NISKA LAND HOLDINGS

2023 DRAFT MANAGEMENT PLAN

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Section 1:
1.0 Introduction

The Niska Land Holdings ("Niska") is privately owned and managed by the Grand River Conservation Authority (GRCA). This plan provides an overview of the land and water resources of Niska, its use and stewardship, and makes recommendations to guide decision making for future management of the property.

Section 1 presents an introduction to Niska, including information on its location and regional context, acquisition history, management history, and the plan's purpose, goals and objectives.

1.1 PROPERTY LOCATION

Niska is located in central southwestern Ontario, straddling the Township of Puslinch (Wellington County) and the western side of the City of Guelph (Figure 1). The land holdings are adjacent to a growing residential community with a strong connection to Niska Portions of the land holdings are bisected by two roads, Niska Rd. and Pioneer Trail. Niska is approximately 65 hectares of forests, wetlands, meadows and agricultural fields and is the convergence of where Hanlon Creek flows into the Speed River. There are four separate parcels of land that make up Niska (Appendix A: Map 1.1).

1.1.1 REGIONAL CONTEXT

Regionally, Niska can be viewed within the context of both an urban and rural setting. Within the Speed River subwatershed, the City of Guelph, and the Hanlon Creek subwatershed, Niska is influenced by all of these regional areas.

Speed River Subwatershed Natural Heritage Characterization

Niska lies within the Speed River subwatershed and is greatly influenced by these subwatershed characteristics. In 2019, the GRCA completed the Speed River Subwatershed Natural Heritage Characterization (SRSNHC) (Grand River Conservation Authority, 2023). This report provides an overview of the natural heritage of the entire Speed River subwatershed, including physical characteristics, aquatic resources, terrestrial resources and a summary of the subwatershed's natural heritage system.

The SRSNHC outlines how the Speed River subwatershed drains approximately 78,000 ha through 10 urban and rural municipalities within Wellington County, the Region of Waterloo, and Halton Region. The subwatershed comprises 3 distinct physiographic regions: the Guelph Drumlin Field, the Paris-Galt Moraine, and a small portion of the Orangeville Moraine toward the north end of the subwatershed. A significant portion of watercourses in the subwatershed are cold water fish habitat, including Hanlon Creek within Niska. The Speed River subwatershed has more wetland and woodland cover compared to other subwatersheds in the Grand River watershed.

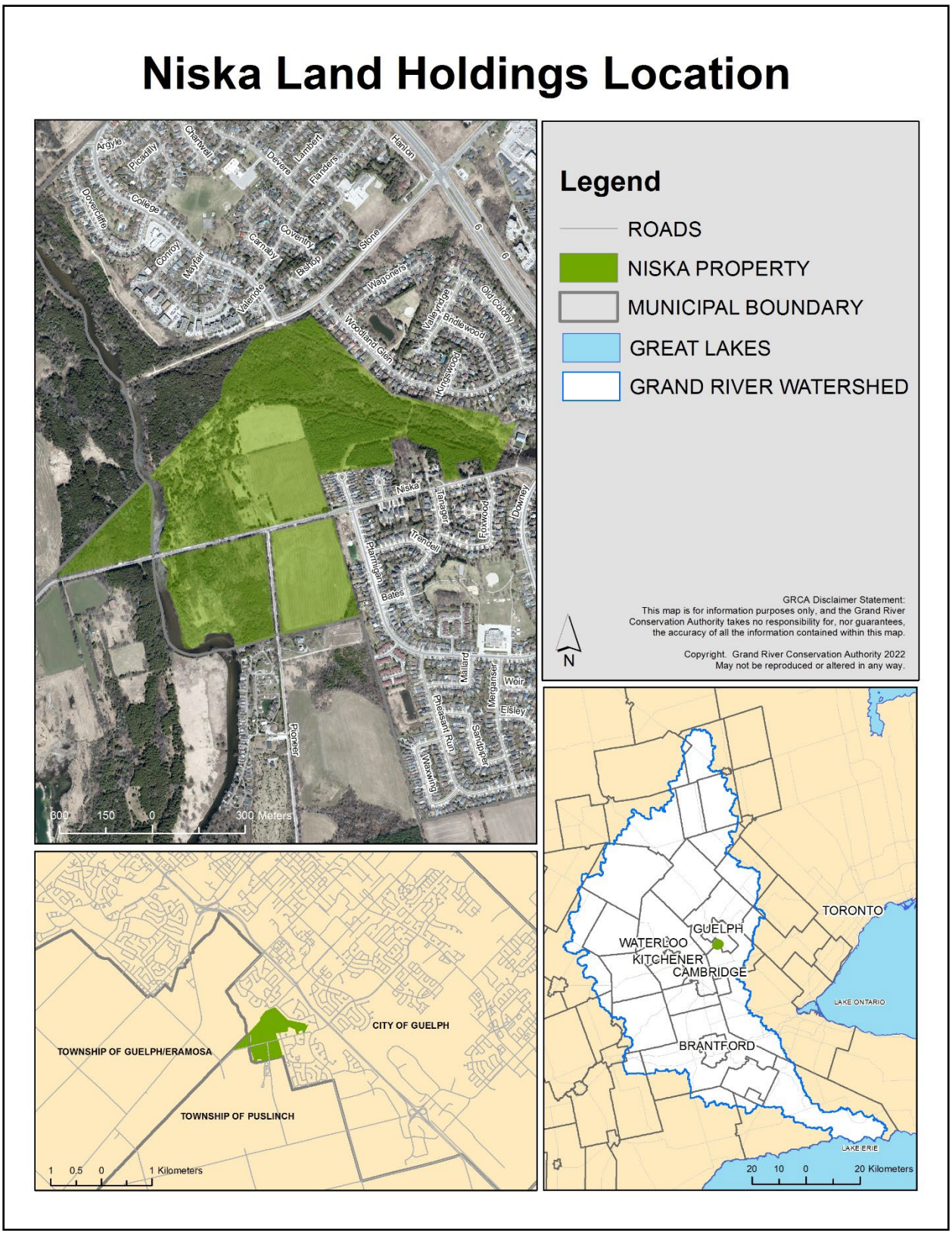

Figure 1 Location Map

Niska is part of this larger natural heritage system, and it benefits from its many characteristics including the following across the Speed River subwatershed.

- 1,039 km of stream, creek, and river habitat, of which 276 km is classified as cold water, 47 km is classified as cool water, 77 km is classified as warm water habitat, and 639 km as unclassified
- 13,526 ha total wetland cover, of which 12,207 ha is evaluated, and 12,103 ha is classified as being provincially significant
- 18,546 ha of forest, 2,155 ha of which is interior forest habitat
- 23 Areas of Natural and Scientific Interest (forest, wetland, grassland, agricultural areas) totaling 4,407 ha
- 50 provincially significant species, including 34 provincially-listed and 30 federally-listed species at risk

City of Guelph Natural Heritage System and Official Plan

Niska is included in the City of Guelph's Natural Heritage System (CGNHS). City land use policies and restrictions associated with the CGNHS that fall within Niska are outlined in the CGNHS.

The CGNHS is made up of a combination of natural heritage features and areas, including:

- Significant Areas of Natural and Scientific Interest
- Significant wetlands and other wetlands;
- Significant woodlands and cultural woodlands;
- Significant valleylands;
- Significant wildlife habitats, including ecological linkages and habitats for significant species;
- Significant Habitat for provincially endangered and threatened species;
- Surface water features and fish habitat;
- Significant landform;
- Restoration areas; and
- Established buffers.

In the City of Guelph's Official Plan (February 2022 Consolidation) most natural areas within Niska are outlined in Schedule 2 Land Use Plan, as Significant Natural Areas. The agricultural field and the meadow north of Niska Road are designated as Open Space and Park and the agricultural field south of Niska Road is designated as Medium Density Residential and Low Density Greenfield Residential.

