



Hutchinson

Environmental Sciences Ltd.

Nobleton Water and Wastewater
Servicing Municipal Class
Environmental Assessment
Environmental Impact Study

Prepared for: Black & Veatch
Job #: J170008

September 24, 2021

September 24, 2021

HESL Job #: J170008

Mr. Rajan Sawhney
Engineering Manager
Black & Veatch
501-50 Minthorn Blvd.
Markham L3T 7X8

Dear Mr. Sawhney:

Re: Nobleton Water and Wastewater Servicing Municipal Class EA Environmental Impact Study (EIS)

We are pleased to submit the EIS for the Nobleton Water and Wastewater Servicing Municipal Class Environmental Assessment Study. The EIS characterizes natural heritage features and functions in the study area, assesses potential impacts of the proposed infrastructure project on them, and recommends mitigation measures to avoid or minimize negative environmental impacts, in accordance with relevant municipal, provincial, and federal policy. Several sensitivities (related to species at risk habitat, significant wildlife habitat, and regulated areas under the Toronto and Region Conservation Authority) were identified through background review and field investigations. Given the restricted nature of the proposed development, within existing disturbed and primarily fenced-in areas, we believe that any potential negative impacts to the environment can be appropriately managed through recommended best practices. Consultation with regulatory agencies is ongoing to determine if any permits or approvals will be required.

Sincerely,

Per. Hutchinson Environmental Sciences Ltd.



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Signatures

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Executive Summary

The Regional Municipality of York is undertaking the Nobleton Water and Wastewater Servicing Municipal Class Environmental Assessment Study (Class EA Study) to identify long-term servicing options to accommodate future growth in the community of Nobleton, Township of King, York Region. The EA Study has identified the following preferred water and wastewater servicing options:

- Expand/upgrade the existing Janet Avenue Wastewater Pumping Station (WWPS),
- Increase capacity of existing Well #2 and add a new well and associated treatment processes at the existing Well #5 site, and
- Expand/upgrade the existing Nobleton Water Resource Recovery Facility (WRRF).

Hutchinson Environmental Sciences Ltd. (HESL) conducted an environmental impact study (EIS) as part of the Class EA Study process to characterize natural heritage features and functions within the study area, identify potential negative impacts of the proposed development on these features and functions, and recommend mitigation measures to avoid or minimize impacts.

All proposed infrastructure works would be confined to within the existing property boundaries of the infrastructure facilities. Work at Well #2 would be restricted to regular maintenance activity (i.e., replacement of existing pump and motor with larger capacity equipment), and thus no impacts to natural heritage features or functions are anticipated at this site. This EIS thus focused on assessing potential environmental impacts of the project related to development at the Janet Ave. WWPS, Well #5, and WRRF sites only.

A combination of background review and field investigations was undertaken to characterize natural heritage features and functions in the study area. No significant natural heritage features were previously mapped in the study area (e.g., provincially significant wetlands, provincially significant woodlands, ANSIs etc.), but the area is within the Greenbelt Protected Countryside, with portions lying in the Greenbelt's Natural Heritage System and York Region's Greenlands System. Parts of the study area also occur within the Toronto and Region Conservation Authority's regulated area.

The study area is located within the Humber River Watershed, with the eastern portion (encompassing Janet Ave. WWPS and Well #5) containing King Creek and its tributaries, and the western portion (encompassing the WRRF) containing tributaries of Cold Creek. The watercourses directly adjacent to the facilities had intermittent flow and offer limited aquatic habitat for fish and other wildlife. The tributaries to King Creek, however, may function as contributing habitat for the endangered fish Redside Dace, which occurs in the main branch of King Creek downstream.

All infrastructure facilities were highly disturbed and comprised of manicured lawn with scattered trees and shrubs, as well as pavement and buildings. The WRRF also had a stormwater pond and meadow, both of which were dominated by Reed Canary Grass, an invasive plant species. Adjacent lands were also highly disturbed at all three sites, containing weedy and invasive plant species, as well as planted species or species that have escaped cultivation.

While much of the study area represents low to moderate habitat ecologically, it was found to support a variety of wildlife species. Several amphibian species were documented at the WRRF stormwater pond and



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the marsh directly south of the property, including the Western Chorus Frog, a threatened species federally. A dead baby Snapping Turtle, a special concern species in Ontario, was also found next to the WRRF stormwater pond, indicating that this water feature is used by the species during the active season. Agricultural lands surrounding the WRRF also provide breeding habitat for Bobolink, and Eastern Meadowlark, two provincially threatened grassland species, and provide foraging habitat for Barn Swallow, a provincially threatened aerial insectivore species.

The restricted nature of the proposed development within existing disturbed sites minimizes any potential impacts to natural heritage features and functions. While several environmental sensitivities were identified (i.e., potential contributing habitat for Redside Dace in adjacent watercourses to Janet Ave. WWPS and Well #5, potential SWH for Snapping Turtle at the WRRF, species at risk habitat adjacent to the WRRF for Western Chorus Frog, Barn Swallow, Bobolink, and Eastern Meadowlark), potential negative impacts to these features can be appropriately minimized and avoided by implementing the recommended mitigation measures, particularly relating to restricting laydown area, avoiding sensitive timing windows, and enacting exclusion fencing and erosion and sediment control. Following these measures will also ensure that the project complies with relevant federal, provincial, and municipal policy.



List of Abbreviations

ANSI	Area of Natural and Scientific Interest
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
DFO	Department of Fisheries and Oceans
ECCC	Environment and Climate Change Canada
EIS	Environmental Impact Study
ELC	Ecological Land Classification
HESL	Hutchinson Environmental Sciences Ltd.
MECP	Ministry of Environment, Conservation and Parks
MNR	Ministry of Natural Resources
MNRF	Ministry of Natural Resources and Forestry (MNR was renamed in 2014)
NHIC	Natural Heritage Information Centre
SWH	Significant Wildlife Habitat
TRCA	Toronto and Region Conservation Authority
WRRF	Water Resource Recovery Facility
WWPS	Wastewater Pumping Station



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1. Introduction

The Regional Municipality of York is undertaking the Nobleton Water and Wastewater Servicing Municipal Class Environmental Assessment Study (Class EA Study) to identify long-term servicing options to accommodate future growth in the community of Nobleton, Township of King, York Region. The EA Study completed Phase 1 (Identification of the Problem or Opportunity) in 2019 and Phase 2 (Identification and Evaluation of Alternative Solutions to the Problem) in 2020. During Phase 2, the following preferred water and wastewater servicing options were recommended (Figure 1):

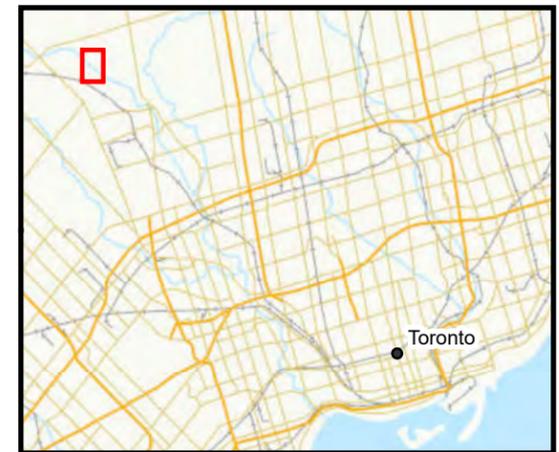
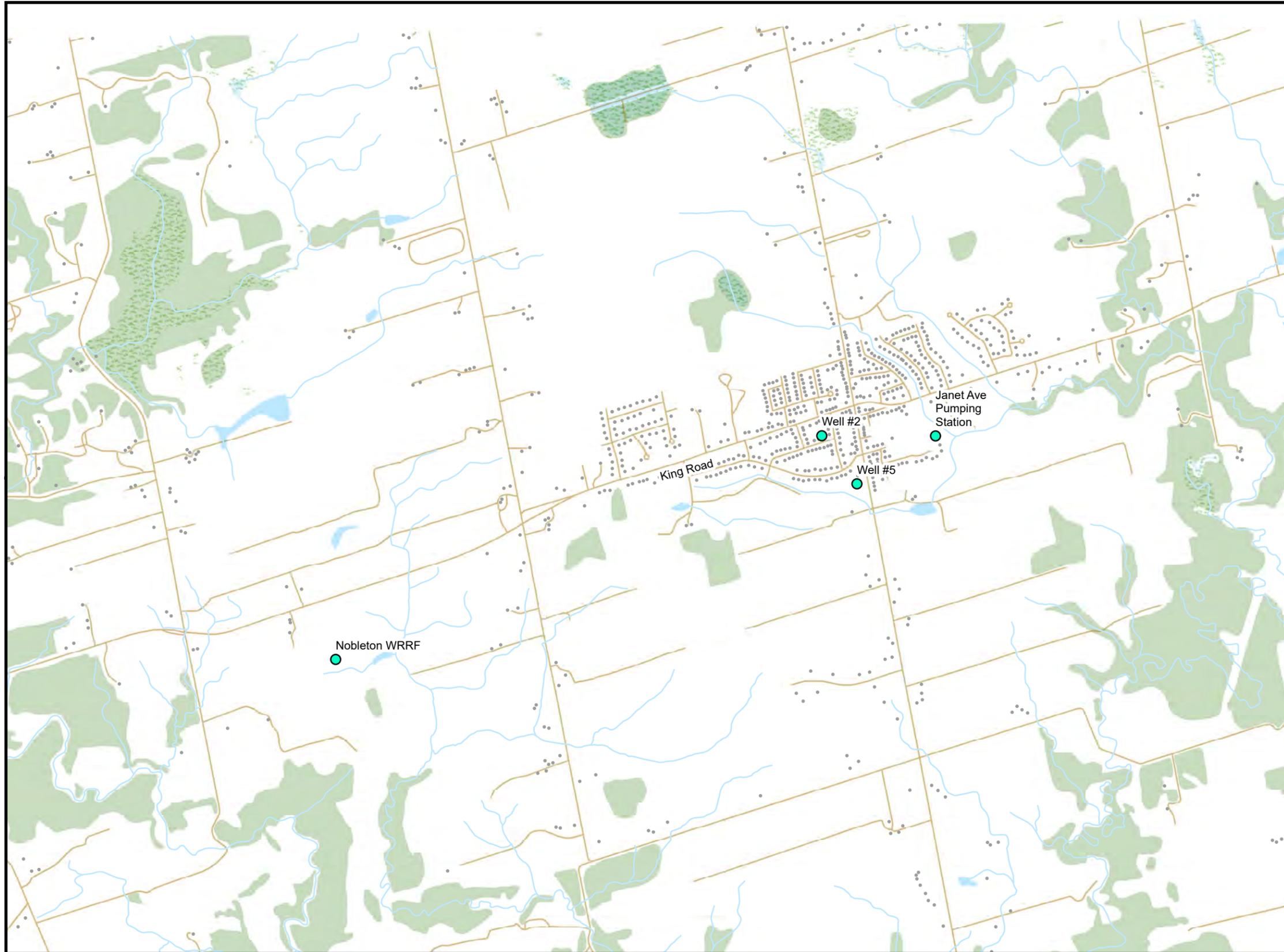
- Expand/upgrade the existing Janet Avenue Wastewater Pumping Station (WWPS),
- Expand/upgrade the existing Nobleton Water Resource Recovery Facility (WRRF),
- Upgrade/twin the forcemain between the WRRF and the WWPS,
- Upgrade the outfall at the Nobleton WWRF, and
- Increase capacity of existing Well #2 and add a new well at the existing Well #5 site.

The Region is now engaged in Phase 3 of the Class EA Study, in which alternative design concepts for the preferred water and wastewater servicing options are identified and evaluated, and a preferred design concept is selected (note that two of the servicing options listed above - upgrade/twin the forcemain between the WRRF and the WWPS and upgrade the outfall at the WRRF- are no longer being considered under Phase 3). Hutchinson Environmental Sciences Ltd. (HESL) conducted an environmental impact study (EIS) as part of the Class EA Study process. The purpose of the EIS is to

- characterize natural heritage features and functions in the study area¹,
- identify potential impacts of the proposed infrastructure upgrades and expansions on natural heritage features and functions,
- recommend mitigation measures to avoid and minimize adverse effects on the natural environment, and
- ensure compliance with applicable legislation and policy.

¹ The study area is defined as encompassing the locations of the preferred water and wastewater servicing options and adjacent lands (i.e., within 120 m of these options).





- Point of Interest
- Building
- Watercourse
- Road
- +— Railroad
- Wooded Area
- Wetland
- Waterbody

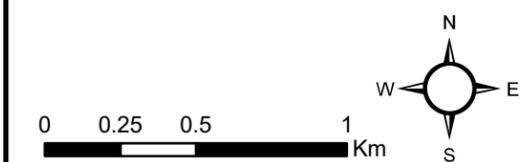


Figure 1:
Study Area

Project Lead: Andrea Smith
 Prepared by: Kris Hadley
 Data Source: HESL, ESRI Imagery
 Coordinate System: NAD 1983 UTM Zone 17N



2. Policy Framework

The following federal, provincial, and municipal legislation and policy apply to the proposed Nobleton municipal infrastructure project.

2.1 Federal Policy

2.1.1 *Species at Risk Act (2002)*

The federal *Species at Risk Act (2002)* prohibits

- The killing, harm, harassment, capture, possession, collection, or trade of an individual of a wildlife species listed as extirpated, endangered, or threatened under the Act; and
- The damage or destruction of its residence or critical habitat.

The Act applies to all species listed as extirpated, endangered, or threatened occurring on federal lands, and to listed aquatic species and bird species covered by the *Migratory Birds Convention Act (1994)* wherever they occur in Canada.

2.1.2 *Fisheries Act (1985)*

The federal *Fisheries Act (1985)* prohibits any activity that (i) causes death of fish (other than by fishing) or (ii) harmful alteration, disruption, or destruction of fish habitat. It is also illegal to deposit a deleterious substance into water frequented by fish or elsewhere if it may enter any such water. The provisions apply to all fish and fish habitat throughout Canada.

2.1.3 *Migratory Birds Convention Act (1994)*

Under the *Migratory Birds Convention Act (1994)* it is illegal to disturb or destroy eggs and nests of migratory bird species listed under Article I of the Migratory Birds Convention, and illegal to hunt listed species without a permit.

2.2 Provincial Policy

2.2.1 *Environmental Assessment Act (1990)*

The *Environmental Assessment Act (1990)* provides for the protection, conservation, and wise management of the environment in Ontario. The Act applies to various enterprises, activities, proposals, plans and programs, including municipal development undertakings. As a municipal infrastructure project, the DLWC expansion falls under the class EA process, which establishes a standardized EA approach to classes of activities. The class EA “*applies to projects that are carried out routinely and have predictable environmental effects that can be readily managed*” (Government of Ontario 2021).



As part of a Class EA, proponents must provide a description of the expected environmental effects of the proposed project, as well as a description of measures that could be adopted to mitigate any adverse environmental effects resulting from the project.

2.2.2 *Endangered Species Act (2007)*

Ontario's *Endangered Species Act (2007)* prohibits

- The killing, harm, harassment, or capture of a living individual belonging to a species listed as endangered or threatened under the Species at Risk in Ontario List; and
- The damage or destruction of its habitat.

