



EUGENIA FALLS CONSERVATION AREA

Management Plan 2023



This management plan was reviewed and approved by GSCA Board of Directors on _____

For more information, or for a copy of this plan in an alternative format, contact GSCA at 519-376-3076 or explore@greysauble.on.ca

Executive Summary

Situated on the Niagara Escarpment, in the village of Eugenia in the Municipality of Grey Highlands, Eugenia Falls Conservation Area encompasses 23.24 hectares (57.42 acres) of land. Eugenia Falls Conservation Area hosts significant natural and cultural features, with 92% of the property being within an Area of Natural and Scientific Interest (ANSI). The Beaver River, rare species, a vast trail network, and the rich history and remnants of a hopeful hydro-electric industry, define Eugenia Falls Conservation Area as one of the premier properties in Grey Sauble Conservation Authority's (GSCA's) conservation areas system.

With over 40,000 visitors per year, balancing visitor use with the protection of natural features is a primary objective of this plan, as well as the responsibility of conserving and celebrating the site's history and cultural heritage. There are many challenges with the site, including aging infrastructure, environmental degradation, site safety, cultural heritage preservation and overall management capacity.

This is the first management plan for Eugenia Falls Conservation Area and will provides a 20-year vision for the property, with the following Actions to be implemented:

1. Conserve and Protect
2. Update/Remove Infrastructure
3. Improve the Visitor Experience
4. Enhance and Celebrate Cultural Heritage
5. Operations/Risk Management

Acknowledgement

The management planning process is led by staff in GSCA's Lands Policy Department. The creation of the Eugenia Falls Management Plan has taken the dedication, brainstorming and perspectives of a diverse team of partners, stakeholders, community members and the public.

Undertaking a management plan is a major endeavor that will now provide Eugenia Falls Conservation Area with a vision for the next 20 years.

Thank you to all the members of the public who participated in the process, including surveys, written comments and attending public meetings. We would also like to acknowledge all the individuals who provided their support, expertise and participation in the development of the management plan.

Advisory Committee

Beaver Valley Bruce Trail Club
County of Grey
Grey Bruce Health Unit
Heritage Grey Highlands
Grey Sauble Conservation Authority
Grey Sauble Conservation Foundation
Local Neighbourhood Representative
Metis Nation of Ontario
Municipality of Grey Highlands
Ontario Power Generation

Land Acknowledgement

We acknowledge with respect, the history, spirituality, and culture of the Anishinabek: The People of the Three Fires known as Ojibway, Odawa, and Pottawatomi Nation, who have inhabited this land from time immemorial. And further give thanks to the Chippewas of Saugeen, and the Chippewas of Nawash, now known as the Saugeen Ojibway Nation, as the traditional keepers of this land. We also recognize the Metis whose ancestors shared this land and these waters. May we all, as Treaty People, live with respect on this land, and live-in peace and friendship with all its diverse peoples.

DRAFT

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Capacity

GSCA has developed this management plan as a starting point, to allow for future guidance on projects and management decisions. Due to budgetary and staffing constraints, development phases, engineered drawings or finalized designs are not included as part of this plan. Finer details will be determined based on available funds.

NEPOSS

The development of a management plan is a requirement for Niagara Escarpment Parks and Open Spaces Systems (NEPOSS) properties under Part 3 of the Niagara Escarpment Plan (NEP). As the property owners and managers, the goals, objectives and financial commitments of Grey Sauble Conservation Authority take precedence over the NEPOSS where they are not in conflict with the Niagara Escarpment Plan or the Niagara Escarpment Planning and Development Act.

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List of Acronyms

ANSI – Area of Natural and Scientific Interest
AODA – Accessibility for Ontarians with Disabilities Act
EFCA – Eugenia Falls Conservation Area
ELC – Ecological Land Classification
NEC – Niagara Escarpment Commission
NEP – Niagara Escarpment Plan (2017)
NEPOSS – Niagara Escarpment Parks and Open Space System
NHIC – Natural Heritage Information Centre
OPG – Ontario Power Generation

1.0 Introduction

Eugenia Falls Conservation Area (EFCA) is one of Grey Sauble Conservation Authority's (GSCA) flagship properties and holds high value within GSCA and the surrounding community for its natural beauty and rich history. With over 40,000 visitors each year, EFCA is one of the most popular properties in GSCA's ownership.

A management plan is a document that sets out the management approach and objectives for a property and describes the framework that will be used for ongoing decision-making. The management planning process often involves an extensive review to understand the site followed by visioning exercises to imagine its future state and what the property could and should become.

The EFCA is part of the Niagara Escarpment Parks and Open Space System (NEPOSS). The NEPOSS is a network of more than 160 publicly owned parks and open spaces located along the Niagara Escarpment that together serve to protect significant escarpment resources and provide opportunities for public access and recreation. The development of a management plan is also a requirement for NEPOSS properties under Part 3 of the Niagara Escarpment Plan (NEP).

In GSCA's 55-year ownership, this is the first time a management plan has been completed for EFCA. The management planning process for EFCA commenced in 2021 with the installation of trail and car counters to collect visitor data and obtaining feedback from the public and stakeholders. Survey data shows that visitors generally enjoyed their visit to the conservation area, however signage, parking and washroom facilities could be improved.

This document, the Eugenia Falls Management Plan, is the result of public feedback, and input from staff, stakeholders and neighbours. This plan aims to address the variety of threats and challenges identified, while maintaining the properties existing strengths. This plan provides a vision for the property over the next 20 years.

2.0 Context

Eugenia Falls Conservation Area (EFCA) is located on the Niagara Escarpment, a landform recognized by the United Nations Educational, Scientific and Cultural Organization (UNESCO) as a World Biosphere Reserve. This management plan incorporates several themes related to the Biosphere Reserve policy which are found in Section 9.0 and include: biodiversity conservation by removing invasive plants and keeping visitors on designated trails, proposing minimal development for the site and removing some existing infrastructure and highlighting Indigenous history through various signage projects. EFCA is situated in the village of Eugenia, in the Municipality of Grey Highlands, this property features an extensive stretch of the Bruce Trail, provides rich local history and hosts many species of rare plants and wildlife.

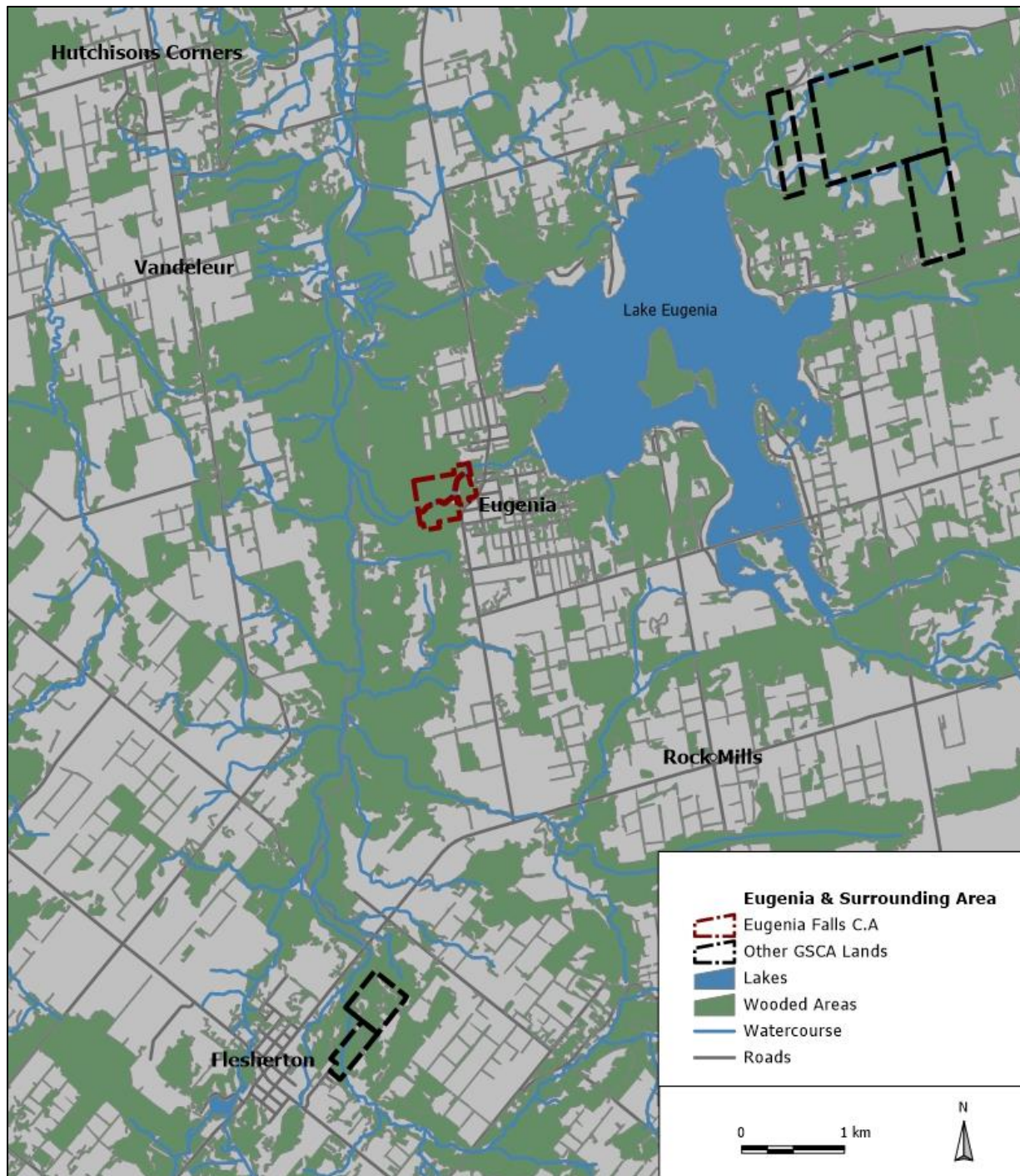
2.1 Location

The Eugenia Falls Conservation Area is located at 150 Pellisier Street in the village of Eugenia, within the main Beaver River watershed along the Beaver River (Maps 1 and 2). The river as it

flows through the property is owned by Ontario Power Generation (OPG). The property is approximately 23.24 hectares (57.42 acres) in size and located on Lot Mill Res. 1, 2, Pt. 3, Concession Plan 20 (Eugenia) in the former Township of Artemesia in the Municipality of Grey Highlands.



Map 1. Eugenia Falls Conservation Area Boundary



Map 2. EFCA location within greater landscape

2.2 Land Acquisition

The original 1.8 hectares (4.47 acres) which was considered the Hydro Park now the area where the parking lot, cenotaph and pavilion are, was transferred from the Hydro Electric Power Commission of Ontario for \$1.00 on October 17, 1967. On October 17, 1977 the remaining acreage was transferred to North Grey Region Conservation Authority from The Hydro-Electric

Power Commission of Ontario for \$870.00.

2.3 Tax Status

22.25 hectares (55 acres), or 96% of the property is in the Conservation Lands Tax Incentive Program (CLTIP). Because of the inclusion in CLTIP, the total taxes in 2021 were \$19.08.

3.0 Goals and Objectives

The goals and objectives outlined below meet the Part 3 NEPOSS objectives of the NEP as well as the goal “Enhance GSCA Land Management and Natural Heritage Preservation” as set out in GSCA’s 2019-2021 Strategic Plan.

Goal: To protect, conserve and manage the property within an ecosystem framework and, in consultation with the community, to ensure watershed health, public enjoyment and environmental sustainability.

Objectives:

- *Natural Heritage* - To protect, restore and regenerate the natural ecosystem of EFCA by ensuring the health and diversity of native species, habitats, landscapes and ecological processes; to maximize the linkages and connectivity of the natural heritage features to one another and to adjacent areas; and to provide professional resource management as appropriate.
- *Cultural Heritage* - To identify, protect and conserve the cultural heritage features of EFCA for their inherent value and depiction of the long-term human use and occupancy of the area, including any identified traditional and/or ongoing uses of Indigenous peoples.
- *Land Use* - To ensure protection of the ecological integrity and cultural values of the property through innovative planning and management, and appropriate conservation, recreation, and other land uses.
- *Recreation* - To provide opportunities for appropriate outdoor recreation at EFCA, that is sustainable in environmental, physical, and economic terms, and which is consistent with all other objectives.
- *Education* - To promote knowledge and understanding of the natural and cultural values of the site, the watershed area, and the Niagara Escarpment, including their protection and management requirements, as well as their significance, sensitivities, and interrelationships.
- *Stewardship* - To promote and facilitate the ongoing public involvement at EFCA that will foster sustainable recreational tourism and will accomplish watershed management objectives.
- *Fiscal Sustainability* – To ensure that GSCA undertakes upgrades, alterations, and management of the EFCA in a manner that considers fiscal requirements and

responsibilities and strives to ensure financial balance and sustainability over the long-term.

- *Management* - To manage EFCA in a manner that will ensure the achievement of all objectives.

4.0 Purpose of the Management Plan

The Management Plan study approach for the EFCA generally follows the NEPOSS Planning Manual which is referenced in Part 3 of the Niagara Escarpment Plan. EFCA was established as a community park well before the Niagara Escarpment Commission and NEPOSS existed. However, this site contributes to the NEPOSS due to its designations as shown in Section 5.1, presence of the Bruce Trail, cultural history and its significance within the community.

This plan represents the first management plan to be completed for Eugenia Falls Conservation Area. A management plan is needed to ensure future sustainability of the site in terms of environmental protection, historical/cultural preservation and visitor amenities and experiences.

The purpose of this plan is to provide an evaluation of the property and work with the local community to determine direction for future use of the site, as well as a strategy to implement proposed projects. The plan also identifies specific management zones, following the 2021 NEPOSS manual, within which a certain type of activity may be undertaken. The plan will be reviewed biennially by GSCA Lands staff to assess the plan progress and track changes in direction for the site. The plan will be updated every 10 years or may exceed this if updates are deemed unnecessary.

5.0 Site Analysis: The Natural Environment

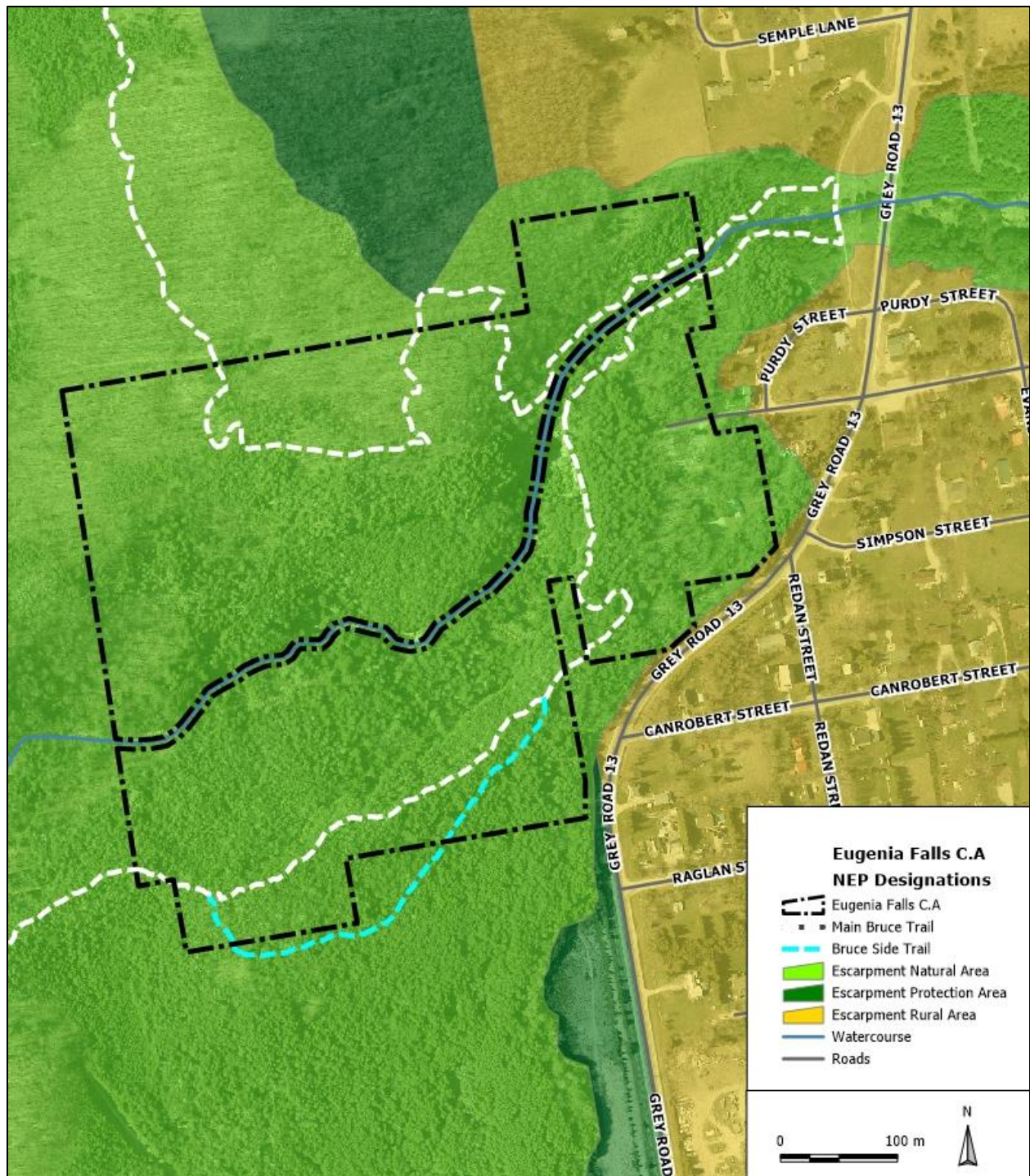
EFCA boasts an array of ecological features including the Niagara Escarpment, Species at Risk (SAR), Areas of Natural and Scientific Interest (ANSI) and many sensitive flora species. The vast, mature upland forest, and stretch of the Beaver River provides unique habitats for a variety of species.

5.1 Site Designations

In 1990 the Niagara Escarpment was designated as a United Nations Educational Scientific and Cultural Organization (UNESCO) World Biosphere Reserve. This designation recognizes the Niagara Escarpment and the land in its vicinity as a nationally and internationally significant landform that includes scientifically valuable examples of sustainable relationships between human activities and ecosystems.

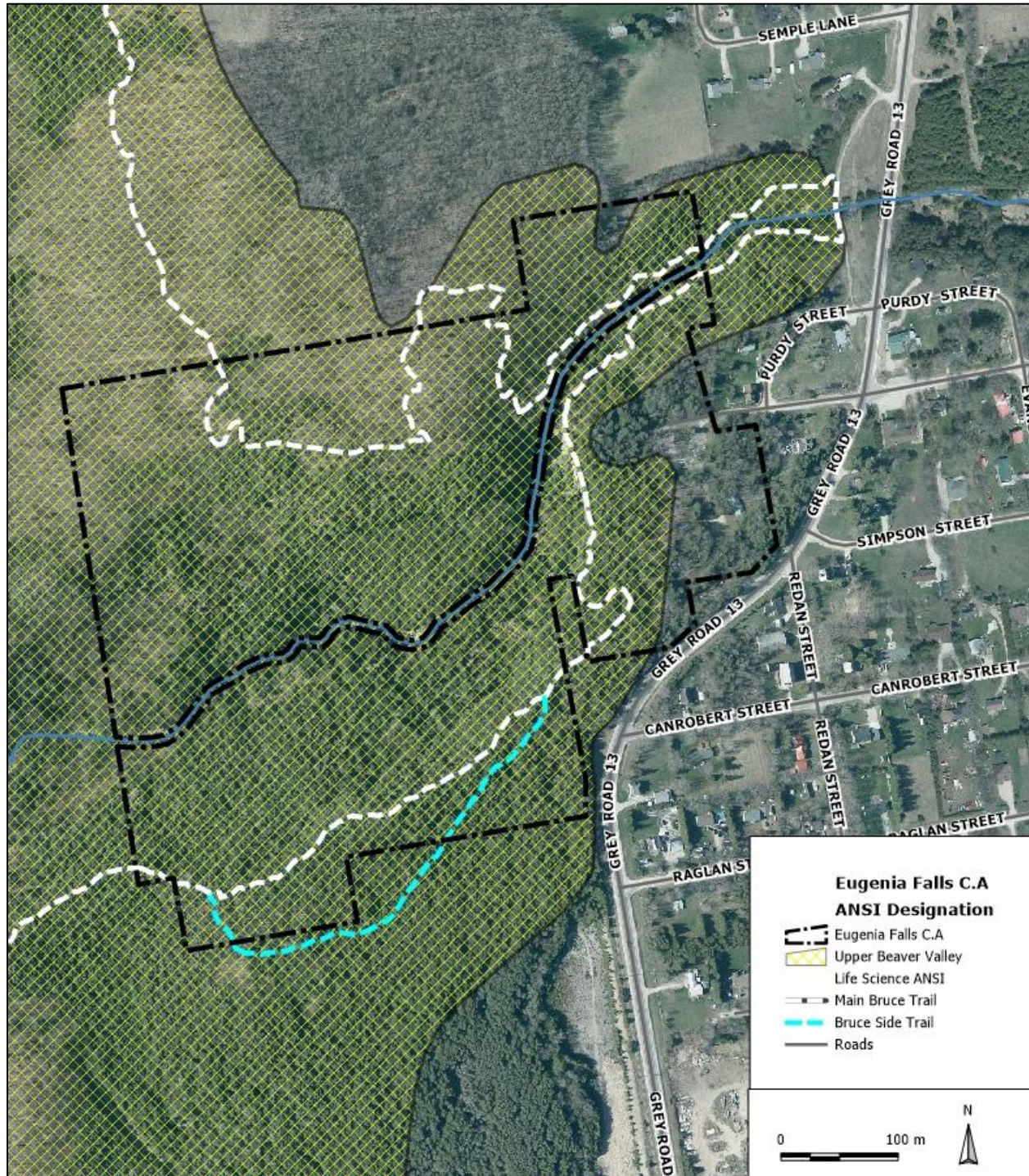
The EFCA lies within the jurisdiction of the Niagara Escarpment Commission (NEC) and is designated under the Niagara Escarpment Plan (NEP) as Escarpment Natural Area, as shown in Map 2.

The Escarpment Natural Areas contains escarpment features that are in a relatively natural state as well as its associated valleys, wetlands and woodlands that are also relatively undisturbed. These areas tend to be the most sensitive and scenic natural resources and the policies aim to protect and enhance these natural areas.



Map 3. NEP Designations within EFCA

As shown below in Map 3, 21.44 hectares (53 acres) are a Provincially Significant Life Science ANSI (Area of Natural and Scientific Interest) for the Upper Beaver Valley. This designation is applied to contiguous geographical regions within Ontario that have geological or ecological features which are significantly representative provincially, regionally, or locally.



Map 4. Life Science ANSI Designation within EFCA

5.2 Site Physiography and Soils

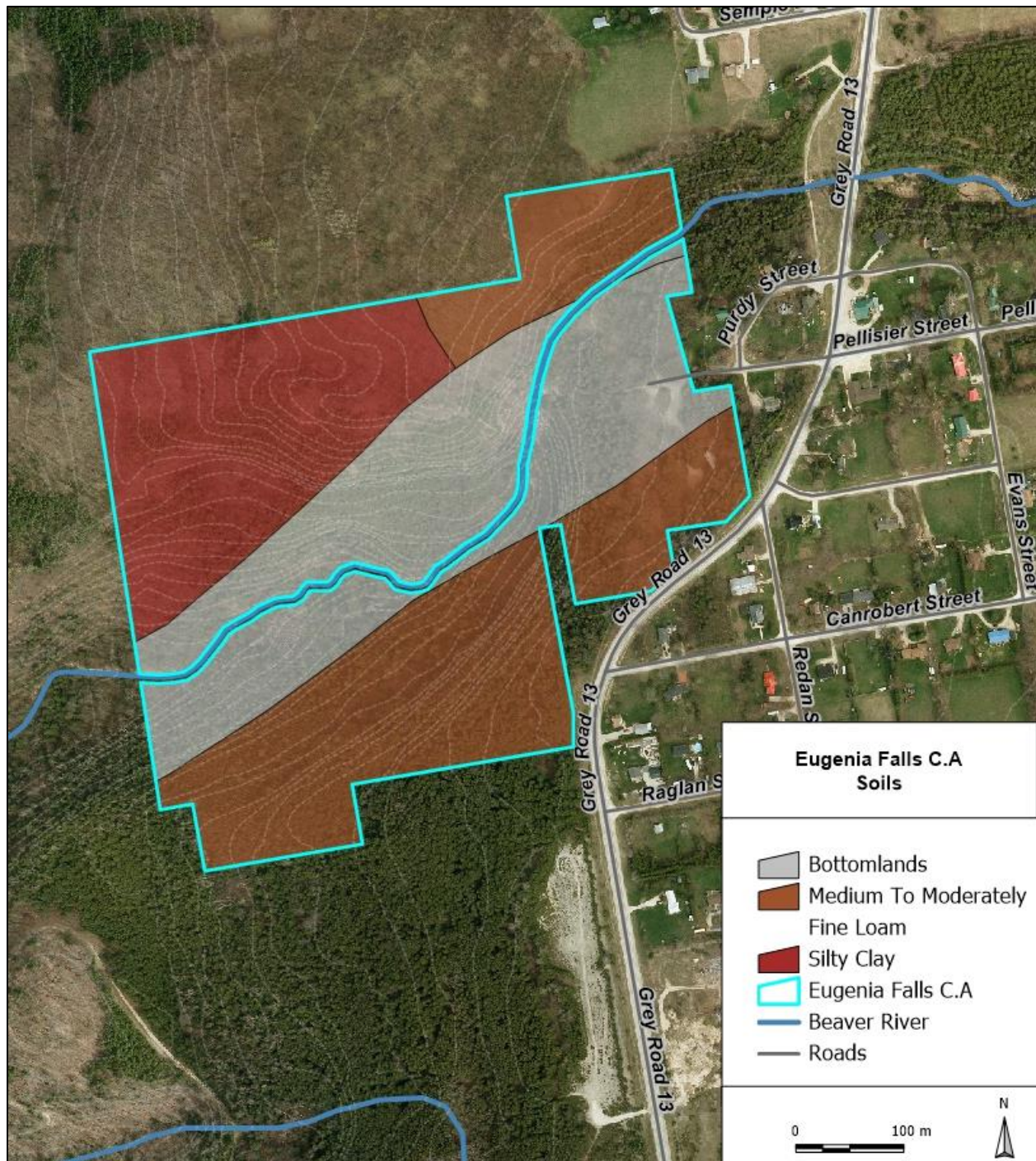
The bedrock exposed along the Niagara Escarpment and underlying this conservation area is of sedimentary origin, having been deposited in epicontinental seas during the Silurian and Ordovician Periods more than 400 million years ago. These formations are well stratified dolomites, limestones, sandstones and shales some of which contain fossilized saltwater corals, reminders of the ancient marine environment which once covered this area (Tovell, 1992).

