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# Archetypal Aquifers and
# Canada 1 Water

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# ARCHETYPAL AQUIFERS AND CANADA 1 WATER
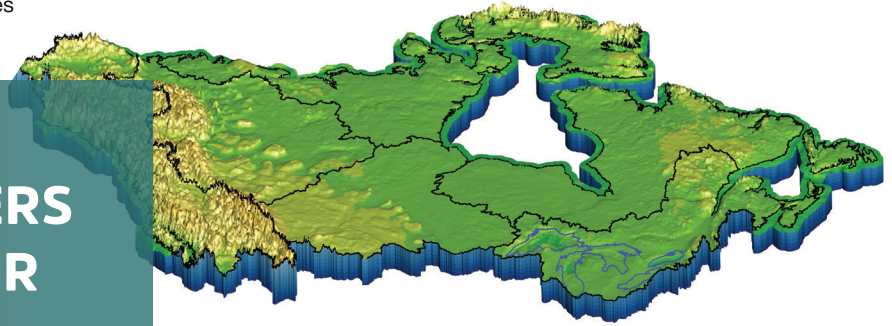
The Archetypal Aquifers and Canada 1 Water projects are two of six projects taken on from 2019 to 2024 under the Groundwater Geoscience Program (GGP) of the Geological Survey of Canada (GSC), Natural Resources Canada (NRCan).

Groundwater maintains ecosystem health and provides water resources for multiple users across Canada. These projects integrate research results into a framework of aquifer archetypes and national-scale groundwater-surface water modelling. The GSC has invested in understanding Canadian groundwater resources over the past 25 years.

Two decades of knowledge regarding Canadian groundwater will inform integrated groundwater-surface water flow models for six major watersheds under the Canada 1 Water initiative.

The goal is to combine valuable research with new studies to form a framework of aquifer archetypes and a physics-based flow model, which will help end-users make science-based decisions to improve groundwater management.

## EXPECTED OUTCOMES

The goals of this project are to:

- establish a classification system and concepts for the main archetypal aquifers;

- characterize archetypal aquifers to support the synthesis of data and knowledge to form a model of specific aquifer settings to support groundwater studies in regions with sparse data;

- continue to advance knowledge on groundwater settings in Canada through case studies that will provide insights on the hydrogeology and will advance help develop groundwater studies;

- develop field laboratories in fractured bedrock and in a confined esker aquifer. The work focusses on geophysical characterization supported by a detailed interpretation of sedimentological, geochemical and hydrogeological data;

- contribute to **The Groundwater Project (gw-project. org)**, which aims to capture the legacy of knowledge and interpretation from groundwater specialists and engineers worldwide, including researchers from the GSC;

- contribute to the Aquifer Thermal Energy System study with CanmetENERGY, York University, and the Toronto and Region Conservation Authority;

- The Canada 1 Water project will complete fully coupled groundwater-surface water modelling that integrates historical climate data and forward climate scenario modelling for the six major watersheds in Canada.

## PARTNERS

The Archetypal Aquifers project involves many partners, including partners from academia and government:

- government:
    - Natural Resources Canada (GSC, CanmetMINING, CanmetENERGY, Canada Centre for Mapping and Earth Observation)
    - Agriculture and Agri-Food Canada
    - Ontario Geological Survey

- academia:
    - University of Guelph
    - University of Ottawa
    - University of Toronto
    - University of Waterloo
    - York University

- conservation authorities and municipalities:
    - South Nation Conservation
    - Rideau Valley Conservation Authority
    - Toronto and Region Conservation Authority
    - Conservation Authorities Moraine Coalition
    - City of Ottawa

## CONTACT

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