2.2.3 *Fish and Wildlife Conservation Act (1997)*

Ontario's *Fish and Wildlife Conservation Act (1997)* prohibits the destruction of nests and eggs of wild birds (not including species subject to the federal *Migratory Birds Convention Act* or the following exempted species: American Crow, *Corvus brachyrhynchos*; Brown-headed Cowbird, *Molothrus ater*; Common Grackle, *Quiscalus quiscula*; House Sparrow, *Passer domesticus*; Red-winged Blackbird, *Agelaius phoeniceus*; and European Starling, *Sturnus vulgaris*).

2.2.4 *Conservation Authorities Act (1990)*

Toronto and Region Conservation Authority (TRCA) regulates development (including infrastructure construction) within its jurisdiction through Ontario Regulation 166/06: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses, under the *Conservation Authorities Act (1990)*. Under the regulation, development is prohibited in areas that are

- Adjacent or close to the shoreline of the Great Lakes-St. Lawrence River System or to inland lakes that may be affected by flooding, erosion or dynamic beaches
- River or stream valleys that have depressional features associated with a river or stream, whether or not they contain a watercourse;
- Hazardous lands;
- Wetlands; and
- other areas where it could interfere with hydrologic functions of a wetland (including within 120 m of all Provincially Significant Wetlands and wetlands on the Oak Ridges Moraine, and within 30 m of all other wetlands).

unless the development will not affect control of flooding, erosion, dynamic beaches, pollution or conservation of land.

TRCA may grant permission for development within the above mentioned natural heritage features, with or without conditions. Proponents must apply to the TRCA for a permit, providing information on

- the type and location of the proposed development;
- the proposed use of buildings and structures following completion of the development;
- the start and completion dates of the development;



- elevations of existing buildings and grades and proposed elevations of buildings and grades after development;
- drainage details before and after development,
- a complete description of the type of fill proposed to be placed or dumped; and
- any other technical studies or plans requested by TRCA (Ontario Regulation 166/06).

It is also prohibited to straighten, change, divert or interfere with existing channels of rivers, creeks, streams or watercourses, or change or interfere with a wetland under Ontario Regulation 166/06. Proponents must apply for permission to alter existing channels with information on

- details of the proposed alteration;
- methods to be used to undertake the alteration;
- the start and completion dates of the alteration;
- any other technical studies or plans requested by SVCA (Ontario Regulation 166/06).

The proposed Nobleton municipal infrastructure project occurs in areas within or adjacent to TRCA regulated areas including unevaluated wetlands and watercourses (Figure 2).

2.2.5 Greenbelt Plan (2017)

Ontario's Greenbelt Plan (Government of Ontario 2017) is a provincial land use plan to protect agricultural land and the natural environment by directing where urbanization cannot occur. The Plan designates Protected Countryside, which includes the Agricultural System, Natural System, and Settlement Areas. Lands within the Protected Countryside are classified into one of several policy areas (e.g., specialty crop area, prime agricultural areas, rural lands, towns/villages or hamlets) and may be subject to policies related to the Natural Heritage System, Water Resource System, key hydrologic areas, key natural heritage features and key hydrologic features of the Plan.

Under Section 4.2.1 of the Greenbelt Plan, all existing, expanded, or new infrastructure subject to and approved under the Environmental Assessment Act is permitted within the Protected Countryside, provided it meets one of the following objectives:

- It supports agriculture, recreation and tourism, Towns/Villages and Hamlets, resource use or the rural economic activity that exists and is permitted within the Greenbelt ; or
- It serves the significant growth and economic development expected in southern Ontario beyond the Greenbelt by providing for the appropriate infrastructure connections among urban centres and between these centres and Ontario's borders.

The location and construction of infrastructure (including expansions, operations and maintenance) in the Protected Countryside are subject to the following:

- Planning, design and construction practices shall minimize, wherever possible, the amount of the Greenbelt, and particularly the Natural Heritage System and Water Resource System, traversed or occupied by such infrastructure;
- Planning, design and construction practices shall minimize, wherever possible, the negative impacts on and disturbance of the existing landscape;



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- New or expanding infrastructure shall avoid key natural heritage features, key hydrologic features or key hydrologic areas unless need has been demonstrated and it has been established that there is no reasonable alternative; and
- Where infrastructure does cross the Natural Heritage System or intrude into or result in the loss of a key natural heritage feature, key hydrologic feature or key hydrologic areas, planning, design and construction practices shall minimize negative impacts on and disturbance of the features or their related functions, and, where reasonable, maintain or improve connectivity.

Key natural heritage features include

- Habitat of endangered and threatened species;
- Fish habitat;
- Wetlands;
- Life science areas of natural and scientific interest (ANSIs);
- Significant valleylands;
- Significant woodlands;
- Significant wildlife habitat;
- Sand barrens, savannahs and tallgrass prairies; and
- Alvars.

Key hydrologic features include

- Permanent and intermittent streams;
- Lakes and their littoral zones;
- Seepage areas and springs; and
- Wetlands.

The proposed project is located within the Greenbelt's Protected Countryside, with portions within the Natural Heritage System (Figure 2).

2.3 Municipal Policy

2.3.1 York Region Official Plan (2019)

York Region has established a Regional Greenlands System, which complements the Greenbelt Plan by protecting key natural heritage features and key hydrological features, as well as adjacent lands, through a system of core natural areas connected by corridors and linkages. Core natural areas are those with the highest concentration of significant natural features, including significant woodlands and wetlands, Life science ANSIs, and Environmentally Significant Areas. Corridors include significant valleylands and watercourses.

The York Region Official Plan guides lower tier municipalities to protect the Greenlands System (York Region 2019). Development and site alteration are prohibited within the Regional Greenlands System, and development and site alteration within 120 m of the System requires an environmental impact study. However, according to Section 2.1.10 of the Official Plan, new infrastructure required to service the community (including water and wastewater systems) is permitted if



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- No other reasonable alternative location exists and an approved environmental impact study demonstrates that it can be constructed without negative impact, and shall be subject to the policies of the Greenbelt Plan (where applicable); or
- The project is authorized through an Environmental Assessment.

Infrastructure design and construction should be sensitive to the features and functions of the Greenlands System and should avoid key natural heritage features and key hydrologic features, where possible.

Portions of the study area (at the WRRF) are located within the Regional Greenlands System (Figure 2).

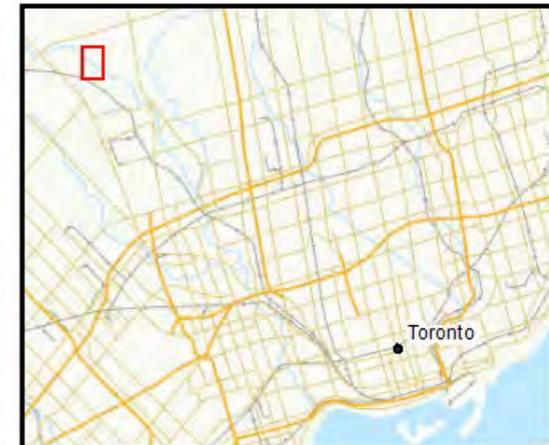
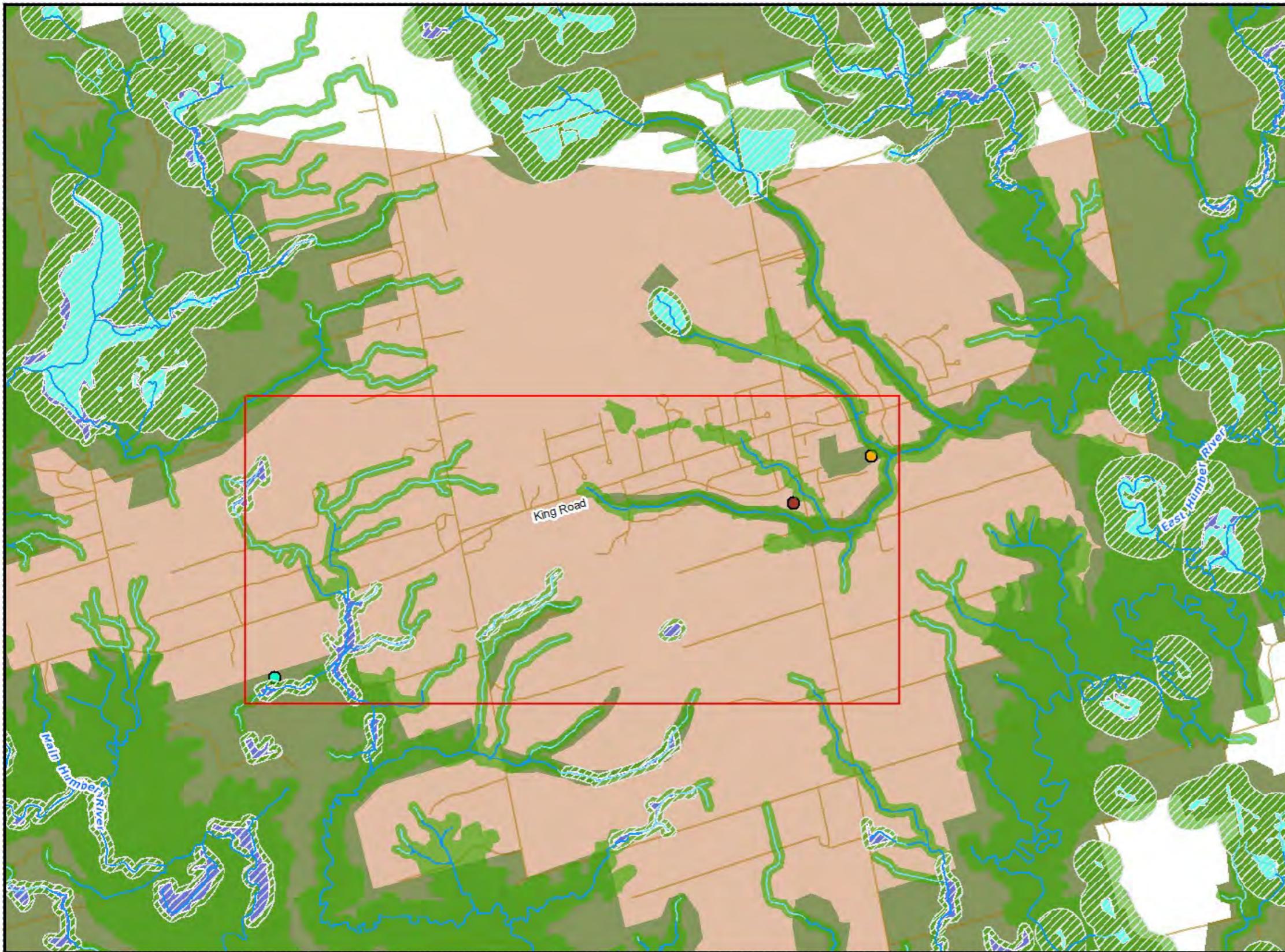
2.3.2 *Township of King Official Plan (2019)*

The Township of King Official Plan integrates provincial and regional policies into a unified framework to protect and enhance the environment (Township of King 2019). The Township's Natural Heritage System protects key natural heritage features and key hydrological features, as well as linkages and corridors connecting these features, identified under the Greenbelt Plan and the York Region Official Plan. The Natural Heritage System includes the Greenbelt Natural Heritage System and the York Region Greenlands System. Development and site alteration are directed outside the Natural Heritage System, but infrastructure is permitted within the Natural Heritage System, subject to the following:

- No reasonable alternative exists;
- The Natural Heritage Evaluation or Hydrologic Evaluation demonstrate that it can be constructed without negative impact and in accordance with the applicable Provincial Plan; and
- Where it is authorized through an Environmental Assessment.

The construction, expansion, replacement, and maintenance of existing infrastructure should occur in a way that is compatible with adjacent land uses and that minimizes environmental impacts. Planning, design and construction practices shall minimize, wherever possible, the amount of the Greenbelt, and the Natural Heritage System, traversed or occupied by infrastructure and expansions within the Protected Countryside. New or expanding infrastructure shall avoid key natural heritage features, key hydrologic features, or key hydrologic areas, unless it has been demonstrated that the route is needed and no reasonable alternative exists. In cases where infrastructure crosses the Natural Heritage System, or crosses or results in the loss of a key natural heritage feature, key hydrologic feature, or key hydrologic areas, planning design and construction practices must minimize negative impacts on these features and their functions, and, where reasonable, maintain or improve connectivity.





- Watercourse**
- Regulated
 - Unregulated/Unverified
 - ▨ Wetlands - Area of Interference
 - MNRF Provincially Significant Wetlands
 - MNRF Locally Significant Wetlands
 - TRCA ELC and Unevaluated Wetlands
 - Regulated Area 2020 (small scale)
- Nobleton WRRF
- Well #5
- Janet Ave Pumping Station
- Road
- Regional Greenlands System
- Protected Countryside



Figure 2:
Environmental Land Designations

Project Lead: Andrea Smith
 Prepared by: Kris Hadley
 Data Source: HE SL, ESRI Imagery
 Coordinate System: NAD 1983 UTM Zone 17N



3. Methodology

3.1 Background Review and Consultation

We conducted a background review and corresponded with regulators at the beginning of the project to scope field efforts and to gain a general overview of natural heritage features present and potential species of conservation concern that could occur in the area. Information sources included:

- Email correspondence with the Ontario Ministry of Environment, Conservation and Parks (MECP; Andersen 2021);
- MECP Species at Risk in Ontario list (MECP 2020);
- Ministry of Natural Resources (MNR) Natural Heritage Information Centre (NHIC) records of species at risk, rare plant communities, wildlife concentration areas, and natural areas (MNR 2021);
- MNR's Natural Heritage Reference Manual and SWH resource material (MNR 2000, 2010; MNR 2014, 2015);
- Federal Species at Risk Public Registry (Government of Canada 2018);
- Fisheries and Oceans Canada Aquatic Species at Risk Map (DFO 2020);
- Ontario Reptile and Amphibian Atlas (Ontario Nature 2018);
- Ontario Breeding Bird Atlas (OBBA; Bird Studies Canada et al. 2006);
- eBird (eBird 2012);
- Bat Conservation International's bat species profiles (Bat Conservation International 2020);
- iNaturalist (iNaturalist 2019);
- York Region Official Plan (2010) and King Township Official Plan (2019);
- The Greenbelt Plan (2017);
- Ontario GeoHub – Aquatic Resource Area Line Segment (Land Information Ontario 2021);
- Toronto and Region Conservation Authority database on natural heritage features (via York Region's Self Service Data Depot; York Region 2016); and
- Aerial photography and topographic maps.

3.2 Field Investigations

We conducted field work in the spring and summer of 2021 to characterize the nature heritage features and functions in the study area. All the recommended servicing upgrades and expansion are planned within existing cleared and/or developed land within the properties of existing infrastructure facilities. However, adjacent lands may include forest, wetlands, watercourses, and grassland habitat. Our field investigations were site-specific, based on the type and extent of proposed development, and the environmental conditions, present at each of the servicing option locations, as outlined below. Depending on the site, field investigations included surveys of vegetation communities, breeding birds, herpetofauna (amphibians, turtles), and aquatic habitat. Incidental observations of wildlife species were also recorded during all field investigations.

3.2.1 Vegetation Communities

Plant surveys were conducted on July 21 and August 9, 2021 to characterize vegetation communities using standard Ecological Land Classification (ELC techniques; Lee et al. 1998). All vascular plant species



encountered were recorded, taking note of rare or sensitive species. ELC units were mapped on aerial photography in the field and a plant species list was compiled from observations.

