

Figure 1.2

## Halton-Hamilton Source Protection Region

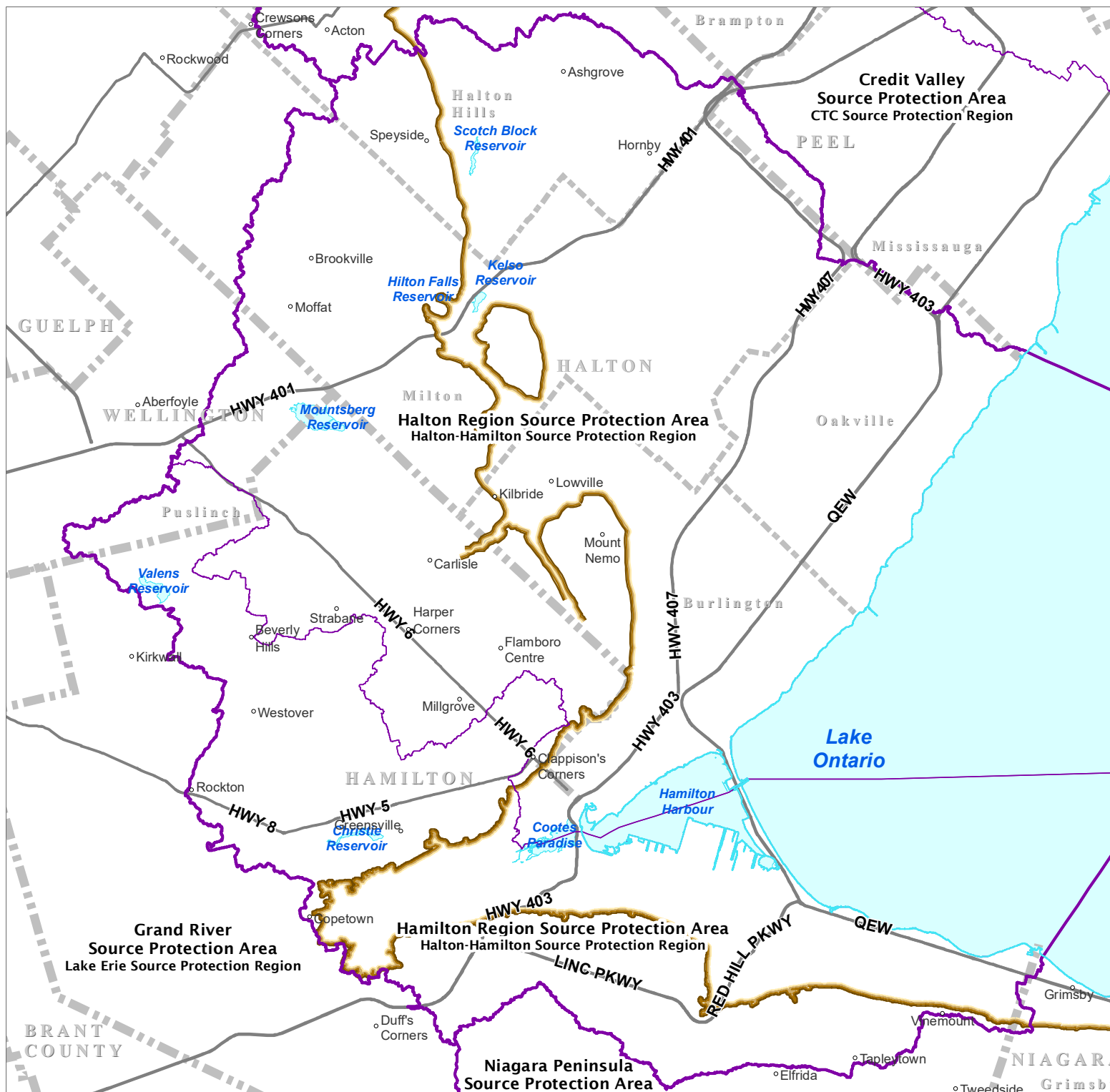
### Legend

- Source Protection Region
- Source Protection Area
- Upper Tier Municipality
- Lower Tier Municipality
- Niagara Escarpment
- Highway
- ~ Waterbody

**DRAFT**

Projection : UTM NAD 83 Zone 17

Date : February 2021



**Figure 2.1**

**Halton Region Source Protection Area**

**Legend**

- Source Protection Area
- Watersheds
- Upper Tier Municipality
- Lower Tier Municipality
- Niagara Escarpment
- Roads**
  - Highway
  - Regional
  - Waterbody

**DRAFT**

Projection : UTM NAD 83 Zone 17

Date : February 2021



1:200,000



Conservation  
**Halton**



Hamilton  
Conservation  
Authority  
A Healthy Watershed for Everyone





Figure 2.2

## Physiography

### Legend

- Source Protection Area
- Watersheds
- Subwatersheds
- Upper Tier Municipality
- Lower Tier Municipality
- Highway
- ~ Waterbody
- Physiography**
- Contact
- Escarpment
- + Shorecliff
- Physiographic Region**
- 1: Escarpments
- 2: Till Moraines
- 3: Spillways
- 6: Till Plains (Drumlinized)
- 7: Drumlins
- 8: Bevelled Till Plains
- 9: Limestone Plains
- 10: Shale Plains
- 11: Sand Plains
- 13: Eskers
- 14: Beaches
- 17: Peat And Muck

**DRAFT**

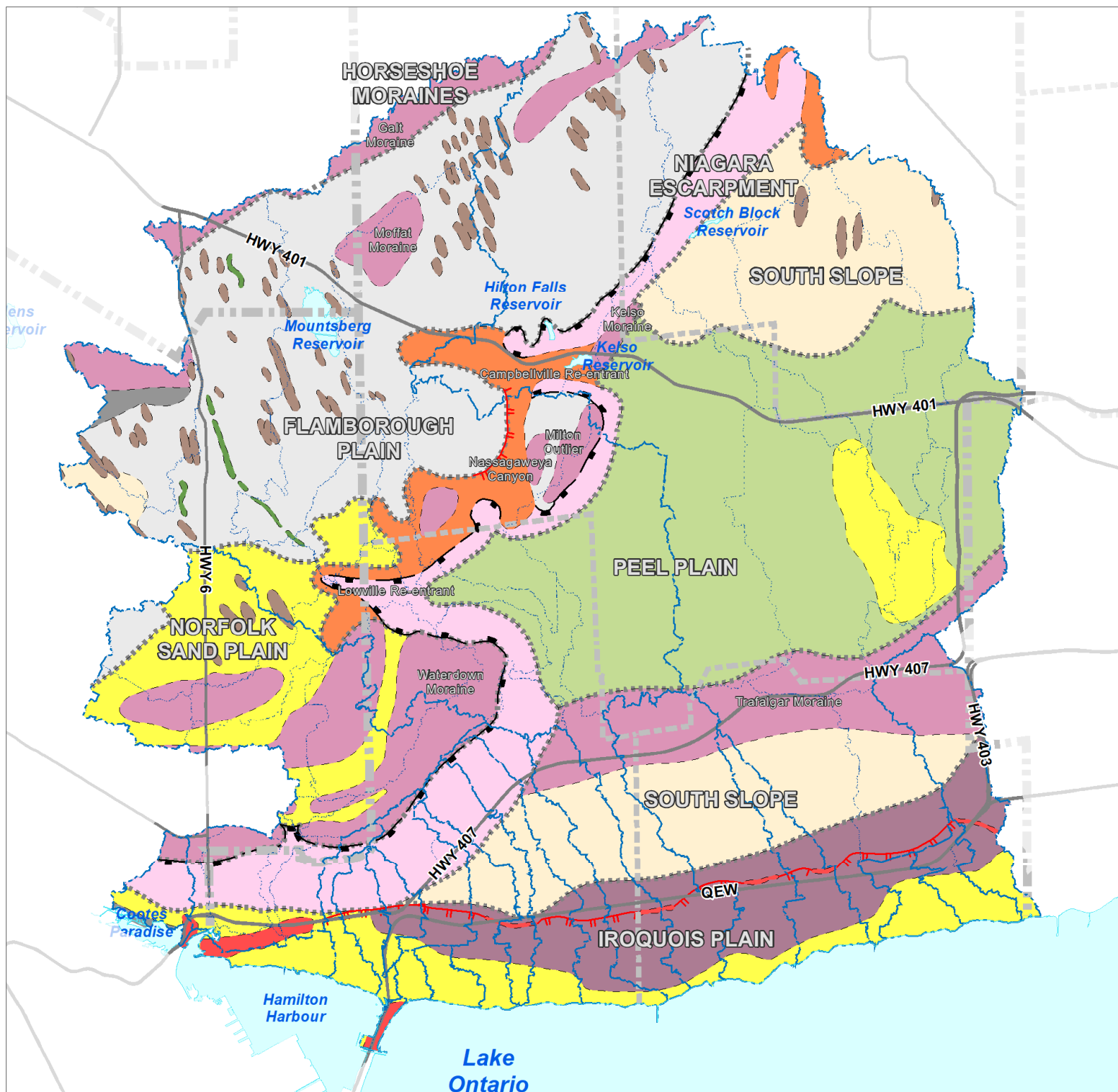
Source : Physiography (2007), Ontario Geological Survey, Chapman & Putnam.

Projection : UTM NAD 83 Zone 17

Date : February 2021












1:200,000









**Figure 2.5**

**Bedrock Geology**

**Legend**

-  Source Protection Area
-  Watersheds
-  Subwatersheds
-  Upper Tier Municipality
-  Lower Tier Municipality
-  Highway
-  Waterbody
-  Karst Sites
-  Karst Areas

**Bedrock Formation / Member**

-  Georgian Bay
-  Queenston
-  Cataract - Clinton
-  Gasport - Goat Island
-  Eramosa
-  Guelph

***DRAFT***

Source : Paleozoic Geology for Southern Ontario, Ministry of Northern Development & Mines (2007), modified based on Brunton (2009). Brunton, F.R. & Dodge, J.E.P. Karst Map of Southern Ontario, OGS GRS005 (2008). Bedrock Topography hillshade from Halton Region / Earthfx (2009).

Projection : UTM NAD 83 Zone 17

Date : February 2021



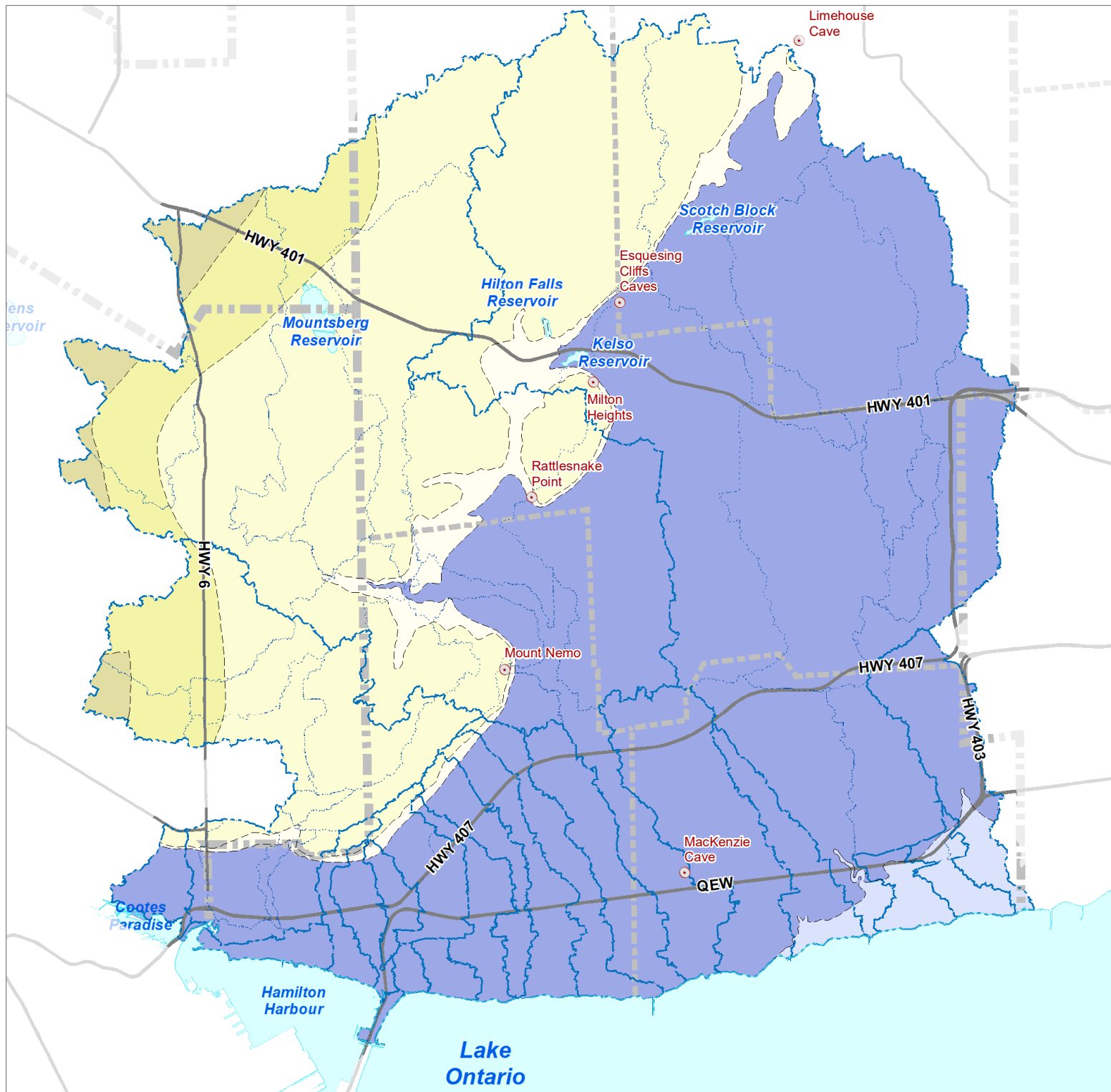
1:200,000



Conservation  
**Halton**





















A Healthy Watershed for Everyone





**Figure 2.6**

**Land Cover**

-  Source Protection Area
-  Watersheds
-  Subwatersheds
-  Upper Tier Municipality
-  Lower Tier Municipality
-  Niagara Escarpment
- Roads**
  -  Highway
  -  Regional
  -  Local
-  Waterbody
- Land Cover - CH**
  -  Agricultural
  -  Built Up Area-Impervious
  -  Built Up Area-Pervious
  -  Extraction-Aggregate
  -  Treed
  -  Wetland
  -  Undifferentiated
  -  Other

***DRAFT***

Source : Ministry of Natural Resources, SOLRIS v3 (2000-2015).

Projection : UTM NAD 83 Zone 17

Date : February 2021



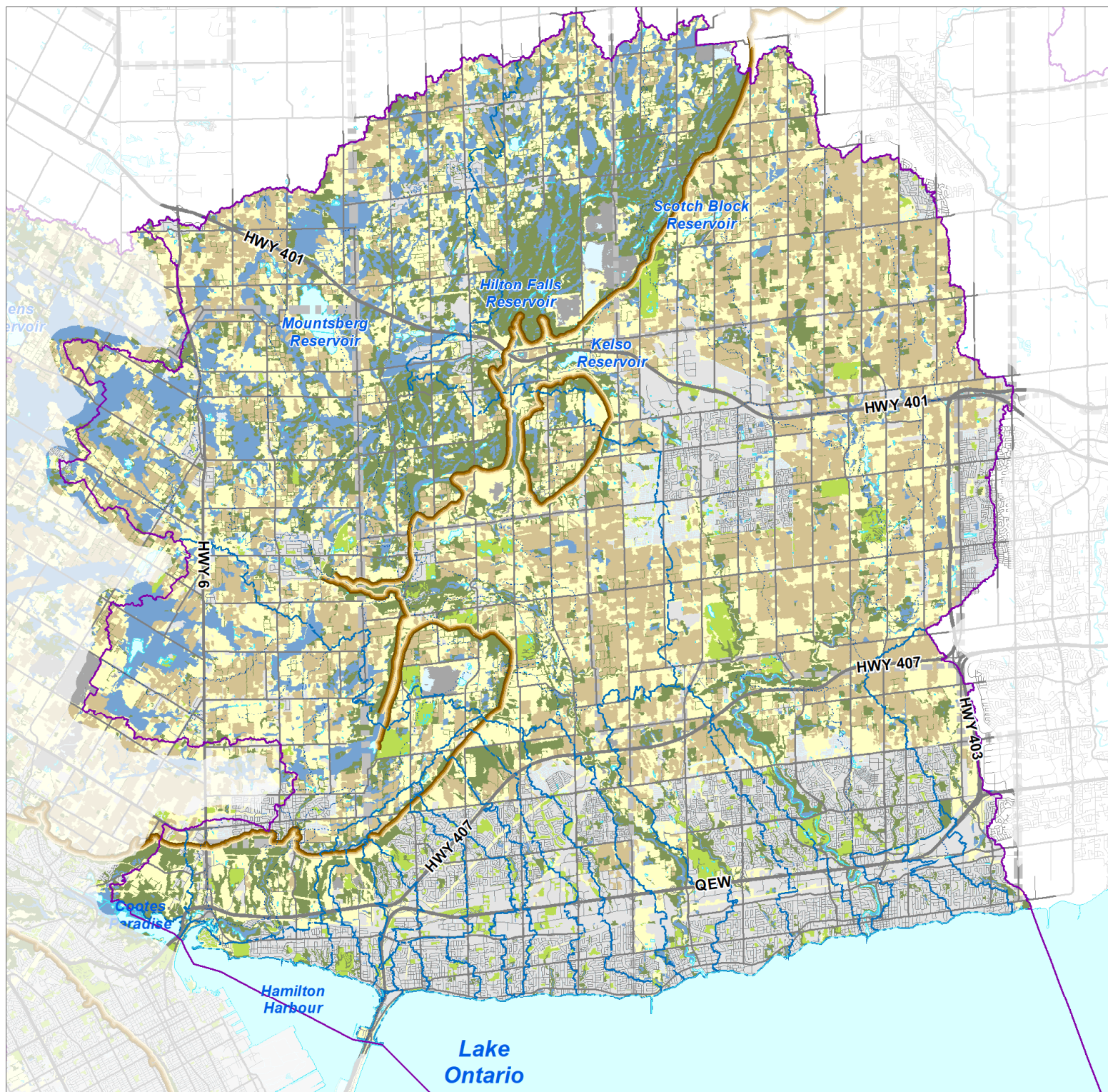
1:200,000



Conservation  
**Halton**



A Healthy Watershed for Everyone



**Figure 2.7**

**Provincial Planning Areas**

**Legend**

- Source Protection Area
- Watersheds
- Subwatersheds
- Upper Tier Municipality
- Lower Tier Municipality
- Niagara Escarpment
- Highway
- Waterbody
- Places To Grow**
  - Undelineated Settlements
  - Built Boundary Settlements
- Greenbelt Designations**
  - Protected Countryside
  - Natural Heritage System
- Niagara Escarpment Plan**
  - Escarpment Natural Area
  - Escarpment Protection Area
  - Escarpment Rural Area
  - Mineral Resource Extraction Area
  - Recreation
  - Urban Area

**DRAFT**

Source : Ministry of Public Infrastructure Renewal (2008);  
Ministry of Municipal Affairs & Housing (2007);  
Niagara Escarpment Commission (2007).

Projection : UTM NAD 83 Zone 17

Date : February 2021



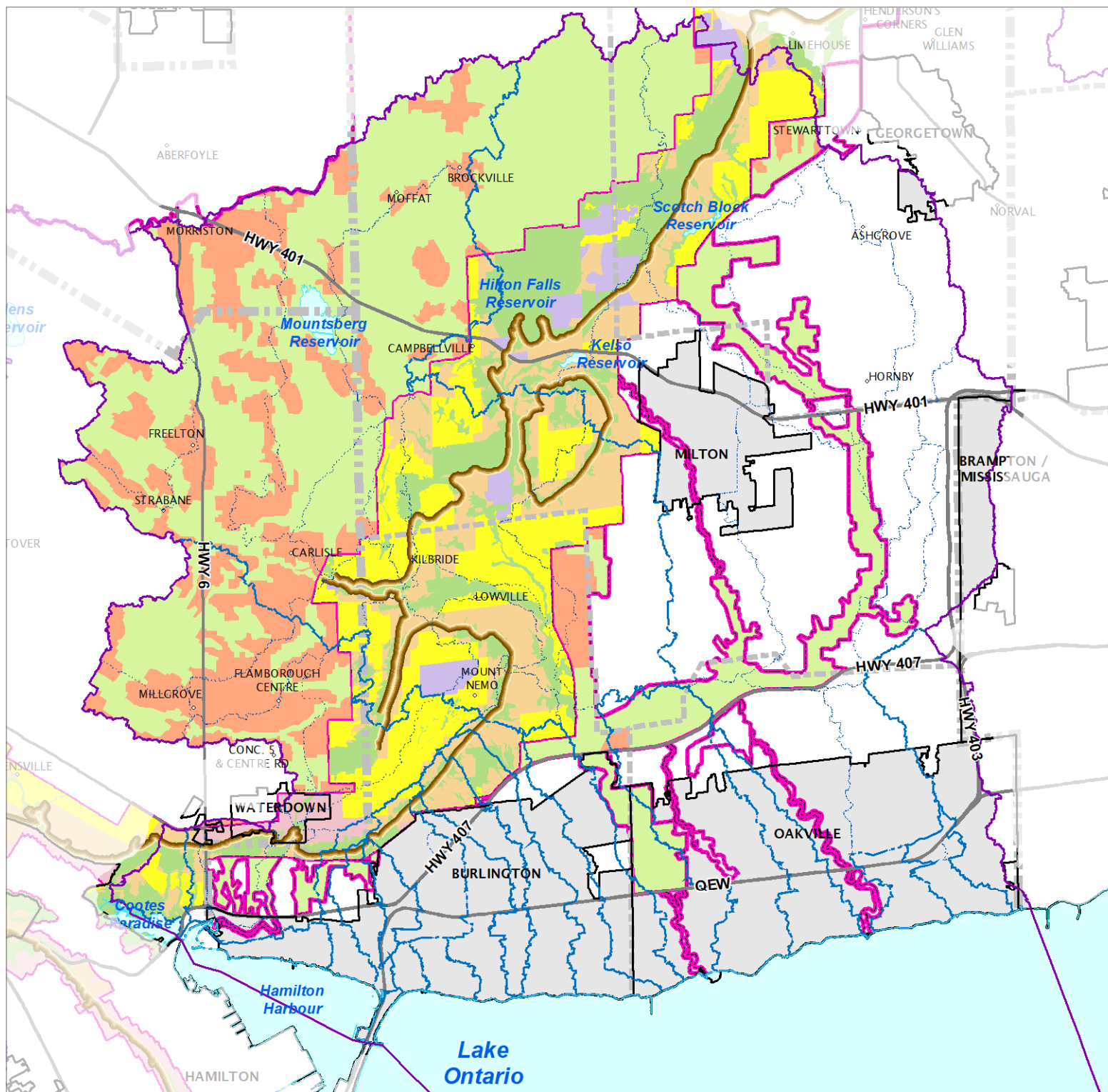
1:200,000



Conservation  
**Halton**



A Healthy Watershed for Everyone





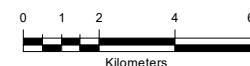
**Figure 2.8**  
**Growth Areas in Halton Region**  
**Between 2021 and 2031**

**Legend**

- Source Protection Area
- Upper Tier Municipality
- Lower Tier Municipality
- Niagara Escarpment
- Roads**
  - Highway
  - Regional
  - Railway
  - ~ Waterbody
- Existing Urban Area Boundary
- Urban Areas to 2031

**DRAFT**

Source : Halton Region ROPA 38 Map 5, 2009  
Projection : UTM NAD 83 Zone 17  
Date : February 2021



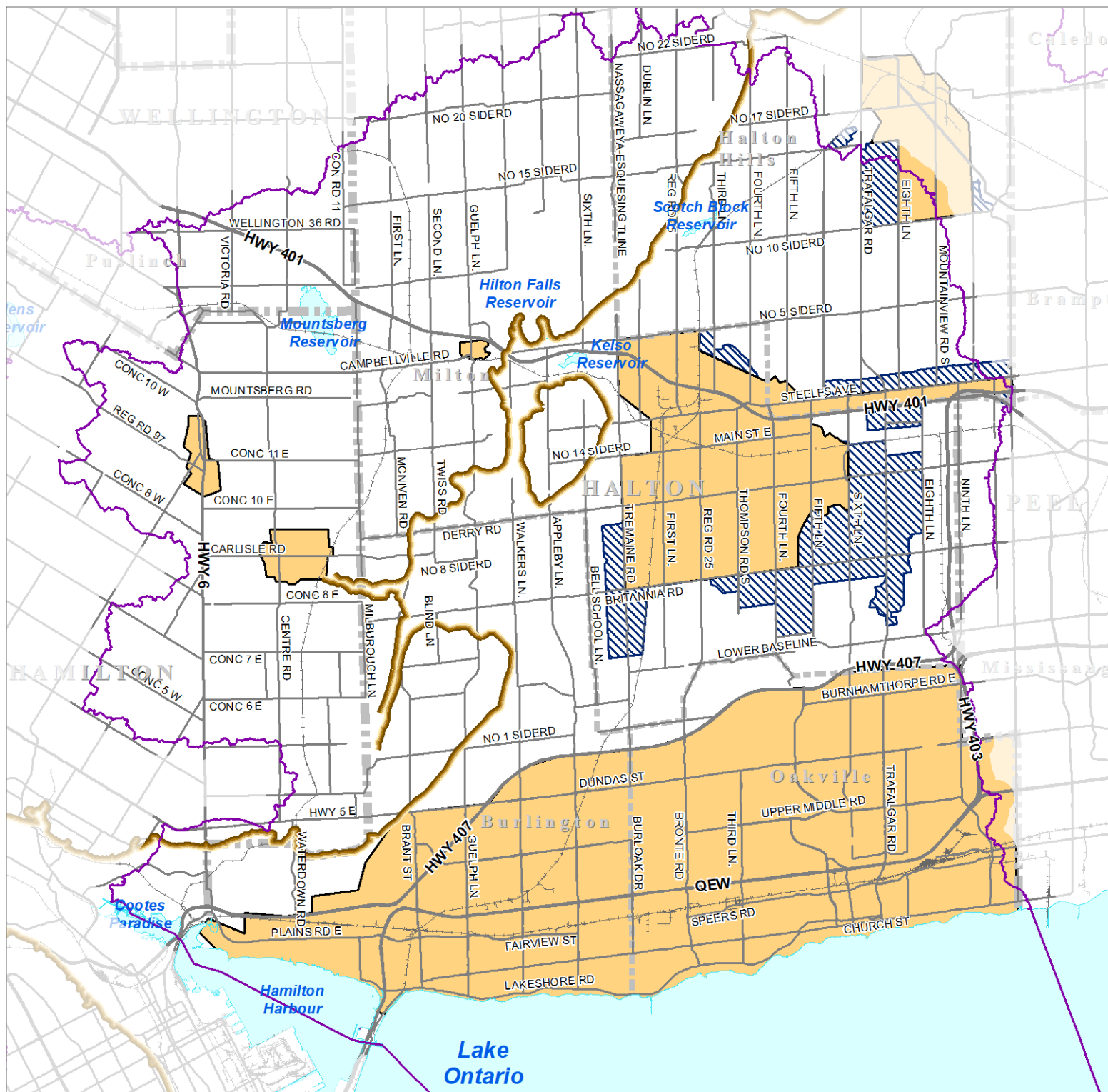
1:200,000



Conservation  
**Halton**












A Healthy Watershed for Everyone



**Figure 2.9**

**Watersheds & Subwatersheds**

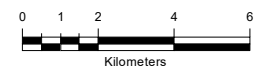
**Legend**

-  Source Protection Area
-  Watersheds
-  Subwatersheds
-  Upper Tier Municipality
-  Lower Tier Municipality
-  Niagara Escarpment
-  Highway
-  Railway
-  Waterbody

**DRAFT**

Projection : UTM NAD 83 Zone 17

Date : February 2021



1:200,000

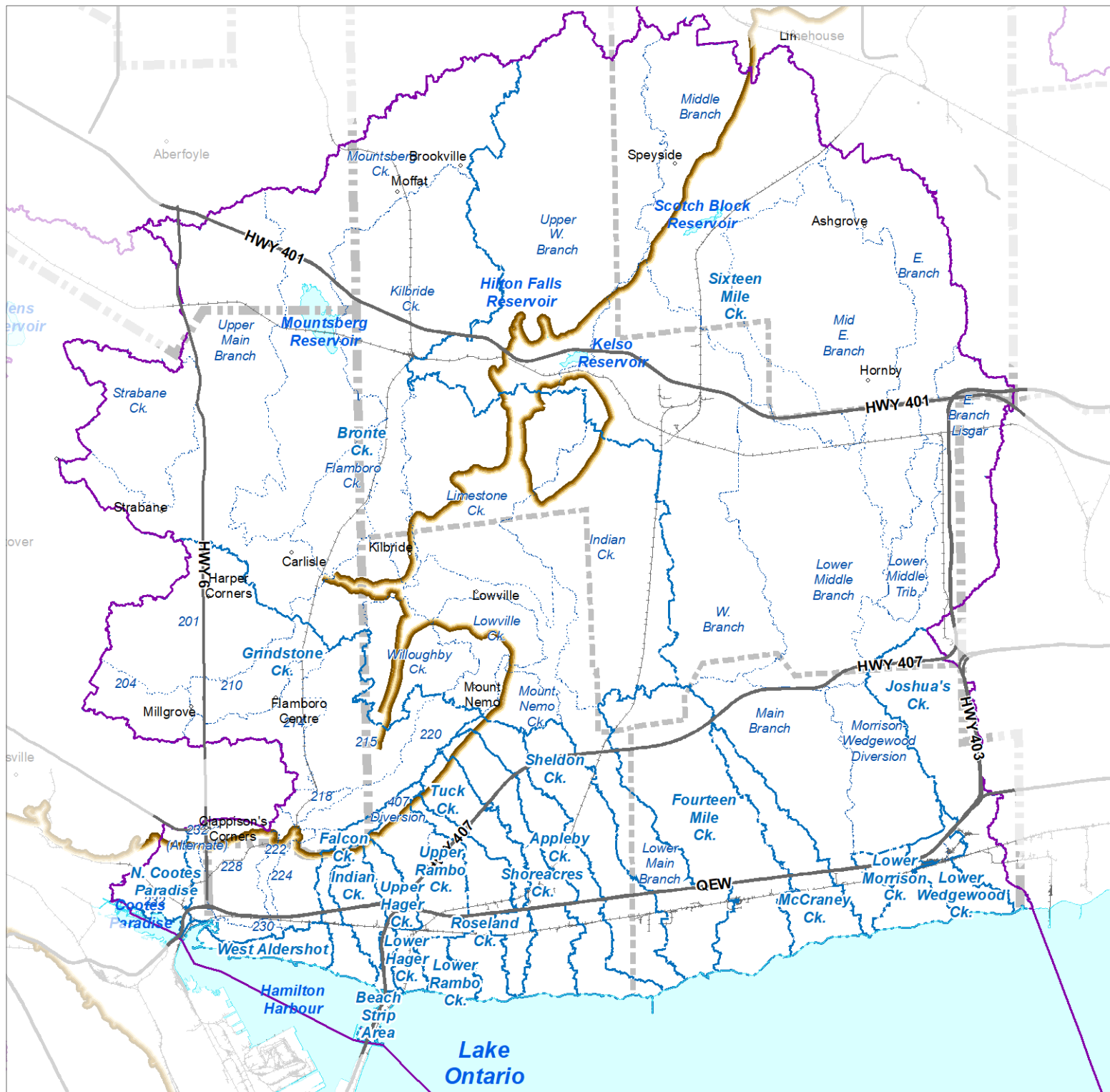




Figure 2.10

## Land Use

### Legend

-  Source Protection Area
-  Watersheds
-  Subwatersheds
-  Upper Tier Municipality
-  Lower Tier Municipality
-  Niagara Escarpment
- Roads**
  -  Highway
  -  Regional
  -  Local
  -  Railway
  -  Waterbody
- Land Use**
  -  Industrial
  -  Commercial
  -  Farm Codes
  -  Golf Course
  -  Other
  -  Pit/Quarry
  -  Institutional
  -  Residential
  -  Special Purpose
  -  Highway Median Grass

**DRAFT**

Source : Ministry of Natural Resources, Teranet Enterprises Inc., Municipal Property Assessment Corporation (2007)

Projection : UTM NAD 83 Zone 17

Date : August 2021



1:200,000



Conservation  
**Halton**



A Healthy Watershed for Everyone



**Figure 3.1**

## Hydrology and Sensitive Areas

### Legend

- Source Protection Area
- Upper Tier Municipality
- Lower Tier Municipality
- Niagara Escarpment
- Highway
- Dams
- ~ Hydrography
- Waterbody
- Natural Heritage System Area**
  - Greenbelt Act
  - Niagara Escarpment Planning and Development Act
  - Places to Grow Act
- Environmentally Sensitive Areas**
  - Bronte Creek Valley (or as labeled on map)

**DRAFT**

Projection : UTM NAD 83 Zone 17

Date : February 2021



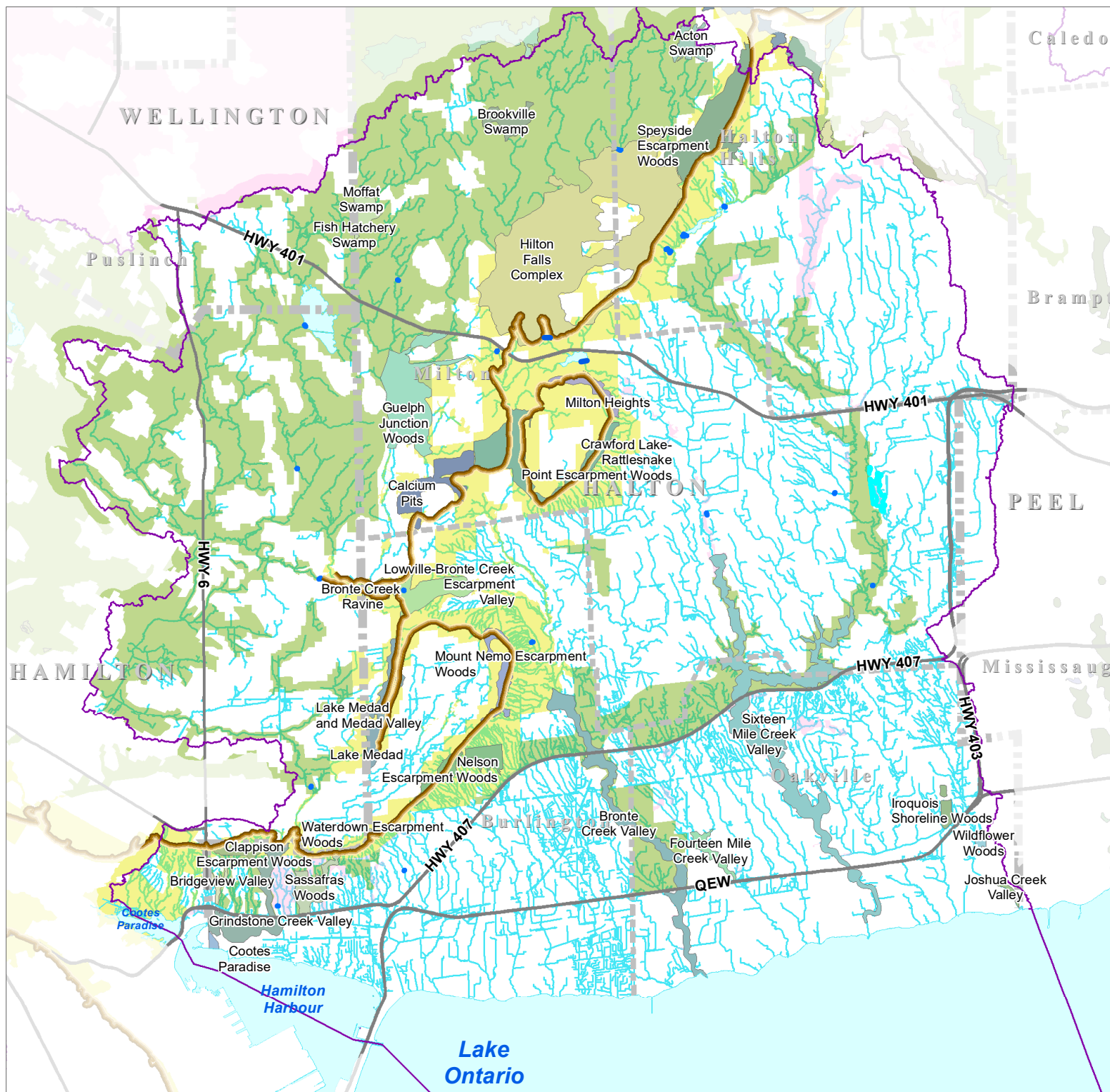
1:200,000



Conservation  
**Halton**



Hamilton  
Conservation  
Authority  
A Healthy Watershed for Everyone

















**Figure 4.1**

**Climate and Long-Term Surface  
Water Monitoring Locations**

**Legend**

-  Source Protection Area
-  Watersheds
-  Subwatersheds
-  Niagara Escarpment
-  Highway
-  Hydrography
-  Waterbody
- Conservation Halton - Long  
Term Environmental Monitoring  
Program (LEMP)
-  Great Lakes Index Station
- Environment Canada Climate Stations**
-  Active
-  Historic
- Monitoring Network (PWQMN)**
-  Active
-  Historic

**DRAFT**

Source : Ministry of Environment (2008), Environment  
Canada (2020).