Hanlon Creek Subwatershed

Hanlon Creek Subwatershed drains 2,640 hectares of land within the City of Guelph and Wellington County (Appendix A: Map 1.2). The northern and westerly portions of the subwatershed are situated on a drumlin formation. The central part of the subwatershed is located on an outwash gravel plain as Hanlon Creek approaches the Speed River. Hanlon Creek flows into the Speed River approximately 180 m upstream of Niska Road in southwest Guelph.

There have been many studies on Hanlon Creek and its subwatershed. One of the first studies was the 1971 Hanlon Creek Ecological Study by the University of Guelph, which described then current and proposed trends in future development, and provided a scoped inventory of natural resources systems within the subwatershed boundary. A second study was the 1993 Hanlon Creek Watershed Plan by Marshall Macklin Monaghan Limited & LGL Limited. This study was initiated by the City of Guelph to determine measures necessary to protect and enhance the valued natural resources of the subwatershed and to define the level of development which could proceed within the constraints established for its protection. The third notable study is the 2004 Hanlon Creek State of the Watershed Study by Planning & Engineering Initiatives Limited. This study was required by the City of Guelph to update monitoring information, define current trends, evaluate the effects of management strategies in the Hanlon Creek Watershed Plan, and recommend a five-year monitoring plan.

All these plans provide background information and recommendations for the health of Hanlon Creek and its subwatershed.

1.2 PROPERTY HISTORY

The history of Niska is presented in two different sections, Acquisition History and Management History.

1.2.1 ACQUISITION HISTORY

In 1971, through a report titled Review of Planning for the Grand River Watershed, it was recommended that the Grand River Conservation Authority (GRCA) acquire lands to support the Hespeler Reservoir as a flood control project. In 1971, the GRCA purchased approximately 17.4 hectares of land on Niska Road in Guelph. Subsequent to that, in 1977, the GRCA purchased an additional 47 hectares from the Ontario Waterfowl Research Foundation (OWRF) in support of the same project. The consolidated land holdings total 64.7 hectares and are referred to as the Niska Land Holdings in GRCA reports.

1.2.2 MANAGEMENT HISTORY

This section presents some land management moments in Niska's history.

- In 1952, Gordon Mack had the property designated as a Federal Migratory Bird Sanctuary, and permitted the property to be used for academic studies and research.
- In 1977, a commercial lease was signed between the GRCA and the Niska Wildlife Foundation (NWF). This lease was essentially unchanged from 1977 to 1994, with the exception of minor modifications (e.g. nominal rent increases).
- In 1987, the OWRF dissolved.
- On January 24, 1994, a new lease between the NWF and the GRCA was signed.
- In 2005, the NWF indicated that the property was closed to the public.
- In 2014, the GRCA terminated the commercial lease with the NWF and began the process of assessing and evaluation options for rehabilitating Niska.
- October 5, 2017, OPA 48 was approved with modifications by the Ontario Municipal Board (OMB), with the exception of a number of site-specific appeals and a policy appeal. A small portion of Niska was one of the site-specific appeals before the OMB.

- In January 26, 2018, the GRCA Board passed a Motion (No.18-03) directing staff to complete a management plan for the entire Niska Land Holdings prior to any of those lands being declared surplus.
- On March 14, 2018, the appeal pertaining to the eight hectares of Niska that was before the OMB was withdrawn as a result of Minutes of Settlement between Dr. Hugh Whiteley, the Corporation of the City of Guelph and the Grand River Conservation Authority. The Minutes of Settlement provide for an enhanced notification process, as the GRCA completes its management plan for Niska.

1.3 PLAN PURPOSE

The Niska Management Plan is being written as a directive of the Board of Directors of the GRCA as noted in the Ontario Municipal Board Minutes of Settlement between Dr. Hugh Whiteley and the Corporation of the City of Guelph and the Grand River Conservation Authority.

This includes a prescriptive process that integrates opportunities for public comments in the recommendation and decision-making processes of this plan. These opportunities include:

- The GRCA will release a draft of the Management Plan for at least 30 days before it holds a meeting to consider the plan. GRCA staff will collect public feedback during this time.
- The GRCA Board will receive written and oral comments in respect of the draft of the Management Plan and consider any resolutions it may find advisable in light of the public comments it receives. Recommendations will not be adopted at this meeting.
- The GRCA will provide 30 days' notice of any GRCA Board meeting to consider the adoption of the Management Plan, and that notice will clearly state that the Management Plan will be considered at that meeting.

This Management Plan must be completed before GRCA staff can declare any portion of Niska as surplus lands.

Section 2:
2.0 The GRCA and the Management Plan Process

2.1 INTRODUCTION

Section 2 discusses two topics: a brief overview of the GRCA, and a description of the framework used to develop the Niska Management Plan.

2.2 THE GRAND RIVER CONSERVATION AUTHORITY

The Grand River Conservation Authority (GRCA) was created in 1966, by merging the Grand River Conservation Commission and the Grand Valley Conservation Authority. The GRCA is a corporate body and private landowner, established to enable municipalities to jointly undertake water and other resources management on a watershed basis – for the benefit of all. The GRCA is the oldest water management agency in Canada and one of the oldest in the world. The GRCA is a member of Conservation Ontario, an organization representing all 36 Conservation Authorities in Ontario.

A 26-member board of directors oversees the policies, programs and budgets of the GRCA. Municipalities appoint the members of the board. Many appointees are also municipal councilors while some are citizen appointees. In 2019, the GRCA board adopted mission, vision, and values statements (listed below).

VISION

"A healthy watershed where we live, work, play and prosper in balance with the natural environment.

MISSION

"We will work with local communities to reduce flood damage, provide access to outdoor spaces, share information about the natural environment, and make the watershed more resilient to climate change."

VALUES

"Resilience, collaboration, innovation, courage, and respect."

The GRCA's Strategic Plan serves as a guide to enhance and build on GRCA's programs and services. Protect life and minimize property damage from flooding and erosion.

The GRCA is governed by the Conservation Authorities Act and a variety of provincial regulations. In December 2020, Bill 229, Protect, Support and Recover from COVID-19 Act, made a number of significant amendments to Conservation Authorities Act. These included new requirements for board composition, defining Conservation Authority mandatory programs and services, and changes to permitting and appeals processes.

Regulation 686/21 includes a requirement that Conservation Authorities prepare by December 31, 2024 a comprehensive land inventory including, among other information:

- whether or not a parcel of land or a portion of a parcel is suitable for the purposes of housing and housing infrastructure development;
- applicable municipal zoning;
- if the parcel of land or a portion of the parcel augments any natural heritage; and
- if the parcel or a portion of the parcel integrates with other provincially or municipally owned lands or other publicly accessible lands and trails.

More recently, the More Homes Built Faster Act, 2022 (Bill 23) received Royal Assent on November 28, 2022. Several changes were made to the Conservations Authorities Act that are intended to support faster and less costly approvals, streamline conservation authority processes, and help make land suitable for housing available for development.

These changes will have an impact on the approach that the GRCA takes when considering lands to declare as surplus.

2.3 MANAGEMENT PLAN PROCESS

There are a number of key components included in most management plans. They include a general introduction and history of the property, a detailed inventory of anthropogenic and natural features located on the property, challenges and opportunity for the property, current management practices, suggested actions and accompanying budget, and finally a suggested implementation process and timeline for completion. Depending on the size and nature of the property this process may take several years. The process undertaken for the Niska Management Plan also specifically reflects the shared outcomes outlined in the Minutes of Settlement.

The following management plan process for Niska was conducted by GRCA staff:

1. gather existing relevant data, property records, research and documents related to the property, relevant sections from subwatershed plans, reports, and policies;
2. describe the property's physical and natural heritage attributes and geographic context, its history and land management practices, and its current use;
3. create and show in map form, physical and natural heritage attributes and land classifications;
4. make recommendations for opportunities for management of the property;
5. compile all of this information into an informative and readable management plan.

