



SCOPED ENVIRONMENTAL IMPACT STUDY REPORT

SITE: 0 CHIPPEWA STREET, SAULT STE. MARIE

MAMTA HOMES

Attention: Mr. Harjinder Kang

54 Howell Street

Brampton, Ontario, L6Y 3H7

Revised July 11, 2024

Project Reference Number: 24115

©2024 Greenstone Engineering Ltd. | 67 Elgin Street, Sault Ste. Marie, Ontario, P6A 2Y4

The information in this document is the intellectual property of Greenstone Engineering Ltd. and is intended solely for the use by the individual owner of this document. Reproduction of this document for personal use, or for use intended by this document, is permitted provided that property attribution is made to Greenstone Engineering. Ltd. Reproduction of any portion of this document for any other purposes, including but not limited to, use by members of the same firm or for any other purposes, is strictly prohibited.



EXECUTIVE SUMMARY

The Subject Property is located at 0 Chippewa Street, Sault Ste. Marie, Ontario and is approximately 15.3 ha in size. It is gently sloping with an elevation change of 5 meters (m) across the property. The dominant vegetation is grasses with some shrubs and small trees. The bedrock is comprised of sandstone, shale, and conglomerate from the Jacobsville and Oronto Group. The soils are imperfectly drained Albany sands originating from glaciolacustrine and shallow water lacustrine deposits.

The Subject Property is currently vacant land. Its land use designation is residential. The zoning is primarily Rural Area Zone (RA), with a Parks and Recreation (PR) Zone as well as an Environmental Management Zone (EM) along the perimeter.

The natural heritage feature of interest for this Environmental Impact Statement is fish habitat. Fish habitat on and adjacent to the Subject Property is found in:

- The Bennett - West Davignon Diversion Channel located north and west of the Subject Property,
- The municipal drainage ditch located south and southeast of the Subject Property,
- The West Davignon Creek west of the Bennett - West Davignon Diversion Channel, and
- The tributary that flows south into the Bennett - West Davignon Diversion Channel located north of the Subject Property.

These streams are classified as coldwater. They support communities of sport fish including Brook Trout, Brown Trout, Coho Salmon, and Rainbow Trout, and a variety of bait fish species (e.g. minnows).

The property is currently vacant and undeveloped. The current development proposal is the creation of a Condominium Plan comprised of 3 Parcels: Parcel A containing 66 detached homes and 16 semi-detached homes; Parcel B containing 104 Townhomes; and Parcel C containing two 90-unit apartment buildings. Property development is proposed to be staged and start with Parcel B.

The condominium complex will be accessed, and municipal sewer and water services will be extended from Chippewa Street, Atwater Street, and Amherst Street. Connecting the Subject Property with Atwater Street, and Amherst Street will require the installation of a culvert at each crossing of the municipal drainage ditch. The homes will be located on either side of several of the proposed condominium roads. The apartment buildings will be located at the western side of the Subject Property and accessed from western end several condominium roads.

The proposed development has the potential to negatively impact fish habitat in the following ways:



- Death or injury to fish and other aquatic life.
- Changes in the thermal regime of the watercourses from coldwater to coolwater or warmwater resulting in changes in fish and aquatic invertebrate species composition and abundance
- Changes in fish and aquatic invertebrate species composition and abundance not caused by a change in the thermal regime of the creeks.
- Changes in the relative abundance of species within the fish community.
- Loss of general fish habitat.
- Loss of or change in local spawning and/or nursery areas. Spawning and nursery areas have not been identified, however, they may exist.
- Habitat fragmentation.
- Loss and fragmentation of habitat for native fish species and other aquatic species due to competition with and predation by non-native species.
- Water crossings may become barriers to fish movement.
- Drying up of refugia due to increased evaporation

The recommended mitigation measures to protect these fish habitat include:

- Prohibit development and site alteration within 15 m of the top of the bank of the BWDCC located west of Parcel C.
- This 15 m buffer zone must remain vegetated, however, due to the type of vegetation currently located within the buffer zone (i.e. long grass), the Client may wish to remediate parts. Native grasses, forbs and shrubs should be used during remediation where practical.
- The use of herbicides, pesticides and fertilizers within the buffer area should be prohibited. Additionally, the use of herbicides, pesticides and fertilizers throughout the Subject Property is not recommended.
- Develop a stormwater management plan to ensure that there will be no direct impacts on the creeks.
- Minimize the creation of impervious surfaces to the greatest extent possible especially within 50 m of the creeks. Implement low-impact development principles.



- Minimize the area disturbed to the greatest degree possible during construct by staging the development.
- Develop and implement an Erosion and Sediment Control Plan to prevent sediment and other substances from entering the creeks.
- Machinery must arrive on site a clean, and well-maintained condition, free of fluid leaks, invasive species and noxious weeds. Wash, refuel and service machinery, and store fuel and other materials more than 30 m from the creeks, and in a manner that will prevent deleterious substances from entering the groundwater or surface water.
- Develop a spill response plan that will be implemented in case of a spill of a deleterious substance or sediment is released.
- Access to the Subject Property is proposed to be from Chippewa Street, Atwater Street, and Amherst Street possibly Arden Street. Connecting the Subject Property with Atwater Street, Amherst Street and Arden Street will require the construction of 2 water crossings of the municipal drainage ditch. The City of Sault Ste. Marie has instructed the Client to install culverts. Water crossings can have deleterious effects on fish habitat. A permit from the Sault Ste. Marie Region Conservation Authority will be required. A project review or authorization from Fisheries and Oceans Canada will likely be required.
- When installing the culverts implement the measures in the interim standard for in-water isolation developed by Fisheries and Oceans Canada (2023a) (Appendix F).
- When working in and around the creeks, implement the measures to protect fish and fish habitat described by Fisheries and Oceans Canada (Appendix G).

The following monitoring is required:

- Ensure that the 15 m vegetated buffer along the BWDDC on the west side of the Subject Property is clearly identified in the field. The adequacy of the identification methods needs to be checked on a regular basis during any development or site alteration activities. It is anticipated that development will be phased, as a result, the adequacy of the buffer identifiers should be checked periodically between development phases.
- The buffer needs to remain intact following development. The buffers should be monitored on a regular basis to ensure that they remain undeveloped. The area adjacent to the municipal drain should remain vegetated to the extent possible.
- Prior to site alteration, adequate erosion and sediment control measures should be established and maintained until the disturbed area is revegetated. During active construction inspections should take place on a weekly basis in the snow-free season, after every rainfall event, after significant snowmelt events and daily during extended rain or snowmelt periods. During inactive construction periods, where the site is left alone for 30 days or longer, a monthly inspection should be conducted. Repairs to the erosion and sediment control measures should be done within 48 hours (Toronto and Region Conservation Authority, 2019).



- Site stabilization should occur during or immediately following construction to reduce the potential of erosion and sedimentation.

In conclusion, it is anticipated that these mitigation features and monitoring will be adequate to protect fish habitat in the creeks that are adjacent to the Subject Property.



TABLE OF CONTENTS

1	INTRODUCTION.....	1
2	REGULATORY FRAMEWORK.....	1
2.1	PLANNING ACT, R.S.O. 1990, C. P.13	1
2.1.1	Provincial Policy Statement, 2020.....	2
2.2	CITY OF SAULT STE. MARIE OFFICIAL PLAN	3
2.3	FISHERIES ACT.....	5
3	STUDY APPROACH.....	5
3.1	BACKGROUND DATA REVIEW	5
4	EXISTING CONDITIONS.....	7
4.1	PAST AND PRESENT LAND USES	7
4.1.1	Land Use Designations	7
4.1.2	Zoning.....	8
4.2	PHYSIOGRAPY AND GEOLOGY	9
4.3	HYDROGEOLOGY	9
4.4	VEGETATION	10
4.5	FISH HABITAT	10
5	PROPOSED DEVELOPMENT	11
6	POTENTIAL IMPACTS.....	13
7	MITIGATION MEASURES	19
8	MONITORING	25
9	CONCLUSIONS AND RECOMMENDATIONS	26
10	CLOSING AND STATEMENT OF QUALIFICATIONS	28
11	REFERENCES.....	30



LIST OF FIGURES

Figure 1: Location Map

Figure 2: Subject Property Map

Figure 3: Official Plan Land Use Designations (City of Sault Ste. Marie, 2019)

Figure 4: Zoning Map (City of Sault Ste. Marie, 2024)

Figure 5: Sault Ste. Marie Region Conservation Authority Regulated Areas Map (City of Sault Ste. Marie, 2024)

LIST OF APPENDICES

Appendix A: Figures

Appendix B: Subject Property Photographs

Appendix C: 0 Chippewa Street Site Plan

Appendix D: Agency Correspondence

Appendix E: Bennett-West Davignon Creek Flood Control Channel Map (SSMRCA, n.d.)

Appendix F: Interim Standard: In-Water Site Isolation (Fisheries and Oceans Canada, 2023b)

Appendix G: Measures to Protect Fish and Fish Habitat (Fisheries and Oceans Canada, 2023c)

Appendix H: Resumes of Key Staff



1 INTRODUCTION

Greenstone Engineering Ltd. (“Greenstone”) was commissioned by Mr. Harjinder Kang of Mamta Homes (the “Client”) to complete a Scoped Environmental Impact Study (EIS) focused on Fish Habitat, as per the Client’s request and Greenstone’s proposal dated May 16, 2024, as revised. This Scoped EIS was conducted for the property located at 0 Chippewa Street, Sault Ste Marie, Ontario (referred to as the “Subject Property”). The Subject Property is access from the western end of Chippewa Street. The Subject Property is currently vacant and undeveloped. Maps showing the location and condition of the Subject Property are provided in Appendix A as Figure 1 and Figure 2, respectively.

The Client is proposing to develop a residential subdivision at 0 Chippewa Street, Sault Ste. Marie, Ontario. The proposed subdivision requires the approval of the City of Sault Ste. Marie (“the City”). During pre-consultation, the City indicated that a scoped Environmental Impact Study (EIS) is required to address potential impacts on fish habitat in the West Davignon Creek and its tributaries.

The purpose of an EIS is to identify potential negative impacts of a proposed development or site alteration activities on natural heritage features and areas and their ecological functions and proposes measures to reduce or eliminate those impacts. A scoped EIS focuses the impact assessment on one or more specific natural heritage features or areas and its or their ecological functions. The Scoped EIS for this project will only assess potential negative impacts of the proposed residential subdivision on the fish habitat adjacent to the Subject Property.

2 REGULATORY FRAMEWORK

The following legislation, regulations, policies, and guidance documents provide the foundation for this EIS:

2.1 PLANNING ACT, R.S.O. 1990, C. P.13

The *Planning Act* is the overarching legislation that regulates land use and guides land use planning in the Province of Ontario. Its is designed to promote sustainable economic development in a healthy natural environment and ensure that matters of provincial interest are integrated in provincial and municipal land use planning decisions. The matter of provincial interest most relevant when completing an EIS is “*the protection of ecological systems, including natural areas, features and functions.*”

Additionally, Section 3 of the Planning Act provides the legislative authority to issue policy statements regarding municipal planning matters that are of Provincial interest.



2.1.1 PROVINCIAL POLICY STATEMENT, 2020

The Provincial Policy Statement, 2020 (PPS) contains the policy statements regarding matters of Provincial interest. The Natural Heritage policy statements, found in Section 2.1, are:

2.1.1 Natural features and areas shall be protected for the long term.

2.1.2 The diversity and connectivity of natural features in an area, and the long-term ecological function and biodiversity of natural heritage systems, should be maintained, restored or, where possible, improved, recognizing linkages between and among natural heritage features and areas, surface water features and ground water features.

2.1.3 Natural heritage systems shall be identified in Ecoregions 6E & 7E1, recognizing that natural heritage systems will vary in size and form in settlement areas, rural areas, and prime agricultural areas.

2.1.4 Development and site alteration shall not be permitted in:

- a) significant wetlands in Ecoregions 5E, 6E and 7E1; and*
- b) significant coastal wetlands.*

2.1.5 Development and site alteration shall not be permitted in:

- a) significant wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E1;*
- b) significant woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River);*
- c) significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River);*
- d) significant wildlife habitat;*
- e) significant areas of natural and scientific interest; and*
- f) coastal wetlands in Ecoregions 5E, 6E and 7E1 that are not subject to policy 2.1.4(b)*

unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.



- 2.1.6 Development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements.*
- 2.1.7 Development and site alteration shall not be permitted in habitat of endangered species and threatened species, except in accordance with provincial and federal requirements.*
- 2.1.8 Development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas identified in policies 2.1.4, 2.1.5, and 2.1.6 unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.*
- 2.1.9 Nothing in policy 2.1 is intended to limit the ability of agricultural uses to continue.*

The Ministry of Natural Resources and Forestry (MNRF) developed the Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005. Second Edition in 2010. It is designed to provide technical guidance for implementing the Natural Heritage Policy in the PPS.

An EIS identifies the natural heritage features and areas listed above that are located on or adjacent to (i.e., within 120 metres [m] of) the Subject Property. The focus of this EIS is fish habitat.

2.2 CITY OF SAULT STE. MARIE OFFICIAL PLAN

The City of Sault Ste. Marie Official Plan (OP) was first approved in 1996. It provides guidance and direction regarding “the physical change and development of” land and land use in Sault Ste. Marie. It provides the policy framework to address impacts of change on the local people, the local economy and the natural environment within City limits. It is designed to meet current and future needs (City of Sault Ste. Marie, revised 2024).

Part V. of the OP outlines the goals and policies regarding the Natural Environment. The Natural Environment goals include identifying, protecting, conserving, restoring and developing provincially, regionally and locally significant natural environmental features and resources, to ensure that the City has naturally sustainable environment. Additionally, the City encourages the protection of natural environmental features which are located on both public and private land to maintain or develop corridors and linkages between natural environmental features to maintain and enhance SSM’s natural habitats. Natural heritage features are identified on Schedule A to the OP and the City’s SooMaps website.

The OP policies that relate directly to fish habitat are found in Section 3.6 of Part V. This section acknowledges that fish and quality fish habitat provide significant economic benefits through fishing related tourism. The Fish Habitat policies are:



FI.1. To protect all fish habitat from harmful disruption, alteration or destruction by not permitting development which could result in damage to these areas.

FI.2. To encourage the restoration, enhancement and creation of fish habitat.

FI.3. To ensure that public access to fishery resource areas is provided or maintained given that the area is suited to human activity.

FI.4. No development is permitted in Type 1 fish habitat. This currently includes:

1. St. Mary's River Rapids; and
2. Crystal Creek from Case Road to Minnehaha Falls.

FI.5. All fish habitat, excluding areas identified as Type 1, is classified as Type 2 or 3. Applications for developments in or adjacent to these areas, or adjacent to Type 1 Areas, may be approved by Council, if accompanied by an Environmental Impact Statement (EIS).

The EIS may determine:

1. that the habitat or a portion thereof is Type 1 and subject to policy FI.4 above, or
2. the conditions under which development may take place.

FI.6. A separate zoning provision shall be used in the Comprehensive Zoning By-law to identify a vegetative buffer adjacent to fish habitat.

FI.7. Minor adjustments to expand or reduce the limits of the zoning buffer boundaries may be agreed upon by Council or the Committee of Adjustment at the time of consideration of an adjacent development proposal. Such minor refinements do not require an amendment to this Plan.

Policy FI.5 has been superseded by Section 2.1.6 of the PPS, 2020 that prohibits development and site alteration in fish habitat except in accordance with provincial and federal requirements (Government of Ontario, 2020). Section 2.1.8 prohibits development and site alteration within adjacent lands (i.e., 120 m) of fish habitat unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on fish habitat or on its ecological functions (Ontario Ministry of Natural Resources, 2010; Government of Ontario, 2020). An EIS is the usual document that demonstrates no negative impacts on natural heritage features including fish habitat and their ecological functions.

The City's requirements for an EIS are contained in Section 2 of Part VIII of the OP. This section states the following:



1. An EIS must be prepared by a qualified professional to the satisfaction of City Council, with the technical advice of an appropriate agency;
2. Council, with the technical advice of an appropriate agency, may permit an applicant to present a Scoped EIS for smaller scale projects and projects where potential impact are less likely;
3. An EIS will include:
 - a) a description of the existing natural environment that will be affected or that might reasonably be expected to be affected, either directly or indirectly,
 - b) the environmental effects that might reasonably be expected to occur;
 - c) alternative methods and measures for mitigation of potential environmental effects of the proposed development; and
 - d) a monitoring plan to measure the potential effects on the environment; and
4. The preparation of an EIS does not mean that an applicant's proposed development or redevelopment will be approved.

2.3 FISHERIES ACT

The Fisheries Act “provides a framework for the proper management and control of fisheries, and the conservation and protection of fish and fish habitat, including by preventing pollution” in Canada. The term fish includes all parts of fish, shellfish, crustaceans, marine animals and any parts of shellfish, crustaceans or marine animals including all life stages from the eggs and sperm to adults. Fish habitat includes all waters that fish frequent and all other areas on which fish depend directly or indirectly to carry out their life processes. These areas include spawning grounds, nursery and rearing areas, areas that provide a food supply, and migration areas.

3 STUDY APPROACH

3.1 BACKGROUND DATA REVIEW

The background data review included contacting relevant agencies and reviewing publicly available background material.