Projection : UTM NAD 83 Zone 17

Date : February 2021



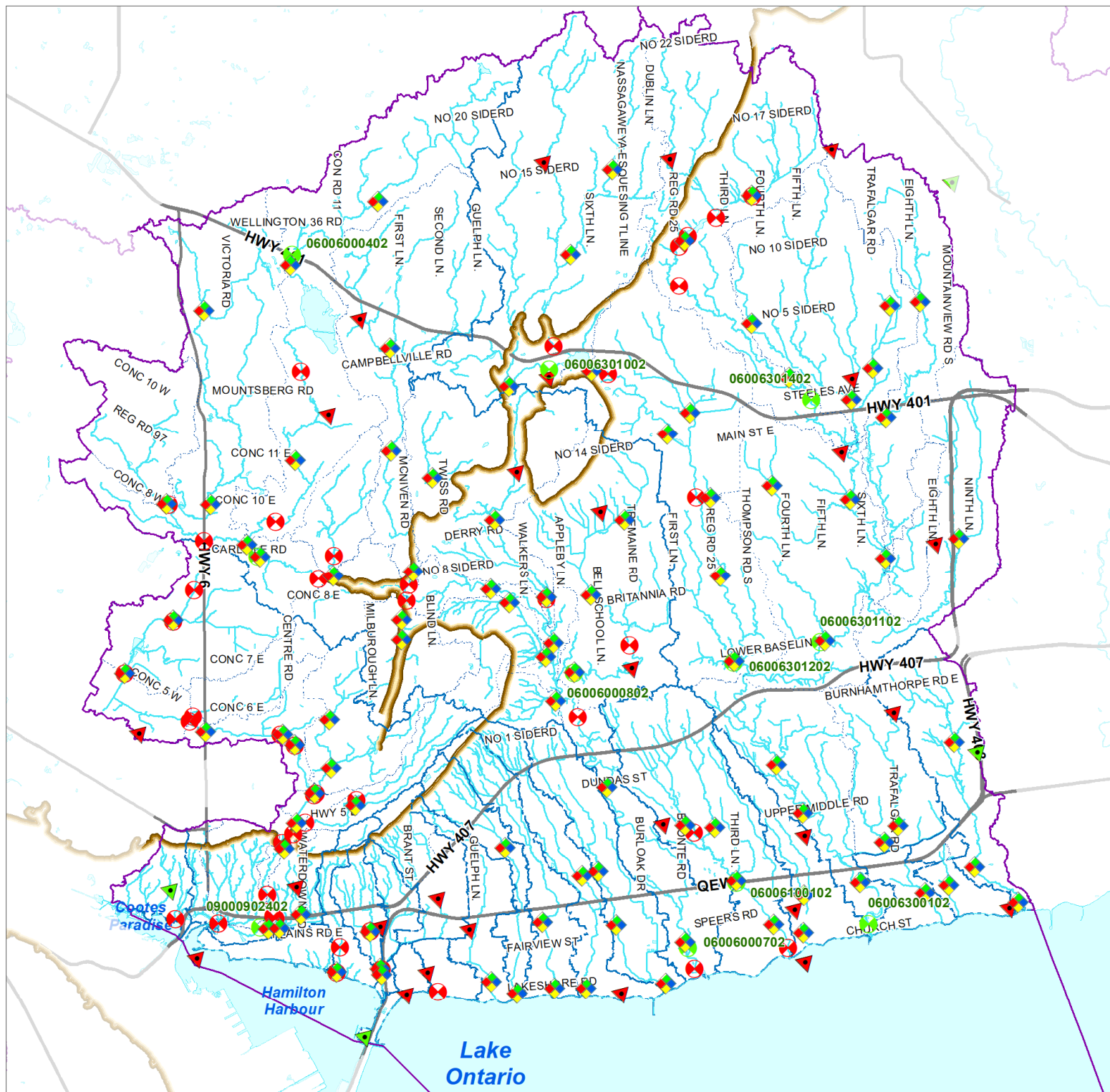
1:200,010



Conservation  
**Halton**



A Healthy Watershed for Everyone



**Figure 4.4**

# **Long-Term Groundwater Monitoring Locations**

## **Legend**

- Source Protection Area
- ▭ Watersheds
- ▭ Subwatersheds
- ▭ Upper Tier Municipality
- ▭ Lower Tier Municipality
- ▭ Niagara Escarpment
- Roads**
- Highway
- Regional
- ▭ Waterbody
- Municipal Well
- ▴ Municipal Monitoring Well
- Provincial Groundwater Monitoring Network (PGMN)

**DRAFT**

Source : Ministry of Environment (2008), Halton Region (2007), City of Hamilton (2007).

Projection : UTM NAD 83 Zone 17

Date : March 2021



1:200,000



Conservation  
**Halton**



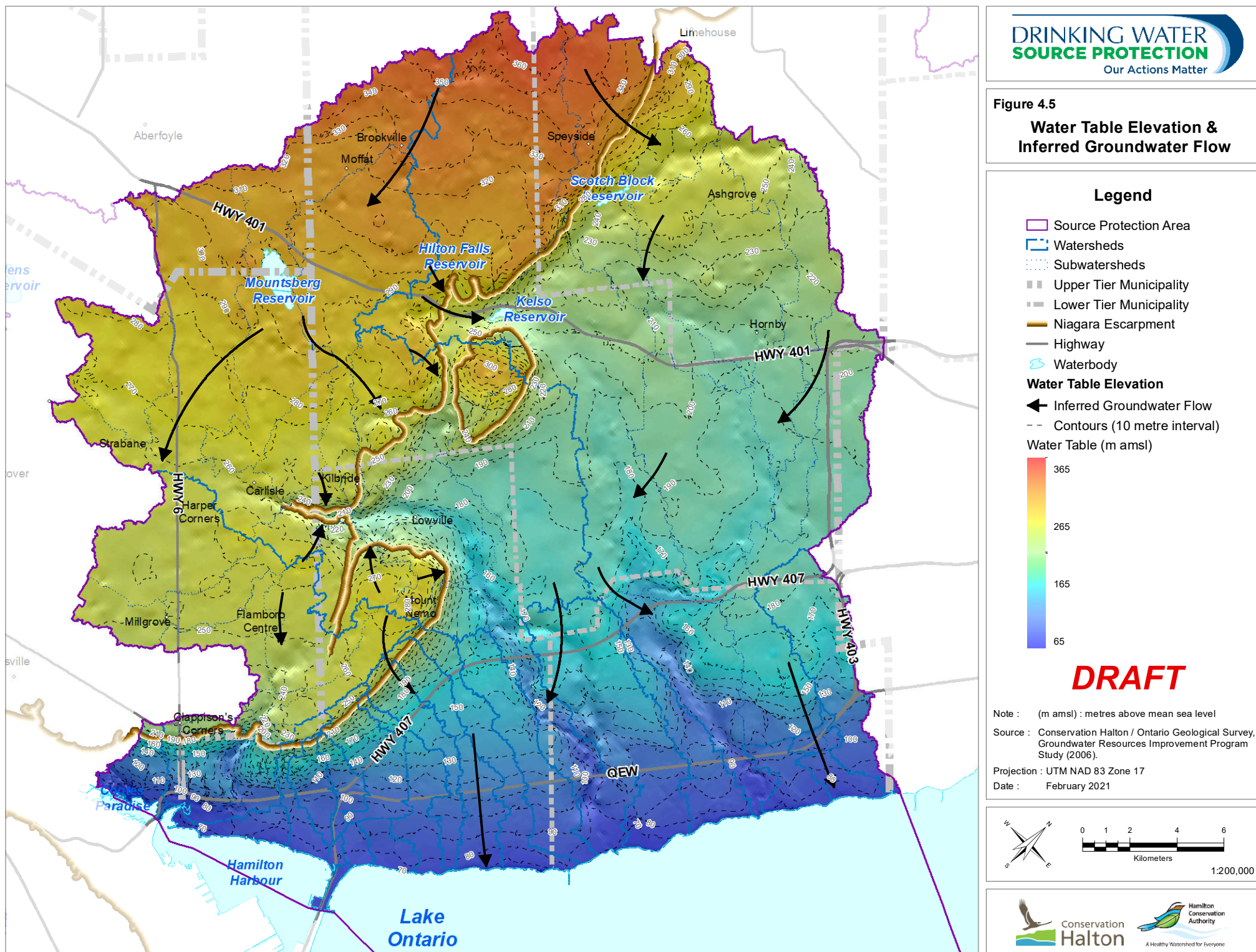
A Healthy Watershed for Everyone





**Figure 4.5**

**Water Table Elevation & Inferred Groundwater Flow**



**Figure 4.6**

**Stream Temperature Conditions**

**Legend**

**Thermal Field Stations**

- Cold
- Cold - Cool
- Cool
- Cool - Warm
- Warm

**Stream Temperature**

- Cold
- Cold-cool
- Cool
- Cool-warm
- Warm

■ Source Protection Area

■ Watersheds

■ Subwatersheds

■ Upper Tier Municipality

■ Lower Tier Municipality

■ Niagara Escarpment

■ Highway

■ Waterbody

**DRAFT**

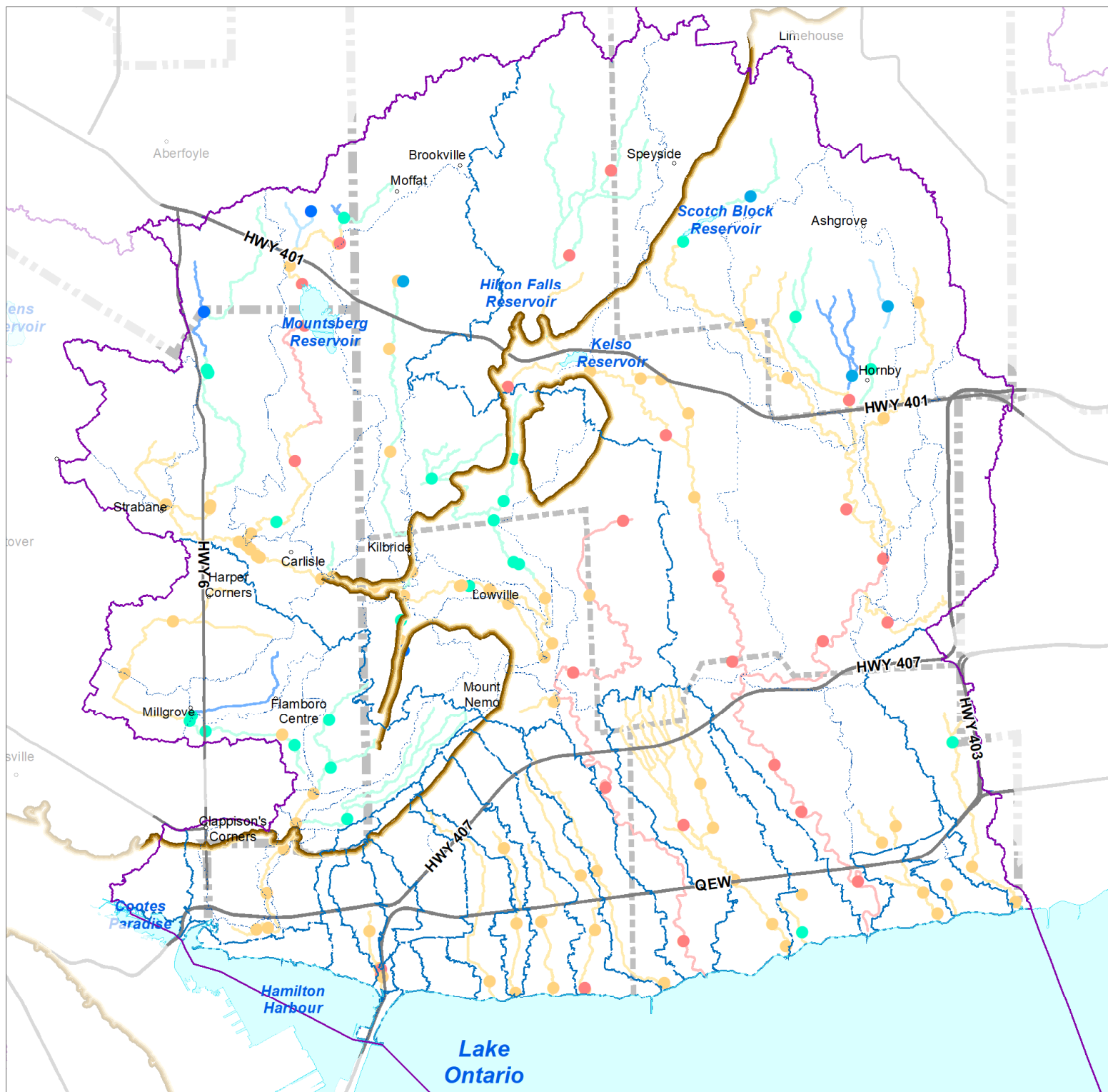
Source : Stream Temperature - Conservation Halton  
2020, Field Stations 2007-2020,  
Source Protection Program

Projection : UTM NAD 83 Zone 17

Date : March 2021

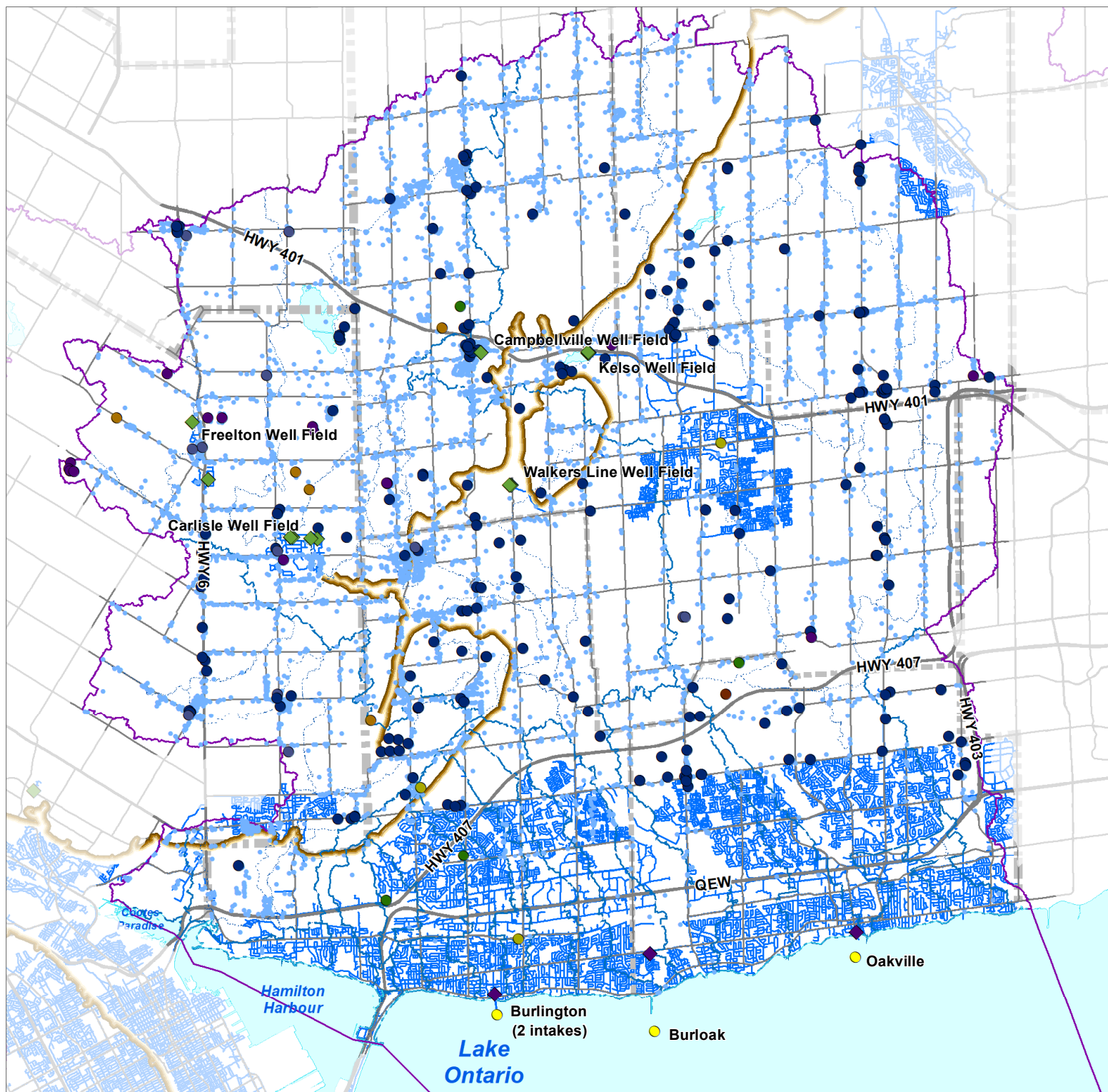


1:200,000





**Figure 4.7**  
**Drinking Water Systems**



**Legend**

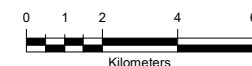
- Source Protection Area
- Watersheds
- Subwatersheds
- Upper Tier Municipality
- Lower Tier Municipality
- Niagara Escarpment
- Roads**
  - Highway
  - Regional
- Waterbody
- Municipal Intake
- Private Water Well
- Drinking Water System**
  - 1 Large Municipal Residential
  - 2 Small Municipal Residential
  - 3 Large Municipal Non-Residential
  - 4 Small Municipal Non-Residential
  - 5 Non-Municipal Year-Round Residential
  - 6 Non-Municipal Seasonal Residential
  - 7 Large Non-Municipal Non-Residential
  - 8 Small Non-Municipal Non-Residential
  - Unknown
  - Water mains

**DRAFT**

Source : Ministry of Environment Domestic Water Supply Wells with UTM accuracy <= 300 metres (2006), and Municipal Health Departments (2009).

Projection : UTM NAD 83 Zone 17

Date : March 2021



1:200,000

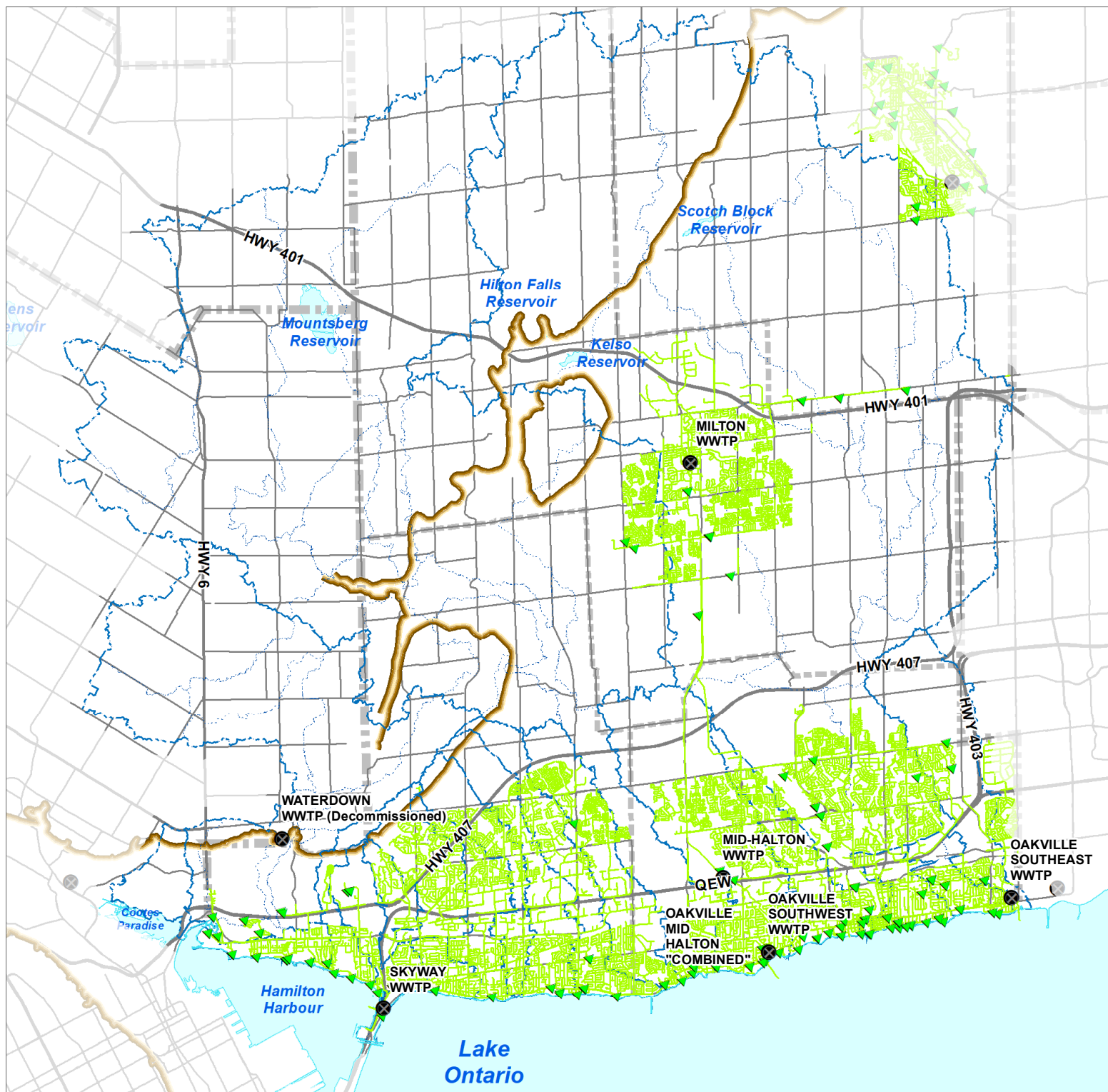


Conservation  
**Halton**



A Healthy Watershed for Everyone

**Figure 4.9**  
**Wastewater Treatment Systems**

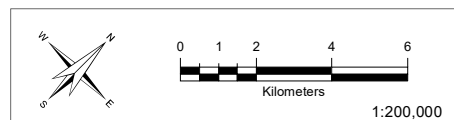


**Legend**

- Source Protection Area
- Watersheds
- Subwatersheds
- Upper Tier Municipality
- Lower Tier Municipality
- Niagara Escarpment
- Roads**
  - Highway
  - Regional
- Waterbody
- Wastewater Treatment Plants (WWTP)
- Sewage Pumping Station
- Sanitary Sewer Mains

***DRAFT***






Projection : UTM NAD 83 Zone 17  
Date : August 2021



**Figure 5.2**

**Water Budget Components**

**Legend**

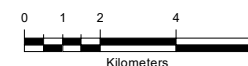
-  Source Protection Area
-  Watersheds
-  Subwatersheds
-  Upper Tier Municipality
-  Lower Tier Municipality
-  Niagara Escarpment
-  Highway
-  Waterbody

**Water Budget Components**

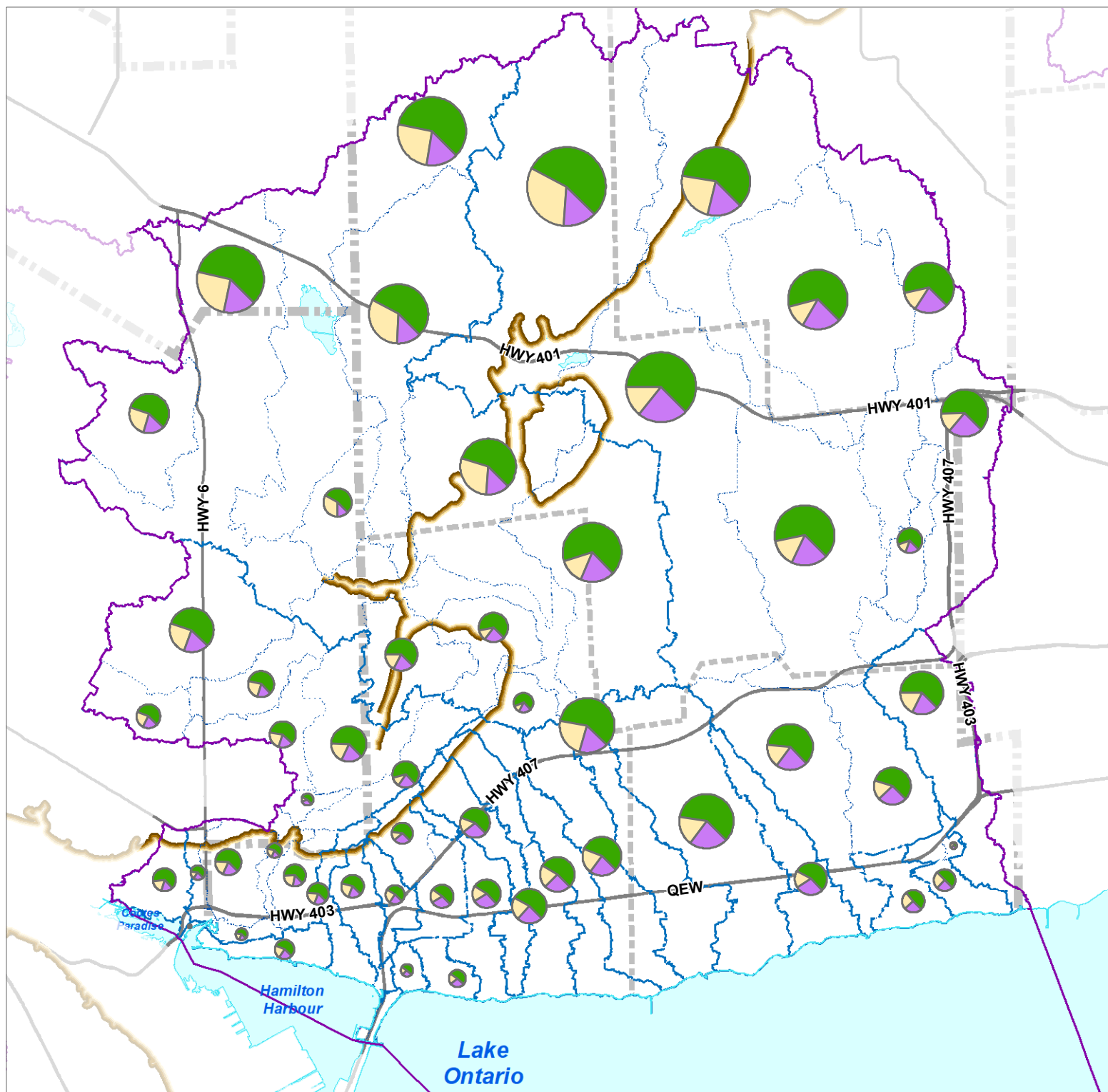


**DRAFT**

Source : PRMS Model, EarthFX, 2008  
 Projection : UTM NAD 83 Zone 17  
 Date : February 2021  
 Note: Watershed Boundaries current to 2012



1:200,000





**Figure 5.3**

**Permit To Take Water (PTTW)  
by Purpose - Surface Water**

**Legend**

- Source Protection Area
  - Watersheds
  - Subwatersheds
  - Upper Tier Municipality
  - Lower Tier Municipality
  - Niagara Escarpment
- Roads**
- Highway
  - Regional
- ~~~~~ Hydrography
- ~~~~~ Waterbody
- Permit Purpose**
- Municipal Water Supply
  - Agricultural
  - Commercial
  - Industrial
  - Miscellaneous
  - Water Treatment Plant

***DRAFT***

Source : Ministry of Environment, Permit To Take Water Database (2006), with updates (2008).

Projection : UTM NAD 83 Zone 17

Date : February 2021

Note : Watershed boundaries current to 2012



1:200,000



Conservation  
**Halton**

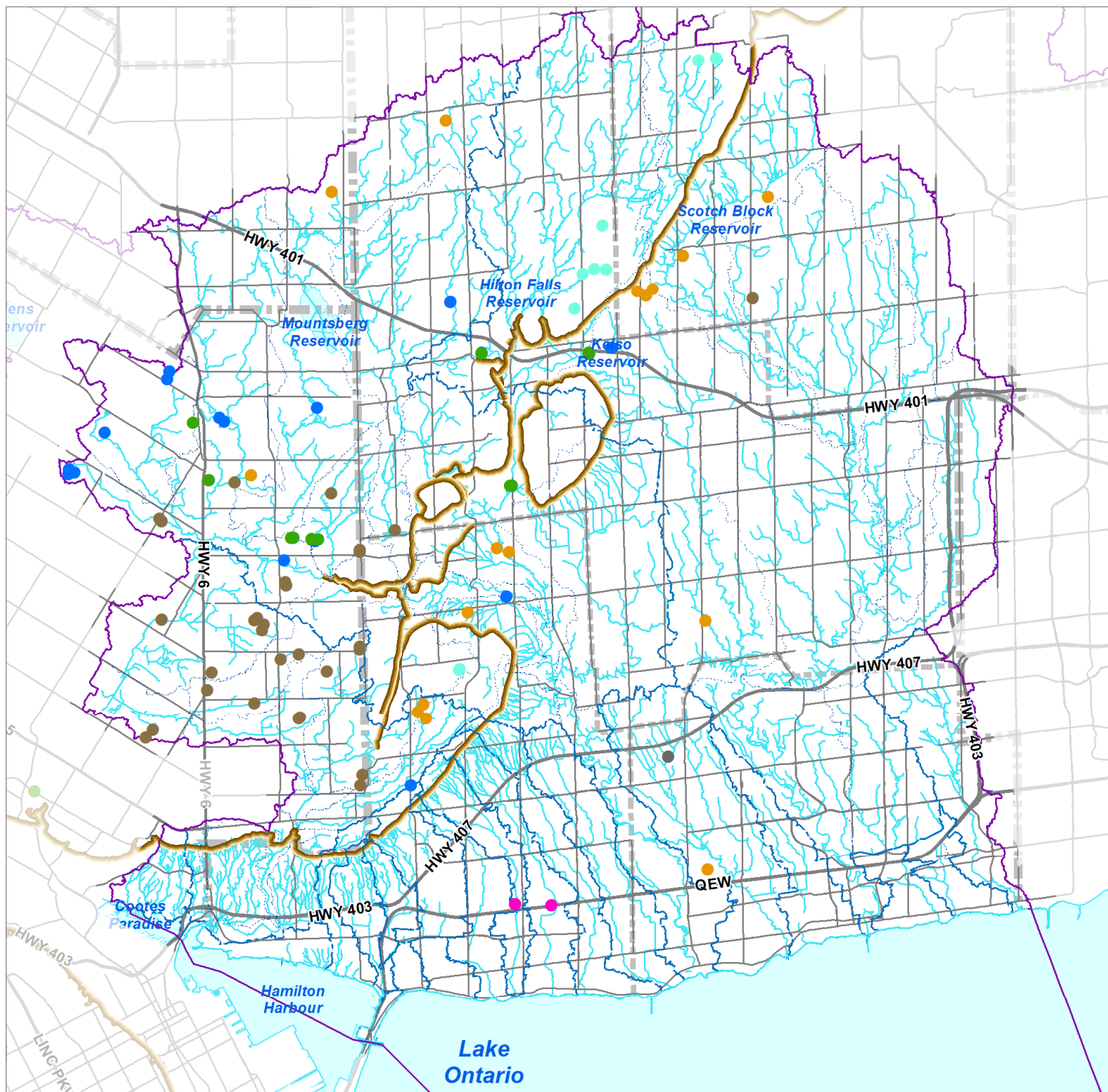


A Healthy Watershed for Everyone





**Figure 5.4**  
**Permit To Take Water (PTTW)**  
**by Purpose - Groundwater**



### Legend

- Source Protection Area
  - Watersheds
  - Subwatersheds
  - Upper Tier Municipality
  - Lower Tier Municipality
  - Niagara Escarpment
- Roads**
- Highway
  - Regional
  - ~ Hydrography
  - ~ Waterbody
- Permit Purpose**
- Agricultural
  - Commercial
  - Dewatering
  - Industrial
  - Remediation
  - Water Supply
  - Municipal Water Supply

Source : Ministry of Environment, Permit To Take Water Database (2006), with updates (2008).