Section 3:
3.0 Natural Heritage Characterization

3.1 INTRODUCTION

Section 3 describes the natural heritage characteristics of Niska, including climate, physiography and surficial geology, hydrology and hydrogeology, soils, vegetation, mammals, fish, amphibians, reptiles, birds, and associated land designations. Some information in Section 3 is the result of field work and surveys completed between 2018 and 2019 by GRCA staff. Field work and surveys included ecological land classification, breeding bird surveys, breeding amphibian surveys, wetland delineation, spawning surveys, plantation assessment, stream water temperature monitoring and incidental wildlife observations.

3.2 PHYSICAL CONDITIONS

The climate, physiography and surficial geology, soils, and hydrology and hydrogeology of Niska are outlined in section 3.2.

3.2.1 CLIMATE

Niska is characterized by a humid continental climate with large seasonal differences of warm and humid summers to cold or very cold winters. Situated within the Huron-South Slopes Climate Zone, the area receives high rainfall and snowfall as moisture, picked up by winds blowing over Lake Huron, condenses as snow or rain on morainic slopes and contributes to the annual precipitation. The Hanlon Creek subwatershed typically receives more precipitation in the spring and summer months, with the lowest amounts of precipitation in the winter.

Figure 2 and Table 1 provide climate data from the Region of Waterloo International Airport for the period 1981 to 2010, which is approximately 7.5 km west of Niska.

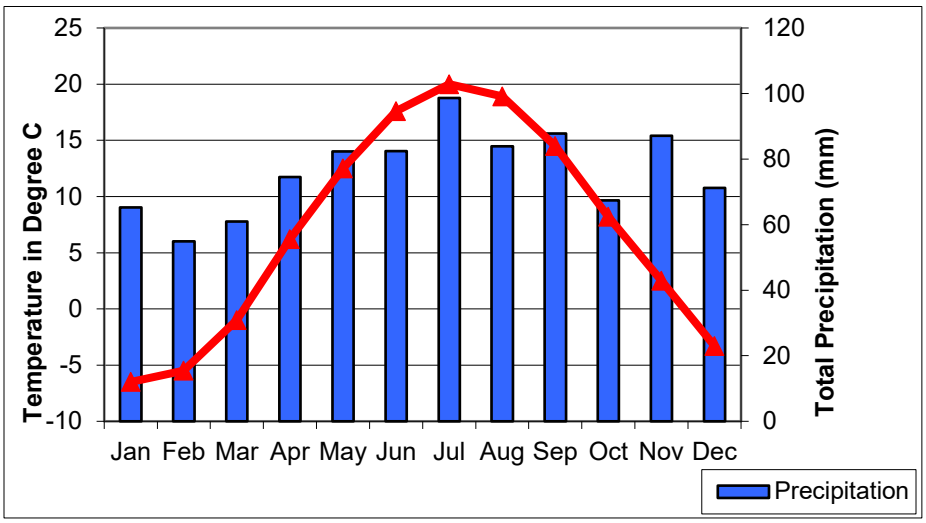

Figure 2 Monthly average temperature and precipitation data from the Region of Waterloo International Airport (Environment Canada, 2023).

Table 1 General Climate Summary from the Region of Waterloo International Airport (Environment Canada, 2023).

Temperature:	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Daily Average (°C)	-6.5	-5.5	-1.0	6.2	12.5	17.6	20.0	18.9	14.5	8.2	2.5	-3.3	7.0
Daily Maximum (°C)	-2.6	-1.2	3.6	11.5	18.5	23.6	26.0	24.8	20.4	13.5	6.3	0.2	12.0
Daily Minimum (°C)	-10.3	-9.7	-5.6	0.8	6.4	11.5	14.0	12.9	8.6	2.9	-1.4	-6.8	2.0
Precipitation:													
Rainfall (mm)	28.7	29.7	36.8	68.0	81.8	82.4	98.6	83.9	87.8	66.1	75.0	38.0	776.8
Snowfall (cm)	43.7	30.3	26.5	7.3	0.4	0.0	0.0	0.0	0.0	1.4	13.0	37.3	159.7
Precipitation (mm)	65.2	54.9	61.0	74.5	82.3	82.4	98.6	83.9	87.8	67.4	87.1	71.2	916.5

3.2.2 PHYSIOGRAPHY AND SURFICIAL GEOLOGY

The Hanlon Creek subwatershed landscape was influenced by the repeated advancements and retreat of the Lake Ontario and Lake Huron Ice Lobes and depositional features associated with them. The dominant physiographic features for the Hanlon Creek subwatershed include the Guelph Drumlin Field and glacial spillways and till plains (Appendix A: Map 3.1).

Niska and the lower reach of Hanlon Creek are primarily situated within an old glacial spillway composed of sands, gravels and outwash deposits. Areas surrounding Niska include portions of the Guelph Drumlin Field. This feature contains broad, oval shaped hills with low slopes composed of stony tills fringed by gravel terraces (Appendix A: Map 3.2). The area's moderate permeability and infiltration of water contributes to base flow in the local watercourses. Overburden thickness, the layer of unconsolidated sediment between the ground surface and bedrock, is fairly uniform and generally less than 25 m thick throughout most of Niska.

3.2.3 SOILS

Soils across Niska consist of three soil types: Dumfries, Burford loam, and bottom land soils (Appendix A: Map 3.3). Parent materials of the Dumfries soil type include stoney and sandy loam tills. It is classed as Grey-Brown Podzolic, across the Ah horizon, yellowish brown across the Ae horizon, which becomes lighter in colour with depth and dark brown B horizon. Burford loam soil parent materials consist primarily of gravel.

Drainage characteristics of the soils in the area are divided into two groups: well drained and imperfectly drained. The majority of Niska is characterized by well drained soils which are associated with the Dumfries soil series. Portions of the property adjacent to the Speed River are imperfectly drained and associated with both the Dumfries and Burford soil series.

3.2.4 HYDROLOGY AND HYDROGEOLOGY

Niska is an ecologically diverse landscape situated within the Speed River valley. The property is influenced by two watercourses and their associated floodplains – the larger Speed River, which is a tributary of the Grand River, and Hanlon Creek which is a smaller cold water tributary to the Speed River (Appendix A: Map 3.4).

The Speed River winds its way out of the City of Guelph and along the western edge of Niska before flowing into the Township of Puslinch. Regulated upstream by the Guelph Dam, the Speed River responds with lower peak flows and higher low flows than would occur in a

naturally flowing river. Summer low flows are kept above 1.7 m^3/s in all but extreme drought years, whereas peak annual flows normally range from 20 to 60 m^3/s. The average flow of the river is 6 m^3/s. The Speed River through this reach is classified as a warm water river system.

Hanlon Creek, a cold water tributary of the Speed River, travels from east to west across the northern portion of Niska to its confluence with the larger river. Hanlon Creek is a permanently flowing cold water stream that can be characterized as a “C” type channel using the Rosgen Stream Classification system. Previous subwatershed studies have noted an increase in stream flow within Hanlon Creek between the Hanlon Park Expressway and the mouth of the creek, due to groundwater discharge and/or urban runoff.

Recharge of shallow groundwater flow in the overburden is from the infiltration of local precipitation. Major recharge areas include elevated landforms such as the Paris Moraine to the west of Niska and the upland areas along Gordon Street. Groundwater recharge within Niska is estimated to be between 100 to 200 mm/year throughout the spillway along Hanlon Creek, and greater than 200 mm/year within the gravel deposits located adjacent to the spillway to the southeast (Appendix A: Map 3.5). The areas with groundwater recharge greater than 200 mm/year are identified as areas with significant groundwater recharge. Figure 3 illustrates local recharge to the shallow groundwater system, and discharge into Hanlon Creek.

