest community with tree species associations that are either uncommon or because of disturbance or management. Dominant species within this community include Green Ash and White Birch
CUW1	Mineral Cultural Woodland	Wooded communities that have a history of anthropogenic influence. Non-native floral species are often the most dominant vegetation form.

The Study Areas are within a landscape that is primarily estate residential land use interspersed with remnant natural features through the greater Carlisle RSA. The surrounding area is a mixture of agricultural areas, estate residential, and large tracts of wooded natural features. Three of the Study Areas are predominantly located within community park areas, and the dominant vegetation community is best described as Parkland with a floral composition dominated by common, maintained grass species (*Poa spp.*).

The Location A Study Area is adjacent to a wooded community that is described as a Dry-Fresh Deciduous Forest Ecosite (FOD4). The canopy of this community is dominated by White Pine (*Pinus strobus*), Freeman's Maple (*Acer x freemanii*), White Birch (*Betula papyrifera*), and Black Cherry (*Prunus serotina*). The understorey is dominated by Tatarian Honeysuckle (*Lonicera tatarica*), Green Ash (*Fraxinus pennsylvanica*), and Common Buckthorn (*Rhamnus cathartica*). The ground layer is dominated by Wild Sarsaparilla (*Aralia nudicaulis*), White Baneberry (*Actaea pachypoda*), and sapling Green Ash.

The Location C and D Study Areas are within maintained lands of the Carlisle Community Center Park. Location C is located north of the park but is adjacent to a private lot and a Mineral Cultural Woodland (CUW1) community. Location D abuts maintained residential properties.

Location B was not included in the field investigations but was reviewed using publicly available imagery (Google Earth). Along the frontage of William Street, the property and roadside are populated mainly by young Ash trees (*Fraxinus spp.*) with some Staghorn

Sumac (*Rhus typhina*) in the shrub layer, forming a community that would be considered a Mineral Cultural Woodland (CUW1). To the southwest of the road, the property is regenerating from prior agricultural use, which would be classified as a Mineral Cultural Meadow (CUM1). Though not clearly discernable in images, this community is very common in southern Ontario, generally composed of a mixture of cool-season exotic pasture grasses, goldenrods (*Solidago spp.*) and asters (*Symphyotrichum spp.*). Some active re-forestation efforts have occurred on this property as evidenced by recently planted conifer saplings. To the south, Conservation Halton classifies a tree community as a Mixed Swamp (SWM), a component of the Locally Significant Carlisle Wetland Complex and a tributary of Bronte Creek.

No additional natural/successional vegetation communities were identified within the remaining Study Areas; however, several hedgerows and small pocket woodlands, likely classified as Mineral Cultural Woodlands (CUW1) and comprised of a combination of native and non-native tree and shrub species, are identified adjacent to the Study Areas. These features were not investigated in detail and community observations were made strictly from the edges of the Study Area locations.

4.2 Wildlife and Wildlife Habitats

During field investigations on October 3, 2023, all terrestrial wildlife observed, including calls and signs, were recorded. Due to the rural nature of the Study Area, it is anticipated that most wildlife species in the area are limited to those that tolerate some degree of habitat fragmentation and cultural landscapes. Due to the timing of the survey, birds recorded have been assumed to be breeding locally. Table 4.2 lists all wildlife species identified during field investigations.

Table 4.2 – Incidental Terrestrial Wildlife

Common Name	Scientific Name	Provincial Status (S Rank) *	ESA Status
Birds			
American Crow	*Corvus brachyrhynchos*	S5B,SZN	-
American Goldfinch	*Carduelis tristis*	S5B,SZN	-
American Robin	*Turdus migratorius*	S5B,SZN	-
Blue Jay	*Cyanocitta cristata*	S5	-
Field Sparrow	*Spizella pusilla*	S5B,SZN	-
Northern Cardinal	*Cardinalis cardinalis*	S5	-
Northern Flicker	*Colaptes auratus*	S5B,SZN	-

Song Sparrow	*Melospiza melodia*	S5B,SZN	-

* S Rank: S5 – Secure, S4 – Apparently secure, S3 – Vulnerable, S2 – Imperiled, S1 – Critically imperiled, SNA – Non-native, SZN – Non-breeding migrants/vagrants

4.2.1 Significant Wildlife Habitat

Significant Wildlife Habitat (SWH) was assessed based on the collection of targeted and incidental field data and comparisons to thresholds set out in the Significant Wildlife Habitat Criteria Schedule for Ecoregion 7E (OMNR 2015), a significant component of which is the ELC communities described earlier. SWH are areas or features that are rare or provide important habitat functions and are subsequently protected through the Natural Heritage section (2.1) of the Provincial Policy Statement (PPS; OMMAH 2020). In many cases, to complete a full suite of evaluations for every potential SWH would be extremely arduous and time consuming, so in many cases professional opinion and experience is utilized to screen potential SWH. The PPS does not apply to the Project due to the nature of the work (infrastructure) but is being discussed regardless given the importance of SWH features.