Projection : UTM NAD 83 Zone 17

Date : May 2021



1:200,000



Conservation  
**Halton**



A Healthy Watershed for Everyone

**Figure 5.8**

**Surface Water  
Monthly Stresses**

**Legend**

Source Protection Area

Upper Tier Municipality

Lower Tier Municipality

Niagara Escarpment

Highway

Waterbody

**Monthly Surface Water Stress**

Significant

Moderate

Low

*Label indicates the Percent Water Demand for the entire Subwatershed.*

**DRAFT**

Source : Halton - Hamilton Source Protection

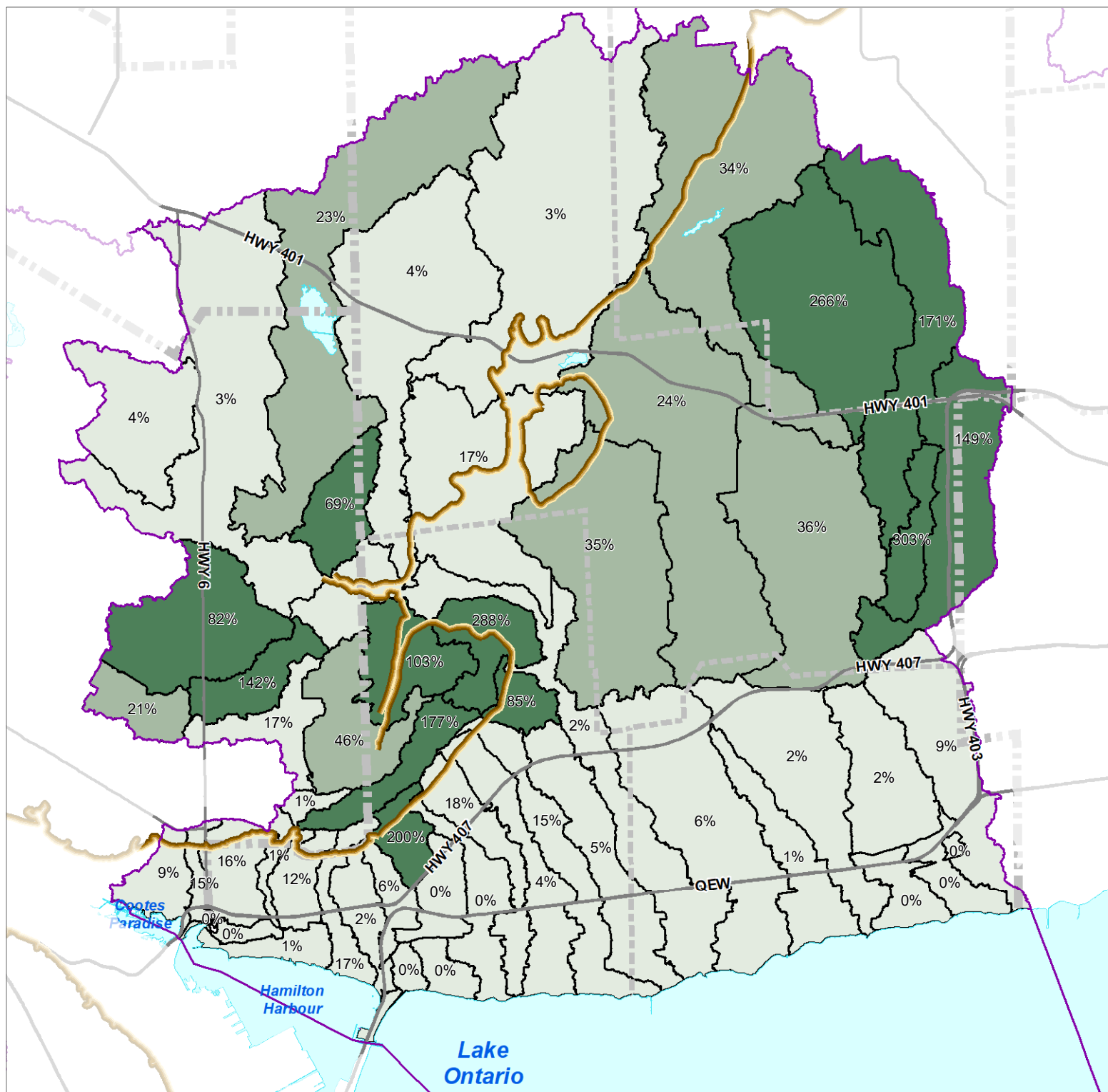
Projection : UTM NAD 83 Zone 17

Date : February 2021

Note : Watershed boundaries current to 2012



1:200,000





**Figure 5.9**  
**Groundwater Annual Stresses**  
**Existing Conditions**



**Legend**

- Source Protection Area
- Upper Tier Municipality
- Lower Tier Municipality
- Niagara Escarpment
- Highway
- ~ Waterbody

**Annual Groundwater Stress**

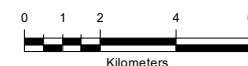
- ~ Moderate
- ~ Low

*Label indicates the Percent Water Demand for the entire Subwatershed.*

*Note: Existing Conditions for the Study Year - 2007*

**DRAFT**

Source : Halton - Hamilton Source Protection  
Projection : UTM NAD 83 Zone 17  
Date : February 2021  
Note : Watershed boundaries current to 2012



1:200,000



**Figure 5.10**  
**Groundwater Monthly Stresses**  
**Existing Conditions**



**Legend**

- Source Protection Area
- Upper Tier Municipality
- Lower Tier Municipality
- Niagara Escarpment
- Highway
- ~ Waterbody

**Monthly Groundwater Stress**

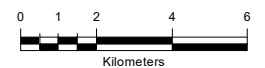
- ~ Moderate
- ~ Low

*Label indicates the Percent Water Demand for the entire Subwatershed.*

*Note: Existing Conditions for the Study Year - 2007*

**DRAFT**

Source : Halton - Hamilton Source Protection  
Projection : UTM NAD 83 Zone 17  
Date : February 2021  
Note : Watershed boundaries current to 2012



1:200,000


















Figure 5.11

**Kelso-Campbellville  
Tier 3 Study Area**

**Legend**

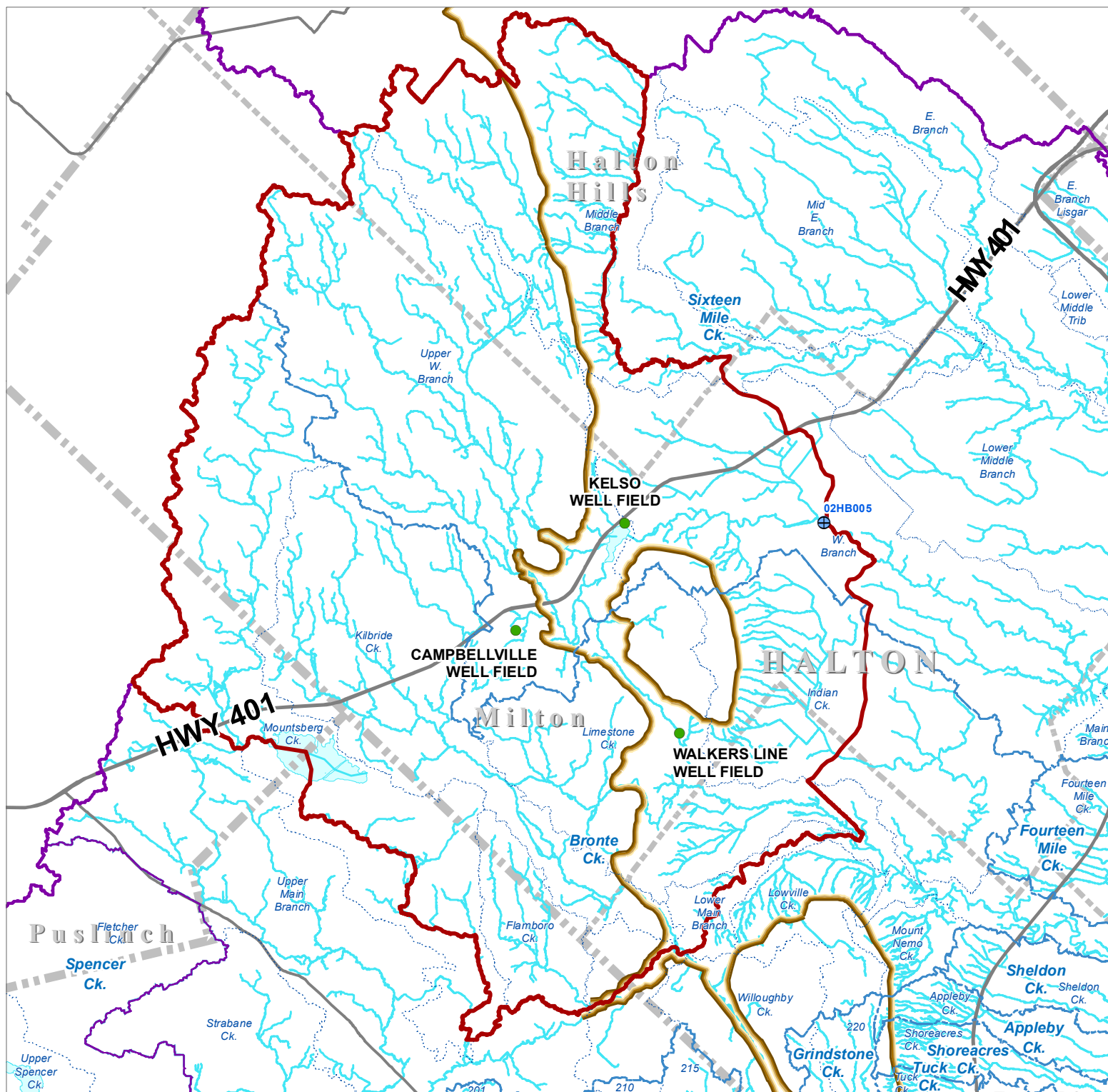
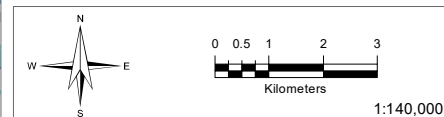
-  Source Protection Region
-  Source Protection Area
-  Tier 3 Study Area
-  Upper Tier Municipality
-  Lower Tier Municipality
-  Niagara Escarpment
-  Highway
-  Hydrography
-  Municipal Well
-  Watersheds
-  Subwatersheds
-  Streamflow / Water Level Gauge (HYDAT)
-  Waterbody

**DRAFT**

Projection : UTM NAD 83 Zone 17

Date : February 2021

Note : Watershed boundaries current to 2012





**Figure 5.12**

**Kelso WHPA-Q1 and Q2**

**Legend**

**Roads**

— Highway

— Regional

~ Hydrography

Waterbody

● Municipal Well

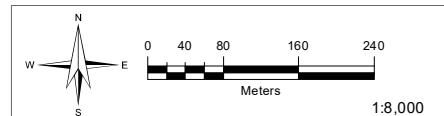
■ Kelso WHPA-Q1 and Q2

***DRAFT***

Source : Halton Region / Earthfx Groundwater Model (2013).

Projection : UTM NAD 83 Zone 17

Date : February 2021





**Figure 5.13**

**Campbellville WHPA-Q1 and Q2**

**Legend**

**Roads**

— Highway

— Regional

~ Hydrography

Waterbody

● Municipal Well

■ Campbellville WHPA-Q1 and Q2

**DRAFT**

Source : Halton Region / Earthfx Groundwater Model (2013).