The caprock of the Niagara Escarpment visible at Eugenia Falls is harder dolomites of the Amabel formation which overlie the softer fossiliferous dolomite of the Fossil Hill formation. Underneath is the Cabot Head formation, which contains red, green and bluish-grey shale with thin beds of limestone. The Cabot Head formation contained of sandstones, siltstones and shales, have a microscopic texture size which creates an impermeable layer (clast). The clast limits filtration of ground water and causes water to flow horizontally, leading to a number of springs along the base of the falls. (Interpretive Strategy Report for Eugenia Falls, 1992), (Ministry of Natural Resources, Ecological Survey of the Niagara Escarpment Biosphere Reserve, Volume 1 - Significant Natural Areas. 1996).

Eugenia Falls is a characteristic example of the erosional process called sapping. This process occurs when water erodes softer underlying shales causing the harder caprock to become undercut and therefore break off. At Eugenia, the valley floor is covered with the Amabel and Fossil Hill dolostones. This debris is known as talus. This sapping process has slowed due to the decreased water flow for the upstream hydro dam at Lake Eugenia (Tovell, 1992).

The most recent glacial period (Wisconsin) which lasted for about 40,000 years and ended 10,000 years ago also had a tremendous influence on the physical features of this property. Glacial ice scoured the landscape exposing large areas of dolostone bedrock, particularly above the escarpment, while at the same time depositing massive quantities of granular material both above and below the escarpment. Large dolostone boulders called erratics were dragged by the glacier from the escarpment edge and dropped in the till above the escarpment. The soils and steep riverbanks that presently exist on the site are largely the result of glacial and the subsequent post-glacial activity (Tovell, 1992).

Soils are another complex element of this site. The nature of underlying bedrock, the impact of glacial and post-glacial activities, erosion and the influence of topography are the prime factors in the formation of the soil types found on the site. The soils above the escarpment are part of the Gibraltar Moraine which consists of irregular hills formed from an accumulation of drift deposits known as the Osprey and Pike Lake limestone tills with numerous erratics. Soil texture of the site is shown in Map 4 (Physiography of Southern Ontario, MNMD, OGS, 1984), (Interpretive Strategy Report for Eugenia Falls, 1992).



Map 5. Soil texture at EFCA

5.3 The Beaver River

The Beaver River system is the major surface drainage system running through the conservation area. The focal point of the property is the 30-meter waterfall where the river drops cleanly over the face of the Niagara Escarpment. The Beaver River is a major river in this area at 80.07 km in length with a drainage area of 623.22 square km. Mill Creek and the Boyne River

are major tributaries.

The headwaters of the Beaver River are in Rob Roy, flowing west through Feversham and making its way to Lake Eugenia. The upper reaches of the Beaver River have excellent riparian cover and natural land use, providing cold waters to support Brook Trout.

Once the Beaver River enters Lake Eugenia, it is warmed up and part of the flow is warmed even more through the hydro turbines, whereas the remainder flows over Eugenia Falls through the Cuckoo Valley. If the hydroelectric dam was not in place, there would continue to be a torrent of water flowing over the falls at all seasons.

There are seven water quality monitoring sites within this watershed: three along the main branch of the Beaver River, two on the Boyne, one on the Beaver River outlet at the hydro station and one on Mill Creek.

5.4 Site Ecology

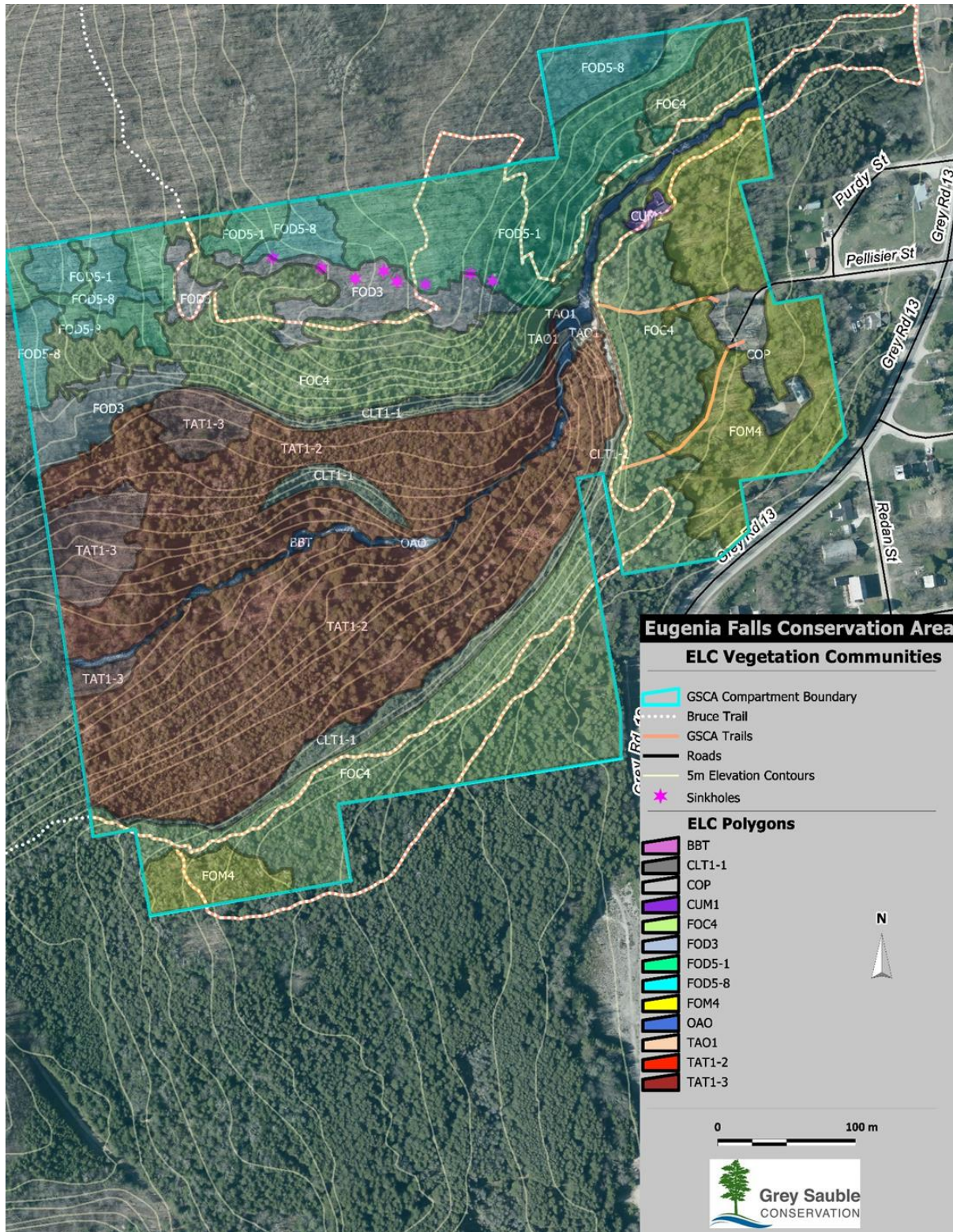
5.4.1 Ecological Lands Classification (ELC)

Ecological Land Classification (ELC) is a system which enables the classification of vegetation systems throughout southern Ontario. ELC is used to identify recurring ecological patterns on the landscape to reduce complex natural variation to a reasonable number of meaningful ecosystem units. It is a useful tool for landscape planning and sustainable management of natural resources. In 2020, ELC polygons were mapped for the EFCA, and confirmation surveys were conducted throughout a large portion of the property. ELC mapping is shown in Map 5 with a description of the codes in Appendix A. The full ELC report, with species lists is included in Appendix B.

Based on the results from the ELC surveys, there are 13 different ELC communities on this property. They generally consist of:

- Treed Cliff, Treed Talus & Open Talus area (CLT, TAT, TAO) – 4 types
- Upland Forests (FOD, FOM, FOC) – 5 types
- Open Aquatic & Treed Beach Bar (OAO, BBT) – 2 types
- Cultural and Built-Up Areas (CUM, COP) – 2 types

The most common vegetation type is Dry - Fresh - White Cedar Carbonate Treed Talus (TAT1-2) at 32% and Fresh - Moist White Cedar Coniferous Forest (FOC4) at 28%. A full list of communities and percent cover is shown in Table 1.



Map 6. ELC Communities at EFCA

Table 1. ELC Communities

ELC Code	ELC Community Name	Description	Total Hectares	% of Total Area
BBT	Beach Bar Treed	<25% tree cover <60%	0.01	0.03
TAO1	Open Talus	Carbonate Open Talus – cover patchy to barren at base of cliff and edge of water.	0.04	0.18
CUM1	Mineral Cultural Meadow	Mineral soil, tree cover <25 %, shrub cover <25 %, area altered by cultural activities	0.05	0.21
COP	Road & Parking Lot	Built up area with pervious ground cover	0.33	1.36
OA0	Open Aquatic	Flowing water in river, and pools	0.39	1.63
TAT1-3	Dry - Fresh - White Birch Carbonate Treed Talus	Cover patchy to continuous, carbonate rock, white birch & other species present, on escarpment slopes.	0.87	3.63
CLT1-1	White Cedar Treed Carbonate Cliff	Carbonate Bedrock, cover varies from patchy to barren to more closed.	0.96	4.00
FOD5-8	Dry - Fresh Sugar Maple - White Ash Deciduous Forest	Sugar Maple, with other hardwoods, moderately dry to fresh.	1.01	4.25
FOD3	Dry - Fresh Poplar - White Birch Deciduous Forest	Trembling Aspen, Largetooth Aspen, White Birch dominant. Moderately dry to fresh, shallow soils over bedrock.	1.11	4.65
FOM4	Dry - Fresh White Cedar - Hardwood Mixed Forest	White Cedar mixed with Aspen, White Birch, Sugar Maple, and White Ash. Typically, a successional forest following a disturbance.	2.33	9.76
FOD5-1	Dry - Fresh Sugar Maple Deciduous Forest	Almost entirely dominated by Sugar Maple, with some other hardwoods, moderately dry to fresh.	2.52	10.53
FOC4	Fresh - Moist White Cedar Coniferous Forest	White cedar dominant, with some white birch, and sugar maple. Moderately well drained.	6.69	27.99
TAT1-2	Dry - Fresh - White Cedar Carbonate Treed Talus	Cover patchy to continuous, carbonate rock, white cedar dominant, on escarpment slopes	7.59	31.76
Total			23.89	100.0

5.4.2 Species at Risk (SAR) and Invasive Species

For the purposes of this report, Species at Risk (SAR) are defined as those designated by Federal and Provincial legislation as being Endangered (END), Threatened (THR), or of Special Concern (SC). Rare species include species designated as provincially rare (S1-S3) by the Natural Heritage Information Centre (NHIC), or locally rare by local Field Naturalists (i.e. Joe Johnson – MNR - Vascular Flora report 1990).

Table 2. SAR Categories

SARO & SARA Categories	Definitions of Categories
Special Concern (SC)	refers to the species living in the wild in Ontario, that may become threatened due to a combination of biological characteristics and identified threats.
Threatened (THR)	refers to the species living in the wild in Ontario but is likely to become endangered if steps are not taken to address factors threatening it.
Endangered (END)	refers to the species still living in the wild in Ontario, but it is facing imminent extirpation or extinction.
Extirpated	refers to the species having lived in the wild in Ontario at one time, but no longer does. However, it does exist somewhere else in the world.
Extinct	refers to a species that no longer exists anywhere on the earth.
Note: SARA has the same categories and descriptions, but it is a Federal Regulation that pertains to all of Canada.	

The most encountered SAR in the Eugenia Falls Conservation Area are Butternut trees (*Juglans cinerea*) and they were observed in the upland hardwoods, (FOD5-1, FOD3, and FOD5-8), as well as in the mixed forest (FOM4) on the east side of the site. This species is listed on SARO and SARA as endangered and is declining due to a disease known as Butternut Canker. Despite having canker on most of the Butternuts observed on this site, they appear to be in fair health.

Two auditory observations of a SAR bird, the Eastern Wood Pewee (*Contopus virens*) were heard within the upland hardwoods (FOD5-1 and FOD5-8). This species is listed as Special Concern on SARO registry, meaning that they are at risk of becoming threatened by a combination of identified threats such as habitat loss, reduction of flying insects, loss of eggs due to increasing predators like blue jays and red squirrels and threats in their wintering habitat in South America. This species has had significant declines in population abundance in recent years.

The Species at Risk that were observed during the field surveys are presented below in Table 3. The Natural Heritage Information Centre (NHIC) database has also reported nearby historical observations of Appalachian Speckleback Lichen (*Punctelia appalachensis*), Wood Thrush (*Hylocichla mustelina*), Peregrine Falcon (*Falco peregrinus*) and Hart's Tongue Fern (*Asplenium scolopendrium*).

Table 3. SAR at Eugenia Falls Conservation Area

Species at Risk located in Eugenia Falls Compartment # 38				
Common Name	Scientific Name	SARO Status	SARA Status	Taxa
Butternut	<i>Juglans cinerea</i>	END	END	Plants

Eastern Wood Pewee	<i>Contopus virens</i>	SC	SC	Birds
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Invasive species refer to any plant, animal, insect or diseases that are not native to the area and have an aggressive growth nature that enables them to outcompete native species for habitat. This can directly affect the populations of wildlife due to impacts on natural food supplies and nesting habitat. As part of the Terrestrial Vegetation / ELC confirmation species surveys that have been conducted in Eugenia Falls Conservation Area, a number of invasive species were tabulated and mapped. Some of these species would have been introduced to the area likely due to the historical uses of the property. Popular introduced garden species like Garlic Mustard (*Alliaria petiolate*), and Goutweed (*Aegopodium podagraria*), have been found within the wooded areas close to the current parking lot.

Some invasive tree pest / diseases were also noted within this site and included Beech Scale Insect (*Cryptococcus fagisuga*), Beech Bark Disease (*Neonectria faginata* & *Neonectria ditissima*), and Butternut Canker (*Sirococcus clavigignenti-juglandacearum*). These tree diseases are caused by various fungi and the spores can travel via insects, wind, and rain which makes control of these diseases extremely difficult. Emerald Ash Borer (EAB) is also common throughout the GSCA watershed and is assumed to be present at EFCA.

Species that bear fruit i.e., Common Buckthorn, Oriental Bittersweet are able to spread by the feeding activities of wildlife, whereas seed bearing species i.e., Wild Chervil and Garlic Mustard can be spread by the seeds clinging to the legs of wildlife and people that walk through the existing patches. People that venture off the trails are more likely to spread these invasive species.

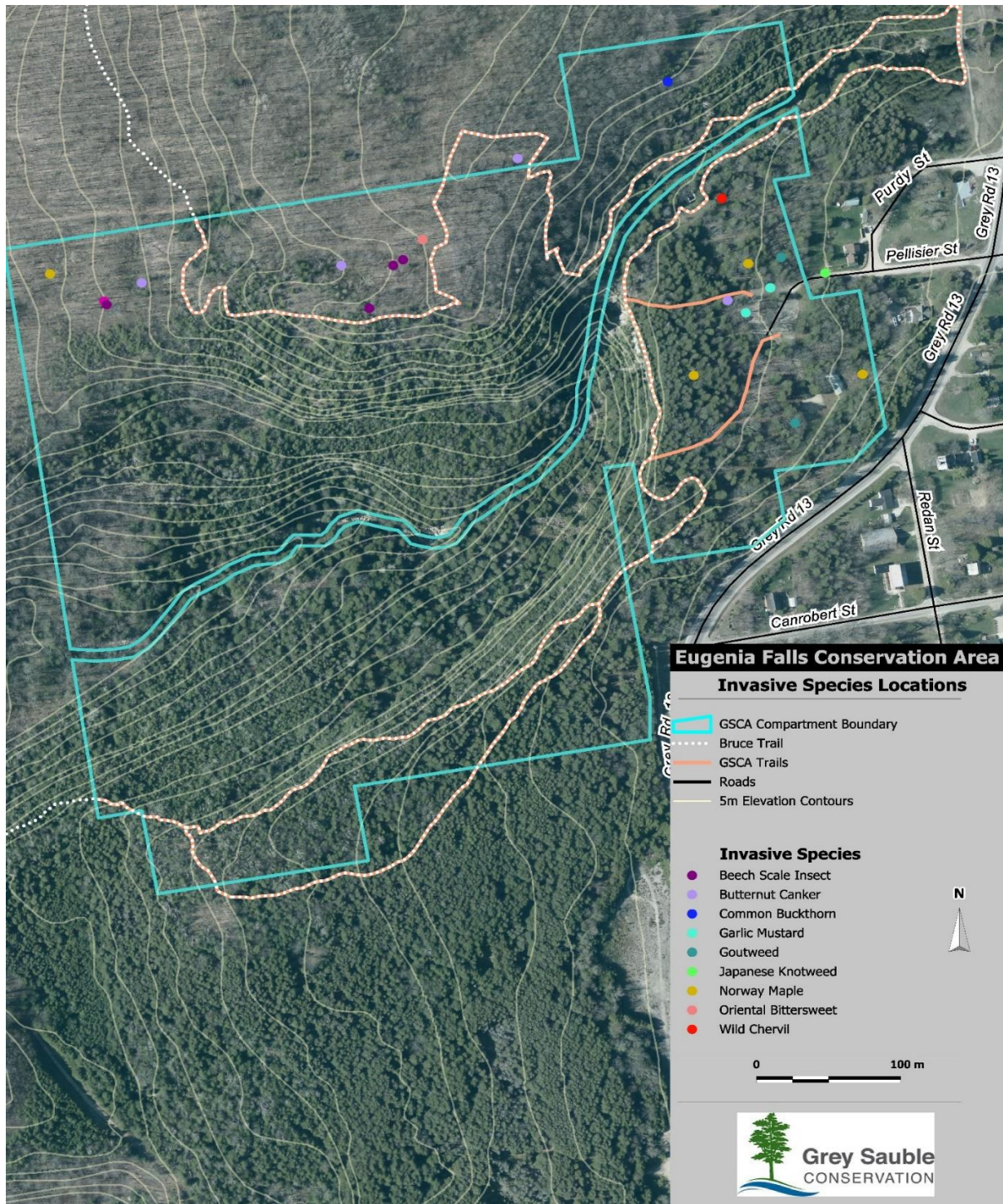
The Invasive Species observed during the field surveys are presented below in Table 4:

Table 4. Invasive Species at Eugenia Falls Conservation Authority

Invasive Species located in Eugenia Falls Compartment # 38				
Common Name	Scientific Name	Taxa	Number of Occurrences	Average Pop Radius (m)
Beech Bark Disease	<i>Nectria coccinea var, faginata</i>	Fungi	1 clump of 20 trees	20
Beech Scale Insect	<i>Cryptococcus fagisuga</i>	Insect	4	5
Butternut Canker	<i>Sirococcus clavigignenti-juglandacearum</i>	Fungi	4	1
Common Buckthorn	<i>Rhamnus cathartica</i>	Plants	1	1
Emerald Ash Borer	<i>Agrilus planipennis</i>	Insect	Throughout	N/A
Garlic Mustard	<i>Alliaria petiolate</i>	Plants	2	1
Goutweed	<i>Aegopodium podagraria</i>	Plants	2	3
Japanese Knotweed	<i>Fallopia japonica</i>	Plants	1	5
Norway Maple	<i>Acer platanoides</i>	Plants	4	3
Oriental Bittersweet	<i>Celastrus orbiculatus</i>	Plants	1 clump of 15	5

			vines	
Wild Chervil	<i>Anthriscus sylvestris</i>	Plants	1	3

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Map 7. Invasive Species Locations

5.5 Partnerships

The Bruce Trail Conservancy is a major partner, as the main Bruce Trail and many side trails run through GSCA properties throughout the watershed. At Eugenia Falls Conservation Area, there is the main Bruce Trail and Eugenia Falls Side Trail. The Bruce Trail Conservancy – Beaver Valley Club is responsible for maintaining and inspecting these trails. This is a mutually beneficial relationship with positive collaboration on many initiatives including grants, educational offerings, stewardship and capital projects.

The Grey Highlands Peace Committee has strong ties to the cenotaph, hosting the annual ceremony, monitoring the cenotaph, and maintaining the gardens around the immediate area.

GSCA has a very positive relationship with Ontario Power Generation (OPG) in general, through work largely in the Planning and Permits, and Water Resources Departments at the Authority. However, there are times that EFCA is directly impacted due to dam operations upstream. OPG frequently communicates planned maintenance and schedules water releases, and GSCA staff plan to be onsite to ensure the safety of visitors during those times. Also, through the management planning process, both parties have been in discussion about possible land transfers.

The additional chain link fencing added on the upstream side of the waterfall in 2019 was completed with financial contributions from OPG, BTC and the Municipality of Grey Highlands.

6.0 Site History

GSCA staff conducted tertiary research to try and understand more about the pre-Contact history of the site. This history is not well documented, and there are no archeological sites currently noted on the property according to the Ministry of Heritage, Sport, Tourism and Culture. Information included in this report is not site specific.

6.1 Indigenous History

Although there are few records of culture and peoples in the Paleo and Archaic Periods, life along the Great Lakes region is documented as being nomadic, due to the lifestyle that comes with hunting and gathering (Gagné, 2015). Semi-permanent settlements along rivers and bodies of water began to become more frequent and grew as the climate and environment shifted towards what the Europeans would find when they arrived in North America thousands of years later. As technology improved and the climate continued to become more hospitable and led to a slow transition towards the development of the primarily agricultural societies that arose in the Woodland period (Gagné, 2015).

The Woodland Period saw a change in tools, including the bow and arrow and development of pottery. Maize was introduced to Southern Ontario during this period, further promoting the shift from subsistence hunting and gathering to a more stationary agricultural way of living. This shift allowed for a massive population expansion and the development of permanent villages that consisted of large long houses (Gagné, 2015).

The most prominent group in the region surrounding Eugenia Falls throughout the mid-late Woodland Period was the Petun. The Petun lived in a similar fashion to the larger nation to their north, the Huron. The two communities separated from each other during the early Woodland period yet maintained close cultural, economic, and interpersonal ties between them. Both communities were primarily agricultural, with produce such as squash, corn, beans, and

pumpkin making up roughly three quarters of their diet (McMillian & Yellowhorn, 2004). Hunting and fishing supplemented the agricultural heavy diet, with proximity to the fishing bounty of Lake Huron and Georgian Bay whitefish, trout and sturgeon were the primary fish harvested (McMillian & Yellowhorn, 2004). Fishing was conducted primarily by netting off the Fishing Islands in Georgian Bay and Lake Huron proper.

With the arrival of European settlers in the 1600's, local Indigenous populations were met with many challenges, including disease, conflict (from Europeans as well as other First Nations) and a series of land claims made by the Government beginning in the 1800's (McMullen, 1997). The Saugeen Ojibway Nation reserve lands today are comprised of the villages of Saugeen First Nation near Saugeen Shores, Neyaashiinigmiing at Cape Croker, and the hunting grounds north on the peninsula near Tobermory.

6.2 Settler History

It is believed that Samuel de Champlain came to the shores of Georgian Bay westward in the early 1600's and reached the mouth of the Beaver River, which was named due to the large beaver population in that area (Hubbert, 1986). It is unclear which non-Indigenous person was the first to see the falls. However, in 1853 Sandy Brownlee, who lived in Markdale area, and a friend were out hunting when they came down to the valley and heard the roar. They followed the Beaver River until they found the falls, which in those days was a gushing torrent (Hubbert, 1986). They were wide eyed and announced there was "gold at the falls". Word travelled fast even in those days, as soon enough, men from around the area of Owen Sound, Collingwood and Durham had made their way. Steps were cut down the east side of the gorge which they used to carry up bags of metal. One man became doubtful, and a sample was sent to York, where the results came back as calco-pyrite. Although the gold rush was over, it opened up this part of Grey County to further development (Hubbert, 1986).

Shortly after the Fool's Gold Rush, Charles Rankin and William Gilliland were hired to survey Artemesia Township and believed there was great potential for a townsite above the falls. A French veteran of the Crimean War was a member of the detachment, he made a case for the falls to be named after Empress Eugenie, wife of Napoleon III, of France. After a slight misspelling, the falls were dubbed Eugenia Falls, in honour of the French Empress (Davidson, 1972).

As the population of Artemesia Township grew so did the need for improved infrastructure. In 1859 a sawmill was installed by the Purdy brothers, Robert, and David, with a flour mill added in 1860. By 1880 there were a total of four mills operating on Eugenia Falls, with the two newest being a hoop and veneer mill and a sash and door factory that was run by Walker Sloan. Eugenia House was also built around this time by Peter Munshaw, serving as lodgings for tourists (Davidson, 1972). No alterations had yet been made to the flow of the Beaver River, which allowed for the successful operation of the mills. The flow of the Beaver River was altered at Eugenia for the first time with the arrival of William Hogg who, by 1895, installed the first hydroelectric station above the falls (Figure 1). This small hydroelectric plant provided enough power to run a chopping mill and provide light to the towns of Eugenia and Flesherton (Hubbert, 1986).



