1.4 Lower Wanapitei River Subwatershed

General Description

- **Total area:** 329.39 km^2
- **Drainage:** This section of the Wanapitei River originates from Lake Wanapitei. The main tributaries to this system are Coniston Creek, Romford Creek, Dill Creek and Elbow Creek. Coniston Creek, made up of a north and west arm, originates in the area south of the communities of Garson and Falconbridge and drains an area of approximately 49km^2. Once the two branches converge, Coniston Creek meanders through the community of Coniston where it is then joined by Romford Creek. Coniston Creek then flows into Wanapitei River just southeast of Coniston. Dill Creek, which drains the southwestern portion of the subwatershed covering an area of 55.0 km^2, joins the Wanapitei River approximately 3 km south of Coniston.
- **Topography:** Variable ground elevations, characterized by typical northern Ontario bedrock outcrops with swamps and low-lying areas.
- **Geology:**
  - **Bedrock Geology:** Precambrian bedrock of the Huronian Province in the northwest and of the Superior Province toward the southeast.
  - **Quaternary Geology:** Mainly exposed or thinly covered bedrock. To the south, pockets of glaciolacustrine silt and clay. The northern reaches contain pockets of undifferentiated material, predominantly sand to silty sand.
- **Soil:** Mostly covered by stable bedrock with pockets of sandy loam and silty loam in the Garson area as well as in the south of the subwatershed.
- **Groundwater:**
  - Significant Groundwater Recharge Areas can be found mainly around the communities of Garson, Falconbridge, Coniston and Wahnapitae and sporadically in the areas between these 4 communities.
  - Highly Vulnerable Aquifers (HVA) were also identified throughout the subwatershed, particularly within the township of Street to the north, but also in the areas surrounding the communities of Falconbridge, Garson, Coniston and Wahnapitae. Additional HVAs can be found irregularly throughout this subwatershed.
- **Land cover:**
  - Forest covers an area of 177.6 km^2, or 53.9 % of the subwatershed.
  - Rock covers an area of 64.3 km^2, or 19.5 % of the subwatershed, and includes only barren or exposed rock with <25% tree cover.
  - Wetlands cover an area of 43.6 km^2, or 13.2% of the subwatershed.
  - Community/Infrastructure covers 20.1 km^2, or 6.1 % of the subwatershed.
  - Lakes cover an area of 15.7 km^2, or 4.8% of the subwatershed.
  - Mining and Extraction Operations cover an area of 12.0 km^2, making up 3.6 % of the subwatershed.

- **Land Use Type:**
    - **Zoning:** Within this subwatershed, the City of Greater Sudbury's Zoning By-law cover 75.6% of its area. Of that area, 180.7 km^2 (72.5%) is rural, 32.4 km^2 (13.0%) is industrial and 23.2 km^2 (9.3%) is park. The remainder are small areas designated as open space, residential, future development, environmental protection, commercial, institutional, and seasonal lands.

Indigenous Communities and Traditional Territories

- This subwatersheds falls within the Robinson-Huron Treaty Area #61, of 1850. It also lies within the traditional territory of both the Wahnapitae First Nation and the Atikameksheng Anishnawbek First Nation.

Development Pressure

Overall: Moderate. Existing development in the area is mixed and includes the communities of Falconbridge, Coniston, Wahnapitae and a portion of Garson. Much of the subwatershed is rural or uninhabited.

- **Settlement Area:** 14.0 km^2 (4.3 %) is designated as settlement area under the CGS's Official Plan. This includes the communities of Sudbury (5.14 km^2), Coniston (5.00 km^2), Garson (2.21 km^2), Wahnapitae (1.10km^2) and Falconbridge (0.52 km^2).
- **Municipal Wastewater Facilities:** The Coniston Wastewater Treatment Plant services the community of Coniston, while all wastewater generated within the Wahnapitae Wastewater system is treated within a lagoon comprised of 3 cells, where treated water is then discharged to the Wanapitei River.
- **Forestry:** Located within the Sudbury Forest, Scadding and Street townships, in the north of the subwatershed, both contain areas that are identified for harvest in the 2020-2030 Sudbury Forest Management Plan.
- **Aggregates:** There are currently 9 active aggregate operations, covering an area of 3.33 km^2.
- **Mining :**
    - Currently, there are no producing mines, though the Glencore Smelter complex is located nearby, in the Emery Creek subwatershed with some of its infrastructure falling within the Lower Wanapitei River subwatershed.
    - Historically, there were 7 mines in operation: Mohawk Garnet Deposit, Kyanite D, Mond Nickel Co, McPhee, Weisman Feldspar, Elizabeth Feldspar and Vaillancourt Feldspar.
    - Within the last year, there has been one report of active exploration activity, linked to the existing Glencore property.
    - There are currently 5 active Mining Plans and Permits registered to this subwatershed, all located within Scadding and Street townships, in the north end of the subwatershed.