The following agencies were consulted:



Agency	Date(s)	Information Requested/Obtained
Sault Ste. Marie Region Conservation Authority (SSMRCA) – Christine Ropeter, Assistant Manager & Communications	May 28, 2024 -	Fish & Fish Habitat information was requested. Ms. Ropeter responded that they do not have a biologist on staff and recommended that we contact the OMNRF.
Ontario Ministry of Natural Resources and Forestry (OMNRF), Sault Ste. Marie and Blind River District – Derek Goertz, Management Biologist	June 3, 2024	Fish & Fish Habitat, Species at Risk information was requested. Mr. Goertz indicated that all fish and fish habitat information about creeks in Sault Ste. Marie is uploaded to the <i>Aquatic Resources Area</i> and <i>Fish Activity Area</i> layers in the Ontario Geohub.

The following sources of information were reviewed:

- Topographic mapping (OBM, NTS);
- Aerial photography;
- Natural Heritage Information Centre (NHIC) data;
- Fish and Fish Habitat related Datasets from the Ontario Geohub website including:
 - Aquatic resource area line segment;
 - Aquatic resource area polygon segment;
 - Fish Activity layer;
 - Ontario Hydro Network (OHN) – Waterbody; and
 - Ontario Hydro Network (OHN) – Watercourse;
- iNaturalist;
- Ontario Species at Risk website; and
- Fisheries Oceans Canada Aquatic Species at Risk.



4 EXISTING CONDITIONS

4.1 PAST AND PRESENT LAND USES

The Subject Property is undeveloped vacant land (Figure 2) that was once used as an agricultural field, likely as pastureland.

The Bennett-West Davignon Diversion Channel (BWDDC) is located along the northern, northwestern, and western sides of the Subject Property as shown in the Sault Ste. Marie Region Conservation Authority (SSMRCA) Bennett-West Davignon Creek Flood Control Channel Map in Appendix B. The BWDDC, completed in 1979, was constructed to reduce flooding west of Goulais Avenue between Third Line and the St. Marys River (SSMRCA, n.d.). It diverts water from the Bennett Creek into the West Davignon Creek immediately west of the Subject Property. The BWDDC west of the Subject Property south of its confluence with the West Davignon Creek has the characteristic of a natural creek. The rest of the BWDDC appears to be a drainage ditch. It does not appear that it has been maintained for a long time because there is wetland vegetation growing in parts of the channel and well-established vegetation on its banks. The BWDDC continues flowing south eventually emptying into the St. Marys River.

A tributary of the West Davignon Creek flows into the BWDDC from the north approximately halfway between the northeast and northwest corners of the Subject Property.

A municipal drainage ditch is located along the southern and southeastern property boundaries. It flows into the BWDDC just south of the southwestern corner of the Subject Property. The City of Sault Ste. Marie identified it as a source of public concern and complaints. During discussions with the Client, they stated that “The City may work with the developer to improve the drain to alleviate upstream issues.” Additionally, City staff mentioned that this drainage ditch may eventually be dredged/regraded or possibly replaced with a buried pipe. The properties to the north and northwest of the BWDDC are vacant and appear to have been used for agriculture in the past. The property to the west of the Subject Property contains a single-family dwelling and several accessory buildings. It appears to have formerly been a farm. The properties to the south of the Subject Property include an industrial property in the west and vacant land in the west. Finally, the properties to the east of the Subject Property are residential.

4.1.1 LAND USE DESIGNATIONS

Schedule C of the OP shows the designated land uses for properties within the City (City of Sault Ste. Marie, revised 2024). The Subject Property, the properties to the east and the property south of the eastern part of the Subject Property are designated residential as shown in Figure 3 (City of Sault Ste.



Marie, 2019). The property south of the western part of the Subject Property is designated industrial. The remaining adjacent properties are designated rural area.

4.1.2 ZONING

The majority of the Subject Property and the property west of the BWDDC are zoned Rural Area (RA) as shown in Figure 4 (City of Sault Ste. Marie, April 2019; City of Sault Ste. Marie, 2019). The permitted uses in this zone are single detached dwellings, accessory uses including second units, solar power installations and wind turbines, agricultural uses, bed and breakfast, campground, commercial solar power installations and wind generating systems, conservation use, elementary schools, golf course, group home, home-based business, parks and playgrounds, pet care services including veterinary clinic, place of worship, recreational facilities, and similar uses.

The area surrounding the municipal drainage ditch located along southern and southeastern boundaries of the Subject Property and the properties north and northwest of the creeks are zoned Environmental Management (EM). All creeks, ravines and wetlands that are designated as Natural Resource and Constraint Areas in the OP are zoned EM because the main purpose of this zone is to protect the natural environment. The top of the embankments in which the rivers and creeks are located, and the identified boundaries of a wetland and their abutting areas determine the zone boundaries. The permitted uses within EM Zones are limited to conservation uses and uses permitted and regulations pertaining to the zoning of abutting areas, subject to the removal of a holding provision. A holding provision can be removed if the developer or property owner addresses the applicable OP policies pertaining to fish habitat, slope stabilization, flood lands, wetlands, and/or the areas regulated by the SSMCRA that affect the lot in question.

There BWDDC plus the 15 m flooding hazard setback are zoned Parks and Recreation (PR) (Figure 4). The permitted uses in the PR zone are accessory uses including solar power installations and wind turbines, campgrounds, care facilities, caretaker dwellings, conservation uses, day care facilities, golf courses, marinas, parks and playgrounds, recreational facilities, schools, and similar uses.

The properties to the east of the Subject Property are residential subdivisions with Single Detached Residential (R2) and Low Density Residential (R3) zoning (Figure 5). The R2 zone is designed for the majority of the single dwelling neighbourhoods within the City (City of Sault Ste. Marie 2012). The Permitted Uses in the R2 zone are single detached dwellings, bed and breakfasts, day care facilities, elementary schools, group homes, home based businesses (accessory to a dwelling unit), parks, playgrounds, places of worship, and second units, wind turbines and solar power installations as accessory uses. The R3 zone is first residential zone allows a greater density than single detached. It is designed to provide for a mixture of single-family dwellings and higher density residential dwellings. The permitted use in the R3 zone include all the uses permitted in an R2 zone and semi-detached, duplex, triplex, and multiple attached dwellings, and group residence, and rooming house.



4.2 PHYSIOGRAPHY AND GEOLOGY

The Sault Ste. Marie is located in the Ontario Shield Ecozone, the Georgian Bay Ecoregion (5E) and the Thessalon Ecodistrict (5E-1) (Crins, Gray, Uhlig, & Wester, 2009; Wester, Uhlig, Bakowsky, & Banton, 2015). The climate of this Ecoregion is cool-temperate and humid. The average mean temperature of the Sault Ste. Marie area is 4.27 °C with a high temperature mean of 24 °C in July and a low temperature mean of -15.5 °C in January (Environment and Natural Resources Canada, 2024). On average the Sault Ste. Marie area receives 888.7 mm of precipitation annually, of which an average of 634.3 mm is as rainfall and 302.9 mm is as snowfall. The average growing season length is 183 to 219 days (Crins, Gray, Uhlig, & Wester, 2009).

The Subject Property is located at the western end of Chippewa Street, Atwater Street, Amherst Street, and Arden Street in Sault Ste. Marie, Ontario. The civic address is currently 0 Chippewa Street. The property is approximately 15.3 ha in size. The BWDDC runs along the northern and western perimeter of the Subject Property. A municipal drainage ditch is located along the southern and southeastern boundaries of the Subject Property (Figure 2).

This property is gently sloping, ranging in elevation from 193 m above sea level (masl) at the southwest corner to 198 masl along the northern perimeter (Figure 2). The bedrock underlying the Subject Property is sandstone, shale, conglomerate from the Upper Keweenaw Supergroup (<1086 Ma); Jacobsville Group; and Oronto Group (Ontario Geological Survey, 2011). The underlying landform is a glaciolacustrine clay-silt raised or abandoned beach (Ontario Geological Survey and Ontario Ministry of Natural Resources, Northeast Science and Information Section, 2005). The soils on the majority of the Subject Property are imperfectly drained Albany Clay Loam. The soils on the northern part are described as well drained Delamere Clay Loam.

4.3 HYDROGEOLOGY

The specific area of concern for this scoped EIS are the watercourses located along the Subject Property boundaries. These are the BWDDC to the north and west, its tributary to the north of the Subject Property, and the municipal drainage ditch to the south and southeast. The municipal drainage ditch flows into the BWDDC at the southwest corner of the Subject Property.

These watercourses are part of the Sault Ste Marie-St. Marys River Quaternary Watershed. It is within St. Marys River Tertiary Watershed, the Northern Lake Huron Secondary Watershed, the Great Lakes-St. Lawrence River Primary Watershed (Ontario Ministry of the Environment, Conservation and Parks, 2023).



4.4 VEGETATION

The Subject Property was previously utilized for agricultural purposes, presumably pastureland because it was seeded with various tall growing grass species that require minimal maintenance. Some native vegetation, including several shrub and small tree species, has begun to invade within the creek beds and along the banks as well as in sparse pockets across the Subject Property (Figure 2).

4.5 FISH HABITAT

Fish and fish habitat are protected in Canada by the *Fisheries Act* and in Ontario through the PPS, 2020. Fish habitat includes all waters that fish frequent and all other areas on which fish depend directly or indirectly to carry out their life processes. These areas include spawning grounds, nursery and rearing areas, areas that provide a food supply, and migration areas.

PPS, 2020 states that development and site alteration in fish habitat are prohibited except in accordance with provincial and federal requirements (Government of Ontario, 2020). Additionally, development and site alteration are not permitted on adjacent lands to fish habitat unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on fish habitat and its ecological functions. Adjacent lands are defined as the lands within 120 m of fish habitat (Ontario Ministry of Natural Resources, 2010).

Fish habitat on the Subject Property and within 120 m is provided by:

- The BWDDC located along the northern and western property boundaries and extending south of the Subject Property,
- The municipal drainage ditch located along the southern and southeast property boundaries,
- The tributary of the West Davignon Creek that flows into the BWDDC from north Subject Property, and
- The West Davignon Creek west of its confluence with the BWDDC located south of the northwestern corner of the Subject Property (Ontario Ministry of Natural Resources and Forestry, 2022b).

Direct fish habitat is provided by the tributary from north of the Subject Property, BWDDC west of that tributary, the West Davignon Creek and the municipal drainage ditch. All of these watercourses are identified as permanent coldwater streams (Ontario Ministry of Natural Resources and Forestry, 2022b; Ontario Ministry of Natural Resources and Forestry, 2024a). They also support a variety of coolwater species and two warmwater species (Ontario Ministry of Natural Resources and Forestry, 2024a). The following fish species found in these watercourses:



Warmwater Fish Species		Coolwater Fish Species		Coldwater Fish Species	
Name	Spawning Period	Name	Spawning Period	Name	Spawning Period
Bluntnose Minnow	June-August	Blacknose Dace	May-July	Brook (Speckled) Trout *	September-November
Fathead Minnow	May-August	Blacknose Shiner	June-July	Brown Trout *	October-November
		Bluntnose Minnow	June-August	Coho Salmon *	October-November
		Brassy Minnow	May-July	Rainbow Trout (Steelhead) *	March-May
		Brook Stickleback	May-July		
		Common Shiner	May-June		
		Creek Chub	May-June		
		Johnny Darter	May-June		
		Longnose Dace *	May-July		
		Mottled Sculpin *	April-May		
		White Sucker	April-June		

(Eakins, 2024)

None of these species are at risk in Ontario or in Canada (Fisheries and Oceans Canada, 2023d; Ontario Ministry of the Environment, Conservation and Parks, 2024). However, the species identified by a * in the list above are considered sensitive fish species when determining the classification of a drainage ditch (Kavanagh, Wren, & Hoggarth, Guidance for Maintaining and Repairing Municipal Drains in Ontario, 2017).

The BWDDC east of its intersection with the tributary from the north flows intermittently. This channel currently has wetland type vegetation including cattails. It likely provides indirect fish habitat.

5 PROPOSED DEVELOPMENT

The proposed development involves the creation of a Plan of Condominium comprised of 3 Parcels as shown in Figure 7: Site Plan.

Parcel A, located in the northern part of the Subject Property, is proposed to contain 66 detached homes and 16 semi-detached homes. It is proposed to be accessed via extensions of Chippewa Street



and Atwater Street. The detached homes will be located north and south of the proposed extension of Chippewa Street, east and west of two proposed condominium roads, and north of the proposed extension of Atwater Street. The 16 semi-detached homes will be located south of the proposed extension of Atwater Street. The proposed extensions of Chippewa Street and Atwater Street with terminate in a cul-de-sac in the northwestern part of the Subject Property.

Parcel B is located in the southern part of the Subject Property adjacent to the municipal drainage ditch. It is proposed to be an Adult Community Lifestyle area containing 104 townhomes. The townhomes will be located north and south of the proposed extension of Amherst Street and a proposed crescent condominium road south of the proposed extension of Amherst Street. At the eastern side of Parcel B, between the proposed extension of Atwater Street and Amherst Street, the applicant proposes to develop a park, plaza, and amenities building including a stormwater management pond and a snow storage area. A second stormwater management pond is to be located in the southwest corner of Parcel B.

Parcel C is proposed to be a Seniors' community containing two 90-unit apartment buildings. Parcel C is located along the western side of the Subject Property adjacent to the BWDDC and its floodplain. Parcel C is located east of the 15 m flooding hazard area. The parking area for the apartment buildings and visitor parking for Parcel B is located between the apartment buildings and Parcel B. Access to Parcel C will be south from the cul-du-sac at the western end of the proposed extensions of Chippewa Street and Atwater Street, and east from the proposed Parcel B crescent condominium road.

The proposed condominium development will be serviced with water and sewer by the municipality.

An overall site grading plan and a stormwater management plan (SWMP) have been developed to comply with City of Sault Ste. Marie requirements. The site will be graded to ensure that all surface drainage will be directed toward the two stormwater management ponds in Parcel B. Stormwater will not flow directly towards the BWDDC, the existing creeks, or the municipal drainage ditch.

The SWMP addresses the quantity, quality and treatment of stormwater discharge. The stormwater collected in the stormwater management ponds in Parcel B will be treated to remove at least 80% the total suspended solid prior to being discharged into the municipal drainage ditch. Each stormwater management pond will have a single discharge point.

Additionally, the Client will be implementing a Low Impact Development (LID) approach as much as possible. This approach utilizes permeable landscape components to promote absorption of precipitation into the soil which reduces the quantity of surface water run-off.

The Subject Property is currently designated Residential in the OP (City of Sault Ste. Marie, revised 2024; City of Sault Ste. Marie, 2019). It is zoned Rural Area (RA), except for the creek and creek banks along



the southern and southeastern boundaries. As part of the Plan of Condominium application, site specific zoning based on the low and medium density residential zones is proposed.

6 POTENTIAL IMPACTS

The natural heritage feature of concern for this proposed development is fish habitat. Direct fish habitat located on and adjacent (i.e., within 120 m) to the Subject Property that could be impacted are:

- The unnamed tributary of the BWDDC located north of the Subject Property.
- The part of the BWDDC from where the unnamed tributary from north of the Subject Property flows in along the northern property boundary west to the northwestern corner then south along the western property boundary and continues south of the Subject Property,
- The BWDDC downstream (i.e., south) of the Subject Property,
- The municipal drainage ditch located along the southern and southeastern property boundaries including upstream (east) of the Subject Property,
- The West Davignon Creek located west of the BWDDC, and

Indirect fish habitat is provided by the part of the BWDDC along the northern property boundary east of its confluence with the unnamed tributary that flows intermittently and has wetland type vegetation. This habitat is often important during flooding events.

