2.1 Onaping Lake and West Onaping Subwatersheds

General Description

- **Total area**: 881.2 km^2; West Onaping (227.3 km^2) and Onaping Lake: (653.9 km^2).
- **Drainage:** Various lakes and watercourses in the West Onaping subwatershed flow from both the north and the south converging with Muldrew Lake and Creek to eventually enter Onaping Lake. The Onaping Lake subwatershed includes the entirety of Onaping Lake as well as the 42 perennial inlets that feed into it from all directions, discharging in only 2 locations at Bannerman Dam and Onaping Dam.
    - The length of the main channel within the Onaping Lake subwatershed is 91.9 km with a maximum channel elevation of 446.6 m.a.s.l. and a minimum channel elevation of 399.3 m.a.s.l. The slope of the main channel is 0.51 m/km.
    - The length of the main channel within the West Onaping subwatershed is 42.2 km with a maximum channel elevation of 458.8 m.a.s.l. and a minimum channel elevation of 406.1 m.a.s.l. The slope of the main channel is 1.25 m/km.
- **Topography**:
    - Areas towards the west are characterized as moderately rolling, while to the east, the terrain is more rugged and broken.
    - The Onaping Lake subwatershed has a mean elevation of 432.7 m.a.s.l. with a maximum elevation of 531.7 m.a.s.l. Similarly, the West Onaping subwatershed is characterized by a mean elevation of 444.3 m.a.s.l. and a maximum elevation of 524.4 m.a.s.l.
- **Geology:**
    - **Bedrock Geology**: Precambrian bedrock of the Superior Province, with intrusions of the Huronian Province in the south.
    - **Quaternary Geology:** Mainly exposed bedrock, sometimes covered by a discontinuous, thin layer of drift. A large area of glaciolacustrine deposits is present near Low Water Lake to the north, made up of sand, gravelly sand and gravel.
- **Soils:**
    - The most common substrate type is loam, particularly towards the west, with sandy loam becoming more prevalent as you move east across the area. Stable bedrock plays a secondary role in most areas, with some areas along the east being primarily rock cover.
    - Soil data for the southern portion of both subwatersheds was unavailable.
- **Groundwater:** There are a small number of 'highly vulnerable aquifers' (HVA) identified throughout the Onaping Lake subwatershed. The West Onaping subwatershed also contains a large HVA in its northern extent.
- **Land cover:**
    - Forest covers an area of 881.1 km^2, 79.7 % of these subwatersheds.
    - Lakes cover an area of 138.6 km^2, 15.7 % of these subwatersheds.
    - Wetlands cover an area of 35.4 km^2, 4.0 % of these subwatersheds.

- **Land Use Type**
    - **Zoning:** Because of its northern range, none of the area within these subwatersheds are subject to the City of Greater Sudbury's Zoning By-law.

Indigenous Communities and Traditional Territories

- Theses subwatersheds fall within the Robinson-Huron Treaty Area #61 of 1850 and the traditional territory of both the Wahnapitae First Nation and the Atikameksheng Anishnawbek First Nation.
- Several First Nations have identified numerous recreational and cultural activities that occur throughout this Treaty area, including areas designated as conservation reserves, such as Onaping Lake Conservation Reserve.

Development Pressure

Overall: Low. Though Onaping Lake is quite popular for cottagers, campers and recreational land users, the lake itself hosts only 253 cottages, most of which are in the southern portion of the lake. Many areas within these subwatersheds are hard to access and are unlikely to be the focus of any future development. In addition, the 'Onaping Lake Conservation Reserve' that encompasses the entire lake and shoreline, limits the types of activities that can take place, currently and into the future.

- **Settlement Area:** These subwatersheds are outside of the City of Greater Sudbury limits and as such, have no areas identified as 'Settlement Areas' based on the Official Plan.
- **Municipal Wastewater Facilities:** There are no municipal wastewater facilities within these subwatersheds.
- **Forestry:** Forestry appears to be a substantial cause of disturbance for these subwatersheds.
    - From the early 1900's until around 1930, the shoreline and subwatersheds of Onaping Lake were intensively logged.
    - Located within the Spanish Forest Management Area, extensive areas are identified for harvest in the 2020-2030 Forest Management Plan.
- **Aggregates:** There are currently no active or inactive aggregate operations in these subwatersheds.
- **Mining:** These subwatersheds have very little mining activity.
    - Historically, there are no records of a producing mine within either subwatershed.
    - There has been no active exploration reported within the last year (February 2023-January 2024).
    - There are no active Mining Permits or Plans open within these subwatersheds.

Recreational Use

- Recreational activities known to occur in the area include hunting, trapping, boating, canoeing, fishing, snowmobiling, swimming, Crown land camping and nature and cultural appreciation.