Recreational Use

- The various lakes in the south of the subwatershed, as well as the Wanapitei River itself support cottages and seasonal dwellings.

- The undeveloped and treed areas are used for hiking, fishing, hunting, camping, trail-riding and other recreational activities. Blueberry picking is a common activity in this subwatershed because of the history of acidification on the landscape and the many rocky exposed outcrops.
- There are groomed snowmobile trails that travel along the subwatershed, north of Hwy 17 to Lake Wanapitei.
- Therea are two golf courses within this subwatershed: Pine Grove Golf Club and Twin Stacks.
- In developed areas, there are several municipal parks and groomed trails, including the Jane Goodall Reclamation Trail, managed by the City of Greater Sudbury.

Water use

- There are currently 15 active Permits to Take Water within this subwatershed, held mainly by Glencore, Ethier Sand and Gravel and the 2 operating golf courses.

Notable Waterbodies

- Several small and medium sized lakes in this subwatershed are well known and have been part of long-term monitoring programs.
    - Alice and Baby Lake
    - Crowley, Camp and Linton Lakes
    - Raft and Little Raft Lake

Previously and Historically Identified Issues

- **Flooding** has been a common issue in this subwatershed over the years, particularly in the areas of Coniston, Wahnapitae and the community of Wanup.
    - Sections in the town of Coniston were frequently flooded during the spring snowmelt or during intense rain events due to insufficient channel capacity and channel constrictions in Romford Creek and Coniston Creek. Ice jams in Romford Creek were also to blame at times (Coniston Watershed Report, 1965; Report on Coniston Watershed, 1979).
    - Low-lying areas of Wanapitei have been flood-susceptible during periods of spring runoff or high-intensity rain and storm events. (Flood Line Mapping - Dryden Creek, 1986).
    - Flooding in some developed areas of Wanup (outside the Conservation Sudbury jurisdiction) has occurred repeatedly (Flood Line Mapping, Wanup – Technical Report, 1981).

- **Historic mining** activities at the Coniston Smelter left much of the area within this subwatershed barren with little to no vegetation and eroded soils. The loss of a vegetation cover likely contributed to the past flooding issues by increasing runoff resulting in higher flows in area creeks and rivers.

- **Groundwater:** Between Falconbridge and Garson, groundwater flow directions are complex and not well mapped, a gap identified during the development of the Source Protection Plan (2014).

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:** Flood Line Mapping has taken place in the following areas:
  - Coniston Creek, Coniston (1982)
  - Wanapitei and Wanup Areas (1983)
  - Moose Creek, Wahnapitae (1986)
  - Dryden Creek, Wahnapitae (1986)
  - Romford Creek, Coniston (1992)
  - 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.
  - It has been stated that Emery Creek, a tributary to the Wanapitei River, is unlikely to experience major streambank erosion due to its limited size and flow.

Water Control Structure

- OPG operates the Wanapitei Dam located at the northern extent of the subwatershed, where Lake Wanapitei discharges into the south branch of the Wanapitei River.
- A small hydroelectric facility owned by Canadian Hydro Developers is located at Moose Rapids, approximately 4km downstream of the Lake Wanapitei Dam.
- As the river continues south, it crosses two power generation facilities, both managed by OPG: Stinson Dam, approximately 7km northeast Wahnapitae, and Coniston Dam, located between the communities of Coniston and Wahnapitae

Drinking Water Source Protection

- The Wanapitei Water Treatment Plant is one of 2 surface water treatment plants in the Sudbury Water System. It is located along the Wanapitei River, near the town of Wahnapitae and services parts of Sudbury, Wahnapitae, Coniston and Markstay-Warren.
- Municipal well ‘Garson 2’ is located in this subwatershed, associated Wellhead Protection Areas for municipal wells ‘Garson 1, 2 and 3 fall within this subwatershed and service the east end of Garson.
- The northern extent of the Wanapitei River watershed is also located within the headwaters of the Wanapitei River Drinking Water System. As such, all watercourses north of the intake (near Hwy 17) and the lands immediately around them are classified as Intake Protection Zone 3 as the water ultimately drains towards the Wanapitei River drinking water intake.