The potential negative impacts of the proposed condominium development on the direct and indirect fish habitat on and adjacent to the Subject Property include:

Potential Physical Impacts	Potential Impacts on Fish Habitat and Its Ecological Functions
Development Activity: Clearing vegetation from and grubbing in riparian areas	
Changes in habitat structure and cover	<ul style="list-style-type: none">• Eliminate or relocate spawning and/or nursery areas• Reduce or change in food supply• Drying up of refugia due to increased evaporation• Changes in habitat structure and cover leading to a restriction in habitat connectivity and the opportunities for aquatic organisms to use, colonize and move between existing aquatic environments• Removal of cover and in-stream structure resulting in a loss of protection from predators and physical disturbances• Changes in the availability of diverse and stable habitats



Potential Physical Impacts	Potential Impacts on Fish Habitat and Its Ecological Functions
Increased water temperatures	<ul style="list-style-type: none">• Change the thermal regime of the watercourses from coldwater to coolwater or warmwater resulting in direct or egg mortality and reduced reproduction in coldwater fish species• Changes in fish species composition and abundance• Increased microbial breakdown of organic matter and a resultant depletion of dissolved oxygen in a waterbody
Increased concentrations of nitrogen, phosphorus, nitrogen containing compounds may result in eutrophication of a waterbody which leads to increased algal growth and growth of other aquatic plant species	<ul style="list-style-type: none">• Blocks the light needed by aquatic organisms and can cause clouding of the water column• Once the algae die, they sink to the bottom and start to decompose, a process that requires oxygen, resulting in lower dissolved oxygen concentrations in the bottoms of waterbodies.• Low dissolved oxygen levels cause fish to move away from their previously preferred habit and can cause fish and other aquatic organisms to die• Changes in food supply
Increased contaminant concentrations in water and the sediment	<ul style="list-style-type: none">• Death or injury to fish and other aquatic life• Changes in the abundance, composition, and diversity of communities• Loss of habitat• Contaminants persisting in the water column, sediment, and biological tissue can cause deformities to organisms, changes in growth, reduced reproductive success, and impede the competitive abilities of affected organisms
Reduced stream bank stability and its ability to trap sediment from upland sources leading to increased erosion, sedimentation, and/or turbidity	<ul style="list-style-type: none">• Decreased photosynthesis leading to a loss of productivity• Loss of local spawning and/or nursery areas• Loss of food supply• Loss of habitat due to fish avoiding certain areas• Changes in fish and aquatic invertebrate species composition and abundance
Development Activity: Grading	
Changes in natural drainage pattern leading to changes in surface runoff and stream flows	<ul style="list-style-type: none">• Reduced food supply• Changes in fish and aquatic invertebrate species composition and abundance
Addition or removal of in-stream organic structure	<ul style="list-style-type: none">• Changes in habitat structure and cover leading to a restriction in habitat connectivity and the opportunities for aquatic organisms to use, colonize and move between existing aquatic environments• Removal of cover and in-stream structure resulting in a loss of protection from predators and physical disturbances



Potential Physical Impacts	Potential Impacts on Fish Habitat and Its Ecological Functions
	<ul style="list-style-type: none">• Changes in the availability of diverse and stable habitats
Development Activity: Excavation	
Alteration of groundwater flows to surface waters resulting in changes to the baseflows in the creeks and a change in water temperature	<ul style="list-style-type: none">• Change the thermal regime of the watercourses from coldwater to coolwater or warmwater resulting in reduced reproductive activity or mortality of coldwater fish species• Changes in fish species composition and abundance
Increased erosion, sedimentation, turbidity and/or flooding	<ul style="list-style-type: none">• Decreased photosynthesis leading to a loss of productivity• Loss of habitat due to fish avoiding certain areas• Loss of local spawning and/or nursery areas• Reduced food supply• Changes in fish and aquatic invertebrate species composition and abundance
Increased inputs of nutrients and contaminants to waterbodies	<ul style="list-style-type: none">• Decreased photosynthesis leading to a loss of productivity• Loss of habitat due to fish avoiding certain areas• Loss of local spawning and/or nursery areas• Reduced food supply• Changes in fish and aquatic invertebrate species composition and abundance
Development Activity: Building construction	
Increased erosion, sedimentation, turbidity and/or flooding	<ul style="list-style-type: none">• Decreased photosynthesis leading to a loss of productivity• Loss of habitat due to fish avoiding certain areas• Loss of local spawning and/or nursery areas• Reduced food supply• Changes in fish and aquatic invertebrate species composition and abundance
Increased inputs of nutrients and contaminants to waterbodies	<ul style="list-style-type: none">• Decreased photosynthesis leading to a loss of productivity• Loss of habitat due to fish avoiding certain areas• Loss of local spawning and/or nursery areas• Reduced food supply• Changes in fish and aquatic invertebrate species composition and abundance
Water contamination by petroleum products and other substances	<ul style="list-style-type: none">• Death or injury to fish and other aquatic life• Loss of habitat
Increase in impervious surfaces leading to increased surface runoff, decreased ground infiltration, decreased groundwater discharge, decreased stream baseflows and	<ul style="list-style-type: none">• Change the thermal regime of the watercourses from coldwater to coolwater or warmwater resulting in changes in fish and aquatic invertebrate species composition and abundance



Potential Physical Impacts	Potential Impacts on Fish Habitat and Its Ecological Functions
upwellings, and loss of vegetation resulting in increased water temperatures	<ul style="list-style-type: none">• Loss of local spawning and/or nursery areas• Reduced food supply
Development Activity: Construction of Roads and Water Crossings	
Use of industrial equipment in-stream or in riparian areas	<ul style="list-style-type: none">• Potential injury or mortality of fish, their eggs and ova, aquatic invertebrates and their larvae
Realignment of stream channels with or without changes in water velocity potentially causing downstream erosion or sedimentation and/or separating the realigned stream from its floodplain	<ul style="list-style-type: none">• Barriers to fish movement• Habitat fragmentation• Decreased photosynthesis leading to a loss of productivity• Loss of habitat due to fish avoiding certain areas• Loss of local spawning and/or nursery areas• Reduced food supply• Changes in fish and aquatic invertebrate species composition and abundance
Loss of riparian vegetation which may result in a loss of shade and/or an increase in water temperatures	<ul style="list-style-type: none">• Eliminate or relocate spawning and/or nursery areas• Reduce or change in food supply• Drying up of refugia due to increased evaporation• Change the thermal regime of the watercourses from coldwater to coolwater or warmwater• Changes in fish species composition and abundance
Pollutants from roads entering waterbodies including heavy metals, oils, and grease from vehicles and salt from winter road maintenance	<ul style="list-style-type: none">• Death or injury to fish and other aquatic life• Changes in the abundance, composition, and diversity of communities• Loss of habitat• Contaminants persisting in the water column, sediment, and biological tissue can cause deformities to organisms, changes in growth, reduced reproductive success, and impede the competitive abilities of affected organisms
Increase in impervious surfaces leading to increased surface runoff, decreased ground infiltration, decreased groundwater discharge, decreased stream baseflows and upwellings, and loss of vegetation resulting in increased water temperatures	<ul style="list-style-type: none">• Change the thermal regime of the watercourses from coldwater to coolwater or warmwater resulting in changes in fish and aquatic invertebrate species composition and abundance• Loss of local spawning and/or nursery areas• Reduced food supply
Change in thermal cues or temperature barriers	<ul style="list-style-type: none">• Temperature often serves as a behavioural cue for fish. Some fish need a particular temperature to trigger reproductive behaviour.



Potential Physical Impacts	Potential Impacts on Fish Habitat and Its Ecological Functions
	<ul style="list-style-type: none">• Thermal pollution resulting in higher temperatures can cause a shift in the timing of reproduction and changes in the community structure.
Changes in stream morphology resulting from poorly designed water crossings	<ul style="list-style-type: none">• Fish can get trapped or stranded resulting in injury or death• Disruption in access to fish habitats that are essential for one or more life process including spawning and rearing causing a decrease in fish populations• Fish can no longer access historic migration routes
Development Activity: Taking Groundwater and Surface Water	
Decreased groundwater discharge, decreased stream baseflows and upwellings resulting increased water temperatures, decreased water quality, and/or an anoxic stream environment	<ul style="list-style-type: none">• Loss of fish habitat• Changes in migration patterns• Reduced food supply• Changes in fish and aquatic invertebrate species composition and abundance• Death of fish and other aquatic life
Development Activity: Increased human use near streams including increased residential occupation and recreational uses (e.g. walking, fishing, use of all terrain vehicles and snowmobiles)	
Increased inputs of nutrients and contaminants to waterbodies due to the use of fertilizers, pesticides, dumping of debris and compost in areas in or adjacent to streams, and discharge of swimming pool water etc. resulting in increased productivity, algal growth, and reduced oxygen levels	<ul style="list-style-type: none">• Death or injury to fish and other aquatic life• Loss of habitat• Reduced food supply• Changes in fish and aquatic invertebrate species composition and abundance
Trampling of vegetation, soil compaction	<ul style="list-style-type: none">• Loss of habitat• Reduced food supply• Changes in fish and aquatic invertebrate species composition and abundance
Increased erosion, sedimentation and turbidity	<ul style="list-style-type: none">• Decreased photosynthesis leading to a loss of productivity• Loss of habitat due to fish avoiding certain areas• Loss of local spawning and/or nursery areas• Reduced food supply• Changes in fish and aquatic invertebrate species composition and abundance
Introduction of non-native and invasive plant species potentially resulting in changes in productivity, algal growth, reduced oxygen levels, and changes in water temperature	<ul style="list-style-type: none">• Death or injury to fish and other aquatic life• Loss of habitat due to fish avoiding certain areas• Loss of local spawning and/or nursery areas• Reduced food supply



Potential Physical Impacts	Potential Impacts on Fish Habitat and Its Ecological Functions
decreased water quality, and/or an anoxic stream environment	<ul style="list-style-type: none"> Changes in fish and aquatic invertebrate species composition and abundance
Introduction of non-native aquatic animal species into streams	<ul style="list-style-type: none"> Death or injury to native fish and aquatic organisms Loss and fragmentation of habitat for native fish species due to competition with and predation by non-native species Loss of local spawning and/or nursery areas Reduced food supply Changes in fish and aquatic invertebrate species composition and abundance
Damage to stream banks and bed resulting from fording creeks with vehicles causing increased erosion and sedimentation, removal of aquatic vegetation and stream structure (e.g. logs, rocks, etc.), and alteration of substrates	<ul style="list-style-type: none"> Loss of habitat Reduced food supply Changes in fish and aquatic invertebrate species composition and abundance
Increased fishing pressure	<ul style="list-style-type: none"> Reduction in the abundance of fish Change in the relative abundance of species within the fish community
Development Activity: Improvement, Repair and Maintenance of Municipal Drains or Diversion Channels	
Channelization of the watercourse through deepening, straightening, widening, or smoothing out the bottom	<ul style="list-style-type: none"> Increased velocity at high flows Loss of riffle and pool habitat Shallower thalweg (main channel) during low flows Increased temperature Decreased bank stability Increased erosion and sedimentation of bank and bed Changes to flow regime (especially baseflows) Lowering of the water table in adjacent wetlands Loss of substrate (e.g. gravel)
Narrowing or blocking of watercourse	<ul style="list-style-type: none"> Loss of fish passage
Removal of instream aquatic vegetation	<ul style="list-style-type: none"> Loss of cover Loss of vegetation for spawning Loss of nutrients, food, and habitat for aquatic insects Decreased channel/bank stability to the receiving watercourse Increased erosion and sedimentation in the drain
Removal of riparian vegetation	<ul style="list-style-type: none"> Decreased photosynthesis leading to a loss of productivity Loss of habitat due to fish avoiding certain areas Loss of local spawning and/or nursery areas Reduced food supply



Potential Physical Impacts	Potential Impacts on Fish Habitat and Its Ecological Functions
	<ul style="list-style-type: none">• Changes in fish and aquatic invertebrate species composition and abundance
Removal of substrate	<ul style="list-style-type: none">• Loss of spawning substrate (e.g. gravel)• Loss of riffle and pool habitat• Loss of aquatic insects• Disturbance to the banks and the bottom of ditches from the use of equipment• Decreased channel/bank stability to the receiving watercourse• Increased erosion and sedimentation in the drain• Mortality of eggs, juveniles, and adult fish
Removal of woody debris	<ul style="list-style-type: none">• Loss of cover• Loss of woody debris for spawning• Increased velocity in the drain• Decreased channel/bank stability to the receiving watercourse• Increased erosion and sedimentation in the drain
Sedimentation of the work and/or impact zone	<ul style="list-style-type: none">• Changes in fish behavior including blocking migration or forcing them out of preferred habitat• Causes clogging of fish gills, which impacts breathing• Affects the ability of fish to resist parasites and disease• Fish mortality• Sediment that settles out can smother fish eggs or larvae, cover spawning substrate, cover boulders and other types of cover habitat, cover or smother important fish food such as insects and algae;• High sediment loads can bury riffles and reduce the size of pools or fill them in completely (pools are important refuges in the summer and winter); and• Decrease in dissolved oxygen if the bottom substrate is very rich in organic matter

(Kavanagh, Wren, & Hoggarth, Guidance for Maintaining and Repairing Municipal Drains in Ontario, 2017; Fisheries and Oceans Canada, 2018; Ontario Ministry of Agriculture and Rural Affairs, 2004; Fischer & Fischenich, 2000; Ontario Ministry of Natural Resources, 2010; Toronto and Region Conservation Authority, 2019; Wang, Lyons, Kanehl, & Bannermann, 2001)

7 MITIGATION MEASURES

Approximately three-quarters of the perimeter of the Subject Property is occupied by the BWDDC and the municipal drainage ditch. Additionally, the West Davignon Creek and an unnamed tributary flow into the BWDDC near the northwest corner of the Subject Property.



The BWDDC west and south of its confluence with the unnamed tributary of the West Davignon Creek and the municipal drainage ditch located along the southern and southeastern boundaries of the Subject Property are classified as permanent coldwater streams (Ontario Ministry of Natural Resources and Forestry, 2022b; Ontario Ministry of Natural Resources and Forestry, 2024a). These streams provide direct fish habitat (Ontario Ministry of Natural Resources and Forestry, 2024a; Ontario Ministry of Natural Resources and Forestry, 2024c). The remainder of the BWDDC appears to flow intermittently and would likely provide indirect fish habitat

The most effective method of protecting fish habitat is to maintain waterbodies and watercourses in their natural state and provide undisturbed vegetated buffers around them. The recommended mitigation measures during the development and site alteration of the Subject Property include:

1. Establishing a 15 m vegetated buffer from the BWDDC on the west side of Parcel C. The buffer is to be measured from the normal highwater mark (i.e. top of the bank).

The Natural Heritage Reference Manual recommends a minimum of a 30 vegetated buffer adjacent to coldwater streams (Ontario Ministry of Natural Resources, 2010). However, a 15 m vegetated buffer should be sufficient to protect fish habitat because the Client will also be implementing the following mitigation measures:

- A LID approach to reduce the quantity of run-off within the development (Davis, 2005),
- The overall site grading plan to direct stormwater and surface water run-off away from the BWDDC and the municipal drainage ditches, and
- The stormwater management plan collects the stormwater and other surface run-off in two stormwater management ponds. The water is then treated to remove a minimum of 80 % of the Total Suspended Solids prior to being released into the municipal drainage ditch. Each stormwater management pond will release the treated effluent at a single location.

Please note that a permit from the Sault Ste. Marie Conservation Authority will be required to disturb the land adjacent to (generally within 15 m) the BWDDC and municipal drainage ditch. Pre-consultation to discuss the landscaping plan and vegetation types is recommended.

2. The fish habitat in the municipal drainage ditch is protected because the banks along it is at a higher elevation than the Subject Property and the site will be graded so stormwater and surface water are directed into the stormwater management plans. should be considered. Although not legally required, a narrow vegetation buffer along the ditch is recommended as this will provide additional protection for fish habitat. When construction on the along the southern boundary of the Subject Property is completed, the buildings will be the following distances from the top of the bank of the ditch:
 - The apartment buildings in Parcel C will have a vegetated side-yard setback of approximately 15 m, and



- The townhouses in Parcel B will be have a vegetated backyard setback as required by the City of Sault Ste. Marie Zoning By-law.
3. The grading plan requires site alteration to occur close to the top of the bank of the municipal drainage ditch. Along most the municipal drainage ditch the top of the bank is higher than the Subject Property as shown in the photo of the southern boundary of the Subject Property in Appendix B. As a result, overland surface waterflow is directed away from the municipal drainage ditch protecting fish and fish habitat. Additionally, erosion and sedimentation mitigation measures will be implemented prior to soil disturbance and remain in place until vegetation has been re-established.
 4. When landscaping within the 15 m of the BWDDC and the municipal drainage ditch, exposure of soil must be minimized to the greatest degree possible. Reducing the area disturbed at any one time should be minimized to the greatest degree possible. The development should be staged to keep the disturbed area as small as possible.
 5. Naturalizing the area by planting perennial native species of local provenance is recommended within 15 m of fish habitat, where practical (Carolinian Canada, 2003). Because the BWDDC is a flood diversion channel, during heavy rainfall events and during the spring freshet, the water level will likely rise to bank full levels or greater. The species chosen should be grasses, forbs and small shrubs, rather than trees. Planting a heterogeneous pattern of cool-season and warm-season grasses was recommended in Fischer & Fischenich (2000). Recommended native wildflower, shrub and tree species for the Sault Ste. Marie Area can be found at <https://www.cleannorth.org/sault-algoma-grow-me-instead-guide/>. A list of native grasses, rushes and sedges can be found at https://ontariograsses.com/main/alien_native.php?type=N.
 6. An Erosion and Sediment Control Plan must be developed and implemented. The plan should include the following:
 - a. Ensure that appropriate erosion and sediment control measures are established prior to disturbing the soil and remain in place until the new vegetation is fully established.
 - b. Erosion and sediment control measures need to be established as close to the edge of the area to be disturbed as possible.
 - c. Consider using biodegradable erosion and sediment control materials whenever possible.
 - d. The erosion and sediment control measures must be established before any development or site alteration occurs and must be maintained until all disturbed ground has been permanently stabilized, any suspended sediment has resettled in a settling basin, and run off is clear (Kavanagh & Hoggarth, Rehabilitation and Enhancement of Aquatic Habitat Guide v. 1.0, n.d.).
 - e. If soil must be stockpiled, ensure that the stockpiles are a minimum of 30 m from the creeks, covered to prevent issues with dust and surrounded by silt curtains to prevent erosion and sedimentation.



- f. Dispose of and stabilize all excavated material a minimum of 15 m from fish habitat to ensure that sediment does not enter or re-enter a creek.
 - g. Measures to ensure that sediment is filtered out of the water flowing on to the development site and water being pumped or diverted off the site before it enters a creek. Examples of applicable measures include pumping or divert the water to a vegetated area or dewatering bag filters, constructing a settling basin, use of silt fence enclosures, and sediment traps.
 - h. The erosion and sediment control measures and structures must be inspected regularly, properly maintained, and when damaged, repaired quickly. The creeks should be monitored for signs of sedimentation on a regular basis. If sedimentation is observed, work near the creek or creeks affected must stop, and measures to prevent dispersing sediment-laden water must be implemented immediately (Fisheries and Oceans Canada, 2023c).
7. To the degree possible, machinery should not operate within 15 m of fish habitat The following measures are recommended to protect fish habitat and/or the environment in general:
 - a. When machinery arrives on site it should be in a clean, and well-maintained condition, free of fluid leaks, invasive species and noxious weeds (Kavanagh & Hoggarth, Rehabilitation and Enhancement of Aquatic Habitat Guide v. 1.0, n.d.).
 - b. Wash, refuel and service machinery, and store fuel and other material more than 30 m from the watercourses, and in a manner that will prevent deleterious substances from entering the groundwater or surface water.
 - c. Keep an emergency spill kit on site.
8. Develop a spill response plan that will be implemented in case of a spill of a deleterious substance or sediment is released. Deleterious substances include but are not limited to oil, gasoline, diesel, hydraulic fluid, pesticides, herbicides, concrete, treated building supplies, etc.
9. Developments such as the one currently propose often result in the creation of new impervious surfaces. They result in a change in the amount of water than infiltrates into the ground and that which runs off. Additionally, the increase of an impervious surface often results in run-off with higher pollutant loads than prior to development (Davis, 2005). A study analyzing the impacts of urbanization on stream habitat and fish found that the amount of connected imperviousness was the best single indicator of urbanization effects on stream fish communities (Wang, Lyons, Kanehl, & Bannermann, 2001). Additionally, they found that the degree of connected imperviousness within 50 m of a creek had more influence on stream fish and base flow than comparable amount of imperviousness further away. As a result, the creation of impervious surfaces should be minimized to the extent possible within 50 m of the creek. The low impact design proposed by the Client will reduce the degree to which new impervious surfaces are created and protect fish habitat.
10. The use of herbicides, pesticides and fertilizers within the 15 m of the BWDCC and municipal drain should be prohibited. Additionally, the use of herbicides, pesticides and fertilizers



throughout the Subject Property is not recommended. Using perennial native species of local provenance to create meadows rather than lawns should be considered.