Figure 1. William Hogg's 1895 Power Station

Despite the success of this first generating station Hogg was unable to convince investors that the Beaver River could support a greater level of hydroelectric power generation, largely in part to the ongoing construction of the Niagara Electric Plant at Niagara Falls. Despite the potential of Eugenia Falls it could not compete with the scale of Niagara Falls for the demands of the rapidly growing City of Toronto, thus Hogg would not live to see a larger power generation effort in Eugenia as he passed away in early 1905. The land was in ownership of William's sons, J.R Hogg and Albert Orr Hogg in 1902 (Pearn, 2015). The Hogg brothers and Fred Deagle continued efforts to expand local electricity from 1902 and 1907 under the company names "The Eugenia Electric Light and Power Company" and "The Eugenia Falls Water Power and Electric Company". Businessmen from Toronto had formed the Georgian Bay Power Company, which later purchased the Eugenia Falls Electric Light and Power Company. Hugh L. Cooper was hired to perform the assessments of the site with the intent of installing additional generating stations. Despite Eugenia Falls representing an excellent site for power generation, due to the height of the falls and the rate of flow over them, Cooper assessed the falls as a less than favourable site for power generation (Hubbert, 1986).

Based on Cooper's assessment the engineers determined that to create a sufficient power from the falls a tunnel would need to be installed, through which the river would be diverted to spin a turbine within. Work on the tunnels commenced in February 1906, and after battling quicksand and cold weather the construction on the tunnel was completed in March 1907, reaching 264 meters in length, 2.7 meters high, 2.6 meters in width (Pearn, 2015). In 1912 The Georgian Bay Power Company was sold to the Hydro Electric Power Commission of Ontario (Hubbert, 1986; Pearn, 2015). Bond holders received 30 cents on the dollar of the money they had invested, only \$140,000 were sold. An additional \$125,000 was needed to finish the project, so when funding ran out the construction stopped (Pearn, 2015).

As it was unused the tunnel was manually collapsed for safety and today the stone arches at the ends of the tunnel are all that remain of the project (Figures 2 & 3). In 1913 Adam Beck and

the Hydro Electric Power Commission of Ontario began negotiating with farmers in Eugenia for their land, with the goal of damming the Beaver River above the falls to create Lake Eugenia as a reservoir for power generation. The Hydro Electric Power Commission negotiated the purchase of ~1,900 acres of land to be flooded, this area was mostly farmland with some wooded areas. Farmers were able to disassemble their homesteads and move or sell the materials before the flooding commenced (Hubbert, 1986).



Figure 2. Historic view of the tunnel system



Figure 3. The tunnel arch in modern day

The dam site on Lake Eugenia was acquired in 1914 by the commission and construction began on two dams the same year, the first being hollow concrete and the second being of mud construction. The Hydro Commission recognized the true potential of the falls, with a drop of 150 meters between Lake Eugenia and the valley, Eugenia Falls had the largest hydraulic head

of all hydraulic stations east of the Rocky Mountains and at the time could produce 4500kW of power. Construction was finished in 1915 with the completion of the two dams, a flume line, surge tank, penstocks, and the powerhouse (Pearn, 2013). An article from Nov. 25, 1915, in the Flesherton Advance provides the following statistics of the project at the time of its completion:

“Head – 540 feet

Present total capacity of plant – 4000 horsepower; ultimate capacity 8000 horsepower.

Dam erected – 1 concrete & earth fill; concrete dam, one of the longest in Canada, maximim height of 50 feet.

Size of storage basin – 1700 acres.

Length of pipe line – wood stave, 3500 feet; steel 1500 feet.

Length of line 138 miles.

One thousand horsepower was used in the first evening. The voltage is 22,000 and is stepped down for use to 110 volts.” (Pearn, 2013)

The gates of the dam shut officially on November 8, 1915, initiating the flooding that would eventually form Lake Eugenia, covering roughly 1,700 acres of land with water (Hubbert, 1986). The implementation of the hydroelectric dam and subsequently the creation of Lake Eugenia, reduced the flow of water over the falls to a fraction of what it was, allowing for views of the exposed bedrock formations.

Following the completion of the dam, the grounds around the old hydroelectric mill at the falls were converted into a park with the installation of a pavilion, bleachers, a cooking house, and picnic tables for public use (Figure 4). The park was taken over in 1967 by the North Grey Region Conservation Authority with a reopening ceremony being held on July 16, 1967, with over 500 people attending (Hubbert, 1986).



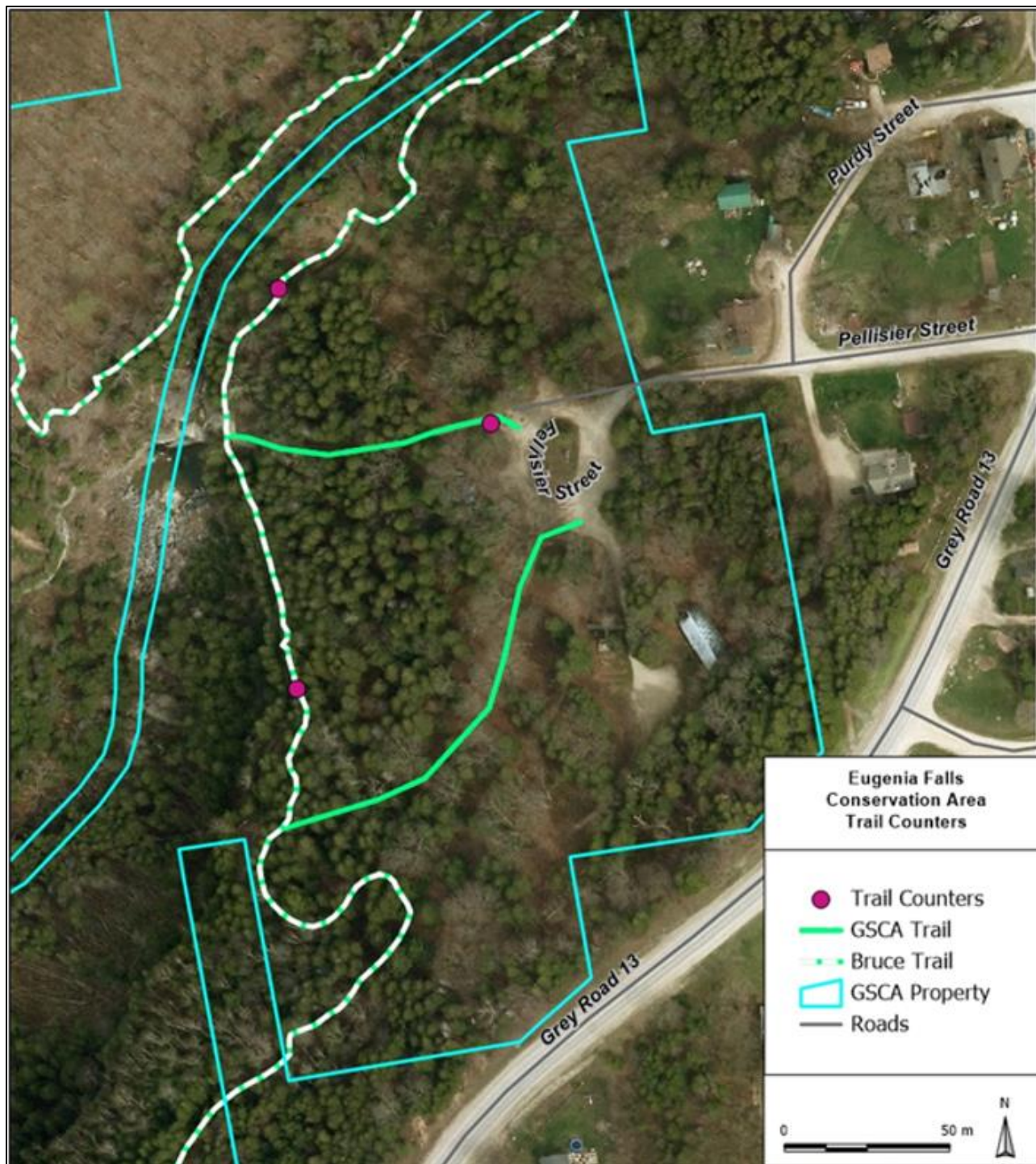
Figure 4. The Hydro Park & Cenotaph (right side of image)

7.0 Site Analysis: Visitor Numbers, Engagement and Feedback

Eugenia Falls Conservation Area is a special property nestled in the village of Eugenia and part of the spectacular Beaver Valley. The main draw to the property is the 30-metre-high waterfall, where most visitors do a quick stop in on their way to other destinations. This property is a huge draw for history and nature enthusiasts. Although the trails around the falls are short and relatively easy, the main Bruce Trail runs along both Escarpment edges, providing a more challenging hike for visitors.

7.1 Visitor Numbers

In 2021, trail counters were installed throughout the property (Map 7). It is very difficult to place counters at Eugenia Falls given the various number of routes that lead to the falls from the parking lot. However, the raw data collected from the counters is shown in Figure 5 for interpretation. Having an estimate of the number of visitors and the routes they take is helpful for GSCA staff to make operational decisions. This data provides an estimate of 36,616 visitors to Eugenia Falls in 2021, however this number is likely underestimated.



Map 8. Trail Counter Locations at EFCA

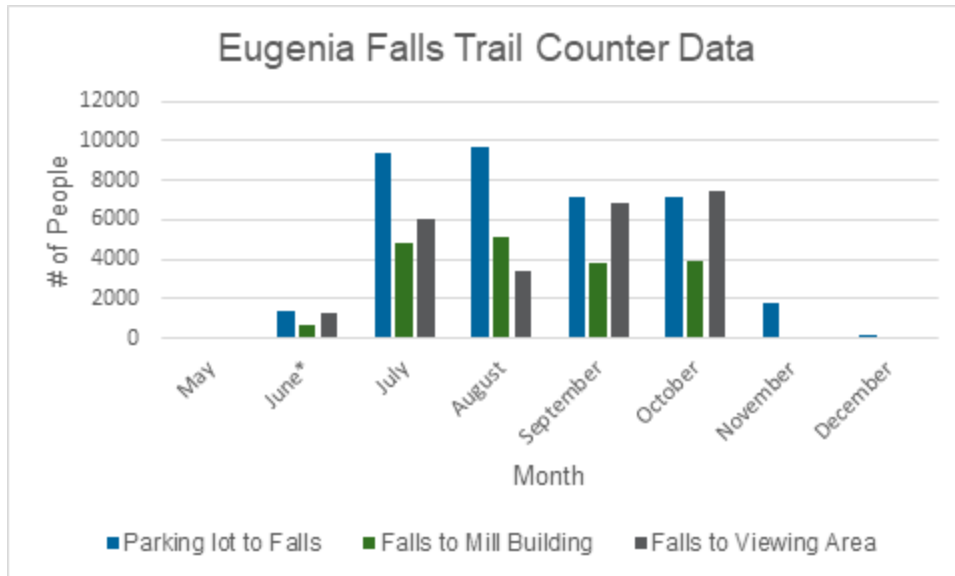


Figure 5. Trail Counter Results from EFCA, 2021

7.2 Public Open House and Draft Plan Feedback

A public open house for the Eugenia Falls Management Plan was held in person at the Flesherton Kinplex on November 15, 2022. Thirty people attended the event.

7.3 Survey Results and Stakeholder Feedback

7.3.1 Public survey results

The most popular month to visit Eugenia Falls was July and 92% of survey participants had visited Eugenia Falls before. Of the survey respondents, 50% were from the local community, 17% heard about Eugenia Falls from their stay at local accommodations and 9% from the Grey County waterfall guide. Other ways of hearing were social media, Bruce Trail, the rock-climbing community, friends or family, the GSCA website or road signs.

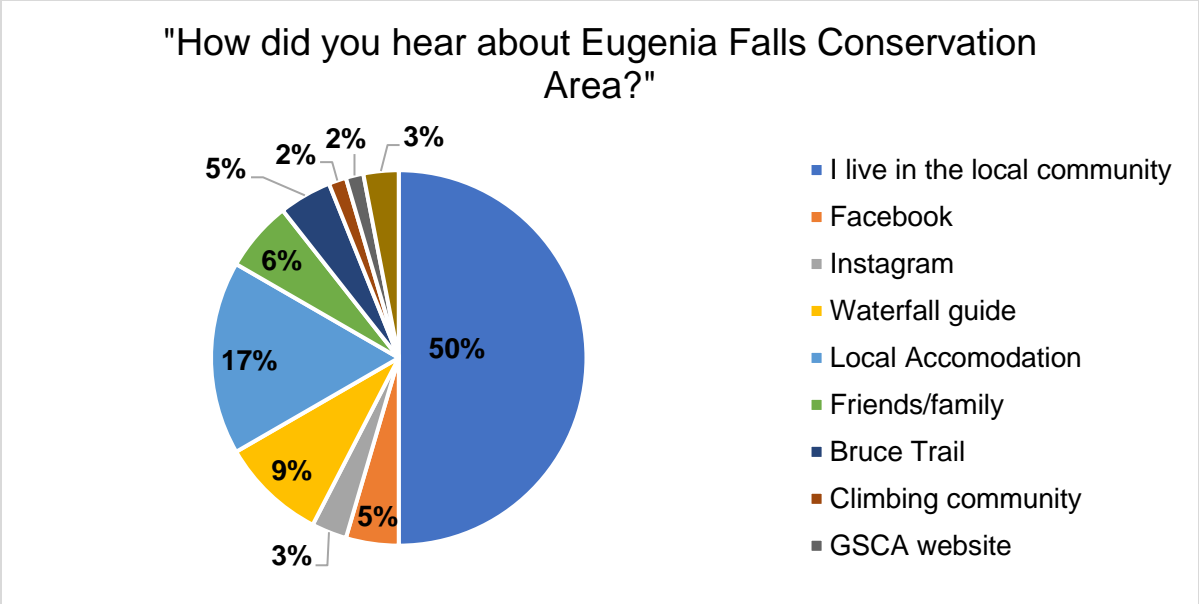


Figure 6. How Respondents heard about EFCA

Participants were also asked about the current state of the conservation area on a scale of 1-5 with 1 being “poor” and 5 being “excellent”. The state of the conservation area and quality of trails were rated good or excellent by 56% and 60% of respondents, respectively. 60% of respondents rated the quality of signage as good or acceptable. When asked about the availability of parking, the three top choices were good, acceptable and excellent at 29%, 27% and 26%. The majority of votes for the cost of parking was acceptable/ok.

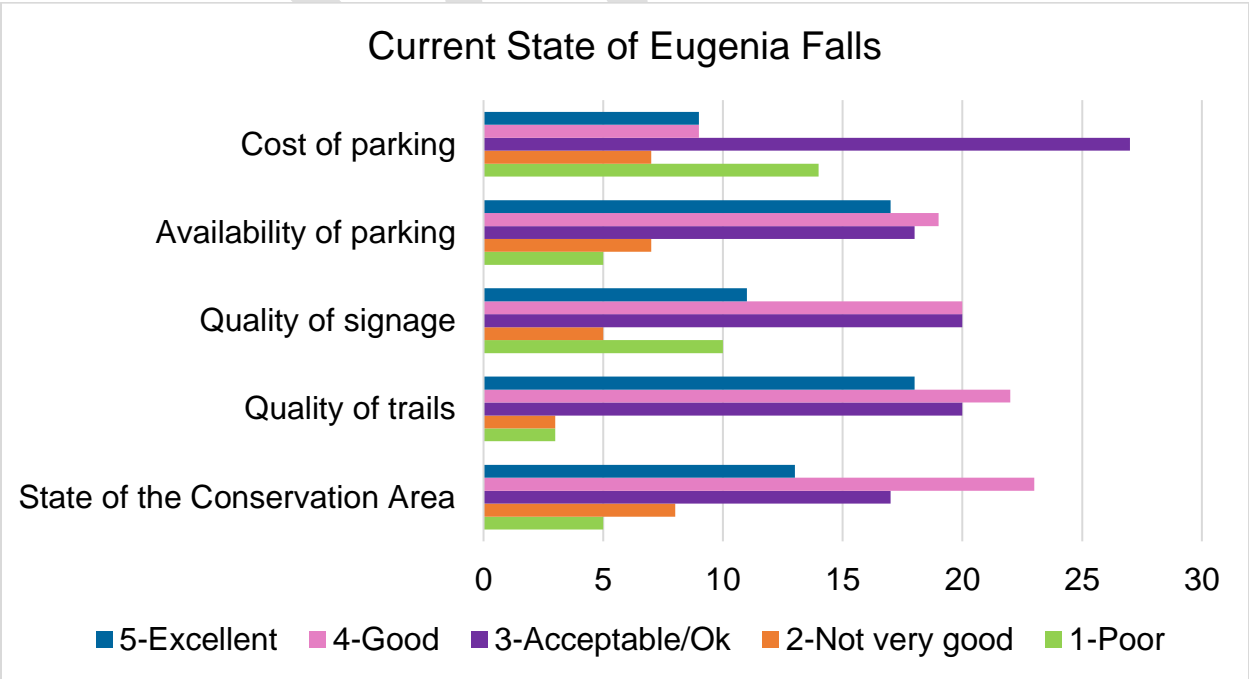


Figure 7. Current State of EFCA

Respondents were also asked about which amenities are important to them (Figure 8). It appears that survey participants are very polarized on whether or not there should be staff present, as the top responses for access to friendly staff was “very unimportant” and “very important”. Clear information about rules and safety, visitor guides, interpretive signage and clean washrooms all scored as having high importance. There were mixed reviews over sheltered picnic areas, benches, accessibility and well-maintained roads/parking areas. Weekend programming was deemed “very unimportant”.

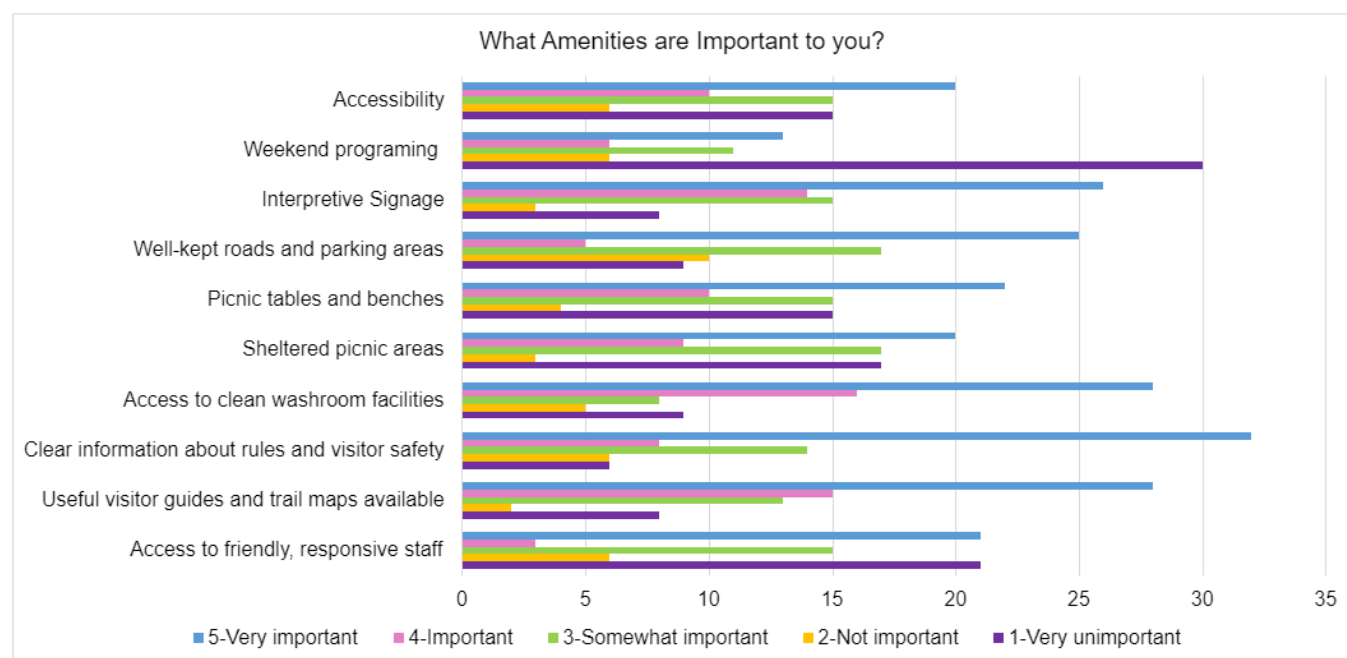


Figure 8. Amenities at EFCA

The number one reason survey participants were visiting Eugenia Falls was to see the falls, followed by using the trail system for recreation and enjoying nature and scenery. The top two activities selected were hiking/walking/running and photography. When asked what other activities should be added, additional viewing platform, self-guided interpretive hikes and an accessible trail network were the top three answers.

Table 5. Reason for Visiting EFCA

Reason for visit	# of Responses
See the waterfall	39
Enjoy nature	34
Trail system for recreation	34
Spend time with family/friends	25
Rest and relax	18
Photography	16
Walk the dog	9
Learn about native plants and animals	4

Summer Day Camp	2
Remembrance Day Cenotaph	1
Bruce Trail End to End	1

Table 6. Typical Activity Participated in at EFCA

Activities participated in	# of Responses
Hiking/walking	60
Photography	28
Dog walking	14
Picnicking	12
Fishing	6
Snowshoeing	7
Community events	4
Cross country skiing	2
Snowmobiling	2
Mountain Biking	1
Running	1
Horseback Riding	1

Table 7. Activities/Amenities that should be Added to EFCA

Activities/Amenities that should be added	# of Responses
Additional viewing platform	25
Self-guided hikes	21
Accessible trail network	20
More trails	18
Wetland boardwalk	15
Workshops or guided hikes	10
Geocaching	9
Food service	8
Mountain/fat biking	6
Wedding/event facilities	5
Horseback riding	2
formalize trail to the bottom	3
Rock climbing	1
Picnics at the park like decades ago	1
Zipline	1
ATV Access	1
New entrance off Grey Rd 13	1
Leave it natural	1
It's perfect how it is	1

Written responses were also submitted from neighbours, partners and stakeholders. These results are summarized as a SWOT (Strength, Weakness, Opportunity, Threat) by common themes below.

Table 8. SWOT Analysis

Themes	SWOT	# of Mentions
Rock Climbing	O	3
Improved viewing areas	O	2
Trespassing on private neighbouring property	T	1
Safety of the site	O	3
More signage above the falls on the Bruce Trail	O,T	1
Pathways and bridges that tie into the beauty of the park	O	1
Trail to the bottom of the falls	O,T	3
Preservation – leave things natural	S,O	3
Staff presence	O, S	3
Cycling should be encouraged as a mode of transportation (install bike racks)	O	1
Dogs off leash and not picking up after their pet	W,T	1
Signage	W	1
Zipline through the Cuckoo Valley	O	1
Geocaching	O	1
New entrance/exit system	O	1
Parking fees	W	1
Blocked off areas	W	1
Acknowledgement of Indigenous Peoples	W, O	1
Horse riding	O	1
Open during the winter	O	1
Bridge across the river	W, O	2

7.3.2 “Friends of Eugenia Falls” survey results

The “Friends of Eugenia Falls” is a self-formed group of local residents and is not affiliated with GSCA. After several meetings, and with GSCA endorsement, this group solicited their own community feedback through a focused survey. The survey was open for four weeks and resulted in 339 responses. 51% of these responses provided their postal code, in which 92% indicated they live in Grey County. The main take away from this survey is that 85% of people want year-round access to EFCA, including the Bruce Trail. Interpretive signage focused on

ecology and pre and post contact history was supported by 80% of respondents. Re-building the power plant ruins and tunnels was considered important by 40% whereas 83% of people favoured letting them naturally degrade over time.

Washrooms were viewed as an important amenity; however portable washrooms were deemed acceptable rather than plumbed washrooms.

Most respondents prioritized the following issues, giving them a ranking of three or more out of five:

- Limited trimming of trees to enhance the view of the falls
- Modifying the stone walls to allow for drainage and reducing freeze up
- Making minor trail changes
- Ensuring year-round access to the cenotaph

The following priorities were not widely supported by the majority of respondents, receiving less than a ranking of three out of five:

- Paving the trails
- Removing trees to improve the view
- Creating a larger viewing platform
- Preserving and renovating the picnic pavilion
- Building new 'picnic pods'
- Redesigning and expanding the parking area

GSCA appreciates the leadership from the Friends of Eugenia Falls to garner more feedback from the community that will help guide this plan, and hopefully assist with implementation of future projects.

8.0 Management Classification and Zones

Property classification and zoning ensures that development and recreational activities are focused at properties and in areas that are most suited for a particular use.

8.1 Classification

Parks and open spaces in NEPOSS are assigned a classification based on the predominant characteristics of the property which provides planning and management direction. There are six classification types: Nature Reserve, Natural Environment, Recreation, Cultural Heritage, Escarpment Access and Resource Management Areas. Eugenia Falls Conservation Area is classed as Natural Environment.