Projection : UTM NAD 83 Zone 17

Date : February 2021

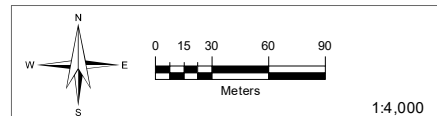




Figure 6.1

# **Halton Region Proposed Intake Protection Zones**

## **Legend**

- Source Protection Area
- Watersheds
- Subwatersheds
- Upper Tier Municipality
- Lower Tier Municipality
- Niagara Escarpment
- Roads**
  - Highway
  - Regional
- ~~~~~ Hydrography
- Waterbody
- A 1 Type A Intake - Great Lakes
- A 1 IPZ-1
- A 1 Proposed IPZ-2
- A 1 IPZ-3
- Area of IPZ-3 extending into Hamilton SPA

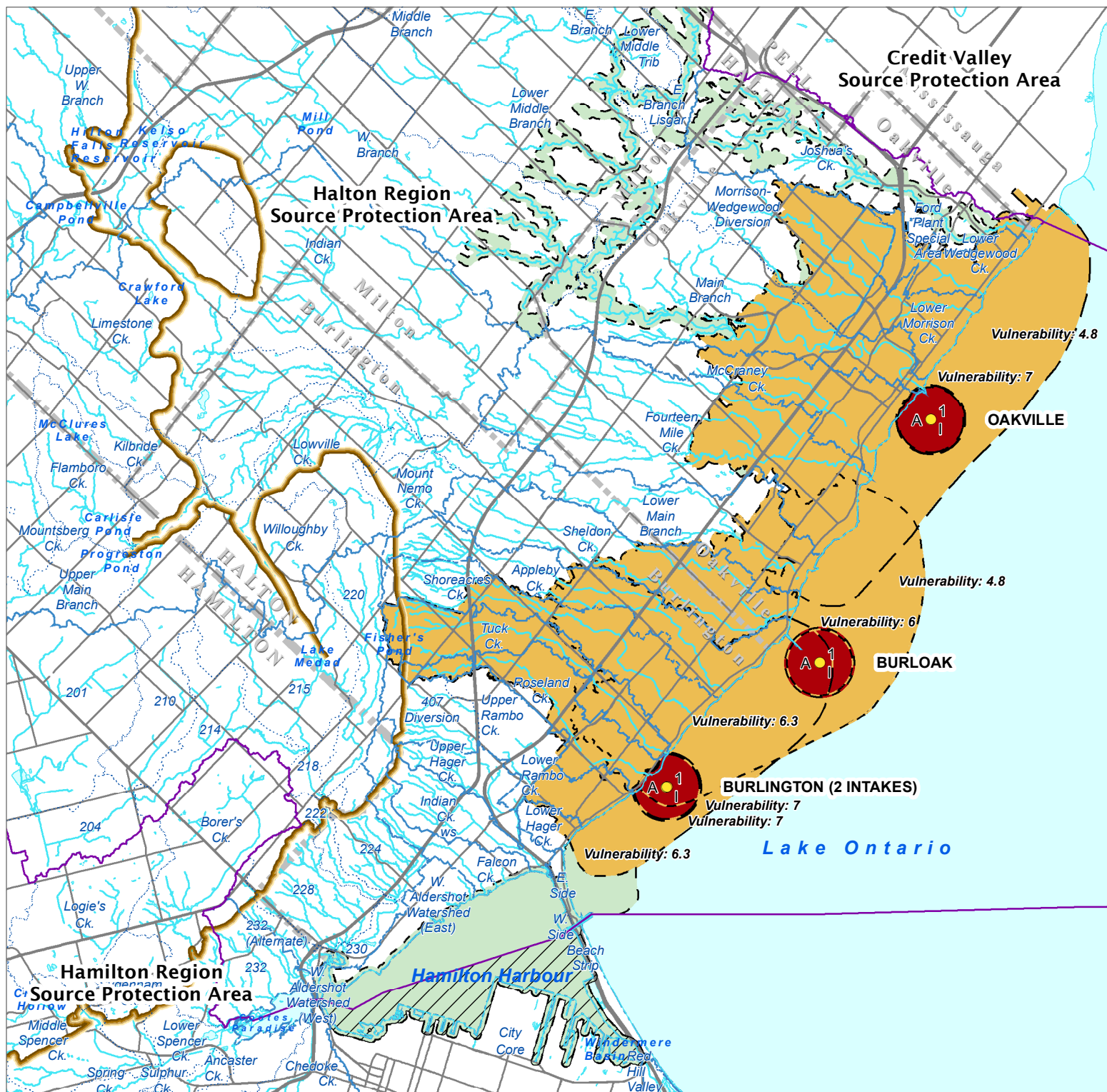
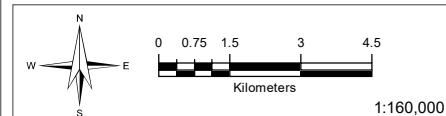
**DRAFT**

Intake Class 1 - Drinking Water System Class  
A 1 I - Water System Type

Source : Halton Region / Lake Ontario Collaborative /  
 Stantec Consulting Inc. as amended 2010.

Projection : UTM NAD 83 Zone 17

Date : August 2021





**Figure 6.2**

**Burlington  
Proposed Intake Protection Zones**

**Legend**

- Source Protection Area
- Upper Tier Municipality
- Lower Tier Municipality
- Niagara Escarpment
- Roads**
  - Highway
  - Regional
  - Local
- ~~~~~ Hydrography
- ~~~~~ Waterbody
- Type A Intake - Great Lakes
- Proposed Intake Protection Zones (IPZs)**
  - IPZ-1
  - Proposed IPZ-2
  - IPZ-2 - Proposed Burloak
  - IPZ-2 - Proposed Oakville
  - IPZ-1 - Burloak
  - IPZ-3
  - Area of IPZ-3 extending into Hamilton SPA

***DRAFT***

Intake Class 1 - Drinking Water System Class  
I - Water System Type

Source : Halton Region / Lake Ontario Collaborative / Stantec Consulting Inc. as amended 2010.

Projection : UTM NAD 83 Zone 17

Date : August 2021

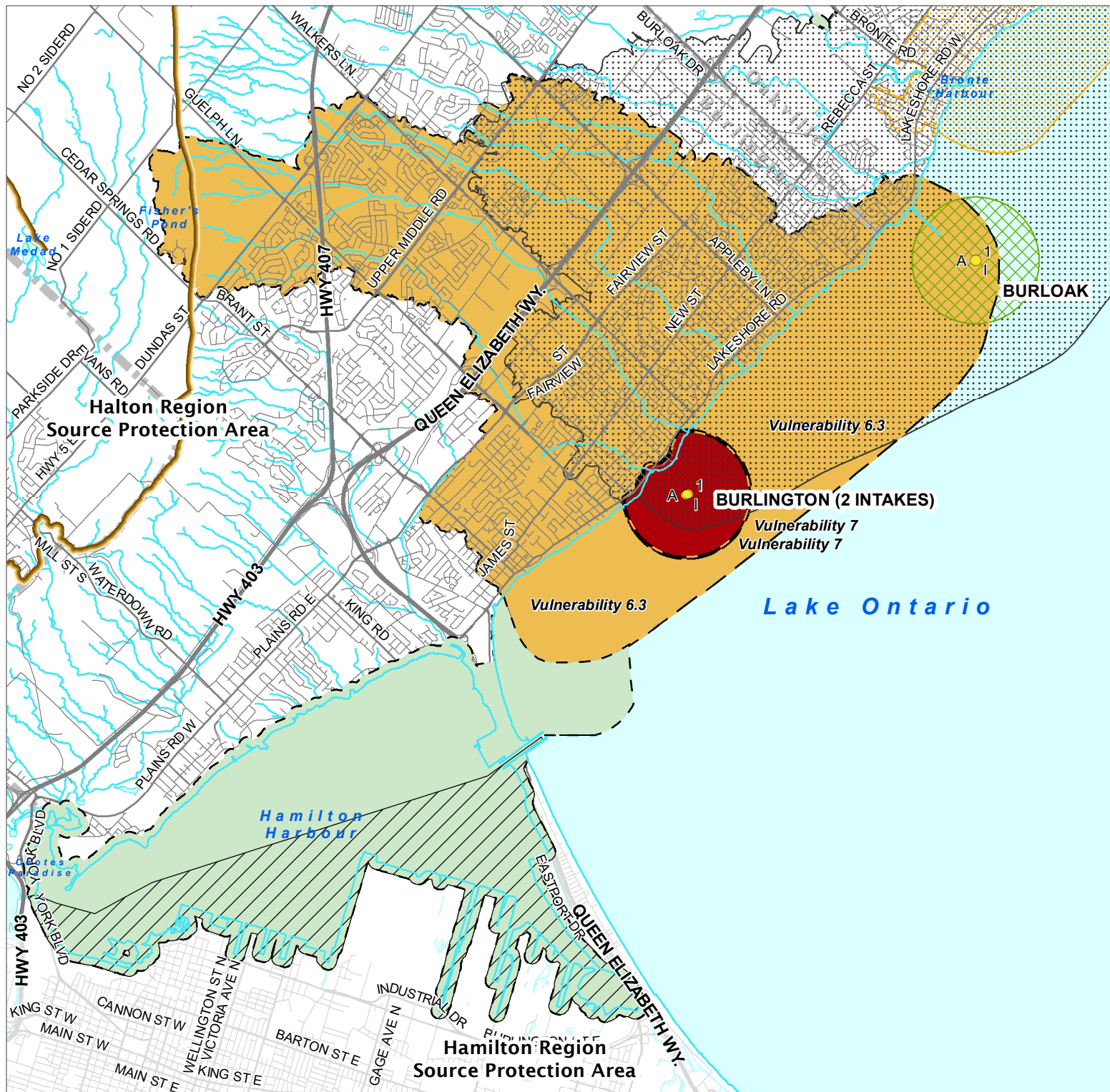
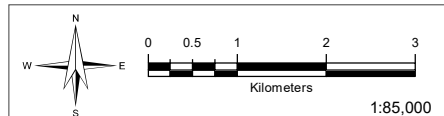


Figure 6.3

# **Burloak Proposed Intake Protection Zones**

## **Legend**

- Source Protection Region
- Source Protection Area
- Upper Tier Municipality
- Lower Tier Municipality
- Niagara Escarpment

## **Roads**

- Highway
- Regional
- Local

Hydrography

Waterbody

Type A Intake - Great Lake

## **Proposed Intake Protection Zones (IPZs)**

- IPZ-1
- Proposed IPZ-2
- Proposed IPZ-2 - Burlington
- Proposed IPZ-2 - Oakville
- IPZ-1 - Burlington
- IPZ-1 - Oakville
- IPZ-3

**DRAFT**

Intake Class 1 - Drinking Water System Class

I - Water System Type

Source : Halton Region / Lake Ontario Collaborative /  
Stantec Consulting Inc. as amended 2010.

Projection : UTM NAD 83 Zone 17

Date : August 2021

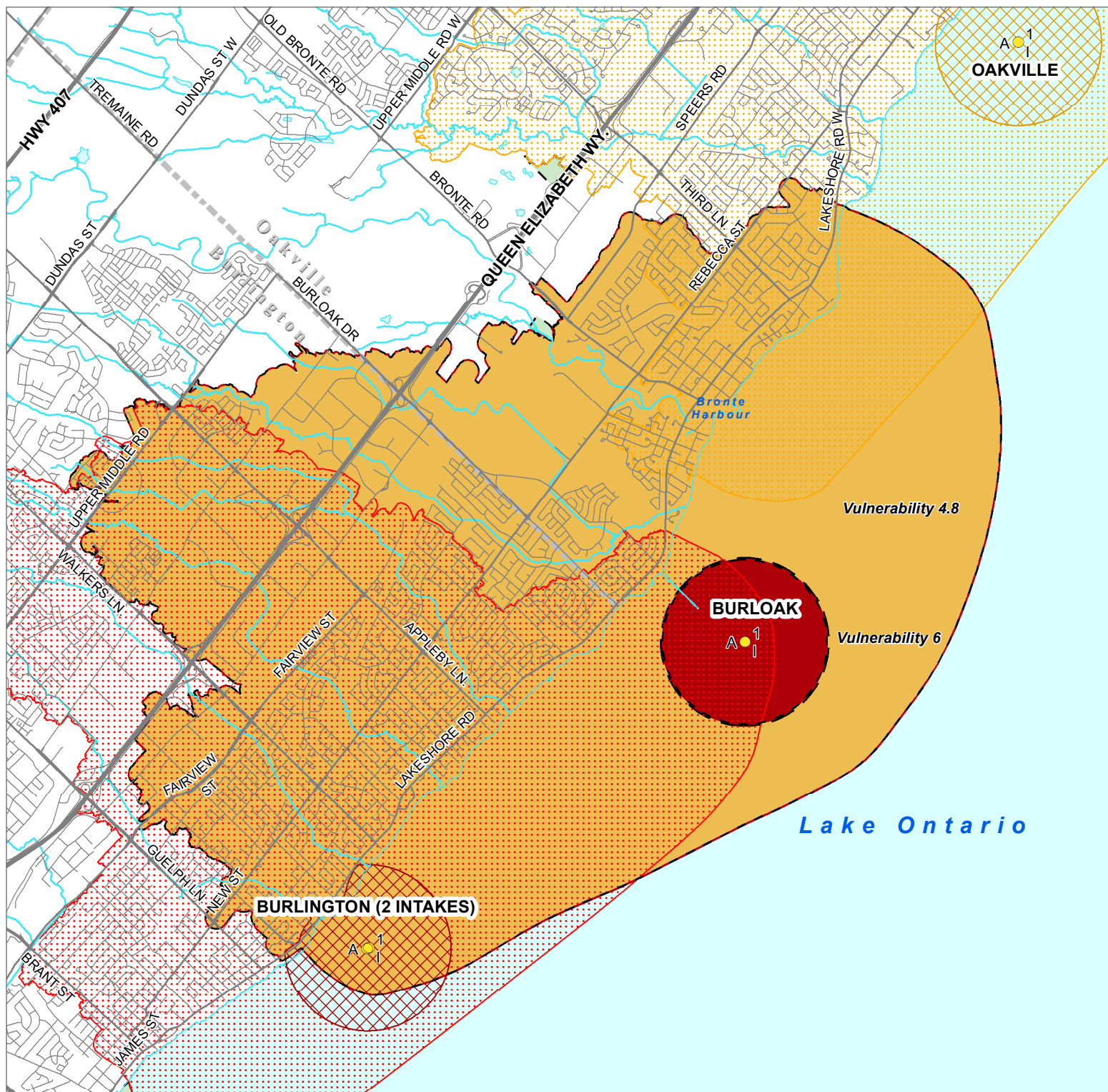
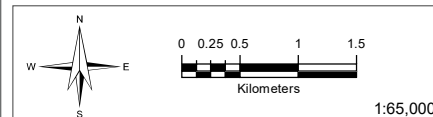




Figure 6.4

# **Oakville** **Proposed Intake Protection Zones**

## **Legend**

- Source Protection Region
- Source Protection Area
- Upper Tier Municipality
- Lower Tier Municipality
- Niagara Escarpment

## **Roads**

- Highway
- Regional
- Local

- Hydrography
- Waterbody

- Type A Intake - Great Lakes

## **Proposed Intake Protection Zones (IPZs)**

- IPZ-1
- Proposed IPZ-2
- Proposed IPZ-2 - Burlington
- Proposed IPZ-2 - Burloak
- IPZ-3

**DRAFT**

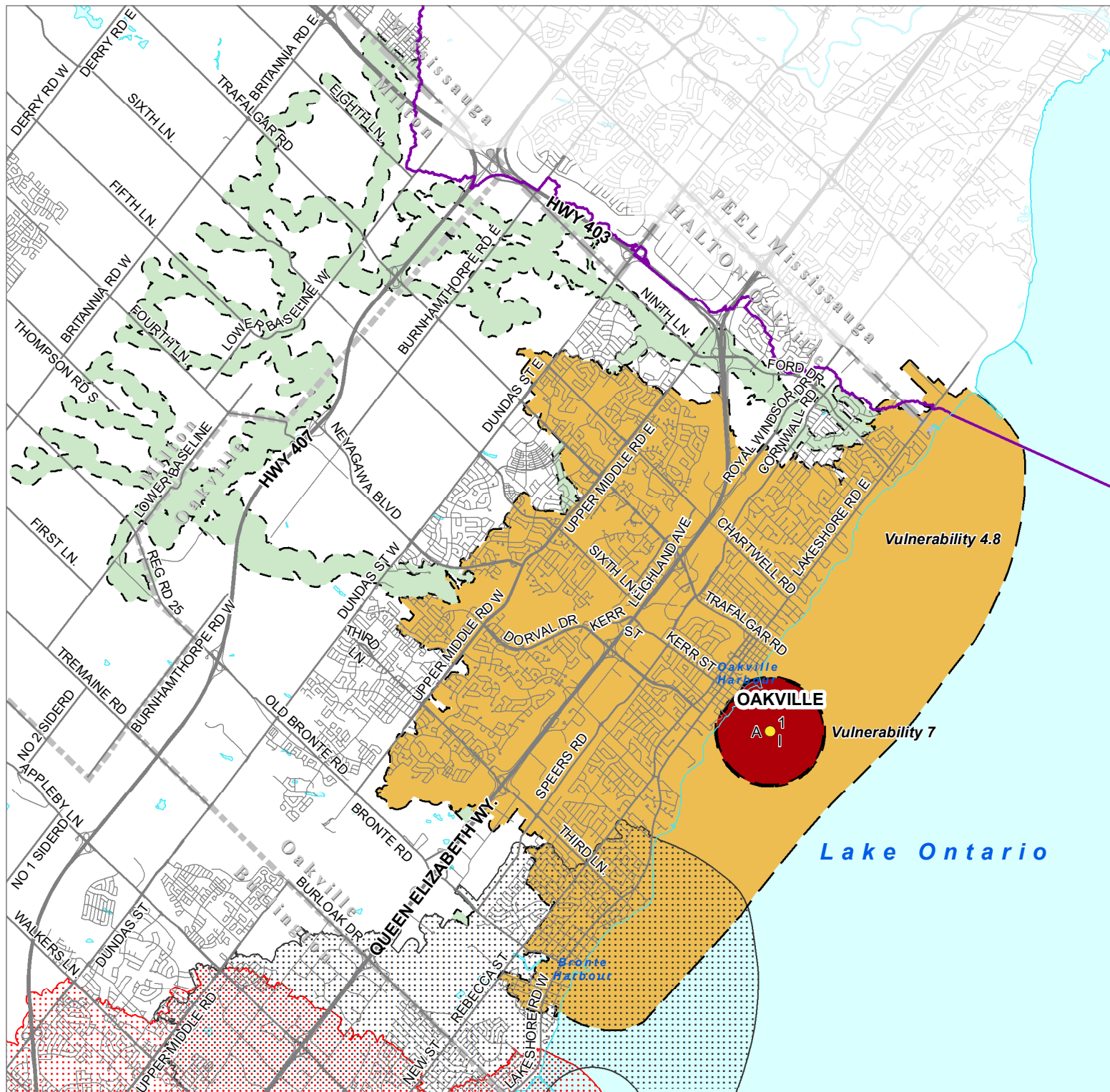
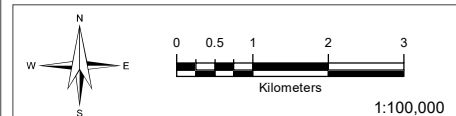
Intake Class 1 - Drinking Water System Class

I - Water System Type

Source : Halton Region / Lake Ontario Collaborative / Stantec Consulting Inc. as amended 2010.

Projection : UTM NAD 83 Zone 17

Date : August 2021












**Figure 6.5**

**Halton Region  
Creek and Storm Sewer Network**




**Legend**


-  Source Protection Region
-  Source Protection Area
-  Upper Tier Municipality
-  Lower Tier Municipality
-  Niagara Escarpment

**Roads**




-  Highway
-  Regional

**Hydrography**

-  Hydrologic Connection
-  Regulated Watercourse
-  Waterbody


-  Type A Intake - Great Lakes

**Proposed Intake Protection Zones (IPZs)**

-  IPZ-1
-  Proposed IPZ-2\*
-  Storm Sewers

**DRAFT**

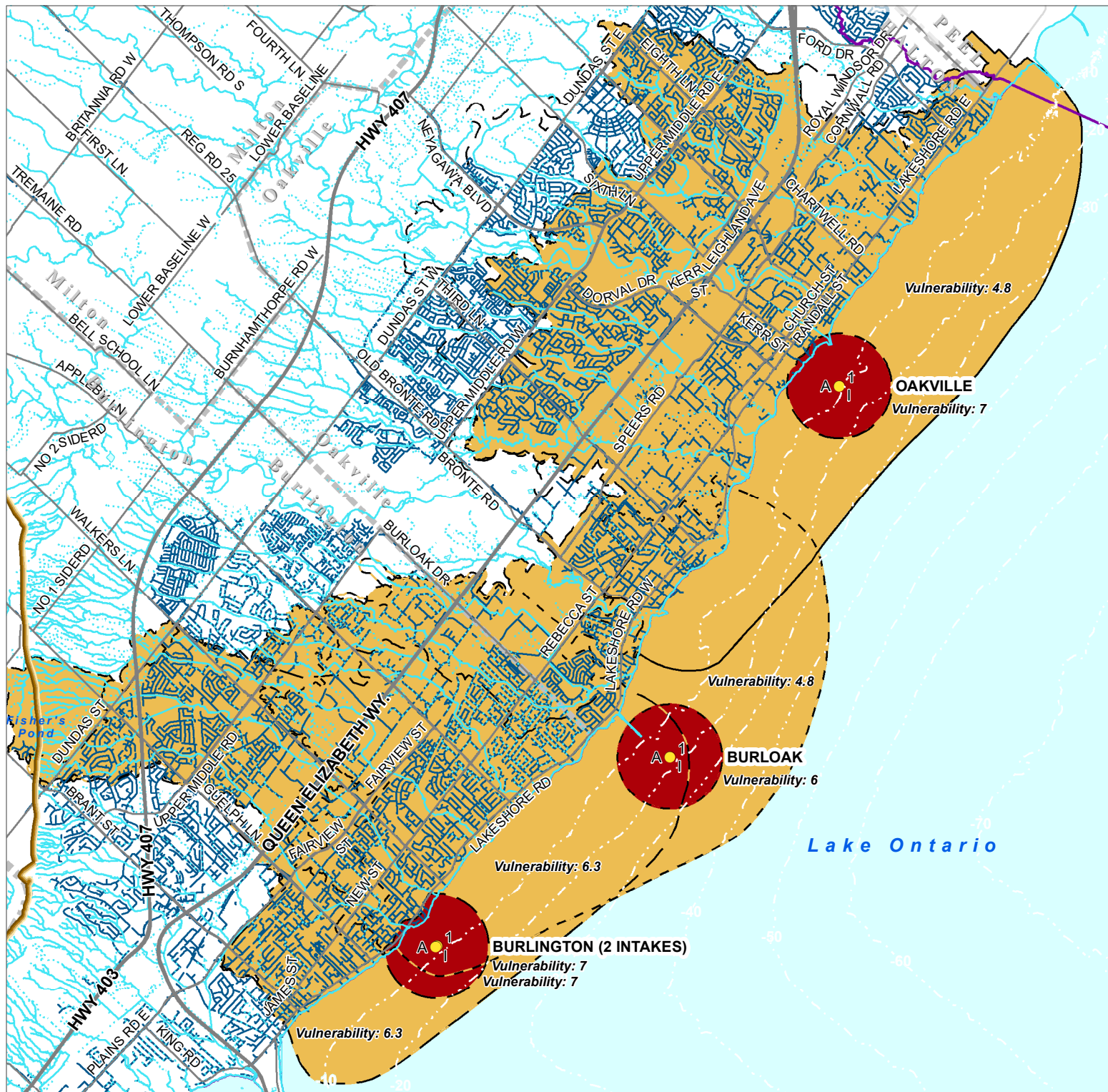
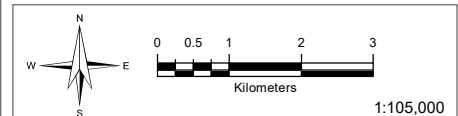
Intake Class 1 - Drinking Water System Class

 1 - Water System Type

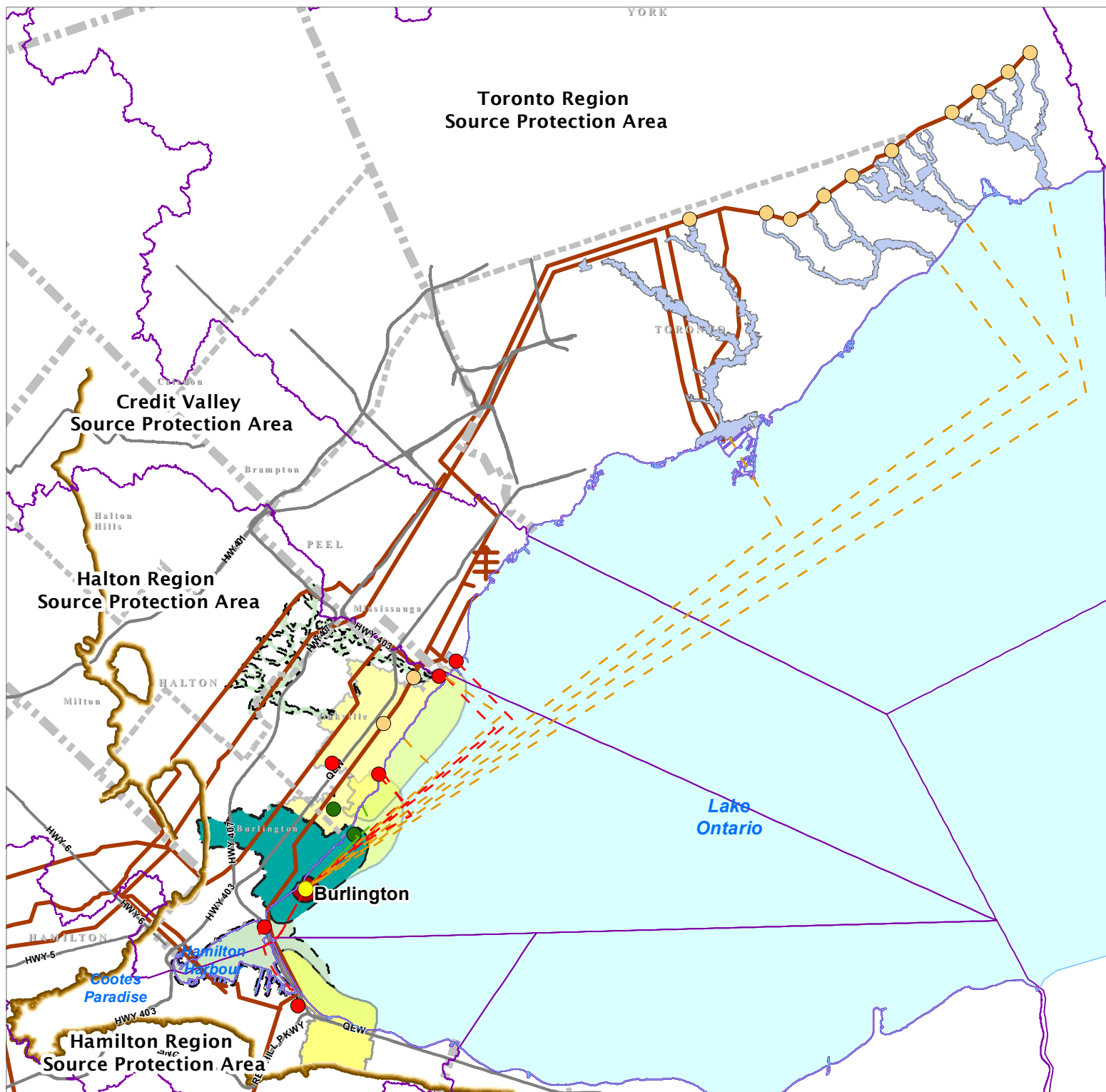
Source : Halton Region / Lake Ontario Collaborative /  
Stantec Consulting Inc. as amended 2010.

Projection : UTM NAD 83 Zone 17

Date : June 2021



**Figure 6.6** Event-based Modelling  
Proposed Intake Protection Zones,  
Significant Threats  
Burlington Intakes



**Legend**

- Source Protection Area
- Niagara Escarpment
- Highway
- Liquid Hydrocarbon Pipeline
- Waterbody
- Type A Intake - Great Lakes
- IPZ-1
- Proposed IPZ 2
- Other IPZ(Proposed or Current)\*
- IPZ-3
- Event Based Areas

**Event-Based Modelling Significant Threats**

- Establishment and Operation of Liquid Hydrocarbon Pipeline
- Fuel Handling and Storage
- Sewage System Operation

**Activity Impacting Intakes**

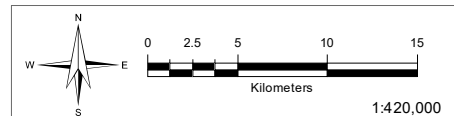
- Establishment and Operation of Liquid Hydrocarbon Pipeline
- Fuel Handling and Storage
- Sewage System Operation

***DRAFT***

\*Note : This figure shows the proposed IPZ-2s for Burlington, Burloak, Oakville, and the current IPZ-2 for Woodward

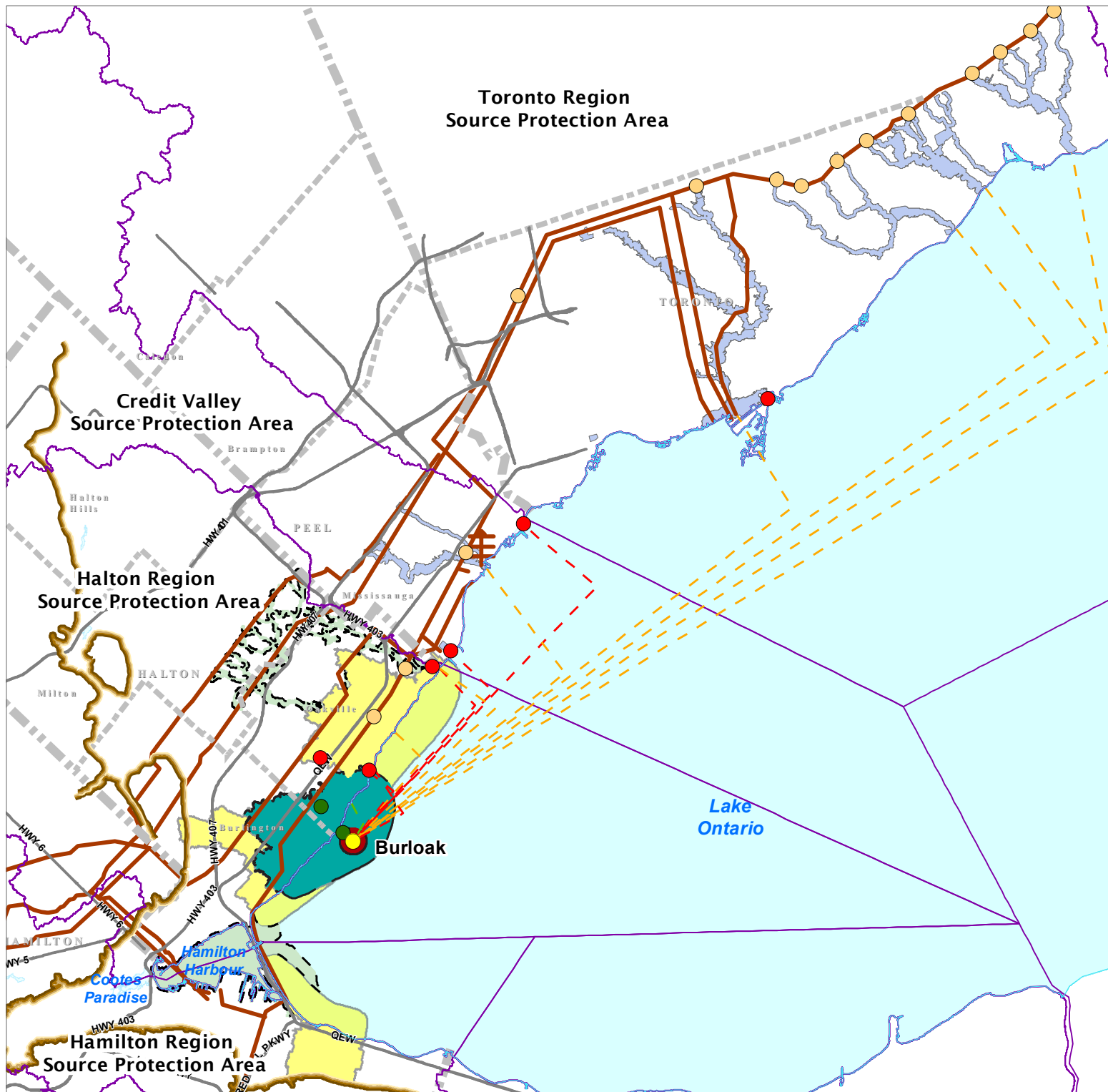
Projection : UTM NAD 83 Zone 17

Date : February 2021





**Figure 6.7** Event-based Modelling  
Proposed Intake Protection Zones,  
Significant Threats  
Burloak Intake



### Legend

- Source Protection Area
- Niagara Escarpment
- Highway
- Liquid Hydrocarbon Pipeline
- Waterbody
- Type A Intake - Great Lakes
- IPZ-1
- Proposed IPZ-2
- IPZ-3
- Event Based Areas
- Other IPZ ( Proposed or Current)\*

### Event-Based Modelling Significant Threats

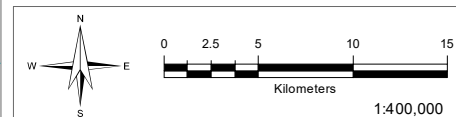
- Establishment and Operation of Liquid Hydrocarbon Pipeline
  - Fuel Handling and Storage
  - Sewage System Operation
- Activity Impacting Intakes
- Establishment and Operation of Liquid Hydrocarbon Pipeline
  - Fuel Handling and Storage
  - Sewage System Operation

**DRAFT**

\*Note : This figure shows the proposed IPZ-2s for Burlington, Burloak, Oakville, and the current IPZ-2 for Woodward