Using native species will reduce the need for herbicides and fertilizers, the volume of water necessary during droughts, and amount of maintenance required (i.e., mowing) (Carolinian Canada, 2003). Additionally, native plant species will attract native pollinators, birds, and other wildlife because these insects (e.g., bees, butterflies, dragonflies, etc.) and animals evolved with and are adapted to them.

The species chosen should be grasses, forbs and small shrubs, rather than trees because of the potential for flooding adjacent to the BWDDC and municipal drainage ditch. Planting a heterogeneous pattern of cool-season and warm-season grasses was recommended in Fischer & Fischenich (2000). Warm season grass species mainly grow in from June to early September because they are adapted to hot, dry weather (Natural Resources Conservation Service, 2004). Also, they remain green in July and August. Cool season grasses grow best in the spring and fall when temperatures are lower. Native grasses will also provide long-term erosion control, protect water quality, and improve wildlife habitat.

Recommended native wildflower, shrub and tree species for the Sault Ste. Marie Area can be found at <https://www.cleannorth.org/sault-algoma-grow-me-instead-guide/>. A list of Ontario's native grass-like species can be found at https://ontariograsses.com/main/alien_native.php?type=N.

11. The proposed access to the development will be from Chippewa Street, Atwater Street, and Amherst Street. Connecting the Subject Property with Atwater Street, and Amherst Street will require the construction of water crossings across the municipal drainage ditch. Water crossings can have deleterious effects on fish habitat. The City of Sault Ste. Marie has decided that these water crossings will be culverts.

The siting of water crossings must include the following considerations (Ontario Ministry of Transportation, 2009):

- a. Avoid crossings near areas of critical fish habitat (i.e., nursery and spawning areas). To date, critical fish habitat has not been identified at or near any of the proposed crossing locations.
- b. Ensure the crossings are designed to maintain the current stream characteristics (e.g., width, depth, slope) to ensure that fish passage is not impeded.
- c. Water crossings should be oriented to avoid or minimize re-alignment of channel sections through the structure and upstream or downstream of it. Water crossings should be at as close to 90° to the waterbody as possible.
- d. Water crossing siting must include geotechnical considerations to ensure that the crossing design includes measures to minimize impacts to sensitive fish habitat, and the structure is built in stable materials to ensure that differential settlement, and related changes will not develop over time.



In addition to a permit from the Sault Ste. Marie Region Conservation Authority, the installation of new culverts in the municipal drain will likely require a review or an authorization of Fisheries and Oceans Canada. The process to request a review of a project is outlined on the Fisheries and Oceans website at starting at the following link: [Request a review of your project near water](#). Because of the sensitive fish species reported to be found in this this municipal drainage ditch and that they spawn in both the spring and fall, it is classified as a Class D drain in Kavanagh, Wren, & Hoggarth's 2017 document *Guidance for Maintaining and Repairing Municipal Drains in Ontario*.

12. To protect fish and fish habitat from impacts resulting from activities conducted in and around water and ensure compliance with the fish and fish habitat provisions of the Fisheries Act the following measures should be implemented (Fisheries and Oceans Canada, 2023c):
 - a. Comply with the restricted [timing windows](#) established by the OMNRF (Ontario Ministry of Natural Resources, 2013). The timing windows are designed to avoid working during times when fish are migrating to spawn, spawning and other critical life stages. The creeks adjacent to the Subject Property are occupied by spring, summer and fall spawning species. As a result, all work below the high water mark of these watercourses must be completed between July 16th and August 31st of any year.
 - b. Minimize to the greatest extent possible the disturbance to riparian vegetation by using existing trails or roads, avoiding tree removal, and preventing soil compaction.
 - c. Avoid disturbing or removing materials including sand, rocks, aquatic vegetation, and natural wood debris from the creek beds and banks.
 - d. Avoid working in or adjacent to the creeks when wet, windy and rainy periods are forecast because it may result in higher water levels, faster flowing water, flooding, and/or increased erosion and sedimentation.
 - e. Implement the methods outlined in Fisheries and Oceans Canada's interim standard for in-water isolation to isolate the work area when in-water work is required. (Fisheries and Oceans Canada, 2023b).
 - f. Maintain fish passage by avoiding changing water flow and water levels within the creeks and obstructing or interfering with the movement of fish.
 - g. Prevent deleterious substances from entering the water by:
 - i. Developing a response plan to be implemented immediately in the event of a spill of a deleterious substance. Items that should be addressed in the response plan include:
 1. An emergency spill kit must be kept on site.
 2. Work in the area of the spill must stop and the spill must be contained it as soon as a spill occurs or is discovered.



3. Spills of sewage, oil, fuel or other deleterious material whether near or directly into a water body must be reported to MECP.
 4. Ensure clean-up measures are suitably applied so as not to result in further alteration of the bed and/or banks of the watercourse.
 5. Ensure the spill is cleaned up appropriately and the deleterious substances are properly disposed of.
 6. Storing all waste materials a minimum of 30 m from the top of the bank of the creeks to prevent them from entering the creeks. All waste materials shall be disposed of at appropriate waste disposal sites.
- ii. Ensure all building materials used adjacent to or in a creek are handled and treated in a manner to prevent the release or leaching of substances into the water that may be deleterious to fish.
- b. Following installation of the culverts, the following rehabilitation measures should be implemented (Ontario Ministry of Transportation, 2009):
 - i. Any areas that where exposed soils or other surfaces have been disturbed need to be stabilized and revegetated.
 - ii. Vegetation that is removed from the banks should be replaced as expeditiously as possible. Revegetation with native species is preferred.
 - iii. If in-stream cover (e.g. woody debris, boulders, overhanging vegetation) was disturbed, it should be re-installed.

8 MONITORING

An important part of ensuring that mitigation measures are effective is monitoring. The following monitoring is required:

1. Ensure that the 15 m vegetated buffer along the BWDDC on the west side of Parcel C is clearly identified in the field prior to any development or site alteration on Parcel C. The adequacy of the identification methods needs to be checked on a regular basis during any development or site alteration activities.
2. Prior to site alteration, adequate erosion and sediment control measures must be established and maintained until the disturbed area is revegetated. During active construction inspections should take place on a weekly basis in the snow-free season, after every rainfall event, after significant snowmelt events and daily during extended rain or snowmelt periods. During inactive construction periods, where the site is left alone for 30 days or longer, a monthly inspection should be conducted until vegetation is well established. Repairs to the erosion and sediment control measures should be done within 48 hours (Toronto and Region Conservation Authority, 2019).



3. Site stabilization should occur during or immediately following construction to reduce the potential of erosion and sedimentation.
4. The vegetated buffer adjacent to Parcel C needs to remain intact following development. For 5 years following the development of Parcel C, the buffer should be monitored on a regular basis to ensure that it remains undeveloped. The area adjacent to the municipal drain should remain vegetated to the extent possible.

9 CONCLUSIONS AND RECOMMENDATIONS

This Scoped EIS was developed to address the fish habitat provided by the fish habitat provided by:

- The BWDDC located north and west of the Subject Property,
- The municipal drainage ditch located south and southeast of the Subject Property,
- The West Davignon Creek west of the BWDDC, and
- The tributary that flows south into the BWDDC located north of the Subject Property.

The proposed development has the potential to negatively impact fish habitat in the following ways:

- Death or injury to fish and other aquatic life.
- Changes in the thermal regime of the watercourses from coldwater to coolwater or warmwater resulting in changes in fish and aquatic invertebrate species composition and abundance
- Changes in fish and aquatic invertebrate species composition and abundance not caused by a change in the thermal regime of the creeks.
- Changes in the relative abundance of species within the fish community.
- Loss of general fish habitat.
- Loss of or change in local spawning and/or nursery areas. Spawning and nursery areas have not been identified, however, they may exist.
- Habitat fragmentation.
- Loss and fragmentation of habitat for native fish species and other aquatic species due to competition with and predation by non-native species.
- Water crossings may become barriers to fish movement.



- Drying up of refugia due to increased evaporation

The recommended mitigation measures to protect these fish habitat include:

- Prohibit development and site alteration within 15 m of the top of the bank of the BWDCC located west of Parcel C.
- This 15 m buffer zone must remain vegetated, however, due to the type of vegetation currently located within the buffer zone (i.e. long grass), the Client may wish to remediate parts. Native grasses, forbs and shrubs should be used during remediation where practical.
- The use of herbicides, pesticides and fertilizers within the buffer area should be prohibited. Additionally, the use of herbicides, pesticides and fertilizers throughout the Subject Property is not recommended.
- Develop a stormwater management plan to ensure that there will be no direct impacts on the creeks.
- Minimize the creation of impervious surfaces to the greatest extent possible especially within 50 m of the creeks. Implement low-impact development principles.
- Minimize the area disturbed to the greatest degree possible during construct by staging the development.
- Develop and implement an Erosion and Sediment Control Plan to prevent sediment and other substances from entering the creeks.
- Machinery must arrive on site a clean, and well-maintained condition, free of fluid leaks, invasive species and noxious weeds. Wash, refuel and service machinery, and store fuel and other materials more than 30 m from the creeks, and in a manner that will prevent deleterious substances from entering the groundwater or surface water.
- Develop a spill response plan that will be implemented in case of a spill of a deleterious substance or sediment is released.
- Access to the Subject Property is proposed to be from Chippewa Street, Atwater Street, and Amherst Street possibly Arden Street. Connecting the Subject Property with Atwater Street, Amherst Street and Arden Street will require the construction of 2 water crossings of the municipal drainage ditch. The City of Sault Ste. Marie has instructed the Client to install culverts. Water crossings can have deleterious effects on fish habitat. A permit from the Sault Ste. Marie Region Conservation Authority will be required. A project review or authorization from Fisheries and Oceans Canada will likely be required.
- When installing the culverts implement the measures in the interim standard for in-water isolation developed by Fisheries and Oceans Canada (2023a) (Appendix F).



- When working in and around the creeks, implement the measures to protect fish and fish habitat described by Fisheries and Oceans Canada (Appendix G).

The following monitoring is required:

- Ensure that the 15 m vegetated buffer along the BWDDC on the west side of the Subject Property is clearly identified in the field. The adequacy of the identification methods needs to be checked on a regular basis during any development or site alteration activities. It is anticipated that development will be phased, as a result, the adequacy of the buffer identifiers should be checked periodically between development phases.
- The buffer needs to remain intact following development. The buffers should be monitored on a regular basis to ensure that they remain undeveloped. The area adjacent to the municipal drain should remain vegetated to the extent possible.
- Prior to site alteration, adequate erosion and sediment control measures should be established and maintained until the disturbed area is revegetated. During active construction inspections should take place on a weekly basis in the snow-free season, after every rainfall event, after significant snowmelt events and daily during extended rain or snowmelt periods. During inactive construction periods, where the site is left alone for 30 days or longer, a monthly inspection should be conducted. Repairs to the erosion and sediment control measures should be done within 48 hours (Toronto and Region Conservation Authority, 2019).
- Site stabilization should occur during or immediately following construction to reduce the potential of erosion and sedimentation.

In conclusion, it is anticipated that these mitigation features and monitoring will be adequate to protect fish habitat in the creeks that are adjacent to the Subject Property.

10 CLOSING AND STATEMENT OF QUALIFICATIONS

This EIS was prepared by Greenstone biologists Ms. Hannah Trainor, B. Sc. and Ms. Janice Christian, M. Sc. The resumes of these key staff are provided as Appendix H.

Ms. Trainor is a Junior Biologist with Greenstone Engineering Inc. Her experience in the field of biology includes field and laboratory research focused on invasive pests in Ontario, including Swede Midge and Colorado Potato Beetle. She also participated in field research evaluating the success of habitat remediation as it applied to Spotted Gar, a species at risk in Ontario. She has a B.Sc. and a B.BRM. in environmental management from the University of Guelph; and has finished her first year of the Forestry Technician program at Sault College.

Ms. Christian is a Senior Biologist with Greenstone Engineering Inc. She has worked in the environmental sector for more than 30 years Her extensive experience includes environmental consulting, land and resource use planning, and natural resource management. Her expertise covers a wide range of



environmental topics including Terrestrial and Wetland Ecology, Forestry, Fisheries Environmental Assessment (EA), Environmental Impact Assessment, Land-Use Planning, Land Management, Waste Management, and On-site Wastewater Treatment. Ms. Christian has worked in the public sector, with environmental non-governmental organizations, quasi-municipal organizations, as a consultant and in private industry. She has worked in Ontario, Saskatchewan, and Alberta. Janice holds a Bachelor of Science in Biology and Chemistry from Trent University and a Master of Science in Biology from the University of Regina. She is a member of the Canadian Society of Environmental Biologists.

To discuss any aspect of this work, please contact the undersigned at the coordinates below.

Sincerely yours,

Hannah Trainor, B.Sc.
Project Technologist
hannah@greenstoneengineering.ca

Janice Christian, M.Sc.
Senior Project Manager
janice@greenstoneengineering.ca



11 REFERENCES

- Brook, T., Vander Veen, S., Morris, K., Sadler Richards, J., & Wilson, W. (2021). *A Guide for Drainage Superintendents Working Under the Drainage Act in Ontario*. (A. Robertson, Ed.) Toronto, Ontario, Canada: Queen's Printer for Ontario, 2021. Retrieved from https://www.publications.gov.on.ca/store/20170501121/Free_Download_Files/300764.pdf
- Carolinian Canada. (2003). Setbacks and Buffers. *Taken Carolinian Canada to the Limit: Environmental Impact Statement Conference* (pp. 28-33). Cambridge, Ontario: Carolinian Canada and Grand River Conservation Authority.
- City of Sault Ste. Marie. (2019, January). *Shape the Sault map*. Retrieved from Shape the Sault: <https://shapethesault.ca/comment-map#d44a3182-6ac8-4d28-9a9b-c0a2f7abb874>
- City of Sault Ste. Marie. (2024). *SooMaps*. Retrieved from <https://www.soomaps.com/>
- City of Sault Ste. Marie. (April 2019). *City of Sault Ste. Marie Zoning By-Law 2005-150 Office Consolidation*. Planning Division. Sault Ste. Marie, Ontario, Canada: City of Sault Ste. Marie. Retrieved from [https://saultstemarie.ca/Cityweb/media/Legal/BL/2005-150-\(Zoning\).pdf](https://saultstemarie.ca/Cityweb/media/Legal/BL/2005-150-(Zoning).pdf)
- City of Sault Ste. Marie. (revised 2024). *City of Sault Ste. Marie Official Plan*. Sault Ste. Marie: City of Sault Ste. Marie.
- Crins, W. J., Gray, P. A., Uhlig, P. W., & Wester, M. C. (2009). *The Ecosystems of Ontario, Part I: Ecozones and Ecoregions*. Peterborough: Ontario Ministry of Natural Resources, Inventory, Monitoring and Assessment.
- Davis, A. P. (2005, August 15). Green Engineering Principles Promote Low-Impact Development. *Environmental Science & Technology*, pp. 339A-344A.
- Eakins, R. J. (2024). *Ontario Freshwater Fishes Life History Database. Version 5.31. [Online database]*. Retrieved June 10, 2024, from <https://www.ontariofishes.ca>
- Environment and Natural Resources Canada. (2024, March 27). *Canadian Climate Normals 1991-2020 Data for Sault Ste. Marie, Ontario*. Retrieved from Canadian Climate Normals: https://climate.weather.gc.ca/climate_normals/results_1991_2020_e.html?searchType=stnName_1991&txtStationName_1991=Sault&searchMethod=contains&txtCentralLatMin=0&txtCentralLatSec=0&txtCentralLongMin=0&txtCentralLongSec=0&stnID=200000000&dispBack=1
- Fischer, R. A., & Fischenich, J. C. (2000). *Design Recommendations for Riparian Corridors and Vegetated Buffer Strips*. Vicksburg, MS: U.S. Army Engineer Research and Development Center.