Water Quality Indicators

- **Surface Water :**
  - Historically, Coniston and Romford Creek, which are tributaries to the Wahnapitae River, were heavily polluted by both sanitary and industrial waste. At times, metals such as nickel and copper could be found to measure 30 to 40 times the provincial objectives, while others like aluminum and iron measure 10 times these objectives. Poorly functioning septic tanks and leaching pits were also identified as sources of contamination, particularly from residents in the township of Dryden. The Wanapitei River received domestic and industrial waste from upstream sources, such as the town of Falconbridge and associated mining operations. Despite this, water quality in the Wanapitei River was generally found to be good, although biological data suggested otherwise in many locations, such as where it passed the Coniston smelter (NDCA Watershed Inventory, 1980).
  - In recent years, water quality collected at the downstream end of the Wanapitei River shows metal concentrations still often exceeding the Provincial Water Quality Objectives by 2-3 times. More current-day concerns such as total phosphorus are in the moderate range (mesotrophic) while sodium concentrations are very low (Source Protection Plan Assessment Report, 2014).
- **Groundwater:** There are currently no known sources of groundwater data within this subwatershed

Significant Features

- Daisy Lake Uplands Provincial Park, a nature reserve and research area, is partially within this subwatershed as well as the Whitefish River subwatershed. It covers an area of 3.49 km^2.
- Wildlife Values:
  - There are 101 moose related wildlife value areas, covering a total area of 13.3 km^2.
  - There are 3 wildlife value points for raptor nesting locations.
- There are no ANSI ecological areas of interest.

Management and Stewardship

- **Wahnapitae First Nation** and **Atikameksheng Anishnawbek First Nation:** Their traditional territories include the area within this subwatershed. They are land holders of the area and, as such, are significant stewards of the land.
- **Ontario Power Generation** operating several dams on the Wanapitei River, play an important management role.
- **Glencore:** Because of their operations on the land, the company must complete regular environmental monitoring to comply with provincial and federal regulations, specifically to this subwatershed, in downstream areas of Coniston Creek and the Wanapitei River.
- **City of Greater Sudbury Regreening Program and VETAC**: The CGS's regreening program has completed regreening work on 79.3 km^2 (24%) of this large subwatershed.

Data available

- **Provincial Water Quality Monitoring:** Conservation Sudbury, in partnership with the Ministry of Environment, Conservation and Parks, have collected surface water quality data on the lower stretch of the Wanapitei River on-and-off since 1968, and regularly since 2007.
- **Snow - Surface Water Monitoring Centre:** Conservation Sudbury, in partnership with the Ministry of Natural Resources and Forestry, have collected bi-monthly snow depth and snow water equivalent data in this subwatershed since 1997 (Garson – 1997-2022, Coniston 2022-present).
- **City of Greater Sudbury – Water and Wasterwater**: Raw water and treated water from the Wanapitei River are sampled and tested regularly, as required by O. Reg. 170/03.
- **Co-operative Freshwater Ecology Unit:** The following lakes were identified as 'Urban Lakes' sampled by the CFEU at various intervals for various programs: Alice Lake, Baby Lake, Dill Lake, Raft Lake, Little Raft Lake, Broder Lake, Crowley Lake, Linton Lake, Camp Lake.
- **Lake Partner Program:** Several locations along the Wanapitei River have been sampled for total phosphorus as part of this provincially run, volunteer-based program.
- **Glencore**: As part of their regulatory requirements, Glencore has collected air, surface and groundwater quality data, as well as information on natural heritage features (fish, benthic invertebrates, wildlife, etc.)

Supporting Documents

City of Greater Sudbury, **Water and Wastewater Master Plan – Existing Water Systems,** 2017

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

Ontario Power Generation, **Wanapitei Water Management Plan**, July 2005

S.A. Kirchhefer Ltd., **Ice Management: Romford Creek**, 1992.

S.A. Kirchhefer Ltd., **Flood Line Mapping Romford Creek,** Jan 1992.