Projection : UTM NAD 83 Zone 18









Date : February 2021









**Figure 6.8** Event-based Modelling  
Proposed Intake Protection Zones,  
Significant Threats  
Oakville Intake





**Legend**

-  Source Protection Area
-  Niagara Escarpment
-  Highway
-  Liquid Hydrocarbon Pipeline
-  Waterbody
-  Type A Intake - Great Lakes
-  IPZ-1
-  Proposed IPZ-2
-  IPZ-3
-  Other IPZ(Proposed or Current)\*
-  Event Based Areas

**Event-Based Modelling Significant Threats**

-  Establishment and Operation of Liquid Hydrocarbon Pipeline
-  Fuel Handling and Storage
-  Sanitary Trunk Sewer Break
-  Sewage System Operation

**Activity Impacting Intakes**

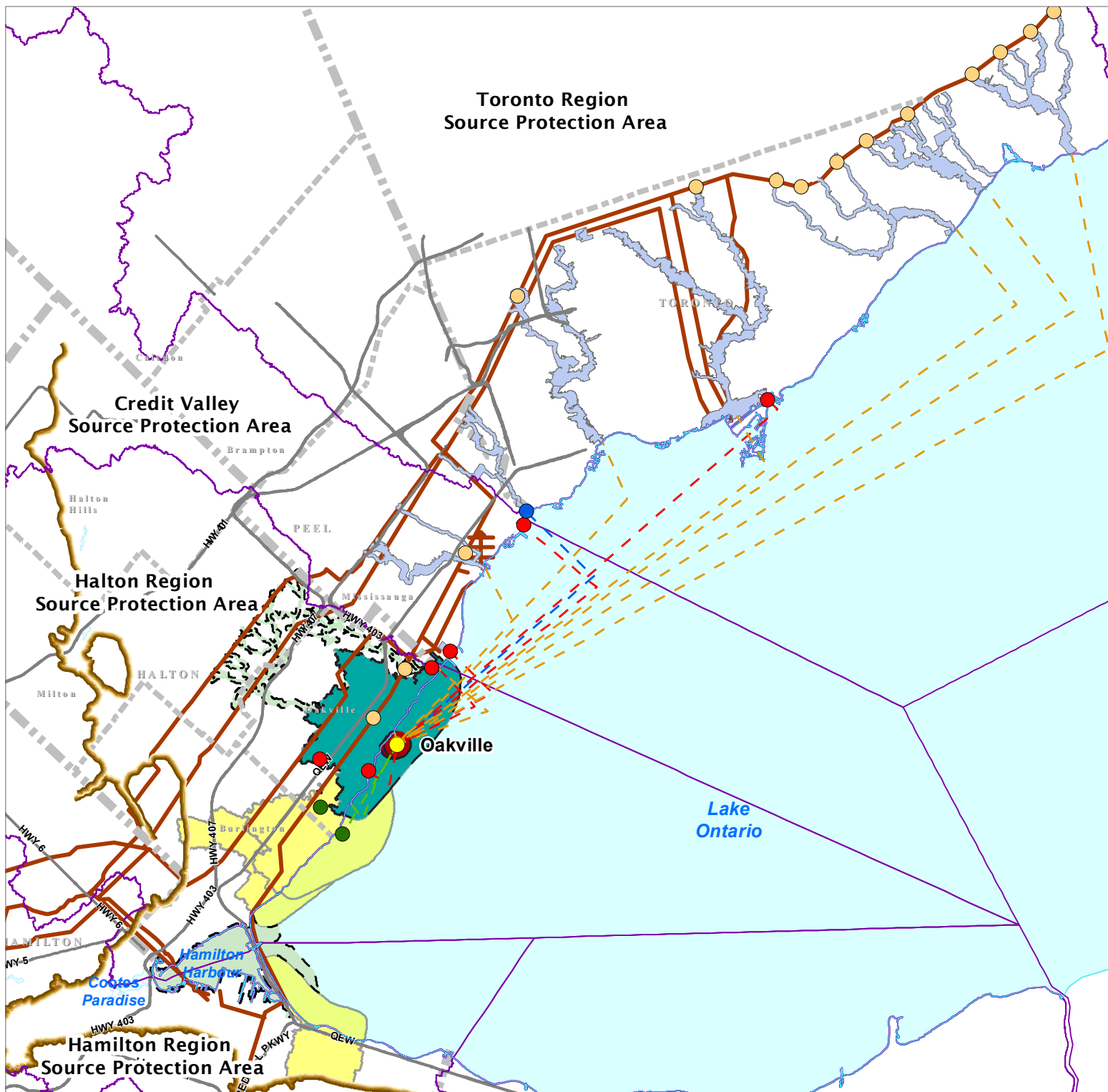
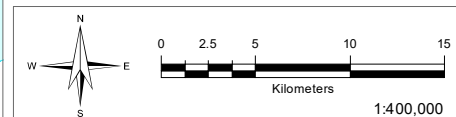
-  Establishment and Operation of Liquid Hydrocarbon Pipeline
-  Fuel Handling and Storage
-  Sanitary Trunk Sewer Break
-  Sewage System Operation

**DRAFT**

\*Note : This figure shows the proposed IPZ-2s for Burlington, Burloak, Oakville, and the current IPZ-2 for Woodward

Projection : UTM NAD 83 Zone 17









Date : February 2021




**Figure 6.9**

# **Intrinsic Groundwater Susceptibility**

## **Legend**

-  Source Protection Area
-  Watersheds
-  Subwatersheds
-  Upper Tier Municipality
-  Lower Tier Municipality
-  Niagara Escarpment
-  Highway
-  Waterbody

## **Intrinsic Susceptibility Index (ISI)**

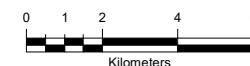
-  High
-  Medium
-  Low

**DRAFT**

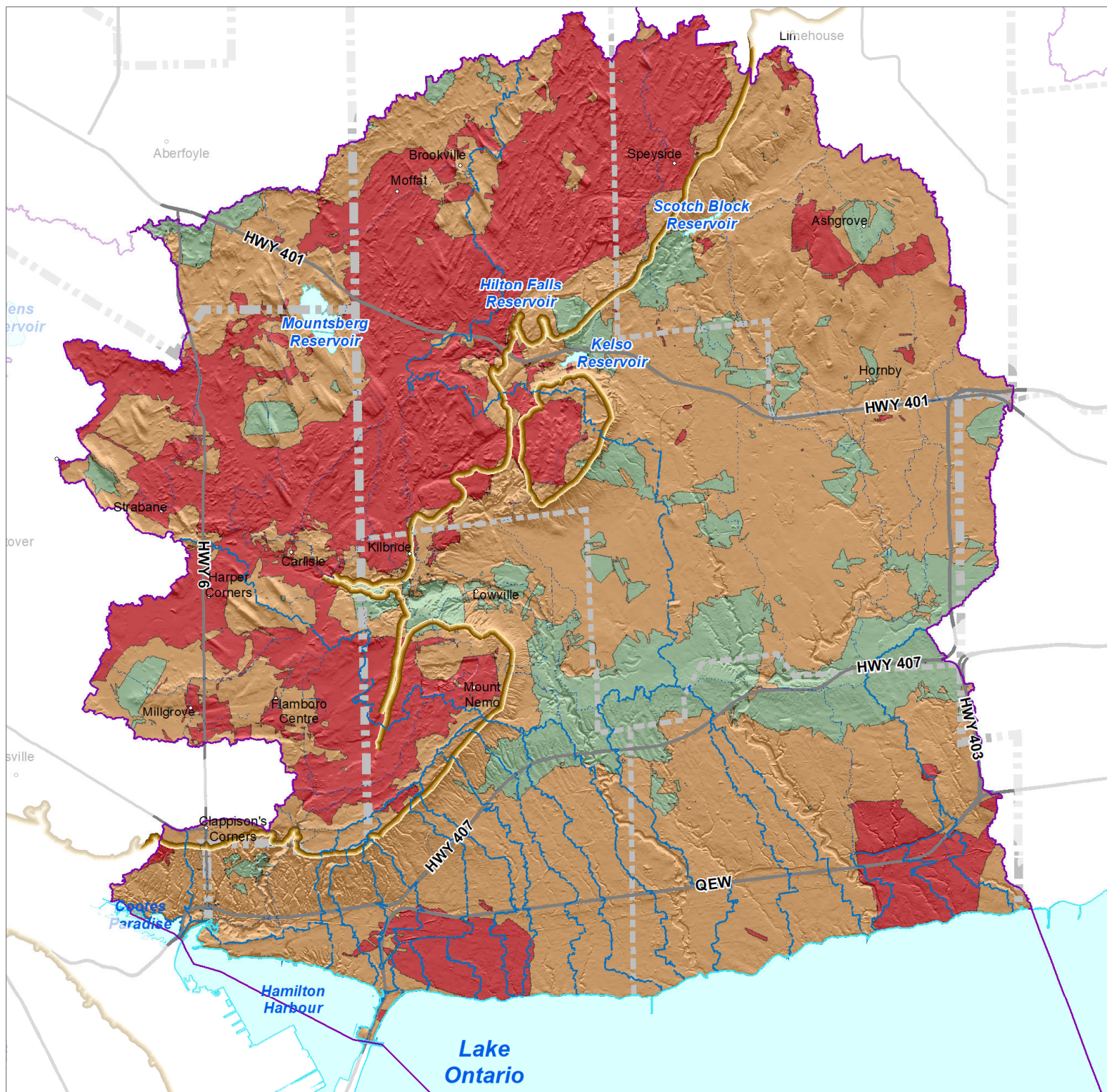
Source : Conservation Halton / Ontario Geological Survey, Groundwater Resources Improvement Project (2006).

Projection : UTM NAD 83 Zone 17

Date : March 2021



1:200,000














**Figure 6.10**

**Highly Vulnerable Aquifers (HVA)**

**Legend**

-  Source Protection Area
-  Watersheds
-  Subwatersheds
-  Upper Tier Municipality
-  Lower Tier Municipality
-  Niagara Escarpment
-  Highway
-  Waterbody
-  Highly Vulnerable Aquifer (Vulnerability = 6)

**DRAFT**

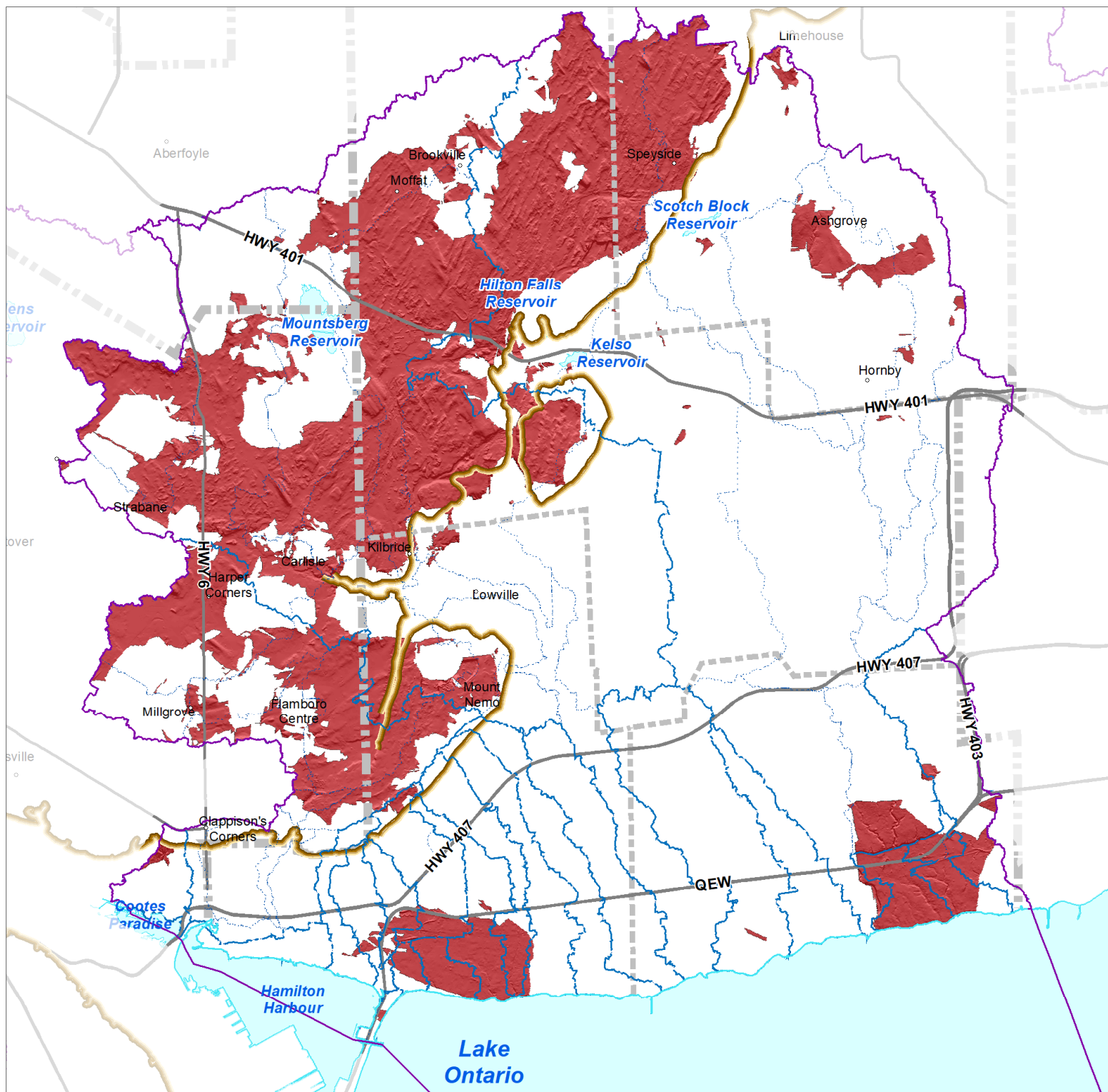
Source : Conservation Halton / Ontario Geological Survey, Groundwater Resources Improvement Project (2006).

Projection : UTM NAD 83 Zone 17

Date : March 2021












1:200,000



**Figure 6.12**

**Significant Groundwater Recharge Area**

**Legend**

-  Source Protection Area
-  Watersheds
-  Subwatersheds
-  Upper Tier Municipality
-  Lower Tier Municipality
-  Niagara Escarpment
-  Highway
-  Waterbody
-  Significant Groundwater Recharge Area (SGRA)

***DRAFT***

Source : Conservation Halton / Ontario Geological Survey, Groundwater Resources Improvement Project (2005). Earthfx PRMS (2010).

Projection : UTM NAD 83 Zone 17

Date : March 2021



1:200,000



Conservation  
**Halton**



A Healthy Watershed for Everyone

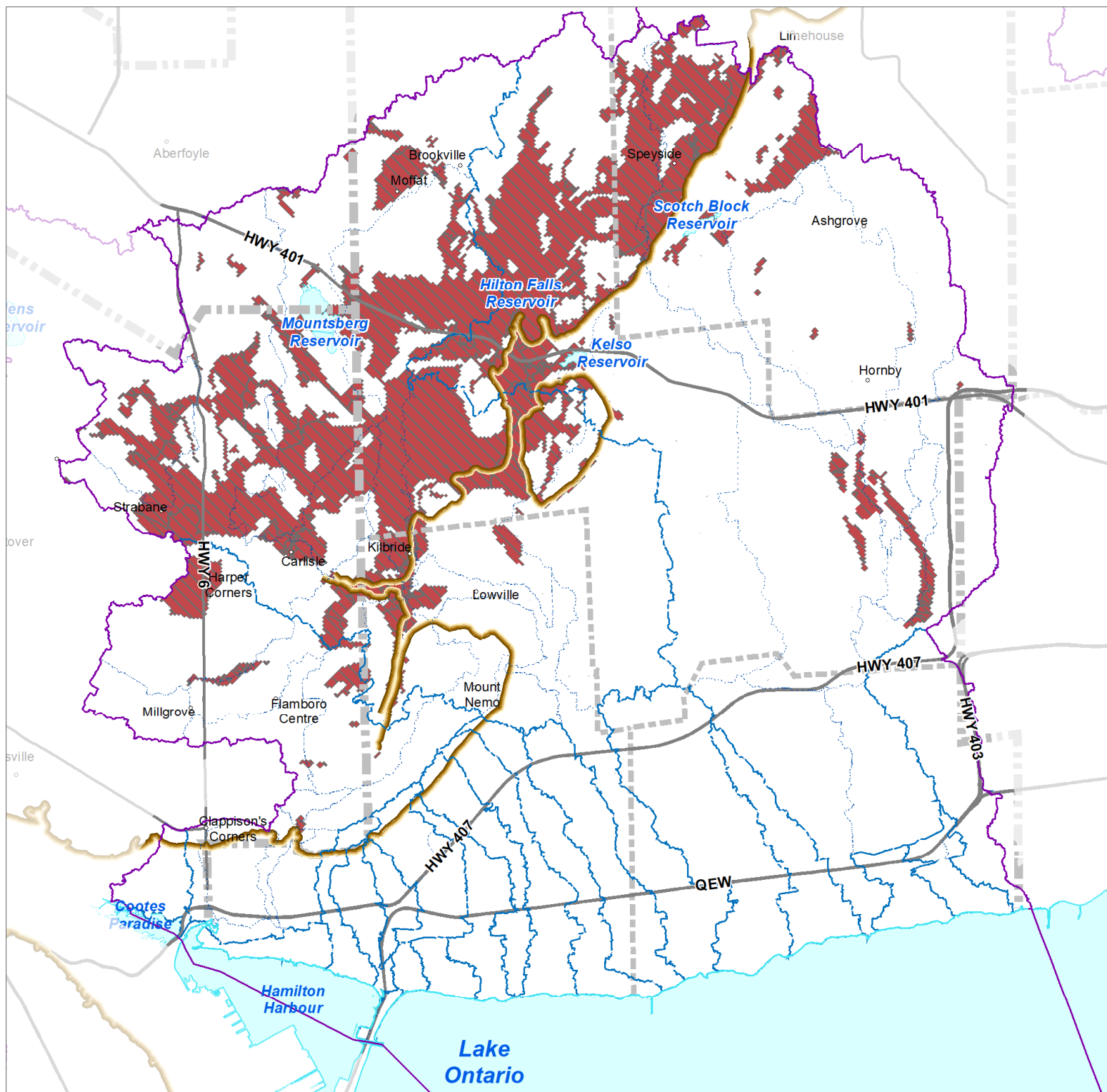










Figure 6.13




## Kelso Wellhead Protection Area

### Legend





-  Watersheds
-  Subwatersheds
-  Lower Tier Municipality

### Roads


-  Highway
-  Regional
-  Local

-  Hydrography
-  Waterbody
-  Municipal Well

### Wellhead Protection Area (WHPA)

-  A (100 metre)
-  B (2 year)
-  C (5 year)
-  D (25 year)

**DRAFT**

- Well ID    1 - Drinking Water System Class  
               I - Water System Type

Source : Halton Region / Earthfx Groundwater Model (2014).

Projection : UTM NAD 83 Zone 18

Date : March 2021

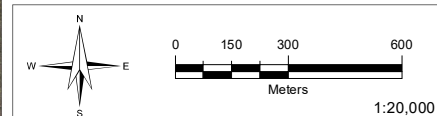




Figure 6.14

# **Walkers Line Wellhead Protection Area**

## **Legend**

- Watersheds
- Subwatersheds
- Roads**
  - Highway
  - Regional
  - Local
- Hydrography
- Waterbody
- Municipal Well

## **Wellhead Protection Area (WHPA)**

- A (100 metre)
- B (2 year)
- C (5 year)
- D (25 year)

**DRAFT**

Well ID 1 - Drinking Water System Class  
I - Water System Type

Source : Halton Region / Earthfx Groundwater Model (2010).

Projection : UTM NAD 83 Zone 17

Date : March 2021

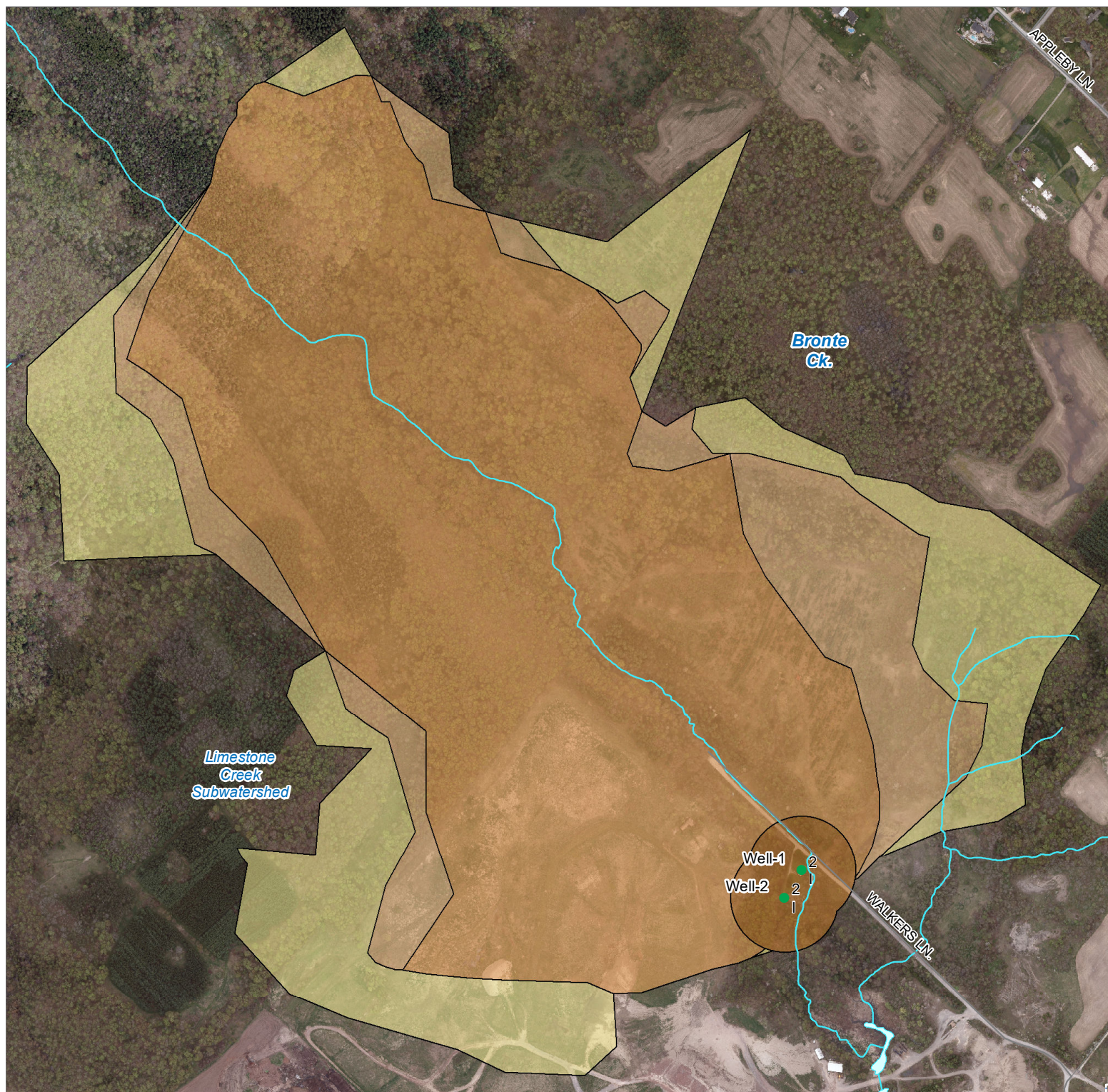
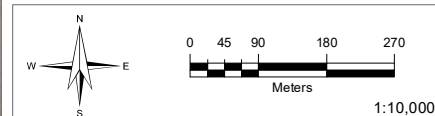




Figure 6.15

# **Campbellville Wellhead Protection Area**

## **Legend**

- Watersheds
- Subwatersheds
- Roads**
  - Highway
  - Regional
  - Local
- Hydrography
- Waterbody
- Municipal Well

## **Wellhead Protection Area (WHPA)**

- A (100 metre)
- B (2 year)
- C (5 year)
- D (25 year)

**DRAFT**

- Well ID    1 - Drinking Water System Class  
●    I - Water System Type

Source : Halton Region / Earthfx Groundwater Model (2014).

Projection : UTM NAD 83 Zone 17

Date : March 2021

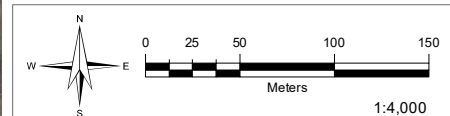




Figure 6.16

# **Freelton Wellhead Protection Areas**

## **Legend**

- Watersheds
- Subwatersheds
- Lower Tier Municipality

## **Roads**

- Highway
- Regional
- Local

- Hydrography
- Waterbody
- Municipal Well

## **Wellhead Protection Area (WHPA)**

- A (100 Metre)
- B (2 Years)
- C (5 Years)
- D (25 Years)

**DRAFT**

- Well ID    1 - Drinking Water System Class  
              I - Water System Type

Source : City of Hamilton / Earthfx Groundwater Model (2010).

Projection : UTM NAD 83 Zone 18

Date : May 2021

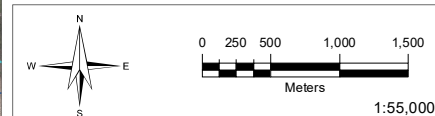




Figure 6.17

**Carlisle  
Wellhead Protection Area**

**Legend**

- Watersheds
- Subwatersheds
- Upper Tier Municipality

**Roads**

- Highway
- Regional
- Local

- Hydrography
- Waterbody
- Municipal Well

**Wellhead Protection Area (WHPA)**

- A (100 metre)
- B (2 year)
- C (5 year)
- D (25 year)
- E (2 hour surface)

**DRAFT**

- Well ID    1 - Drinking Water System Class  
 I - Water System Type

Source : City of Hamilton / Earthfx Groundwater Model (2010).

Projection : UTM NAD 83 Zone 18

Date : June 2021

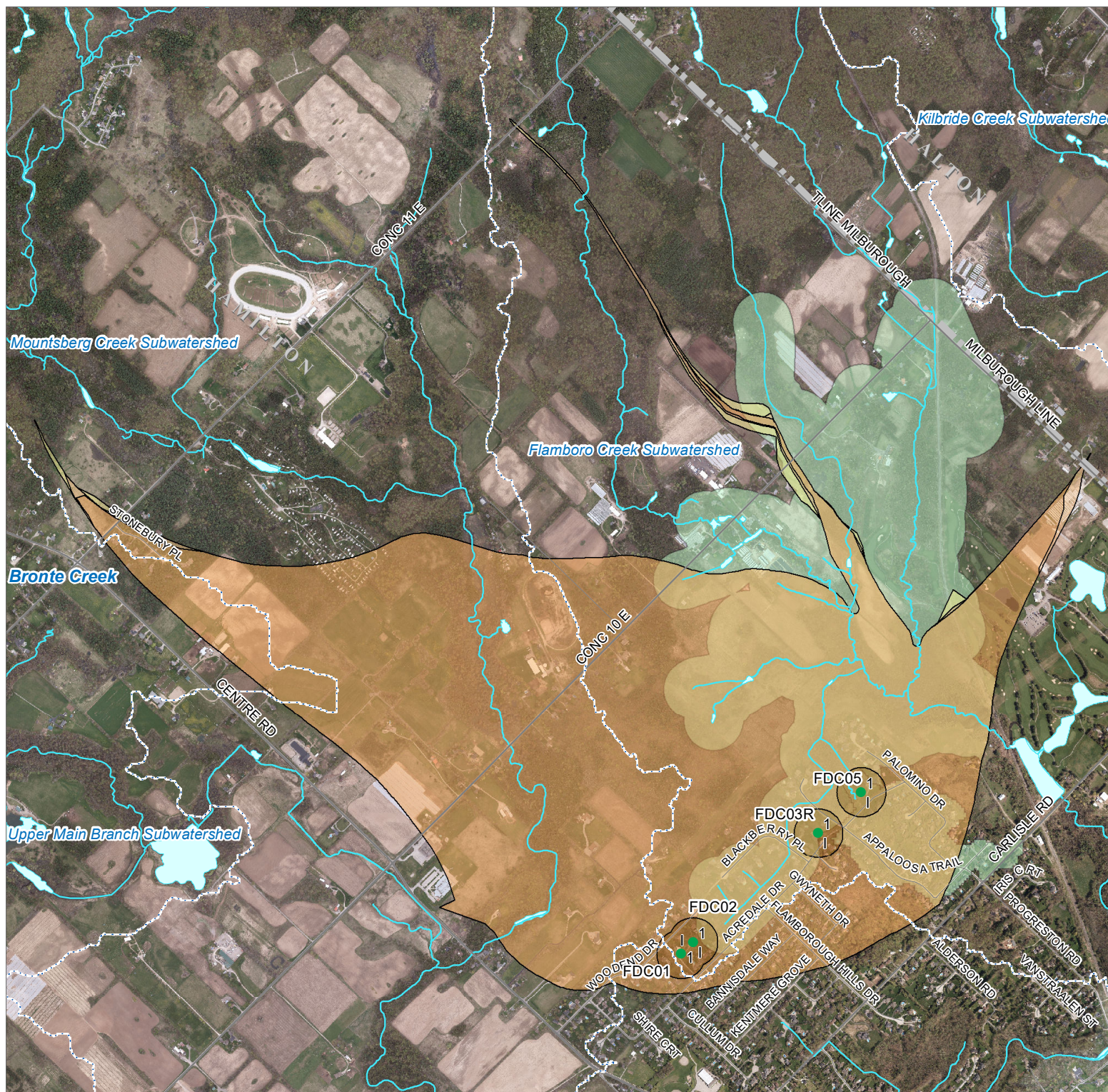
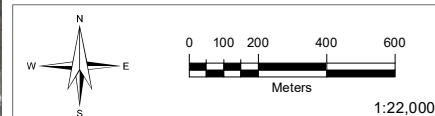




Figure 6.19

# **Kelso WHPA Vulnerability Score**

## **Legend**

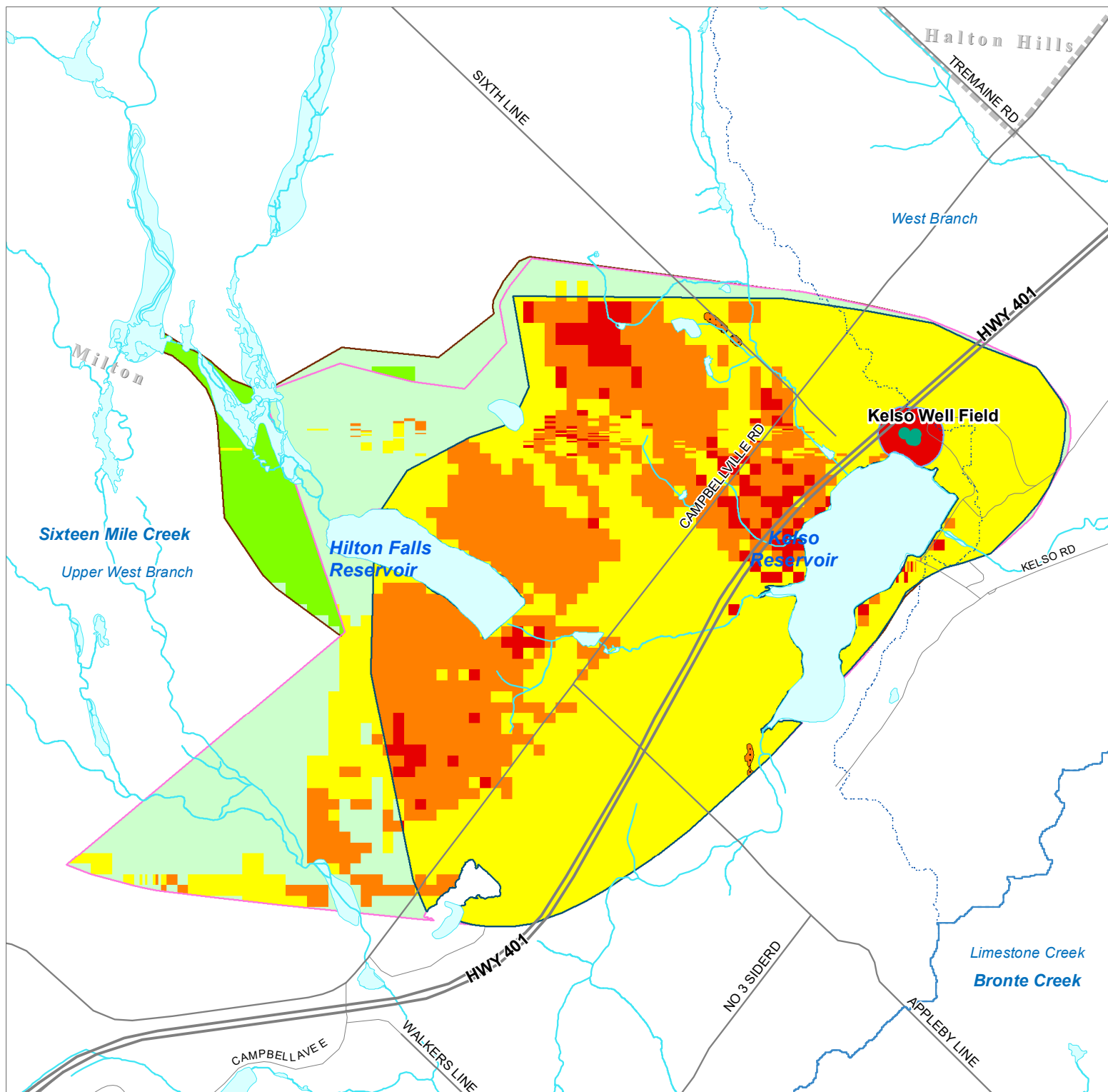