- Fisheries and Oceans Canada. (2018, December 5). *Pathways of Effects*. Retrieved from Fisheries and Oceans Canada: <https://www.dfo-mpo.gc.ca/pnw-ppe/pathways-sequences/index-eng.html>
- Fisheries and Oceans Canada. (2023a, May 30). *Code of practice: Clear span bridges*. Retrieved from Fisheries and Oceans Canada: <https://www.dfo-mpo.gc.ca/pnw-ppe/codes/clear-span-bridges-ponts-portee-libre-eng.html>
- Fisheries and Oceans Canada. (2023b, November 6). *Interim standard: in-water site isolation*. Retrieved from Fisheries and Oceans Canada: <https://www.dfo-mpo.gc.ca/pnw-ppe/codes/interim-provisoire/site-isolation-confinement-aire-travail-eng.html>
- Fisheries and Oceans Canada. (2023c, July 31). *Measures to protect fish and fish habitat*. Retrieved from Fisheries and Oceans Canada: <https://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures-eng.html>
- Fisheries and Oceans Canada. (2023d, August 18). *Search aquatic species at risk*. Retrieved from Fisheries and Oceans Canada: <https://www.dfo-mpo.gc.ca/species-especes/sara-lep/identify-eng.html>
- Fisheries and Oceans Canada, Drainage Superintendents Association of Ontario, Ontario Federation of Agriculture. (2008). *The Drain Primer*. Burlington, Ontario: Her Majesty the Queen in Right of Canada. Retrieved from <https://waves-vagues.dfo-mpo.gc.ca/library-bibliotheque/276051.pdf>
- GBIF.org. (2022, July 12). *iNaturalist Research-Grade Observations GBIF Occurrence Download*. Retrieved from Global Biodiversity Information Facility: <https://doi.org/10.15468/dl.4rrzkh>
- Government of Ontario. (2020). *Provincial Policy Statement, 2020*. Queen's Printer for Ontario.
- Kavanagh, R. J., & Hoggarth, C. T. (n.d.). *Rehabilitation and Enhancement of Aquatic Habitat Guide v. 1.0*. Burlington, Ontario: Fisheries and Oceans Canada.
- Kavanagh, R. J., Wren, L., & Hoggarth, C. T. (2017). *Guidance for Maintaining and Repairing Municipal Drains in Ontario*. Burlington, Ontario: Fisheries and Oceans Canada.
- Natural Heritage Information Centre. (2021, December 15). *Provincially tracked species (1km grid) [geodatabase]*. Retrieved from Ontario GeoHub: <https://geohub.lio.gov.on.ca/datasets/lio::provincially-tracked-species-1km-grid/about>
- Natural Resources Conservation Service. (2004). *Comparing Warm-Season and Cool-Season Grasses for Erosion Control, Water Quality, and Wildlife Habitat*. Maryland: United States Department of Agriculture.



- Ontario Geological Survey. (2011). 1:250 000 Scale Bedrock Geology of Ontario-Revision 1 [dataset]. *Miscellaneous Release---Data 126-Revision 1 [dataset]*. Ontario. Retrieved from https://www.geologyontario.mndm.gov.on.ca/mndmaccess/mndm_dir.asp?type=pub&id=MRD126-REV1
- Ontario Geological Survey and Ontario Ministry of Natural Resources, Northeast Science and Information Section. (2005, June 6). *Digital Northern Ontario Engineering Geology Terrain Study (NOEGTS) [dataset]*. Retrieved from OGS Earth: https://www.geologyontario.mndm.gov.on.ca/mndmaccess/mndm_dir.asp?type=pub&id=MRD160
- Ontario Ministry of Agriculture and Rural Affairs. (2004). *Best Management Practices: Buffer Strips*. Queen's Printer of Ontario.
- Ontario Ministry of Natural Resources. (2010). *Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005. Second Edition*. Toronto: Queen's Printer for Ontario.
- Ontario Ministry of Natural Resources. (2013, December 27). *Ontario Restricted Activity Timing Windows for the Protection of Fish and Fish Habitat*. Retrieved from Fisheries and Oceans Canada: <https://www.dfo-mpo.gc.ca/pnw-ppe/timing-periodes/on-eng.html>
- Ontario Ministry of Natural Resources and Forestry. (2022a, August 12). *Ontario Hydro Network (OHN) - Waterbody [dataset]*. Retrieved from Ontario GeoHub: <https://geohub.lio.gov.on.ca/datasets/mnrf::ontario-hydro-network-ohn-waterbody/explore?location=48.880351%2C-84.732487%2C4.74>
- Ontario Ministry of Natural Resources and Forestry. (2022b, August 31). *Ontario Hydro Network (OHN) - Watercourse [dataset]*. Retrieved from Ontario GeoHub: <https://geohub.lio.gov.on.ca/datasets/mnrf::ontario-hydro-network-ohn-watercourse/explore?location=50.580480%2C-84.745000%2C4.79>
- Ontario Ministry of Natural Resources and Forestry. (2024a, May 30). *Aquatic resource area line segment [dataset]*. Retrieved from Ontario GeoHub: <https://geohub.lio.gov.on.ca/datasets/lio::aquatic-resource-area-line-segment/about>
- Ontario Ministry of Natural Resources and Forestry. (2024b, May 26). *Aquatic resource area polygon segment [dataset]*. Retrieved from Ontario GeoHub: <https://geohub.lio.gov.on.ca/datasets/lio::aquatic-resource-area-polygon-segment-/about>



- Ontario Ministry of Natural Resources and Forestry. (2024c, June 4). *Aquatic Resource Area Survey Point [dataset]*. Retrieved from Ontario GeoHub: <https://geohub.lio.gov.on.ca/datasets/lio::aquatic-resource-area-survey-point/about>
- Ontario Ministry of Natural Resources and Forestry. (2024d, May 3). *Fish activity area [dataset]*. Retrieved from Ontario GeoHub: <https://geohub.lio.gov.on.ca/datasets/lio::aquatic-resource-area-survey-point/about>
- Ontario Ministry of the Environment, Conservation and Parks. (2023). *Source Protection Information Atlas*. Retrieved from Ministry of the Environment, Conservation and Parks: <https://www.lioapplications.lrc.gov.on.ca/SourceWaterProtection/index.html?viewer=SourceWaterProtection.SWPViewer&locale=en-CA>
- Ontario Ministry of the Environment, Conservation and Parks. (2024, April 19). *Species at risk in Ontario*. Retrieved from Government of Ontario: <https://www.ontario.ca/page/species-risk-ontario>
- Ontario Ministry of Transportation. (2009). *Environmental Guide for Fish and Fish Habitat*. Provincial and Environmental Planning Office. St. Catharines, Ontario: Ontario Ministry of Transportation.
- SSMRCA. (n.d.). *Bennett-West Davignon Diversion Channel*. Retrieved June 5, 2024, from Sault Ste. Marie Region Conservation Authority: <https://ssmrca.ca/watershed-management/flood-control-structures/bennett-west-davignon-diversion-channel/#:~:text=The%20Bennett%2DWest%20Davignon%20diversion,in%20the%20Allard%20Lake%20area.>
- Toronto and Region Conservation Authority. (2019). *Erosion and Sediment Control Guide for Urban Construction*. Vaughan, Ontario: Toronto and Region Conservation Authority.
- Wang, L., Lyons, J., Kanehl, P., & Bannermann, R. (2001). Impacts of Urbanization on Stream Habitat and Fish Across Multiple Spatial Scales. *Environmental Management*, Vol. 28(No. 2), pp. 255-266. doi:10.1007/s002670010222
- Wester, M. C., Henson, B. L., Crins, W. J., Uhlig, P. W., & Gray, P. A. (2018). *The Ecosystems of Ontario, Part 2: Ecodistricts*. Peterborough: Ontario Ministry of Natural Resources and Forestry, Science and Research Branch.
- Wester, M., Uhlig, P., Bakowsky, W., & Banton, E. (2015). *Great Lakes-St. Lawrence Ecosite Factsheets (third draft)*. Sault Ste. Marie: Ontario Ministry of Natural Resources.



APPENDICES



APPENDIX A: FIGURES



Sources: Esri, DeLorme, HERE, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, and the GIS User Community

FIGURE 1: LOCATION MAP



Address: 0 Chippewa Street, Sault Ste Marie, Ontario

Scale: 1:200,000

Project Number: 24115

Date: June 2024

Report Name: Scoped EIS

Client: Mamta Homes

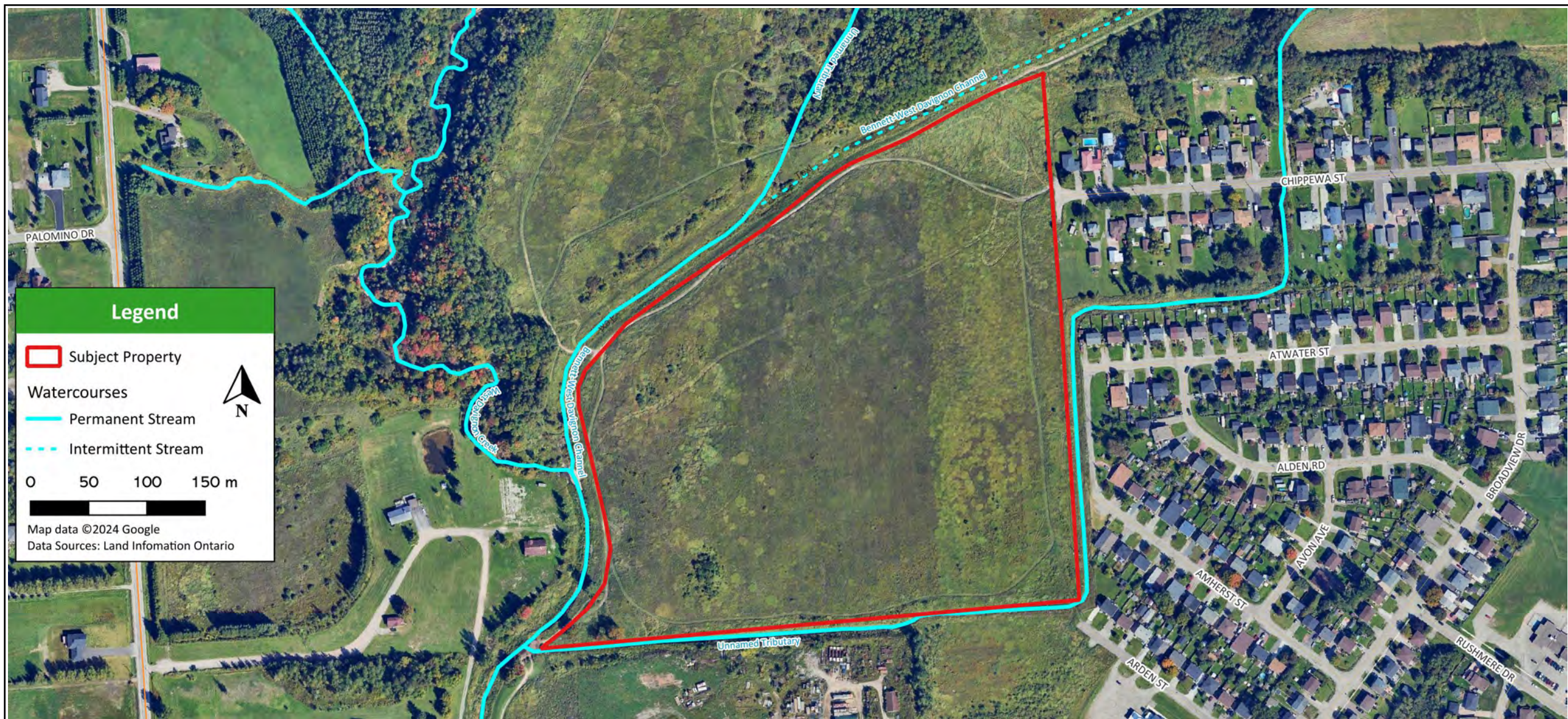


FIGURE 2: SUBJECT PROPERTY MAP

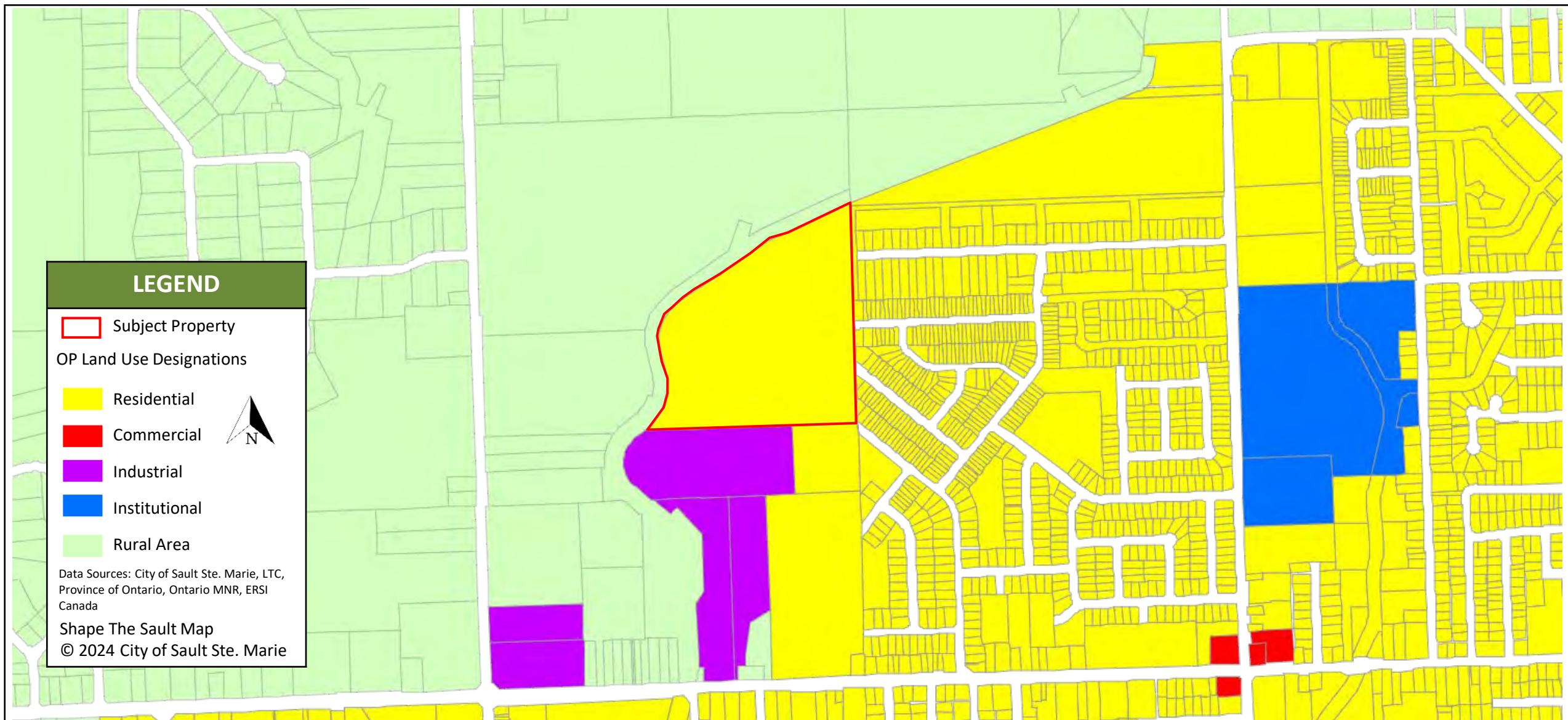


FIGURE 3: OFFICIAL PLAN LAND USE DESIGNATIONS MAP

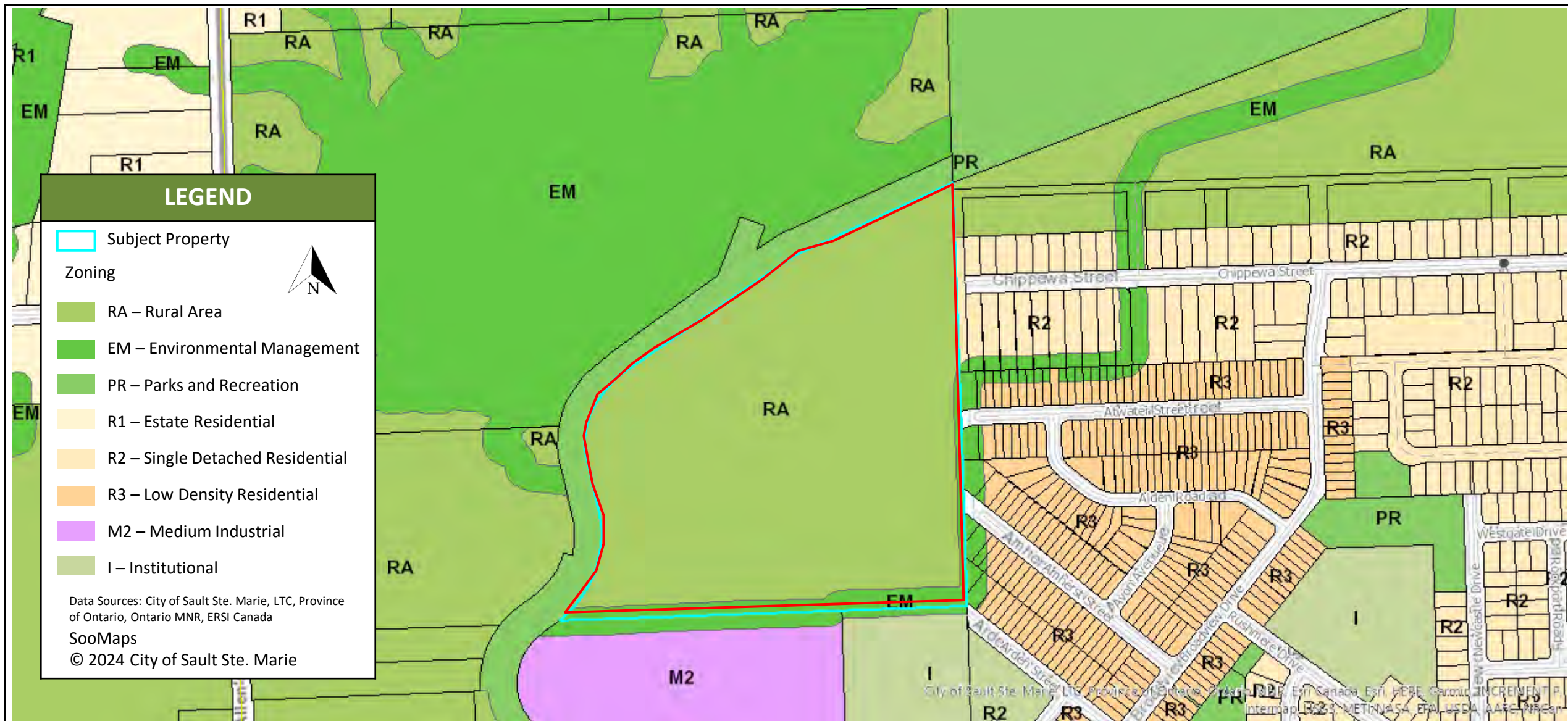


FIGURE 4: ZONING MAP



APPENDIX B: SUBJECT PROPERTY PHOTOGRAPHS



Photograph 1: View of Subject Property facing westward taken from end of Chippewa Street.