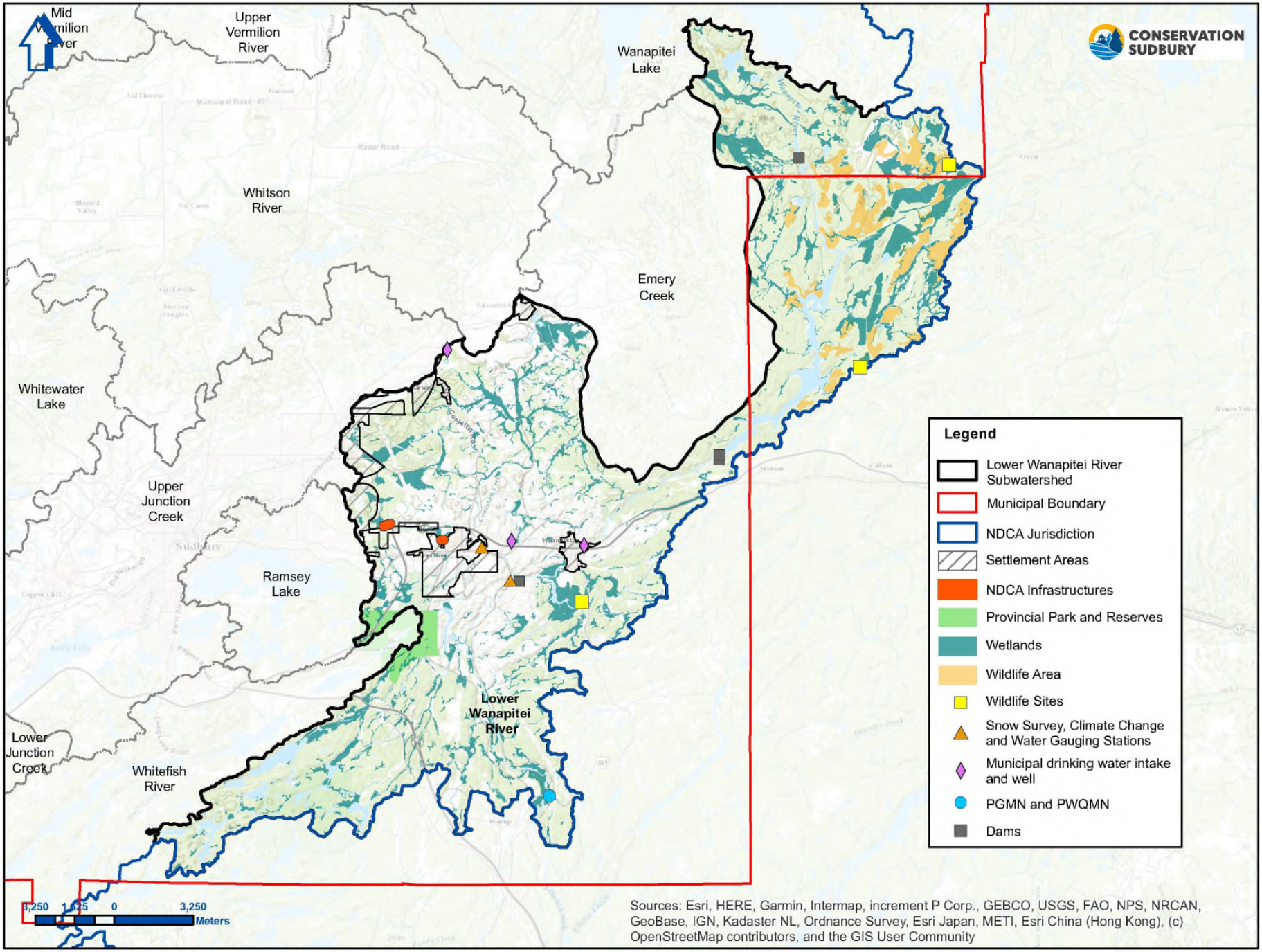
S.A. Kirchhefer Ltd., **Flood Line Mapping Moose Creek – Wahnapitae**, Jan. 1986.

S.A. Kirchhefer Ltd, **Dryden Creek Flood Line Mapping**, 1986.

S.A. Kirchhefer Ltd., **Flood Line Mapping, Wanup - Summary Report, Technical Report and Appendix C,** May 1982.

Nickel District Conservation Authority, **NDCA Watershed Inventory**, September 1980.

M.M. Dillon Ltd.**, Report on Coniston Watershed - Flood Control Alternatives,** 1979


Mid Vermilion River
Upper Vermilion River
Wanapitei Lake
CONSERVATION SUDBURY
Whitson River
Emery Creek
Whitewater Lake
Upper Junction Creek
Ramsey Lake
Lower Wanapitei River
Lower Junction Creek
Whitefish River
Legend
Lower Wanapitei River Subwatershed
Municipal Boundary
NDCA Jurisdiction
Settlement Areas
NDCA Infrastructures
Provincial Park and Reserves
Wetlands
Wildlife Area
Wildlife Sites
Snow Survey, Climate Change and Water Gauging Stations
Municipal drinking water intake and well
PGMN and PWQMN
Dams
3,250 1,625 0 3,250
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