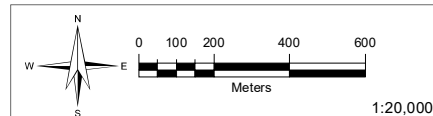
- Watersheds
- Subwatersheds
- Lower Tier Municipality
- Roads**
  - Highway
  - Regional
  - Local
- Hydrography
- Municipal Well
- WHPA Boundary**
  - A
  - B
  - C
  - D
- Transport Pathway Area of Influence
- Vulnerability Score**
  - 10 (High)
  - 8
  - 6
  - 4
  - 2 (Low)

***DRAFT***

Source : Earthfx Model (2014).

Projection : UTM NAD 83 Zone 18

Date : May 2021





**Figure 6.20**

**Walkers Line WHPA  
Vulnerability Score**

**Legend**

Watersheds

Subwatersheds

**Roads**

Highway

Regional

Local

Hydrography

Waterbody

Municipal Well

**WHPA Boundary**

A

B

C

D

Transport Pathway Area of Influence

**Vulnerability Score**

10 (High)

8

6

4

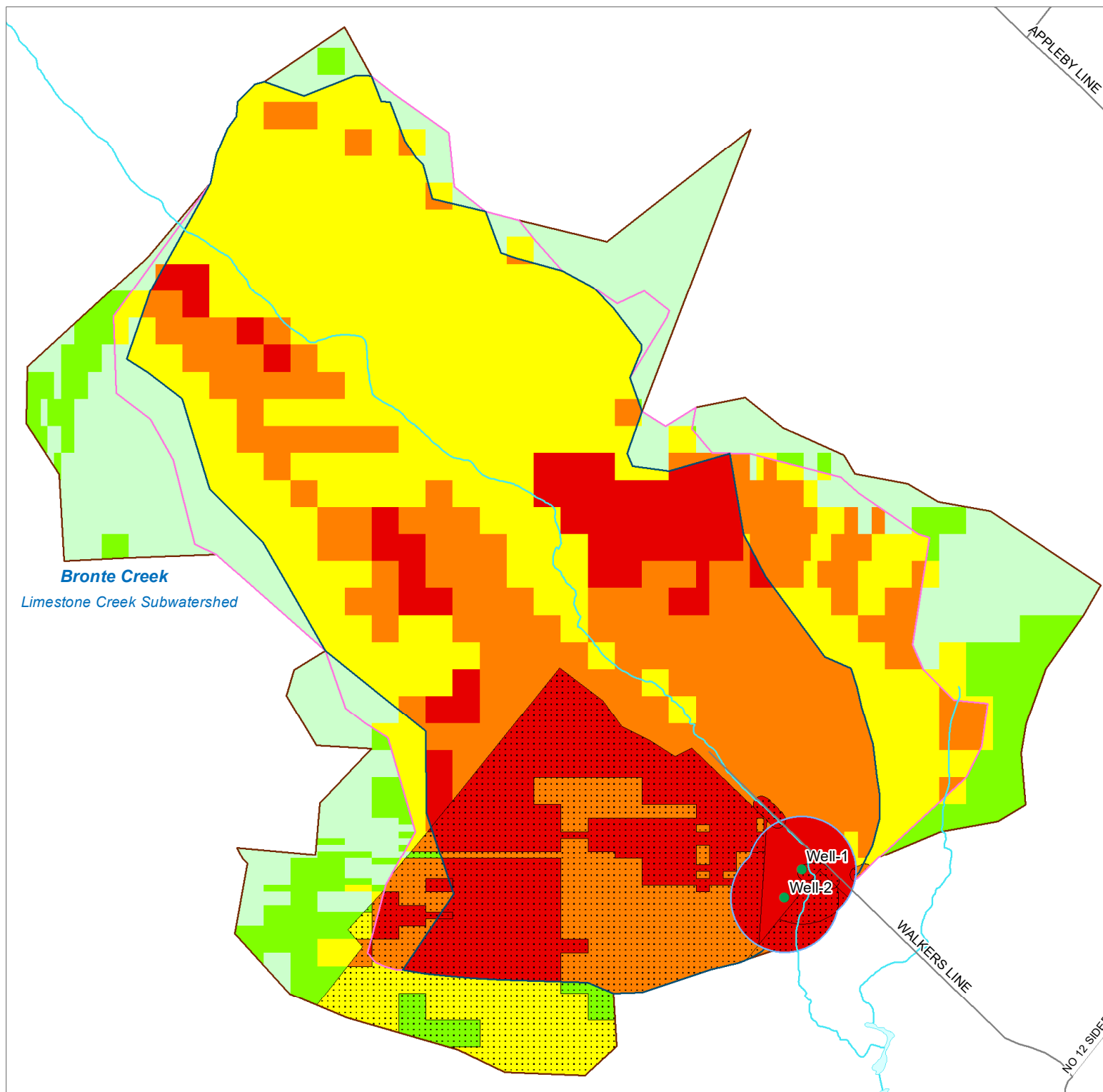
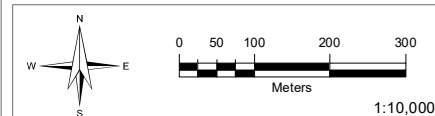
2 (Low)

**DRAFT**

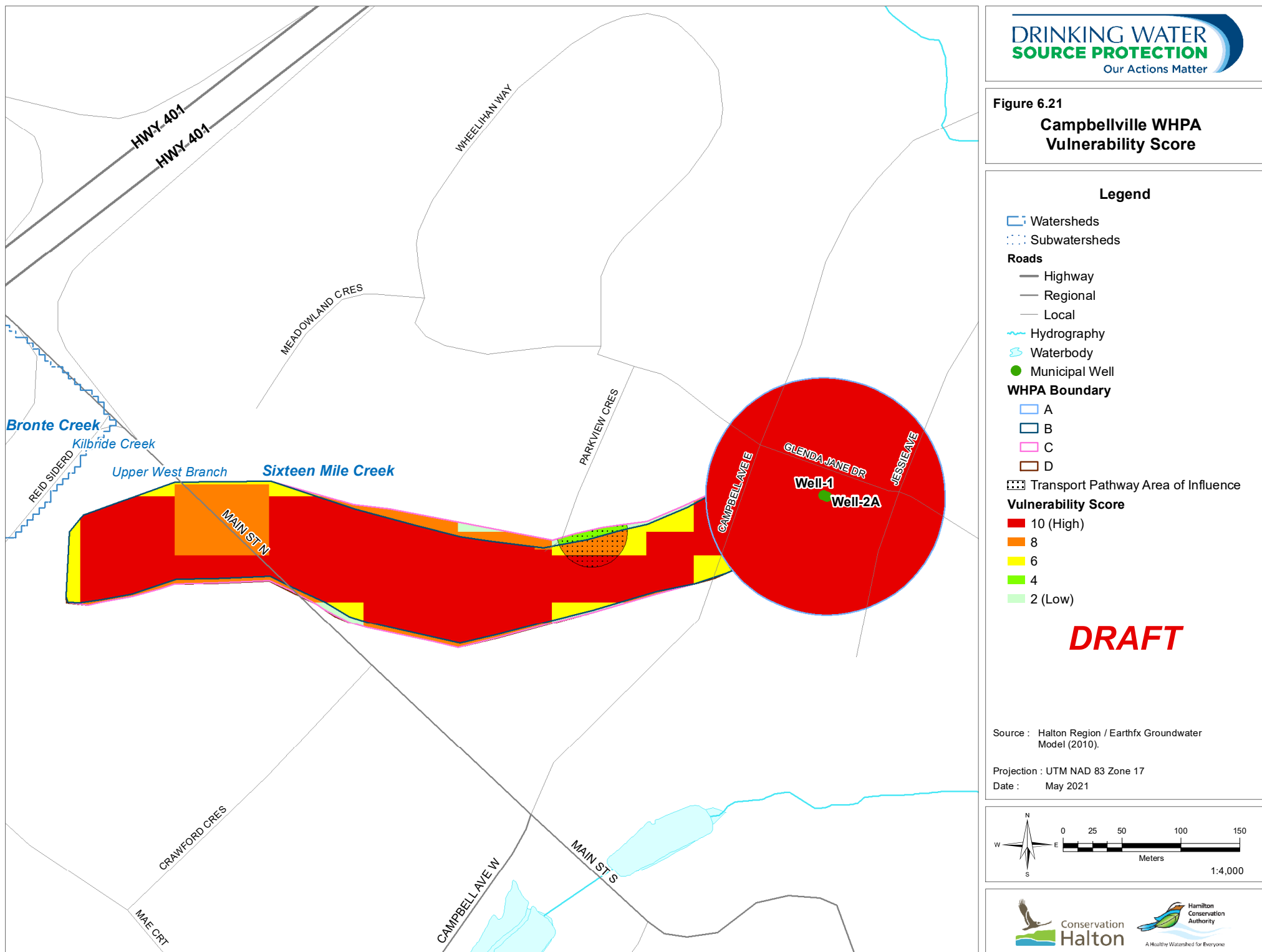
Source : Halton Region / Earthfx Groundwater  
Model (2010).

Projection : UTM NAD 83 Zone 17

Date : May 2021



**Figure 6.21**  
**Campbellville WHPA**  
**Vulnerability Score**





**Figure 6.22**

**Freelton (FDF01) - Vulnerability**

**Legend**

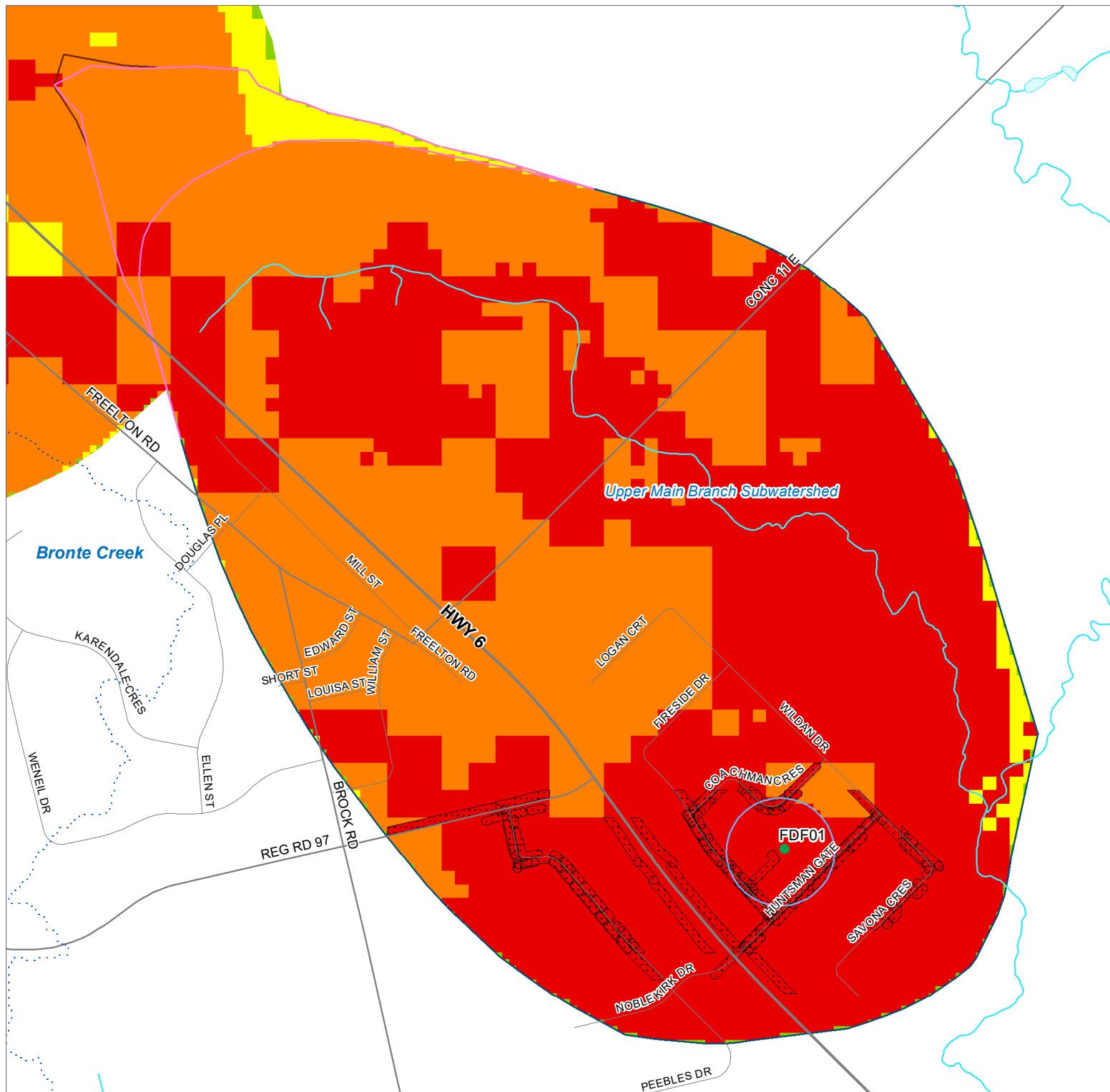
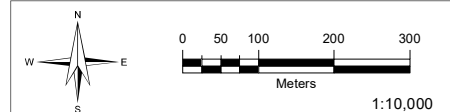
- Watersheds
- Subwatersheds
- Roads**
  - Highway
  - Regional
  - Local
- ~~~~~ Hydrography
- ~~~~~ Waterbody
- Municipal Well
- WHPA Boundary**
  - A
  - B
  - C
  - D
- Transport Pathway Area of Influence
- Vulnerability Score**
  - 10 (High)
  - 8
  - 6
  - 4
  - 2 (Low)

***DRAFT***

Source : City of Hamilton / Earthfx Groundwater Model (2010).

Projection : UTM NAD 83 Zone 18

Date : May 2021



**Figure 6.23**

**Freelton (FDF03) - Vulnerability**

**Legend**

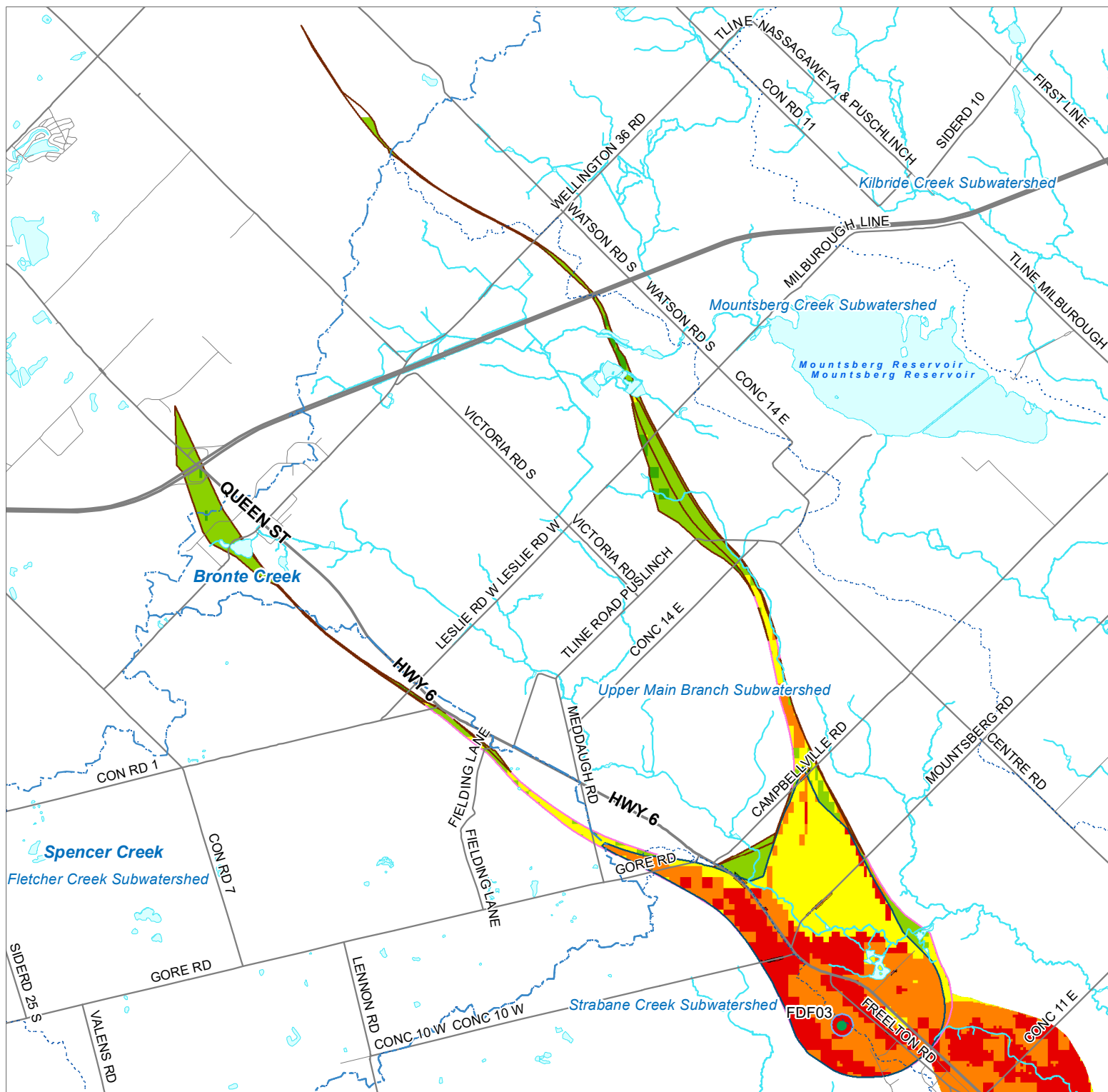
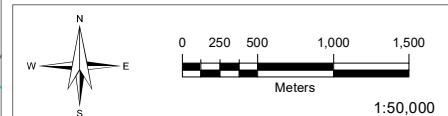
- Watersheds
- Subwatersheds
- Roads**
  - Highway
  - Regional
  - Local
- ~~~~~ Hydrography
- ~~~~~ Waterbody
- Municipal Well
- WHPA Boundary**
  - A
  - B
  - C
  - D
- Transport Pathway Area of Influence
- Vulnerability Score**
  - 10 (High)
  - 8
  - 6
  - 4
  - 2 (Low)

**DRAFT**

Source : City of Hamilton / Earthfx Groundwater Model (2010).

Projection : UTM NAD 83 Zone 17

Date : May 2021





**Figure 6.24**

**Carlisle WHPA  
Vulnerability Score**

**Legend**

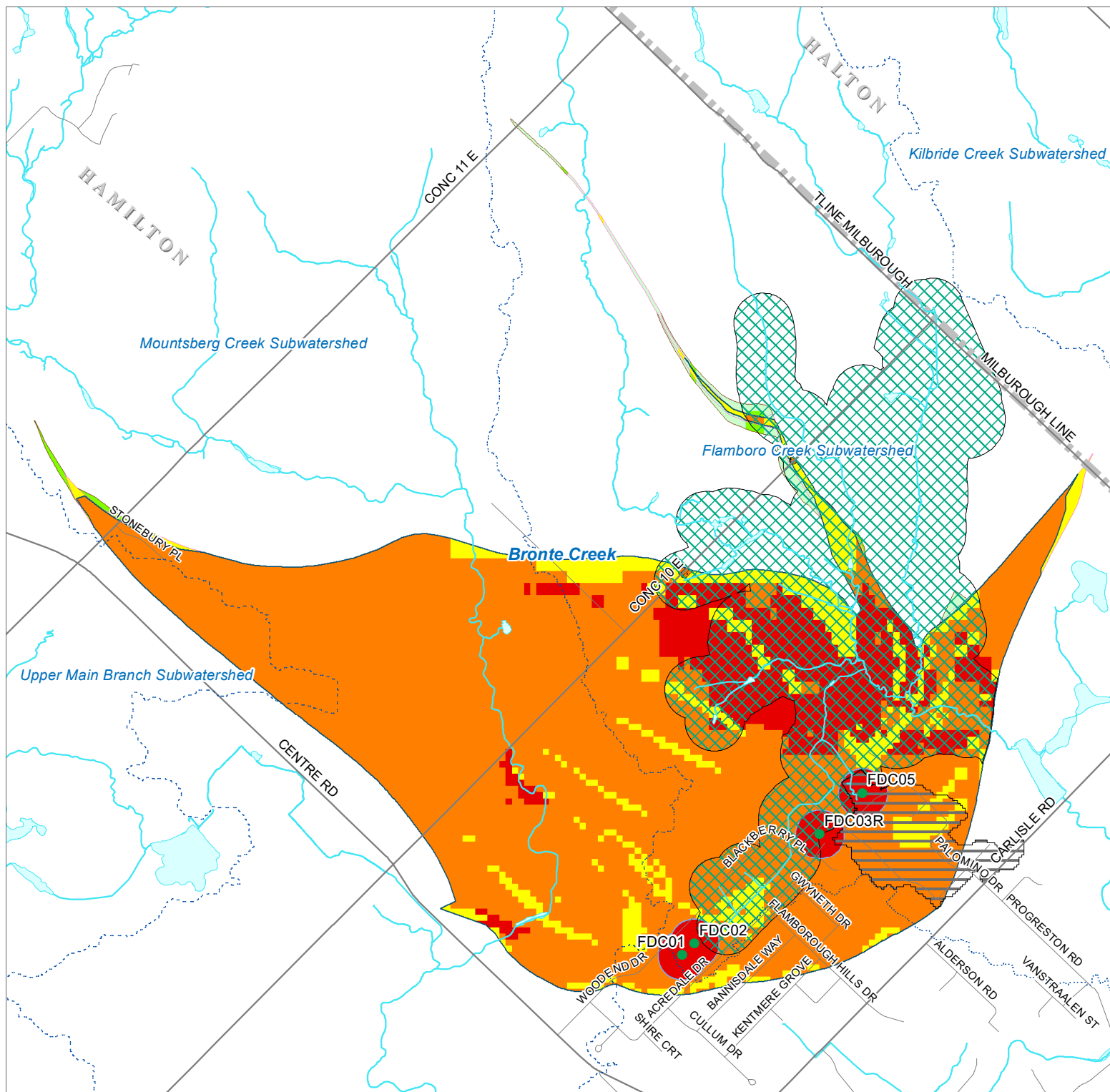
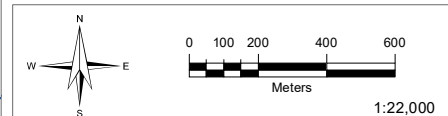
- Watersheds
- Subwatersheds
- Upper Tier Municipality
- Roads**
  - Highway
  - Regional
  - Local
- Hydrography
- Waterbody
- Municipal Well
- WHPA Boundary**
  - A
  - B
  - C
  - D
- WHPA-E Vulnerability**
  - 8.1 - E (2 hour surface - creeks)
  - 9 - E (2 hour surface - storm sewer)
- Transport Pathway Area of Influence
- Vulnerability Score**
  - 10 (High)
  - 8
  - 6
  - 4
  - 2 (Low)

**DRAFT**

Source : City of Hamilton / Earthfx Groundwater Model (2010).

Projection : UTM NAD 83 Zone 17

Date : May 2021



**Figure 6.25**

**Kelso - ISI Vulnerability**

**Legend**

- Watersheds
- Subwatersheds
- Upper Tier Municipality
- Roads**
  - Highway
  - Regional
  - Local
- Hydrography
- Waterbody
- Municipal Well
- ZoneName**
  - A
  - B
  - C
  - D
- Transport Pathway Area of Influence
- Intrinsic Susceptibility Index (ISI)**
- Vulnerability**
  - 10 (high)
  - 8
  - 6
  - 4
  - 2 (low)

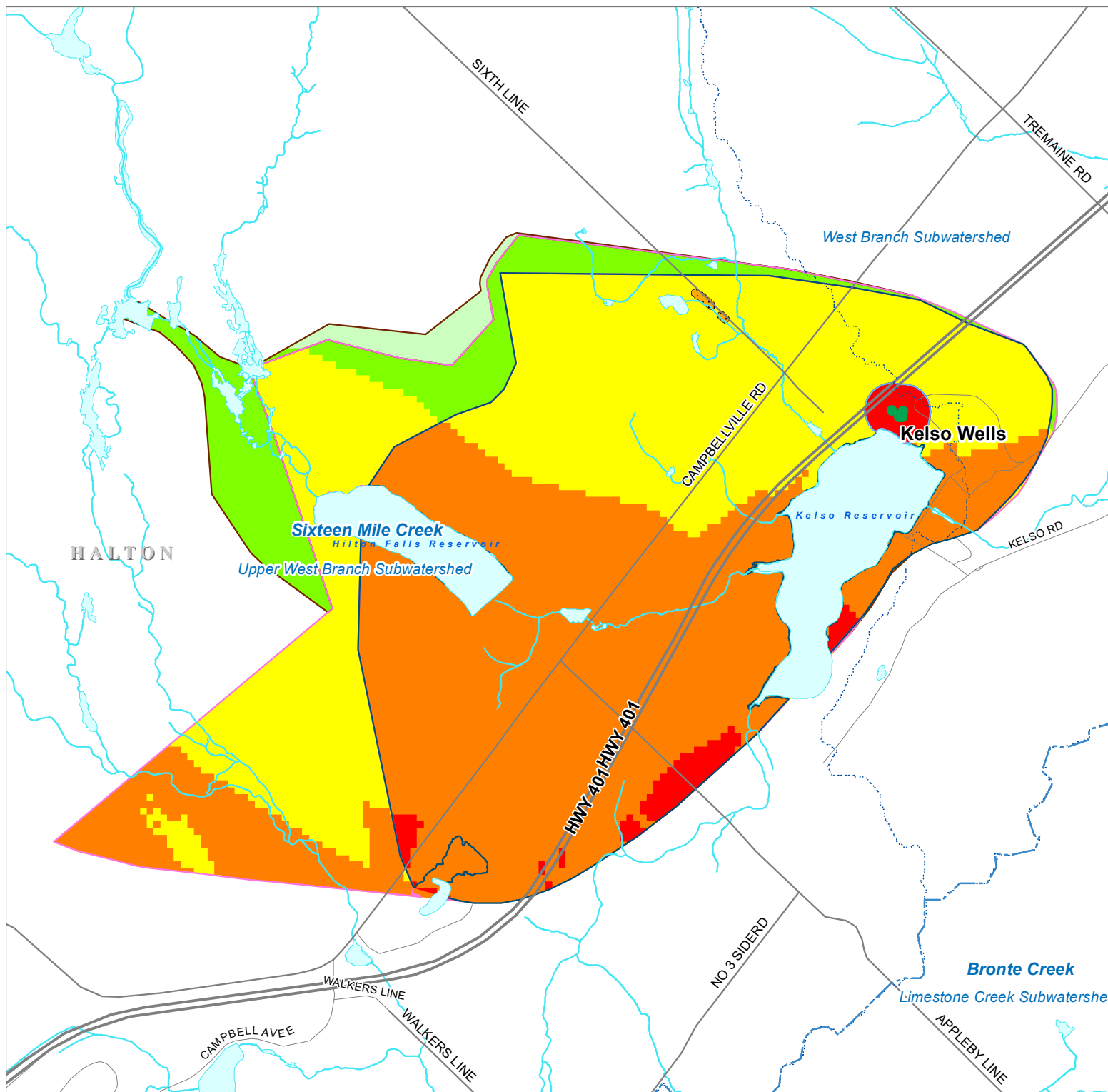
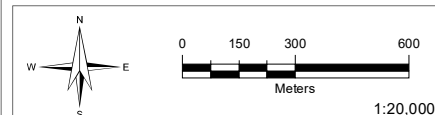
**DRAFT**

\*Surface to Well Advection Time (SWAT) was used to determine vulnerability score and threats assessment. See the SWAT map 6.19

Source : Region of Halton / Earthfx Groundwater Model (2014).

Projection : UTM NAD 83 Zone 17

Date : March 2021





**Figure 6.26**

**Walkers Line - ISI Vulnerability**

**Legend**

- Watersheds
- Subwatersheds
- Upper Tier Municipality
- Roads**
  - Highway
  - Regional
  - Local
- Hydrography
- Waterbody
- Municipal Well
- WHPA Boundary**
  - A
  - B
  - C
  - D
- Transport Pathway Area of Influence
- Intrinsic Susceptibility Index (ISI)**
- Vulnerability**
  - 10 (high)
  - 8
  - 6
  - 4
  - 2 (low)

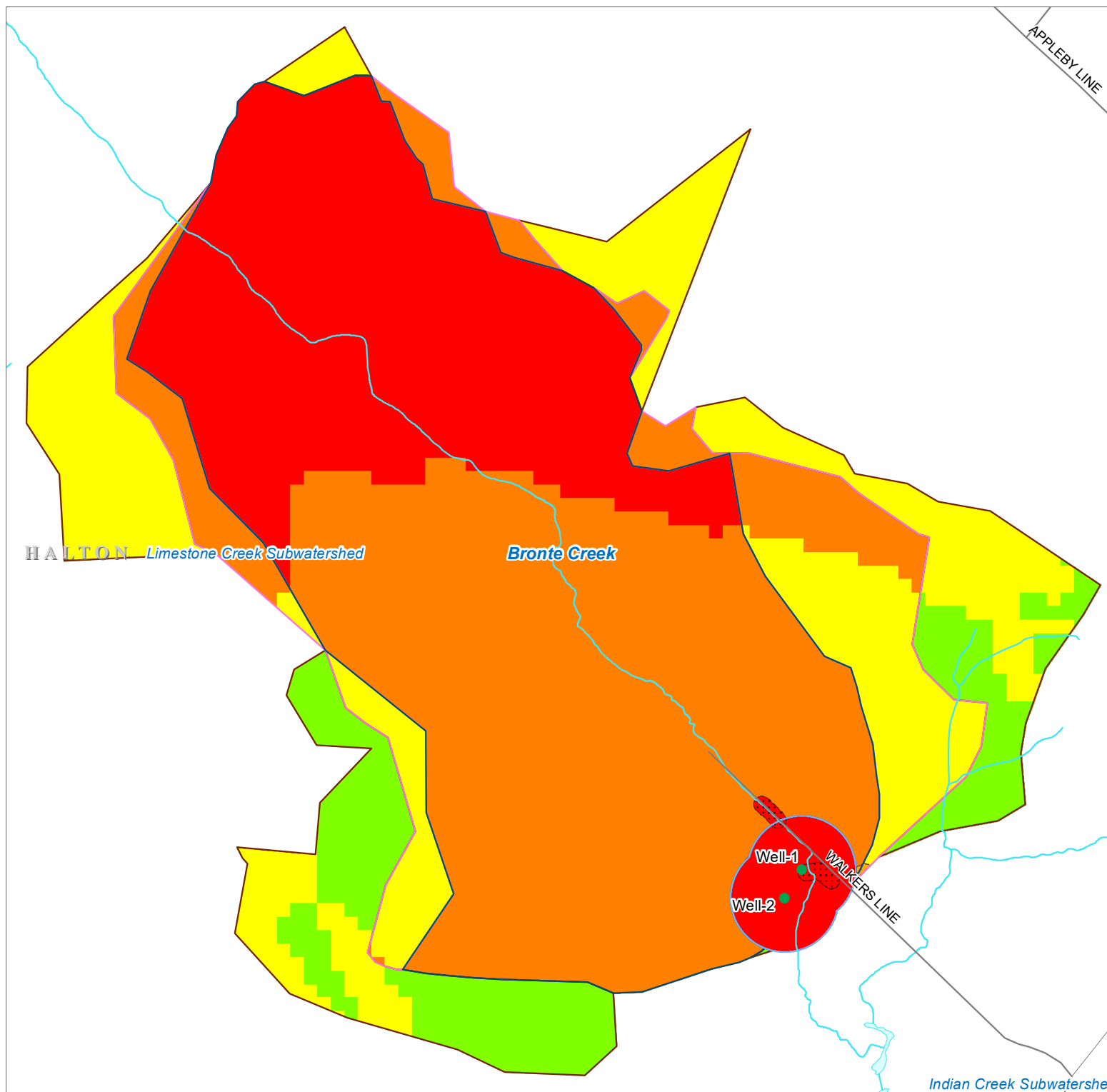
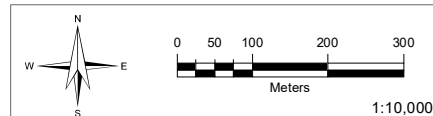
**DRAFT**

\*Surface to Well Advection Time (SWAT) was used to determine vulnerability score and threats assessment. See the SWAT map 6.20

Source : Region of Halton / Earthfx Groundwater Model (2010).

Projection : UTM NAD 83 Zone 17

Date : March 2021



**Figure 6.27**

**Campbellville - ISI Vulnerability**

**Legend**

- Watersheds
- Subwatersheds
- Upper Tier Municipality
- Roads**
  - Highway
  - Regional
  - Local
- Hydrography
- Waterbody
- Municipal Well
- WHPA Boundary**
  - A
  - B
  - C
  - D
- Transport Pathway Area of Influence
- Intrinsic Susceptibility Index (ISI)**
  - Vulnerability**
    - 10 (high)
    - 8
    - 6
    - 4
    - 2 (low)

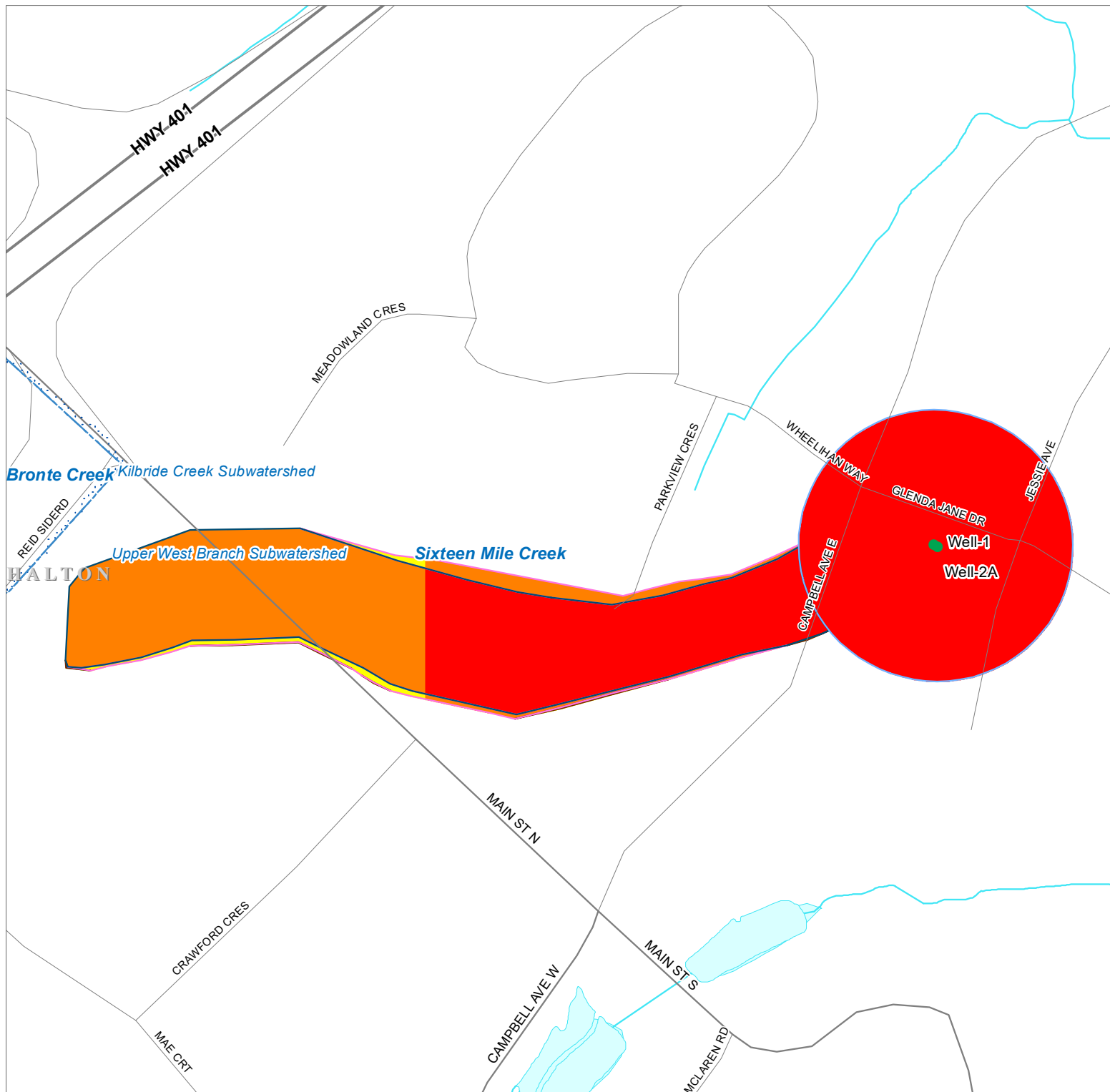
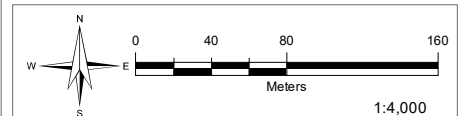
***DRAFT***

\*Surface to Well Advection Time (SWAT) was used to determine vulnerability score and threats assessment. See the SWAT map 6.21

Source : Region of Halton / Earthfx Groundwater Model (2014).

Projection : UTM NAD 83 Zone 18

Date : March 2021





**Figure 6.28**

**Freelton (FDF01)  
ISI Vulnerability**

**Legend**

- Watersheds
- Subwatersheds
- Upper Tier Municipality

**Roads**

- Highway
- Regional
- Local

- Hydrography
- Waterbody

- Municipal Well

**WHPA Boundary**

- A
- B
- C
- D

**Intrinsic Susceptibility Index (ISI)**

**Vulnerability**

- 10 (high)
- 8
- 6
- 4
- 2 (low)

**DRAFT**

Source : City of Hamilton / Earthfx Groundwater Model (2010).

Projection : UTM NAD 83 Zone 17

Date : March 2021

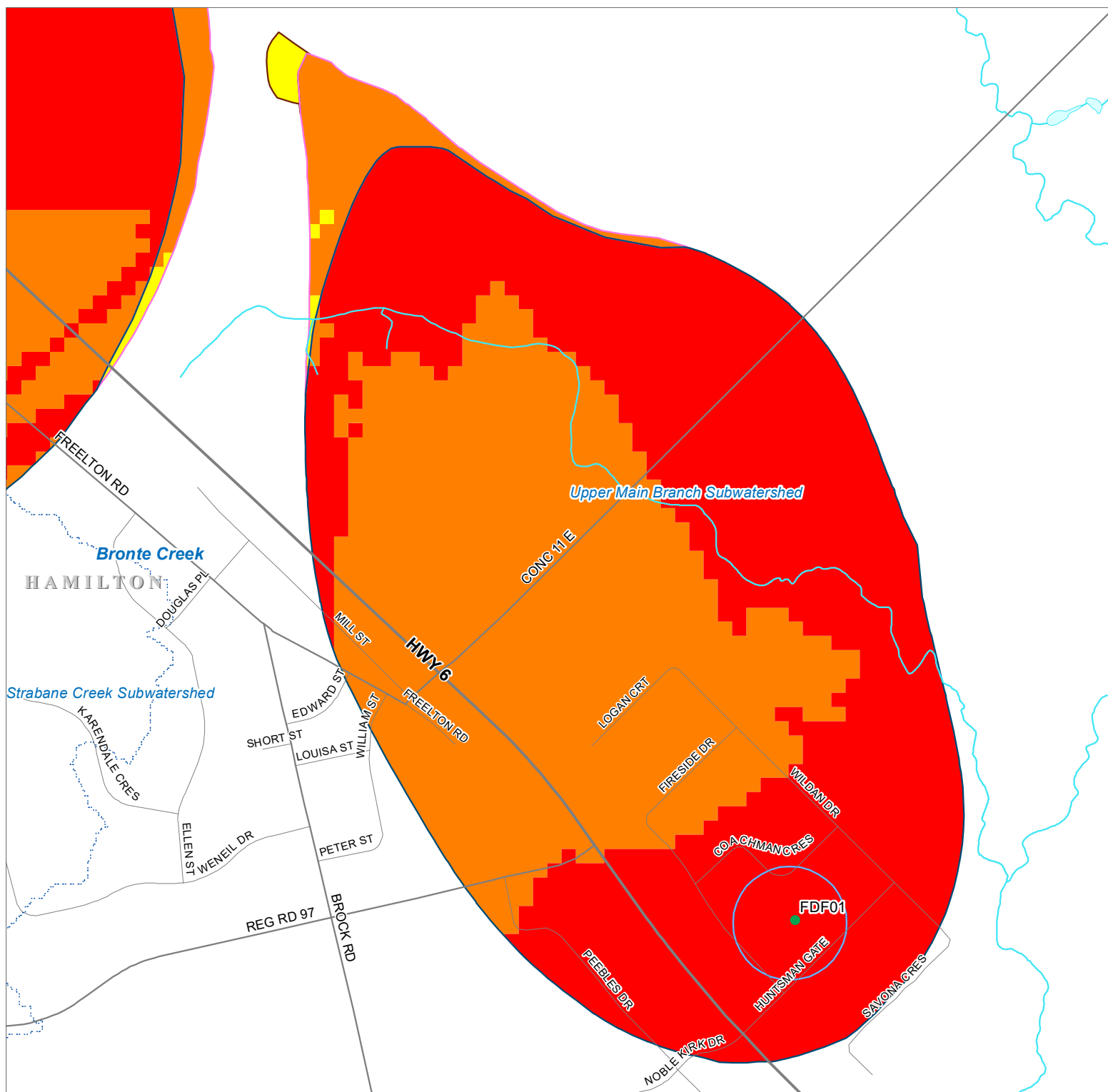
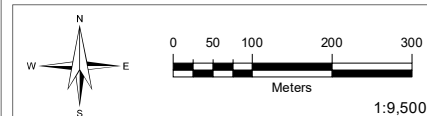


Figure 6.29

# **Freelton (FDF03) ISI Vulnerability**

## **Legend**

- Watersheds
- Subwatersheds
- Upper Tier Municipality

### **Roads**

- Highway
- Regional
- Local

Hydrography