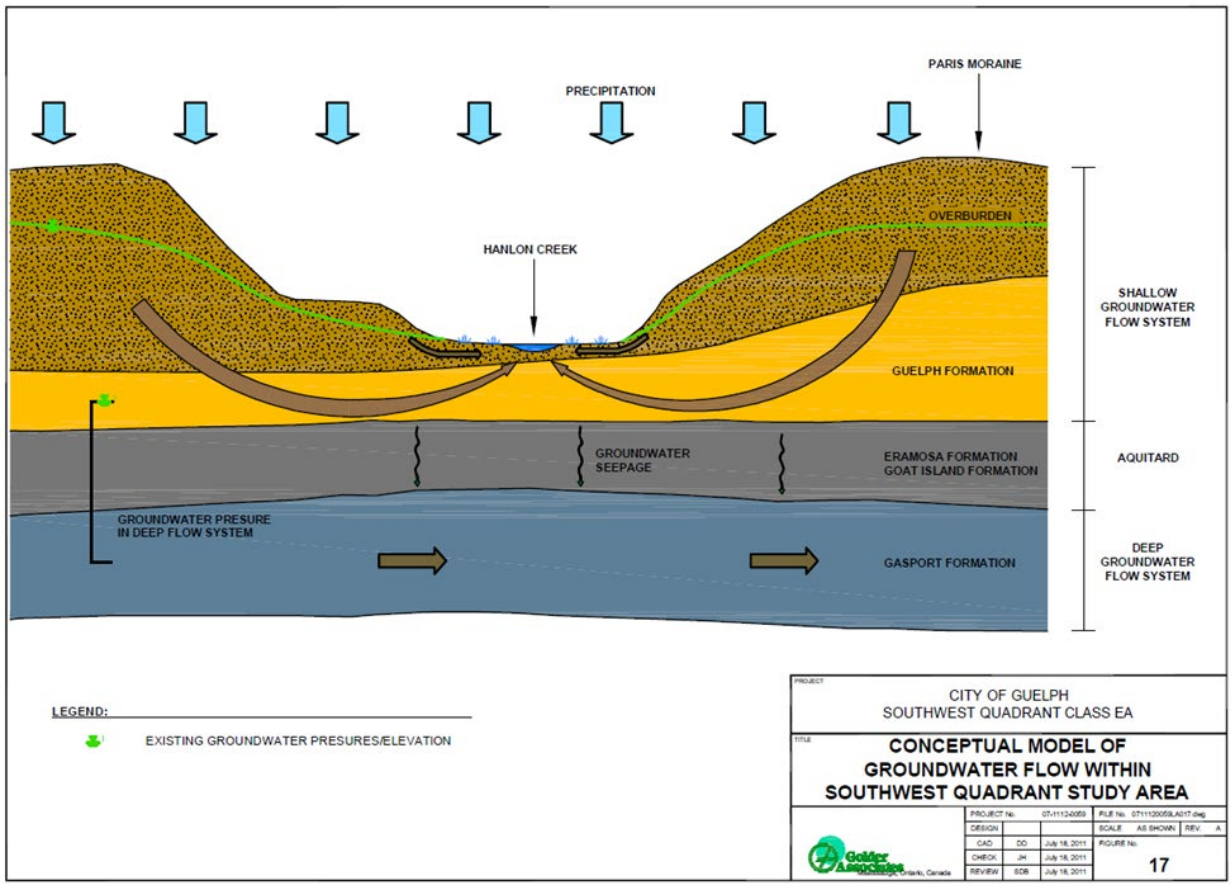

Figure 3 Conceptual Model of Groundwater Flow within the Hanlon Creek Subwatershed (Golder Associates, 2011)

Shallow groundwater flow within the upper bedrock (Guelph Formation) and overburden are shown on Figure 4 (Golder Associates, 2011). Generally, shallow groundwater flow is a subdued reflection of ground surface topography. Groundwater flow in the vicinity of Niska is generally to the west towards the Speed River. Groundwater discharge can be inferred along the lower Hanlon Creek within Niska by the v-shaped groundwater elevation contour which intersects the creek.

Closely associated with the valleylands of the Speed River and Hanlon Creek are its floodplains and the Speed River Provincially Significant Wetland Complex. Almost 28 ha of Niska is located within regulatory floodplains of the Speed River and lower portions of Hanlon Creek. Wetlands are influenced by local surface water and groundwater hydrology, and Niska contains almost 32 ha of the Speed River Provincially Significantly Wetland Complex. Section 3.3 of this report provides further information about wetland systems that are part of Niska.

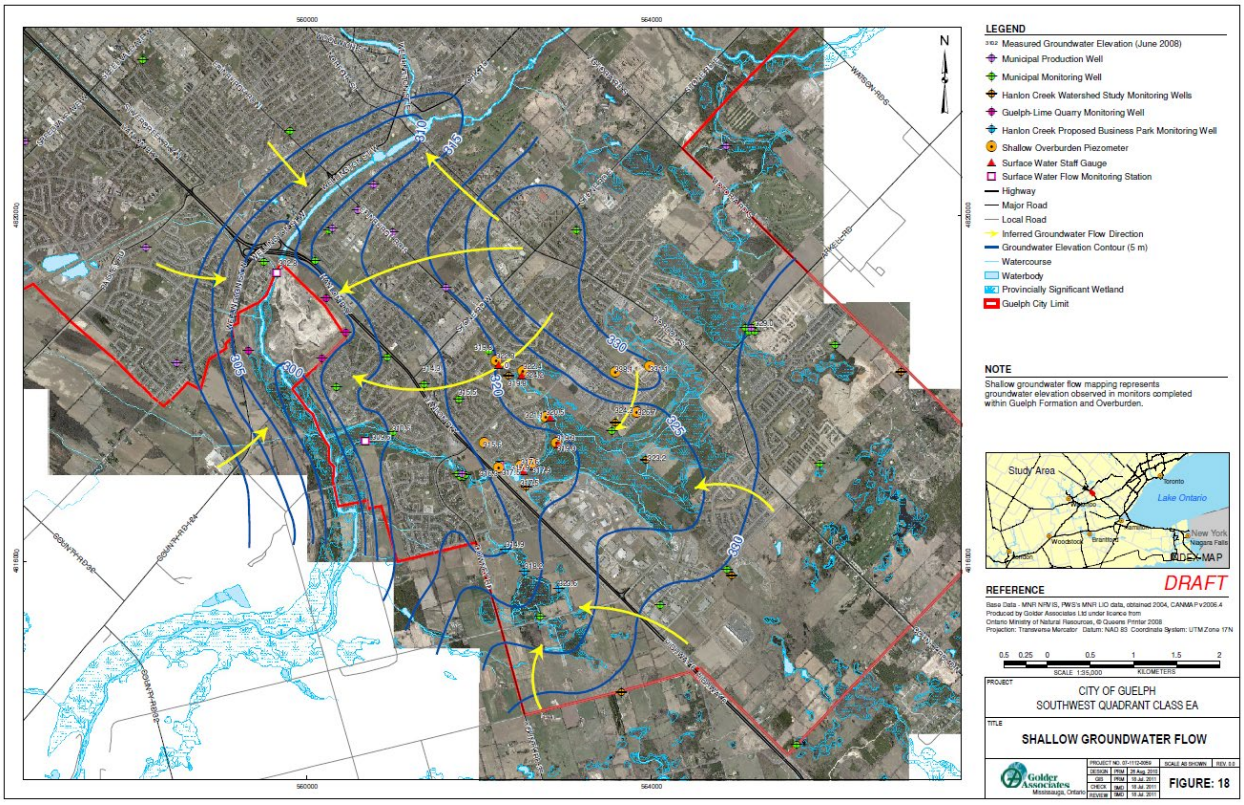

Figure 4 Shallow Groundwater Flow in the Guelph Formation and Overburden (Golder Associates, 2011)

Niska is within the wellhead protection area of City of Guelph's municipal water supply wells. As a result, activities that could result in contamination or overuse of groundwater supplies should be avoided in any plans for future use. The property is also subject to source protection plan policies. Part of the property is also within an Issue Contributing Area for Trichloroethylene (TCE), which means that TCE has been detected exceeding the provincial drinking water standard.