During site visits within the Study Area, terrestrial wildlife observations, including call and signs, were recorded. Specific habitats surveyed for included mammal burrows (often on slopes), recently disturbed soils, potential cover objects, or other anomalous or unique features or habitat within the Study Area including large dead or decaying (wildlife) trees. Wildlife surveys were conducted in conjunction with floral inventories, described above.

No provincially rare vegetation communities were observed during site investigations nor were any candidate or confirmed point-source areas of wildlife concentration/specialized habitats, such as terrestrial reptile hibernacula, turtle nesting areas, or terrestrial crayfish burrows. Targeted surveys for snag and cavity trees (i.e., in leaf-off conditions) were not included in the scope of the Project. All trees greater than 10 cm diameter at breast height (DBH) including healthy or dead/decaying individuals, may provide SWH for bat maternity colonies, as well as habitat for at-risk bats.

4.3 Species at Risk

Provincially protected Species at Risk (SAR) can be found throughout Ontario in both documented and undocumented populations and are protected through the Endangered Species Act (ESA 2007) administered by the MECP. According to the sources reviewed in Table 2.1, a variety of floral and faunal species of provincial interest have been recorded within or in the vicinity of the Study Area. These species and their habitat are generally found in more natural landscapes; however, some listed species have adapted to

anthropogenic habitats. Additionally, the province has not been surveyed extensively and novel individuals and populations can be located during site-specific surveys.

A full list of SAR identified in the background sources with potential to be found in the Study Area is presented in Appendix A. The field studies described above were compared to the known habitat preferences and general locations of SAR to determine the potential that these species or their habitat could occur in the Study Area. No SAR individuals identified in background review were observed during the completed field investigations within the Study Area. Habitat within the Study Area has the potential to support some species listed in Appendix A. Open tree habitats associated with parklands has the potential to support both Eastern Wood-pewee (*Contopus virens*, Special Concern) and Red-headed Woodpecker (*Melanerpes erythrocephalus,* Endangered).

4.4 Natural Heritage and Significant Habitat Summary

4.4.1 Confirmed Habitat within the Study Area

No fish or wildlife habitats of significance were confirmed within the Study Area during site investigations. While not mapped as provincially significant, a wooded community classified as FOD4 (Dry-Fresh Deciduous Forest) was identified adjacent to the Location A Study Area that is comprised of native woodland species (Wild Sarsaparilla, White Baneberry, etc.) and mature trees. Given the natural composition and age of the woodland, it is our opinion that this feature merits additional discussion with respect to potential project constraints and impacts.

4.4.2 Candidate Habitat within the Study Area

Candidate significant wildlife habitats with potential to occur within the Study Area (i.e. were not confirmed, but could not be ruled out following field investigations) consist of:

- Candidate SAR Bat maternity roosting habitat (treed communities)
- Location B is within a Mineral Cultural Meadow (CUM1-1) habitat that has the potential to support open-habitat/grassland breeding birds, including rare and SAR.

5.0 Natural Heritage Constraints

A map of the Study Areas was created identifying low, moderate, and high constraint areas (Maps 3a-d) based on candidate and confirmed natural heritage features and functions and applicable legislation. To address the proximity of adjacent features, a 50m buffer was given to each Location. Location B is located within 50m of one section of the Carlisle Wetland

Complex LSW. No areas defined as a high natural heritage constraint (e.g. provincial natural heritage areas, direct fish habitat, provincially significant wetlands, or habitats that have a high likelihood of supporting SAR) were identified within or adjacent to the remaining Study Areas. Moderate natural heritage constraint areas include higher quality woodland habitats and those areas regulated by Conservation Halton under Ontario Regulation 162/06 for Development, Interference with Wetlands and alterations to Shorelines and Watercourses. The remaining land within the Study Areas and adjacent lands, consisting primarily of parkland habitat, Cultural Meadow, and residential lands, are presented as being a low natural heritage constraint.

If other disciplines (i.e., geotechnical, archaeology, etc.) are engaging in future field work within the Study Areas where vegetation clearing may be required during sensitive periods, these areas should be reviewed for species and habitats protected under the ESA (SAR Bats) or other legislation prior to the initiation of works. One notable piece of legislation is the federal Migratory Birds Convention Act (1994) that protects most birds, their nests and young from disturbance or injury. In all instances of field work there are general timing windows that protect fish and wildlife during vulnerable life stages (i.e., spawning or nesting), and any work that has the potential for disturbance to fish and wildlife should only be completed with respect to these windows.