- It hosts a variety of trails, including canoe routes, snowmobile trails and other unofficial trails used by off-road vehicles.
- Four bear management areas (BMAs) and ten traplines exist within the Onaping Lake Conservation Reserve, and several others are sure to exist within the other areas of the subwatersheds.
- Several outpost camps operate on Onaping Lake and surrounding areas, making this an important area for local recreational users as well as for commercial tourism. Hunting and angling are also long-standing traditional activities in this area. These activities are a vital part of the local economy.

Water use

- There are currently no active Permits to Take Water.

Notable Waterbodies

- Onaping Lake is a long, and expansive lake covering an area of 68.9 km^2. It is an important lake in terms of recreation, tourism and fish habitat and is well known by campers, anglers, hunters, and outdoor enthusiasts for its recreational and natural value. It is also the focus of the 'Onaping Lake Conservation Reserve' (see Significant Features for more info).
- Many other medium and small sized lakes are known in this area, due to their proximity to Highway 144. Some of these include: Muldrew Lake, Path Lake and Low Water Lake.

Previously Identified Management Issues

- The absence of a stream gauge monitoring station on both Bannerman Dam and Onaping Dam were both noted as a data gap in the 2014 Source Protection Plan Assessment Report.
- Within the Spanish and Vermilion River Waters Management Plan, public consultation ranked the Onaping Lake and Bannerman Dams third for concerns regarding water management practices. The main issues and concerns, in order of significance were: 1. Erosion and Sedimentation, 2. High water levels, 3. Fish concerns, 4. Low (minimum) river flows in the Onaping River and Vermilion River, 5. Boat launching, 6. Effect of water levels on wildlife (i.e. loons) 7. Bannerman Creek Delta Nature Reserve Zone.

Natural Hazard Identification and Regulation

Hazards and features regulated by Conservation Sudbury include flood and erosion hazards, wetlands, unstable soils, rivers, streams, creeks, and small inland lakes. More on these regulations can be found in the Conservation Authorities Act, O. Reg. 686/21 that addresses the risks of natural hazards.

- **Floodplain mapping:** Currently, there is no floodplain mapping for this area and no anticipated floodplain mapping work.

    - In the absence of floodplain mapping, flood hazards are estimated based on site conditions. Typically, the extent of the flood hazard is estimated at 1.2 m above the bankfull elevation or high-water elevation.
- **Erosion hazard mapping:** Currently, erosion hazards are evaluated based on the general guidance from the MNRF for confined and unconfined systems.

Water Control Structure

Water levels in Onaping Lake are regulated by both the Bannerman Dam and the Onaping Dam:

- **Bannerman Dam**: Currently owned and operated by Domtar. This dam, built in 1946, is used to supply water to the generating plant in Espanola. Onaping Lake serves as a reservoir, discharging water from Onaping Lake into Bannerman Creek and eventually into the Spanish River. Any excess flow is discharged through the Onaping Dam.
- **Onaping Dam**: Owned and operated by Domtar, this dam is located on the boundary of the Onaping Lake and Lower Onaping River subwatersheds. The dam is normally closed and only opened to discharge into the Onaping River during periods of high flow when the discharge through Bannerman Dam is not sufficient for the control of the lake level.

Drinking Water Source Protection

- There are no municipal drinking water sources within these subwatersheds.
- They are located within the headwaters of the Vermilion River Drinking Water System, a municipal drinking water source. As such, all watercourses within these subwatersheds and the lands immediately around them are classified as Intake Protection Zone 3 as the water ultimately drains towards the Vermilion River drinking water intake.

Water Quality Indicators

- There are no known sources of water quality data in these subwatersheds.

Significant Features

- The 'Onaping Lake Conservation Reserve' has been designated to the lake and its shoreline to permanently protect the area's natural heritage values. This lake an important in terms of recreation, tourism, and fish habitat. It also has a rich history of logging, trapping, and trading, with remnants of old camps, trading posts and other cultural sites still existing on the land.
- Wildlife Values:
    - There are 1048 moose related wildlife value areas, covering a total area of 41.5km^2.
    - There is 1 Great Blue Heron area identified.
    - There are 5 wildlife value points, identified as raptor nesting locations.
- There are no ANSI ecological or geological areas of interest.

Management and Stewardship:

- **Wahnapitae First Nation** and **Atikameksheng Anishnawbek First Nation:** Their traditional territories include the area within these subwatersheds. They are land holders of the area and, as such, are significant stewards of the land.
- **Ministry of Environment, Conservation and Parks:** Manages a portion of this subwatershed falling withing the 'Onaping Lake Conservation Reserve', which includes Onaping Lake, its islands, Vondet Lake and the north part of White Partridge Lake, and a 120-meter-wide area around the shoreline of the lake, excluding areas of patent land.
- **Onaping Lake Area Camper's Association (OLACA)**

Data available

- There are no data collection sites managed by Conservation Sudbury within these subwatersheds.
- There are no known data collection sites managed by other organizations.
- The Benny Climate Station collects climate data and is located just east, outside of this subwatershed.