3.3 TERRESTRIAL RESOURCES

Section 3.3 is divided into two subsections, ecological land classification and significant wildlife habitat.

3.3.1 ECOLOGICAL LAND CLASSIFICATION

The Ecological Land Classification (ELC) System for Southern Ontario (Lee et al., 1998) is an integrated, ecological approach to land-unit description. An ELC identifies ecological patterns on the landscape and classifies those patterns into categories of vegetation units. The ELC protocol provides a standardized and consistent method for the identification, classification, and mapping of vegetation communities. Applying ELC methods to Niska provides an understanding of the various vegetation communities establishing throughout the property and informs future management decisions within and around those ecological communities.

The City of Guelph's Official Plan Amendment 42: Natural Heritage System (2014) identifies 10 community level ELC units within Niska. To further refine the ELC classifications, GRCA staff conducted vegetation surveys in accordance with the ELC protocol between the spring of 2018 and early summer 2019. The inventory identified 22 distinct vegetation communities, excluding the active farmlands. Brief descriptions of the major ecosites within these vegetation community classes are provided in Table 2. Supporting mapping can be viewed in Appendix A: Map 3.6. The full ELC vegetation inventory can be viewed in Appendix B.

A detailed botanical inventory was not completed at Niska. The ELC classifications and accompanying mapping reflect the dominant canopy species and soil types observed across the property.

It is important to note that vegetation communities along the property boundary extend beyond the property, contributing to the City of Guelph's and the Township of Puslinch's natural heritage systems.

Table 2 Niska Land Holdings ELC Communities

Ecosites	ELC Code	Vegetation Community	Ha
Meadow	MEGM3	Dry – Fresh Graminoid Meadow Ecosite	2.81
		TOTAL	2.81
Woodland	WOMM3	Dry – Fresh Mixed Woodland Ecosite	2.97
	WOMM3	Dry – Fresh Mixed Woodland Ecosite	2.37
		TOTAL	5.34
Mixed forest	FOMM7	Fresh – Moist White Cedar – Hardwood Mixed Forest Ecosite	1.12
	FOMM7-2	Fresh – Moist White Cedar – Hardwood Mixed Forest	1.76
	FOMM4-3	Dry – Fresh White Cedar – Hardwood Mixed Forest	6.08
	FOMM7-2	Fresh – Moist White Cedar – Hardwood Mixed Forest	0.94
	FOMM7-2	Fresh – Moist White Cedar – Hardwood Mixed Forest	0.86
	FOM	Mixed Forest	0.19
	FOMM4-3	Dry – Fresh White Cedar – Hardwood Mixed Forest	1.11
	FOMM7-2	Fresh – Moist White Cedar – Hardwood Mixed Forest	2.03
		TOTAL	14.09
Coniferous Forest	FOCM2-2	Dry – Fresh White Cedar Coniferous Forest	0.56
	FOC	Coniferous Forest - White Spruce dominate	0.26
	FOCM2-2	Dry – Fresh White Cedar Coniferous Forest	0.33
	FOCM2-2	Dry – Fresh White Cedar Coniferous Forest	0.48
	FOCM2-2	Dry – Fresh White Cedar Coniferous Forest	1.16
		TOTAL	2.80
Naturalized Plantation	FOCM6-3	Dry – Fresh Scotch Pine Naturalized Coniferous Plantation	0.44
	FOCM6-1	Dry – Fresh White Pine Naturalized Coniferous Plantation	5.12
		TOTAL	5.56
Deciduous Forest	FODM4	Dry – Fresh Upland Deciduous Forest Ecosite	0.89
	FODM4-2	Dry – Fresh White Ash – Hardwood Deciduous Forest	1.41
		TOTAL	2.30
Open Water	SAS_1-3	Stonewort Submerged Shallow Aquatic (No longer present)	~~0.19~~
		TOTAL	0.00
Marsh	MASM2	Forb Mineral Shallow Marsh Ecosite	0.19
Meadow marsh	MAMM2	Forb Mineral Meadow Marsh Ecosite	1.49
	MAMO1-2	Cattail Graminoid Organic Meadow Marsh	0.14
		TOTAL	1.82
Shoreline	SHT	Treed Shoreline	1.80
		TOTAL	1.80
Deciduous Swamp	SWDM3-1	Red Maple Mineral Deciduous Swamp	1.45
Mixed Swamp	SWMO2-1	Red Maple – Conifer Organic Mixed Swamp	0.59
Coniferous Swamp	SWMM1-1	White Cedar – Hardwood Mineral Mixed Swamp	11.23
	SWMM1-1	White Cedar – Hardwood Mineral Mixed Swamp	0.83
	SWMO1-1	White Cedar – Hardwood Organic Mixed Swamp	0.78
	SWMO1-1	White Cedar – Hardwood Organic Mixed Swamp	0.50
		TOTAL	15.38
Agricultural	OAGM1	Annual Row Crops	4.75
	OAG	Open Agriculture	7.66
		TOTAL	12.41

Meadow

A large meadow is located north of the northern farm field. The meadow is dominated by cool season grasses with some herbaceous wildflowers including milkweed, aster species and goldenrod species. There are minimal successional trees and/or shrubs.

Woodland

Woodlands are semi-treed communities that have less than 60% tree cover. Niska supports two mixed deciduous and coniferous woodlands containing interspersed meadow areas. The woodlands are dominated by both native and non-native tree species. Norway spruce, white cedar, white ash, cottonwood and several maple species including Manitoba maple and Freemen's, silver and sugar maples are found in these woodlands.

Mixed Forest

Niska's second largest ecological community is mixed forests. Mixed forests contain both conifer tree species at a 25% or greater cover and deciduous tree species at a 25% or greater cover. Niska's mixed forests are primarily dominated by eastern white cedar and include a mixture of deciduous species such as black ash, cherries, oaks, poplar species, and elms. The understory varies but common species include European buckthorn, elderberry, dogwoods, ferns, jack-in-the-pulpit and tansy ragwort.

Coniferous Forest

Five small coniferous forests add valuable habitat diversity to the landscape. Four of the forests are dominated by eastern white cedar with a dry to fresh soil moisture with some low-lying areas of seeps and poorly drained areas of pooling water. One coniferous forest is dominated by white spruce with a mix of eastern white cedar and European buckthorn. The eastern white cedar forest has very little understory vegetation.

Naturalized Plantation

The forested area in the eastern portion of the property, south of Hanlon Creek, was machine planted between 1987-1989. The western portion of this area was planted primarily in white pine with Norway spruce bordering the southern edge. According to planting plans the eastern strip near Hanlon Creek was also planted with white pine; however, naturally established white cedar dominates this area along with scattered Scots pine and spruce along the perimeter.

Planted trees in the white pine plantation now range from 10 to 30 cm in diameter with an average of 16 cm. The establishment of other trees and shrubs in the understory is low. Naturally establishing trees include black cherry, ash, Manitoba maple and elm species, as well as various non-native species including Tartarian honey suckle, white mulberry, European buckthorn, and glossy buckthorn.

The small pockets of Scots pine plantation near Niska Road have lower canopy cover due to Scots pine mortality and are further along in the conversion to a mixed forest community along with small open grass dominated areas. This plantation hosts a number of native and non-native species.