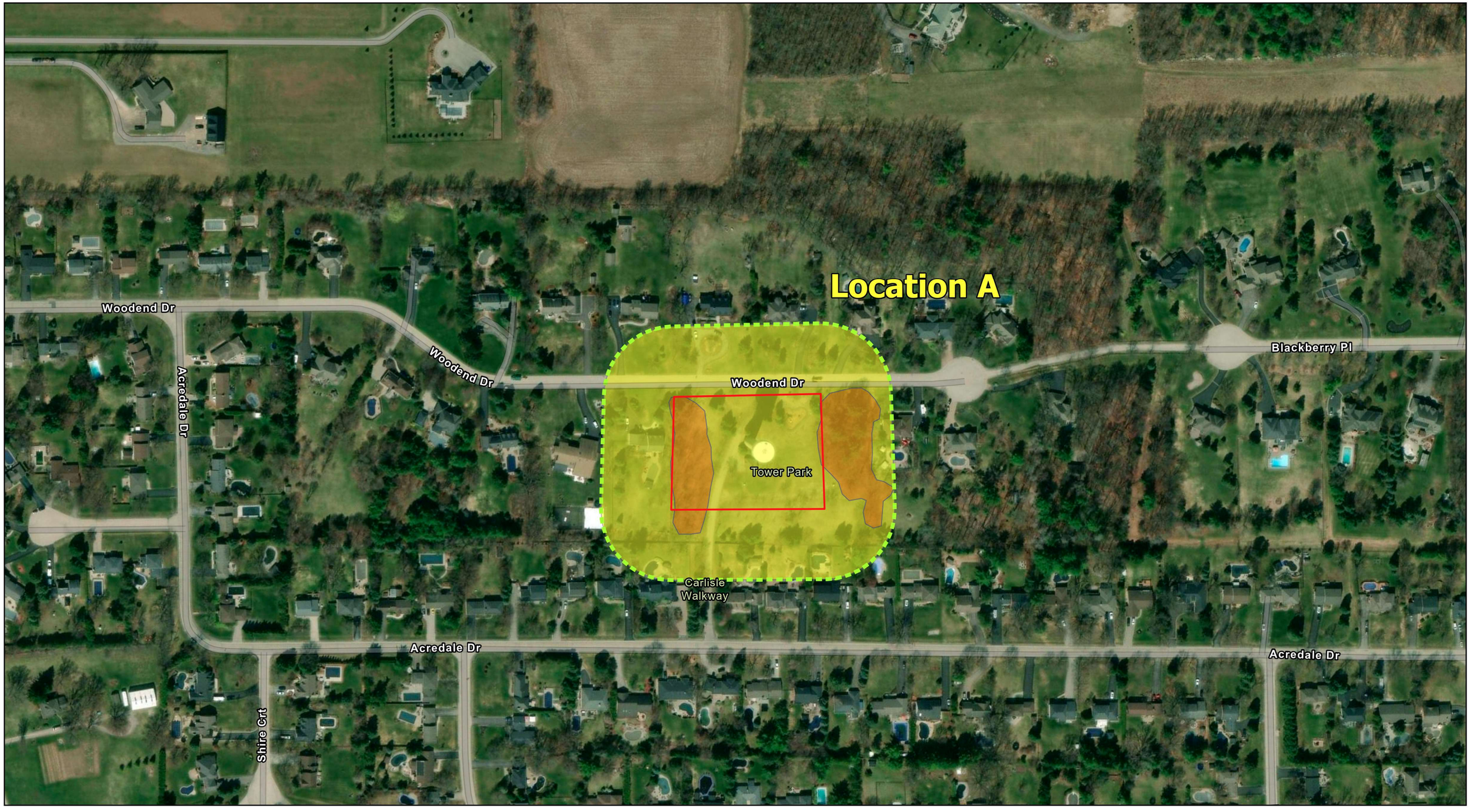
6.0 Conclusions

This Natural Heritage Report documents the existing conditions within the Carlisle Water Storage Study Areas, supported by field studies completed in 2023. These studies included a single season review for rare and at-risk species, as well as a wildlife habitat assessment, and incidental wildlife observations.

Within the PPS (2020), Section 2.1 Natural Heritage, describes the identification, protections and prohibitions provided to natural features and areas. Key among these statements is the prohibition of development within various important features or functional areas. However, with the definitions of the PPS, development does not include, among other actions, activities that create or maintain infrastructure authorized under an environmental assessment process. Because of this definition and that all prohibitions are described in reference to development, Section 2.1 does not generally apply to this project, as it is proceeding under an environmental assessment process. Irrespective of planning process, this project must consider SAR protected under the ESA, birds protected under the Migratory Birds Convention Act (MBCA 1994), and species protected under the Fish and Wildlife Act, all of which require consideration. Overall, there are limited natural heritage

concerns with this project, and those that do exist relate to incidental impacts that may occur during construction.