Municipal Well

### **WHPA Boundary**

- A
- B
- C
- D

### **Intrinsic Susceptibility Index (ISI)**

#### **Vulnerability**

- 10 (high)
- 8
- 6
- 4
- 2 (low)

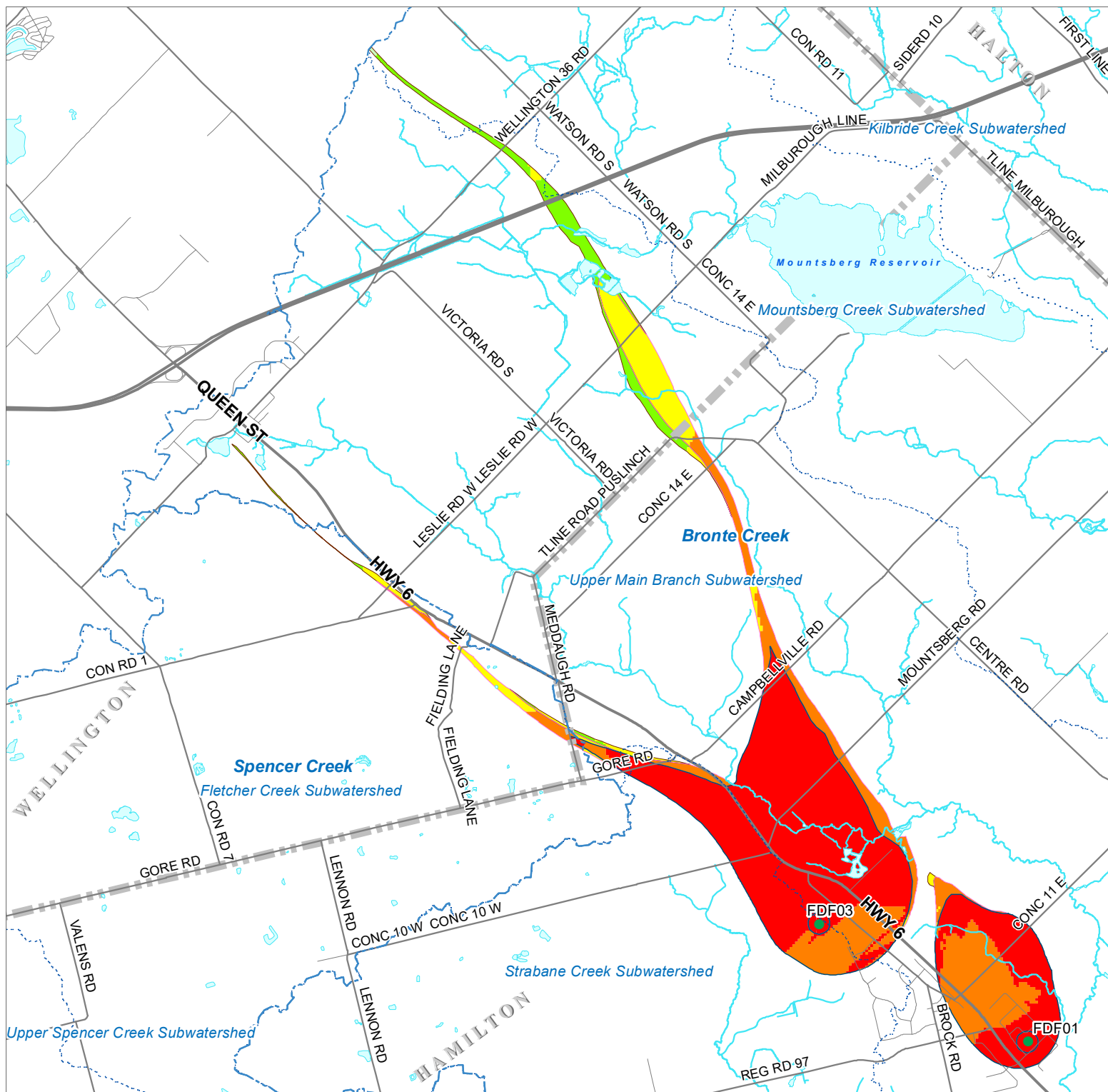
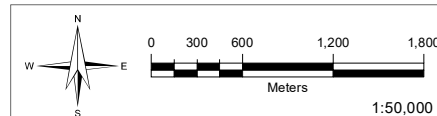
**DRAFT**

Note : ISI data unavailable outside of SPA boundary

Source : City of Hamilton / Earthfx Groundwater Model (2010).

Projection : UTM NAD 83 Zone 17

Date : March 2021





**Figure 6.30**

**Carlisle - ISI Vulnerability**

**Legend**

- Watersheds
- Subwatersheds
- Upper Tier Municipality

**Roads**

- Highway
- Regional
- Local
- Hydrography
- Waterbody
- Municipal Well

**WHPA Boundary**

- A
- B
- C
- D

**DRAFT**

**WHPA-E Vulnerability**

- 8.1 - E (2 hour surface - creeks)
- 9 - E (2 hour surface - storm sewer)
- Transport Pathway Area of Influence

**Intrinsic Susceptibility Index (ISI)**

**Vulnerability**

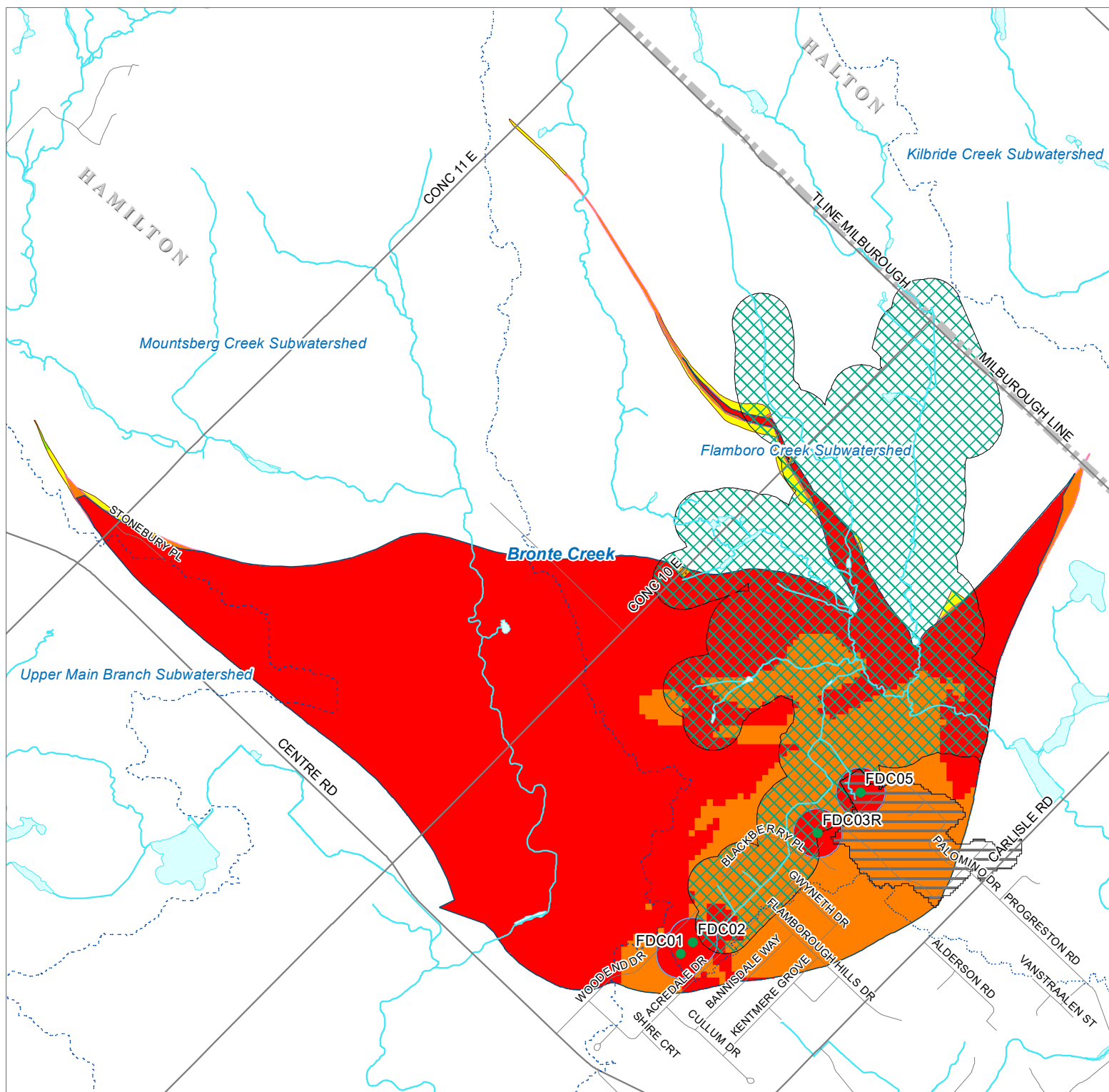
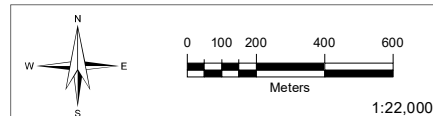
- 10 (high)
- 8
- 6
- 4
- 2 (low)

\*Surface to Well Advection Time (SWAT) was used to determine vulnerability score and threats assessment. See the SWAT map 6.24

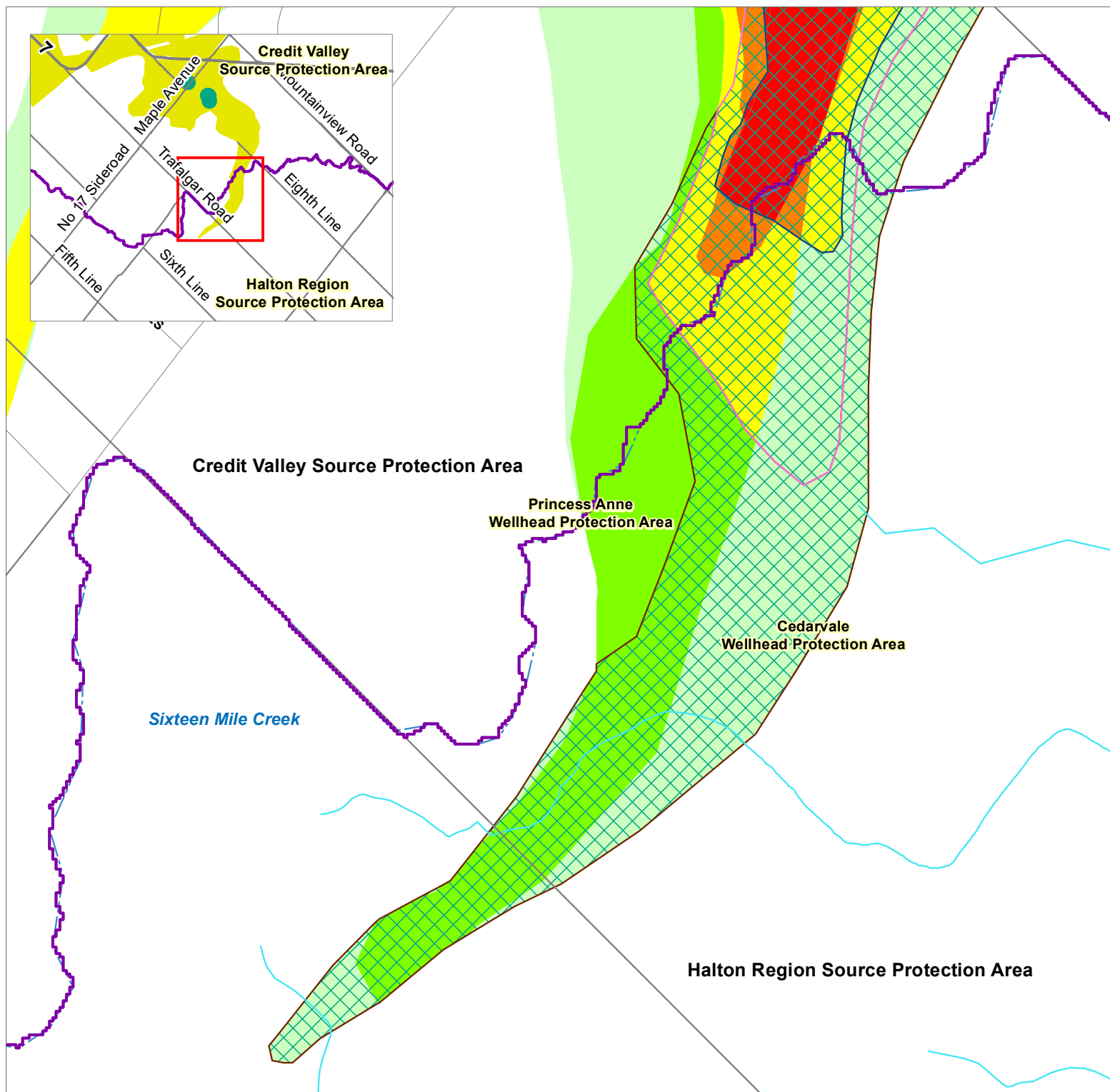
Source : City of Hamilton / Earthfx Groundwater Model (2010).

Projection : UTM NAD 83 Zone 17

Date : March 2021



**Figure 6.31**  
**Cedarvale**  
**Wellhead Protection Area Vulnerability**  
**and Issue Contributing Area**



**Legend**

Source Protection Region

Watersheds

Subwatersheds

**Roads**

Highway

Regional

Local

Hydrography

Waterbody

Municipal Well

**WHPA Boundary**

**ZoneName**

A

B

C

D

Cedarvale Issue Contributing Area

**Cedarvale Wellhead Protection Area**

**Vulnerability**

10 (high)

8

6

4

2 (low)

**DRAFT**

Source : Halton Region / Matrix Solutions Groundwater Model (2013).

Projection : UTM NAD 83 Zone 18

Date : March 2021

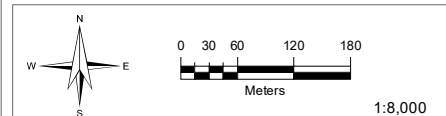








Figure 6.32

**Cedarvale  
 WHPA-Q1 and Q2**

**Legend**

-  Source Protection Region
-  Hydrography
-  Waterbody
-  Cedarvale WHPA Q1-Q2

The circumstances for significant threat activities can be reviewed using the Threats Tool located on the Source Water Protection Portal at <http://swpip.ca>

**DRAFT**

Source : Halton Region / Matrix Solutions Groundwater Model (2013).

Projection : UTM NAD 83 Zone 17

Date : March 2021

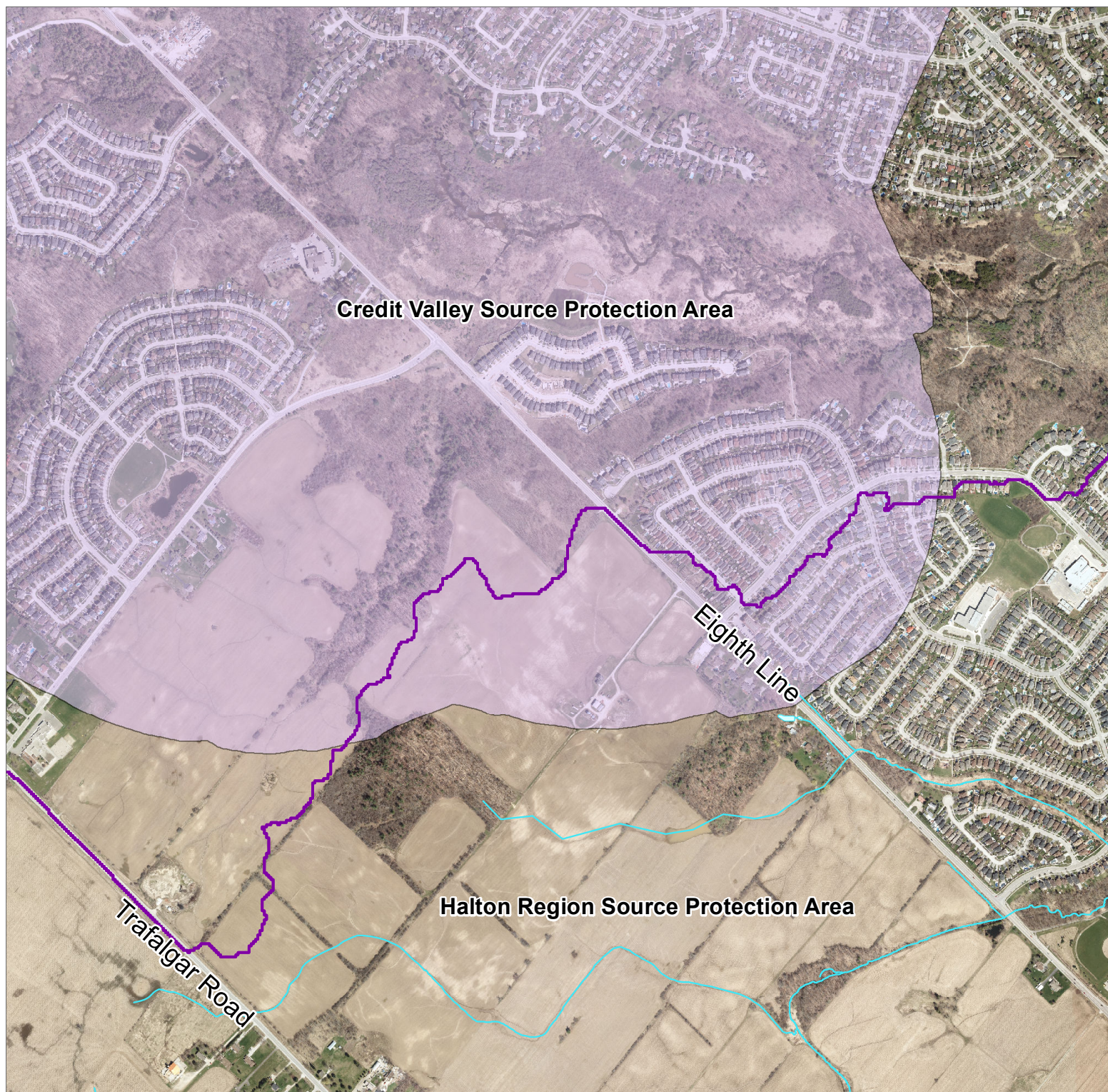
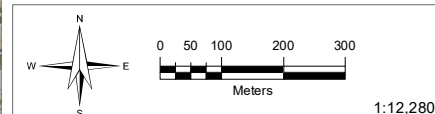




Figure 7.1

# Managed Land Map Wellhead Protection Areas

## Legend

- Source Protection Area
- Watersheds
- Subwatersheds
- Upper Tier Municipality
- Lower Tier Municipality
- Niagara Escarpment

## Roads

- Highway
- Regional
- Local

## Waterbody

## Percent Managed Lands

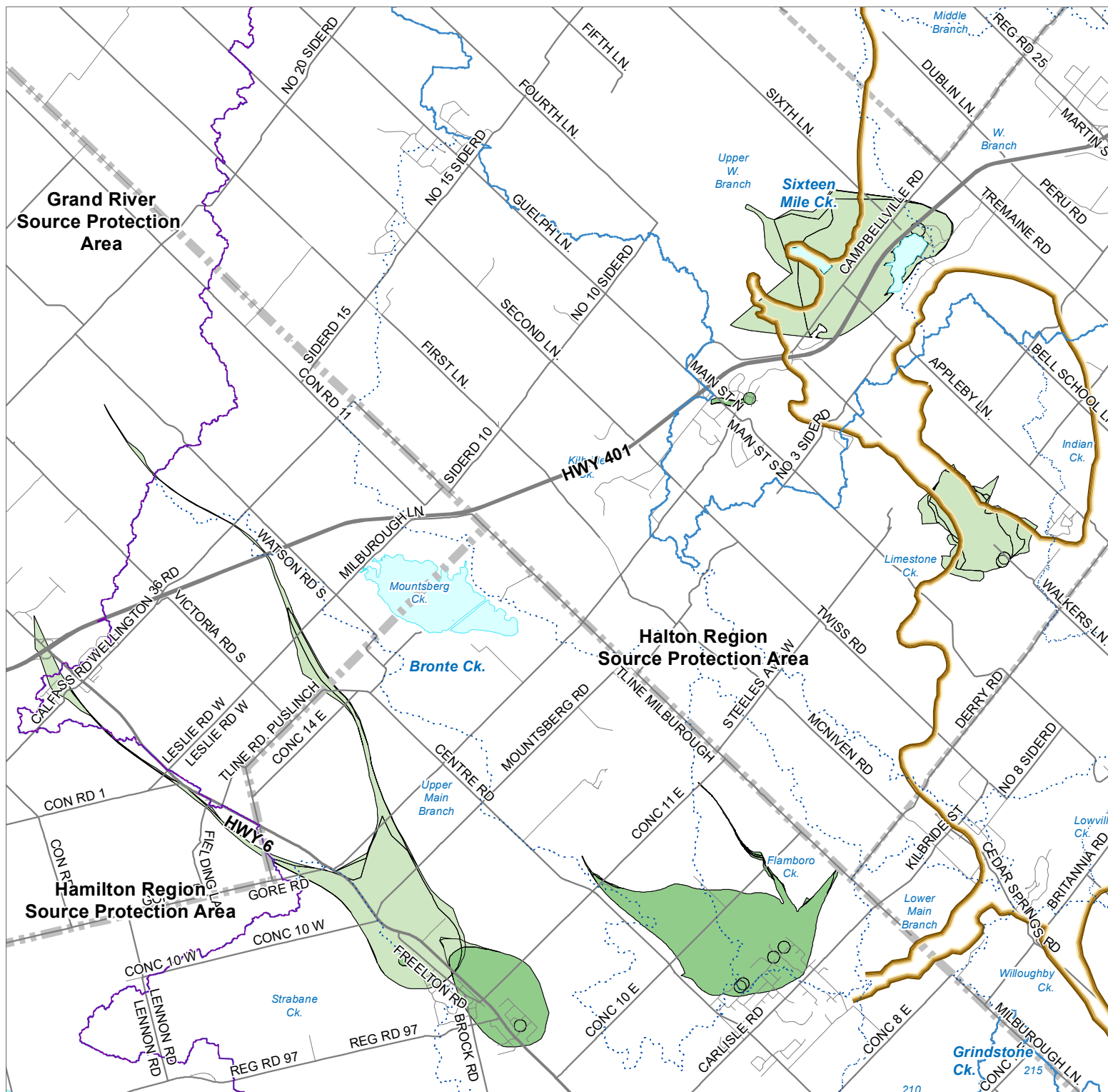
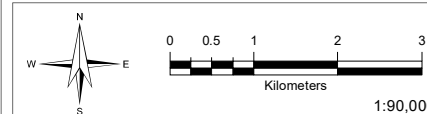
- > 80%
- 40 - 80%
- < 40%

**DRAFT**

Source : Ministry of Natural Resources, SOLRIS (2000), and Municipal Property Assessment Corporation Property Information (2007).

Projection : UTM NAD 83 Zone 17

Date : August 2021













**Figure 7.2**




**Managed Land Map  
Carlisle Wellhead Protection Area-E**

**Legend**




-  Source Protection Area
-  Watersheds
-  Subwatersheds
-  Upper Tier Municipality
-  Lower Tier Municipality

**Roads**

-  Highway
-  Regional
-  Local

-  Hydrography
-  Waterbody
-  Municipal Well

**Percent Managed Lands**

-  > 80%
-  40 - 80%
-  < 40%

**DRAFT**

Source : Ministry of Natural Resources, SOLRIS (2000),  
and Municipal Property Assessment Corporation  
Property Information (2007).

Projection : UTM NAD 83 Zone 17

Date : August 2021

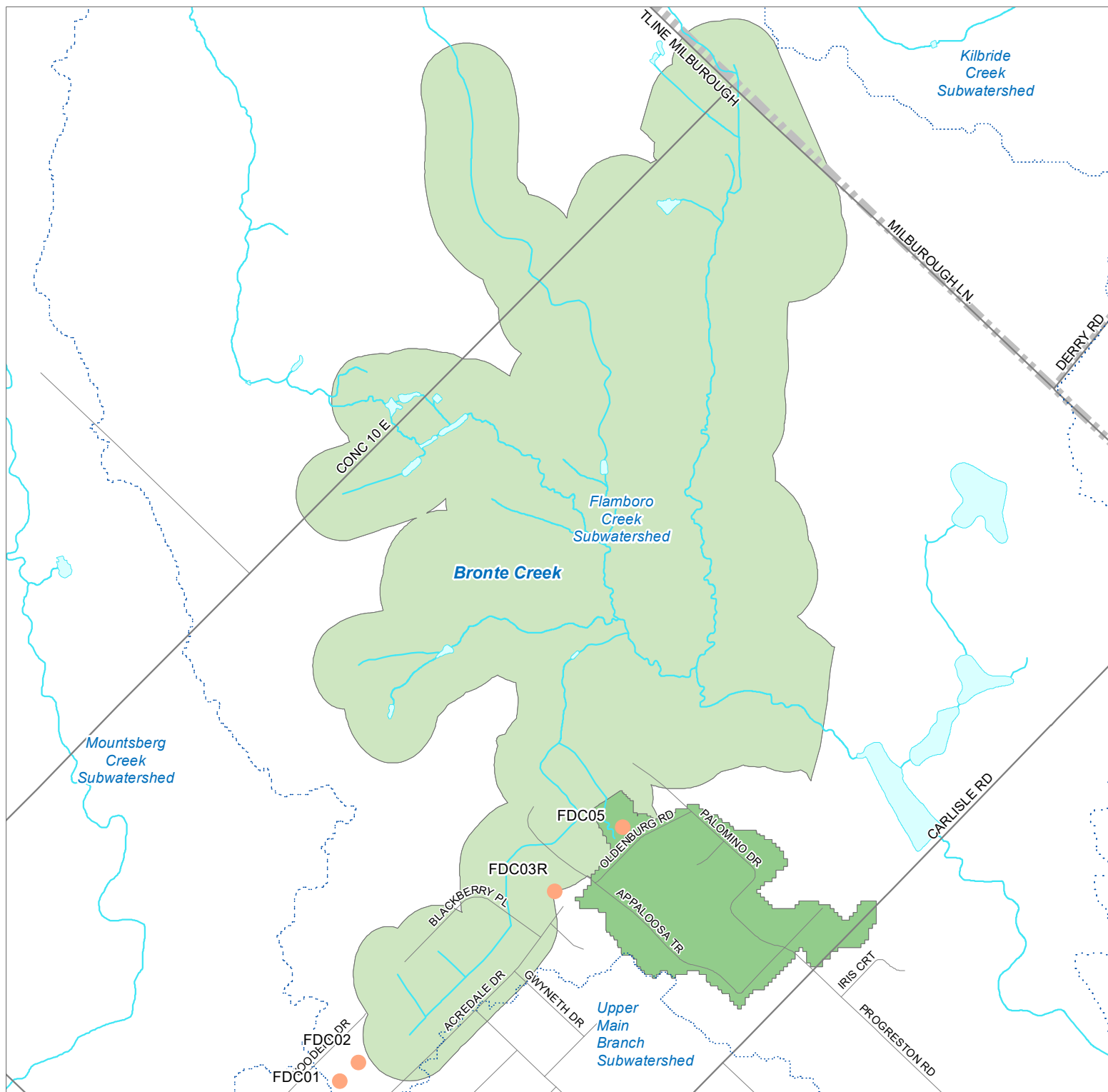
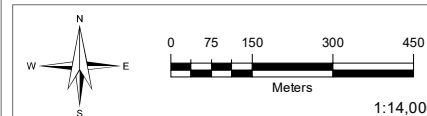
















Figure 7.3

## Managed Land Map Intake Protection Zones

### Legend

-  Source Protection Area
-  Watersheds
-  Subwatersheds
-  Upper Tier Municipality
-  Lower Tier Municipality
-  Niagara Escarpment
- Roads**
  -  Highway
  -  Regional
-  Waterbody
-  Municipal Intake
-  Intake Protection Zone 1 & 2
- Percent Managed Lands**
  -  > 80 %
  -  40 - 80 %
  -  < 40 %

**DRAFT**

Source : Ministry of Natural Resources, SOLRIS (2015),  
and Municipal Property Assessment Corporation  
Property Information (2007).

Projection : UTM NAD 83 Zone 17

Date : June 2021

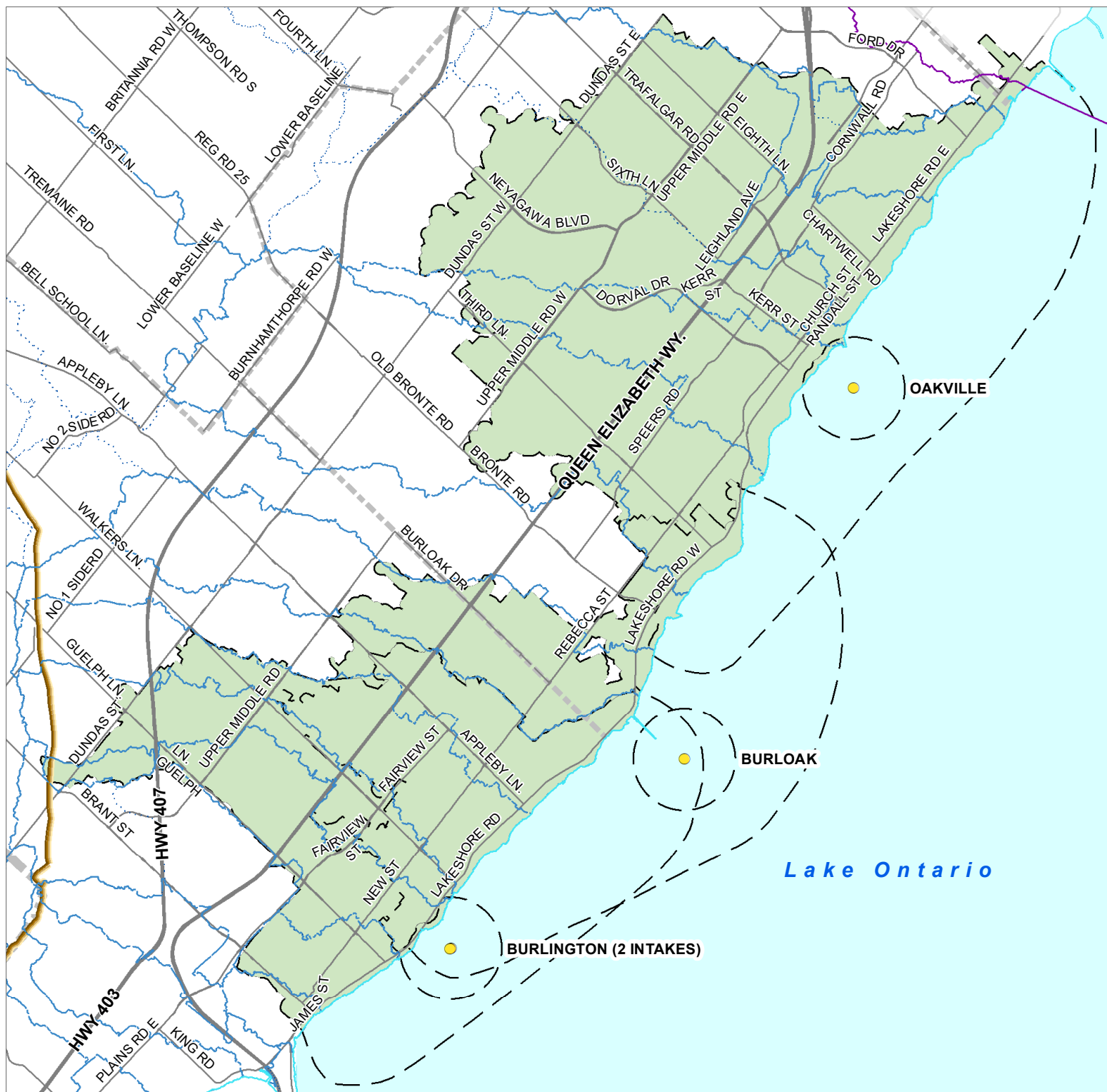
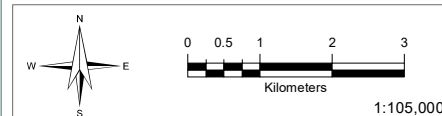













Figure 7.4

## Managed Land Map Highly Vulnerable Aquifers




### Legend

-  Source Protection Area
-  Watersheds
-  Subwatersheds
-  Upper Tier Municipality
-  Lower Tier Municipality
-  Niagara Escarpment

### Roads

-  Highway
-  Regional
-  Waterbody

### Percent Managed Lands

-  > 80 %
-  40 - 80 %
-  < 40 %

**DRAFT**

Source : Ministry of Natural Resources, SOLRIS (2015),  
and Municipal Property Assessment Corporation  
Property Information (2007).

Projection : UTM NAD 83 Zone 17

Date : June 2021



1:200,000

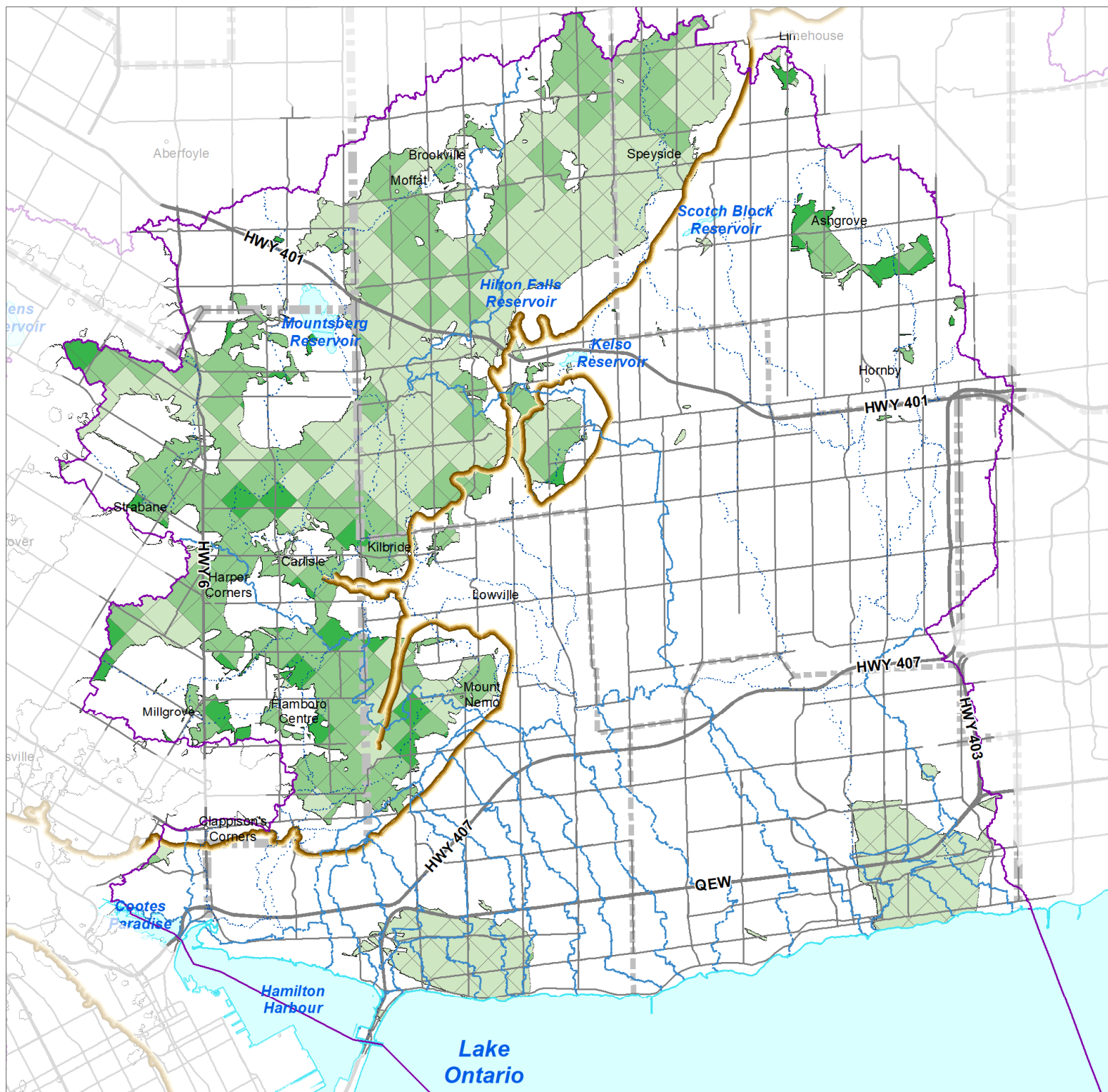



Figure 7.5

**Livestock Density Map  
Wellhead Protection Areas**

**Legend**

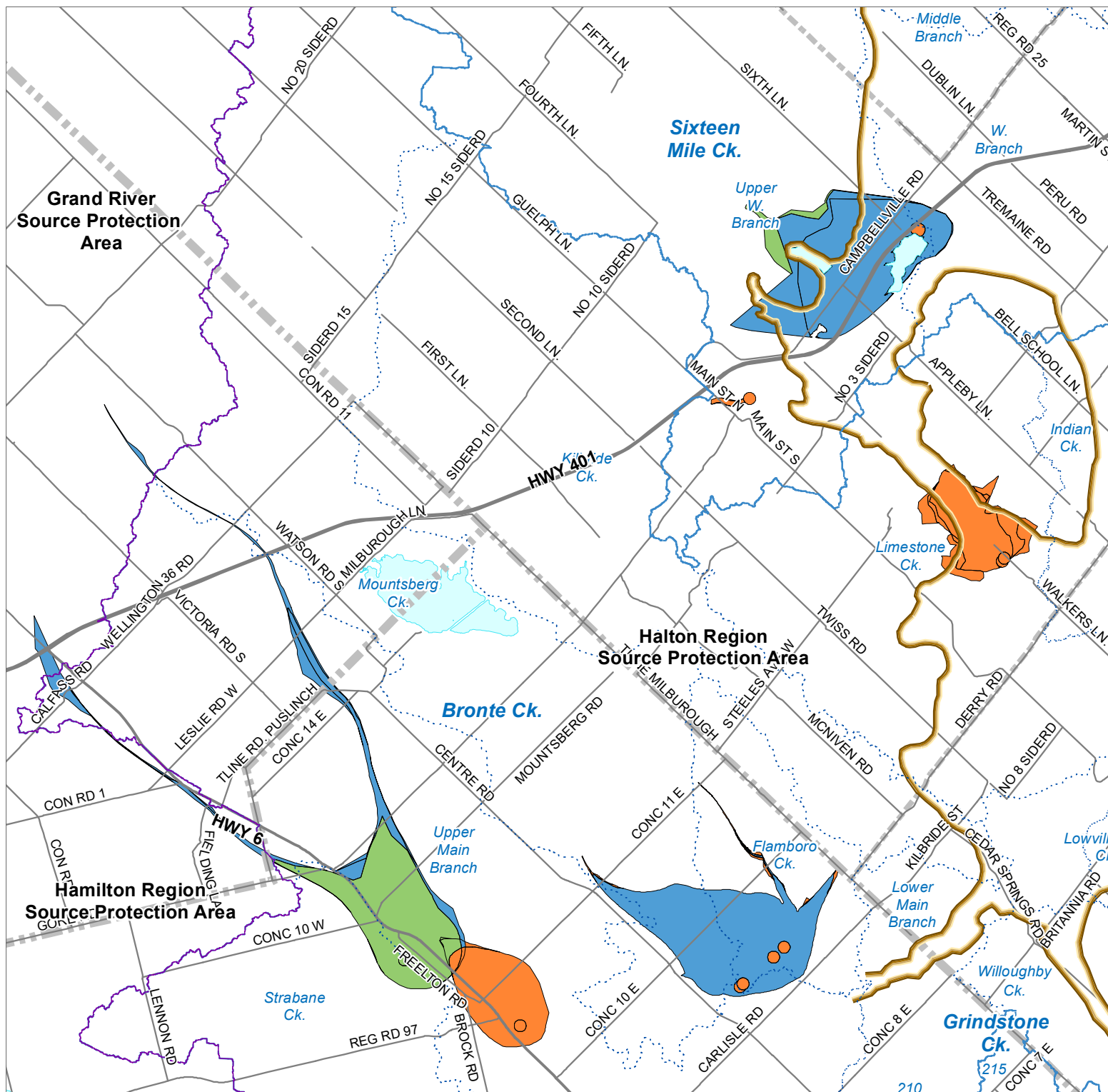
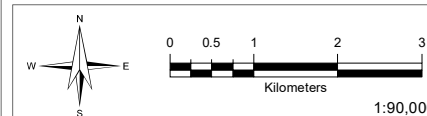
-  Source Protection Area
-  Watersheds
-  Subwatersheds
-  Upper Tier Municipality
-  Lower Tier Municipality
-  Niagara Escarpment
- Roads**
  -  Highway
  -  Regional
  -  Waterbody
- Livestock Density  
(Nutrient Units/Acre)**
  -  > 1
  -  0.5 - 1
  -  < 0.5

**DRAFT**

Source : Ministry of Natural Resources, SOLRIS (2000),  
and Municipal Property Assessment Corporation  
Property Information (2007).

Projection : UTM NAD 83 Zone 17

Date : June 2021





**Figure 7.6**

**Livestock Density Map  
Carlisle Wellhead Protection Area-E**

**Legend**

- Source Protection Area
- Watersheds
- Subwatersheds
- Upper Tier Municipality
- Lower Tier Municipality

**Roads**

- Highway
- Regional
- Local