Deciduous Forest

Forests having 75% or greater deciduous tree canopy are classified as deciduous forests. The larger of the two deciduous forests, at 1.41 ha, is located west of the Speed River along Niska Road. The canopy is primarily composed of white ash trees along with trembling aspen, eastern white cedar, and white pine. Dominant species in the lower vegetation layers include European buckthorn and ash species, as well as jumpseed and wild ginger on the forest floor.

The smaller deciduous forest is located on the southwestern corner of Pioneer Trail and Niska Road. This vegetation community has a slightly higher elevation, is well-drained, and supports a forest dominated by sugar maple along with bur oak, black cherry, yellow birch and American beech. Although there are some invasive species present throughout the forest the ground layers remain populated with ecologically valuable species such as mayapple, bloodroot, and orange-fruited horse gentian.

Open Water/Shallow Aquatic

Niska had a number of artificial ponds throughout the bird sanctuary area formed by a series of weirs and flow diversions. Most of these ponds no longer hold water during the summer months. A larger pond located on Hanlon Creek near the confluence with the Speed River, was maintained by an earthen dam and stoplog control structure. Historical air photos show the pond being present in 1974.

In the fall of 2019, due to a breech in the earthen dam, the large pond was drawn down. The creek has carved a natural channel through the pond and the vegetation has established on the mudflats. This area is no longer open water and should be reclassified once the vegetation community is more established.

Shoreline Communities

A treed shoreline community is present along the Speed River south of Niska Road. This community contains invasive species, debris build up from flood events and variable shoreline composition formed by sediment deposition and scouring. This community is dominated by Manitoba maple and willow trees.

Swamps

Swamps represent the largest vegetation community on the property, covering 15.38 ha. Swamp communities can be dominated by hydrophytic shrub or tree species (> 25% cover) and are characterized by variable flooding regimes. Niska supports deciduous, mixed and coniferous swamps growing on both mineral and organic soils. Coniferous swamps, dominated by white cedar, make up 87% of Niska’s swamp habitats. Deciduous swamps and mixed swamps comprise 9% and 4% respectively and are dominated by red and silver maple. These habitats support a variety of different micro habitats through both hydraulic regimes and decaying plant materials. Maintaining hydrologic connections and balance is fundamental to the health of these ecosystems.

Meadow Marsh

The meadow marshes within Niska are part of the Speed River Provincially Significant Wetland. Meadow marsh communities are typically dominated by plant species less tolerant of prolonged

flooding. Niska supports two uniquely different meadow marshes. The cattail graminoid organic marsh on the far northeastern end of the property is small at 0.14 ha, but it contains a high diversity of species including more than 5 different sedge species and the large yellow lady slipper orchid.

The forb dominated meadow marsh is 1.49 ha on the southwest side of Niska Road and surrounded by the Speed River shoreline and various swamp communities. Moisture levels within the meadow vary throughout the growing season but the habitat is dominated by a variety of herbaceous forbs including cattails, ferns, Joe-pye weed, mints and impatiens species, along with some species of grasses.

3.3.2 SIGNIFICANT WILDLIFE HABITAT

Significant Wildlife Habitats (SWH) are areas of ecologically important habitat for animals and plants that meet certain criteria to be considered significant. SWH is a natural heritage feature listed in the Provincial Policy Statement, which sets the rules for land use planning in Ontario. Provincial technical guides provide direction for identifying SWH; municipalities are responsible for identifying and designating SWH in municipal policy and development processes under the Planning Act. Site specific identification and confirmation of SWH often occurs through Environment Impact Studies (EISs) or Environmental Assessments (EAs) required as part of a development application.

For the purposes of the Niska Management Plan the identification of SWH and candidate SWH is being used primarily to evaluate potential natural heritage values of different portions of Niska and to inform current and future decision making as well as potential future restoration opportunities. Candidate SWH are areas where habitat criteria have been met for a specific type of SWH, but the target species are not yet confirmed and\or the area is not fully evaluated against the criteria for significance.

A review of background information and survey results were used to complete a preliminary screening for significant wildlife habitat within Niska. Two types of SWH have been identified. A deer yarding area was confirmed by the OMNRF in 1984 and updated in 2008. GRCA staff have confirmed several seeps within the PSW and this would meet the criteria for the Seeps and Springs category of SWH.

In addition, a number of candidate SWH have been identified (based on the SWH Ecoregion 6E Criteria Schedule - MNR 2015). In most cases this identification was based on the fact that candidate habitat types (ELC Ecosites) are present at Niska, without a full evaluation of whether the species are present and\or the area meets the criteria for significance. Candidate SWH types include: waterfowl nesting area, raptor wintering area, bat maternity colonies, turtle wintering areas, turtle nesting areas, amphibian breeding habitat (woodland), amphibian breeding habitat (wetland), terrestrial crayfish, and special concern and rare wildlife species.

3.4 AQUATIC RESOURCES

Section 3.4 is presented in two subsections, fish & fish habitat, and water temperature.

Aquatic resources within Niska are primarily tied to Hanlon Creek, and field work by the GRCA was therefore conducted only within Hanlon Creek. The Hanlon Creek is an urban stream that provides important cold water fish habitat to a variety of fish species including a resident brook trout population. Warmer water temperatures are limiting factors to fish habitat in the lower portions of Hanlon Creek and are the result of weirs and small dams, the presence of on-line ponds, flow diversions, wider stream cross-sections and less tree canopy.

3.4.1 FISH & FISH HABITAT

Hanlon Creek flows through Niska to its confluence with the Speed River. Although altered through a series of weirs and flow diversions, the main channel remains permanently flowing. Bankfull width ranges from 2.20 m to 9.50 m and bankfull depth ranges from 0.05 m to 0.60 m. Wetted width of the creek averaged 4.85 m and maximum water depth is 0.60 m. Instream substrates are approximately 22% silt, 22% gravel, 23% sand, 31% cobble, and 2% boulders. Instream cover range from 5% to 40% due to the presence of woody debris, boulders, undercut banks and submerged aquatic vegetation. Watercress, an aquatic plant and good indicator of groundwater, is present along the creek margins in several locations and some ponds. Riparian vegetation cover overhanging the creek ranges between 5% within meadow areas and 80% within cedar forests.

In previous studies, such as the Hanlon Creek Watershed Study (1993) and the Hanlon Creek State-of-the-Watershed Study (2004), brook trout were not found downstream of the Hanlon Expressway. In August 2015, during electrofishing surveys by the GRCA and the Ontario Ministry of Natural Resources and Forestry, brook trout were captured for the first time in reaches of lower Hanlon Creek both above and below the flow split within Niska. A total of 13 species were confirmed across all sampling events. The following fish species were identified in Hanlon Creek within Niska: brook stickleback, brook trout, brown bullhead, creek chub, fathead minnow, hornyhead chub, Johnny darter, longnose dace, mottled sculpin, pumpkinseed, western blacknose dace and white sucker. Detailed electrofishing results are provided in Appendix D.

The reach of Hanlon Creek on Niska likely provides spawning and rearing habitat for several species of the resident fish community depending on the suitability of habitat. In late 2018, brook trout spawning surveys were conducted along the lower reaches of Hanlon Creek in November and December. No trout spawning areas were observed at that time. However, during a site visit to the property on November 20, 2019, a depression in the streambed substrate was observed with high likelihood of being a trout spawning area. Spawning surveys were not conducted at other times of the year. However, it is likely that habitat conditions exist to support nesting and rearing of various spring and early summer spawners within the fish community.

3.4.2 WATER TEMPERATURE

Watercourses can be classified into 3 thermal categories: cold water (< 19ºC), cool water (between 19-25ºC) or warm water (>25ºC). Stream temperature is an influencing factor that contributes to the composition of the fish community that resides there. Fish species such as

brook trout are highly sensitive to warmer water temperatures and their life processes start to become stressed as water temperatures rise above 19°C.