The conceptual design for the proposed Carlisle Water Storage area should take into consideration the natural heritage features and functions noted above and depicted on Maps 3a-d, to confirm compliance with policy as well ecological sustainability through appropriate stewardship. It is recommended that appropriate mitigation measures to protect the identified natural heritage components be incorporated into an Environmental Management Plan (EMP) at detailed design, including discussion of site preparation (e.g. vegetation clearing) and construction timing windows, Erosion and Sediment Controls (ESCs), and contractor education.



Carlisle Water Storage Facility Municipal Class EA and Conceptual Design
City of Hamilton

Natural Heritage Report

Map 3a: Constraints for Location A

0 37.5 75 112.5 150 m

Scale: 1:2,500

Date: 2/27/2024 | Page 1

RVA: 215933 | Draft By: KW

Legend

- Alternative Locations for Proposed Carlisle Water Storage Facility
- Buffer of Proposed Water Storage Location (50m)
- Medium Risk
- Low Risk

Data Source: Esri Community Maps Contributors, City of Hamilton, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS, NRCan, Parks Canada, Town of Oakville, Maxar, Microsoft, Ontario GeoHub, Conservation Halton, RVA

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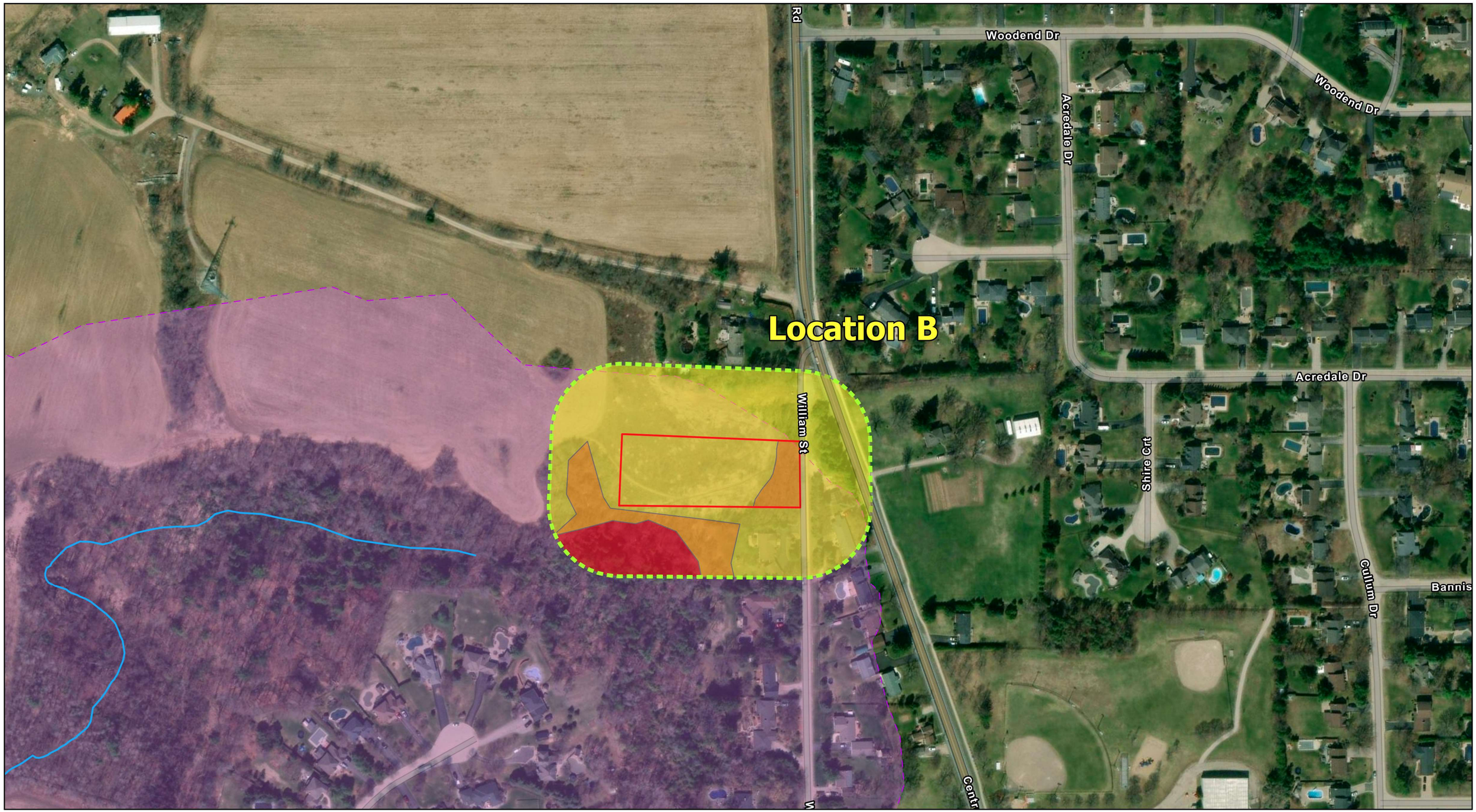