3.2.2 *Fish and Fish Habitat*

Aquatic habitat surveys were completed on July 15, 2021, to characterize and identify watercourses that could be impacted by the footprint of the proposed infrastructure (Figure 3). Watercourse characteristics were used to identify stream permanency and habitat conditions following the protocol outlined in Irwin et al. (2013).

Aquatic habitat was characterized through orthophotography, background review and documentation of aquatic habitat features such as substrate, stream morphology, aquatic vegetation, in-stream cover, and adjacent riparian conditions. Fish community records were obtained from the MNR Land Information Ontario (LIO) database, therefore no site-specific fish sampling was completed in the study area. Habitat requirements of species identified through the background review were noted and compared to habitat observed in the study area to define any critical habitat features, such as spawning habitat, and to inform the development of recommended mitigation measures.

3.2.3 *Breeding Amphibians*

Amphibian surveys were completed following the Marsh Monitoring Program protocol (Bird Studies Canada et al. 2009). A background review of aerial imagery and a preliminary site investigation were completed to determine suitable sampling locations near appropriate breeding habitat (i.e., wetlands or vernal ponds) within the study area, with particular focus on areas within or adjacent to the footprint of project infrastructure. Seven sampling locations were selected (Figure 3). Three-minute surveys were conducted at each location, and all species and call level codes were recorded, as well as their approximate locations. Surveys were completed on April 12, May 19, and June 9, 2021 between 20:30 and 22:50 h. Weather conditions during surveys ranged from a damp light drizzle, calm wind and overcast to clear, with no wind to light air, and slightly dry, and temperatures from 8 to 23°C.

3.2.4 *Breeding Birds*

Two early morning breeding bird surveys were completed to document the bird communities in habitats within and adjacent to the proposed development. The OBBA protocol was followed to conduct five-minute point counts at each location (one each at Janet Ave. WWPS and Well #5 and two at WRRF; Birds Canada et al. 2021; Figure 3). These observations were supplemented with observations made by slowly traversing each survey location. All birds heard or seen during visits were recorded on aerial photo maps of the site, in the approximate location where they were detected (except birds obviously in transit between other locations, which were not recorded). Birds were assumed to be breeding if in suitable habitat and displaying breeding behaviour (e.g., singing male, pair observed together, adult visiting probable nest site, adult nest-building, adult carrying food for young). Species designated at risk federally and/or provincially were identified, as well as species considered area-sensitive (i.e., area-sensitive species require large areas of continuous habitat for breeding and foraging; MNR 2000).



Surveys were carried out on June 2 and June 24, 2021 between 06:30 and 08:50 h. Weather conditions ranged from 0 to 50% overcast, with no wind to gentle breezes, no precipitation, and temperatures between 9° and 19°C.

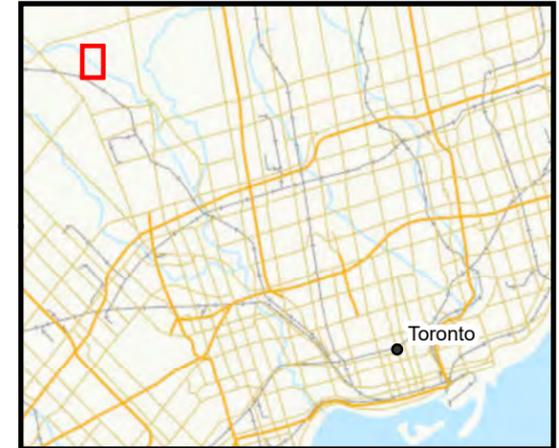
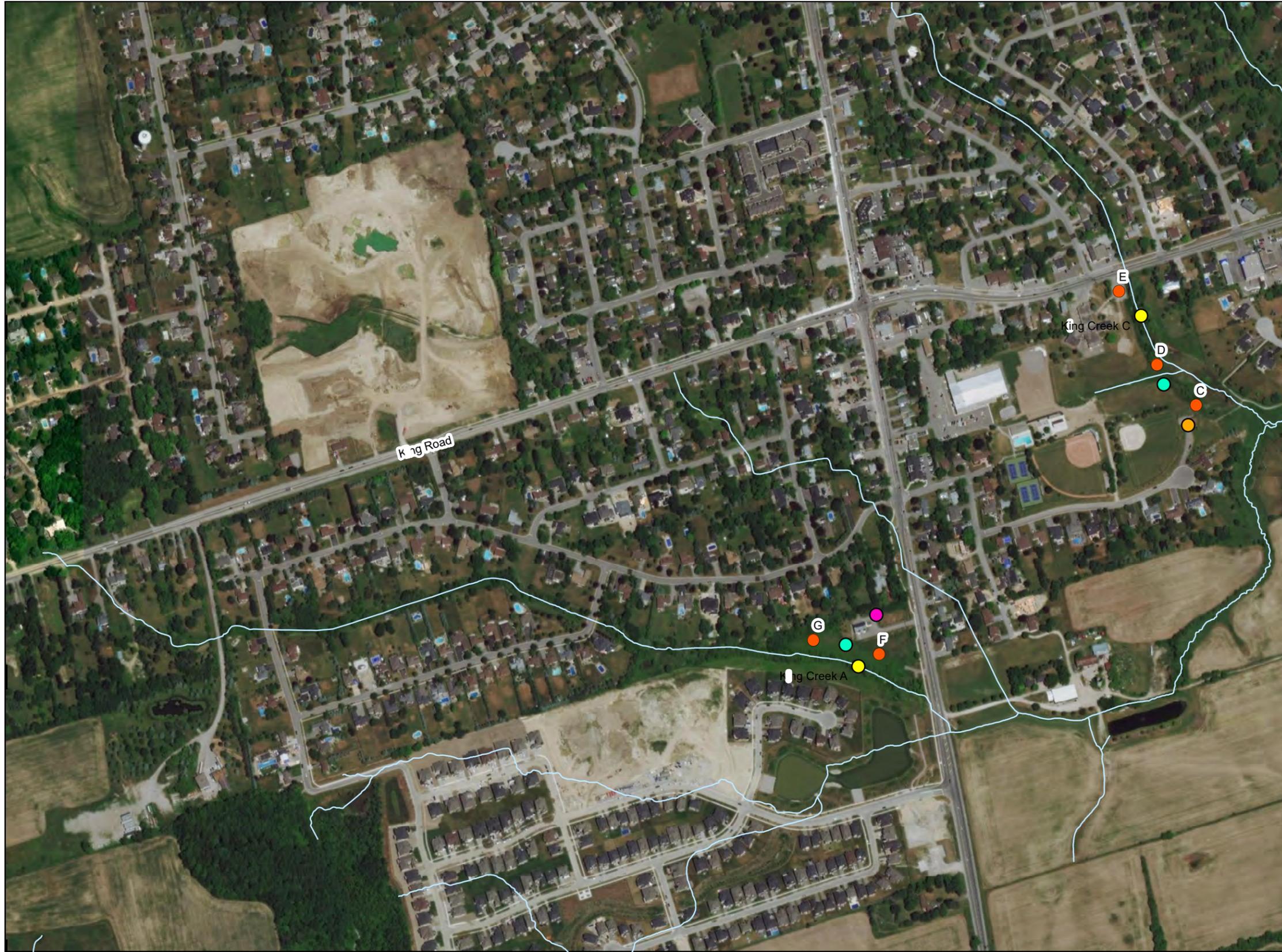
3.2.5 *Species at Risk*

Species of conservation concern, including species at risk, tend to be hard to detect in surveys because they often occur in low numbers and may be cryptic or elusive. Determining the presence or absence of these species from surveys alone may thus result in an underestimate of biodiversity. Many species of conservation concern, however, are associated with specific types of structural habitat and ecological communities (e.g., caves or cliffs, or specific ELC ecosites), and these habitat features may thus be used as indicators of the potential presence of these sensitive species. As a result, we combined information from wildlife surveys and incidental observations during field visits with data collected on vegetation communities to evaluate the potential for species of conservation concern to occur in the study area.

3.2.6 *Significant Wildlife Habitat*

SWH is defined under as wildlife habitat that is ecologically important in terms of features, functions, representation, or amount, and which contributes to the quality and diversity of a geographic area or natural heritage system (MNR 2000). SWH may include seasonal concentration areas, rare vegetation communities or specialized habitats for wildlife, habitats of species of conservation concern (not including threatened or endangered species) and animal movement corridors (MNRF 2015). Candidate SWH was identified in the field (based on species observations) and through a review of the ELC vegetation communities described for the study area. ELC communities documented on site were then compared with ELC ecosite classifications considered potential SWH for Ecoregion 6E, which encompasses the Nobleton area (MNRF 2015).





- Aquatic Habitat Sampling Stations
- Amphibian Sampling Stations
- Bird Count Locations
- Well #5
- Janet Ave Pumping Station
- Watercourse

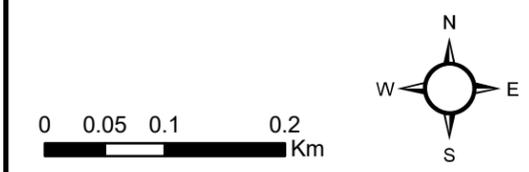
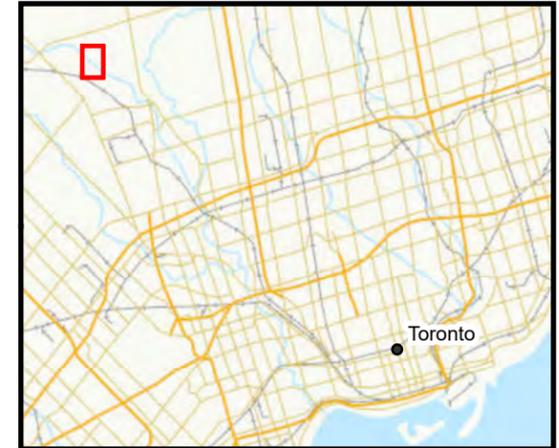


Figure 3a:
Locations of Field
Investigations
- Janet Avenue and Well #5

Project Lead: Andrea Smith
 Prepared by: Kris Hadley
 Data Source: HESL, ESRI Imagery
 Coordinate System: NAD 1983 UTM Zone 17N





- Aquatic Habitat Sampling Stations
- Amphibian Sampling Stations
- Bird Count Locations
- Nobleton WRRF



Figure 3b:
Locations of Field
Investigations
- WRRF

Project Lead: Andrea Smith
 Prepared by: Kris Hadley
 Data Source: HESL, ESRI Imagery
 Coordinate System: NAD 1983 UTM Zone 17N



3.3 Description of Proposed Works and Areas of Investigation

3.3.1 Janet Avenue Wastewater Pumping Station (WWPS)

The WWPS will be upgraded and expanded within the existing property boundary, comprised of lawn and pavement. The WWPS will be upgraded within its existing footprint, and a new below-ground storage tank will be added next to the WWPS (to the northeast), as well as connecting pipes. Adjacent lands include cleared parkland (baseball diamonds), wetlands, King Creek, and residential dwellings. We conducted surveys of vegetation communities, birds, herpetofauna (amphibians, turtles), and aquatic habitat at this site (Figure 3a).

3.3.2 Well #5

A new well will be added to this site, to the west of the existing pumphouse within the existing property. In addition, a new pipe will be installed between the pumphouse and York Regional Road 27, which will result in existing pavement and lawn being dug up. The existing building will be expanded to include the new treatment system for the new well. As a result of this expansion, the existing standby power generator will be removed from the building, and a new, larger generator will be located outside of the building. The site is located next to a watercourse and meadow. We therefore conducted vegetation, bird, herpetofauna, and aquatic habitat surveys at this site (Figure 3a).

3.3.3 Nobleton Water Resource Recovery Facility (WRRF)

The WRRF will be upgraded and expanded within the existing property limit. One of the existing buildings will be expanded, and additional equipment and a tank will be added within the buildings. In addition, two new storage tanks above- or partially above-ground will be added to the north of the stormwater pond. The WRRF is located in an agricultural landscape, surrounded by farm fields on all sides, as well as an unevaluated wetland and a watercourse to the south. We conducted surveys of vegetation communities, birds, herpetofauna, and aquatic habitat, and delineated the wetland boundaries at this site (Figure 3b).

3.3.4 Well #2

The existing well and well facility will be upgraded and upsized within the existing site. The changes to Well #2 will occur within the existing pumphouse and no changes to the size or structural elements of this facility are anticipated. An existing pipe extending from the pumphouse to Faris Avenue is not expected to be affected. Thus, we do not anticipate impacts to natural heritage features and functions because of proposed changes at this site and, consequently, did not undertake field investigations here. If plans for servicing upgrades change to include development beyond the pumphouse, then field investigations may be warranted.



4. Existing Natural Heritage Conditions

4.1 Background Review

No significant natural heritage features are mapped by TRCA or NHIC within the study area (The Regional Municipality of York 2016; MNRF 2021). However, the study area is located within the Greenbelt's Protected Countryside, with portions lying within the Greenbelt's Natural Heritage System and the York Region Greenlands System. In addition, portions of the study area are within TRCA's regulated lands, at each of the three locations (Janet Ave. WWPS, Well #5, and the WRRF), with the WRRF stormwater pond falling within the TRCA's Wetlands – Area of Interference, meaning that development here could potentially interfere with the hydrologic function of the adjacent unevaluated wetland to the south.

We identified 20 species at risk which could occur in the Nobleton area based on their geographic range and known or potential records of the species in the area (Table 1). Ten of these were not considered likely to occur within the study area, due to lack of suitable habitat. The remaining ten species at risk were identified with the potential to occur in the study area due to presence of suitable habitat, comprised of one fish species, four bird species, three turtle species, one amphibian species, and one insect species (Table 1).

Table 1. Species at Risk with potential to occur in the Nobleton area.