In 2018 a total of 5 HOBO water temperature data loggers were deployed by the GRCA within or in close proximity to Niska. The temperature loggers were installed in both the lower section of Hanlon Creek and an unnamed Speed River tributary along the northern property boundary to record daily maximum water temperature from July 5 to October 9.

Of the 3 HOBO loggers deployed in the lower section of Hanlon Creek, there were 16 days the maximum water temperature exceeded 21°C at one or more of the stations. There were no temperature exceedances above 24°C. Overall, water temperatures between July and October demonstrated the reach to be within a cold water thermal regime 65% of the monitoring period with short fluctuations into a cool water thermal regime the remainder of the time.

Of the 2 HOBO loggers deployed in the unnamed Speed River tributary along the northern Niska boundary, there were 6 days the maximum water temperature exceeded 21°C at one or both stations. Overall, water temperatures between July and October demonstrated the tributary to be within a cold water thermal regime 95% of the monitoring period with short fluctuations into a cool water thermal regime the remainder of the time.

3.5 FAUNA

Section 3.5 presents information on observed fauna within Niska. Information in this section is the result of biological inventories completed by the GRCA between spring 2015 and spring 2019. No formal inventories were completed by the GRCA prior to 2015.

Snakes, mammals, dragonflies, frogs/toads and butterflies and moths observed on an incidental basis were also recorded. Amounts observed include the following: 1 snake, 5 mammals, 6 frogs/toads, and 7 butterflies and moths. These incidental species are listed in Appendix D.

3.5.1 BIRDS

A total of 3 breeding bird surveys were conducted between May and June 2018 by GRCA staff in accordance with provincial standards of the Ontario Breeding Bird Atlas. Surveys were completed in different habitat types, including marsh, riverine, plantation, deciduous and mixed swamp, forest slope, upland forest and grassland. A total of 37 bird species were recorded within Niska during the surveys. In addition to the data generated through breeding bird surveys, eBird records from recreational birders were also compiled and integrated with GRCA surveys.

Based on GRCA surveys and eBird records, a total of 118 bird species have been recorded at Niska. As many as 106 bird species have been documented during the breeding season. Birds identified on the property are listed in Appendix C.

Understanding which bird species are using the various habitats and ecological communities on the property can provide a better understanding of habitat conditions on the property and inform management options to support those species during various life stages.

3.5.2 AMPHIBIANS & REPTILES

Breeding amphibians were surveyed in accordance with the Marsh Monitoring Program administered throughout the Great Lakes Region by Birds Canada in cooperation with Environment Canada and the U.S. Environmental Protection Agency. A total of three surveys were completed at least 15 days apart during appropriate weather conditions in the spring of 2018. Five species, the American toad, gray treefrog, green frog, northern leopard frog, wood frog, and spring peeper, were confirmed during the survey.

Reptiles were not formally surveyed or observed on the property. However, iNaturalist data confirms the presence of six reptile species. These species are listed in Appendix D.

3.5.3 MAMMALS

No formal mammal surveys were conducted during the development of this Plan. However, during site visits to the property, incidental observations of mammals were recorded. In total, 10 mammal species have been observed. Refer to Appendix D for the list of mammal species.

3.6 SPECIES AT RISK

Several species at risk (SAR) have been observed within the property boundaries of Niska (Table 4). The source of this data is derived from a combination of GRCA monitoring and incidental observations along with observations from the public reported to GRCA directly or reported through citizen science platforms such as Ebird and iNaturalist. All observations, whether historical or recent, have been noted – this includes species that may be temporary migrants and some that may only occasionally use the property for foraging.

A total of six provincially significant species (4 birds, 1 turtle and 1 Lepidopteran) were recorded.

A total of twelve (12) species have been assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and are recognized as Species at Risk in Canada. Seven species of bird (bald eagle, Canada warbler, bank swallow and barn swallow, evening grosbeak, rusty blackbird, eastern wood-pewee), three reptiles (snapping turtle, midland painted turtle, eastern milksnake), a butterfly (monarch), and a vascular plant (black ash) have been identified within Niska. Threatened and Endangered terrestrial species listed under Schedule 1 of the Federal Species at Risk Act (SARA) are only afforded legal protection on federal lands. Ontario's Endangered Species Act governs the identification and protection of SARs in Ontario.

Table 3 Species at Risk at Niska

Scientific Name	Common Name	Committee on the Status of Endangered Wildlife in Canada Status	Committee on the Status of Species at Risk in Ontario
Haliaeetus leucocephalus	Bald eagle	NAR	SC
Cardelina canadensis	Canada warbler	SC	THR
Riparia riparia	Bank swallow	THR	THR
Hirundo rustica	Barn swallow	THR	THR
Coccothraustes vespertinus	Evening Grosbeak	SC	SC
Euphagus carolinus	Rusty Blackbird	SC	NAR
Contoppus virens	Eastern wood-pewee	SC	SC
Danaus plexippus	Monarch	END	SC
Chelydra serpentina	Snapping turtle	SC	SC
Chrysemys picta marginata	Midland painted turtle	SC	
Lampropeltis traingulum	Eastern milksnake	SC	NAR
Fraxinus nigra	Black ash	THR	

3.7 INVASIVE SPECIES

Twelve terrestrial invasive species have been identified within Niska. The species which would most likely have negative impacts on natural areas within Niska are: European buckthorn, glossy buckthorn, Tatarian honeysuckle, white mulberry, European alder, common European reed, purple Loosestrife, periwinkle, and goutweed.

Tree and shrub species (European buckthorn, glossy buckthorn, Tatarian honeysuckle, white mulberry, and European alder) are common within the understory of many habitats within the property. European buckthorn is the dominant understory species in most of the deciduous and mixed forest communities and a forest health concern. As large ash trees in the canopy decline, presumably from emerald ash borer, they provide an opportunity for buckthorn seedlings to dominate these communities lowering the ecological value and biodiversity. Common European reed is an aggressive invasive and was noted in 11 locations throughout the property. At current levels, patches are relatively small and control efforts could be considered. Periwinkle and goutweed are common household gardening groundcovers and are primarily located in areas of yard waste dumping, backyard gardens that have encroached onto the property, and around building envelopes. These groundcovers are hard to control but efforts could be made to remove them from more vulnerable ecological communities.

Section 4:
4.0 Current Management Practices

4.1 INTRODUCTION

Section 4 summarizes the current management practices within Niska by the GRCA.

4.2 CURRENT GRCA MANAGEMENT PRACTICES

Portions of Niska were originally acquired by the GRCA to support the development of a Hespeler Reservoir flood control project. The recommendation for this reservoir was removed in the 1982 Grand River Water Management Study. Since the end of the property's active use and lease arrangements with the NWF, Niska has been closed to the public and use of the property has been limited to agricultural use of the two farm fields. Enforcement and maintenance of the remaining natural areas of the property is conducted as concerns are raised and prioritized as resources allow.

For GRCA operational purposes, a gate and main entrance into Niska is located on the north side of Niska Road. An entrance path to the field on the south side of Niska Road is available for the agricultural tenant. There are no other officially recognized access or entry points into Niska.

4.2.1 AGRICULTURE

There are two agricultural fields within Niska that the GRCA leases to local farmers (Appendix A: Map 1.1). One field is located on the north side of Niska Road and is 4.5 hectares, and the second field is located on the south side of Niska Road and is 6.5 hectares. Both fields are planted with annual crops such as corn and soya beans, and winter wheat, and have been actively used for agriculture for more than 70 years.

Section 5:
5.0 Recommendations

5.1 INTRODUCTION

A list of recommendations has been created as a result of the management plan process for Niska. Recommendations listed in Section 5.2 are dependent upon annual budgets and resources. These recommendations may be dependent on the implementation of other recommendations that would need to be completed first.