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City of Hamilton

Natural Heritage Report

Map 3b: Constraints for Location B

0 37.5 75 112.5 150 m

Scale: 1:2,500

Date: 2/27/2024 | Page 1

RVA: 215933 | Draft By: KW

Legend

- Alternative Locations for Proposed Carlisle Water Storage Facility
- Watercourse
- High RIsk
- Medium Risk
- Low Risk
- Buffer of Proposed Water Storage Location (50m)
- Conservation Halton Regulation Limit (Approximate)

Data Source: Esri Community Maps Contributors, City of Hamilton, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS, NRCan, Parks Canada, Town of Oakville, Maxar, Microsoft, Ontario GeoHub, Conservation Halton, RVA

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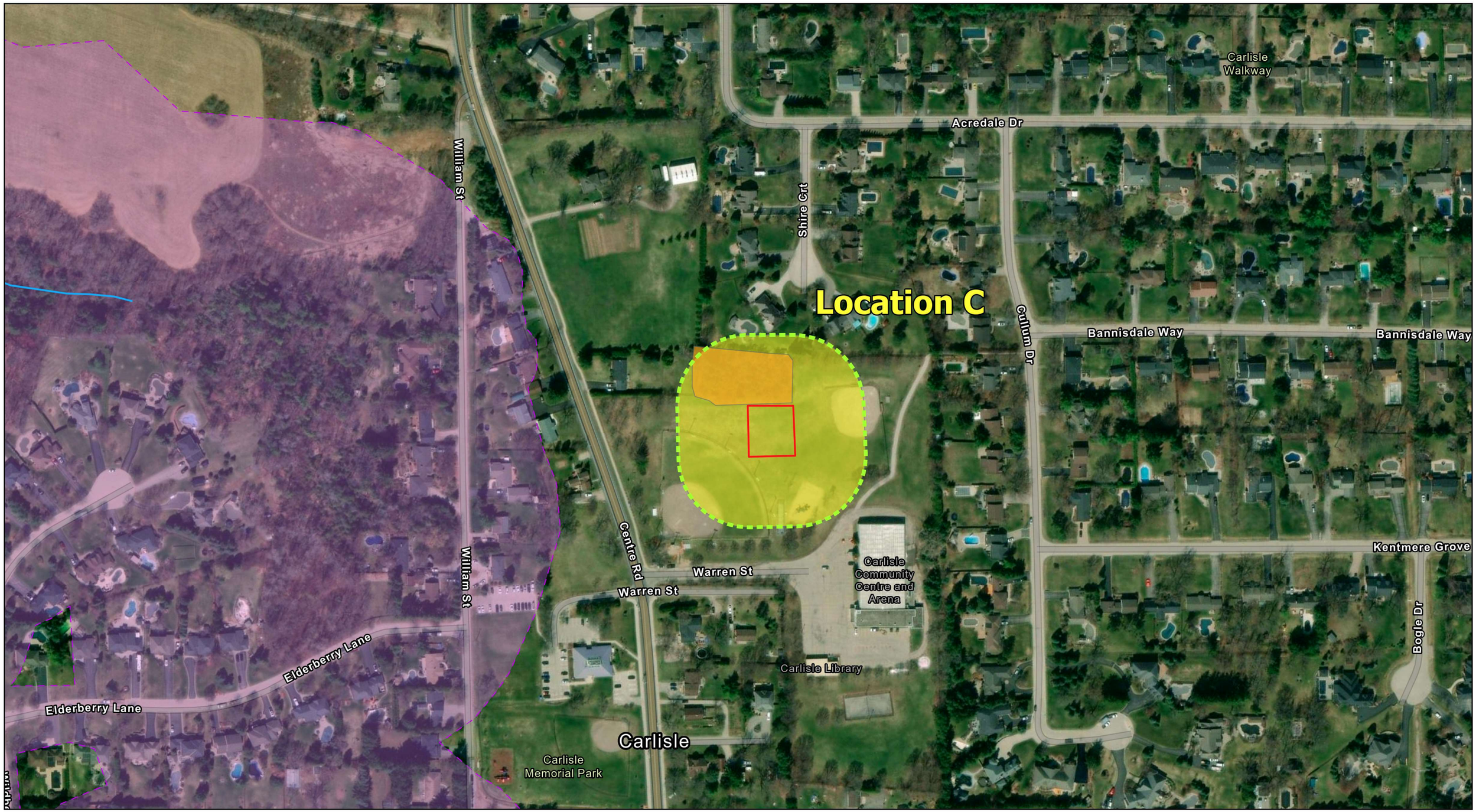