Species	Status	Source of Record	Likelihood Species at Risk or its Habitat at or near Project Area
Black Ash (<i>Fraxinus nigra</i>)	Threatened (Federally)	NHIC	Not likely to occur because no suitable habitat (swampy woodlands)
Redside Dace (<i>Clinostomus elongatus</i>)	Endangered (Provincially and Federally)	NHIC, DFO	Potential for Contributing Redside Dace habitat in King Creek Tributaries A and C along King Road, adjacent to Janet Ave WWPS and adjacent to Well #5. Redside Dace habitat was identified in the main branch of King Creek south of study area (DFO Species at Risk Mapping).
Acadian Flycatcher (<i>Empidonax virescens</i>)	Endangered (Provincially and Federally)	OBBA, eBird	Not likely to occur because no suitable habitat (mature, shady forests with ravines, or forested swamps)
Barn Swallow (<i>Hirundo rustica</i>)	Threatened (Provincially) and Special Concern (Federally)	OBBA, eBird	Observed aerial foraging at WRRF but no suitable nesting habitat found at any of the project areas
Bobolink (<i>Dolichonyx oryzivorus</i>)	Threatened (Provincially and Federally)	NHIC, OBBA, eBird	Observed in suitable nesting habitat in agricultural fields adjacent to WRRF



Nobleton Environmental Impact Study

Species	Status	Source of Record	Likelihood Species at Risk or its Habitat at or near Project Area
Canada Warbler (<i>Cardellina canadensis</i>)	Special Concern (Provincially and Federally)	OBBA, eBird	Not likely to occur because no suitable habitat (wet deciduous and coniferous forest)
Eastern Meadowlark (<i>Sturnella magna</i>)	Threatened (Provincially and Federally)	NHIC, OBBA, eBird	Observed in suitable nesting habitat in agricultural fields adjacent to WRRF
Eastern Wood-pewee (<i>Contopus virens</i>)	Special Concern (Provincially and Federally)	NHIC, OBBA, eBird, TRCA	Not likely to occur because no suitable habitat (deciduous and mixed forest)
Grasshopper Sparrow (<i>Ammodramus savannarum</i>)	Special Concern (Provincially and Federally)	eBird, TRCA	Potential to occur in agricultural habitat adjacent to WRRF
Wood Thrush (<i>Hylocichla mustelina</i>)	Special Concern (Provincially), Threatened (Federally)	NHIC, OBBA, eBird, TRCA	Not likely to occur because no suitable habitat (deciduous and mixed forest)
Unisexual Ambystoma (Jefferson Salamander dependent population; <i>Ambystoma</i> hybrid pop. 1)	Endangered (Provincially and Federally)	NHIC	Not likely to occur because no suitable habitat (deciduous and mixed forest with leaf litter, fallen logs, underground cavities, and vernal pools or fish-free permanent wetlands)
Blanding's Turtle (<i>Emydoidea blandingii</i>)	Threatened (Provincially), Endangered (Federally)	ORAA	Potential habitat in stormwater pond at WRRF and wetland south of WRRF
Midland Painted Turtle (<i>Chrysemys picata marginata</i>)	Special Concern (Federally)	ORAA	Potential habitat in stormwater pond at WRRF and wetland south of WRRF, stream south of Well #5 and in King Creek
Snapping Turtle (<i>Chelydra serpentina</i>)	Special Concern (Provincially and Federally)	ORAA	Observed dead baby Snapping Turtle next to stormwater pond at WRRF, potential habitat in wetland south of WRRF, stream south of Well #5, and along King Creek
Western Chorus Frog (Great Lakes/St. Lawrence – Canadian Shield population; <i>Pseudacris triseriata</i>)	Threatened (Federally)	ORAA	Heard calling in wetland south of WRRF, potential habitat in stream south of Well #5, and along King Creek
Monarch Butterfly (<i>Danaus plexippus</i>)	Special Concern (Provincially)	MECP	Potential habitat in grassland habitat adjacent to Well #5, King Creek, and WRRF
Eastern Small-footed Myotis (<i>Myotis leibii</i>)	Endangered (Provincially)	MECP	Not likely to occur because no suitable habitat (rocky outcrops, open buildings, bridges etc.)



Nobleton Environmental Impact Study

Species	Status	Source of Record	Likelihood Species at Risk or its Habitat at or near Project Area
Little Brown Myotis (<i>Myotis lucifugus</i>)	Endangered (Provincially and Federally)	MECP	Not likely to occur because no suitable habitat (forest, open buildings)
Northern Myotis (<i>Myotis septentrionalis</i>)	Endangered (Provincially and Federally)	MECP	Not likely to occur because no suitable habitat (dense forest)
Tri-coloured Bat (<i>Perimyotis subflavus</i>)	Endangered (Provincially and Federally)	MECP	Not likely to occur because no suitable forest (forest)

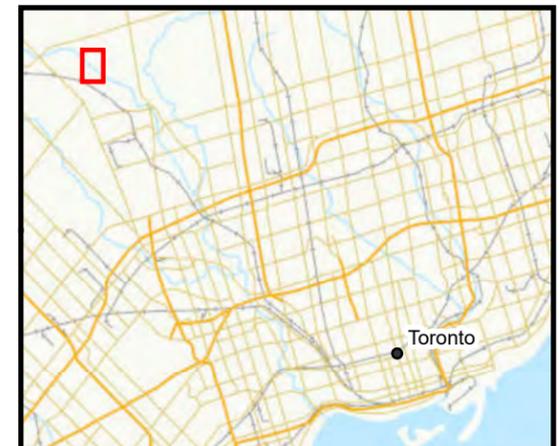
4.2 Vegetation Communities

A total of 129 plant species were documented within the following ELC communities in the study area (Figure 4a,b,c, Appendix A):

- Janet Ave. WWPS
 - Cattail Mineral Shallow Marsh Type (MASM1-1)
 - Open Water (OAO)
 - Reed Canary Grass Mineral Shallow Marsh Type (MASM1-14)
 - Manicured Lawn and Planted Trees and Shrubs (CGL-Green Lands)
 - Smooth Brome Graminoid Meadow Type (MEGM3-5)
 - Fresh-Moist Manitoba Maple Deciduous Woodland Type (WODM5-3) with a Sumac Deciduous Shrub Thicket Type (THDM2-1) inclusion
- Well #5
 - Goldenrod forb Meadow Type (MEFM1-1)
 - Fresh-Moist Manitoba Maple Deciduous Woodland type (WODM5-3)
 - Open Water-Stream (OAO)
 - Open Water-Pond (OAO) with a Cattail Mineral Shallow Marsh Type (MASM1-1) inclusion
- WRRF
 - Open Water-Pond (OAO) with a Cattail Mineral Shallow Marsh Type (MASM1-1) inclusion
 - Reed Canary Grass Graminoid Meadow Type (MEGM3-8)
 - Smooth Brome Graminoid Meadow Type (MEGM3-5)
 - Soy Crop (AG)
 - Manicured Lawn and Planted Trees and Shrubs (CGL-Green Lands)
 - Reed Canary Grass Mineral Shallow Marsh Type (MASM1-14).

For both the Janet Ave. WWPS site and the Well #5 site, the ELC on the property was Manicured Lawn and Planted Trees and Shrubs (CGL-Greenlands), with other ELC types on adjacent lands. At the WRRF, the property was characterized by Manicured Lawn, as well as an open stormwater pond and Reed Canary Grass Graminoid Meadow Type (MEGM3-8). Numerous non-native invasive plants occurred throughout the study area, including Norway Maple (*Acer platanoides*), Garlic Mustard (*Alliaria petiolata*), Reed Canary Grass (*Phalaris arundinacea*), and European Buckthorn (*Rhamnus cathartica*).





- ELC Code**
-  OAO - Stream
 -  MASM1-1
 -  MASM1-14
 -  MEGM3-5
 -  WODM5-3
 -  CGL-Green Lands

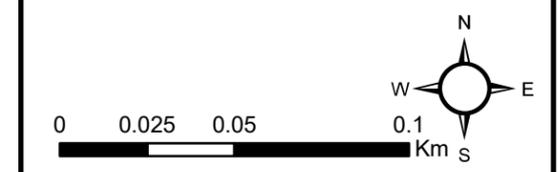
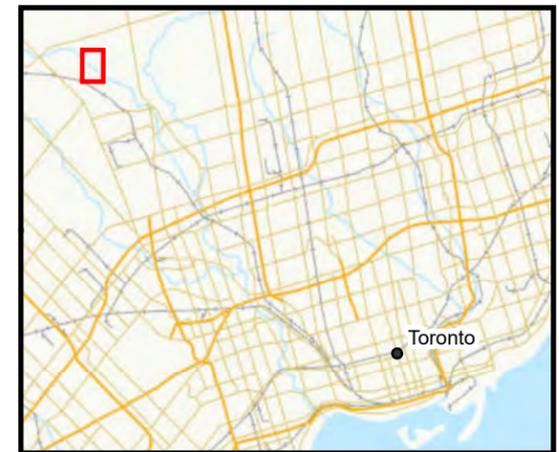


Figure 4a:
 Environmental Land
 Classification
 - Janet Avenue

Project Lead: Andrea Smith
 Prepared by: Kris Hadley
 Data Source: HESL, ESRI Imagery
 Coordinate System: NAD 1983 UTM Zone 17N





ELC Code

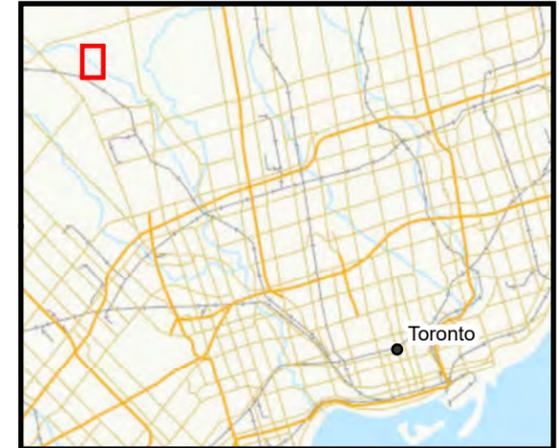
-  OAO - Stream
-  MEFM1-1
-  WODM5-3
-  CGL-Green Lands
-  OAO - Pond



Figure 4B:
Environmental Land
Classification
- Well 5

Project Lead: Andrea Smith
 Prepared by: Kris Hadley
 Data Source: HESL, ESRI Imagery
 Coordinate System: NAD 1983 UTM Zone 17N





- Nobleton WRRF
- Watercourses
- 120m Buffer
- ELC Code**
- OAO - Pond
- MEGM3-8
- MEGM3-5
- AG - Soy
- MASM1-14
- CGL - Green Lands

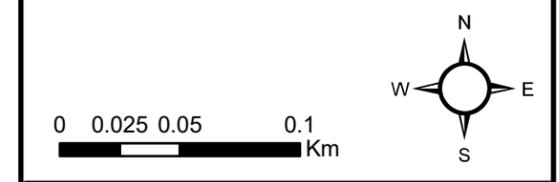


Figure 4C:
Environmental Land
Classification
- WRRF

Project Lead: Andrea Smith
 Prepared by: Kris Hadley
 Data Source: HESL, ESRI Imagery
 Coordinate System: NAD 1983 UTM Zone 17N



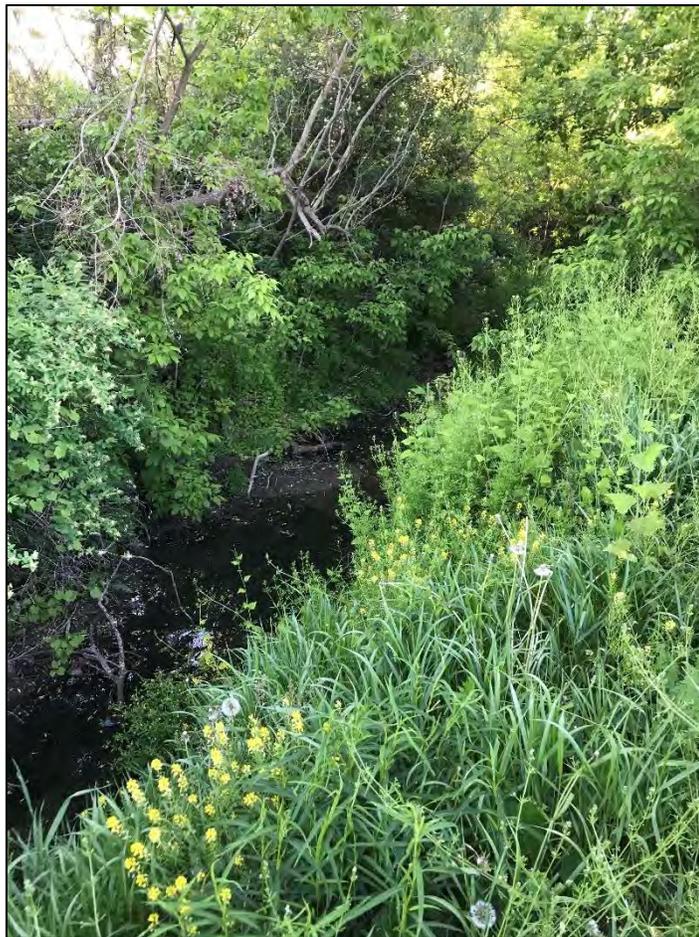
4.2.1 Janet Ave. WWPS

Polygon 1. Cattail Mineral Shallow Marsh Type (MASM1-1).

Most of this polygon consisted of plants in layer 3 (which is from 0.5-2 m tall). Approximately 50% of the site was composed of various species of cattails: Broad-leaf Cattail (*Typha latifolia*) with both the invasive Narrow-leaved Cattail (*Typha angustifolia*) and hybrid Blue Cattail (*Typha x glauca*) in smaller quantities. These marshes are usually low in plant diversity due to the aggressive nature of cattails. Reed Canary Grass, an invasive species, makes up approximately 25% of the rest of layer three. Spotted Jewelweed (*Impatiens capensis*) and Lance-leaved Aster (*Symphotrichum lanceolatum*) are found in trace quantities. There was a Reed Canary Grass Mineral Shallow Marsh Type (MASM1-14) inclusion.

Polygon 2. Open Water (OAO).

This small coldwater stream did not contain much vegetation. There were trace amounts of Creeping Buttercup (*Ranunculus repens*), True Forget-me-not (*Myosotis scorpioides*) and Broad-leaved Waterplantain (*Alisma plantago-aquatica*; Photograph 1)).



Photograph 1. Stream (King Creek Tributary C) running to the northeast of the Janet Ave. WWPS., with riparian Fresh – Moist Manitoba Maple Deciduous Woodland in background.



Polygon 3. Reed Canary Grass Mineral Shallow Marsh Type (MASM1-14).

This site was comprised of 70% Reed Canary Grass. Layer 1 (which is 10 m or higher) was comprised of trace amounts of planted trees, including Basswood (*Tilia americana*), American Elm (*Ulmus americana*), and Green Ash (*Fraxinus pennsylvanica*). Layer 2 (which is 2-10 m) contained mostly planted shrubs, such as Red-osier Dogwood (*Cornus stolonifera*), Common Elderberry (*Sambucus canadensis*), Heart-leaved Willow (*Salix eriocephala*), and Buttonbush (*Cepalanthus occidentalis*). Layer 3 was mostly comprised of Reed Canary Grass, as well as lesser amounts of Tall Goldenrod (*Solidago altissima*) and Lance-leaved Aster. Other forbs were found in trace quantities. Since most of the vegetation in this polygon was located in layer 3, most vegetation in layer 4 (0.5 m tall) was found in trace quantities, and some included smaller specimens of species that were found in layer 3. This site was not very diverse and some of the polygon was on drier ground. This site was of medium quality.

Polygon 4. CGL-Green Lands.

This was a manicured park that contained some planted trees. This site contained cut grass and baseball diamonds. This site was of poor biological quality (Photograph 2).



Photograph 2. Manicured Lawn and Planted Trees and Shrubs (CGL-Greenlands) at Janet Ave. WWPS.



Polygon 5. Smooth Brome Graminoid Meadow Type (MEGM3-5).

Layer one in this polygon only contained trace amounts of trees, such as Manitoba Maple. Most of the vegetation was located in layer 3, with 40% being Smooth Brome. There were also lesser amounts of Tall Goldenrod, Lance-leaved Aster, and Common Milkweed (*Asclepias syriacea*). There were trace amounts of Heath Aster (*Symphotrichum ericoides*), Perennial Sowthistle (*Sonchus arvensis*), Canada Thistle (*Cirsium arvense*) and other weedy species. There was also a Sumac Deciduous Shrub Thicket Type (THDM2-1) inclusion that was dominated by Staghorn Sumac (*Rhus typhina*). A few Cup-plants (*Silphium perfoliatum var perfoliatum*), which is ranked as an S2 species (very rare in Ontario, usually having only 5-20 occurrences or existing in a few remaining hectares; MNR 2000) were found near the rearyards of private lots. They were either planted or have escaped from cultivation, since the plant is native to western Ontario and is not naturally found in this area. This site was of medium quality.



Photograph 3. Smooth Brome Graminoid Meadow, showing Cattail Mineral Shallow Marsh in the background.



Polygon 6. Fresh - Moist Manitoba Maple Deciduous Woodland Type (WODM5-3).