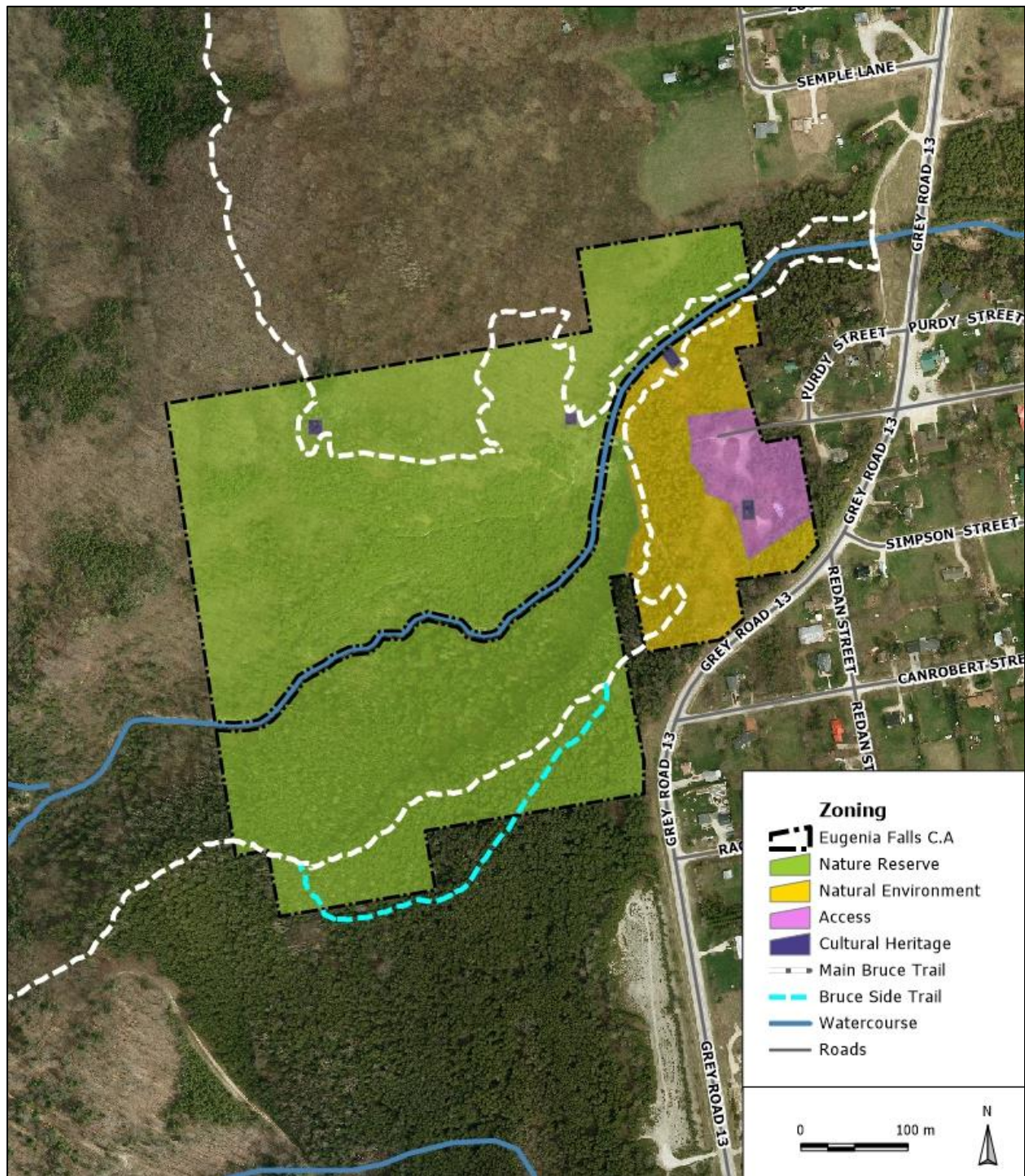
Natural Environment class parks are lands characterized by the variety and combination of outstanding natural heritage features, cultural heritage features and a breath-taking landscape. Natural Environment lands provide opportunities for the protection of these important features. Development in these areas provides the facilities and amenities required to support day use activities. Development will occur in appropriate zones within the property and be conducted in an environmentally sustainable manner. As a Natural Environment class conservation area, EFCA plays an important role in connecting people with cultural heritage and nature and allows visitors to engage in a variety of activities and develop a deep sense of appreciation for our natural spaces.

8.2 Zoning

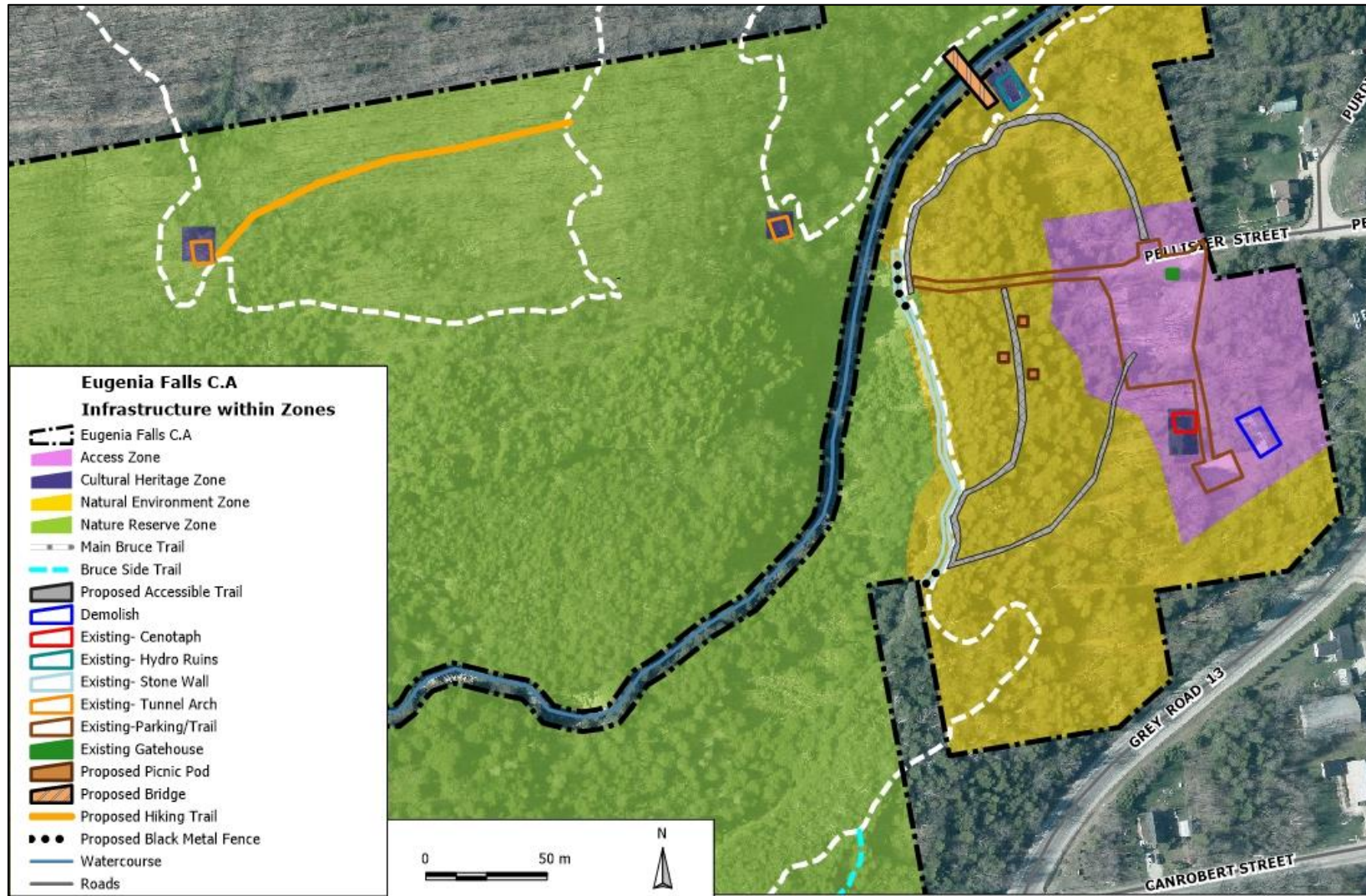
Zoning focuses on development programming and restoration activities in appropriate areas. Each zone represents an area that has distinct management needs based on the existing natural heritage features, existing cultural heritage features, visitor needs and access, suitability for sustainable development and opportunities for recreation. These zones are determined by the Ministry of Natural Resources as per the NEP and include Nature Reserve, Natural Environment, Cultural Heritage, Development, Access, and Resource Management. This plan proposes EFCA be broken up into four of the six zones, as shown in Table 9 and Map 8.

Table 9. EFCA Zones

Zone Type	Total Size Hectares (%)	Function	Summary of Permitted Uses
Nature Reserve	19.31 (83%)	Includes the most sensitive natural heritage features and areas that require careful management to ensure long-term protection.	Management activities may include protection and restoration-based activities. Visitor uses are limited or restricted. Development is generally restricted to trails, necessary signs, interpretive facilities (where warranted), temporary research facilities and conservation practices.
Natural Environment	2.88 (12.4%)	Functions as a buffer between Development or Cultural Heritage Zones and Nature Reserve Zones. These include scenic landscapes.	A minimum level of development is permitted to support low- to moderate-intensity recreational activities. This includes trails, necessary signs and minimal interpretive facilities.
Cultural Heritage	0.08 (0.3%)	Cultural Zones include significant archaeological or cultural heritage features or areas that require management that will ensure long-term conservation.	Management activities may include the protection, restoration, and interpretation of the hydro plant building, cenotaph and tunnel archways.
Access	0.97 (4.2%)	Areas designated to provide access, orientation, recreational or operational facilities (e.g., trailheads, visitor washrooms, parking lots. Etc.)	At EFCA, this is limited to driveways and parking areas, as well as the portable washroom facilities.



Map 9. Management Zones at EFCA



Map 10. Eugenia Falls C.A Infrastructure

9.0 Development Concepts

The plan directions describe the specific projects, such as a piece of capital infrastructure, programming or decisions or policy approaches that together will achieve the vision, commitments, and objectives for Eugenia Falls Conservation Area. Map 9 in the previous section indicates where existing and proposed infrastructure are located, which are discussed throughout this section. The development of the directions was guided by past documents, ecological inventories, the zoning framework and the broader objectives of GSCA, the NEPOSS and regional partners, and informed through public, stakeholder, partner and agency consultation.

Based on this input, there are five proposed Action Areas:

1. Conserve and Protect
2. Update Infrastructure
3. Improve the Visitor Experience
4. Enhance and Celebrate Cultural Heritage
5. Operations/Risk Management

9.1 Action 1: Conserve and Protect

As mentioned in Section 5.1, there are many sensitive features of Eugenia Falls Conservation Area that need to be protected. The main threats to these features and surrounding ecology are increasing visitor use and invasive species.

Table 11 indicates the various deliverables and timelines within this Action. Goal A within Action 1 is to address the invasive species issue at the property through inventory, controlling where possible and monitoring future threats. In 2022, GSCA developed an internal Invasive Species Strategy to help target efforts with minimal capacity and funding which is attached in Appendix C. Of the invasive species listed in section 5.4.2, Common Buckthorn, Wild Chervil and Garlic Mustard are the most concerning.

It is not feasible to manage all invasive species. Species will be prioritized for control following the prioritization outlined in GSCA's Invasive Species Strategy, which is summarized in Table 10 below. Based on the priority level species indicated from Table 10 and the species identified in Section 5.4.2, Map 8, initial control efforts will solely focus on Wild Chervil, given that there is not presently Wild Parsnip, Giant Hogweed or Phragmites on the site. Should staffing and funding change in the future, more species will be added for control.

Table 10. Invasive Species Strategy species priority level from the GSCA Invasive Species Strategy (Appendix C)

Priority Level	Management Trigger	Example	Action
Top priority	- Species known to cause bodily harm - Species listed on Ontario Noxious Weeds List*	- Giant hogweed - Wild parsnip - Wild chervil - Phragmites	- Begin control measures as soon as possible. Close the area, if necessary, and place signs informing the public

	- Species directly affecting GSCA recreational areas		
Medium priority	<ul style="list-style-type: none"> - Species known to reproduce and spread quickly - Small isolated/satellite population - Newly established/detected population - Rapidly expanding population 	<ul style="list-style-type: none"> - Garlic mustard - Dog-strangling vine - Buckthorn - Non-native honeysuckle sp. 	<ul style="list-style-type: none"> - Develop a management plan. - If budget and staffing resources are available, initiate management plan.
Low priority	<ul style="list-style-type: none"> - Species known to spread slowly - Species that do not cause physical harm to visitors - Species with no known control tools/techniques 	- Periwinkle	<ul style="list-style-type: none"> - Monitor population. - If population grows, affects species-at-risk, or poses safety risk initiate control measures.

Currently, through forested areas surrounding the parking lot, there is little understory vegetation as trails meander in all directions. Designated trails will be made to guide visitors by adding trail edging/guides in the form of wood planks (Figure 9) to promote one consistent trail. There are existing areas between the parking lot and escarpment edge that are cedar forest with minimal understory that will be created into designated picnicking areas. Three picnic tables will be placed strategically just off the trail to provide visitors with a space to rest or have a picnic. Approximate locations of these picnic areas are shown in Map 9. These small areas will be edged-in similar to Figure 10, using materials on site where possible. No gravel will be added for the base. Any areas outside of the designated trails will have new signage installed stating, "Area Closed for Regeneration". This has proved to be a successful message at other park property and areas of the Bruce Trail.



Figure 9. Trail edging

Retrieved online from:

<http://www.craterlakeinstitute.com/index-of-images/historic-photos/current-photos-by-park-staff/misc-trail-photos-by-jennifer-gifford-crla-trails-supervisor/>



Figure 10. Designated picnic areas

Retrieved online from: <https://offtracktravel.ca/wallace-island-british-columbia/>

Table 11. Action 1 Workplan

Action 1 - Conserve and Protect	Potential Delivery Partners	Timeline	Cost Estimate	Management Zones/NEC Permit
A. Invasive species				
Inventory	GSCA	Ongoing	In Kind	All/No
Develop plan for control	GSCA	Short (1-3 years)	In Kind	All/No
Control	GSCA or contract out to licensed operators. Mechanical control events could involve volunteers.	Short (1-3 years)	\$1,600 for herbicide	All/No
Monitor	GSCA	Bi-annually	In Kind	All/No
B. Visitor Management (Restoration Plan)				
Install trail edging	GSCA, BTC	Medium (3-7 years)	\$3,000	Natural Environment /No
Create 3 designated picnic areas	GSCA	Short (1-3 years)	\$3,000	Natural Environment /No
Install "Area Closed for Regeneration" signage	GSCA, BTC	Medium (3-7 years)	\$400	Natural Environment /No

9.2 Action 2: Update/Remove Infrastructure

Updating infrastructure is also covered through GSCA's Asset Management Plan, but for the purpose of this plan, Table 12 indicates the timeline for replacement of capital items. The pavilion at EFCA (Figure 11) was installed in 1971, and at the time was a popular spot for family reunions and community gatherings, however it currently does not get the same use it once did. The pavilion is quite large and uninviting given the location on the property and density of trees surrounding it. GSCA staff have investigated the option to renovate the pavilion, however after further inspection it was decided that given the age and structural issues, the pavilion should be removed. The pavilion is not a heritage feature.

The pavilion would be dismantled carefully by GSCA staff, and the material would be separated out for proper disposal at one of Grey Highlands landfill sites. As the roof is metal and the structure is wood, there are no materials of concern. If possible, some of these materials may be reused on site for trail edging, or at another GSCA property. A cement pad, being the floor of the pavilion will be left and picnic tables will remain on this pad so that visitors can continue to have picnics but now enjoy the open space and sunshine. At a later date, the community will be consulted on if the space is acceptable without the roofed structure or if this is truly a need within the community.



Figure 11. EFCA pavilion

Washrooms are another piece of infrastructure that poses challenges due to the dark, damp environment and the bedrock substrate. There are currently two privies that were built in 1987 (Figure 12) that are not up to an acceptable standard for visitors. GSCA has been renting portable washrooms for several years now, which are placed in front of these privy units. Through the plan, the privies will be decommissioned, and two portable washrooms will be rented permanently, one of which will be accessible. Given the seasonality of this site and limitations of bedrock, renting portable washrooms is an affordable option.

A bear bin will be placed on the property to store garbage in until GSCA operations staff are scheduled for maintenance and inspections.



Figure 12. EFCA privies

In 2021 GSCA staff added a gatehouse structure (Figure 13) for gate staff/ambassadors to keep belongings and shelter from inclement weather. The introduction of staff on site has been very successful and the gatehouse will be a permanent structure.



Figure 13. EFCA Gatehouse

Lastly, the parking area at EFCA needs to be redesigned to maximize space, improve flow, solve drainage issues and delineate parking spaces. GSCA will hire an engineer to design this space.

Table 12. Action 2 Workplan

Action 2 – Update Infrastructure	Potential Delivery Partners	Timeline	Cost Estimate	Management Zone/ NEC Permit
Remove pavilion	GSCA	Short (1-3 years)	\$10,000	Access/No
Decommission privies	GSCA	Short (1-3 years)	\$1,500	Access/No
Re-design and resurface parking lot	GSCA, Grey Highlands	Medium (3-7 years)	\$70,000	Access/Yes

9.3 Action 3: Improve the Visitor Experience

The visitor experience and connecting people to the conservation area is a fundamental aspect of this plan and several of the directions are focused on improvements and enhancements in this area. Table 13 shows a summary table with the deliverables and associated timelines under this Action.

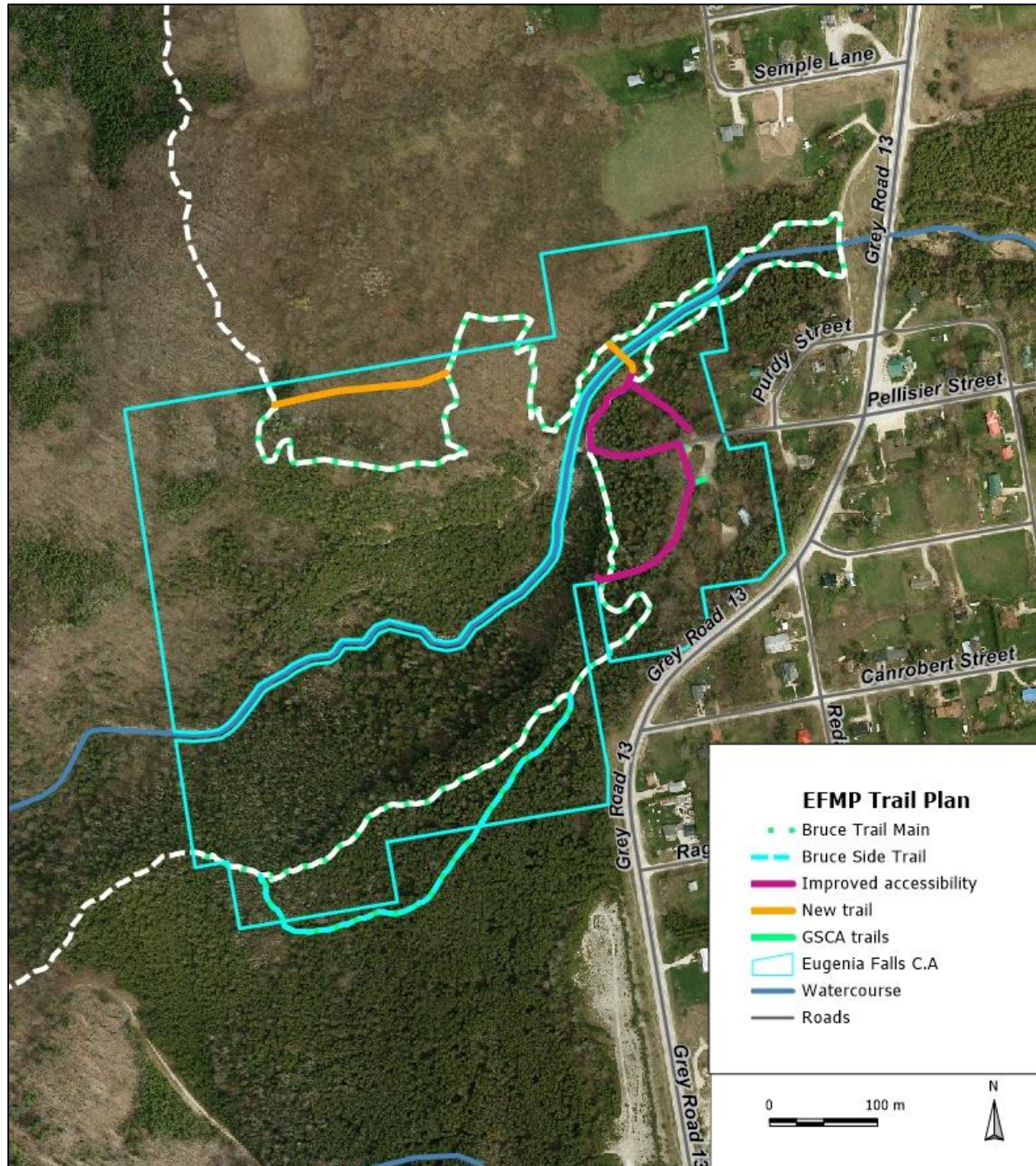
9.3.1 Trail Network and Permitted Uses

Eugenia Falls Conservation Area currently has about 2 km of trails, largely comprised of the Bruce Trail. This plan primarily focuses on enhancing existing trails and improving visitor movement. As shown in Map 10 there are two new trails proposed. The first one involves building a bridge over the Beaver River at the hydro plant ruins, which would offer a loop and also a shorter way to get to the other side of the falls. The other new trail is one that would connect two points of the Bruce Trail, creating a loop through the hardwoods for those that want to partake in a short looped hike. The specific trail route has not yet been mapped, but GSCA will also work with the Bruce Trail Conservancy to possibly extend this onto BTC land to the north. This upland forest area has sinkholes from when the hydro-electric tunnel project was shut down and also has butternut trees. A new trail will avoid these two features for safety and ecological reasons.

The bridge at the hydro plant ruins would be the same design that has been used at Tara Conservation Area and Inglis Falls Conservation Area. The design for this bridge can be found in Appendix D. The inclusion of this bridge in the management plan is for visioning purposes. There is not enough information currently on the site conditions, logistics of getting heavy machinery in and high water mark from OPG's dam release to have this considered by NEC. As this is also a longer term project, a separate Development Permit Application with this detailed information will be provided at a later date. It is important to note that this footbridge is different than the suspension bridge that is discussed in Section 11.0. The suspension bridge was proposed to span the entire Cuckoo Valley.

One of the most popular requests from the community and the Beaver Valley Bruce Trail Club is

to have the Bruce Trail open in the winter so that trail users can hike through, and to avoid an extensive trail re-route. GSCA will pilot leaving the Bruce Trail open in the winter for hiking and snowshoeing, but the gate to the property will remain closed, so parking will need to occur offsite. If roadside parking along Purdy and Pellisier Streets become an issue or if there are any safety incidents, GSCA will revert back to closing the property in winter.



Map 11. EFMP Trail Plan



Figure 14. Example of bridge from GSCA's Tara Conservation Area

Accessibility is becoming an increasingly popular topic, especially with an aging population. The rugged escarpment terrain of Eugenia Falls Conservation Area does not lend itself well to accessible trails, and as these are classified as wilderness trails, they are exempt from the Accessibility for Ontarians with Disabilities Act (AODA). That being said, where possible, GSCA will aim to improve accessibility of select trails as shown in Map 10 by evaluating trail width and surface type. For example, there may be sections where stone dust or gravel could be added to adjust the slope and smooth out barriers such as roots and rocks. This will be fully assessed once the design phase is initiated.

Permitted uses were also evaluated to consider the addition of horses and biking. At this time GSCA will not add any additional trail uses, therefore it will be managed for hiking uses only. An explanation as to why these permitted uses were not included is in Section 11.0. Permitted use signage is installed at all GSCA properties and will also be included on the trailhead signage. No ATV signs are installed at problem areas. If biking becomes an issue, "no biking" signage will be installed at different property entrances.

9.3.2 Signage

Visual accessibility regarding signage is also of increasing importance at outdoor areas and will be a major goal of GSCA in the coming years. For many visitors, English is not their first language, and the overuse of signage lately has made it challenging for people to understand the rules of the property. To help improve communications, future signage will use more symbols and colours rather than text.

The first step to improving signage will be to install new trail wayfinding signage throughout the network and will also include a large trail map display in the parking area to show the trails and

the varying level of difficulty as well as time and distance (example in Figure 15).



Figure 15. Example of trailhead signage

Retrieved online from: <https://pahighlands.org/news/amc-partners-new-signage-schuylkill-river-trail>

Other signage updates include:

- An update to permitted use signage to include a more visually appealing design that incorporates GSCA branding and icons (Figure 16 for example)
- The existing interpretive signage is starting to fade and crack, which will be updated in phases in partnership with other groups such as Ontario Power Generation, the Grey Sauble Conservation Foundation, Bruce Trail Conservancy and Heritage Grey Highlands and Grey Roots Museum and Archives.
- Currently, interpretive signage on the history of the property is about the gold rush and hydroelectric power but does not recognize the pre-Contact history of the site. Tying into Section 10.4, additional interpretive signage will be installed that acknowledges the history of the site/area prior to European settlement, as well as the current importance to Indigenous peoples. This piece would be in collaboration with GSCA's Indigenous Relationships Committee, Grey Roots Museum and Archives as well as First Nations and Metis peoples.
- Interpretive signage that includes a land acknowledgement and some translation into Anishinaabemowin language.

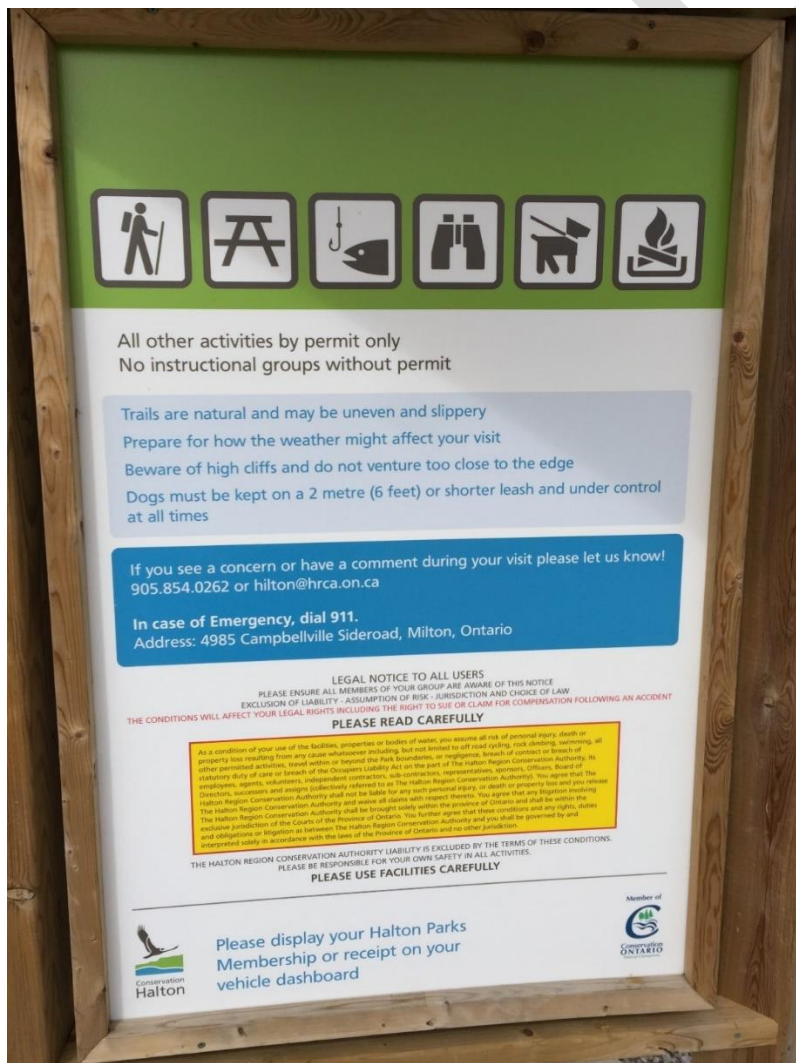


Figure 16. Example of permitted use signage (Conservation Halton, 2021)



Figure 17. Example of wayfinding signage

Retrieved online from: <https://www.pinterest.ca/pin/92534967316865866/>

9.3.3 Improve Viewing Area

Based on survey results, visitors would like to see the viewing area improved. This will be accomplished through regular pruning of trees along the top of the escarpment and installation of steel-slatted fencing to provide better drainage and viewing opportunities (see Section 10.5.1).