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City of Hamilton

Natural Heritage Report

Map 3c: Constraints for Location C

0 37.5 75 112.5 150 m

Scale: 1:2,500

Date: 2/27/2024 | Page 1

RVA: 215933 | Draft By: KW

Legend

- Alternative Locations for Proposed Carlisle Water Storage Facility
- Watercourse
- Medium Risk
- Buffer of Proposed Water Storage Location (50m)
- Low Risk
- Conservation Halton Regulation Limit (Approximate)

Data Source: Esri Community Maps Contributors, City of Hamilton, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS, NRCan, Parks Canada, Town of Oakville, Maxar, Microsoft, Ontario GeoHub, Conservation Halton, RVA

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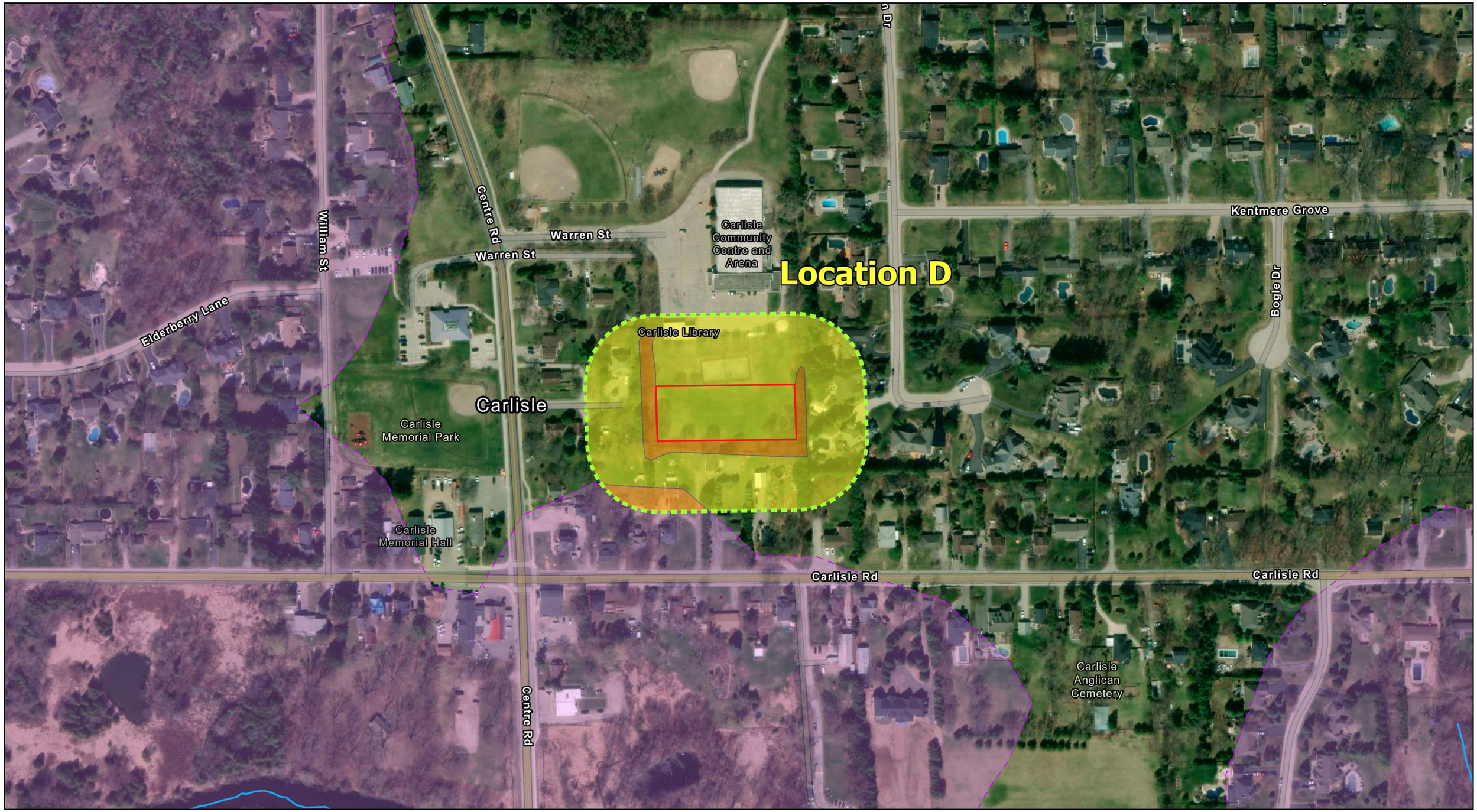

