

## **Staff Report 2025-0521**

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Meeting Date: September 16, 2025

Subject: Mapping of Ecologically Sensitive Groundwater Recharge Areas

Submitted By: Joe Nethery, Nethery Planning, for Policy and Heritage

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### **RECOMMENDATION**

That Staff Report 2025-0521, Mapping of Ecologically Sensitive Groundwater Recharge Areas, approve Project A6 of the 2025-2026 Aggregates Work Program and Council's direction through Resolution Number 2025-030 to provide a report on the state of mapping, methodologies, and science of determining Ecologically Sensitive Groundwater Recharge Areas within the Town including mapping done by Credit Valley Conservation Authority (CVC) and Toronto and Region Conservation Authority (TRCA).

### **REPORT HIGHLIGHTS**

- The purpose of this report is to provide an update on the status of Ecologically Sensitive Groundwater Recharge Areas (“ESGRA”) mapping projects completed by Credit Valley Conservation (“CVC”) and the Toronto and Region Conservation Authority (“TRCA”).
- This report is the final deliverable of Project A6 – Ecologically Sensitive Groundwater Recharge Areas Mapping as part of the overarching Caledon Aggregate Implementation projects.
- CVC completed their ESGRA modelling exercise in 2023 with external consultants, Matrix Environmental Solutions. This project is part of CVC’s Water Resource System mapping study, and the creation of a new watershed plan. The project involved reviewing and updating ESGRA mapping which was previously completed in 2011 by the same consultant group. CVC intend to complete ESCGRA mapping in March 2026, with a Watershed Plan to be presented to the CVC Board for endorsement in 2027.
- TRCA staff completed their ESGRA modelling exercise in 2019, in collaboration with staff from Oak Ridges Moraine Groundwater Program, as part of their Water Resource System (“WRS”) mapping project.

### **DISCUSSION**

The purpose of this report is to provide an update on the status of ESGRA mapping projects completed by CVC and the TRCA.

#### **Background**

In October 2024, as a result of the Supplementary Aggregate Policy Study, Council adopted an Official Plan Amendment (OPA 1, Mineral Aggregate Policies) and passed a related Zoning By-law Amendment. The Study also put forward a series of recommendations for aggregate-related projects to implement or supplement the Study's findings.

## Staff Report 2025-0521

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On March 25, 2025, Council approved Staff Report 2025-0126: Supplementary Aggregate Policy Study Implementation Report and Work Program, which put forward an update and work program for all twelve aggregate-related projects. The six projects being led by the Planning and Development Department are:

- A1 – Aggregate Standards Manual;
- A2 – Town-Wide Official Plan Amendment;
- A3 – Rehabilitation Master Plan;
- A4 – Excess Soil Official Plan Amendment;
- A5 – Recycled Aggregate Strategy; and
- A6 – Mapping of Ecologically Sensitive Groundwater Recharge Areas.

The purpose of Project A6 – Mapping of Ecologically Sensitive Groundwater Recharge Areas (“ESGRA”) is to provide an assessment of the state of mapping, methodologies, and science of determining ESGRAs that has been undertaken by the CVC and the TRCA. The Greenbelt Plan includes a definition of an ESGRA that provides helpful context to this study: “areas of land that are responsible for replenishing groundwater systems that directly support sensitive areas like coldwater streams and wetlands.”

This report is the product for Project A6 and provides an overview of the methodology and status of CVC and TRCA’s ESGRA mapping process. This report was informed by a series of meetings held with CVC and TRCA staff in July 2025.

### Status Update

#### Credit Valley Conservation

The Credit Valley Conservation ESGRA mapping process was a modelling exercise completed by Matrix Environmental Solutions in 2023, as part of creating a [new watershed plan for the Credit River watershed](#). The Watershed Plan, which is being developed in consultation with implementing municipalities and other stakeholders, will be presented to the CVC Board for endorsement in 2027. Updates can be [found on their project website](#). The new watershed plan will review and characterize the current condition of water resources and natural heritage systems, as well as provide strategies and policies to protect ESGRAs.