Table 13. Action 3 Workplan

Action 3 - Improve Visitor Experience	Potential Delivery Partners	Timeline	Cost Estimate	Management Zone/NEC Permit
Secure funding for trail improvements	GSCA, GSCF	Short (1-3 years)	In Kind	Natural Environment/No
Improve accessibility of existing trails	GSCA, other organizations in the accessibility field	Medium (3-7 years)	\$40,000	Natural Environment,

				Nature Reserve/No
Install new trail connector trail	GSCA, BTC	Short (1-3 years)	In Kind	Natural Environment/No
Install pedestrian bridge over the Beaver River	GSCA, BTC, GSCF, Grey Highlands	Medium (3-7 years)	\$60,000	Natural Environment/Yes
Create and install trailhead signage	GSCA, GSCF, BTC, Grey Highlands	Short (1-3 years)	\$1,600	Access/No
Secure funds for interpretive signage	GSCA, Grey Roots, GSCF, Heritage Grey Highlands, Grey Highlands	Medium (3-7 years)	In Kind	Natural Environment/No
Update existing interpretive signage and create new signage	GSCA, Grey Roots, GSCF	Medium (3-7 years)	\$1,200	Natural Environment/No
Develop and install more wayfinding signage	GSCA, BTC	Short (1-3 years)	\$400	Natural Environment, Nature Reserve/No
Cut back shrubs along the wall to improve view of the falls	GSCA	Short (1-3 years)	In Kind	Nature Reserve/No
Pruning trees to improve view from lookout	GSCA	Short (1-3 years)	\$10,000	Natural Environment/No

9.4 Action 4: Enhance and Celebrate Cultural Heritage

Not included in the previous section under infrastructure are several historical features which are also considered capital assets. These include: the hydro-electric plant ruins, the cenotaph, the gingko tree and the stone arches. These features require separate attention and planning given their historic and cultural nature. Table 14 summarizes the goals within this Action and delivery plan.

9.4.1 The Power Station Ruins and Tunnel Arches

Over the years, the power station building has unfortunately been targeted for graffiti and destruction (Figure 19, 20). In 2018 the roof was removed due to liability concerns. The continued dismantling and damage to the stone walls are now of concern. Other than the waterfall, the historic features from the hydro industry are important draws to the site. Once these features are gone, they cannot be rebuilt. Through this plan, GSCA will work with Heritage Grey Highlands to preserve the current structure. In order to prevent ongoing vandalism, consideration will be given to opening up the area between the parking lot and the ruins, as well as implementing security measures. Further to this preservation, an interpretive display will be installed similar to the one shown in Figure 21.

A stone mason will be hired to assess the tunnel arches and stabilize them. The stone arches are not targeted for vandalism as much as the power plant ruins given their more remote

location.



Figure 18. Inside the power station building (2022)



Figure 19. Outside the power station building (2020)



Figure 20. Interpretive display example

Retrieved online from:

9.4.2 Cenotaph and Ginkgo Tree

These two features are an important historical aspect of the property and are honoured annually on Remembrance Day. Both are currently in good shape and will be monitored for damage and restored as needed by affiliated clubs (Figures 22 and 23). A second Ginkgo tree will be planted as a succession plan for the current tree. Seeds will be taken from the existing tree and grown at the Inglis Falls Arboretum Alliance nursery.



Figure 21. Eugenia Falls Cenotaph

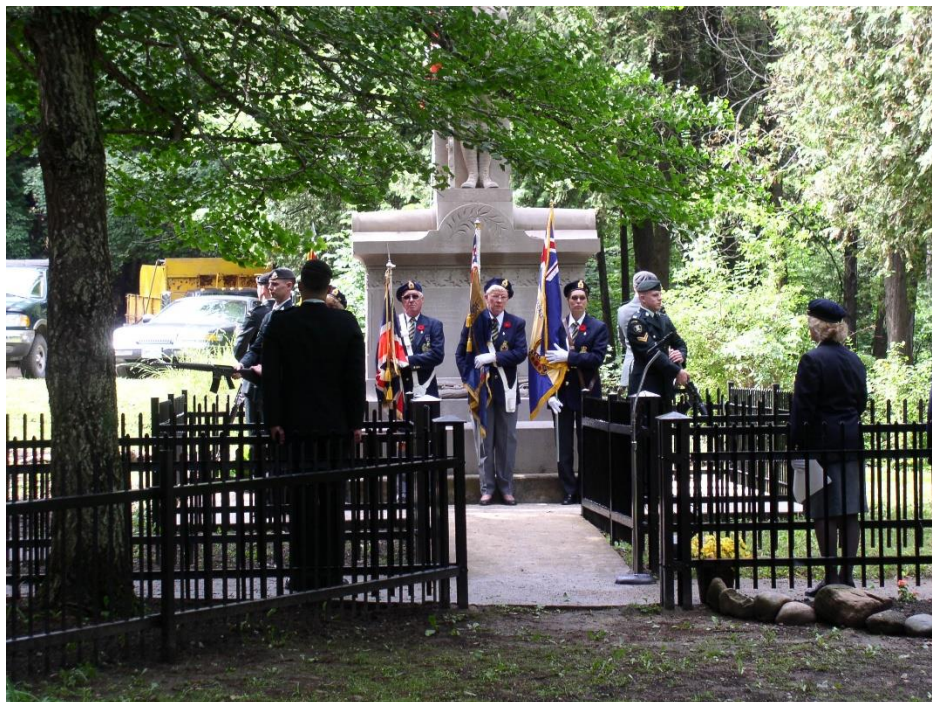


Figure 22. Gingko tree at Eugenia Falls (on the left)

Table 14. Action 4 Workplan

Action 4 - Enhance and Celebrate Cultural Heritage	Potential Delivery Partners	Timeline	Cost Estimate	Management Zone/NEC Permit
A. Power Plant Ruins				
Stabilize/renovate	GSCA	Short (1-3 years)	\$60,000	Cultural Heritage/No
B. Stone Arches				
Hire stone mason to update	GSCA, Grey Roots, Heritage Grey Highlands	Short (1-3 years)	\$7,000	Cultural Heritage/No
C. Cenotaph & Gingko				
Monitor and plan for restoration	Legion, Heritage Grey Highlands, Grey Highlands Peace Committee	Long (7-20 years)	Cost to clubs	Cultural Heritage/No
Plant new Gingko Tree	Grey Highlands Peace Committee	Medium (3-7 years)	In Kind	Cultural Heritage/No
Create native plant garden around cenotaph	GSCA, Grey Highlands Climate Action Group, Eugenia District	Short (1-3 years)	\$5,000	Access/No

	Community Improvement Association			
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9.5 Risk Management/Operations

Ongoing operations and risk management at this property is very important and encompasses activities like inspections, hazard tree removal, trail blazing etc. Items in this Action are harder to plan for as they are often on a case-by-case basis and can come up unexpectedly. Table 15 summarizes these deliverables.

9.5.1 Operations

In 2020, GSCA decided to increase staff presence at Eugenia Falls Conservation Area due to increasing compliance issues, mainly visitors travelling out of bounds, as well as the COVID-19 Pandemic. Park ambassadors are there from 10 am until 6 pm throughout the late-spring, summer and early fall months. In 2021, a gate house building was added to the parking lot for staff to collect payments. Another measure that was implemented to deter visitors from going out of bounds was a re-route of the Bruce Trail away from the cliff face, as well as additional fencing installed around the immediate waterfall area.

The rise in social media has greatly shaped the way individuals share their experience at properties. As pictures from out of bounds areas get posted, more people see these and try to copy the same photo. There have been several falls that have resulted in severe injury and emergency rescues. GSCA staff are working with media outlets and tourism-focused organizations to promote trail/property etiquette and manage visitor expectations. Ambassador and gate staff frequently communicate with the public to stay in bounds and signage and safety fencing is replaced when needed. It was recommended through the survey to have signage expressing the seriousness of past falls and injuries. GSCA will install new signage with wording such as “Past falls have resulted in injury and death at the visitor’s expense. Travelling beyond this point may result in trespassing fines or rescue costs up to \$20,000”.

Through this management plan and as part of capital asset planning, the stone fencing around the falls needs repairs. Additionally, the stone wall at EFCA acts as a barrier to drainage under heavy rains and spring thaws, leading to substantial ponding of water at the base of the wall (Figure 24). To resolve these issues and improve the visitor experience, GSCA will move towards a combination of steel fencing and the existing stone fencing. At the two viewing areas, as shown in Map 9, the stone fencing will be removed and replaced solely with 1.2 meter high steel fencing as shown in Figures 25-27. This is similar founding that can be found at home building centres, such as this: <https://www.homedepot.ca/product/peak-6-ft-w-x-4-ft-h-powder-coated-aluminum-metal-fence-panel-in-black/1000500164?rrec=true>. In total, fencing at both viewing areas will be approximately 30 m in length. While drainage is a major reason to transition, this style of fencing is also visually appealing to see through the spaces of the fence, people are less likely to climb over this style of fence compared to the current stone wall and graffiti can be easily painted over. In addition to changing the fencing type, general site drainage will be considered and may including grading or installation of piping to direct the flow of water.

It was also mentioned in the survey to have an entrance and exit road, to improve the traffic flow of the site. Through staff investigations at the south end of the property off Grey Road 13, this would not be feasible. However, as the entrance to the property is a municipal road allowance,

GSCA staff will work with the Municipality of Grey Highlands to widen the entrance road so that two cars can pass each other safely. With this, it will also be investigated if there is an option to make Purdy St. a one-way road, to help achieve better flow of cars.



Figure 23. Stone wall preventing runoff



Figure 24. Fencing view for existing viewing area away from the falls



Figure 25. Fencing vision for viewing area beside the falls



Figure 26. Fencing example from Hamilton Region C.A

9.5.2 Ash Management

The Emerald Ash Borer (EAB) is a non-native invasive insect that was first identified near Detroit Michigan in 2002 and shortly afterwards in Essex County Ontario. EAB is known to attack all native ash species (*Fraxinus* sp.) by boring into the conductive tissues (xylem and phloem) and stopping the supply of water and nutrients. Within its native range, there are several predators that sufficiently control the population size of EAB. In North America, the

known predators are not able to sufficiently control its population or spread. EAB has been found throughout the GSCA watershed and is expected to be more widespread than in areas that have been identified.

It is challenging to assess the health of an EAB-infected ash tree as the decay occurs on the inside. Trees that may appear to be healthy can decline rapidly by the next season. This poses a risk to GSCA property users, especially given the number of ash trees found along trail networks. In order to come up with a plan to begin managing ash, it is important to know how many ash trees would need to be considered for removal.

The desired outcomes of GSCA's Risk Management Guideline (2018), are to recognize, prioritize, and mitigate risk and liability exposure; and to incorporate a risk management culture into our processes, policies and decisions. There are a significant number of ash trees within striking distance of EFCA trails and the presence of EAB creates an increasing risk for GSCA property users.

Other agencies have addressed this issue on their properties several years ago and have recommended to remove all ash trees within striking distance, regardless of their health. Moving forward GSCA staff will:

- Continue to map and mark ash at GSCA properties with trails and infrastructure which will allow staff to determine the total risk and scope of removal;
- Develop a tree removal plan, focusing first on Category 1 lands and then Category 2 as per the Risk Management Guideline;
- Connect with the Bruce Trail Conservancy on ash management along the Bruce Trail sections on GSCA lands;
- Allocate funding under property operations to hire a tree removal professional to begin removing ash on a select number of properties per year, as budget allows;

Trees that are cut in remote locations will be left in place, but those that are easy to access, for example near parking lots will be brought back to the GSCA office for firewood or removed by the arborist. As the Emerald Ash Borer is all throughout Grey County at this point, moving firewood or leaving on site will not prevent the spread.

9.5.3 What3words

What3words is a phone application used to help find an individual that may be lost or injured on a property. They have divided the world into 3-metre squares and gave each square a unique combination of three words, making it the easiest way to find and share exact locations. Visitor safety is of high importance, and in order to assist emergency services, GSCA will promote use of what3words on GSCA properties via signage and online communications.

Table 15. Action 5 Workplan

Action 5 - Operational/Risk Management	Delivery	Timeline	Cost Estimate	Management Zone/NEC Permit
Regular inspections to monitor the property for trespassers, vandals and damage to the property	GSCA	Ongoing	In Kind	All/No
Install signage indicating risk	GSCA, Grey Highlands	Short (1-3 years)	\$150	Natural Environment, Nature Reserve/No
Proactively manage risks and hazards on the property (hazard trees, trail conditions etc.)	GSCA, BTC	Ongoing	In Kind	All/No
Improve signage to EFCA	GSCA, Grey County, Grey Highlands	Short (1-3 years)	In Kind	N/A
Replace stone fencing with black steel fence at viewing areas	GSCA	Short (1-3 years)	\$20,000	Natural Environment/No
Improve site drainage	GSCA	Short (1-3 years)	\$5,000	Natural Environment/No
Expand the road entryway	GSCA, Grey Highlands	Short (1-3 years)	\$5,000	Access/Yes
Ash Management Strategy	GSCA, Arborist	Ongoing	\$5,000/year	All/No
Promote what3words	GSCA	Short (1-3 years)	In Kind	All/No

10.0 Effectiveness Monitoring

The EFMP is a 20-year plan. Consistent with the timing requirements laid out for implementation (Tables 11-15 in Section 10) many works identified will occur within 15 years after Plan approval. A progress report will be completed every five years to determine which deliverables have been met. This report will also include a new public survey to gain an analysis of visitor data.

Table 16. Effectiveness Monitoring Plan

Action Area	Deliverable	Metric
1- Conserve and Protect	Invasive Species Plan developed	Y/N
	Invasive species inventory and monitoring bi-annually	Updated mapping bi-annually
	Invasive species controlled	Annual control of garlic mustard and wild chervil around power plant ruins
	Determine sensitive features	Map of sensitive features

	Trail edging installed	100 meters of edging installed on trail from parking lot to viewing area
	Install "Area Closed for Regeneration" signage	Survey every three years to determine amount of regeneration
2- Update Infrastructure	Remove pavilion	Y/N
	Decommission washrooms	Y/N
	Redesign and resurface parking lot	Y/N
3 – Improve the Visitor Experience	Secure funding for trail improvements	\$ secured
	Improve accessibility of existing trails	Y/N
	Install pedestrian bridge over the Beaver River	Y/N
	Create and install trailhead signage	Y/N
	Secure funds for interpretive signage	\$ secured
	Update existing interpretive signage and create new signage	# of signs developed, # of partners included in the project
	Develop and install more wayfinding signage	Y/N
	Cut back shrubs along the wall to improve view of the falls	Y/N
	Improve the viewing area	Drainage improved; trees pruned
4 - Enhance and Celebrate Cultural Heritage	Stabilize/renovate power plant ruins	Y/N
	Hire stone mason to update stone arches	Y/N
	Monitor cenotaph and plan for restoration	Clubs have funding allocated for future
	Plant new Gingko Tree	Y/N
	Create native plant garden around cenotaph	# native plants, # clubs/volunteers, area planted, # non-native species removed
5 - Operational/Risk Management	Inspections	Property is inspected six times annually
	Install signage indicating risk	Y/N
	Manage risks and hazards	Y/N
	Improve signage directing to Eugenia Falls	# of complaints per year
	Replace sections of stone fence	Y/N, # of meters installed

	Improve site drainage	Drainage improved by 75%
	Road entryway expanded	2 cars can pass
	Develop Ash Management Strategy	Y/N
	Promote what3 words	Logo incorporated on all map signage

11.0 Recommendations that were Excluded

- 1. Adding a Bruce Trail Side Trail through the valley bottom** – This proposal brought forward by the Bruce Trail Conservancy – Beaver Valley Club was seriously considered. After GSCA staff walked the flagged-out route, it was determined that this is too steep of a route, and it would be unlikely that winter snowshoers/hikers would use it, given the rugged and difficult terrain. The main purpose of this added route was to help avoid trail re-routes in the winter when the EFCA is closed. However, through the plan we are now proposing to keep the Bruce Trail open through the property throughout the winter. As a Natural Environment class park, this is not in line with the vision. Furthermore, GSCA does not wish to have a trail to the bottom of Eugenia Falls and with this added route, it is believed that visitors will meander their way through the bush following the river to get there.
- 2. Trail/stairs to the bottom of the falls** – After much consideration, GSCA has decided to continue to restrict access to the bottom of the falls. The primary reason for this is safety concerns, as all routes to the bottom are lengthy, steep and rugged which will ultimately result in more rescues in difficult locations that require special equipment and specially trained Emergency Medical Services staff. Additionally, with the increase in “Instagram-worthy” photos, the falls will become overcrowded with tourists staying at the bottom of the falls to picnic, party and swim. This then leads to environmental damage, litter, and ruins the experience for others.
- 3. Suspension bridge across the valley** – Similar to other ideas, GSCA staff feel this would lead to more safety concerns and might ruin the experience for others. Further, this would require ongoing inspections and maintenance which would be quite costly. It is not believed that this is consistent with maintaining the natural and ecological integrity of the property.
- 4. Changing permitted uses** – Through the online survey it was requested to add horseback riding, ATV's, mountain biking and rock climbing. As discussed at the Public Open House, the horseback riding was requested as it was a historical trail, however a new route has been formed and no longer needed through the park. ATV use is a major challenge for GSCA lands in general without being a permitted use. They cause significant environmental damage and are not aligned with GSCA's mandate, Conservation Authorities Act Regulations or the Nature Reserve zoning.

Due to the narrow trails and steep, winding topography, mountain biking will not be permitted as it would pose a safety risk for oncoming hikers. That being said, visitors are more than welcome to bike to the property as a mode of transportation. It is recommended through the NEP Section 3.2.2 that the Bruce Trail remains a foot path and that biking is not permitted. As access to the bottom of the falls remains restricted, rock climbing will not be permitted.

5. **Composting toilets** – Based on conversations with Parks Canada and Ontario Parks, the composting toilets at their parks do not function properly due to their high use, which results in regular pump outs. Eugenia Falls sees a significant number of visitors and is also seasonal, making portable washrooms the most practical option.

DRAFT

References

- Chapman, L., Putnam, D. (1984). *Physiography of Southern Ontario*. Ministry of Northern Mines and Development, Ontario Geological Survey.
- Davidson, A. (1972). *A New History of the County of Grey: And the Many Communities Within Its Boundaries and the City of Owen Sound*. Published by the Grey County Historical Society.
- Gagné, M. (2015). Archaic. *The Canadian Encyclopedia*. Retrieved from: <https://www.thecanadianencyclopedia.ca/en/article/archaic>
- Gagné, M. (2015). Palaeoindian. *The Canadian Encyclopedia*. Retrieved from: <https://www.thecanadianencyclopedia.ca/en/article/palaeoindian>
- Gagné, M. (2015). Woodland Culture. *The Canadian Encyclopedia*. Retrieved from: <https://www.thecanadianencyclopedia.ca/en/article/woodland-culture>
- Hubbert, M. (1986). *Split Rail Country: A History of Artemesia Township*. The Historical Society of Artemesia Township. Owen Sound, Ontario.
- McMillian A. D., Yellowhorn, E. (2004) *First Peoples in Canada*. D&M Publishers. Vancouver, Canada.
- McMullen, Stephanie., 1997. *Disunity and dispossession: Nawash Ojibwa and Potawatomi in the Saugeen Territory, 1836 – 1865*. University of Calgary, Calgary, AB.
- Ministry of Natural Resources and Forestry. (2017). Niagara Escarpment Plan.
- Ministry of Natural Resources and Forestry. (2021). Niagara Escarpment Parks and Open Spaces Systems Planning Manual.
- Pearn, B. (2015). Building the Eugenia Power House and Hydro Dam 1914-1915. Eugenia District Community Improvement Committee of the Municipality of Grey Highlands Council. Flesherton, Ontario
- Riley, J., Jalava, J., S. Varga, S. (1996). Ecological Survey of the Niagara Escarpment Biosphere Reserve, Volume 1 - Significant Natural Areas. Ministry of Natural Resources.
- Tovell, W.M., (1992). A Guide to the Geology of the Niagara Escarpment, The Niagara Escarpment Commission and the Ontario Heritage Foundation, Ontario.

Appendix A

Table 1. ELC Codes and Descriptions at EFCA

Nested ELC Community Units	ELC Code	Vegetation Characteristics	Environmental Characteristics
Treed Beach/Bar	BBT	25% < tree cover < 60%	Active processes least severe, woody species invasion includes tree species
White Cedar Treed Carbonate Cliff Type	CLT1-1	25% < tree cover < 60%	- Typically restricted to the narrow cliff rim - Dependent on how broken and fractured the cliff rim and face are
Road and Parking Lot	COP		Built up area with pervious ground cover
Cultural Meadow	CUM1	Mineral soil, tree cover <25 %, shrub cover <25 %, area altered by cultural activities	
Fresh - Moist White Cedar Coniferous Forest Ecosite	FOC4	- White Cedar dominant - Balsam Fir, Hemlock, and to a lesser extent, White Pine, Yellow Birch, Sugar Maple, Green Ash and White Birch associates - Shrub and herb cover and species richness low, fern rich - Sensitive Fern, Marsh Fern, Spotted Touch-me-not and Cinnamon Fern	- Moist (4,5,6) to fresh (2,3) soil moisture - Moderately well (4) to poor (6) soil drainage - Typically on basic or carbonate substrate and bedrock; moist yet well drained - Middle to lower slopes (3,4,5), seepage areas and bottomlands (5,6)
Dry-Fresh Poplar-White Birch Deciduous Forest Ecosite	FOD3	- Trembling Aspen, Largetooth Aspen or White Birch dominant - often represents second growth arising on heavily managed, grazed or disturbed sites (e.g., cutting, clearing)	- Moderately dry (0) to fresh (1,2,3) soil moisture regimes - Shallow substrates over bedrock, rock, sands and coarse loams - Upper to middle slope (1,2,3) or tableland (7) topographic positions

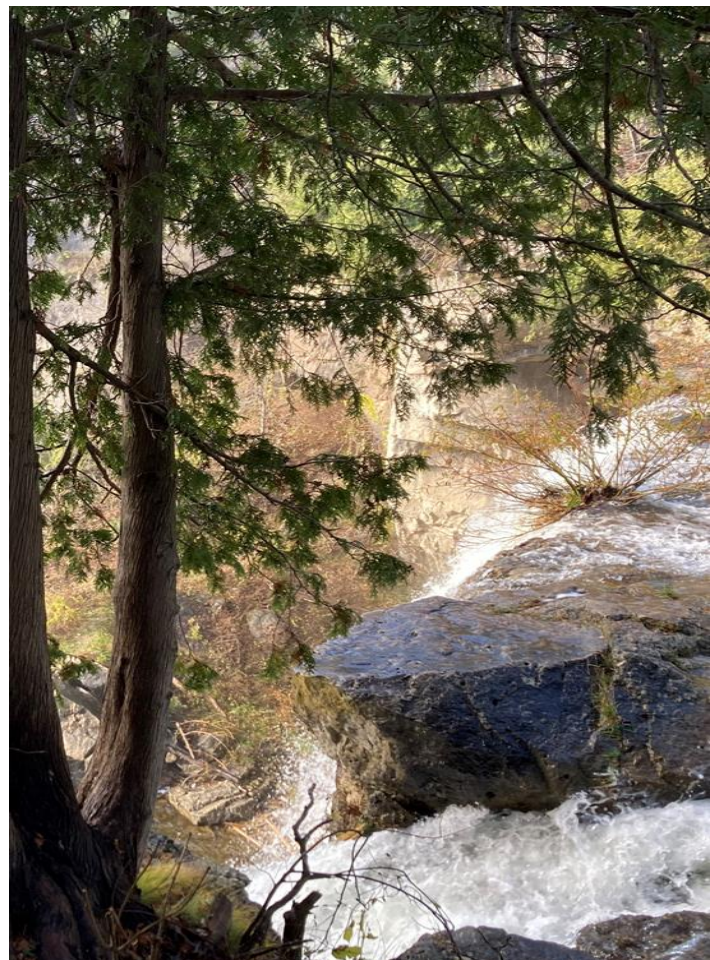
Dry-Fresh Sugar Maple Deciduous Forest Type	FOD5-1	Almost entirely dominated by Sugar Maple	
Dry-Fresh Sugar Maple – White Ash Deciduous Forest Type	FOD5-8		
Dry-Fresh White Cedar Mixed Forest Ecosite	FOM4	<ul style="list-style-type: none"> -White Cedar with White Birch, Largetooth Aspen, Trembling Aspen, Sugar Maple and White Ash; dominant species varies -Often represents second growth arising on heavily managed, grazed or disturbed areas -Low shrub and herb cover 	<ul style="list-style-type: none"> -Moderately dry (0) to fresh (1,2) soil moisture regimes -Sands, loams and shallow substrates over bedrock; common on mesic and carbonate substrates and bedrock
Open Aquatic	OA0		
Carbonate Open Talus	TAO1	Cover patchy and barren	Carbonate rock
Dry-Fresh White Cedar Carbonate Treed Talus Type	TAT1-2		Dry (0.0) to fresh (1,2,3) moisture regimes
Dry-Fresh White Birch Carbonate Treed Talus Type	TAT1-3		Dry (0.0) to fresh (1,2,3) moisture regimes



EUGENIA FALLS CONSERVATION AREA

Terrestrial Vegetation
Inventory and Ecological
Land Classification

February 2022



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1.0 Introduction

Eugenia Falls Conservation Area located at the west end of the Village of Eugenia and is owned and operated by the Grey Sauble Conservation Authority (GSCA). The Authority was established in 1985 with the amalgamation of the former North Grey Region and Sauble Valley Conservation Authorities to undertake programs designed to further the conservation, development, and management of renewable resources within

its area of jurisdiction. GSCA's vision is a healthy watershed environment in balance with the needs of society.