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City of Hamilton

Natural Heritage Report

Map 3d: Constraints for Location D

0 37.5 75 112.5 150 m

Scale: 1:2,500

Date: 2/27/2024 | Page 1

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Legend

- Alternative Locations for Proposed Carlisle Water Storage Facility
- Buffer of Proposed Water Storage Location (50m)
- Watercourse
- Medium Risk
- Low Risk
- Conservation Halton Regulation Limit (Approximate)

Data Source: Esri Community Maps Contributors, City of Hamilton, Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS, NRCan, Parks Canada, Town of Oakville, Maxar, Microsoft, Ontario GeoHub, Conservation Halton, RVA

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7.0 References

Bird Studies Canada, Environment Canada's Canadian Wildlife Service, Ontario Nature, Ontario Field Ornithologists and Ontario Ministry of Natural Resources. 2006. Ontario Breeding Bird Atlas Website. http://www.birdsontario.org/atlas/index.jsp

Government of Canada. 2021. Agriculture and Agri-Food Canada; Science and Technology Branch.

Government of Canada. 2023. Fisheries and Oceans Canada Aquatic Species At Risk Map. Available at: https://www.dfo-mpo.gc.ca/species-especes/sara-lep/map-carte/index-eng.html

Government of Canada. 1994. Migratory Birds Convention Act, Statutes of Canada (1994, c. 22). Retrieved from the Department of Justice Laws Website: http://laws-lois.justice.gc.ca/eng/acts/M-7.01/FullText.html

Government of Ontario. 2007. Endangered Species Act. S.O. 2007, c. 6. Retrieved from the Government of Ontario e-laws Website: https://www.ontario.ca/laws/statute/07e06

Government of Ontario. 1997. Fish and Wildlife Conservation Act, S.O. 1997, c. 41. Retrieved from the Government of Ontario e-laws Website: https://www.ontario.ca/laws/statute/97f41

Government of Ontario. 1990. Conservation Authorities Act. S.O. 1990, c. 27. Ontario Regulation 162/06. Halton Region Conservation Authority: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses. Retrieved from the Government of Ontario e-laws Website: https://www.ontario.ca/laws/regulation/060160

Government of Ontario. 2021. Ontario Geohub Open Government License. Available at: https://geohub.lio.gov.on.ca/datasets/aquatic-resource-area-polygon-segment-/explore

Government of Ontario. 2021. Make a Map: Natural Heritage Areas. Available at: https://www.lioapplications.lrc.gov.on.ca/Natural_Heritage/index.html?viewer=Natural_Heritage.Natural_Heritage&locale=en-CA

Kaposi, D., MacNaughton, A. and Edwards, B. 2021. Ontario Moth Atlas.

Lee H.T. 2008. Southern Ontario Ecological Land Classification – Vegetation Type List Ontario Ministry of Natural Resources.

Lee, H., Bakowsky, W., Riley, J., Bowles, J., Puddister, M., Uhlig, P. and McMurray, S. 1998. Ecological Land Classification for Southern Ontario. MNR, Peterborough, Ontario.

MacNaughton, A., Layberry, R., Cavasin, R., Edwards, B. and Jones, C. 2021. Ontario Butterfly Atlas.

Ontario Ministry of Agriculture Food and Rural Affairs. 2023. King's Printer for Ontario, 2023. Available at: https://www.lioapplications.lrc.gov.on.ca/AgMaps/Index.html?viewer=AgMaps.AgMaps&locale=en-CA

Ministry of Natural Resources and Forestry. 2023. Natural Heritage Information Centre. (NHIC). Available at: https://www.lioapplications.lrc.gov.on.ca/Natural_Heritage/index.html?viewer=Natural_Heritage.Natural_Heritage&locale=en-CA

Ontario Ministry of Municipal Affairs & Housing. 2020. Provincial Policy Statement. 53 pp. Available at: https://files.ontario.ca/mmah-provincial-policy-statement-2020-accessible-final-en-2020-02-14.pdf

OMNR (Ontario Ministry of Natural Resources). 2015. Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E, January 2015. Available at: https://docs.ontario.ca/documents/4775/schedule-6e-jan-2015-access-ver-final-s.pdf

Ontario Nature. 2020. Ontario Reptile and Amphibian Atlas: a citizen science project to map the distribution of Ontario's reptiles and amphibians. Ontario Nature, Ontario. Available at: https://www.ontarioinsects.org/herp.