Photograph 2: View of Subject Property facing southward taken from end of Chippewa Street.



Photograph 3: View of Subject Property facing northward taken from end of Chippewa Street.



Photograph 4: View of eastern part of the Bennett-West Davignon Diversion Channel facing northward taken from northern boundary of the Subject Property.



Photograph 5: View of ford across the Bennett-West Davignon Diversion Channel near the northeastern corner of the Subject Property facing northwestward.



Photograph 6: View of the Bennett-West Davignon Diversion Channel at the northeastern corner of the Subject Property facing westward.



Photograph 7: View of the intersection of the West Davignon Creek and the Bennett-West Davignon Diversion Channel facing westward taken.



Photograph 8: View of the southwestern part of the Subject Property and the Bennett-West Davignon Diversion Channel facing southward.



Photograph 9: View of the southwestern corner of the Subject Property facing southeastward.



Photograph 10: View of the southern tributary on the southern boundary of the Subject Property facing westward (Photo Credit: Micheal Kresin, Kresin Engineering Corporation).



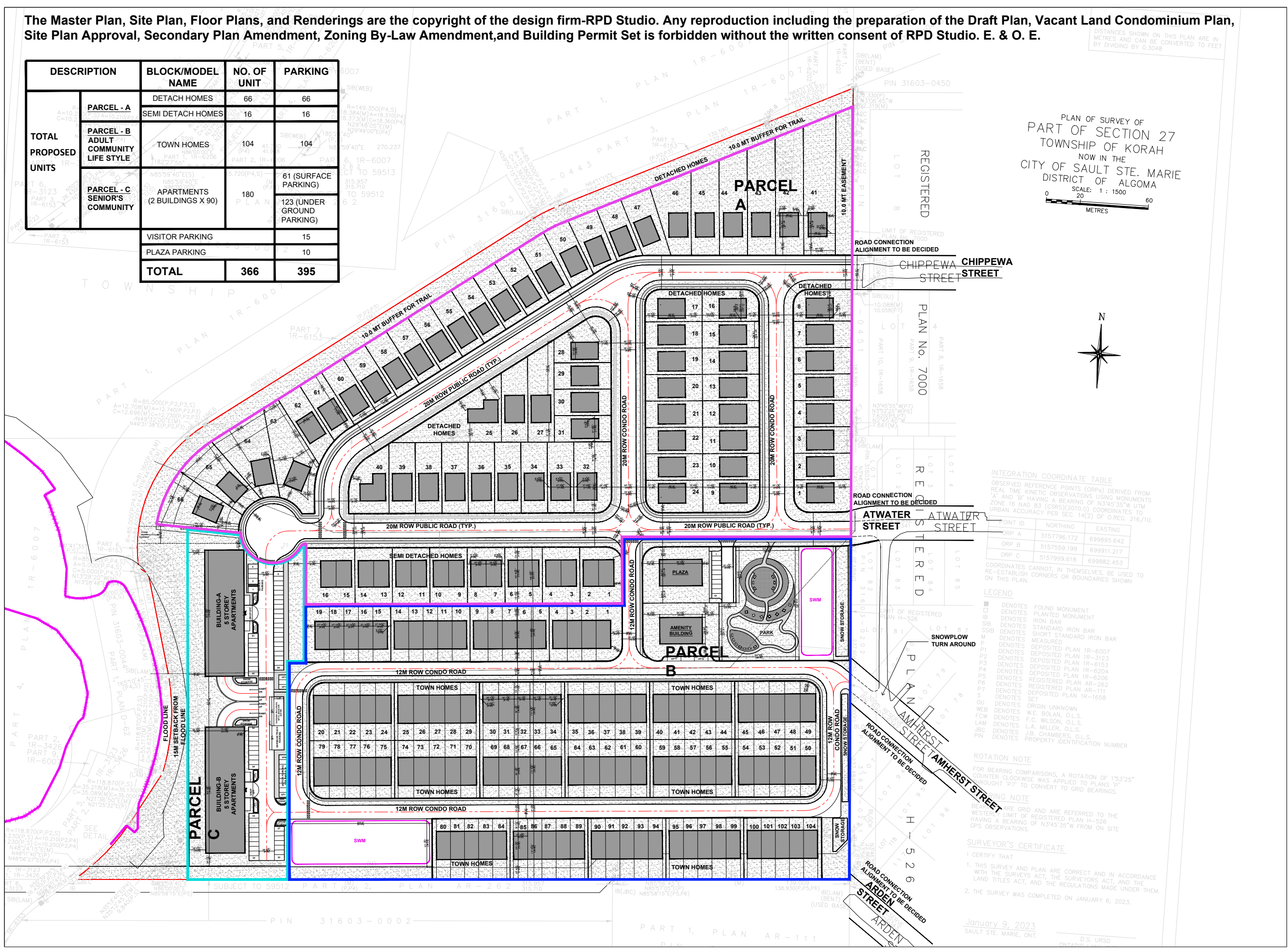
Photograph 11: View of the ford at the southeastern corner of the Subject Property facing northward taken from the end of Arden Road.



APPENDIX C: 0 CHIPPEWA STREET SITE PLAN

The Master Plan, Site Plan, Floor Plans, and Renderings are the copyright of the design firm-RPD Studio. Any reproduction including the preparation of the Draft Plan, Vacant Land Condominium Plan, Site Plan Approval, Secondary Plan Amendment, Zoning By-Law Amendment, and Building Permit Set is forbidden without the written consent of RPD Studio. E. & O. E.

DESCRIPTION	BLOCK/MODEL NAME	NO. OF UNIT	PARKING
TOTAL PROPOSED UNITS	PARCEL - A	66	66
	SEMI DETACH HOMES	16	16
	PARCEL - B	104	104
	ADULT COMMUNITY LIFE STYLE	104	104
	PARCEL - C	180	61 (SURFACE PARKING)
	SENIOR'S COMMUNITY	180	123 (UNDER GROUND PARKING)
VISITOR PARKING			15
PLAZA PARKING			10
TOTAL		366	395



RPDS
INTEGRATED DESIGN FIRM
SUITE 203, 7895 TRANMERE DR., MISSISSAUGA, ON L5S 1Y9
MAIL: PROJECT@RPDSTUDIO.CA, CALL: 647 556 2596
WEBSITE: WWW.RPDSTUDIO.CA

DEVELOPED BY:



CONSULTING ENGINEER :



Contractor and trader must check and verify all dimensions before execute the work and must report discrepancies and should not scale or measure the drawings.

All drawings, specifications and related documents are the copyright of the designer and must be returned upon request.

All the work must be in compliance with Ontario Building Code.

Reproduction of drawings, specifications and related documents in part or whole is forbidden without the written consent.

This drawing is not to be used for construction until signed and stamped by the designer.

FOR REVIEW ONLY
(NOT FOR PERMIT)

01	Issued For Review	2023/08/23
No.	Revision	Date

Client Name:

Drawing Title:

Project:

0 CHIPPEWA STREET

CITY OF SAULT STE. MARIE
DISTRICT OF ALGOMA



Scale:

1"=80'-0"

Drawn by:

HL

Checked by:

RP

Project No.:

Date:

2023/08/23

Drawing No.:

A-2.0



APPENDIX D: AGENCY CORRESPONDENCE

From: [Christine Ropeter](#)
To: [Hannah Trainor](#)
Cc: [Janice Christian](#); [Marlene McKinnon](#); [Corrina Barrett](#)
Subject: RE: Fish habitat and potential SAR
Date: May 28, 2024 1:14:21 PM
Attachments: [image001.png](#)
[image002.png](#)
[image003.png](#)

Good Afternoon Hannah

Thank you for contacting the Sault Ste. Marie Region Conservation Authority (SSMRCA). The SSMRCA has no biologist on staff and has no fish and fish habitat information. You may want to contact the Ministry of Natural Resources and Forestry district office in the Sault. You can send them an email at their general address mnrf.ssm.district@ontario.ca and someone should reply to your request.

If I can answer any other questions, please feel free to contact me.

Sincerely,

Christine Ropeter

Assistant Manager/Communications
Sault Ste. Marie Region Conservation Authority
1100 Fifth Line East
Sault Ste. Marie, ON P6A 6J8
705-946-8530 ext.# 1001
cropeter@ssmrca.ca
www.ssmrca.ca



“Protecting wildlife and biodiversity is a responsibility we all share.”

From: Hannah Trainor <hannah@greenstoneengineering.ca>
Sent: Tuesday, May 28, 2024 11:19 AM
To: Christine Ropeter <cropeter@ssmrca.ca>
Cc: Janice Christian <janice@greenstoneengineering.ca>
Subject: Fish habitat and potential SAR

Hello Christine,

My name is Hannah Trainor and I am writing a Scoped Environmental Impact Study for Greenstone Engineering. I was given your contact information by Janice Christian, as she mentioned you may be able to help. I am looking for any information you have regarding fish and fish habitat, as well as the potential presence of any species at risk noted on the following

address: 0 Chippewa Street, Sault Ste. Marie, Ontario.

Thank you for your help!

Hannah

From: [Goertz, Derek \(MNRF\)](#)
To: [Janice Christian](#)
Cc: [Hannah Trainor](#)
Subject: RE: Request for fisheries information for the West Davignon Creek & two tributaries
Date: June 3, 2024 2:57:13 PM
Attachments: [image002.png](#)
[image003.jpg](#)

Hi Janice,

It's good to hear from you! The info in the *Aquatic Resources Area* layer in Geohub will be the most up-to-date information we have on the fish community. The other layer that will help you out is the *Fish Activity Area* layer. This layer contains any known critical habitats (i.e. spawning areas, nurseries, etc.). I'm quick to update these layers as we receive additional data so they should both have the most up-to-date information (recognizing that there are probably numerous habitats that we haven't documented yet).

Let me know if you have any questions. Good luck with the project!

Cheers,

Derek Goertz

Management Biologist | Sault Ste. Marie District | Regional Operations Division
Ontario Ministry of Natural Resources and Forestry | Ontario Public Service
705-992-4775 | derek.goertz@ontario.ca



Taking pride in strengthening Ontario, its places and its people

From: Janice Christian <janice@greenstoneengineering.ca>
Sent: Monday, June 3, 2024 1:13 PM
To: Goertz, Derek (MNRF) <Derek.Goertz@ontario.ca>
Cc: Hannah Trainor <hannah@greenstoneengineering.ca>
Subject: Request for fisheries information for the West Davignon Creek & two tributaries

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Hi Derek,

It's been a long time since we spoke. I'm glad to see that you are still at the District.

I'm working as the biologist, environmental planner, and senior project manager at Greenstone Engineering. Chris Tenaglia owns the company.

Currently, I am working on a Fish Habitat Scoped EIS for the property at the west end of

Chippewa St. The West Davignon Creek abuts the property on the west, a tributary that flows east and south of the property and a trib that abuts the property to the northwest. (see the attached map)

We checked the Aquatic Resources layers from Ontario GeoHub and discovered that all three creeks are Cold water streams, with fish species summaries for each. Do you have any additional fish or fish habitat information that you can share?

Thanks,

Janice Christian, M.Sc.

Senior Project Manager

Unit 1, 67 Elgin St., Sault Ste. Marie, ON P6A 2Y4

705-946-8975

janice@greenstoneengineering.ca





APPENDIX E: BENNETT-WEST DAVIGNON CREEK FLOOD CONTROL CHANNEL MAP (SSMRCA, N.D.)



Legend

- Flood Control Channel
- Flood Line
- SSMRCA Property
- Street Center Line
- Wetland Area
- Creek, Stream
- Creek, Stream, Interflow
- Interim
- Reservoir
- River
- River, Interflow
- Other
- Other

Flood Control Channel Bennett-West Davignon Creek (6.502km) Sault Ste. Marie

0 320 640 960 Metres



Sault Ste. Marie Region
Conservation Authority

Document communiqué en vertu de l'Accès à l'information



APPENDIX F: INTERIM STANDARD: IN-WATER SITE ISOLATION (FISHERIES AND OCEANS CANADA, 2023B)

Interim standard: in-water site isolation

On this page

- [About standards](#)
- [User guide](#)
- [Methods](#)
- [Glossary](#)

1.0 About standards

Standards are 1 of a suite of tools used by the Fish and Fish Habitat Protection Program (FFHPP) to manage the risk of harmful impacts to fish and fish habitat from projects occurring in or near water. A standard specifies how to implement a specific mitigation measure (e.g., conduct all operations in isolation of open or flowing water) to achieve its objective.

Standards are not considered stand-alone documents. The conditions under which a standard can be applied, and any other applicable management measure (e.g., project must adhere to [timing windows](#)), are dictated by the regulatory or non-regulatory instrument (e.g., Codes of Practice, Regulations, Letters of Advice or Authorizations) within which it is referenced.

to reference standards in their guidelines or regulations as appropriate. If a standard cannot be implemented due to site-specific conditions or other reasons, the standard does not apply. If you are uncertain about whether you can meet a standard, it is recommended that you consult a qualified environmental professional.

Standards do not remove nor replace the obligation to comply with all applicable statutory and regulatory requirements of the *Fisheries Act*, the *Species at Risk Act* or other federal, provincial, territorial or municipal legislation and policy including guidance regarding species and habitats managed by these jurisdictions.

2.0 User guide

This standard provides national guidance for isolating a work site when it is located in a watercourse or water body. In-water site isolation may be required to support the construction of new infrastructure or to support maintenance or removal activities associated with existing infrastructure. Some examples of projects that typically involve in-water site isolation include:

- cast-in-place concrete works associated with water intake / outfall structures, boat ramp construction and other works
- bridge and culvert installation, maintenance, replacement or removal activities
- linear infrastructure (e.g., pipeline and telecommunication lines) installation, maintenance, integrity assessment, replacement or removal activities

3.0 Methods

This in-water site isolation standard includes guidance related to the following 5 methods:

1. cofferdams
2. turbidity curtains
3. pump arounds
4. flumes
5. diversion channels

3.1 Cofferdams

A cofferdam is an in-water site isolation method that is typically used along the margins of a water body or watercourse and does not impede downstream flow. A cofferdam can also be installed across a watercourse upstream and downstream of the work area. In this case, water from upstream is either pumped downstream (see Section 2.3) or directed into a temporary pipe (see Section 2.4) or temporary diversion channel (see Section 2.5). A cofferdam can be constructed using a variety of materials including rock, steel sheet pile, sandbags, concrete blocks, poly or inflatable barrier. If a dry working environment is required within the isolation area, the cofferdam materials will need to be able to create a water-tight seal. Water from within the isolation area is pumped outside of the isolation area.

3.1.1 Installation

- select appropriate materials to create a water-tight seal around in the isolation area accounting for bank and substrate morphology and type; do not use grout
- install the cofferdam from upstream to downstream, to direct flow away from the in-water work area
- design the cofferdam to accommodate the peak seasonal flows or highest water level expected for the duration of the in-water work
- if ice is present, remove it carefully to reduce scour of the bed and banks

3.1.2 Dewatering

- safely relocate fish trapped within the site isolation work area to an appropriate location in the same watercourse or water body
 - dewater gradually to reduce the potential for stranding fish
 - capture and relocate any fish as per applicable permits
- screen intake pipes during all phases of the project
 - follow Interim code of practice: End of pipe fish protection screens for small water intakes in freshwater
- dewater the isolation area using appropriately sized pumps for the flows and seepage anticipated during construction
- pump sediment laden water into a vegetated area or a filtration system (e.g., settling basin, straw bales, filter fabric/bags)
- release filtered water gradually to reduce risk of erosion
- return water downstream, within the same watercourse or water body
- continue dewatering for the duration of in-water works or for as long as water continues to enter the isolation area

- repair, as needed, deficiencies observed with the cofferdam and/or dewatering system during in-water works
- regularly monitor the watercourse or water body for signs of suspended sediment during all phases of the project and take corrective action when and where required
- conduct additional relocation of fish if a breach to the isolation occurs during construction or the dewatering process

3.1.4 Removal

- remove the cofferdam following completion of in-water works
 - remove the cofferdam from downstream to upstream, to maintain water flow away from the in-water work area while allowing equalization of water levels inside and outside of the isolation area
 - remove all cofferdam materials from the watercourse or water body following completion of in-water works
- restore the bed and banks, gradient and contour affected by the project

3.2 Turbidity curtain

A turbidity curtain is an in-water site isolation method that is typically used along the margins of a water body or watercourse and does not impede downstream flow. This method is also used in the marine environment. A turbidity curtain is used in areas of low or no current that are not prone to high winds and waves. A turbidity curtain generally has a floating headline to keep the top of the curtain above the water level and a weighted bottom/anchor line/ballast chain to maintain contact with the bottom

3.2.1 Installation

- install the turbidity curtain around the in-water work area in a manner that prevents disturbance to the bed and banks
- deploy the turbidity curtain in a manner that excludes fish from the isolation area and/or safely relocate any fish within the work area to an appropriate location in the same watercourse or water body
 - relocate any fish as per applicable permits for capturing and relocating fish
- size the turbidity curtain to manage anticipated water levels during construction

3.2.2 Maintenance and monitoring

- regularly inspect the turbidity curtain during in-water works
- repair, as needed, deficiencies observed with the turbidity curtain during in-water works
- monitor for the presence of fish within the isolation area
 - relocate any fish as per applicable permits for capturing and relocating fish
- regularly monitor the watercourse for signs of sedimentation during all phases of on-land or in-water activities and take corrective action when and where required

3.2.3 Removal

- remove the turbidity curtain from the watercourse or water body following completion of in-water works and only after suspended

A pump around is an in-water site isolation method that is used when it is necessary to block the watercourse from 1 bank to the other to undertake work in the dry. Downstream flow is maintained using pumps. A cofferdam (e.g., rock, steel sheet pile, sandbags, concrete blocks, poly, inflatable barrier) is installed at the upstream and downstream ends of the work site. Water is pumped from upstream of the isolation area to a location immediately downstream of the isolation area.