This polygon consisted mainly of Manitoba Maple, with some Crack Willow (*Salix fragilis*) and other species. Layer 2 consisted of Staghorn Sumac (*Rhus typhina*), Manitoba Maple, and invasive European Buckthorn. Layer 3 consisted mainly of Smooth Brome, Tall Goldenrod, invasive Garlic Mustard, Canada Thistle, and invasive Buckthorn. Layer 4 was mostly comprised of layer 4 species, with some Kentucky Bluegrass (*Poa pratensis*). This site was of poor quality due to the number of invasive plants.

4.2.2 Well #5

Polygon 1. Goldenrod Forb Meadow Type (MEFM1-1).

Layer 1 was comprised of a few planted trees, including Silver Maple (*Acer saccharinum*), and Bur Oak (*Quercus macrocarpa*). Layer 2 was mostly a few planted shrubs. Layer 3, which comprised most of the polygon, contained 60% Tall Goldenrod, with some Canada Thistle, Reed Canary Grass, Wild Bergamot (*Monarda fistulosa*; planted but spreading), and trace amounts of Bull Thistle (*Cirsium vulgare*), Queen Anne's Lace (*Daucus carota*), Heath Aster (*Symphotrichum ericoides*), and Canada Wild Rye (*Elymus canadensis*; planted). This layer also had several "restoration" plantings, such as Grey-headed Coneflower (*Ratibida pinnata*) and Purple Coneflower (*Echinacea purpurea*). The latter is not found naturally in Ontario and the former is found only in southwestern Ontario. Layer 4 consisted mostly of Kentucky Bluegrass and layer 3 species in a smaller form. This is a decent meadow that offers habitat for insects, birds, and other animals (Photograph 4).



Photograph 4. Goldenrod Forb Meadow to the south of Well #5.



Polygon 2. Fresh - Moist Manitoba Maple Deciduous Woodland Type (WODM5-3).

Layer 1 was comprised mostly of Manitoba Maple, Black Walnut (*Juglans nigra*), and trace amounts of Wild Grape (*Vitis riparius*). Layer 2 contained Staghorn Sumac and trace amounts of Winged Spindle-tree (*Euonymus alata*). Layer 3 had Garlic Mustard and Urban Avens (*Geum urbanum*) and trace amounts of Dame's Rocket (*Hesperis matronalis*). This polygon was weedy with many non-native invasive species and is of poor quality.

Polygon 3. Open Water (OAO).

This was a small narrow stream, with little vegetation in the open water.

Polygon 4. Open Water (OAO)

This was a stormwater pond with Blue Cattails around its periphery. It contained mostly Canada Waterweed (*Elodea canadensis*), Sago Pondweed (*Potamogeton pectinatus*), and Stonewort (*Chara spp.*). Emergent Creeping Spikerush (*Eleocharis smallii*) bordered the pond.

4.2.3 WRRF

Polygon 1. Open Water (OAO).

The stormwater pond was bordered by Narrow-leaved Cattail and Reed Canary Grass. It also contained Lesser Duckweed (*Lemna minor*).

Polygon 2. Reed Canary Grass Graminoid Meadow Type (MEGM3-8).

This site contained some planted trees. Layers 1 and 2 were virtually non-existent. Layer 3 was mostly comprised of Reed Canary Grass, Canada Thistle, Tall Goldenrod and trace amounts of Common Milkweed. Layer 4 contained mostly Kentucky Bluegrass, Bird's-foot Trefoil (*Lotus corniculatus*), St. John's-wort (*Hypericum perforatum*) and many species from layer 3. This site was of poor quality due to most of the vegetation being non-native invasive species.

Polygon 3 A, B, and C. Smooth Brome Graminoid Meadow Type (MEGM3-5).

This site had a few trees in layer 1, including Manitoba Maple, Basswood, and Buckthorn, all in trace amounts. Layer two had some Buckthorn and Manitoba Maple in trace quantities. Layer three was comprised mainly of Smooth Brome, Tall Goldenrod, Reed Canary Grass, Heath Aster, St. John's-wort, and Orchard Grass (*Dactylis glomerata*). There were many other herbaceous species in trace quantities. This site is of medium quality. Smooth Brome, which is the most common plant, is an invasive species from Europe (Photograph 5).





Photograph 5. Smooth Brome Graminoid Meadow to the southwest of the WRRF.

Polygon 4. AG Soy crop.

The adjacent farmland was all under soybean crops.

Polygon 5. CGL-Green Lands.

This was mowed grass that contains Kentucky Bluegrass and other non-native sod-forming grasses. This site was of poor ecological quality.

Polygon 6. Reed Canary Grass Mineral Shallow Marsh Type (MASM1-14).

This site contained mostly Reed Canary Grass in layers 3 and 4 (approximately 80% of total cover). The site was not very diverse and was mostly a monoculture. There was some Tall Goldenrod, Common Teasel (*Dipsacus foliolosus ssp. sylvestris*), and a few other species in trace quantities. Reed Canary Grass is a non-native invasive species, but it does remove nutrients from the runoff of adjacent farm fields. This site of poor quality as it does not offer much habitat for other flora and fauna (Photographs 6 and 7).





Photographs 6 and 7. Reed Canary Grass Mineral Shallow Marsh to the south of the WRRF.



4.3 Fish and Fish Habitat

The study area is located in the Humber River watershed and is divided between the East Humber Subwatershed and the Upper Main Humber Subwatershed (Figures 2, 3a,b). The eastern portion of the study area contains King Creek and its tributaries, and the western portion of the study area contains tributaries of Cold Creek. Both the King Creek and Cold Creek tributaries identified in the study area are classified as small riverine warmwater habitat that have a drainage area of less than 10 km² and are all first order streams (TRCA 2005).

For the purpose of this report, watercourses were assigned a label for ease of reference and description (Figures 3a and b).

4.3.1 King Creek Tributary A

The upstream reach of King Creek Tributary A located at King Road (crossing #2) is a small narrow channel that was flowing at the time of the assessment. The upstream reach appears to originate immediately north of King Road in a small wetland pocket. Watercress (*Nasturtium officinale*) was observed along the length of the channel indicating possible groundwater inputs (Photograph 8). The channel flows through a black corrugated pipe under King Road. The downstream channel is choked with cattails, with no defined channel and directs flow east along the roadside ditch. The channel is then directed to a cement box culvert where the channel is then buried (Photograph 9).



Photograph 8. Upstream reach of King Creek Tributary A at King Road.





Photograph 9. Downstream reach of King Creek Tributary A at King Road.

Further downstream, King Creek Tributary A flows in a south-easterly direction south of Well #5. The watercourse is located within a wide floodplain (MEFM1-1 Goldenrod Form Meadow Type) and was flowing at the time of the assessment. The watercourse has a defined stream bottom with a gradual transition to the surrounding floodplain. The watercourse in this location is a narrow, gently meandering system with watercress scattered throughout.

The wetted width was approximately 0.52 m, with a wetted depth of 0.02 m. Riffle, run, pool morphology was observed with substrate sorting. Substrates consisted of silt/sand with gravel and small cobble. Banks were well vegetated with no signs of erosion and riparian cover is provided by herbaceous vegetation and deciduous trees (Photograph 10). The watercourse appears to be intermittent as it does contain some morphological characteristics such as a stream bottom and gradual banks that support the intermittent stream classification (Irwin et al. 2013).





Photograph 10. Downstream reach of King Creek Tributary A adjacent to Well #5.

4.3.2 *King Creek Tributary C*

King Creek Tributary C flows in a southerly direction through a mixed deciduous treed area for approximately 80 m downstream of King Road. The watercourse throughout this reach was stagnant with very little flow observed. The wetted width was approximately 1.2 m and wetted depth was 0.06 m. Bankfull in this location was approximately 5.5 m with steep banks located along the left bank. Banks were well vegetated in this area with herbaceous vegetation. In-stream cover was low and provided by medium to large woody debris which was causing back ponding of water in some locations (Photograph 11).





Photograph 11. Downstream view of King Creek Tributary C (mid-reach).

A small drainage ditch conveys flow from the west between the Janet Ave. WWPS and the recreational fields. In this location, the Tributary C floodplain transitions to a cattail marsh with several small channels throughout. A headwall is located along the western portion of the wetland, however, it was not discharging at the time of the assessment. The lower reach was assessed at the recently constructed pedestrian bridge. The wetted width was 0.50 m with a wetted depth of 0.07m. The tributary at this location has a low gradient with minimal flow. Substrates were dominated by silt with some gravel. Instream and riparian cover was provided by cattails. The watercourse appears to be intermittent as it does contain a stream bottom and lacks prominent banks that indicate intermittent stream classification (Irwin et al. 2013; Photograph 12).





Photograph 12. Downstream view of King Creek Tributary C (lower-reach).

4.3.3 Cold Creek Tributary C

Cold Creek Tributary C originates immediately southwest of the WRRF in an agricultural field (MNRF 2021) and flows in a northeasterly direction towards Cold Creek. The swale and wetland area were overgrown with Reed Canary Grass. At the time of the assessment there was no flow in the swale feature, however, some standing water was observed. The features appear to be ephemeral as they likely flow for days to weeks following a major rain event or snow melt (Irwin et al. 2013; Photograph 13).





Photograph 13. View Cold Creek Tributary C facing east.

4.3.4 Fish Communities

Fish sampling records were obtained from Land Information Ontario (LIO) and were used to characterize the fish community within the study area. Fish records for King Creek indicate the presence of Creek Chub (*Semotilus atromaculatus*) and White Sucker (*Catostomus commersonii*), both coolwater, common species found in Ontario. DFO Species at Risk mapping also indicates the presence of Redside Dace in the main branch of King Creek downstream of the study area.

There were several fish records identified for the Cold Creek Tributaries, however upon further review of the fish species it was determined that the ephemeral habitat provided in the study area would not support these species. These fish records are likely for the Main Humber River, located further downstream of the study area.

4.3.5 Identification of Critical Habitat

Critical habitats are often defined as those that support fish during sensitive life stages such as spawning and rearing. Quiescent habitats with complex structure are used by most fish species as nursery habitat while spawning habitat requirements can vary significantly.

No critical habitat that would support spawning or rearing life stages was identified in the King Creek or Cold Creek Tributaries within the study area, largely due to the intermittent or ephemeral nature of the watercourses.



4.4 Breeding Amphibians

Most amphibian calls were recorded within 100 m of Stations A and B at the WRRF, while calls at Stations C, D (near the Janet St. WWPS) and G (near Well #5) were recorded beyond 100 m. No calls were recorded at Stations E (near the Janet St. WWPS) or F (near Well #5) on any survey dates. Amphibians were recorded on all survey dates at the WRRF (Stations A and B), but only in April at the Janet St. WWPS site, and only in May at the Well #5 site (Figures 3a and b).

The WRRF stations A and B were surrounded by various meadow marsh types, as well as meadow that was flooded early in the season and a stormwater pond. At the WRRF, seven amphibian species were detected in the existing stormwater pond and the wetland directly south of the pond, including one species at risk, Western Chorus Frog (*Pseudacris triseriata*, Great Lakes/St. Lawrence Canadian Shield population), which is listed as threatened nationally (COSEWIC 2008; Ontario Nature 2018). No species at risk amphibians were recorded at any of the remaining survey stations.

Table 2. Amphibian Species and Approximate Numbers Heard During Breeding Surveys.

Stations	A	B	C	D	A	B	G	A	B
Survey Dates	12-Apr-21				19-May-21			9-June-21	
Species Names									
Northern Leopard Frog (<i>Lithobates pipiens</i>)	1	1			2	2			
Spring Peeper (<i>Pseudacris crucifer</i>)		3	3	3					
Wood Frog (<i>Lithobates sylvaticus</i>)	1	1	3	3					
Green Frog (<i>Rana clamitans</i>)								1	
American Toad (<i>Anaxyrus americanus</i>)		1			2	3	1		
Grey Treefrog (<i>Dryophytes versicolor</i>)					2	3		3	3
Western Chorus Frog (<i>Pseudacris triseriata</i>)						3			
Total Heard within 100 m of Station	2	6	0	0	4	11	0	4	3

* All species recorded outside of the 100-metre station are bold and grey filled.



4.5 Breeding Birds

A total of 33 bird species were documented in the three locations surveyed within the study area (Janet Ave. WWPS, Well #5, WRRF; Figures 3a and b), including three species at risk, one species of regional conservation concern (L3), and four area-sensitive species (Appendix B, Table 4).

The three bird species at risk, Barn Swallow (*Hirundo rustica*), Bobolink (*Dolichonyx oryzivorus*), and Eastern Meadowlark (*Sturnella magna*), were all documented in the vicinity of the WRRF and are all listed as threatened both in Ontario and federally. More information about the habitat requirements of the species at risk are found in Section 4.6.

TRCA assigns local ranks for all wildlife species and vegetation communities found in its jurisdiction, based on ecological criteria such as rarity and sensitivity to habitat loss and disturbance. Regional species of conservation concern have rankings of L1 to L3, meaning that they are considered at long-term risk within the region (TRCA 2019). Bobolink was listed as a L3 species, indicating that it is generally less sensitive and more abundant than L1 and L2 species.

Area-sensitive species require large areas of continuous habitat for breeding and foraging. However, the specific area requirements vary by species. Hairy Woodpecker (*Picoides villosus*), observed at the Janet Ave. WWPS and the WRRF, needs at least 4 to 8 ha for its breeding territory. Savannah Sparrow (*Passerculus sandwichensis*) and Bobolink, both observed in the vicinity of the WRRF, both require grassland greater than 50 ha, while Eastern Meadowlark, also documented at the WRRF, requires at least 10 ha of open grasslands (MNR 2000).

The highest number of bird species (26) was recorded at the WRRF location, comprised of birds typical of open grassland and agricultural habitat, such as Savannah Sparrow, Song Sparrow (*Melospiza melodia*), Horned Lark (*Eremophia alpestris*), Bobolink, Barn Swallow, and Mourning Dove (*Zenaida macrora*), and wetland habitat, such as Red-winged Blackbird (*Agelaius phoeniceus*) and Spotted Sandpiper (*Actitis macularia*). The bird species observed at the urban survey locations (Janet Ave. WWPS and Well #5) represented a mix of species associated with forest edge, open parkland and riparian thickets, such as American Crow (*Corvus brachyrhynchos*), Yellow Warbler (*Setophaga petechia*), Northern Cardinal (*Cardinalis cardinalis*), Song Sparrow, and European Starling (*Sturnus vulgaris*), as well as wetlands, such as Red-winged Blackbird and Swamp Sparrow (*Melospiza georgiana*). At all three locations, most bird species were documented adjacent to the infrastructure facilities, and not within the property sites. European Starling and American Robin (*Turdus migratorius*) were observed within the Well 5 property. At the WRRF, Mourning Dove, Red-winged Blackbird, and American Goldfinch (*Spinus tristis*) were documented within the property boundaries. No birds were observed within the Janet Ave. WWPS.



Table 3. Bird Species of Conservation Concern Observed in Study Area.

Species	Conservation Status				Location		
	National Species at Risk	Ontario Species at Risk	TRCA LRank	Area-sensitive	Janet Ave. WWPS	Well #5	WRRF
Hairy Woodpecker				x	x		x
Barn Swallow	Threatened	Threatened					x
Savannah Sparrow				x			x
Bobolink	Threatened	Threatened	L3	x			x
Eastern Meadowlark	Threatened	Threatened		x			x



4.6 Species at Risk

Five species at risk were documented in the study area during 2021 field investigations: Snapping Turtle, Western Chorus Frog, Barn Swallow, Bobolink, and Eastern Meadowlark, as well as the host plant for Monarch Butterfly. Adjacent watercourses to Well #5 and the Janet Ave. WWPS could be classified as contributing habitat for Redside Dace. Three additional species at risk were identified during the background review as having potentially suitable habitat within the study area, although none were documented during field investigations (Grasshopper Sparrow, Blanding's Turtle, and Midland Painted Turtle).