Supporting Documents

Conservation Sudbury, **Vermilion River Watershed - Surface Water Quality Report on Current Conditions**, 2017.

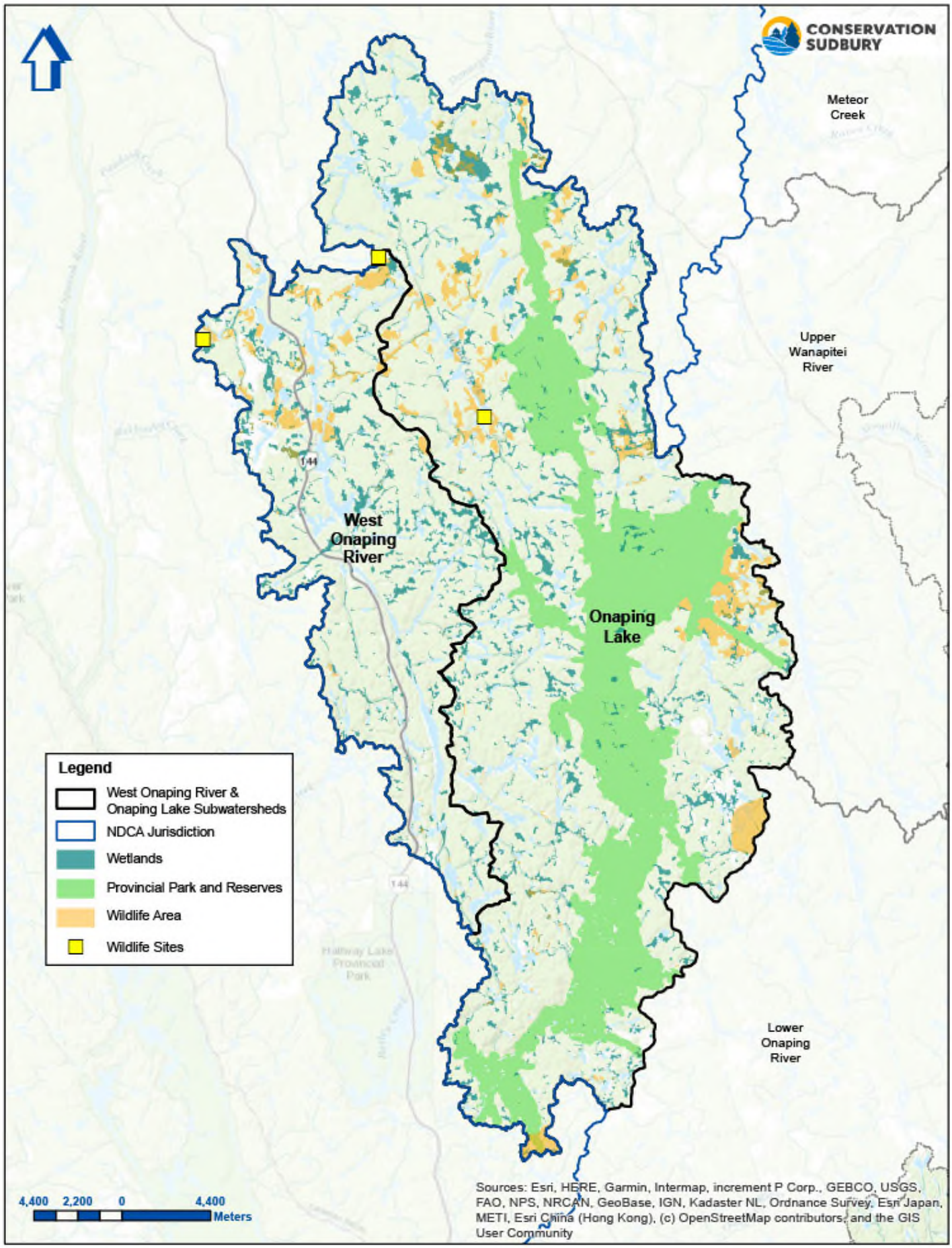
Conservation Sudbury, **Greater Sudbury Source Protection Area - Assessment Report**, September 2, 2014.

Dennis Consultants Ltd., **Flood Damage Reduction Program for Onaping River at Dowling**, Jan 1982.

J.V. Svanks., **Report on Study of Onaping-Vermilion River Watershed**, 1970.

Ontario Ministry of Natural Resources**, Onaping Lake Conservation Reserve Management – Statement of Conservation Interest**, January 2006.

Spanish and Vermilion Rivers Water Management Planning Team**, Spanish and Vermilion Rivers Water Management Plan,** November 2016


CONSERVATION SUDBURY
Meteor Creek
Upper Wanapitei River
West Onaping River
Onaping Lake
Lower Onaping River
144
Legend
West Onaping River & Onaping Lake Subwatersheds
NDCA Jurisdiction
Wetlands
Provincial Park and Reserves
Wildlife Area
Wildlife Sites
4,400 2,200 0 4,400
Meters
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community