5.2 RECOMMENDATIONS

Generally, the main objectives behind the recommendations for Niska focus on opportunities for community use and conservation of the natural areas through partnerships with the City of Guelph or other third parties, where appropriate, as well as the opportunities to declare lands as surplus, where appropriate.

Recommendation 1: Engage with the City of Guelph and other third parties to explore opportunities to enter into a maintenance agreement for parcels of land that can provide recreational or conservation opportunities.

There are suitable conditions at Niska for a maintenance agreement. The GRCA has a strong relationship with the City of Guelph and active third-party groups in the area. As well, there are existing city trails adjacent to and in close proximity to Niska.

It is recommended that the GRCA enter into a maintenance agreement with the City of Guelph. This would include discussing the opportunities to connect with the adjacent City trail systems as shown in Figure 5. As per the Ontario Municipal Board 2018 Minutes of Settlement, if this management plan is approved, the GRCA and the City of Guelph will establish a joint working group, which shall include members of the public, to consider the implementation of a trails system at Niska. The working group shall consider, among other things, the function, location and character of trails.

The terms of the maintenance agreement would also require the City of Guelph to assume full responsibility for maintenance, cleanliness, and general appearance of the lands and municipal works, including, but not limited to items such as removal of garbage, removal of tree hazards, maintenance of existing fences, maintenance of trails, etc.

Should the City of Guelph not be interested in entering into a maintenance agreement, GRCA staff will explore opportunities with third parties.

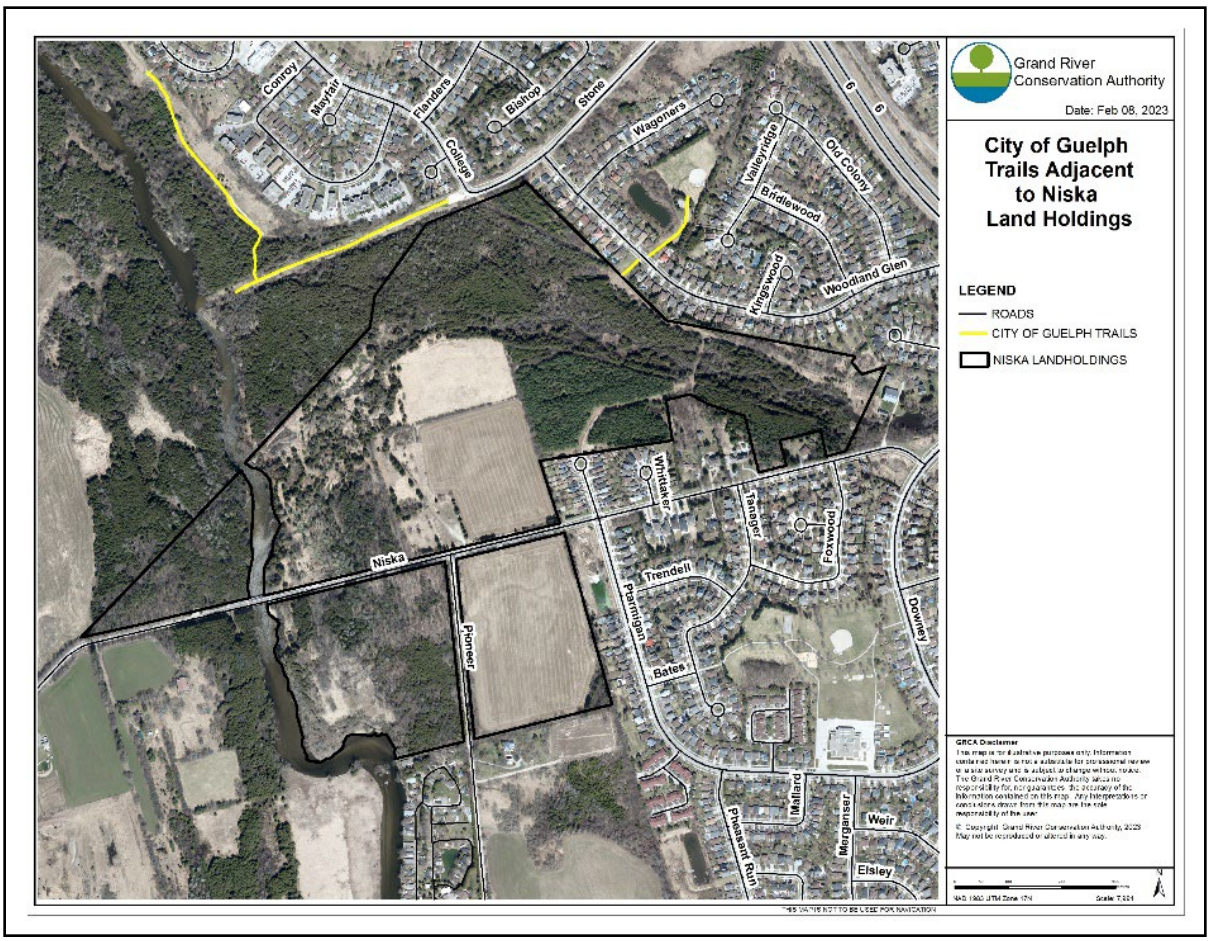

Figure 5 City of Guelph Trails Adjacent to Niska

Recommendation 2: Continue to advocate and promote partnership opportunities to manage and monitor the biodiversity and ecological systems within the land holdings.

Natural areas found at Niska, especially the Hanlon Creek and the Speed River provincially significant wetland, provide ecological values to the regional environment. Where possible, these areas should be managed using best practices to conserve and/or enhance those ecological values. Working with partners is an excellent way to implement this. Partners are able to conduct research, monitor and assess natural area conditions, and together implement habitat restoration and improvement. Opportunities for such may include, but are not limited to, plantings, invasive plant species control, water temperature monitoring, and measures to improve stream connectivity.

Recommendation 3: Dispose of lands south of Niska Rd. that are associated with the agricultural lease and identify other lands that could be suitable for disposition.

The GRCA evaluates opportunities to dispose of, or enter into long term agreements for properties that do not meet the needs of the Authority. Through the management plan process, GRCA staff concluded that the lands of an eight hectare parcel owned by the GRCA and located at Pioneer Trail and Niska Rd. in the City of Guelph meet GRCA's criteria for declaring land surplus, including:

- the land was acquired for the Hespeler Reservoir flood control project (Section 1.2.1), which was later removed as a project (Section 4.2);
- the land does not contain any provincially significant wetlands;
- the land is not part of a Management or Agreement Forest; and
- the land does not contain any regulated features under Ontario Regulation 150/06.

Further, with the recent introduction of Bill 23: The More Homes Built Faster Act, changes were made to how Conservation Authorities dispose of lands whose purchase was partially funded by the province. Authorities are now simply required to provide notice to the Minister of Natural Resources and Forestry at least 90 days before disposition of these types of lands. Authorities are required to conduct public consultations before disposing of provincially-funded lands that meet certain criteria, including those that contain areas of natural and scientific interest, wetlands, regulated natural hazards, habitat of threatened or endangered species as well as agreement forests or Niagara Escarpment lands.

With GRCA Board approval of the management plan, GRCA staff shall proceed with the process to declare this parcel surplus. It is recognized that within the OMB MOS, that an additional notification period by the GRCA is required for the public.

During the course of the Management Plan it was identified that there are other portions of land within Niska that may meet the GRCA's criteria suitable for surplus land. However, there is more investigation that is required and all regulatory requirements would need to be met in order for the GRCA to declare the lands surplus.

Section 6:
6.0 Plan Implementation

6.1 INTRODUCTION

Section 6 presents the implementation phasing of the Management Plan. This section of the document will be informed and populated at the time that a final management report is submitted for approval

Section 7:
7.0 Literature Cites & References

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