Snapping Turtle is listed as special concern provincially under Ontario's *Endangered Species Act (2007)* and nationally under the federal *Species at Risk Act (2002)*. The species inhabits a variety of freshwater habitats, typically associated with slow-moving water with soft mud or sand bottom and abundant vegetation (ORAA 2018). Snapping Turtle can be found in small wetlands, ponds and ditches during the active season, and hibernates in mud or silt at the bottom of lakes and rivers over the winter. The turtle is long-lived, taking many years to mature and has a slow reproduction rate, all features which make it vulnerable to population decline (ORAA 2018). Snapping Turtles are threatened by road mortality, hunting, and poaching. A baby Snapping Turtle was found dead next to the stormwater pond at the WRRF.

The two other turtle species at risk which could occur in the study area (Blanding's Turtle, threatened provincially and endangered federally; and Midland Painted Turtle, special concern federally) are typically associated with shallow rivers, lakeshores and wetlands, although turtles can also travel inland in search of mates and nesting habitat. Common threats for these species include road mortality, habitat loss and degradation, poor water quality, and nest predation by Raccoons (*Procyon lotor*) and Striped Skunks (*Mephitis mephitis*; Ontario Nature undated, MECP 2021a). Potentially suitable habitat for these turtles exists in the WRRF stormwater pond and King Creek tributaries. The ephemeral nature of open water in the unevaluated wetland to the south of the WRRF suggest this does not provide suitable habitat for turtle species.

Western Chorus Frog is listed as a threatened species nationally under the federal *Species at Risk Act* (COSEWIC 2008). The Great Lakes/St. Lawrence – Canadian Shield population (which occurs in the study area) has experienced a 43% population decline in Ontario over the past decade due to habitat loss and fragmentation (COSEWIC 2008). Compared with other frog species, Western Chorus Frog has relatively low mobility and high fidelity to natal ponds, making it particularly sensitive to degradation of habitat (COSEWIC 2008).

Western Chorus Frogs breed in temporary wetlands and shallow portions of permanent wetlands that dry up in the summer (COSEWIC 2008). Breeding wetlands are located in open habitat, such as forest clearings, wet meadows, fallow lands and shrubby areas (COSEWIC 2015). Chorus Frogs forage within 250-300 m of breeding wetlands and hibernate within 100-200 m of them, in soft soil, existing burrows, or under rocks, dead trees or decaying leaves (COSEWIC 2015). The species is threatened by activities likely to destroy or degrade its habitat, including construction and maintenance of linear infrastructure (e.g., roads, trails, utility and energy pipelines), urban development, agricultural intensification, and wetland alteration (e.g., levelling, drainage and channelization; Environment Canada 2015). Western Chorus Frog was heard calling in the wetland to the south of the WRRF.



Barn Swallow is a widespread aerial insectivore experiencing significant long-term population declines in North America, which has resulted in its threatened designation. Barn Swallow breeds in open country, typically near water. It often relies on human structures for nest sites, such as ledges and walls of old barns, culverts and bridges. The main factors affecting populations appear to be loss of nesting sites (e.g., open barns) and foraging habitat (e.g., open farmland) due to changing agricultural practices, as well as large scale declines in insect prey likely due to pesticide use (COSEWIC 2011a; MECP 2021b). Barn Swallow was observed foraging over the agricultural fields to the north and west of the WRRF, as well as over the wetland to the south of the WRRF, and along the hedgerow to the west. No human structures providing potential nesting habitat were observed at or adjacent to the WRRF, although the agricultural buildings to the northwest (>120 m away) may provide suitable nesting habitat.

Bobolink and Eastern Meadowlark are threatened species both nationally and provincially. Both species breed in a wide range of open farmland, including pastures, meadows, hayfields and overgrown fields (Cornell University 2019; MECP 2021c,d). The two species are experiencing population declines in eastern North America primarily due to habitat loss and degradation (through mowing of hay during the breeding period, over-grazing by livestock, urban development, and reforestation; COSEWIC 2011b; MECP 2021c,d). These grassland birds were observed in the agricultural fields to the southwest (Bobolink) and southeast (Eastern Meadowlark) of the WRRF. Bobolink were in the fields adjacent to the hedgerow where the outfall is to be upgraded, while Eastern Meadowlark was heard calling in a field >120 m to the southeast of the WRRF.

Grasshopper Sparrow, a special concern species associated with grasslands, could also occur in the agricultural fields surrounding the WRRF. This species is typically found in open grasslands, hayfields, pastures and, occasionally, cropfields during the breeding season. Its populations are declining in North America due to habitat loss and fragmentation, which increase risk of nest predation, and changes to hay-cutting practices, which can destroy nests and young (MECP 2021e).

Monarch Butterfly is distributed across southern Canada during the summer months. Caterpillars rely solely on milkweed species for food and are thus restricted to forest edge, meadows and open areas (MECP 2021f). Adults occur in a variety of habitats where they feed on wildflower nectar. All Canadian populations migrate south to overwinter, with most converging on forests in central Mexico. The species is listed as endangered federally and special concern in Ontario, due primarily to habitat loss and fragmentation on its wintering grounds, as well as pesticide and herbicide use across its range (MECP 2021g). Common Milkweed was observed in meadow habitats adjacent to the Janet Ave. WWPS, Well #5, and the WRRF, indicating that these areas could provide suitable habitat for Monarch Butterfly.

The DFO Aquatic Species at Risk mapping identifies King Creek east of Highway 27 in Nobleton as Redside Dace occupied or recovery habitat (DFO 2020). King Creek Tributaries A and C, which both flow into the main branch of King Creek, do not provide suitable habitat for Redside Dace but could potentially be classified as Contributing Redside Dace habitat. Ontario Regulation 242/08 29.1 (1) (v) under the Endangered Species Act (2007) defines Contributing Habitat as:

a stream, permanent or intermittent headwater drainage feature, groundwater discharge area or wetland that augments or maintains the baseflow, coarse sediment supply or surface water quality



of a part of a stream or other watercourse described in subparagraph i or ii, provided the part of the stream or watercourse has an average bankfull width of 7.5 metres or less.

Discussions with MECP are ongoing to confirm whether Redside Dace habitat is present within 120 m of the proposed development at the Janet Avenue WWPS and Well #5, and whether any permitting requirements under the *Endangered Species Act (2007)* are required.

4.7 Significant Wildlife Habitat

The review of ELC vegetation communities described in the study area did not identify any candidate SWH either within or adjacent to the infrastructure facilities at the Janet Ave. WWPS, Well #5 and WRRF locations. However, the observation of a dead Snapping Turtle at the WRRF indicates this location could represent the following candidate SWH:

- Special Concern and Rare Wildlife Species Habitat: possible where special concern or provincially rare (S1-S3, SH) plant and animal species have been recorded within the NHIC 1 km² square (MNR 2015).

The Snapping Turtle was found within the WRRF property, next to the stormwater pond. Thus, it is likely that this water feature is used by the species during the active season for foraging and shelter.

4.8 Evaluation of Significance

The findings of the background review and field investigations have been used to determine the significance of natural heritage features in accordance with the applicable municipal and provincial policy. Table 5 details the evaluation of significance of natural heritage features and ecological functions associated with the study area. No provincially significant wetlands, provincially significant woodlands or ANSIs were identified in the study area. However, based on field investigations, habitat for species at risk, and significant wildlife habitat were identified at the WRRF location, and potential contributing habitat for species at risk was identified at the Janet Ave. WWPS and Well #5 locations. Portions of the study area are within the Regional Greenlands System, Greenbelt Natural Heritage System and Greenbelt Protected Countryside, as well as the TRCA's regulated area (Table 5).



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Table 4. Documented or Potential Ecological Sensitivities Within the Study Area.

Work Area	Ecological Sensitivities – Field Investigations				Ecological Sensitivities – Policy Review			
	Vegetation Communities	Species at Risk	Significant Wildlife Habitat	Fish and Fish Habitat	Regional Greenlands System	Natural Heritage System	Protected Countryside	TRCA Regulated Area
Janet Avenue WWPS	No	Yes – Potential for Redside Dace Contributing Habitat	No	Yes – fish habitat in King Creek tributaries	Yes – King Creek Tributary C corridor, including WWPS	Yes – King Creek Tributary C corridor	Yes	Yes – including part of WWPS property
Well #5	No	Yes – Potential for Redside Dace Contributing Habitat	No	Yes – fish habitat in King Creek tributaries	Yes – King Creek Tributary A corridor south of King Road	Yes – King Creek Tributary A corridor south of King Road	Yes	Yes – including part of Well #5 property
WRRF	No	Yes – Western Chorus Frog, Bobolink, and Eastern Meadowlark observed on adjacent lands; Snapping Turtle observed on property	Potential SWH for Snapping Turtle in stormwater pond on the property	No – Cold Creek Tributary C may provide indirect fish habitat to downstream reaches	Yes – portion of WRRF, Cold Creek Tributary C and adjacent wetlands	Yes	Yes	Yes – including part of WRRF property



5. Impact Assessment

The study area is characterized by a mix of habitat types nested within an urban and agricultural landscape. The area shows evidence of past and ongoing disturbance, including mowed and paved areas, successional habitat (e.g., shrub thickets and old field meadows), and cropfields. The King Creek tributaries are situated in a mostly urban setting within the Town of Nobleton, while the Cold Creek tributary is located in a mostly rural setting located west of Nobleton.

The vegetation communities in the study area reflect the influence of disturbance and human activity within this landscape. Many of the plant species recorded at all three sites were weedy non-native invasives. At the urban sites there was also evidence of vegetation that had been planted or had escaped cultivation, since these species are not naturally occurring in the area. Most of the habitats had low vegetative diversity and were of low to medium ecological value. The habitat within the infrastructure facilities, where all proposed development would occur, was categorized as manicured lawn with planted trees and shrubs (at the Janet Ave. WWPS and Well #5) and as a mix of manicured lawn, stormwater pond, and meadow dominated by the invasive Reed Canary Grass (at the WRRF).

Watercourses located in the King Creek sub-watershed are ephemeral or intermittent and offer limited aquatic habitat for fish and other wildlife, however they potentially contribute to Redside Dace habitat downstream.

One special concern species, Snapping Turtle, was observed at the WRRF stormwater pond. Four other species at risk, Western Chorus Frog, Barn Swallow, Bobolink, and Eastern Meadowlark, were observed on adjacent lands to the WRRF. Common Milkweed, the host plant for the Monarch Butterfly, another species at risk, was documented adjacent to all three infrastructure facilities, suggesting that the insect may use these meadow habitats.

The proposed infrastructure upgrades and expansion will be restricted to within existing property limits, which, as described above, are characterized as disturbed habitat, so impacts to natural heritage features are anticipated to be minimal. The proposed development has the potential to directly affect the development footprint through general construction impacts, which could disturb or destroy existing habitat but these habitats have been previously impacted by urbanization and agricultural practices. Use of machinery near water could release deleterious substances to watercourses and wetlands (e.g., sediment or toxic materials) and exposed soils and work areas could lead to erosion issues. In addition, construction activity could disturb adjacent wildlife due to excessive noise and light. Potential impacts for each site are detailed below to address site-specific natural heritage features within and adjacent to the work area.

5.1 Janet Avenue Wastewater Pumping Station (WWPS)

Impacts associated with the upgrading and expansion of the WWPS will be limited to the existing fenced-in area comprised of lawn and pavement. This area is of low value ecologically. Manicured lawn (parkland and ball diamonds) immediately surrounds the WWPS, and beyond this the habitat is dominated by low diversity cattail marsh and invasive Reed Canary Grass marsh. The watercourse is of low value as aquatic habitat, although it may contribute to downstream Redside Dace habitat. Given the restricted nature of the



proposed works within existing disturbed habitat, there is a low likelihood that the proposed works will negatively impact adjacent significant natural heritage features and functions in this study area if the recommended mitigation measures (Section 6) are implemented..

5.2 Well #5

Potential impacts associated with the upgrading and expansion of Well #5 will be limited to the existing footprint and no long-term or permanent impacts are anticipated. The property itself is of low value ecologically, but adjacent lands include a meadow which provides good wildlife habitat, and a narrow stream, which is potential contributing habitat for downstream Redside Dace populations. Potential temporary impacts to the surrounding natural heritage features include sediment-laden runoff or spilled toxic material from the work area. Given the restricted nature of the proposed works within existing disturbed habitat, there is a low likelihood that the proposed works will negatively impact adjacent significant natural heritage features and functions in this study area if the recommended mitigation measures (Section 6) are implemented.

5.3 Nobleton Water Resource Recovery Facility (WRRF)

The WRRF will be upgraded and expanded within the existing property limit. The stormwater pond offers medium quality habitat ecologically, supporting species such as Snapping Turtle (a special concern species) and Red-winged Blackbird. The meadow on site is of low ecological value because it is mainly comprised of invasive plant species. The WRRF is surrounded by low quality habitat, either dominated by invasive plant species, or made up of croplands. The marsh immediately to the south of the WRRF does, however, provide habitat for Western Chorus Frog (a threatened species), and the surrounding meadows provide habitat for Bobolink and Eastern Meadowlark (both threatened species). Barn Swallow was observed aerially foraging in the area, but no suitable nesting habitat (i.e., artificial structures such as culverts, bridges, open barns) were present on adjacent lands. The primary potential temporary impact to the adjacent natural heritage features is sediment-laden runoff but given the restricted nature of the proposed works, there is a low likelihood it will negatively impact adjacent significant natural heritage features and functions if the recommended mitigation measures (Section 6) are implemented.

In summary, the proposed development will be entirely restricted to existing developed or disturbed areas and will therefore have a low likelihood of negatively impacting significant natural heritage features and functions. Some direct negative impacts are anticipated to the aquatic habitat in the stormwater pond at the WRRF, however, these can be minimized or avoided by following the recommendations presented in Section 6. Potential indirect negative impacts to adjacent lands at each location can also be minimized or avoided by following these mitigation measures.

6. Recommended Mitigation Measures

We recommend that the following mitigation measures be applied at the planning, construction, and post-construction stages of the development to minimize or avoid negative impacts on natural features and their ecological functions.



6.1 Site Selection

The size and location of the development can influence its impact on the surrounding environment. The development footprints of all infrastructure upgrades and expansions will be contained within the existing property boundaries at the Janet Ave. WWPS, Well #5, and the WRRF. Any laydown areas should be kept as small as possible, and away from sensitive natural heritage features and functions.

6.2 Timing

Construction should be scheduled for times of the year that avoid or minimize wildlife disturbance. These periods vary depending on wildlife species and habitat types. For example, hibernating wildlife are vulnerable to site clearing if it destroys their overwintering habitat (e.g., dens), while the spring and summer season is a sensitive period for many species that reproduce and raise young during this time. The migration period is also a higher risk period for many species of birds (Government of Canada 2019). Where it is not possible to avoid construction during sensitive wildlife periods, additional mitigation measures will need to be implemented as detailed in the following sections (i.e., relating to buffers, exclusion fencing, lighting, wildlife inspections, fill management, retention of vegetation etc.).