3.3.1 Installation

3.3.1.1 Pumps

- install a water pumping system to transfer the natural water flow directly downstream of the in-water work site
 - install pump intakes upstream of the in-water work area with sufficient space to install the upstream cofferdam
 - install pump outlet hoses downstream of the in-water work area with sufficient space to install the downstream cofferdam
- size the pumping system to accommodate the peak seasonal flows for the duration of the in-water work
 - have back-up pumps available on-site in the event of unanticipated precipitation events or if the primary pump(s) fail
- install and operate the pump intakes and outlet hoses in a manner that prevents disturbance to the channel bed
 - follow Interim code of practice: End of pipe fish protection screens for small water intakes in freshwater
 - install energy dissipating materials (e.g., filter fabric) at the hose outlet to reduce scour and erosion of the channel substrate and

3.3.1.2 Cofferdam

Installation

- install cofferdam using materials appropriate for the site conditions (e.g., rock, steel sheet pile, sandbags, concrete blocks, poly or an inflatable barrier); do not use earthen material (e.g., soil)
- select appropriate materials to create a water-tight seal around in the isolation area accounting for bank and substrate morphology and type; do not use grout
- install the cofferdam from upstream to downstream, to direct flow away from the in-water work area
- design cofferdam to accommodate the peak seasonal flows or highest water level expected for the duration of the in-water work
- if ice is present, remove it carefully to reduce scour of the bed and banks

Dewatering

- safely relocate fish trapped within the site isolation work area to an appropriate location in the same watercourse or water body
 - dewater gradually to reduce the potential for stranding fish
 - capture and relocate any fish as per applicable permits
- screen intake pipes during all phases of the project
 - follow Interim code of practice: End of pipe fish protection screens for small water intakes in freshwater
- dewater the isolation area using appropriately sized pumps for the flows and seepage anticipated during construction

- return water downstream, within the same watercourse or water body
- continue dewatering for the duration of in-water works or for as long as water continues to enter the isolation area

3.3.2 Maintenance and monitoring

- regularly inspect the water pumping system, cofferdam and dewatering system during in-water works
- repair, as needed, deficiencies observed with the cofferdam and/or dewatering system during in-water works
- regularly monitor the watercourse or water body for signs of suspended sediment during all phases of the project and take corrective action when and where required
- conduct additional relocation of fish if a breach to the isolation occurs during construction or the dewatering process

3.3.3 Removal

- remove the pumping system and cofferdams following completion of in-water works
 - remove the cofferdam from downstream to upstream, to maintain water flow away from the in-water work area while allowing equalization of water levels inside and outside of the isolation area
 - remove all cofferdam materials from the watercourse or water body following completion of in-water works
- restore the bed and banks, gradient and contour affected by the project

undertake work in the dry. Downstream flow is maintained using a pipe, and water is conveyed downstream by force of gravity. A cofferdam (e.g., rock, steel sheet pile, sandbags, concrete blocks, poly, inflatable barrier) is installed at the upstream and downstream ends of the work site.

3.4.1 Installation

3.4.1.1 Flume

- design a flume or elevated pipe system to accommodate the peak seasonal flows for the duration of the in-water work
- install the flume in a manner that prevents disturbance to the channel bed
 - install flume intake upstream of the in-water work area with sufficient space to install the upstream cofferdam
 - install flume outlet downstream of the in-water work area with sufficient space to install the downstream cofferdam

3.4.1.2 Cofferdam

Installation

- install cofferdam using materials appropriate for the site conditions (e.g., rock, steel sheet pile, sandbags, concrete blocks, poly or an inflatable barrier); do not use earthen material (e.g., soil)
- select appropriate materials to create a water-tight seal around in the isolation area accounting for bank and substrate morphology and type; do not use grout
- install the cofferdam from upstream to downstream, to direct flow away from the in-water work area

Dewatering

- safely relocate fish trapped within the site isolation work area to an appropriate location in the same watercourse or water body
 - dewater gradually to reduce the potential for stranding fish
 - capture and relocate any fish as per applicable permits
 - screen intake pipes during all phases of the project
 - follow Interim code of practice: End of pipe fish protection screens for small water intakes in freshwater
- dewater the isolation area using appropriately sized pumps for the flows and seepage anticipated during construction
- pump sediment laden water into a vegetated area or a filtration system (e.g., settling basin, straw bales, filter fabric/bags)
- release filtered water gradually to reduce risk of erosion
- return water downstream, within the same watercourse or water body
- continue dewatering for the duration of in-water works or for as long as water continues to enter the isolation area

3.4.2 Maintenance and monitoring

- regularly inspect the flume, cofferdam and dewatering system during in-water works
- repair, as needed, deficiencies observed with the flume, cofferdam and/or dewatering system during in-water works
- regularly monitor the watercourse or water body for signs of suspended sediment during all phases of the project and take corrective action when and where required

- remove the flume and cofferdams following completion of in-water works
 - remove the cofferdam from downstream to upstream to maintain water flow away from the in-water work area while allowing equalization of water levels inside and outside of the isolation area
 - remove all cofferdam materials from the watercourse or water body following completion of in-water works
- restore the bed and banks, gradient and contour affected by the project

3.5 Diversion channel

A diversion channel is an in-water isolation method that uses a temporary channel constructed to convey water around the in-water isolation area and does not impede downstream flow. Use of this method is usually limited by the availability of space within which to construct a diversion channel. A cofferdam (e.g., rock, steel sheet pile, sandbags, concrete blocks, poly or an inflatable barrier) is installed at the upstream end of the work site. This method is often used in order to maintain fish passage.

3.5.1 Installation

3.5.1.1 Diversion channel

- excavate a temporary channel parallel to, and as close as possible to the existing channel, working from the downstream end to the upstream point of diversion

3.5.1.2 Cofferdam

Installation

- install the cofferdam using materials appropriate for the site conditions (e.g., rock, steel sheet pile, sandbags, concrete blocks, poly or an inflatable barrier); do not use earthen material (e.g., soil)
- select appropriate materials to create a water-tight seal around in the isolation area accounting for bank and substrate morphology and type; do not use grout
- install the cofferdam from upstream to downstream, to direct flow away from the in-water work area
- design the cofferdam to accommodate the peak seasonal flows expected for the duration of the in-water work
- if ice is present, remove it carefully to reduce scour of the bed and banks

Dewatering

- safely relocate fish trapped within the site isolation work area to an appropriate location in the same watercourse or water body
 - dewater gradually to reduce the potential for stranding fish
 - capture and relocate any fish as per applicable permits
- screen intake pipes during all phases of the project
 - follow Interim code of practice: End of pipe fish protection screens for small water intakes in freshwater
- dewater the isolation area using appropriately sized pumps for the flows and seepage anticipated during construction

- return water downstream, within the same watercourse or water body
- continue dewatering for the duration of in-water works or for as long as water continues to enter the isolation area

3.5.2 Maintenance and monitoring

- regularly inspect the water pumping system, cofferdam, diversion channel and dewatering (if applicable), during in-water works
- repair, as needed, deficiencies observed with the water pumping system, cofferdam, diversion channel and/or dewatering during in-water works
- regularly monitor the watercourse for signs of suspended sediment during all phases of the project and take corrective action when and where required
- conduct additional relocation of fish if a breach to the isolation occurs during construction or the dewatering process

3.5.3 Removal

- remove the cofferdams, reinstall the banks and fill in and stabilize the diversion channel to reduce erosion when no longer in use following completion of in-water works
 - remove the cofferdam from downstream to upstream to maintain water flow away from the in-water work area while allowing equalization of water levels inside and outside of the isolation area
 - remove all cofferdam materials from the watercourse or water body following completion of in-water works

Marine environment

Comprises all ocean, coastal waters and estuaries, including intertidal zones and salt water marshes, and extending, in the case of watercourses, up to the freshwater limit.

Qualified Environmental Professional (QEP)

A person who is experienced in identifying and assessing potential impacts to fish and fish habitat generated from various works, undertakings or activities conducted in or near water, and implementing management measures to avoid and mitigate them. QEPs possess a post-secondary degree or diploma in biological, geophysical or environmental sciences and are often referred to as:

- aquatic biologist
- fisheries biologist
- fluvial geomorphologist
- applied scientist
- fisheries technician
- environmental consultant
- natural resource consultant

Peak seasonal flow

Highest instantaneous discharge expected within the given season.

Date modified:

2023-11-06



APPENDIX G: MEASURES TO PROTECT FISH AND FISH HABITAT (FISHERIES AND OCEANS CANADA, 2023C)



Government
of Canada

Gouvernement
du Canada

[Canada.ca](#) > [Fisheries and Oceans Canada](#) > [Aquatic ecosystems](#)

> [Projects near water](#)

Measures to protect fish and fish habitat

Comply with the fish and fish habitat protection provisions of the *Fisheries Act* by incorporating measures to avoid:

- causing the death of fish
- harmful alteration, disruption or destruction of fish habitat in your work, undertaking or activity

Works, undertaking or activities where impacts to fish and fish habitat can be avoided if you can follow the measures to protect fish and fish habitat include:

- clear span bridges
- bridge maintenance
- on-land mineral exploration activities
- decking repairs for docks, piers, wharves and bridges

You're responsible for reviewing the complete list of measures and implementing those that are applicable to your work, undertaking or activity. If you can't completely implement the protection measures, [check if your project needs a review](#).

Prevent the death of fish

You can prevent the death of fish by:

- avoiding killing fish by means other than fishing

- avoiding using explosives in or near water
- planning in water work, undertaking or activity to respect timing windows to protect fish, including:
 - their eggs
 - juveniles
 - spawning adults
 - the organisms upon which they feed and migrate

Maintain riparian vegetation

Measures to maintain riparian vegetation include:

- maintaining an undisturbed vegetated buffer zone between areas of on-land activity and the high water mark of any water body
- using existing trails, roads or cut lines wherever possible
- avoiding tree removal
- using methods to prevent soil compaction, such as swamp mats or pads

Carry out works, undertakings and activities on land

You can prevent the harmful alteration, disruption or destruction of fish habitat by avoiding:

- conducting any work, undertaking or activity in water
- placing fill or other temporary or permanent structures below the high water mark
- fording of the watercourse
- disturbing or removing materials from the banks, shoreline or waterbody bed, such as:

- sand
- rocks
- aquatic vegetation
- natural wood debris
- building structures in areas that:
 - may result in erosion and/or scouring of the stream bed or banks
 - are inherently unstable, like:
 - bends
 - meanders
 - floodplains
 - alluvial fans
 - braided streams

Maintain fish passage

Maintain fish passage by avoiding:

- changing flow or water level
- obstructing or interfering with the movement and migration of fish

Ensure proper sediment control

Ensure proper sediment control by:

- avoiding introducing sediment in the water, like:
 - silts
 - clays
 - sands
- developing and implementing an erosion and sediment control plan
 - installing effective erosion and sediment control measures to stabilize all erodible and exposed areas

- regularly inspecting and maintaining the erosion and sediment control measures during all phases of the project
- keeping the erosion and sediment control measures in place until all disturbed ground has been permanently stabilized
- installing settling basin and/or filtration system for water flowing onto the site and water being pumped or diverted from the site, including:
 - holding back runoff water until suspended sediment has resettled in the settling basin and runoff water is clear
 - dewatering gradually to prevent sediment resuspension and bank destabilization
- disposing of and stabilizing all excavated material above the high water mark or top of bank of nearby waterbodies and ensuring sediment re-entry to the watercourse is prevented
- heeding weather advisories and scheduling work to avoid wet, windy and rainy periods that may result in high flow volumes and/ or increase erosion and sedimentation
- regularly monitoring the watercourse for signs of sedimentation during all phases of the work, undertaking or activity and taking corrective action if required
- using biodegradable erosion and sediment control materials whenever possible and removing all exposed non-biodegradable erosion and sediment control materials once site is stabilized
- operating machinery on land in stable dry areas
- stopping work and containing sediment-laden water to prevent dispersal
- installing temporary clear span bridges to accommodate expected high water flows and to not damage erodible banks
- limiting the impacts to stream or shoreline banks

Prevent entry of deleterious substances in water

Prevent entry of deleterious substances in water by:

- avoiding depositing any deleterious substances in the watercourse
- developing a response plan to be implemented immediately in the event of a spill of a deleterious substance
- keeping an emergency spill kit on site
- stopping work and containing deleterious substances to prevent dispersal
- reporting any spills of sewage, oil, fuel or other deleterious material whether near or directly into a water body
- ensuring clean-up measures are suitably applied so as not to result in further alteration of the bed and/or banks of the watercourse
- cleaning up and appropriately disposing of the deleterious substances
- planning activities near water such that materials and chemicals don't enter the watercourse, including:
 - grout
 - paint
 - primers
 - degreasers
 - rust solvents
 - poured concrete
 - blasting abrasives
 - or other chemicals
- maintaining all machinery on site in a clean condition and free of fluid leaks to prevent any deleterious substances from entering the water
- washing, refueling and servicing machinery and store fuel and other materials for the machinery in such a way as to prevent any deleterious

substances from entering the water

- disposing all waste materials (including construction, demolition, excavation, commercial logging) above the high water mark of nearby waterbodies to prevent entry
- ensuring that building material used in a watercourse is handled and treated in a manner to prevent the release or leaching of substances into the water that may be deleterious to fish

Related links

- [2019 changes to the *Fisheries Act*](#)
- [Request a review of your project near water](#)
- [Standards and codes of practice](#)

Date modified:

2019-08-28



APPENDIX H: RESUMES OF KEY STAFF

HANNAH TRAINOR, B.SC.

PROJECT TECHNOLOGIST

hannah@greenstoneengineering.ca

PROFESSIONAL SUMMARY

Hannah holds a Bachelor of Science and Bachelor of Bioresource Management from the University of Guelph. Her technical experience has included research projects of invasive pests in Ontario such as Swede Midge and the Colorado Potato Beetle and the Spotted Gar, a species at risk in Ontario. She has experience completing verification soil sampling programs, Phase I Environmental Site Assessments, as well as groundwater monitoring programs. Hannah also has first aid and CPR level training.

EDUCATION

- Bachelor of Bioresource Management, University of Guelph 2022
- Bachelor of Science, University of Guelph 2022

PROFESSIONAL EXPERIENCE

PROJECT TECHNOLOGIST, GREENSTONE ENGINEERING LTD., 2024 – PRESENT

- Execution of groundwater and verification soil sampling programs adhering to standard operating procedures and MECP technical documents.
- Preparation of Phase I Environmental Site Assessment reports.
- Preparation of supporting figures and test pit logs.

RESEARCH ASSISTANT, UNIVERSITY OF TORONTO, SUMMER 2023

- Tagged and tracked Spotted Gar using GPS.
- Assessed habitat and water quality analysis using YSI technology.
- Clipped and preserved juvenile fin samples.
- Set and monitored hoop nets recording identity of fish species captured.

RESEARCH ASSISTANT, UNIVERSITY OF GUELPH, 2021 - 2023

- Travelled to multiple study sites throughout Southern Ontario.
- Maintained sticky card pheromone traps and live captured specimens in the field.
- Gathered, transported, and dissected canola samples to find insect larvae.
- Recorded data and maintained laboratory notes.

JANICE CHRISTIAN, M.SC.

705-946-8975

janice@greenstoneengineering.ca

PROFESSIONAL SUMMARY

Janice has worked in the environmental sector for more than 30 years. She has extensive experience in environmental consulting, land and resource use planning, and natural resource management. Her expertise covers a wide range of environmental topics including Environmental Assessment, Environmental Impact Assessment, Land-Use Planning, Land Management, Waste Management, On-site Wastewater Treatment, Terrestrial and Wetland Ecology, Forestry, and Fisheries. Janice has worked in the public sector, with environmental non-governmental organizations, quasi-municipal organizations, as a consultant and in private industry. She has worked in Ontario, Saskatchewan, and Alberta. Janice holds a Bachelor of Science in Biology and Chemistry from Trent University and a Master of Science in Biology from the University of Regina. She is a member of the Canadian Society of Environmental Biologists.