As part of GSCA 's Natural Heritage mapping, vegetation community surveys, Species at Risk (SAR) surveys and Invasive Species surveys are being conducted within the GSCA watershed to provide a better understanding of the ecological health of our watershed.

Some of the most significant natural resources within this region, i.e., the Niagara Escarpment with its cliffs and associated upland forests, the Beaver River and scenic Eugenia Falls, are found within the Eugenia Falls Conservation Area.

2.0 Study Area Description

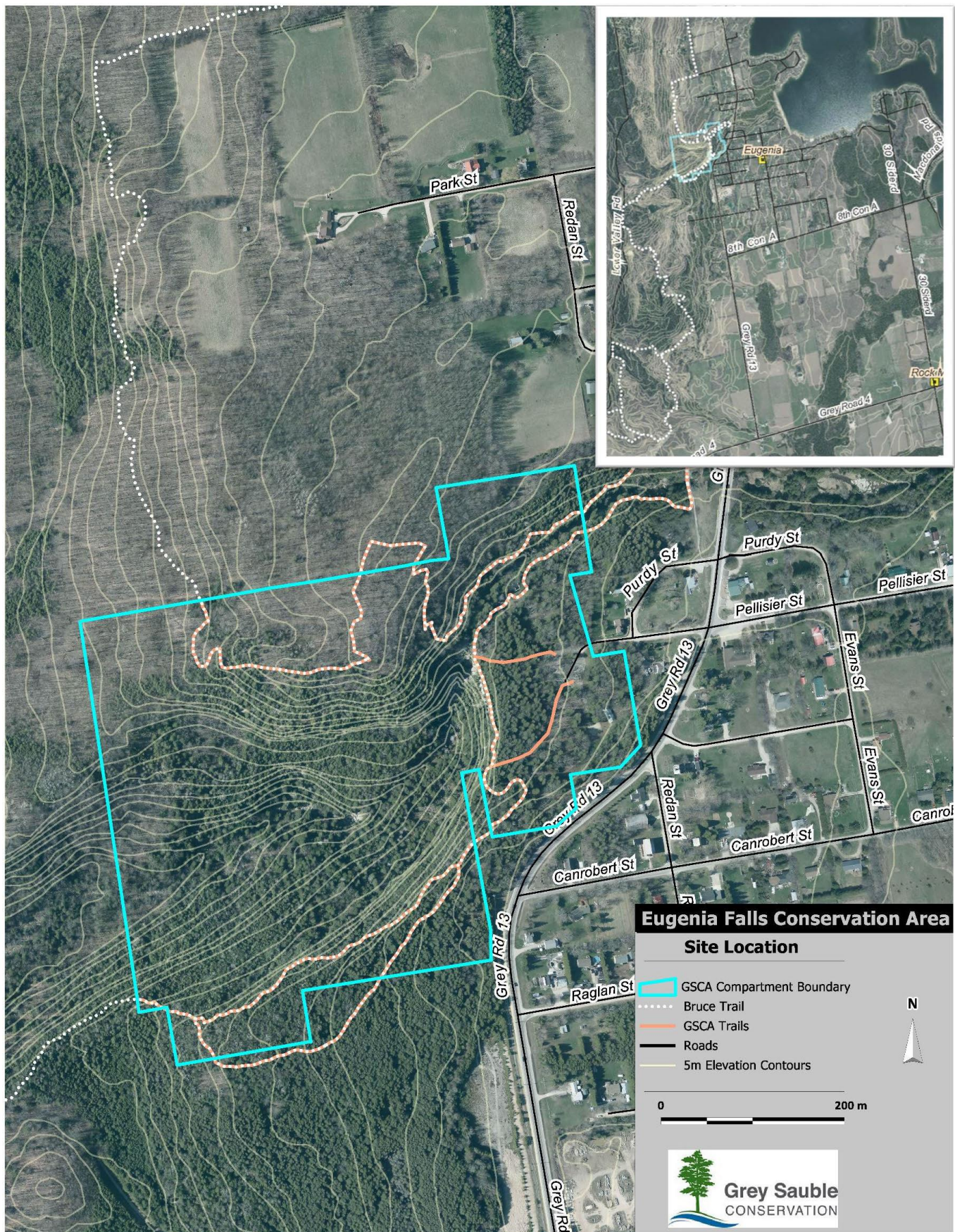
2.1 General Site Description and History

The Eugenia Falls Conservation Area is located within the main Beaver River watershed along the Beaver River (Figure 1). The property is approximately 23.5 hectares (ha) (58 acres) in size, not inclusive of the open water that runs through the site. It is located in Beaver Valley, on Plan 20 (Eugenia), Mill Reserve 1, 2 and Pt. 3 , in the former Artemesia Township within the Municipality of Grey Highlands.

The focal point of this conservation area is the 30 m waterfall where the Beaver River flows over the face of the Niagara Escarpment into Cuckoo Valley. This is the historic location of a few mills and a small private electric plant from the late 1800's and by 1905 it became the chosen site of the second hydroelectric plant in Ontario. In 1915 Ontario Hydro moved the plant to the north and created Lake Eugenia, thus reducing the flow of water over Eugenia Falls, but some remnants of these original structures remain on the site, including the ruins of the original power station and tunnels. The property was purchased by Grey Sauble Conservation Authority in 1968 and is now a popular tourist destination for sightseers and hikers. The conservation area includes a parking lot, pit toilet facilities, a picnic pavilion situated next to the local cenotaph, as well as a lookout with a view of the falls. This property also contains hiking trails that connect to the Bruce Trail.

The subject area is primarily within the boundaries of the Niagara Escarpment Natural Area with a small section of Escarpment Rural which is regulated by the Niagara Escarpment Commission (NEC). It is also within the boundaries of the Upper Beaver River Life Science Provincial Area of Natural and Scientific Interest (ANSI). This property is also a part of the Niagara Escarpment Parks and Open Spaces System (NEPOSS).

Figl



2.2 Geological Description

The physiography of the Eugenia Falls Conservation Area varies from gently rolling topography to very steep rocky slopes and cliffs along the Niagara Escarpment. The gorge is deeply cut by the Beaver River with talus slopes below the cliff faces. The land to the north of the falls rises approximately another 30 m above the cliff creating very dangerous steep slopes approximately 60 m above the river valley bottom.

The bedrock exposed along the Niagara Escarpment and underlying this conservation area is of sedimentary origin, having been deposited in epicontinental seas during the Silurian and Ordovician Periods more than 400 million years ago. These formations are well stratified dolomites, limestones, sandstones and shales some of which contain fossilized saltwater corals, reminders of the ancient marine environment which once covered this area (Tovell, 1992).

The various bedrock strata are exposed at different locations on the site. The caprock of the Niagara Escarpment visible at Eugenia Falls, consists of harder dolomites of the Amabel formation which overlie the softer fossiliferous dolomite of the Fossil Hill formation. Underneath is an even softer shale of the Cabot Head formation. The Cabot Head Shale presents an impermeable layer to the infiltration of ground water and thus encourages its flow in a horizontal direction. As a result, a number of springs issue forth from this contact zone in various locations along the base of the falls. (Interpretive Strategy Report for Eugenia Falls, 1992), (Ministry of Natural Resources, Ecological Survey of the Niagara Escarpment Biosphere Reserve, Volume 1 - Significant Natural Areas. 1996).

Although generally soft and water soluble compared to other rock types, the varying hardness of the different limestone bedrock layers have contributed greatly to the diverse topography of this site. The forces of erosion on these materials over an extensive period of time have created the Niagara Escarpment, a dominant and significant scarp stretching from Niagara Falls to Tobermory which loops through the site (Tovell, 1992).

The forces of erosion have continued on the escarpment to present day, in the form of chemical and mechanical weathering. The freeze-thaw action of water on the exposed dolomite caprock at the falls has resulted in the formation of deep crags and crevices, and results in the separation of large blocks of dolomite from the escarpment brow. These large blocks of limestone eventually break off completely and tumble over to form a bouldery talus slope along the base of the escarpment (Tovell, 1992). The Beaver River continues to erode the face of the escarpment by undercutting the caprock at the falls and carving out a very narrow valley head, but with the reduced flow due to hydro projects upstream, this process has been slowed down.

The most recent glacial period (Wisconsin) which lasted for about 40,000 years and ended 10,000 years ago also had a tremendous influence on the physical features of this property. Glacial ice scoured the landscape exposing large areas of dolostone bedrock, particularly above the escarpment, while at the same time depositing massive quantities of granular material both above and below the escarpment. Large dolostone boulders called erratics were dragged by the glacier from the escarpment edge and dropped in the till above the escarpment. The soils and steep riverbanks that presently exist on the site are largely the result of glacial and the subsequent post-glacial activity (Tovell, 1992).

Soils are another complex element of this site. The nature of underlying bedrock, the impact of glacial and post-glacial activities, erosion and the influence of topography are the prime factors in the formation of the soil types found on the site. The soils above the escarpment are part of the Gibraltar Moraine which consists of irregular hills formed from an accumulation of drift deposits known as the Osprey and Pike Lake limestone tills with numerous erratics. (Physiography of Southern Ontario, MNMD, OGS, 1984), (Interpretive Strategy Report for Eugenia Falls, 1992).

3.0 Methodology

3.1 Ecological Land Classification Base Mapping

Initial vegetation communities, (ELC polygons), based on Ecological Land Classification for Southern Ontario (ELC) (Lee et al. 1998) were determined based on aerial photography interpretation and previous forestry stand mapping within Manifold mapping software. Due to the variable topography, geological landforms and the historical land use of the area within the Eugenia Falls site, there are various classifications of ELC polygons present within this site.

General soil descriptions were derived from the Ontario Geological Survey (OGS) regional mapping and confirmation soil sampling did not occur at this time. Field surveys were conducted to confirm vegetation communities, as well as to survey for Species at Risk (SAR) and Invasive Species.

3.2 Flora and Fauna Species Surveys

Prior to conducting any species inventory fieldwork, all available documentation, mapping including review of Natural Heritage Information Centre (NHIC) mapping for rare species, and aerial coverage of the site was reviewed by the surveyor to familiarize with site features and historical siting's of any known locally rare species or SAR.

Verification of many ELC polygon boundaries, as well as the species inventory were surveyed concurrently from July to October 2020. Early spring surveys for ephemerals were conducted in May and June of 2021. Not all parts of the site were accessible to be field surveyed due to safety issues on steep slopes and the cliffs.

Systematic transects were used to cover the accessible portions of the site and when a habitat that has potential for rare species was observed either from a transect line or on aerial photos, then a meandering survey of that habitat occurred, before returning to the transect path. The transects were approximately 20 - 30 metres apart and a GPS tracking device was used to ensure adequate coverage of a site, and to minimize overlap of areas covered. However, unique, smaller habitats may have been missed if they occur in between the transects and were not visible to the surveyor.

These surveys were done to confirm vegetation communities during the optimal growing period of many plant species. All locations of any Species at Risk (SAR) and Invasive Species that were identified were GPS'd and mapped with approximate population sizes within Manifold mapping software. A list including the regional ranking of all flora species observed was documented for the site and is presented in Appendix A.

During the vegetation surveys any observations of bird, mammal, reptile and amphibian species were also recorded and tabulated and are presented in Appendix B.

Full scale wildlife inventories were not conducted at this time, and any observations made of other wildlife species during the vegetation surveys were incidental. All the surveys conducted up to this point occurred during daylight hours therefore nocturnal species were not observed.

4.0 Ecological Land Classification (ELC)

The vegetation communities described in this report are based on the Ecological Land Classification for Southern Ontario (ELC), (Lee et al 1998), and are shown on Figure 2. For the inaccessible areas, the ELC polygon boundaries were determined from aerial photo interpretation.

Within the ELC framework a forest is defined as having more than 60 % tree cover. The majority of this site

consists of forest cover and in the western portion of the site it supports Significant Forest Interior Habitat which extends beyond the property boundaries to the north and is important for the health of birds and other wildlife. The presence of flowing open water provides benefit to wildlife as well.

Within the property limits of the Eugenia Falls Conservation Area (EFCA) there were thirteen (13) vegetation communities identified. They generally consist of:

- ◆ Treed Cliff, Treed Talus & Open Talus area (CLT, TAT, TAO) – 4 types
- ◆ Upland Forests (FOD, FOM, FOC) – 5 types
- ◆ Open Aquatic & Treed Beach Bar (OAO, BBT) – 2 types
- ◆ Cultural and Built-Up Areas (CUM, COP) – 2 types

Table 1. Summary of ELC Communities and Percent Cover within EFCA

ELC Code	ELC Community Name	Description	Total Hectares	% of Total Area
BBT	Beach Bar Treed	<25% tree cover <60%	0.01	0.03
CLT1-1	White Cedar Treed Carbonate Cliff	Carbonate Bedrock, cover varies from patchy to barren to more closed.	0.96	4.00
COP	Road & Parking Lot	Built up area with pervious ground cover	0.33	1.36
CUM1	Mineral Cultural Meadow	Mineral soil, tree cover <25 %, shrub cover <25 %, area altered by cultural activities	0.05	0.21
FOC4	Fresh - Moist White Cedar Coniferous Forest	White cedar dominant, with some white birch, and sugar maple. Moderately well drained.	6.69	27.99
FOD3	Dry - Fresh Poplar - White Birch Deciduous Forest	Trembling Aspen, Largetooth Aspen, White Birch dominant. Moderately dry to fresh, shallow soils over bedrock.	1.11	4.65
FOD5-1	Dry - Fresh Sugar Maple Deciduous Forest	Almost entirely dominated by Sugar Maple, with some other hardwoods, moderately dry to fresh.	2.52	10.53
FOD5-8	Dry - Fresh Sugar Maple - White Ash Deciduous Forest	Sugar Maple, with other hardwoods, moderately dry to fresh.	1.01	4.25
FOM4	Dry - Fresh White Cedar - Hardwood Mixed Forest	White Cedar mixed with Aspen, White Birch, Sugar Maple, and White Ash. Typically, a successional forest following a disturbance.	2.33	9.76
OAO	Open Aquatic	Flowing water in river, and pools	0.39	1.63
TAO1	Open Talus	Carbonate Open Talus – cover patchy to barren at base of cliff and edge of water.	0.04	0.18
TAT1-2	Dry - Fresh - White Cedar Carbonate Treed Talus	Cover patchy to continuous, carbonate rock, white cedar dominant, on escarpment slopes	7.59	31.76
TAT1-3	Dry - Fresh - White Birch Carbonate Treed Talus	Cover patchy to continuous, carbonate rock, white birch & other species present, on escarpment slopes.	0.87	3.63
Total			23.89	100.0

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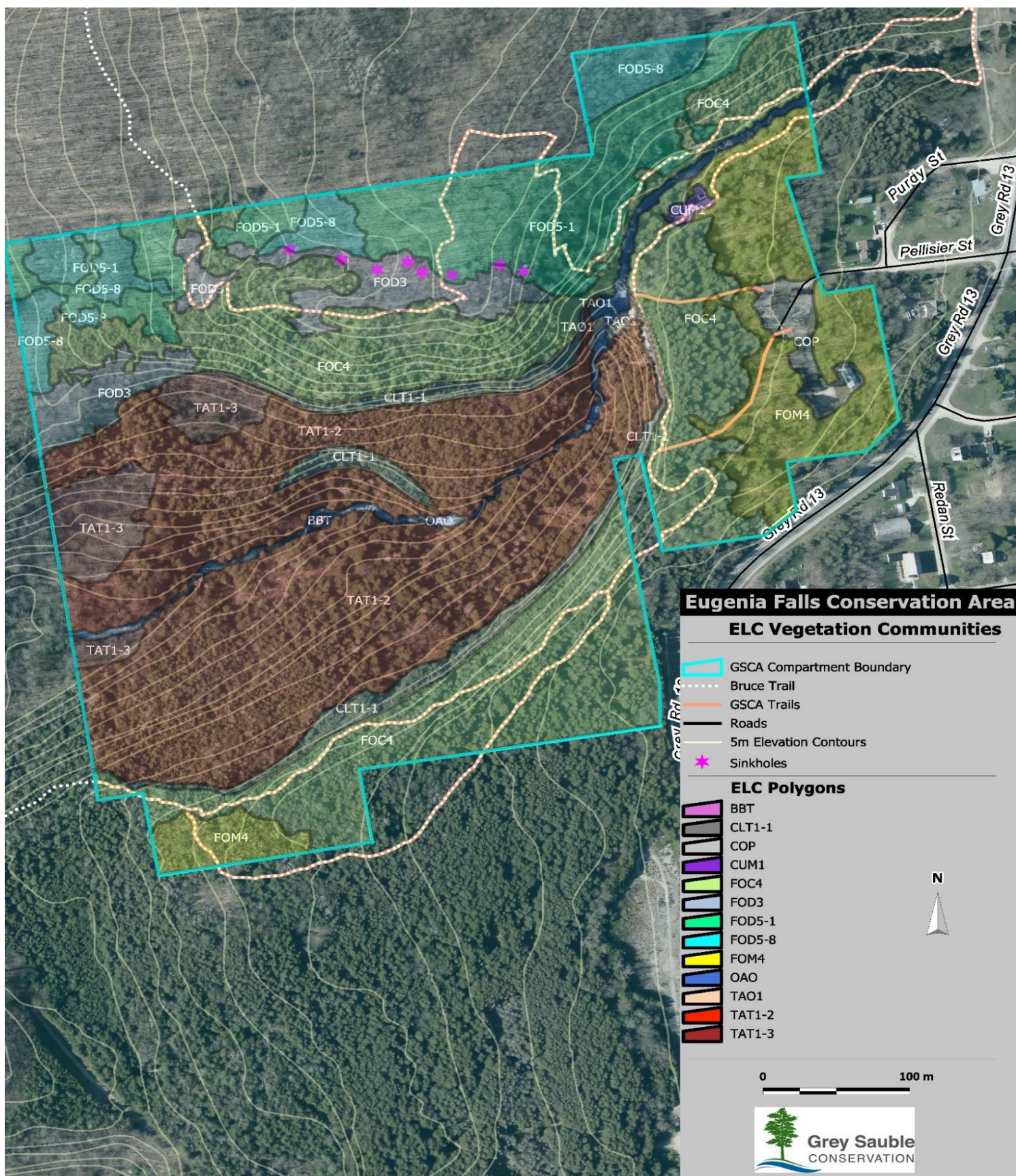


Figure 2 – Ecological Land Classification Map

4.1 Treed Cliff (CLT), Treed Talus (TAT), Open Talus (TAO)

4.1.1 Treed Cliff & Open Talus (CLT1-1, TAO1)

The carbonate treed cliff of the Niagara Escarpment (CLT1-1) is considered a significant natural area within Ontario. It rims both sides of the gorge formed by the Beaver River, resulting in the presence of Eugenia Falls. The stunted cedar trees along this cliff may be several hundred years old but due to its steepness it was also inaccessible for ground surveys and was interpreted the same way as the talus slopes and the Open Talus (TAO1), at the base of the cliff along the edge of the water near the waterfall. These Open Talus areas are void of any tree cover.

4.1.2 Treed Talus (TAT1-2 & TAT1-3)

The dominant vegetation community within EFCA is the Carbonate White Cedar Treed Talus Slopes (TAT1-2) which consists of dominant Eastern White Cedar often mixed with White Birch that spans both sides of the river valley below the escarpment cliff, with pockets of White Birch Carbonate Treed Talus (TAT1-3). The steepness of these slopes below the cliff made this area inaccessible for ground surveys, thus no understory vegetation information is available. But the dominant tree species were visible from air photos and from some vantage points along the cliff using binoculars. These talus forests are becoming mid-late successional age (80-120 years) having regenerated after a fire had swept through the gorge in the late 1800's, early 1900's (Ecological Survey of the Niagara Escarpment Biosphere Reserve, Volume 1 - Significant Natural Areas. - MNR 1996,).

4.2 Upland Forests (FOC, FOM, FOD)

4.2.1 White Cedar Coniferous Forest (FOC4)

Within EFCA there are a variety of upland forests that cover the upper slopes above the cliff of the Niagara Escarpment, the largest being the White Cedar Coniferous Forest (FOC4), with Eastern White Cedar being the dominant tree species, along with some White Birch, and other occasional hardwoods mixed in. This vegetation community is moderately well drained in its position on the upper slope above the cliff and has relatively limited herbaceous ground cover. Some of these areas along the upper Beaver River and on the east side of the gorge are very accessible to the public which has resulted in some trampling of the forest floor vegetation off the marked trails. Evidence of Pileated Woodpeckers, Eastern Cottontail, and White-Tailed Deer have been observed within these areas. There are numerous bedrock outcrops and bouldery areas within the FOC4 communities.

4.2.2 White Cedar - Hardwood Mixed Forest (FOM4)

The mixed coniferous and deciduous stand closest to the eastern boundary of the site is within the area that would have been historically disturbed during the operation of the power generating station in the late 1800's, early 1900's and is classed as an FOM4, consisting of a mixture of various deciduous trees including some endangered Butternut trees as well as Eastern White Cedar. This area is representative of a typical successional forest.

The herbaceous ground cover consists of common species including Jack in the Pulpit, Wild Columbine, Yellow Ladyslipper, Spotted Jewelweed, Common Milkweed, as well as some invasive species like Wild Chervil and Garlic Mustard. Near the riverbanks were native Cardinal Flower, and Spotted Joe Pye-Weed.

The soils in this community are typically shallow over bedrock and are well drained creating a soil moisture regime of dry to fresh. There are some bouldery areas as well as exposed bedrock and crevices. A small area of FOM4 also occurs in the southwest corner of the site.

4.2.3 Poplar - White Birch Deciduous Forest (FOD3)

There are a few different deciduous forests communities that occur mostly on the uplands north of the Beaver River. This vegetation community has a large percentage of Large Tooth Aspen, and Trembling Aspen as well as a variety of other deciduous species including endangered Butternut trees, and some Eastern White Cedar. The ground cover of this community contains a variety of flora species typical to a hardwood forest including a variety of Violets, White Trilliums, Jack in the Pulpit, Bulblet Fern and Wild Ginger.

Historically there was a tunnel that was constructed across the upland hardwood forest north of the river, as part of the historical power generating station. The tunnel was collapsed when the station was decommissioned with only the two stone entrance ends remaining. This has resulted in several sinkholes being created in a line through the hardwood forest, many of which are in this vegetation community.

4.2.4 Sugar Maple Deciduous Forest (FOD5-1)

Deciduous Forest cover the majority of the upper slopes of the area, with the more level upper areas being dominated by older Sugar Maple Forests. Common tree species that were observed in lower numbers within this forest are White Ash, American Beech, White Birch, Ironwood. Typical forest floor species included various Violets, Red and White Trillium, Blue Cohosh, Common Milkweed, Red Columbine, and Jack in the Pulpit. Auditory observations of an Eastern Wood-Pewee were also documented within this forest.

These sections of forest continue beyond the boundaries of the Eugenia Falls Conservation Area and contribute to the Significant Interior Forest Habitat to the north and west of the site.

4.2.5 Sugar Maple – White Ash Deciduous Forest (FOD5-8)

This forest type is similar to FOD5-1 but is less dominated with Sugar Maple and contains other deciduous species in higher numbers. The presence of endangered Butternut trees were also observed in this forest community as well as auditory observations of an Eastern Wood-Pewee which is listed as special concern on the Species at Risk list for Ontario. The forest floor species are relatively similar between the two types of deciduous forest. Like FOD5-1 this forest also continues beyond the property boundaries to contribute to the Significant Interior Forest Habitat of the area.

4.3 Open Aquatic & Treed Beach Bar (OAO, BBT)

The Beaver River, waterfall and pool at the base of the falls make up the Open Aquatic (OAO) ELC community. The river base is typically exposed bedrock with scattered boulders and pockets of sand & gravel, with some occasional mucky organic areas near the edges. Downstream of the waterfall there is a pool created by talus boulders and the river becomes very rocky with small gravelly and rocky beach bars within the flow. One such beach bar is large enough to support a few Eastern White Cedar trees (BBT).

4.4 Cultural & Built up-Areas (CUM1, COP)

There remains a small open area (CUM1) adjacent to the ruins of the historical power station adjacent to the Beaver River, upgradient of the falls. It is assumed that this is part of the area that was disturbed during the operation of the power station but has not regenerated back into forest cover. A variety of grasses, goldenrods and Common Milkweed among other field species exist here but, this area is susceptible to some trampling as

people tend to leave the trail in this area.

Currently there is an access road that leads to a parking lot that represents this culturally affected area (COP). The ground surface of the parking lot consists of natural soil and gravel, so it remains pervious for drainage. The parking area includes a pavilion, cenotaph and two pit toilets.

5.0 Species at Risk

For the purposes of this report Species at Risk (SAR) are defined as those designated by Federal and Provincial legislation as being Endangered (END), Threatened (THR), or of Special Concern (SC). Rare species include species designated as provincially rare (S1-S3) by the Natural Heritage Information Centre (NHIC), or locally rare by local Field Naturalists (i.e. Joe Johnson – MNR - Vascular Flora report 1990)

Table 2. SARO & SARA Categories

SARO & SARA Categories	Definitions of Categories
Special Concern (SC)	refers to the species living in the wild in Ontario, that may become threatened due to a combination of biological characteristics and identified threats.
Threatened (THR)	refers to the species living in the wild in Ontario but is likely to become endangered if steps are not taken to address factors threatening it.
Endangered (END)	refers to the species still living in the wild in Ontario, but it is facing imminent extirpation or extinction.
Extirpated	refers to the species having lived in the wild in Ontario at one time, but no longer does. However, it does exist somewhere else in the world.
Extinct	refers to a species that no longer exists anywhere on the earth.
Note: SARA has the same categories and descriptions, but it is a Federal Regulation that pertains to all of Canada.	