The federal *Migratory Birds Convention Act (1994)* protects the nests, eggs and young of most bird species from harm or destruction. The breeding bird season for the Nobleton area extends from early April through late August for most species (ECCC 2017). As a result, any development activities that could disturb breeding birds, such as clearing of vegetation, loud noise emissions (e.g., >10 decibels above ambient in natural areas and >50 decibels), and high intensity operations (e.g., frequent, long-lasting and large-scale) should be scheduled outside of these periods (Government of Canada 2019).

Amphibian and reptile populations are active from March to October in southern Ontario (MNR 2016). It is recommended that construction activities be scheduled outside of these periods in areas close to, or including, potential habitat (such as wetlands, ditches and upland woodland habitat) to avoid disturbance of these species, and their habitats and movement corridors. For example, adult Snapping Turtles migrate from winter hibernation sites to summer habitat in April and May, while hatchlings move to water in early fall (MNR 2016). Amphibian species generally breed from mid-March to the end of July (Bird Studies et al. 2009). Since Snapping Turtle was documented at the WRRF stormwater pond, we recommend that construction activities at this site be restricted to the period of October 1-February 28.

6.2.1 Construction During Sensitive Periods

If construction is planned during sensitive wildlife periods, such as the active period for amphibians and reptiles (generally March through October) and/or the bird breeding season (e.g., early April through late August), the following approaches should be followed to minimize disturbance to these wildlife species.

Exclusion fencing should be installed prior to amphibian and reptile emergence from hibernation in spring (i.e., prior to March). The enclosed areas should be surveyed immediately after installation, and then daily during the amphibian/reptile active season (March-October). See Section 6.3 for more details on exclusion fencing.



For breeding birds, inspections of potential habitat should be conducted based on Canadian Wildlife Service guidelines to determine if birds are nesting in the planned construction area (Canadian Wildlife Service 2014). These surveys should be carried out by a trained ecologist.

6.3 Exclusion Fencing

Exclusion fencing should be used during the construction phase to separate the development zone from surrounding habitat. This fencing is important both for preventing direct mortality to wildlife, and for preventing wildlife from using the construction zone as nesting habitat. Many turtle and snake species, for example, lay eggs in soft substrate, and may thus be attracted to any sand fill used during the construction phase. Best practices for exclusion fencing are described in MNRF (2013), including selection of fence type based on target species and choice of layout to maintain habitat connectivity. In general, fencing should be installed during the winter while reptiles and amphibians are still hibernating (i.e., November – February) and should be surveyed immediately after installation to ensure no individuals have become trapped. Fence inspections should be carried out on a regular basis, including after spring thaw, throughout the active season, and after heavy storm events. Any damage affecting integrity should be fixed as soon as possible (MNRF 2013).

6.4 Lighting

Birds migrating at night can become disoriented by outdoor lighting, especially during inclement weather (e.g., fog, heavy rain). The best way to avoid this problem is to avoid illuminating construction areas during bird migratory periods. Construction areas should not be lit at night during spring (March-June) and fall (August-October) bird migration periods to avoid disrupting migration patterns and disorienting birds. If this is not possible, the following steps should be taken to minimize the risk of creating light traps during migration (City of Markham 2014):

- Restrict lighting only to where required for safety and security and ensure light does not spill over into adjacent areas;
- Avoid up-lighting (light projected upward to sky) by providing shields on light fixtures;
- Consider motion sensor lighting rather than continuous illumination; and
- Turn off or minimize light usage from 11 pm to 6 am.

6.5 Wildlife Inspections

Before initiating work each day, the construction site should be thoroughly inspected for wildlife, such as birds that may have become disoriented, or reptiles trapped by fencing, and any individuals should be safely removed from the construction area. A qualified expert should be available to conduct these daily searches and any translocations that may be necessary. Where possible, wildlife should be allowed to leave the site on their own, following safe routes, unless individuals are injured or in immediate danger. Any species at risk encountered should be properly handled, moved, and reported, following species at risk handling protocol under the *Endangered Species Act* (2007; Government of Ontario undated). Construction staff should be trained on the identification of potential species at risk that could occur in the area to aid in daily monitoring and reporting.



6.6 Site Management

The construction site should also be managed to prevent attracting wildlife to the area. In particular,

- Food wastes and other garbage should be properly secured and disposed of;
- Proper site drainage should be implemented to limit the occurrence of standing pools of water; and
- Construction features which could offer shelter (such as piles of construction material and debris, as well as open pipes, bins, buildings, and trailers) should be properly secured to prevent wildlife access. For example, piles of soil, fill, brush, and rocks should be covered, pipes should be capped, and structures should be closed.

6.7 Erosion and Sediment Control Plan

A plan should be developed to control erosion and subsequent sedimentation that could occur during and negatively impact adjacent watercourses and wetlands. Controls, such as sediment barriers, should be securely installed prior to the initiation of work to avoid leakage during inclement weather. Regular monitoring and inspection should be carried out to ensure control measures are structurally sound and functioning effectively (including within 24 hours following any storm event). Adjustments to control measures should be made as necessary to improve performance. Control measures should be maintained until vegetation has established on exposed soils.

For work areas adjacent to Redside Dace contributing habitat, double row sediment fencing with staked strawbales in between is required to provide a multi-barrier approach.

6.8 Retention of Vegetation and Habitat Features

The natural vegetation in the study areas should be protected as much as possible, to maintain native plant diversity and the wildlife habitat it provides. Vegetation serves many important functions, including provision of shade, food, nesting habitat, movement corridors, and protection from predators. Any vegetation that must be removed during construction should be replaced with plantings of native species once development is complete. Topsoil management should be implemented as part of revegetation efforts. For example, the top 20 to 30 cm of any stripped topsoil should be retained, stored, and used in restoration works so that the native and local seedbank is retained. Revegetated areas should be monitored to ensure successful establishment of native plantings.

6.9 Invasive Species Management

Many invasive plant species were documented in the study area. Efforts should be made during construction to avoid the introduction and spread of additional invasive plant species to the area, and from the area to other construction sites and surrounding natural areas. Invasive seeds and plant material can be inadvertently transferred from site to site on construction vehicles and equipment. We recommend that all vehicles and equipment be thoroughly washed to remove mud, seeds and plant material before they are moved among construction sites. We recommend consulting the Ontario Invasive Plant Council's Clean Equipment Protocol for more information (Halloran et al. 2013). Once invasive plant species are established it is extremely difficult to eradicate them from invaded areas.



7. Regulatory Authorization

Natural heritage related permitting may be required from different regulatory agencies in support of the proposed project. Details on potential regulatory authorization requirements are provided below.

7.1.1 DFO Request for Project Review

A Request for Project Review will not be required for the proposed works.

7.1.2 MECP Request for Project Review

A preliminary screening of species at risk was submitted to MECP in June 2021 to initiate discussion on what permits or approvals may be necessary. The preliminary screening was reviewed by MECP, who requested that we submit an updated species at risk screening once field investigations were completed. An updated species at risk screening was submitted in September 2021 and is currently under review by MECP.

King Creek Tributaries A, B and C have been identified as potential contributing habitat for Redside Dace and this will be clarified through discussions with MECP. In the event they are confirmed as contributing habitat, the form and function of the features are regulated.

7.1.3 TRCA Regulated Lands Permitting

Portions of the infrastructure facilities and adjacent lands lie within TRCA's regulated area, including the stormwater pond at the WRRF, which is within the wetlands – area of interference. TRCA will be reviewing the Environmental Study Report to determine if any permitting is required to conduct the proposed works in regulated areas.

8. Summary and Conclusions

The preferred water and wastewater servicing options for the Nobleton Class EA Study are to

- expand and upgrade the Janet Ave. WWPS,
- increase capacity of existing Well #2 and add a new well at existing Well #5,
- and expand and upgrade the existing WRRF.

All proposed infrastructure works would be confined to within the existing property boundaries of these facilities. Work at Well #2 would be restricted to within the existing building, and thus no impacts to natural heritage features or functions are anticipated at this site. This EIS thus focused on assessing potential environmental impacts of the project related to development at the Janet Ave. WWPS, Well #5, and WRRF sites only.



A combination of background review and field investigations was undertaken to characterize natural heritage features and functions in the study area. No significant natural heritage features were previously mapped in the study area (e.g., provincially significant wetlands, provincially significant woodlands, ANSIs etc.), but the area is within the Greenbelt Protected Countryside, with portions lying in the Greenbelt's Natural Heritage System and York Region's Greenlands System. Parts of the study area also occur within TRCA's regulated area, including part of the WRRF property which is within the wetlands – area of interference.

The study area is located within the Humber River Watershed, with the eastern portion (encompassing Janet Ave. WWPS and Well #5) containing King Creek and its tributaries, and the western portion (encompassing the WRRF) containing tributaries of Cold Creek. The watercourses directly adjacent to the facilities had intermittent flow and offer limited aquatic habitat for fish and other wildlife. The tributaries to King Creek, however, may function as contributing habitat for the endangered fish Redside Dace, which occurs in the main branch of King Creek downstream.

All infrastructure facilities were highly disturbed and comprised of manicured lawn with scattered trees and shrubs, as well as pavement and buildings. The WRRF also had a stormwater pond and meadow, both of which were dominated by Reed Canary Grass, an invasive plant species. Adjacent lands were also highly disturbed at all three sites, containing weedy and invasive plant species, as well as planted species or species that have escaped cultivation. While much of the study area represents low to moderate habitat, it was found to support a variety of wildlife species. Several amphibian species were documented at the WRRF stormwater pond and the marsh directly south of the property, including the Western Chorus Frog, a threatened species federally. A dead baby Snapping Turtle, a special concern species in Ontario, was also found next to the WRRF stormwater pond, indicating that this water feature is used by the species during the active season. Agricultural lands surrounding the WRRF also provide breeding habitat for Bobolink, and Eastern Meadowlark, two provincially threatened grassland species, and provide foraging habitat for Barn Swallow, a provincially threatened aerial insectivore species.

The restricted nature of the proposed development within existing disturbed sites minimizes any potential impacts to natural heritage features and functions. While several environmental sensitivities were identified (i.e., potential contributing habitat for Redside Dace in adjacent watercourses to Janet Ave. WWPS and Well #5, potential SWH for Snapping Turtle at the WRRF, species at risk habitat adjacent to the WRRF for Western Chorus Frog, Barn Swallow, Bobolink, and Eastern Meadowlark), potential negative impacts to these features can be appropriately minimized and avoided by implementing the recommended mitigation measures, particularly relating to restricting laydown area, avoiding sensitive timing windows, and enacting exclusion fencing and erosion and sediment control. Following these measures will also ensure that the project complies with relevant federal, provincial, and municipal policy.



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Appendix A. Plant List for Nobleton Study Area.



Appendix A.

Vascular plant list of Nobleton . Compiled from site observations on July 21 2021.

Common Name	Scientific Name	Family	Grank2	Srank3	Janet Ave	Well 5	WRRF
Manitoba Maple	<i>Acer negundo</i>	ACERACEAE	G5	S5	1	1	1
Norway Maple	<i>Acer platanoides</i>	ACERACEAE	GNR	SNA	1		
Silver Maple	<i>Acer saccharinum</i>	ACERACEAE	G5	S5	1	1	
Broad-leaved Water-plantain	<i>Alisma plantago-aquatica</i>	ALISMATACEAE	G5	S5	1		
Garlic Mustard	<i>Alliaria petiolata</i>	BRASSICACEAE	GNR	SNA	1	1	
Red-root Amaranth	<i>Amaranthus retroflexus</i>	AMARANTHACEAE	GNR	SNA			1
Ragweed	<i>Ambrosia artemisiifolia</i>	ASTERACEAE	G5	S5	1		
Greater Burdock	<i>Arctium lappa</i>	ASTERACEAE	GNR	SNA	1		
Common Milkweed	<i>Asclepias syriaca</i>	ASCLEPIADACEAE	G5	S5	1	1	
Nodding Beggar's Ticks	<i>Bidens cernua</i>	ASTERACEAE	G5	S5	1		
Devil's Beggar's Ticks	<i>Bidens frondosa</i>	ASTERACEAE	G5	S5	1		
Smooth Brome	<i>Bromus inermis ssp inermis</i>	POACEAE	G4G5T?	SNA	1	1	1
Fox Sedge	<i>Carex vulpinoidea</i>	CYPERACEAE	G5	S5	1	1	
Buttonbush	<i>Cephalanthus occidentalis</i>	RUBIACEAE	G5	S5	1		
Field Bindweed	<i>Convolvulus arvensis</i>	CONVOLVULACEAE	G?	SNA			1
White Goosefoot	<i>Chenopodium album var album</i>	CHENOPODIACEAE	G5T5	SNA	1		1
Giant-seed Goosefoot	<i>Chenopodium simplex</i>	CHENOPODIACEAE	G5	S5	1		
Oxeye Daisy	<i>Chrysanthemum leucanthemum</i>	ASTERACEAE	G?	SNA	1		
Chicory	<i>Cichorium intybus</i>	ASTERACEAE	G?	SNA	1	1	1
Canada Thistle	<i>Cirsium arvense</i>	ASTERACEAE	G?	SNA	1	1	1
Bull Thistle	<i>Cirsium vulgare</i>	ASTERACEAE	G5	SNA	1	1	1
Red-osier Dogwood	<i>Cornus stolonifera</i>	CORNACEAE	G5	S5	1	1	
Fleabane	<i>Conyza canadensis</i>	ASTERACEAE	G5	S5	1	1	
Crown-vetch	<i>Coronilla varia</i>	FABACEAE	G?	SNA	1	1	
European Swallow-wort	<i>Cynanchum rossicum</i>	ASCLEPIADACEAE	G?	SNA			1
Queen Anne's Lace	<i>Daucus carota</i>	APIACEAE	G?	SNA	1	1	1
Orchard Grass	<i>Dactylis glomerata</i>	POACEAE	G?	SNA	1	1	1
Common Teasel	<i>Dipsacus fullonum ssp sylvestris</i>	DIPSACACEAE	G?T?	SNA		1	1
Eastern Purple Coneflower	<i>Echinacea purpurea</i>	ASTERACEAE	G4	SNA		1	
Wild Mock-cucumber	<i>Echinocystis lobata</i>	CUCURBITACEAE	G5	S5	1	1	
Broad Waterweed	<i>Elodea canadensis</i>	HYDROCHARITACEAE	G5	S5		1	
Creeping Spikerush	<i>Eleocharis smallii</i>	CYPERACEAE	G5?	S5		1	
Nodding Wild-rye	<i>Elymus canadensis</i>	POACEAE	G5	S4S5		1	
Quack Grass	<i>Elymus repens</i>	POACEAE	G5	SE5	1	1	
Great-hairy Willow-herb	<i>Epilobium hirsutum</i>	ONAGRACEAE	G?	SNA	1		
Field Horsetail	<i>Equisetum arvense</i>	EQUISETACEAE	G5	S5	1	1	
Winged Spindle-tree	<i>Euonymus alata</i>	CELASTRACEAE	G?	se2		1	
Spotted Joe-Pye Weed	<i>Eupatorium maculatum ssp. maculatum</i>	ASTERACEAE	G5T5	S5	1		
Grass-leaved Goldenrod	<i>Euthamia graminifolia</i>	ASTERACEAE	G5	S5	1		
Virginia strawberry	<i>Fragaria virginiana ssp. virginiana</i>	ROSACEAE	G5T?	SU	1	1	
Green Ash	<i>Fraxinus pennsylvanica</i>	OLEACEAE	G5	S5	1		
Clover-root	<i>Geum urbanum</i>	ROSACEAE	G5	se2		1	
Ground Ivy	<i>Glechoma hederacea</i>	LAMIACEAE	G?	SNA	1		
Dame's Rocket	<i>Hesperis matronalis</i>	BRASSICACEAE	G4G5	SNA		1	
Virginia Waterleaf	<i>Hydrophyllum virginianum</i>	HYDROPHYLLACEAE	G5	S5			1