University of Toronto. 1954. 1954 Air Photos of Southern Ontario. Available at: https://mdl.library.utoronto.ca/collections/air-photos/1954-air-photos-southern-ontario/index

NHIC. 2023. Natural Heritage Information Centre. NHIC online database and mapping. Ontario Ministry of Natural Resources. Available at: https://www.ontario.ca/environmentand-energy/natural-heritage-information-centre

APPENDIX A

Species at Risk Background Review

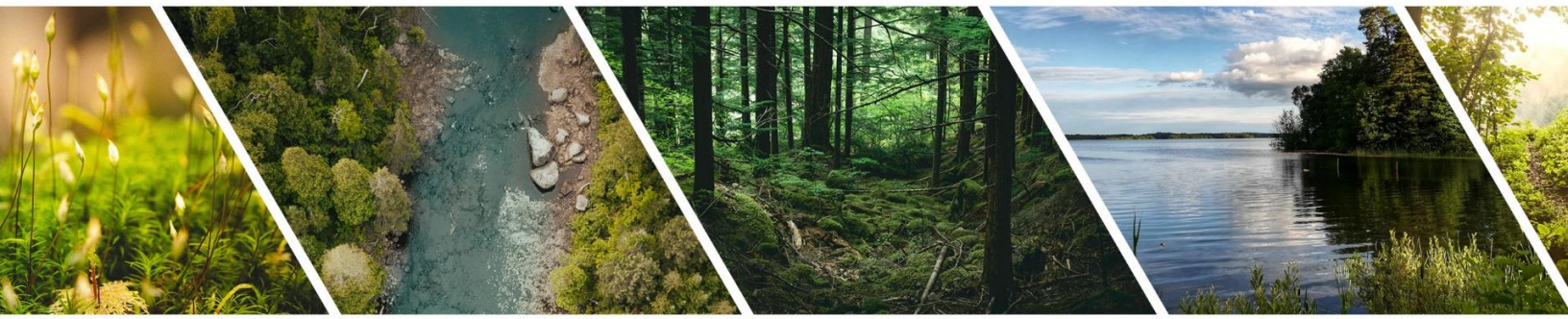

Table 1: Rare and At-Risk Species Potentially Present in the Vicinity of the Study Area

Common Name	Scientific Name	S-Rank	ESA/SARA Status	Source*	Last Observed (Year)
FLORA					
Black Ash	*Fraxinus nigra*	S4/G5	END/THR	INAT	2019
FUNGI AND LICHENS					
-	-	-	-	-	-
BIRDS					
Red-headed Woodpecker	*Melanerpes erythrocephalus*	S3/G3	END/END	NHIC	-
Bobolink	*Dolichonyx oryzivorus*	S4B/G5	THR/THR	NHIC; OBBA; eBird	2023
Eastern Meadowlark	*Sturnella magna*	S4B/G5	THR/THR	NHIC; OBBA; eBird	2023
Chimney Swift	*Chaetura pelagica*	S3B/G4G5	THR/THR	OBBA	2005
Eastern Whip-poor-will	*Antrostomus vociferus*	S4B/G4	THR/THR	NHIC	-
Bank Swallow	*Riparia riparia*	S4B/G5	THR/THR	OBBA; eBird	2023
Barn Swallow	*Hirundo rustica*	S4B/G5	SC/SC	OBBA; eBird	2023
Eastern Wood-pewee	*Contopus virens*	S4B/G5	SC/SC	OBBA; eBird	2023
Wood Thrush	*Hylocichla mustelina*	S4B/G4	SC/THR	OBBA	2022
Common Nighthawk	*Chordeiles minor*	S4B/G5	SC/THR	eBird	2023
REPTILES AND AMPHIBIANS					
Jefferson's Salamander	*Ambystoma jeffersonianum*	S2/G4	END/END	ORAA	2017
Blanding's Turtle	*Emydoidea blandingii*	S3/G4	THR/END	ORAA	2017
Snapping Turtle	*Chelydra serpentina*	S4/G5	SC/SC	NHIC; INAT; ORAA	2019
Eastern Milksnake	*Lampropeltis triangulum*	S4/G5	-/SC	NHIC; ORAA	2019
Midland Painted Turtle	*Chrysemys picta marginata*	S4	-/SC	NHIC; ORAA	2019
INVERTEBRATES (excludes mussels)					
Monarch	*Danaus plexippus*	S4B/G4	SC/SC	OBA; INAT	2022
West Virginia White	*Pieris virginiensis*	S3/G2G3	SC/ -	OBA; INAT	2023
FISH AND MUSSELS					
Redside Dace	*Clinostomus elongatus*	S1/G3	END/END	NHIC; DFO	-

*Source Abbreviations:
INAT – iNaturalist.ca (filtered for Research Grade and Threatened)
NHIC – Natural Heritage Information Center
ORAA – Ontario Reptile and Amphibian Atlas (Ontario Nature)
OBA – Ontario Butterfly Atlas (Toronto Entomological Society)
OBBA – Ontario Breeding Bird Atlas (Birds Canada)
DFO – Department of Fisheries and Oceans Species at Risk Mapping Application
eBird – Courtcliffe Park – Hamilton County - Hotspot