The most encountered SAR in the Eugenia Falls Conservation Area are Butternut trees (*Juglans cinerea*) and they were observed in the upland hardwoods, (FOD5-1, FOD3, and FOD5-8), as well as in the mixed forest (FOM) on the east side of the site. This species is listed on SARO and SARA as endangered and is declining due to a disease known as Butternut Canker. Despite having canker on most of the Butternuts observed on this site, they appear to be in fair health.

Two auditory observations of a SAR bird, the Eastern Wood Pewee were heard within the upland hardwoods (FOD5-1 and FOD5-8). This species is listed as Special Concern on SARO registry, meaning that they are at risk of becoming threatened by a combination of identified threats. This species has had significant declines in population abundance in recent years.

The Species at Risk that were observed during the field surveys are presented below in Table 3:

Table 3. SAR at Eugenia Falls Conservation Area

Species at Risk located in Eugenia Falls Compartment # 38				
Common Name	Scientific Name	SARO Status	SARA Status	Taxa

Butternut	<i>Juglans cinerea</i>	END	END	Plants
Eastern Wood Pewee	<i>Contopus virens</i>	SC	SC	Birds

Locations of observations are shown in Figure 3.

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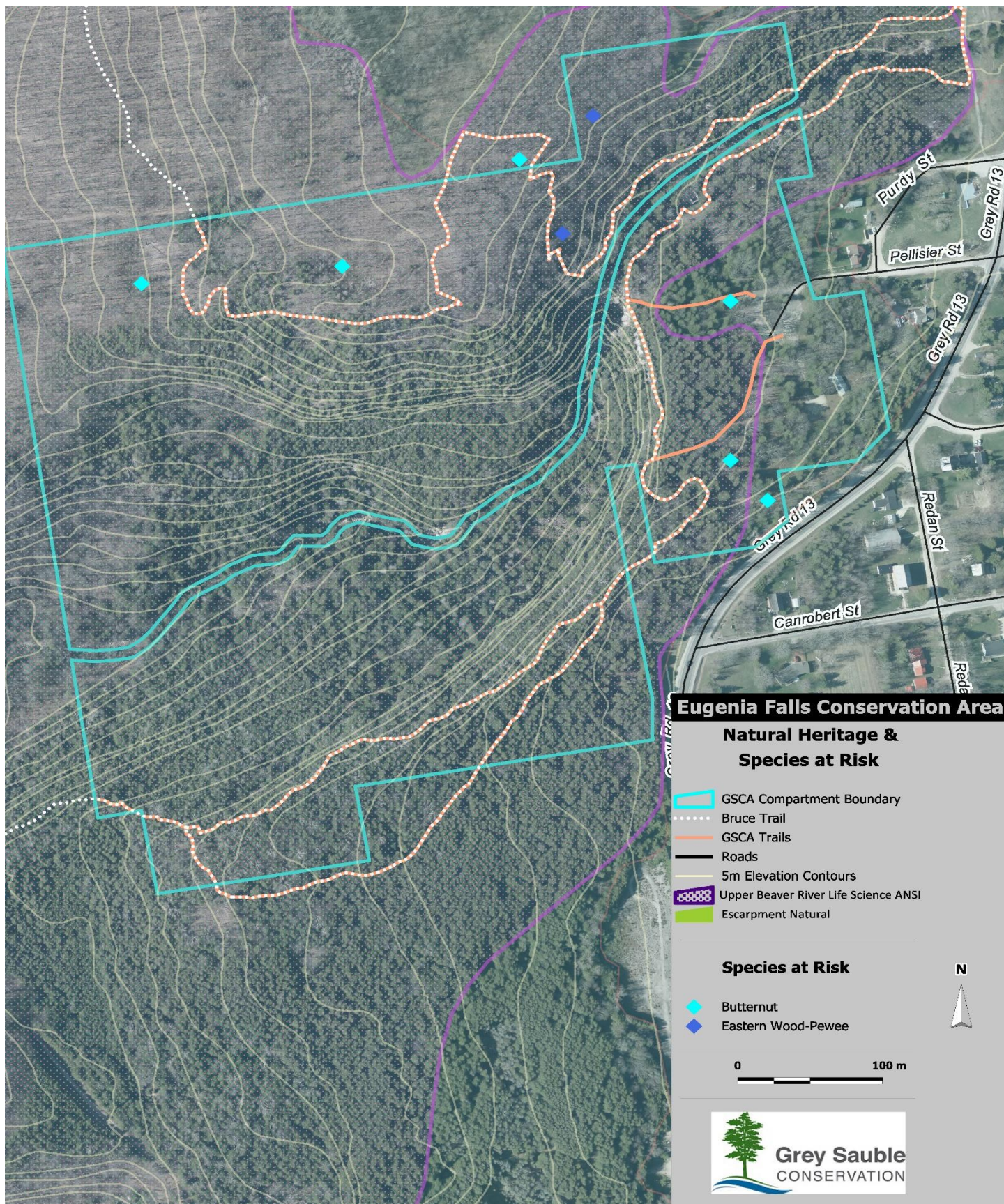


Figure 3 – Species at Risk Locations

6.0 Invasive Species

Invasive species refer to any plant, animal, insect or diseases that are not native to the area and have an aggressive growth nature that enables them to outcompete native species for habitat. This can directly affect the populations of wildlife due to impacts on natural food supplies and nesting habitat. As part of the Terrestrial Vegetation / ELC confirmation species surveys that have been conducted in Eugenia Falls Conservation Area, a number of invasive species were tabulated and mapped. Some of these species would have been introduced to the area likely due to the historical uses of the property. Popular introduced garden species like Garlic Mustard (*Alliaria petiolate*), and Goutweed (*Aegopodium podagraria*), have been found within the wooded areas close to the current parking lot.

Some invasive tree pest / diseases were also noted within this site and included Beech Scale Insect (*Cryptococcus fagisuga*), Beech Bark Disease (*Neonectria faginata* & *Neonectria ditissima*), and Butternut Canker (*Sirococcus clavigignenti-juglandacearum*). These tree diseases are caused by various fungi and the spores can travel via insects, wind, and rain which makes control of these diseases extremely difficult.

Species that bear fruit i.e., Common Buckthorn, Oriental Bittersweet are able to spread by the feeding activities of wildlife, whereas seed bearing species i.e., Wild Chervil and Garlic Mustard can be spread by the seeds clinging to the legs of wildlife and people that walk through the existing patches. People that venture off the trails are more likely to spread these invasive species. A strategy should be developed to eradicate these species before they become extensive.

The Invasive Species observed during the field surveys are presented below in Table 4:

Table 4. Invasive Species at Eugenia Falls Conservation Authority

Invasive Species located in Eugenia Falls Compartment # 38				
Common Name	Scientific Name	Taxa	Number of Occurrences	Average Pop Radius (m)
Beech Bark Disease	<i>Nectria coccinea</i> var, <i>faginata</i>	Fungi	1 clump of 20 trees	20
Beech Scale Insect	<i>Cryptococcus fagisuga</i>	Insect	4	5
Butternut Canker	<i>Sirococcus clavigignenti-juglandacearum</i>	Fungi	4	1
Common Buckthorn	<i>Rhamnus cathartica</i>	Plants	1	1
Garlic Mustard	<i>Alliaria petiolate</i>	Plants	2	1
Goutweed	<i>Aegopodium podagraria</i>	Plants	2	3
Japanese Knotweed	<i>Fallopia japonica</i>	Plants	1	5
Norway Maple	<i>Acer platanoides</i>	Plants	4	3
Oriental Bittersweet	<i>Celastrus orbiculatus</i>	Plants	1 clump of 15 vines	5
Wild Chervil	<i>Anthriscus sylvestris</i>	Plants	1	3

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Figure 4 – Invasive Species Locations

7.0 Conclusion

This site consists largely of natural forested areas, cliff faces and open water. The area of the cliff face remains relatively undisturbed from human activities, resulting in the presence of old growth cedars. The area of the mature sugar maples has less diverse undergrowth than that of the younger mixed hardwoods, likely due to the amount of canopy cover reducing the light to the forest floor. Both types of forest are important SAR bird habitat and contribute to an even larger area of Significant Interior Forest Habitat that benefits all wildlife.

Historically disturbed areas around the site of the former power plant by the river and the historic tunnel location have regenerated to native forest for the most part, with a small area of cultural meadow near the power plant building. However there remains some partially buried domestic waste within the mixed forest (FOM4) near the ruins of the power station close to the eastern property boundary, as well as an old, rusted vehicle in a valley at the edge of the FOD5-1 polygon near the northeast corner of the site.

The area near the falls lookout has been somewhat trampled due to cultural recreation activity thus reducing the diversity of forest floor species. Keeping Eugenia Falls Conservation Area as natural as possible will help to support the diverse ecosystems that rely on the natural features of this area. Limiting the impacts of the public (like foraging and trampling off trail) and keeping the area from becoming fragmented with trails and off trail hiking, should be a priority, in order to maintain undisturbed areas for wildlife.

8.0 References

Interpretive Strategy and Signage Report – Eugenia Falls, 1992, P. Coulter, S. Nagy, Grey Sauble Conservation Authority.

Grey Sauble Conservation Authority – Forestry Dept. Forest Inventory Database. Owen Sound, Grey County, Ontario.

Ministry of Northern Mines and Development, Ontario Geological Survey, Paleozoic Geology of Southern Ontario, map.

Ministry of Northern Mines and Development, Ontario Geological Survey, Physiography of Southern Ontario, map 1984, L.J. Chapman, D.F. Putnam.

Ministry of Natural Resources, Ecological Land Classification for Southern Ontario, September 1998, H. Lee, W. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig, S. McMurray, North Bay, Ontario.

Ministry of Natural Resources, Natural Heritage Information Centre, Ontario Vascular Plants.
<https://www.biodiversityexplorer.mnr.gov.on.ca/nhicWEB>

Ministry of Natural Resources, Ecological Survey of the Niagara Escarpment Biosphere Reserve, Volume 1 - Significant Natural Areas. 1996, J.L. Riley, J.V. Jalava, S. Varga

Species at Risk in Ontario List, O. Reg. 230/08. <https://www.ontario.ca/page/species-risk-ontario>

Species at Risk Public Registry. <http://sararegistry.gc.ca>

Tovell, W.M., (1992). A Guide to the Geology of the Niagara Escarpment, The Niagara Escarpment Commission and the Ontario Heritage Foundation, Ontario.

8.0 Limitations

Surveys were conducted during the daylight hours which reduces the likelihood of observing nocturnal species. Many parts of this property are inaccessible due to safety issues. While every effort was made to ensure the best coverage for the accessible portions of the surveyed site, Grey Sauble Conservation Authority (GSCA) warrants that there is a possibility that species may exist within the study areas that were not apparent during the site visits.

GSCA believes that the information collected during the survey is reliable, however GSCA cannot guarantee that the information provided is complete. GSCA reserves the right to amend and/or supplement this report if additional information becomes available.

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Appendix A: Compiled List of Wildlife Species Observed on Site

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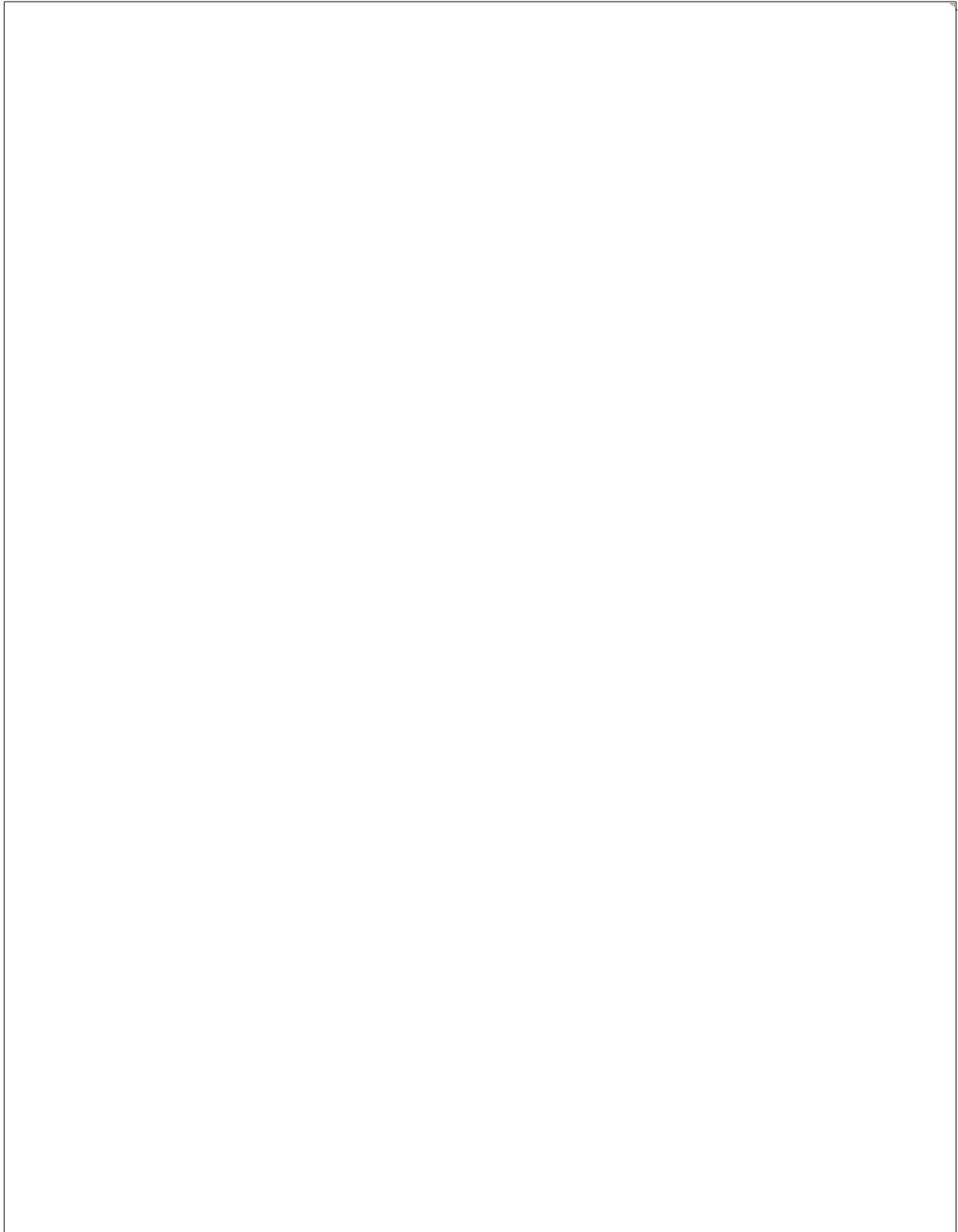


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OBSERVED ON SITE	SCIENTIFIC NAME	ENGLISH COMMON NAME	PROVINCIALY TRACKED	S RANK	COSEWIC / SARA STATUS	SARO STATUS	G RANK	N RANK	TAXON GROUP
X	Laportea canadensis	Wood Nettle	N	S5			G5	N5	Vascular plants
X	Lapsana communis	Common Nipplewort	N	SNA			GNR	NNA	Vascular plants
X	Lilium philadelphicum	Wood Lily	N	S5			G5	N5	Vascular plants
X	Lobelia cardinalis	Cardinal Flower	N	S5			G5	NNR	Vascular plants
X	Maianthemum canadense	Wild Lily-of-the-valley		S5			G5	N5	Vascular plants
X	Maianthemum racemosum	Large False Solomon's Seal	N	S5			G5	N5	Vascular plants
X	Maianthemum stellatum	Star-flowered False Solomon's Seal	N	S5			G5	N5	Vascular plants
X	Malva moschata	Musk Cheeseweed	N	SNA			GNR	NNA	Vascular plants
X	Malva neglecta	Dwarf Cheeseweed	N	SNA			GNR	NNA	Vascular plants
X	Mellilotus albus	White Sweet-clover	N	SNA			G5	NNA	Vascular plants
X	Myosotis arvensis	Rough Forget-me-not	N	SNA			GNR	NNA	Vascular plants
X	Nepeta cataria	Catnip	N	SNA			GNR	NNA	Vascular plants
X	Oenothera biennis	Common Evening Primrose	N	S5			G5	N5	Vascular plants
X	Oxalis stricta	Upright Yellow Wood- sorrel	N	S5			G5	N5	Vascular plants
X	Pilosella aurantiaca	Orange Hawkweed	N	SNA			GNR	NNA	Vascular plants
X	Plantago lanceolata	English Plantain	N	SNA			G5	NNA	Vascular plants
X	Plantago major	Common Plantain	N	SNA			G5	NNA	Vascular plants
X	Potentilla simplex	Old-field Cinquefoil	N	S5			G5	N5	Vascular plants
X	Prunella vulgaris	Self-heal		S5			G5	N5	Vascular plants
X	Ranunculus hispidus	Bristly Buttercup		S5			G5	NNR	Vascular plants
X	Rumex obtusifolius	Bitter Dock	N	SNA			GNR	NNA	Vascular plants
X	Silene vulgaris	Bladder Campion	N	SNA			GNR	NNA	Vascular plants
X	Solidago canadensis	Canada Goldenrod		S5			G5	N5	Vascular plants
X	Solidago flexicaulis	Zigzag Goldenrod	N	S5			G5	N5	Vascular plants
X	Solidago gigantea	Giant Goldenrod	N	S5			G5	N5	Vascular plants
X	Solidago juncea	Early Goldenrod	N	S5			G5	N5	Vascular plants
X	Sonchus arvensis	Field Sow-thistle		SNA			GNR	NNA	Vascular plants

OBSERVED ON SITE	SCIENTIFIC NAME	ENGLISH COMMON NAME	PROVINCIALY TRACKED	S RANK	COSEWIC / SARA STATUS	SARO STATUS	G RANK	N RANK	TAXON GROUP
X	Streptopus lanceolatus	Rose Twisted-stalk		S5			G5	N5	Vascular plants
X	Symphytotrichum cordifolium	Heart-leaved Aster	N	S5			G5	N5	Vascular plants
X	Symphytotrichum lanceolatum	Panicked Aster		S5			G5	N5	Vascular plants
X	Symphytotrichum lateriflorum	Calico Aster		S5			G5	N5	Vascular plants
X	Symphytotrichum novae- angliae	New England Aster	N	S5			G5	N5	Vascular plants
X	Symphytotrichum ontarionis	Ontario Aster		S5			G5	NNR	Vascular plants
X	Taraxacum officinale	Common Dandelion	N	SNA			G5	N5	Vascular plants
X	Thalictrum dioicum	Early Meadow-rue	N	S5			G5	NNR	Vascular plants
X	Thalictrum pubescens	Tall Meadow-rue	N	S5			G5	NNR	Vascular plants
X	Tragopogon dubius	Yellow Goat-s-beard	N	SNA			GNR	NNA	Vascular plants
X	Trifolium pratense	Red Clover	N	SNA			GNR	NNA	Vascular plants
X	Trillium erectum	Red Trillium	N	S5			G5	N5	Vascular plants
X	Trillium grandiflorum	White Trillium	N	S5			G5	N5	Vascular plants
X	Tussilago farfara	Colt's-foot	N	SNA			GNR	NNA	Vascular plants
X	Urtica dioica	Stinging Nettle		S5			G5	N5	Vascular plants
X	Verbascum thapsus	Common Mullein	N	SNA			GNR	NNA	Vascular plants
X	Veronica officinalis	Common Speedwell	N	SNA			G5	NNR	Vascular plants
X	Vicia cracca	Tufted Vetch	N	SNA			GNR	NNA	Vascular plants
X	Viola labradorica	Labrador Violet (Dog Violet)	N	S5			G5	N5	Vascular plants
X	Viola pubescens	Yellow Violet		S5			G5	N5	Vascular plants
X	Viola renifolia	Kidney-leaved White Violet	N	S5			G5	N5	Vascular plants
X	Viola sororia	Woolly Blue Violet	N	S5			G5	N5	Vascular plants

OBSERVED ON SITE	SCIENTIFIC NAME	ENGLISH COMMON NAME	PROVINCIAL LY TRACKED	S RANK	COSEWIC / SARA STATUS	SARO STATUS	G RANK	N RANK	TAXON GROUP
FERNS									
X	Botrypus virginianus	Rattlesnake Fern	N	S5			G5	N5	Vascular plants
X	Cystopteris bulbifera	Bulblet Fern	N	S5			G5	N5	Vascular plants
X	Dryopteris carthusiana	Spinulose Wood Fern	N	S5			G5	N5	Vascular plants
X	Dryopteris goldiana	Goldie's Wood Fern	N	S4			G4G5	N4	Vascular plants
X	Dryopteris marginalis	Marginal Wood Fern	N	S5			G5	N5	Vascular plants
X	Onoclea sensibilis	Sensitive Fern	N	S5			G5	N5	Vascular plants
X	Polystichum lonchitis	Northern Holly Fern	N	S4			G5	N4N5	Vascular plants
X	Pteridium aquilinum	Bracken Fern	N	S5			G5	N5	Vascular plants

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Appendix C: List of Tree, Shrub, & Woody Vine Species Observed on Site

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Tree, Shrub, & Woody Vines Species List - GSCA - Eugenia Falls # 38

OBSERVED ON SITE	SCIENTIFIC NAME	ENGLISH COMMON NAME	PROVINCIALY TRACKED	S RANK	COSEWIC / SARA STATUS	SARO STATUS	G RANK	N RANK	TAXON GROUP
TREES									
X	Abies balsamea	Balsam Fir	N	S5			G5	N5	Vascular plants
X	Acer negundo	Manitoba Maple	N	S5			G5	N5	Vascular plants
X	Acer platanoides	Norway Maple	N	SNA			GNR	NNA	Vascular plants
X	Acer saccharum	Sugar Maple	N	S5			G5	N5	Vascular plants
X	Betula alleghaniensis	Yellow Birch	N	S5			G5	N5	Vascular plants
X	Betula papyrifera	Paper Birch	N	S5			G5	N5	Vascular plants
X	Crataegus monogyna	English Hawthorn	N	SNA			G5	NNA	Vascular plants
X	Fagus grandifolia	American Beech	N	S4			G5	N5	Vascular plants
X	Fraxinus americana	White Ash	N	S4			G5	N5	Vascular plants
X	Juglans cinerea	Butternut	Y	S2?	END	END	G4	N3N4	Vascular plants
X	Juglans nigra	Black Walnut	N	S4?			G5	N4	Vascular plants
X	Malus pumila	Common Apple	N	SNA			G5	NNA	Vascular plants
X	Ostrya virginiana	Eastern Hop-hornbeam	N	S5			G5	N5	Vascular plants
X	Picea glauca	White Spruce	N	S5			G5	N5	Vascular plants
X	Pinus resinosa	Red Pine	N	S5			G5	N5	Vascular plants
X	Populus alba	White Poplar	N	SNA			G5	NNA	Vascular plants
X	Populus balsamifera	Balsam Poplar	N	S5			G5	N5	Vascular plants
X	Populus grandidentata	Large-toothed Aspen	N	S5			G5	NNR	Vascular plants
X	Populus tremuloides	Trembling Aspen	N	S5			G5	N5	Vascular plants
X	Prunus pensylvanica	Pin Cherry	N	S5			G5	NNR	Vascular plants
X	Prunus serotina	Black Cherry	N	S5			G5	N5	Vascular plants
X	Sorbus americana	American Mountain-ash	N	S5			G5	N5	Vascular plants
X	Syringa vulgaris	Common Lilac	N	SNA			GNR	NNA	Vascular plants
X	Thuja occidentalis	Eastern White Cedar	N	S5			G5	N5	Vascular plants
X	Tilia americana	American Basswood	N	S5			G5	N5	Vascular plants
X	Tsuga canadensis	Eastern Hemlock	N	S5			G5	N5	Vascular plants
X	Ulmus americana	American Elm	N	S5			G5	N5	Vascular plants

OBSERVED ON SITE	SCIENTIFIC NAME	ENGLISH COMMON NAME	PROVINCIALY TRACKED	S RANK	COSEWIC / SARA STATUS	SARO STATUS	G RANK	N RANK	TAXON GROUP
SHRUBS									
X	Cornus alternifolia	Alternate-leaved Dogwood	N	S5			G5	N5	Vascular plants
X	Cornus sericea	Red-osier Dogwood	N	S5			G5	N5	Vascular plants
X	Dirca palustris	Eastern Leatherwood	N	S4			G4	NNR	Vascular plants
X	Lonicera x bella	Bell's Honeysuckle	N	SNA			GNA	NNA	Vascular plants
X	Rhamnus cathartica	Common Buckthorn	N	SNA			GNR	NNA	Vascular plants
X	Ribes hirtellum	Smooth Gooseberry	N	S5			G5	N5	Vascular plants
X	Ribes oxycanthoides	Canada Gooseberry		S5			G5	N5	Vascular plants
X	Rubus idaeus	Common Red Raspberry		S5			G5	N5	Vascular plants
X	Rubus occidentalis	Black Raspberry	N	S5			G5	N5	Vascular plants
X	Sambucus racemosa	Red Elderberry	N	S5			G5	N5	Vascular plants
X	Toxicodendron radicans	Poison Ivy		S5			G5	N5	Vascular plants
X	Viburnum opulus ssp. trilobum	Highbush Cranberry	N	S5			GNR	NNR	Vascular plants
VINES									
X	Celastrus orbiculatus	Oriental Bittersweet	N	SNA			GNR	NNA	Vascular plants
X	Parthenocissus quinquefolia	Virginia Creeper	N	S4?			G5	N4N5	Vascular plants
X	Vitis riparia	Riverbank Grape	N	S5			G5	N5	Vascular plants





Grey Sauble
CONSERVATION

Invasive Plant Species Strategy

A strategy for monitoring and controlling invasive plant species on GSCA properties.