St. John's-wort	<i>Hypericum perforatum</i>	CLUSIACEAE	G?	SNA	1	1	1
Spotted Jewel-weed	<i>Impatiens capensis</i>	BALSAMINACEAE	G5	S5	1	1	
Black Walnut	<i>Juglans nigra</i>	JUGLANDACEAE	G5	S4	1	1	
Red Cedar	<i>Juniperus virginiana</i> var. <i>virginiana</i>	CUPRESSACEAE	G5T	S5		1	
Rice Cutgrass	<i>Leersia oryzoides</i>	POACEAE	G5	S5	1		
Lesser Duckweed	<i>Lemna minor</i>	LEMNACEAE	G5	S5			1
Butter-and-eggs	<i>Linaria vulgaris</i>	SCROPHULARIACEAE	G?	SNA	1		
Tartarian Honeysuckle	<i>Lonicera tatarica</i>	CAPRIFOLIACEAE	G?	SNA	1		
Bird's-foot Trefoil	<i>Lotus corniculatus</i>	FABACEAE	G?	SNA	1		
Purple Loosestrife	<i>Lythrum salicaria</i>	LYTHRACEAE	G5	SNA	1	1	
Common Apple	<i>Malus pumila</i>	ROSACEAE	G5	SNA	1	1	
Pineapple-weed	<i>Matricaria matricarioides</i>	ASTERACEAE	G5	SNA			1
Alfalfa	<i>Medicago sativa</i> ssp <i>falcata</i>	FABACEAE	G?T?	SNA	1	1	
White Sweet Clover	<i>Melilotus alba</i>	FABACEAE	G5	SNA	1	1	1
Corn Mint	<i>Mentha arvensis</i> ssp <i>borealis</i>	LAMIACEAE	G5	S5	1		
Wild Bergamot	<i>Monarda fistulosa</i>	LAMIACEAE	G5	S5		1	
White Mulberry	<i>Morus alba</i>	MORACEAE	G?	SNA		1	
True Forget-me-not	<i>Myosotis scorpioides</i>	BORAGINACEAE	G?	se4	1	1	
Common Evening-primrose	<i>Oenothera biennis</i>	ONAGRACEAE	G5	S5		1	
Thicket Creeper	<i>Parthenocissus inserta</i>	VITACEAE	G5	S5		1	
Reed Canary Grass	<i>Phalaris arundinacea</i>	POACEAE	G5	S5	1	1	1
White Spruce	<i>Picea glauca</i>	PINACEAE	G5	S5		1	
Eastern White Pine	<i>Pinus strobus</i>	PINACEAE	G5	S5	1		
English Plantain	<i>Plantago lanceolata</i>	PLANTAGINACEAE	G5	SNA	1		
Nipple-seed Plantain	<i>Plantago major</i>	PLANTAGINACEAE	G5	SNA		1	
Fowl Bluegrass	<i>Poa palustris</i>	POACEAE	G5	S5	1		
Kentucky Bluegrass	<i>Poa pratensis</i> ssp <i>pratensis</i>	POACEAE	G5T	S5	1	1	
Japanese Knotweed	<i>Polygonum cuspidatum</i>	POLYGONACEAE	G?	se4		1	
Trembling Aspen	<i>Populus tremuloides</i>	SALICACEAE	G5	S5	1		
Sago Pondweed	<i>Potamogeton pectinatus</i>	POTAMOGETONACEAE	G5	S5		1	
Sulphur Cinquefoil	<i>Potentilla recta</i>	ROSACEAE	G?	SNA	1	1	
self-heal	<i>Prunella vulgaris</i> ssp <i>lanceolata</i>	LAMIACEAE	G5T?	S5	1		
Choke Cherry	<i>Prunus virginiana</i> ssp <i>virginiana</i>	ROSACEAE	G5T?	S5		1	
Bur Oak	<i>Quercus macrocarpa</i>	FAGACEAE	G5	S5		1	
Tall Buttercup	<i>Ranunculus acris</i>	RANUNCULACEAE	G5	SNA	1	1	
Creeping Buttercup	<i>Ranunculus repens</i>	RANUNCULACEAE	G?	SNA	1		
Gray-headed Coneflower	<i>Ratibida pinnata</i>	ASTERACEAE	G5	S2S3		1	
Fragrant Sumac	<i>Rhus aromatica</i>	ANACARDIACEAE	G5	S5		1	
Staghorn Sumac	<i>Rhus typhina</i>	ANACARDIACEAE	G5	S5	1	1	
Buckthorn	<i>Rhamnus cathartica</i>	RHAMNACEAE	G?	SNA	1	1	1
Black Raspberry	<i>Rubus occidentalis</i>	ROSACEAE	G5	S5		1	
Black-eyed Susan	<i>Rudbeckia hirta</i>	ASTERACEAE	G5	S5		1	
Curly Dock	<i>Rumex crispus</i>	POLYGONACEAE	G?	SNA	1		
Heart-leaved willow	<i>Salix eriocephala</i>	SALICACEAE	G5	S5	1		
Crack Willow	<i>Salix fragilis</i>	SALICACEAE	G?	SNA	1		
Meadow Willow	<i>Salix petiolaris</i>	SALICACEAE	G5	S5	1		
Common Elderberry	<i>Sambucus canadensis</i>	CAPRIFOLIACEAE	G5	S5	1		
Small-fruit Bulrush	<i>Scirpus microcarpus</i>	CYPERACEAE	G5	S5	1		
Green Bristle Grass	<i>Setaria viridis</i>	POACEAE	G?	SNA	1	1	
Bladder Campion	<i>Silene latifolia</i>	CARYOPHYLLACEAE	G?	SNA	1	1	

Cup-plant	<i>Silphium perfoliatum var perfoliatum</i>	ASTERACEAE	G5T?	S2	1		
Climbing Nightshade	<i>Solanum dulcamara</i>	SOLANACEAE	G?	SNA	1		
Black Nightshade	<i>Solanum nigrum</i>	SOLANACEAE	G?	SNA			1
Tall Goldenrod	<i>Solidago altissima var altissima</i>	ASTERACEAE	G?	S5	1	1	1
Canada Goldenrod	<i>Solidago canadensis</i>	ASTERACEAE	G5	S5	1	1	
Smooth Goldenrod	<i>Solidago gigantea</i>	ASTERACEAE	G5	S5	1		
Perennial Sowthistle	<i>Sonchus arvensis</i>	ASTERACEAE	G?T?	SNA	1	1	1
Narrow-leaved Meadow-sweet	<i>Spiraea alba</i>	ROSACEAE	G5	S5	1		
Least Chickweed	<i>Stellaria pallida</i>	CARYOPHYLLACEAE	G?	SNA	1		
Heart-leaved aster	<i>Symphotrichum cordifolium</i>	ASTERACEAE	G5	S5	1		
Heath Aster	<i>Symphotrichum ericoides ssp. ericoides</i>	ASTERACEAE	G5T?	S5	1	1	
Panicked Aster	<i>Symphotrichum lanceolatus ssp. lanceolatus</i>	ASTERACEAE	G5T?	S5	1	1	
Calico Aster	<i>Symphotrichum lateriflorus var. lateriflorus</i>	ASTERACEAE	G5T5	S5	1		
New England aster	<i>Symphotrichum novae-angliae</i>	ASTERACEAE	G5	S5	1	1	
Northern Snowberry	<i>Symphoricarpos occidentalis</i>	CAPRIFOLIACEAE	G5	se3		1	
Common Lilac	<i>Syringa vulgaris</i>	OLEACEAE	G?	SNA		1	
Common Dandelion	<i>Taraxacum officinale</i>	ASTERACEAE	G5	SNA	1	1	
Field Penny-cress	<i>Thlaspi arvense</i>	BRASSICACEAE	G?	SNA	1		
Eastern White Cedar	<i>Thuja occidentalis</i>	CUPRESSACEAE	G5	S5	1	1	
Basswood	<i>Tilia americana</i>	TILIACEAE	G5	S5	1		1
Alsike Clover	<i>Trifolium hybridum ssp. elegans</i>	FABACEAE	G?	SNA	1		
Red Clover	<i>Trifolium pratense</i>	FABACEAE	G?	SNA	1		
White Clover	<i>Trifolium repens</i>	FABACEAE	G?	SE5	1	1	
Colt's Foot	<i>Tussilago farfara</i>	ASTERACEAE	G?	SNA		1	
Narrow-leaved Cattail	<i>Typha angustifolia</i>	TYPHACEAE	G5	SE5	1		1
Broad-leaf Cattail	<i>Typha latifolia</i>	TYPHACEAE	G5	S5	1		
Blue Cattail	<i>Typha x glauca</i>	TYPHACEAE	HYB	SE4?	1	1	
American Elm	<i>Ulmus americana</i>	ULMACEAE	G5	S5	1		
Common Mullein	<i>Verbascum thapsus</i>	SCROPHULARIACEAE	G?	SNA	1	1	
Blue Vervain	<i>Verbena hastata</i>	VERBENACEAE	G5	S5		1	
Nannyberry	<i>Viburnum lentago</i>	CAPRIFOLIACEAE	G5	S5	1		
Guelder-rose Viburnum	<i>Viburnum opulus</i>	CAPRIFOLIACEAE	G5	se4		1	
Tufted Vetch	<i>Vicia cracca</i>	FABACEAE	G?	SNA	1	1	
Riverbank Grape	<i>Vitis riparia</i>	VITACEAE	G5	S5	1	1	1

Appendix B. Breeding Bird List for Nobleton Study Area.



Breeding Birds of Nobleton, 2021

Common Name	Scientific Name	Status						Locations		
		National Species at Risk COSEWIC designation ^a	National Species at Risk Act Designation ^a	Species at Risk in Ontario Listing ^b	Provincial breeding season SRANK ^c	TRCA Status ^d	Area-sensitive (OMNR) ^e	1	2	3
Killdeer	<i>Charadrius vociferus</i>				S5	L5				2
Spotted Sandpiper	<i>Actitis macularia</i>				S5	L4				2
Mourning Dove	<i>Zenaidura macroura</i>				S5	L5		1		1
Hairy Woodpecker	<i>Picoides villosus</i>				S5	L4	A	1		1
Eastern Phoebe	<i>Sayornis phoebe</i>				S5	L5				2
Horned Lark	<i>Eremophila alpestris</i>				S5	L4				1
Tree Swallow	<i>Tachycineta bicolor</i>				S4	L4				2
Barn Swallow	<i>Hirundo rustica</i>	THR		THR	S4	L4				3
American Crow	<i>Corvus brachyrhynchos</i>				S5	L5		3		2
Black-capped Chickadee	<i>Poecile atricapillus</i>				S5	L5				1
House Wren	<i>Troglodytes aedon</i>				S5	L5			1	1
American Robin	<i>Turdus migratorius</i>				S5	L5		1	1	2
Gray Catbird	<i>Dumetella carolinensis</i>				S4	L4		1		
Cedar Waxwing	<i>Bombicilla cedrorum</i>				S5	L5				1
European Starling	<i>Sturnus vulgaris</i>				SE	L+		1	4	2
Warbling Vireo	<i>Vireo gilvus</i>				S5	L5				1
Yellow Warbler	<i>Setophaga petechia</i>				S5	L5		2		
Common Yellowthroat	<i>Geothlypis trichas</i>				S5	L4				1
Northern Cardinal	<i>Cardinalis cardinalis</i>				S5	L5		2	1	1
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>				S4	L4				1
Indigo Bunting	<i>Passerina cyanea</i>				S4	L4			1	
Chipping Sparrow	<i>Spizella passerina</i>				S5	L5		1		
Field Sparrow	<i>Spizella pusilla</i>				S4	L4				1
Savannah Sparrow	<i>Passerculus sandwichensis</i>				S4	L4	A			3
Song Sparrow	<i>Melospiza melodia</i>				S5	L5		4	5	5
Swamp Sparrow	<i>Melospiza georgiana</i>				S5	L4		1		
Bobolink	<i>Dolichonyx oryzivorus</i>	THR		THR	S4	L3	A			4
Red-winged Blackbird	<i>Agelaius phoeniceus</i>				S4	L5		3	1	10
Eastern Meadowlark	<i>Sturnella magna</i>	THR		THR	S4	L4	A			1
Common Grackle	<i>Quiscalus quiscula</i>				S5	L5		1	1	
Brown-headed Cowbird	<i>Molothrus ater</i>				S4	L5		1		
American Goldfinch	<i>Spinus tristis</i>				S5	L5		1	1	2
House Sparrow	<i>Passer domesticus</i>				SNA	L+		2	1	2

Field Work Conducted On: June 2 and 24, 2021

Location 1 - Janet Ave SPS

Location 2 - Well #5

Location 3 - WRRF

Number of Species: 33
 Number of (provincial and national) Species at Risk: 3
 Number of S1 to S3 Species: 0
 Number of TRCA L1, L2 and L3 Species (Species of Concern): 1
 Number of Area-sensitive Species: 4

Location 1 Janet Ave SPS

Number of Species: 16
 Number of (provincial and national) Species at Risk: 0
 Number of S1 to S3 Species: 0
 Number of TRCA L1, L2 and L3 Species (Species of Concern): 0
 Number of Area-sensitive Species: 1

Location 2 Well # 5

Number of Species: 10
 Number of (provincial and national) Species at Risk: 0
 Number of S1 to S3 Species: 0
 Number of TRCA L1, L2 and L3 Species (Species of Concern): 0
 Number of Area-sensitive Species: 0

Common Name	Scientific Name	Status					Locations		
		National Species at Risk COSEWIC designation ^a	National Species at Risk Species at Risk Act Designation ^a	Species at Risk in Ontario Listing ^b	Provincial breeding season SRANK ^c	TRCA Status ^d	Area-sensitive (OMNR) ^e	1	2

Location 3

Number of Species:	26
Number of (provincial and national) Species at Risk:	3
Number of S1 to S3 Species:	0
Number of TRCA L1, L2 and L3 Species (Species of Concern):	1
Number of Area-sensitive Species:	4

KEY

a COSEWIC = Committee on the Status of Endangered Wildlife in Canada

b Species at Risk in Ontario List (as applies to ESA) as designated by COSSARO (Committee on the Status of Species at Risk in Ontario)

END = Endangered, THR = Threatened, SC = Special Concern

^c SRANK for breeding status if:

S1 (Critically Imperiled), S2 (Imperiled), S3 (Vulnerable), S4 (Apparently Secure), S5 (Secure)

SH (historical, possibly extirpated)

SNA (Not applicable... 'because the species is not a suitable target for conservation activities'; includes non-native species),

NatureServe. 2015. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available at: <http://exp.natureserve.org/>

^d Ontario Ministry of Natural Resources (OMNR). 2000. Significant Wildlife Habitat Technical Guide (Appendix G). 151 p plus appendices.

^e Toronto and Region Conservation Authority L rank (Dec 2010):

L1 to L3 Regional species of concern from highest to lowest; L4 Urban concern; L5 Secure through region; L+ Non-native