Matrix Environmental Solutions reviewed and built upon existing groundwater recharge mapping, which was completed in 2011. The methodology used to complete this process is the result of a multidisciplinary collaboration exercise between CVC, TRCA, and Oak Ridges Moraine Groundwater Program (“ORMGP”) Staff. ESGRAs were delineated using a technical method established by [Marchildon et al. \(2015\)](#).

The sources of data included CVC’s Hydrological Network, as well as Ecological Land Classification mapping from the Ministry of Natural Resources (“MNRO”). Ecological target features included coldwater streamers, spawning redds, wetlands, seeps, and other features of hydrologic interest. An overview of the mapping methodology being used in this active project can be found as Schedule A to this Report.

The ESGRAs identified are candidate ESGRAs, which means that they have not yet been field validated or undergone the official approval process by municipalities. The results of

the ESGRA mapping process will be used by the CVC to complete their watershed plan, in Phase 3 of their study. There will be official public engagement events in 2026, and the plan will be put forward to the CVC Board of Directors in 2026/2027.

CVC is also conducting a Water Resource System (“WRS”) mapping project, which will compile existing water resource mapping, including the ESGRA mapping. CVC will engage with municipalities on this project later in 2025 with expected completion in March 2026

### Toronto and Region Conservation Authority

The Toronto and Region Conservation Authority ESGRA mapping process was a modelling exercise completed by the TRCA, in collaboration with the ORMGP, as part of their Water Resource System mapping review study. The ESGRA mapping was completed in 2019, and this project was the first time TRCA had comprehensively identified ESGRAs for its entire jurisdiction. This process also builds upon previous ESGRA modelling and mapping work completed by the Lake Simcoe Region Conservation Authority in 2012, and Central Lake Ontario Conservation Authority in 2014.

ESGRAs were delineated using a technical method established by [Marchildon et al. \(2015\)](#) but with some context-specific modifications. The sources of data included TRCA’s geospatial layers, as well as Ecological Land Classification mapping from the MNRO. The datasets included in the process were layers describing all known watercourses and wetlands, wetland flora species records, fish species records, and locations of fen wetlands. An overview of the mapping methodology used in this past project can be found as Schedule B to this Report.

There are no current plans to update ESGRA mapping. TRCA maintains a [Watershed and Ecosystems Reporting Hub](#) consolidating a range of data into charts, maps, and summary text on the state of its watersheds.

### Public Input is Welcome at Any Time

Town staff were involved as steering committee members on both projects, and had the opportunity to review and provide feedback. The scientific expertise to generate this kind of data is housed with the conservation authorities, and staff will continue to look to the conservation authorities for leadership in this subject area.

Town staff maintain this data in the corporate GIS, and can apply it when scoping and reviewing technical studies for development applications.

CVC and TRCA staff welcome comments or inquiries or input into the ESGRA mapping process at any time. As noted above, CVC is undertaking work on groundwater mapping with a target completion date of March 2026.

## **FINANCIAL IMPLICATIONS**

There are no financial implications associated with this update.

**COUNCIL WORK PLAN**

**Strategic Plan 2023-2035**

This report is directly related to the following priority in Caledon's 2023-2035 Strategic Plan:

Environmental Leadership

Details about Caledon's 2023-2035 Strategic Plan can be found at [caledon.ca/strategicplan](https://caledon.ca/strategicplan)

**ATTACHMENTS**

- Schedule A Credit Valley Conservation's "Candidate Ecologically Significant Groundwater Recharge Areas Mapping for the Credit River Watershed – Overview" (March 2025)
- Schedule B Toronto and Region Conservation Authority's "Technical Memorandum Methodology for Delineation of Ecologically Significant Groundwater Recharge Areas" (August 2019)