Adopted: 22-August-2022



PROTECT. RESPECT. CONNECT.

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Introduction

Grey Sauble Conservation Authority (GSCA) will aim to control invasive plant species that are present on their properties through various control measures. Selection of species to control and associated control methods will be on a case-by-case basis.

GSCA will work to provide information to its watershed residents about identification, damage, and control measures. This maybe through its website or other means.

What are Invasive Species?

Invasive species are plants, animals, insects, and pathogens that are introduced to an area and cause harm to the environment, economy, or society (Invasive Species Centre, 2022). Invasive species generally do not have any natural predators within these new ecosystems and are able to outcompete native species for scarce resources. An introduced species is not considered an invasive species unless it causes negative environmental, economic, or social impacts. An example of a introduced, non-invasive species is European larch (*Larix decidua*).

Impacts of Invasive Plants

Invasive plants can cause numerous negative impacts to GSCA properties and associated infrastructure, their visitors, and the surrounding landscape.

Natural Areas

Natural areas have developed over many years and provide many benefits to society and the environment. These areas provide numerous ecosystem services including water and air filtration, habitat and food for wildlife, production of oxygen, and recreational and educational opportunities. These ecosystems can be sensitive to change and oftentimes when an invasive species is introduced to an area, they will outcompete the native species and alter the species composition and threaten the natural balance and services these areas offer.

Agriculture

Invasive species can have extremely negative impacts on agricultural activities. Invasive plants can be vectors for pests and diseases that harm crops, reduce crop yields, and require additional use of pesticides to control them. Several invasive species have been known to take over farmland effectively reducing the yield of desirable crops or reducing the amount of area available to pasture livestock. An example is knapweed sp. (*Centaurea spp.*).

Forestry

Like agriculture, invasive species can have negative impacts on a forests productivity and its ability to regenerate itself. Invasive species can outcompete desirable native species reducing their overall numbers and growth rates. Within plantations, common buckthorn (*Rhamnus cathartica*) quickly establishes in recently harvested areas and form dense canopies which stops or hinders the regeneration of desirable native species.

Human Health

Some invasive species are known to cause physical harm to humans. For example, the sap of giant hogweed (*Heracleum mantegazzianum*) is known to cause severe dermatitis if it comes in contact with the skin.

Other species, such as invasive phragmites (*Phragmites australis*) forms dense stands within ditches and

rights-of-way that can block visibility. This can increase the chance of car accidents. Dead stalks of Phragmites are also known to become very flammable.

Why Control Invasive Species?

Due to the lack of natural predators, when an invasive species is introduced to a new environment, they can quickly become established and grow unchecked. Some invasive species prey directly on native species and reduce their populations. This will reduce the amount of biodiversity within an area and in some cases extirpation of native species can occur.

Invasive species management is a difficult task that can be expensive and time consuming. For certain species one intervention is enough while for many others require multiple interventions. For all control efforts, challenges exist in securing funding, expertise, and resources. For certain projects, funding is only available for a single year, potentially causing problems for species requiring multiple years of control. Invasive species management plans are long-term plans but with the uncertainty of funding for multiple years, can be challenging to execute.

Each of the strategies listed below relate to each other and in many cases overlap with at least one other strategy. For instance, preventing the introduction of an invasive species may include an education component, collaboration with other groups, communication with the public about identifying an invasive species, and sharing of best management practices publicly.

Strategies for Controlling Invasive Species

The following strategies will be used for all invasive species. In many cases, multiple strategies will be utilized for the same occurrence. For instance, if wild chervil (*Anthriscus sylvestris*) is found on a GSCA property, staff may communicate the negative impacts of it through social media channels, implement a control strategy, collaborate with other organizations to develop/influence policy decisions, and after control efforts monitor the site for control efficacy.

For each finding, a property and species-specific plan/prescription will be developed.

Prevention

- Preventing an invasive species from entering an area is the preferred method of control as it costs the least and has the least impact on the environment, economy, and society.

Communication

- Along with prevention, communication is a key component of any invasive species strategy. Building awareness of invasive species is key to achieving GSCA's goals and objectives.

Best Management Practices (BMP)

- Numerous studies have been completed indicating the most effective control means for many different invasive species. There are many factors that go into controlling invasive species and individual results may vary. GSCA will work to incorporate known BMPs into invasive species control methods, while also applying learnings from past control methods.

Prioritization

- Controlling every occurrence of invasive species on GSCA properties is not possible. Prioritization is required to make headway and allow for focused control efforts. GSCA has

adapted a 'Decision Support Key' (Appendix A) from Credit Valley Conservation, to assist with identifying and selecting species and areas for control.

Implementation

- Implementation is conducting the work to control an invasive species. Control efforts for certain invasive species at specific GSCA properties has taken place. When an invasive species is identified on a GSCA property, the Decision Support Key will be used to determine next steps. Invasive species management requires long-term commitments and available resources. Where possible, GSCA will continue to seek funding.

Collaboration

- GSCA understands it cannot control all invasive species alone. Working with others through partnerships (formal and informal) is key to long-term success. Staff will seek to maintain current partnership and build additional ones. Groups and organizations may include municipalities, neighbouring Conservation Authorities, or local naturalist groups.

Policy

- GSCA will aim to work with various levels of government and key stakeholders to create and influence policies and guidelines to assist in the control of invasive species.

Monitoring (and Research)

- GSCA will seek to stay up to date on current research and control methods. GSCA will aim to support groups monitoring and researching invasive species.

Prioritization of Invasive Species for Control

Identifying and controlling invasive species before they become established within an area is key. Controlling invasive species once they have become established within an area can become extremely costly and time consuming.

GSCA will follow the 'Invasive Species Decision Key' (Appendix A) to identify appropriate next steps when an invasive species is found on a property.

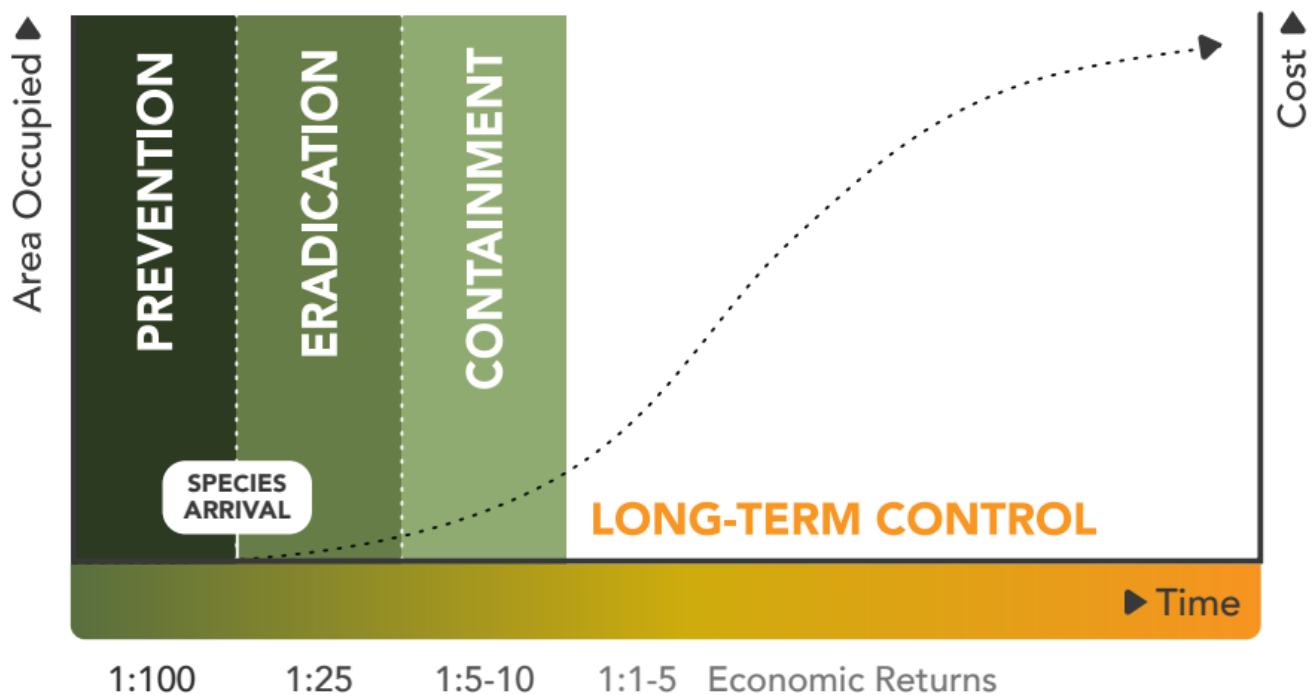
Priority Species

GSCA aims to ensure safe access to its properties for visitors and staff. As such, invasive species known to cause harm to people will be given top priority. Species listed on the Ontario Noxious Weeds list and located near agricultural properties or species which negatively detract from the ability to use GSCA recreational areas will be given next highest priority, and species known to spread quickly and cause severe harm to the natural environment will be given the next highest priority. Invasive species that do not cause a safety risk to visitors, do not impact agriculture as per the Ontario Noxious Weeds list, do not spread quickly, and those that have no known control tools/techniques will be given the lowest priority. The table below provides examples and potential actions for when an invasive species is found.

Priority Level	Management Trigger	Example	Action
Top priority	<ul style="list-style-type: none"> - Species known to cause bodily harm - Species listed on Ontario Noxious Weeds List* - Species directly affecting GSCA recreational areas 	<ul style="list-style-type: none"> - Giant hogweed - Wild parsnip (<i>Pastinaca sativa</i>) - Wild chervil - Phragmites 	<ul style="list-style-type: none"> - Begin control measures as soon as possible. Close the area, if necessary, and place signs informing the public.
Medium priority	<ul style="list-style-type: none"> - Species known to reproduce and spread quickly - Small isolated/satellite population - Newly established/detected population - Rapidly expanding population 	<ul style="list-style-type: none"> - Garlic mustard (<i>Alliaria petiolata</i>) - Dog-strangling vine (<i>Vincetoxicum rossicum</i> & <i>Vincetoxicum nigrum</i>) - Buckthorn - Non-native honeysuckle sp. (<i>Lonicera spp.</i>) 	<ul style="list-style-type: none"> - Develop a management plan. - If budget and staffing resources are available, initiate management plan.
Low Priority	<ul style="list-style-type: none"> - Species known to spread slowly - Species that do not cause physical harm to visitors - Species with no known control tools/techniques 	<ul style="list-style-type: none"> - Periwinkle (<i>Vinca minor</i>) 	<ul style="list-style-type: none"> - Monitor population. - If population grows, affects species-at-risk, or poses safety risk initiate control measures.

*http://omafra.gov.on.ca/english/crops/facts/noxious_weeds.htm

The figure below shows relative cost (economic) ratios of invasive species management at different times of invasion. Preventing entry of an invasive species is 100 times higher than long-term control measures. Eradication is estimated to be 25 times greater, and containment is 5-10 times. This figure highlights the need for prevention of entry and communication of invasive species over control efforts.



Adapted from Generalized Invasion Curve (Agriculture Victoria, 2009).

If an invasive species enters an area, early detection and control are still much cheaper and effective than waiting and implementing control measures after the species is established.

Selecting a Control Method

Many invasive species there are several control methods to choose from. These may include manually pulling, cutting, solarizing, applying herbicides, and/or using biological control agents. Each control method will have its own advantages and disadvantages. The advantages and disadvantages will be weighed to reduce potential impacts on the environment while meeting the goals of the control program. If possible and where appropriate, partner organizations and/or volunteers will be utilized to control invasive species. Whenever possible, control methods that do as little harm to the surrounding environment will be selected. In some cases, it is not feasible to select a control method with zero off-target impacts. In these cases, the damage to non-target species will be minimized as much as possible.

No matter which control method is selected, Best Management Practices and all laws and regulations will be followed.

Measuring Successes and Reporting

For all management projects undertaken, follow up monitoring will be conducted. This may include visiting the site to see if a particular species is present again, measuring the size of an area of invasive species to understand if it has become smaller, or completing an inventory to determine the presence and/or abundance of native species before and after management has taken place.

Annually, a report will be developed explaining the management activities for the year, challenges faced, and plans for the upcoming year.

Scoping / Financial Implications

GSCA identifies the need to control invasive species on its properties and understands that these efforts have a cost. Staff also understand it is not feasible to control every occurrence of an invasive species on an annual basis. Therefore, staff have prioritized several properties and species for initial control efforts. Staff are suggesting \$15,000 per year is earmarked for invasive species control. This includes \$10,000 for staff time and \$5,000 for herbicide/tools. The species and properties located below (Appendix B) are ones that have been identified by staff as having the potential to cause human health problems or negatively affect agricultural production.

Additional Resources

Below are additional resources that maybe useful for controlling invasive species on GSCA properties.

<https://www.invasivespeciescentre.ca/invasive-species/invasive-species-resources/best-management-practices-database/>

https://cvc.ca/wp-content/uploads/2021/01/CVC_InvasiveSpeciesStrategyWEBsingles-Ir-1.pdf

https://agriculture.vic.gov.au/_data/assets/pdf_file/0009/582255/Invasive-Plants-and-Animals-Policy-Framework-IPAPF.pdf

References

CVC, 2021 - https://cvc.ca/wp-content/uploads/2020/12/rpt_InvasiveSpeciesStrategy_v16_20201230.pdf. Accessed 26-Jan-22.

Invasive Species Centre - <https://www.invasivespeciescentre.ca/learn/>. Accessed 26-Jan-22.

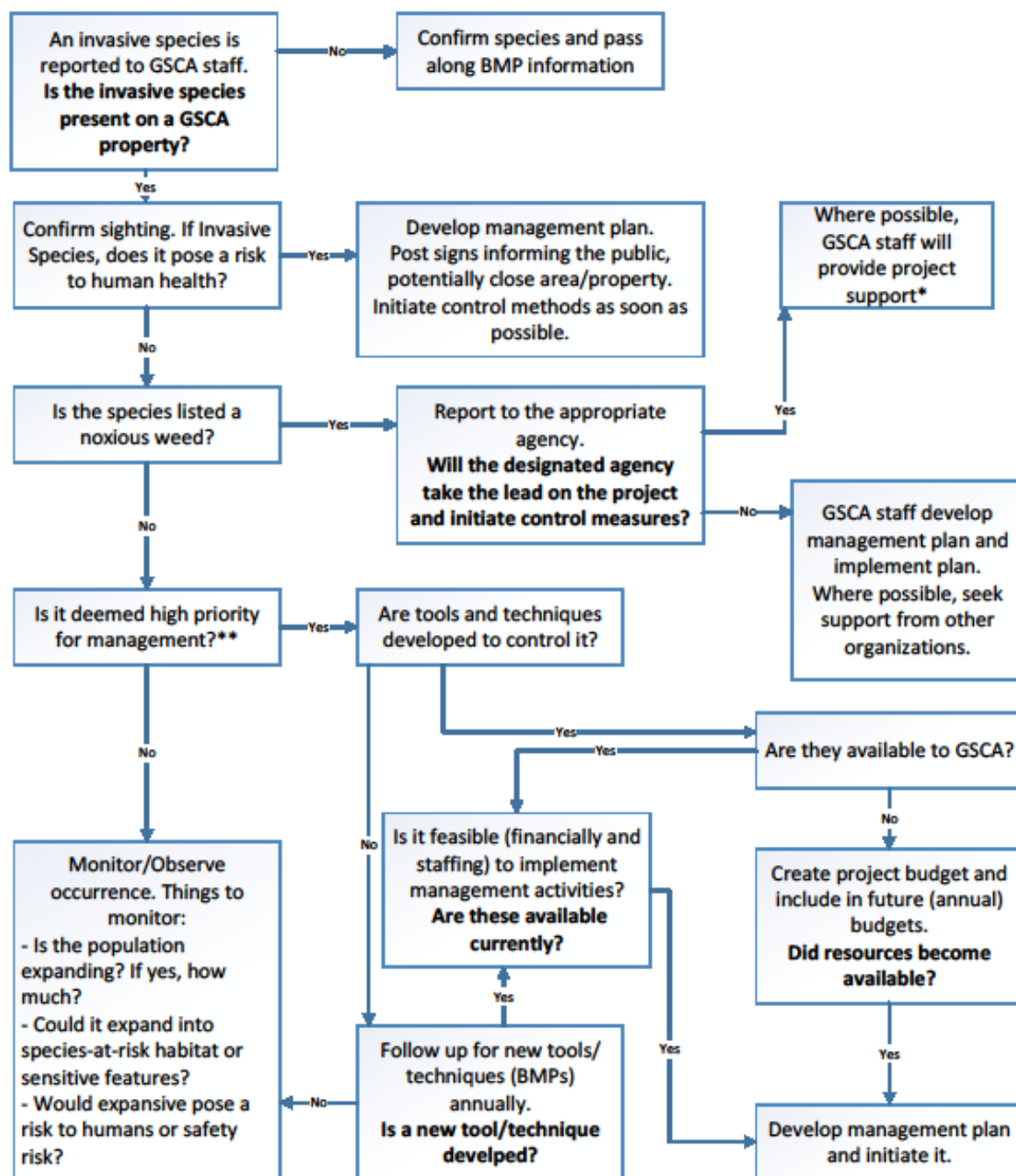
CLOCA, 2010 - Invasive Species Management Strategy (cloca.ca). Accessed 06-May-22.

City of Mississauga, 2021 – Invasive Species Management Plan & Implementation Strategy. <https://www.mississauga.ca/wp-content/uploads/2021/02/18112420/Invasive-Species-Management-Plan.pdf>. Accessed 04-July-22.

Sherman, Kellie. 2015. Creating an Invasive Plant Management Strategy: A Framework for Ontario Municipalities. Ontario Invasive Plant Council. Peterborough, ON.

Appendix A – Invasive Species Decision Key

Appendix A - Invasive Species Control Decision Key



*Project support may include providing staff, equipment/supplies, education/outreach, access to GSCA property.

***High priority includes priority species based on Invasive Species Strategy, high functioning habitat, known species-at-risk habitat

Adapted from CVC Invasive Species Strategy 2020-2030 – pg 58 - https://cvc.ca/wp-content/uploads/2021/01/CVC_InvasiveSpeciesStrategyWEBsingles-lr-1.pdf

- i) Appendix B – 2023 Priority Invasive Species on GSCA Properties
- ii)

GSCA Property	Invasive Species			
	Wild Chervil	Giant Hogweed	Wild Parsnip	Dog-strangling Vine
Skinner's Bluff	Yes - small patch			
Skinner Marsh - McNab Lake	Yes - large patch			
Shallow Lake		Yes - medium patch		
The Glen				Yes - small patch
Inglis Falls	Yes - large patch			
West Rocks	Yes - large patch			
Massie Hills	Yes - large patch			
Bognor Marsh	Yes - large patch			
Clendenan		Yes - small patch		
Griersville	Yes - large patch			

iii) **Appendix C – Best Management Practices**

Giant Hogweed – https://www.ontarioinvasiveplants.ca/wp-content/uploads/2020/10/GiantHogweed_BMP.pdf

Wild Chervil – <http://www.invadingspecies.com/invaders/plants/wild-chervil/>

Common Buckthorn – https://www.ontarioinvasiveplants.ca/wp-content/uploads/2016/06/OIPC_BMP_Buckthorn.pdf

Phragmites – https://www.ontarioinvasiveplants.ca/wp-content/uploads/2021/05/OIPC_BMP_Phragmites_April302021_D10_WEB.pdf

Garlic Mustard – https://www.ontarioinvasiveplants.ca/wp-content/uploads/2016/07/OIPC_BMP_GarlicMustard.pdf

Wild Parsnip – https://www.ontarioinvasiveplants.ca/wp-content/uploads/2016/07/OIPC_BMP_WildParsnip_Feb182014_FINAL2.pdf

Dog-strangling Vine - https://www.ontarioinvasiveplants.ca/wp-content/uploads/2016/06/OIPC_BMP_DogStranglingVine.pdf

iv) Appendix D – Invasive Species Prescription Template



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www.greysauble.on.ca

Protect.
Respect.
Connect.

GSCA Invasive Species Control Prescription

Compartment Details:

Property Name/Management Area: _____
Compartment Number: _____
Lot: _____ Concession: _____
Municipality: _____ Former Township: _____

Property/Stand Details:

(see attached map)

Invasive Species Found (list all that were found):

Current Land Cover: Forested Agriculture Open

Accessibility (able to get a pickup truck to site, is there a long hike, is the site roadside, etc...):

Potential Concerns (note accessibility by the public, known user groups, etc...):

Presence of Species-at-Risk? Yes No Unknown

If yes, please let them? _____

Treatment:

Best Management Practices document available? Yes No

If yes, can suggested BMPs be applied to site? Yes No

Recommended Treatment:

Follow-up Recommendations:

Member Municipalities

Municipality of Arran-Elderslie, Town of the Blue Mountains, Township of Chatsworth, Township of Georgian Bluffs, Municipality of Grey Highlands, Municipality of Meaford, City of Owen Sound, Town of South Bruce Peninsula

Strategies – where appropriate, describe possible actions for each strategy. If none, put N/A:

Prevention:

Communication:

Prioritization:

Collaboration:

Policy:

Monitoring (and Research):

Prepared By: _____

Date Prepared: _____

Appendix E – Summary of Invasive Species on GSCA Properties

Property	Beech Bark Disease	Beech Scale Insect	Bell's Honeysuckle	Butternut Canker	Coltsfoot	Common Buckthorn	Common Privet	Dog Strangling Vine	Garlic Mustard	Goutweed	Gypsy Moth Caterpillar	Holly Leaved Oregon Grape	Invasive Honeysuckle Sp.	Japanese Barberry	Japanese Knotweed	Lamb's Ear	Lamium	Manitoba Maple	Morrow's Honeysuckle	Norway Maple	Oriental Bittersweet	Periwinkle	Phragmite / Common Reed	Purple Loosestrife	Reed Canary Grass	Scotch Pine	Silver Or White Poplar	Tartarian Honeysuckle	Tufted (cow) Vetch
AINSLIE WOOD														1															
BIGHEAD RIVER						89			4	4					2							5							
BOAT LAKE - C																						2							
BOAT LAKE - D																						2							
BOGNOR MARSH - C						6																							
BOGNOR MARSH - D	3	11		4		458			2		1		8	2									5	2					
CLENDENAN			2			1			1																				
EUGENIA FALLS	2	6				2			4											2	2								
FISHING ISLANDS - C																						2							
FOUR CORNERS						3																							
GIBRALTAR					1	4			25																				
HEPWORTH	5	34	15	1		3													14		7							2	
HIBOU																							35						
INDIAN FALLS			1			1			1																				
INGLIS FALLS	3	7	11	1		70	10		23	1		7		4			1		50	7	3	20							
KEMBLE MOUNTAIN - B																													
KEPPEL FOREST			4			3																							
KOLAPORE UPLANDS	5	2		19	2	92			21									1				2	1						
LEITH SPIT																							1						
LITTLE GERMANY		1	3	1	4	36		3	2				2											2					6
MASSIE HILLS - A	3	6				277																2							

MASSIE HILLS - B	1	7		14	4	174							1									2							
Property	Beech Bark Disease	Beech Scale Insect	Bell's Honeysuckle	Butternut Canker	Coltsfoot	Common Buckthorn	Common Privet	Dog Strangling Vine	Garlic Mustard	Goutweed	Gypsy Moth Caterpillar	Holly Leaved Oregon Grape	Invasive Honeysuckle Sp.	Japanese Barberry	Japanese Knotweed	Lamb's Ear	Lamium	Manitoba Maple	Morrow's Honeysuckle	Norway Maple	Oriental Bittersweet	Periwinkle	Phragmite / Common Reed	Purple Loosestrife	Reed Canary Grass	Scotch Pine	Silver Or White Poplar	Tartarian Honeysuckle	Tufted (cow) Vetch
PEASEMARSH																						7							
ROBSON LAKES - A						201							2																
ROBSON LAKES - B		1				7																							
ROBSON LAKES - C		1	7	4		63																							
ROCKFORD						44								2								1							
ROCKLYN CREEK - A		1				81			6																				
SHALLOW LAKE - A						8																							
SHEPPARD LAKE						111																							
SINKHOLE									2																				
SKINNER McNAB - A		1				26			2																1				
SKINNER McNAB - B			3			4			1												1								
SKINNER McNAB - D		5	2		1	32			2												3								
SKINNER McNAB - E						5			1				2																
SKINNER'S BLUFF - B		3		2		86							6			2					1								
SKY LAKE - B	1	2																											
SKY LAKE - C	1	24																											
SPEY RIVER - B		1				3								1															
SPEY RIVER - C		2				3																							2
SYDENHAM FOREST	1	3		37		17							5																
SYDENHAM LOWLANDS - B																													
TELFER CREEK	1	2			5	8																							

THE GLEN - A						4		2				6																	
WALTER'S CREEK - B	1	4				25			2																				
Property	Beech Bark Disease	Beech Scale Insect	Bell's Honeysuckle	Butternut Canker	Coltsfoot	Common Buckthorn	Common Privet	Dog Strangling Vine	Garlic Mustard	Goutweed	Gypsy Moth Caterpillar	Holly Leaved Oregon Grape	Invasive Honeysuckle Sp.	Japanese Barberry	Japanese Knotweed	Lamb's Ear	Lamium	Manitoba Maple	Morrow's Honeysuckle	Norway Maple	Oriental Bittersweet	Periwinkle	Phragmite / Common Reed	Purple Loosestrife	Reed Canary Grass	Scotch Pine	Silver Or White Poplar	Tartarian Honeysuckle	Tufted (cow) Vetch
WALTER'S CREEK (HOLLAND AF)						309							1														1		9
WEST ROCKS	2	1										1	4	1															
WEST ROCKS - D	1	2				93						1	62	27						1						4			1
WODEHOUSE - B						20																							
WODEHOUSE - F	1					4																							
WODEHOUSE - G						39																							
Total by Species	31	127	48	83	17	2,412	10	5	99	5	1	9	99	38	2	2	1	1	64	10	17	32	55	4	1	4	1	2	18

APPENDIX D