EDUCATION

- Master of Science, University of Regina, 1996
- Bachelor of Science, Trent University, 1994

PROFESSIONAL DEVELOPMENT

- Workplace Hazardous Information Management System
- Transportation of Dangerous Goods
- Septic System Design Self-Study Course
- Introduction to the Canadian Environmental Assessment Act, 2012 Training
- How to Conduct Cumulative Effects Assessment and Management Studies More Effectively Webinar
- Provincial Policy Statement 2014 Training
- Ontario Wetland Evaluation Certification
- Ecological Land Classification Certification, Southern Manual and the Provincial ELC
- Primer on Planning, Ontario Association of Committees of Adjustment & Consent Authorities
- Northeastern Ontario Land Use Planning Technical Workshops



- Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005 Second Edition Training
- Municipal Class Environmental Assessment Training
- Ministry of Natural Resources' Class Environmental Assessment for Resource Stewardship and Facilities Development, and Class Environmental Assessment for Provincial Parks and Conservation Reserves Training

PROFESSIONAL ASSOCIATIONS

- Canadian Society of Environmental Biologists

PROFESSIONAL EXPERIENCE

SENIOR PROJECT MANAGER, GREENSTONE ENGINEERING LTD., 2022 – PRESENT

- Complete land use planning applications, natural environment assessments, environmental monitoring plans, environmental impact assessments, class environmental assessments, Canadian Environmental Assessment Act Section 67 determinations, aggregate application natural environment level 1 and level 2 studies, and other reports or plans that advise Clients on the potential impacts of their projects/facilities on the natural environment and recommend preventative, mitigation and monitoring features.
- Complete Phase 1 Environmental Site Assessment Reports, Excess Soil Assessments
- Complete excess clean soil management site applications (O. Reg 406)
- Review environmental plans on behalf of Indigenous communities.
- Review for plans and reports written by other staff.

ENGLISH AS A FOREIGN LANGUAGE AND SCIENCE TEACHER, SELF-EMPLOYED, 2018 - 2022

- Create courses to teach
- Develop course outlines and prepare lessons
- Teach up to 1-6 children at a time.

ENVIRONMENTAL AND PLANNING SPECIALIST, KARHI CONTRACTING INC., 2017 - 2018

- Prepared severance applications.
- Completed Permit applications and rehabilitation plans for work on shorelands, water crossings, and Crown land roads.
- Used GIS to produce drawings and maps.
- Completed Hauled sewage lagoons and drying bed environmental compliance approval applications and closure plans.



- Worked with Indigenous communities to site hauled sewage lagoons and drying beds
- Completed Ministry of Transportation entrance and building permit applications.
- Wrote a waste management hauling driver's handbook for Karhi Contracting Inc. in compliance with Guideline C-12 under O. Reg. 347 of the Ontario Environmental Protection Act.

SENIOR ENVIRONMENTAL SCIENTIST, ENVIRONMENTAL SCIENCE, PINCHIN LTD., 2015 – 2017

- Completed environmental monitoring plans, environmental impact assessments, class environmental assessments, Canadian Environmental Assessment Act Section 67 determinations, natural environment assessments, aggregate application natural environment level 1 and level 2 studies, and other reports or plans that advise Clients on the potential impacts of their projects/facilities on the natural environment and recommend preventative, mitigation and monitoring features.
- Acted as senior technical reviewer for plans and reports written by other members of the environmental science service line.
- Assisted with the development and coordination of the environmental natural science service line
- Prepared design and operations plans and annual monitoring plans for landfill sites and closed mine sites.
- Prepared a Signs Manual for the Ministry of Natural Resources and Forestry that consolidated existing policies and procedures and provided recommendations on policy and procedural changes

PRINCIPAL CONSULTANT, JANICE CHRISTIAN ENVIRONMENTAL & PLANNING CONSULTING, 2012 – 2016

- Liaised with clients and regulatory agencies as a sub-consultant for larger Environmental Consulting Firms.
- Prepared and peer reviewed Environmental Impact Assessments and Environmental Protection Plans.
- Prepared Planning Act Applications including subdivision plans; consent applications and zoning by-law amendment applications.
- Acted on behalf of clients with conservancy organizations, planning authorities, government ministries.
- Provided project management and coordination services for an Environmental Not-for-Profit Organization including facilitating meetings, pursuing funding opportunities, managing funded projects, providing leadership to sub-committees, interns and other staff/contractors, making presentations at public and committee meetings.

GENERAL MANAGER/ PLANNER/ SECRETARY TREASURER, SAULT STE. MARIE NORTH PLANNING BOARD, 2011 – 2012

- Administered all land use planning functions for this quasi-municipal Planning Board.
- Conducted site inspections.
- Reviewed all Planning Act applications for compliance with Provincial and local policies and provided the Board with approval recommendations.



- Provided the residents of the Planning Area with assistance and advice on planning matters.
- Managed one staff, an office and the budget.
- Managed the five-year review of the Official Plan for the area.

DISTRICT PLANNER, SAULT STE. MARIE DISTRICT, ONTARIO MINISTRY OF NATURAL RESOURCES, 2010-2011

- Led the Municipal Planning portfolio which included preparing input packages for and reviewing Municipal Official Plans and Official Plan Amendments, commented on Municipal Planning Act applications, providing advice to other staff on the Planning Act and the Provincial Policy Statement.
- Led the Protected Areas Planning portfolio which included providing advice to other staff on the management of in Conservation Reserves; preparing a Conservation Reserves Strategy for the District; providing leadership to protected areas technicians and preparing Land use policy amendments proposals.
- Provided advice to other staff including with interpretation and implementation of the Environmental Assessment Act, the Environmental Bill of Rights, and MNR's Statement of Environmental Values.

INTEGRATED RESOURCE MANAGEMENT TECHNICAL SPECIALIST, SAULT STE. MARIE DISTRICT, ONTARIO MINISTRY OF NATURAL RESOURCES., 2003 – 2010

- Managed the Waste management program including working with the local and regional Ministry of the Environment staff regarding compliance issues and Environmental Assessment Act requirements.
- Provided advice to Senior MNR staff regarding waste management at a local and regional level.
- Developed and worked extensively with a Public Advisory Council to work on the waste management issues (lack of remaining capacity for a population of approximately 5000 and an area of 2400 km², lack of recycling services, etc) in the municipally unincorporated area located just north of Sault Ste. Marie.
- Managed permitting for work proposed on Crown land, on shorelines and in the water (Public Lands Act permits and Lakes and Rivers Improvement Act approvals.
- Conducted Class Environmental Assessments (Resource Stewardship and Facility Development Class EA, Provincial Parks and Conservation Reserves Class EA) including public consultation and aboriginal engagement.
- Reviewed and commented on Class EAs and Environmental Assessments (renewable energy and waste projects).
- Provided advice to the public and agencies regarding MNR administered legislation.

INTEGRATED RESOURCE MANAGEMENT TECHNICAL SPECIALIST, SIOUX LOOKOUT DISTRICT, ONTARIO MINISTRY OF NATURAL RESOURCES, 2000-2003

- Managed the budget for the Lac Seul Area.
- Recruited and supervised seasonal staff.
- Managed the Land stewardship and Waste management programs.



- Managed the Nuisance Bear program including acting as the local media contact, serving on the provincial nuisance bear service provider authorization committee; negotiated nuisance bear removal services with the Municipality of Sioux Lookout and the local OPP detachment.
- Represented MNR's on the Fisheries Advisory Committees that were developing fisheries management plans. This role involved extensive negotiation and facilitation skills.

PROJECT ASSISTANT, NORTHERN EAST SLOPES REGIONAL INTEGRATED RESOURCE MANAGEMENT PROJECT, ALBERTA ENVIRONMENT

- Assisted in the preparation of a regional pilot Integrated Resource Management (IRM) Project for the Northern East Slopes Region by managing the project, investigating IRM approaches from other jurisdictions, developing a terms of reference for the project, communications products, a public consultation process.

AREA BIOLOGIST, UPPER HAY AREA, LANDS AND FOREST SERVICE, ALBERTA ENVIRONMENT, 1996- 1999

- Managed the silviculture program by planning and contracting silviculture activities and auditing local forest industries' silviculture programs.
- Acted as area specialist in ecological management.
- Developed and provided advice on the use of native plant guidelines for northwestern Alberta.

PROJECT EXPERIENCE

PROJECT MANAGEMENT

- Managed a \$3.2 M, 7 million tree silviculture program by planning and contracting silviculture activities.
- Owner/Operator of Janice Christian Environmental and Planning Consulting including soliciting work, writing proposals, carrying out all required studies, completing reports to clients' satisfaction, and all administrative work associated with owning a business.
- Project Manager for a local environmental not-for-profit organization, including providing direction to interns, developing grant proposals and reporting on projects to funders' requirements, research, compiling and presenting information on waste management practices to the Council Members, support agencies and the public, developing communication products, and managing budgets. The Council was comprised of interested and influential community members and was supported by representatives of provincial government ministries.
- General Manager for the Sault Ste. Marie North Planning Board, a quasi-municipal land use planning board for a 2400 km² municipally unincorporated planning area located north of Sault Ste. Marie, Ontario. Duties included managing a small staff, managing the annual budget including submission of Board approved budget proposals to the Ontario



Ministry of Municipal Affairs and Housing, reviewing and providing advice to the Board regarding land use planning applications.

- Led the Ontario Ministry of Natural Resources, Sault Ste. Marie District, Municipal Planning portfolio which included preparing input packages for and reviewing Municipal Official Plans and Official Plan Amendments, commented on Municipal Planning Act applications, providing advice to other staff on the Planning Act and the Provincial Policy Statement.
- Team Leader for Protected Areas Technicians conducting studies in Conservation Reserves.
- Sault North Waste Management Project lead for the Sault Ste. Marie District of the Ontario Ministry of Natural Resources.
- Lands portfolio lead for the Sioux Lookout District, Ministry of Natural Resources; Partnership Coordinator for the Sioux Lookout District, Ministry of Natural Resources.
- Managed the Northern East Slopes Integrated Resource Management Region Planning Pilot Project for Alberta Environment.
- Managed the Silviculture program for the Upper Hay Forest District, Lands and Forest Service, Alberta Environment.

ENVIRONMENTAL ASSESSMENT

- Prepared and provided senior technical review of Class Environmental Assessment reports; Prepared *Canadian Environmental Assessment Act, 2012* Section 67 Determination reports for projects on federal land.
- Prepared Category A, B reports and used emergency provisions under the MNR's Resource Stewardship and Facilities Development and Provincial Parks and Conservation Reserves Class Environmental Assessments.
- Reviewed and recommended approval of proponent-led Class Environmental Assessment Reports.
- Reviewed and commented on Individual Environmental Assessment Reports for renewable energy projects and waste management projects.
- Reviewed and provided advice to colleagues regarding Environmental Assessment Act, Environmental Bill of Rights and MNR's Statement of Environmental Values.

ENVIRONMENTAL IMPACT ASSESSMENT

- Prepared and provided senior technical review of Environmental Impact Studies to support *Planning Act* applications and applications to Conservation Authorities; Natural Environment Property Assessments as well as the *Aggregate Resources Act* Natural Environment Studies Level 1 and Level 2; and other Natural Heritage Reports.
- Responsible for recommending approval of Environmental Impact Studies.



LAND USE PLANNING

- Prepared subdivision, severance, and zoning by-law amendment applications.
- Provided recommendations to Sault Ste. Marie North Planning Board concerning proposed severances, zoning by-law amendments, and subdivisions applications.
- Contributed to the five-year Reviews of the Official Plans.
- Provided environmental input into Official Plans and Zoning By-laws.

ENVIRONMENTAL PERMITTING, COMPLIANCE AND MONITORING

- Prepared Ministry of Natural Resources and Forestry Work Permit applications and Ministry of Transportation entrance and building permit applications for clients.
- Prepared Ministry of the Environment, Parks and Conservation Hauled Sewage Environmental Compliance Approval applications.
- Prepared, reviewed and peer reviewed Environmental Management Plans; Stormwater Management studies; Design and Operations Plans, and Annual Monitoring Reports for landfill sites.
- Issued Public Lands Act Work Permits for work on Crown land and work around water for the Ministry of Natural Resources and Forestry.
- Reviewed applications and prepared the documents to issue location approval under the Lakes and Rivers Improvement Act.
- Improved compliance with Environmental Compliance Approvals for waste management sites.
- Developed a waste management strategy and a Conservation Reserves Strategy.
- Assisted in the development of fisheries management plans.

COMMUNICATIONS AND INTERPERSONAL RELATIONSHIP BUILDING

- Teaching English as a Second Language to children and adults from China, Latin America, Russia, Germany, USA, etc.
- Teaching Science concepts to preschoolers, school-aged children and teens as a freelance online teacher.
- Soliciting work, writing proposals, writing technical reports.
- Developing grant proposals and reporting on projects to funders' requirements.
- Research, compiling and presenting information on waste management practices to Board Members, support agencies and the public.
- Developing communication products.
- Facilitating and presenting information at public and board meetings.
- Reviewing and providing advice to regarding land use planning applications a decision-making Board.



- Providing input to and reviewing plans and plan amendments, commented on applications.
- Providing advice to colleagues, staff of other agencies and the public.
- Building and repair relationships between provincial government officials and advisory committee members.
- Media contact.
- Negotiating with partners.



REPORT LIMITATIONS & GUIDELINES FOR USE

This report has been prepared for the exclusive use and sole benefit of the Client and may not be used by any third party without the express written consent of Greenstone Engineering Ltd. and the Client. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of third parties. This report is not to be construed as legal advice. Greenstone Engineering Ltd. disclaims responsibility of consequential financial effects on transactions or property values, or requirements for follow-up actions and costs. No other warranty is expressed or implied.

Misinterpretation of this report by other design or project team members or contractors could result in significant financial and/or safety issues. Retaining Greenstone Engineering Ltd. to confer with the appropriate members of future related project teams can substantially lower those potential issues.

BASIS OF THE REPORT

The information, opinions, and/or recommendations made in this report are in accordance with Greenstone Engineering Ltd.'s present understanding of the site-specific conditions as described by the Client. The applicability of this report is restricted to the current site conditions encountered at the time of the investigation or study. If the proposed site specific conditions differs or is modified from what is described in this report or if the site conditions are altered, this report is no longer valid unless Greenstone Engineering Ltd. is requested by the Client to review and revise the report to reflect the differing or modified project specifics and/or the altered site conditions.

STANDARD OF CARE

Based on the limitations of the scope of work, schedule, and budget, the preparation of this report, and all associated work, was carried out in accordance with the normally accepted standard of care for the specific professional service provided to the Client. The environmental conditions that have been presented are based on the factual data obtained from this investigation. No other warranty is expressed or implied.

INTERPRETATION OF SITE CONDITIONS

Descriptions of environmental conditions made in this report are based on site conditions encountered by Greenstone Engineering Ltd. at the time of the work, and at the specific inspected, tested, monitored and/or sampled locations. Classifications and statements of condition(s) have been made in accordance with commonly accepted practices, which are judgmental in nature; no specific description should be considered exact. Extrapolation of in-situ conditions can only be made to some limited extent beyond the sampling or test points, if completed. The extent depends on variability of the specific media conditions (building materials, soil, groundwater, rock, sediment, etc.) as influenced by natural, environmental, geological and/or hydrogeological processes, construction activity, and site/building use. No warranty or other conditions, expressed or implied, should be understood.

VARYING OR UNEXPECTED CONDITIONS

Regardless of how exhaustive an environmental investigation is performed, the investigation cannot identify all the surface/subsurface conditions, which may differ from the conditions encountered at the test locations at the time of our investigation. Further, surface/subsurface conditions can change with time due to natural and direct or indirect human impacts at or away from the site. As



such, no warranty is expressed or implied that the entire site is representative of the subsurface information obtained at the specific locations of our investigation, which may also change with time.

Should any site or surface/subsurface conditions be encountered that are different from those described in this report or encountered at the test locations, Greenstone Engineering Ltd. must be notified immediately to assess if the varying or unexpected conditions are substantial and if reassessments of the report conclusions or recommendations are required. Greenstone Engineering Ltd. will not be responsible to any party for damages incurred as a result of failing to notify Greenstone Engineering Ltd. that differing site or subsurface conditions are present upon becoming aware of such conditions.

PLANNING, DESIGN, AND CONSTRUCTION

If there are any changes in the project scope or development features, which may affect our assessment, the information obtained during the investigation may be inadequate. In this case, Greenstone Engineering Ltd. should be retained to review the project changes to evaluate if the changes will affect the conclusions and recommendations within our report, and if additional field investigation work, as well as reporting is required as part of the reassessment.

Development or design plans and specifications should be reviewed by Greenstone Engineering Ltd., sufficiently ahead of initiating the next project stage (property acquisition, financing, tender, construction, etcetera), to confirm that this report completely addresses the elaborated project specifics and that the contents of this report have been properly interpreted. Specialty quality assurance services (field observations and testing) during construction can be a necessary part of the evaluation of subsurface conditions and site preparation works. Site work relating to the recommendations included in this report should only be carried out in the presence of a qualified environmental engineer. Greenstone Engineering Ltd. cannot be responsible for site work carried out without being present or consulted.

FINANCIAL DISCLAIMER

Greenstone Engineering Ltd. will not be responsible for any consequential or indirect damages. Greenstone Engineering Ltd. will only be held liable for damages resulting from the negligence of our work completed. Any liability resulting from negligence of Greenstone Engineering Ltd. and its officers shall be limited to the lesser of fees paid and/or actual damages incurred by the Client.

LEGAL DISCLAIMER

Greenstone Engineering Ltd. makes no other representations whatsoever, including those concerning the legal significance of its findings, or as to other legal matters that could be construed within this report, including, but not limited to, ownership of any property, or the application of any law to the facts set forth herein. With respect to regulatory compliance issues, regulatory statutes are subject to interpretation and these interpretations may change over time.

REGULATORY DISCLAIMER

This report has been prepared for due diligence purposes only and in accordance with standard environmental engineering and consulting practices in accordance with applicable standards.