- ~~~~~ Hydrography
- ~~~~~ Waterbody

- Municipal Well

**Livestock Density  
(Nutrient Units/Acre)**

- > 1
- < 0.5

***DRAFT***

Source : Ministry of Natural Resources, SOLRIS (2000),  
and Municipal Property Assessment Corporation  
Property Information (2007).

Projection : UTM NAD 83 Zone 17

Date : August 2021

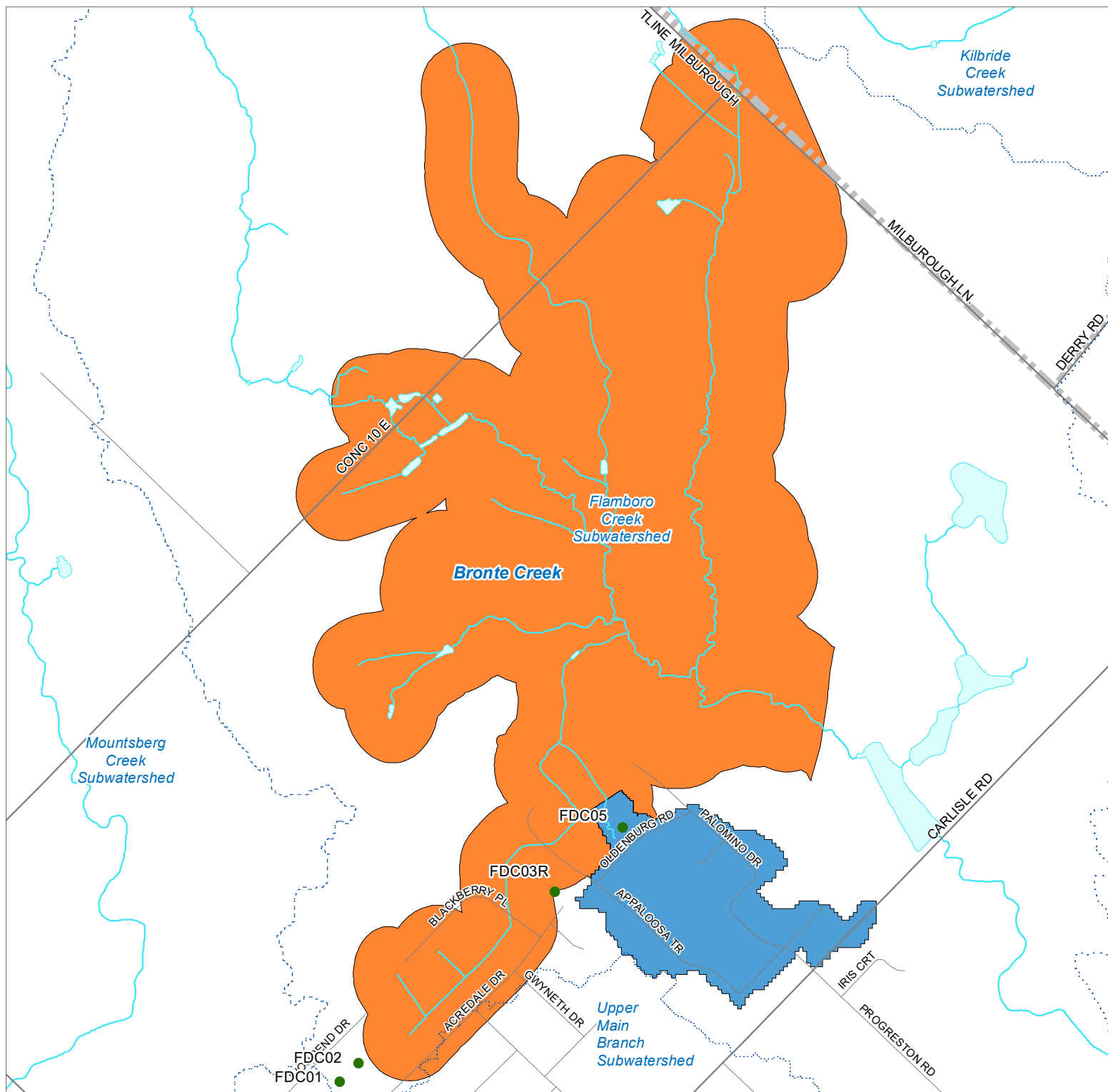
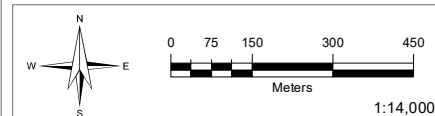










Figure 7.7

# **Livestock Density Map Highly Vulnerable Aquifers**

## **Legend**

-  Source Protection Area
-  Watersheds
-  Subwatersheds
-  Upper Tier Municipality
-  Lower Tier Municipality
-  Niagara Escarpment
- Roads**
  -  Highway
  -  Regional
  -  Waterbody
- Livestock Density  
(Nutrient Units/Acre)**
  -  > 1
  -  0.5 - 1
  -  < 0.5

**DRAFT**

Source : Ministry of Natural Resources, SOLRIS (2015),  
and Municipal Property Assessment Corporation  
Property Information (2007).

Projection : UTM NAD 83 Zone 17

Date : June 2021



1:200,000



Conservation  
**Halton**



A Healthy Watershed for Everyone

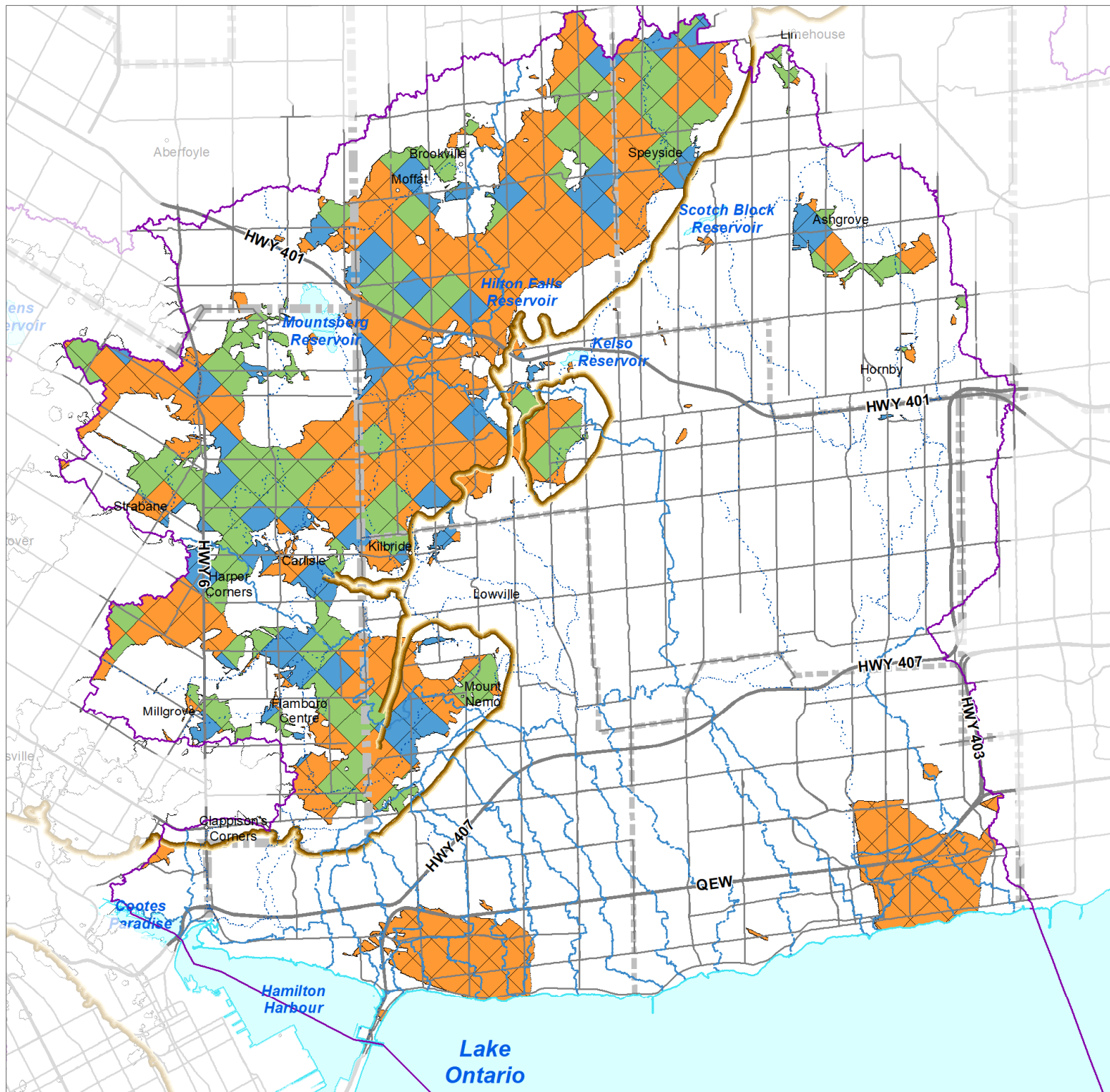




Figure 7.8

# **Total Impervious Surface Area Map**

## **Legend**

- Source Protection Area
- Watersheds
- Subwatersheds
- Upper Tier Municipality
- Lower Tier Municipality
- Niagara Escarpment
- Highway
- Waterbody

## **Impervious Surfaces**

**% of imperviousness in 1 km<sup>2</sup> grid**

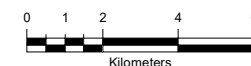
- $\geq 80\%$
- $8 - < 80\%$
- $1 - < 8\%$
- $< 1\%$

*Note : Impervious surfaces are those hard surfaces where road salt could be applied.*

***DRAFT***

Projection : UTM NAD 83 Zone 18

Date : August 2021



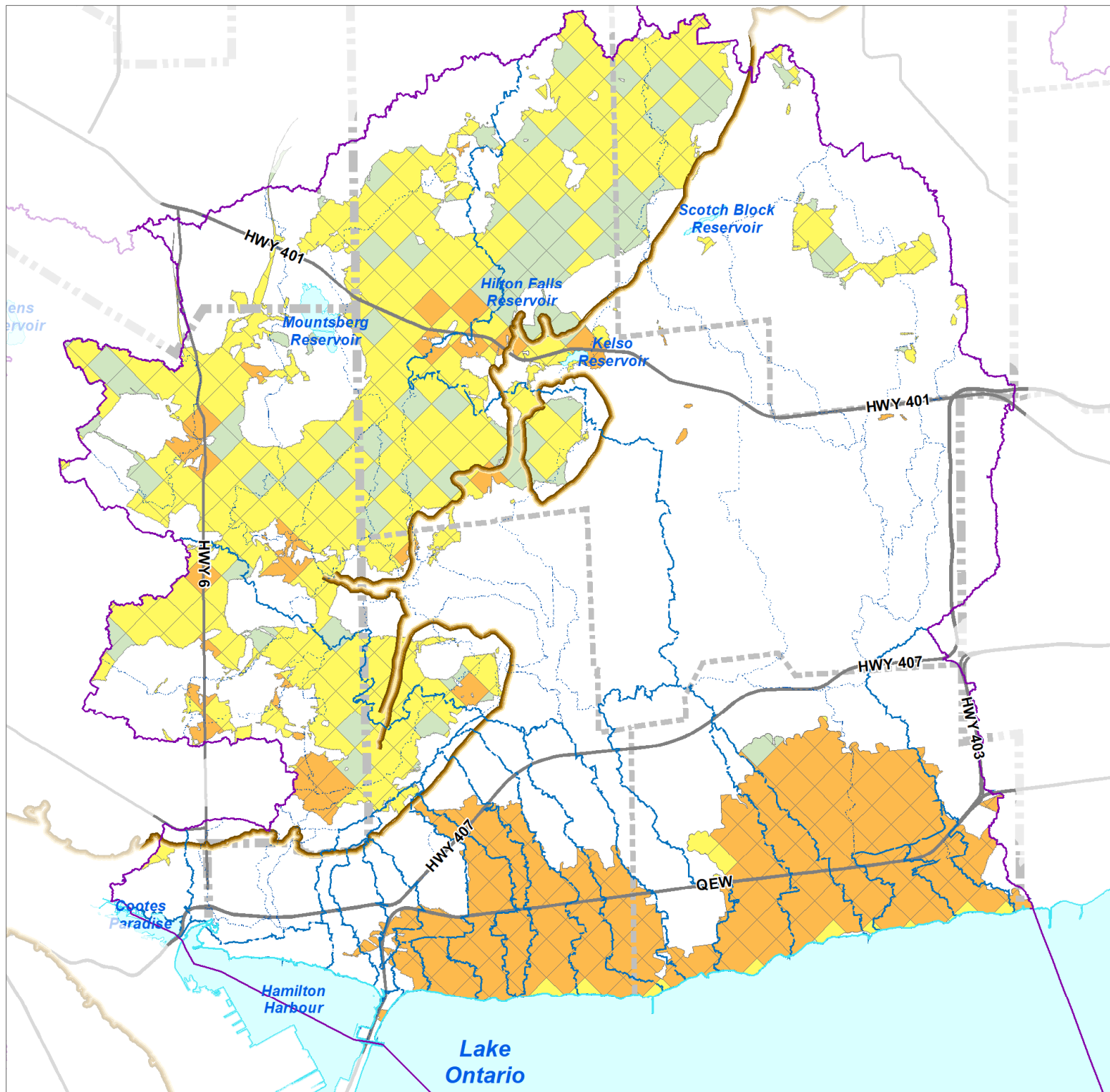
1:200,000



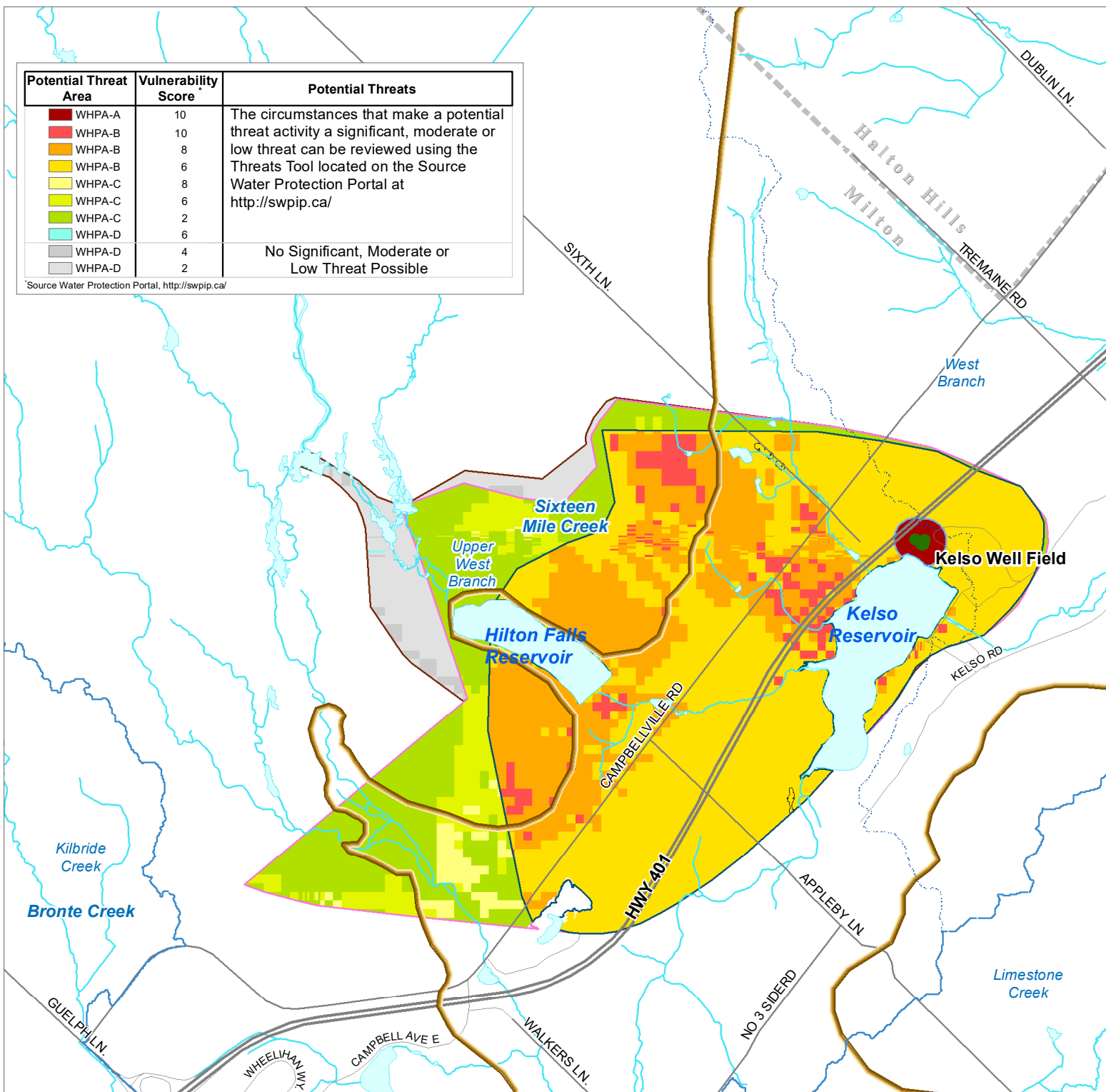
Conservation  
**Halton**



Hamilton  
Conservation  
Authority  
*A Healthy Watershed for Everyone*



**Figure 7.9**  
**Potential Threat Areas**  
**Kelso Wellhead Protection Area**



**Legend**

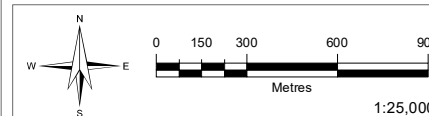
- Watersheds
- Subwatersheds
- Lower Tier Municipality
- Niagara Escarpment
- Roads**
  - Highway
  - Regional
  - Local
- ~ Hydrography
- ~ Waterbody
- Municipal Well
- WHPA Boundary**
  - A
  - B
  - C
  - D
- Transport Pathway Area of Influence

**DRAFT**

Source : Earthfx Model (2014).

Projection : UTM NAD 83 Zone 18

Date : May 2021





**Figure 7.10**

**Potential Threat Areas  
Walkers Line Wellhead Protection Area**

**Legend**

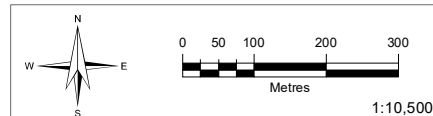
- Watersheds
- Subwatersheds
- Niagara Escarpment
- Roads**
  - Highway
  - Regional
  - Local
- Hydrography
- Waterbody
- Municipal Well
- WHPA Boundary**
  - A
  - B
  - C
  - D
- Transport Pathway Area of Influence

**DRAFT**

Source : Halton Region / Earthfx Groundwater Model (2010).

Projection : UTM NAD 83 Zone 17

Date : May 2021



Potential Threat Area	Vulnerability Score	Potential Threats
WHPA-A	10	The circumstances that make a potential threat activity a significant, moderate or low threat can be reviewed using the Threats Tool located on the Source Water Protection Portal at <a href="http://swpip.ca/">http://swpip.ca/</a>
WHPA-B	10	
WHPA-B	8	
WHPA-B	6	
WHPA-C	8	
WHPA-C	6	
WHPA-C	2	No Significant, Moderate or Low Threat Possible
WHPA-D	6	
WHPA-D	4	
WHPA-D	2	

\*Source Water Protection Portal, <http://swpip.ca/>

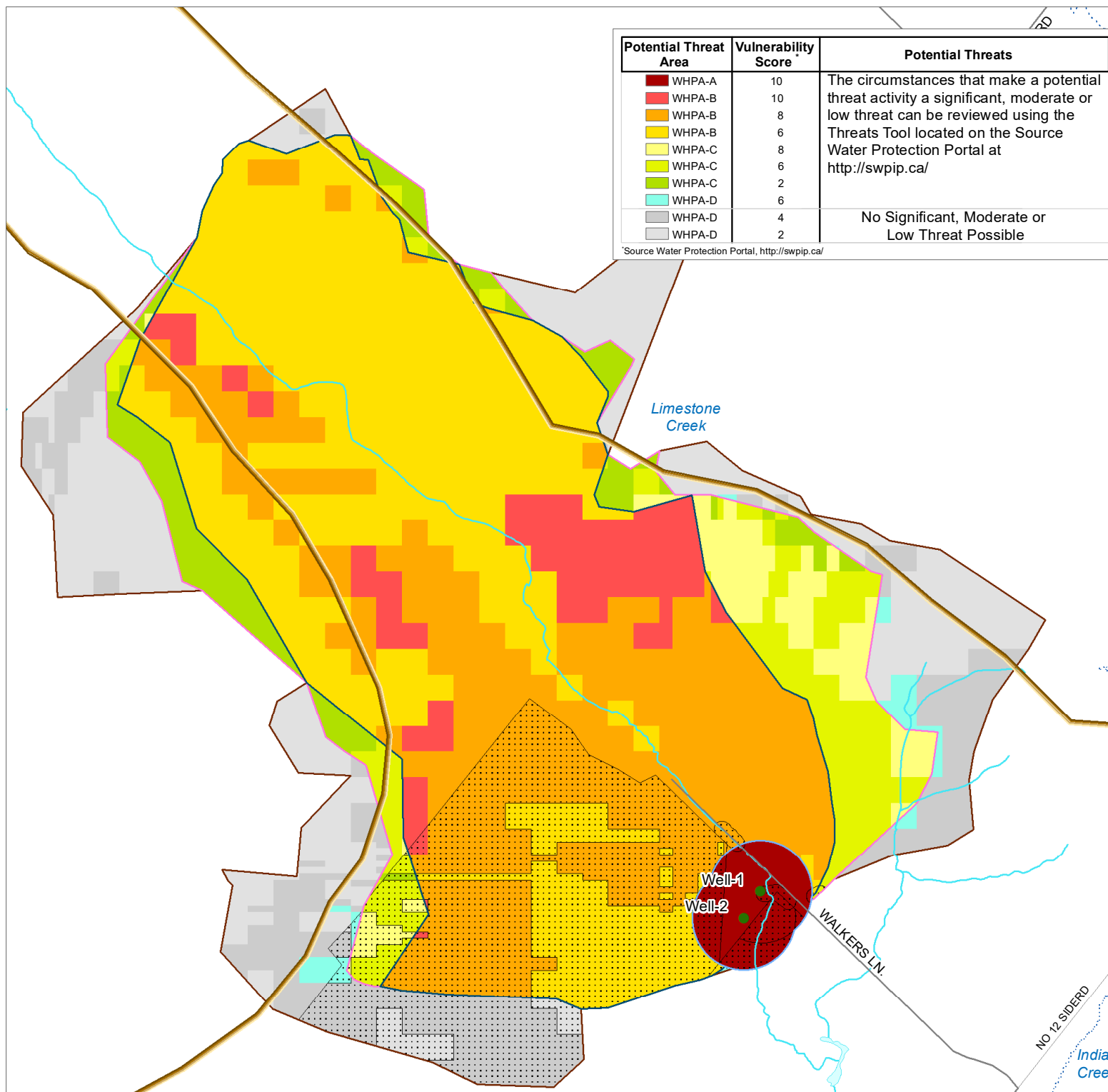


Figure 7.11

**Potential Threat Areas  
Campbellville Wellhead Protection Area**

**Legend**

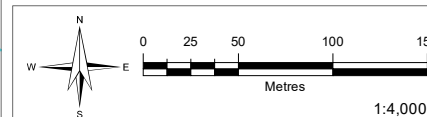
- Watersheds
- Subwatersheds
- Roads**
  - Highway
  - Regional
  - Local
- Hydrography
- Waterbody
- Municipal Well
- WHPA Boundary**
  - A
  - B
  - C
  - D
- Transport Pathway Area of Influence

**DRAFT**

Source : Earthfx Model (2014).

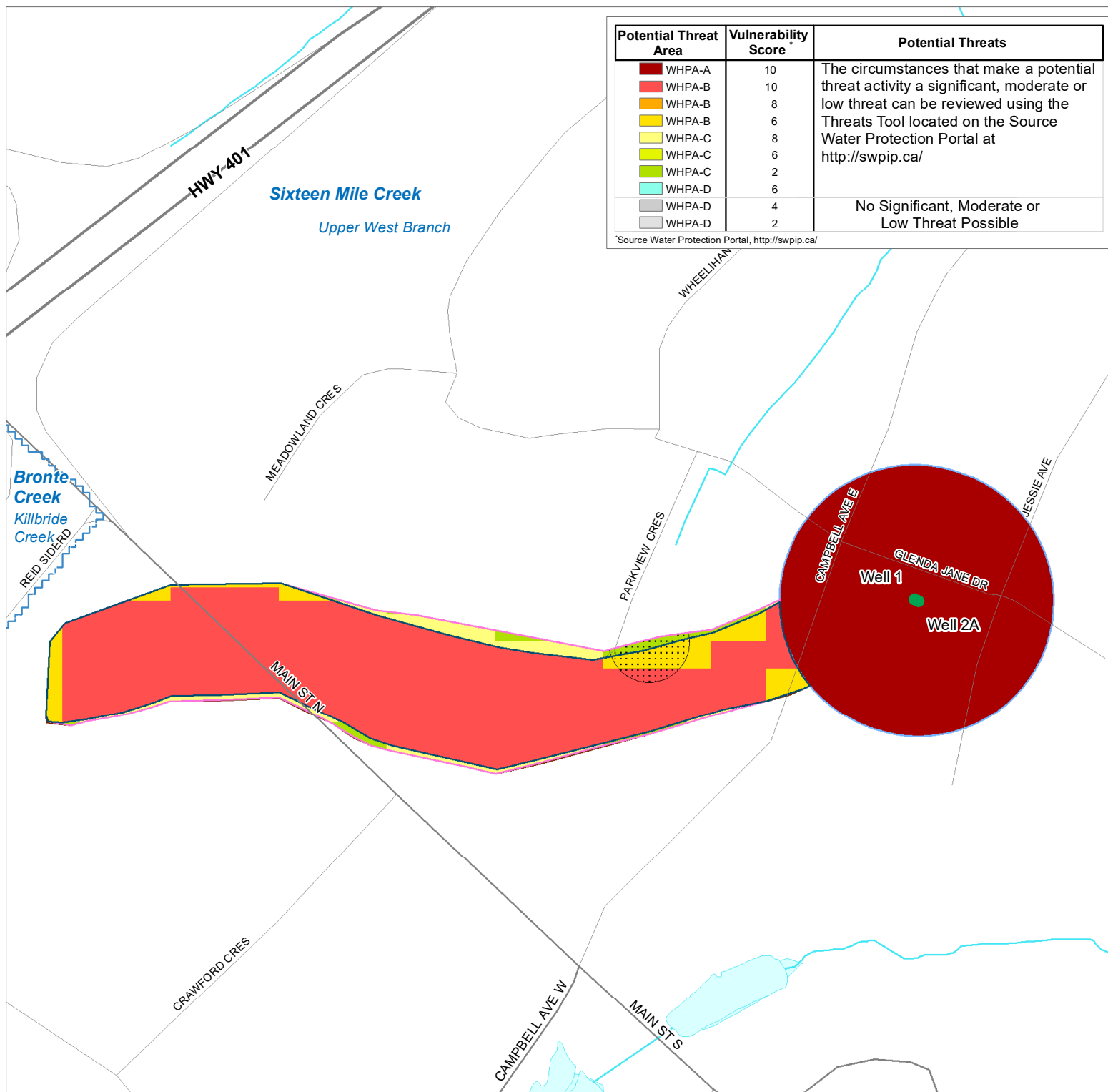
Projection : UTM NAD 83 Zone 17

Date : May 2021



Potential Threat Area	Vulnerability Score	Potential Threats
WHPA-A	10	The circumstances that make a potential threat activity a significant, moderate or low threat can be reviewed using the Threats Tool located on the Source Water Protection Portal at <a href="http://swpip.ca/">http://swpip.ca/</a>
WHPA-B	10	
WHPA-B	8	
WHPA-B	6	
WHPA-C	8	
WHPA-C	6	
WHPA-C	2	No Significant, Moderate or Low Threat Possible
WHPA-D	6	
WHPA-D	4	
WHPA-D	2	

\*Source Water Protection Portal, <http://swpip.ca/>





This mapping is produced by Conservation Halton and should be used for informational purposes only. The data displayed are derived from sources with varying accuracies and all boundaries should therefore be considered approximate. Data on this map is used under license with Conservation Halton, Ontario Ministry of Natural Resources, Halton Region, City of Hamilton, Ministry of Environment, Ontario Geological Survey, Natural Resources Canada, Teranet Enterprises Inc. and other agencies. Copyright 2021.

**Figure 7.13**

**Potential Threat Areas**  
**Freelton (FDF03) Wellhead Protection Area**

**Legend**

- Watersheds
- Subwatersheds
- Lower Tier Municipality
- Hydrography
- Waterbody
- Municipal Well
- Transport Pathway Area of Influence

**WHPA Boundary**

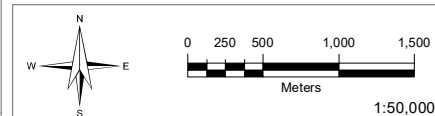
- A
- B
- C
- D

**DRAFT**

Source : Halton Region / Earthfx Groundwater Model (2010).

Projection : UTM NAD 83 Zone 17

Date : June 2021



Potential Threat Area	Vulnerability Score	Potential Threats
WHPA-A	10	The circumstances that make a potential threat activity a significant, moderate or low threat can be reviewed using the Threats Tool located on the Source Water Protection Portal at <a href="http://swpp.ca/">http://swpp.ca/</a>
WHPA-B	10	
WHPA-B	8	
WHPA-B	6	
WHPA-B	2	
WHPA-C	10	
WHPA-C	8	
WHPA-C	6	
WHPA-C	4	
WHPA-C	2	
WHPA-D	6	No Significant, Moderate or Low Threat Possible
WHPA-D	4	
WHPA-D	2	

Source Water Protection Portal, <http://swpp.ca/>



Potential Threat Area	Vulnerability Score	Potential Threats
WHPA-A	10	The circumstances that make a potential threat activity a significant, moderate or low threat can be reviewed using the Threats Tool located on the Source Water Protection Portal at <a href="http://swpip.ca/">http://swpip.ca/</a>
WHPA-B	10	
WHPA-B	8	
WHPA-B	6	
WHPA-C	8	
WHPA-C	6	
WHPA-C	2	
WHPA-D	6	No Significant, Moderate or Low Threat Possible
WHPA-E	9	
WHPA-E	8.1	
WHPA-D	4	
WHPA-D	2	

\*Source Water Protection Portal, <http://swpip.ca/>

Figure 7.14

## Potential Threat Areas Carlisle Wellhead Protection Area

### Legend

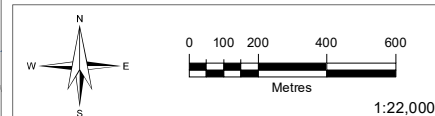
- Watersheds
- Subwatersheds
- Upper Tier Municipality
- Roads**
  - Highway
  - Regional
  - Local
- Hydrography
- Waterbody
- Municipal Well
- WHPA Boundary**
  - A
  - B
  - C
  - D
  - E
- Transport Pathway Area of Influence

**DRAFT**

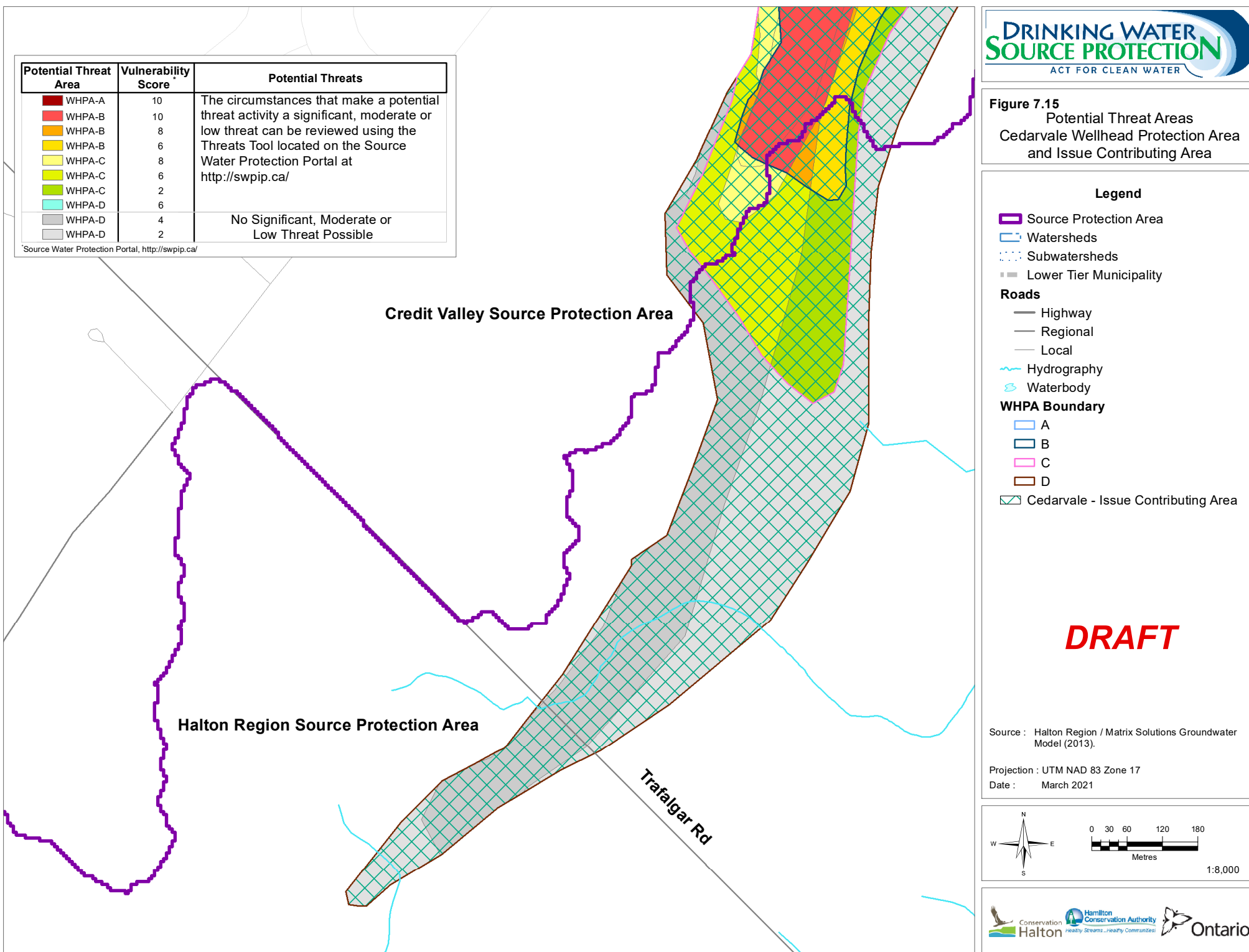
Source : City of Hamilton / Earthfx Groundwater Model (2010).

Projection : UTM NAD 83 Zone 18

Date : May 2021



**Figure 7.15**  
**Potential Threat Areas**  
**Cedarvale Wellhead Protection Area**  
**and Issue Contributing Area**





Potential Threat Area	Vulnerability Score	Potential Threats
IPZ-1	7	The circumstances that make a potential threat activity a significant, moderate or low threat can be reviewed using the Threats Tool located on the Source Water Protection Portal at <a href="http://swpip.ca/">http://swpip.ca/</a>
IPZ-1	6	
IPZ-1	6	
IPZ-2	6.3	
IPZ-2	4.8	No Significant, Moderate or Low Threat Possible
IPZ-2	4	

\*Source Water Protection Portal, <http://swpip.ca/>



Figure 7.16

## Potential Threat Areas Intake Protection Zones

### Legend

- Source Protection Region
- Source Protection Area (SPA)
- Upper Tier Municipality
- Lower Tier Municipality
- Niagara Escarpment

### Roads

- Highway
- Regional
- Hydrography
- Waterbody
- Municipal Intake

### Event-Based Modelling Significant Threats within Halton Region Source Protection Area

- Conveyance of Oil in a Pipeline
- Fuel Handling and Storage
- Sewage System Operation
- IPZ-3
- Area of IPZ-3 extending into Hamilton SPA

### Activity impacting the source water of the intake

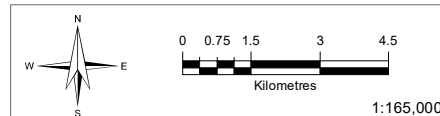
- Burlington
- Burloak
- Oakville

**DRAFT**

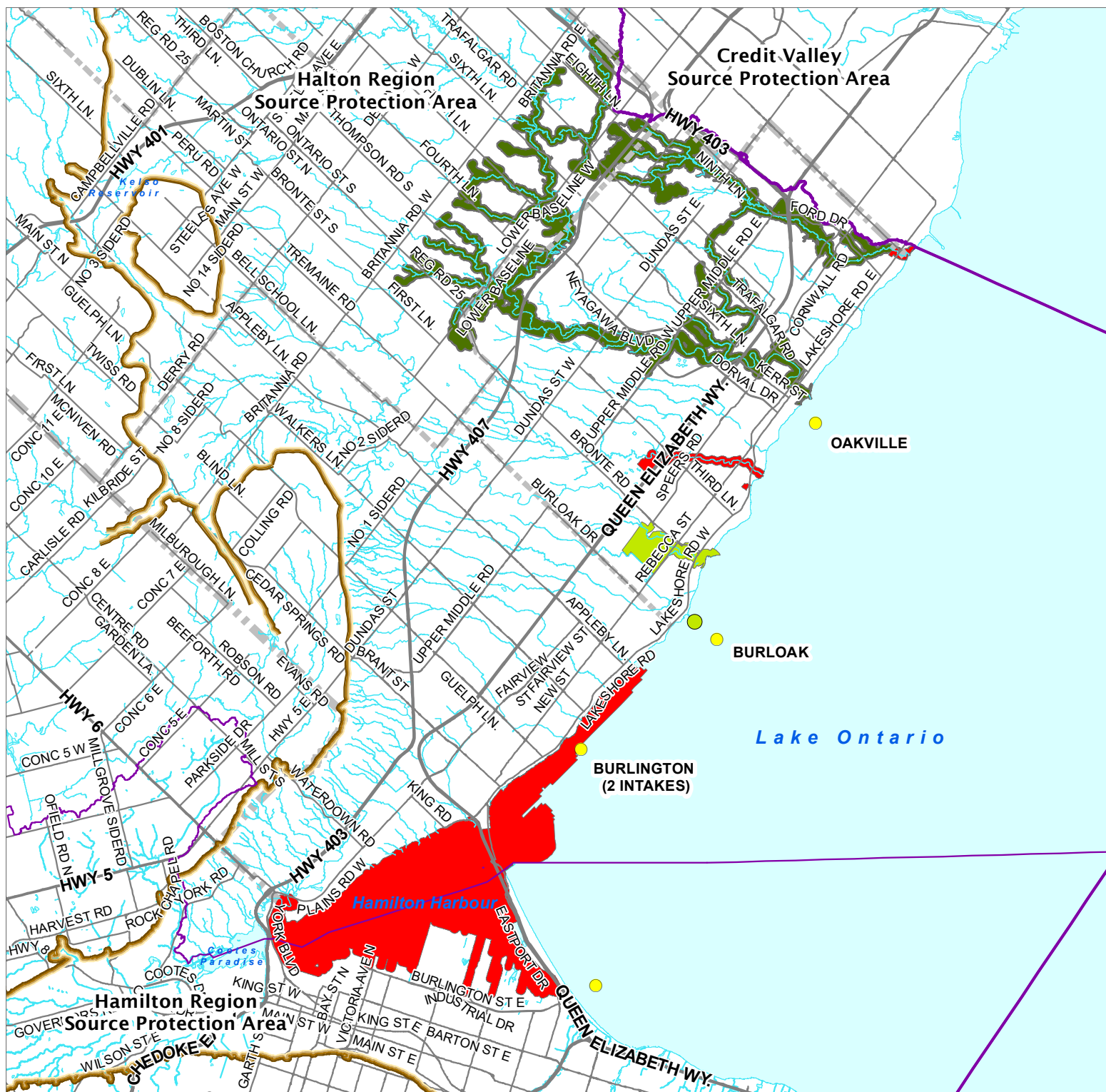
Source : Halton Region / Lake Ontario Collaborative /  
Stantec Consulting Inc. as amended (2010).

Projection : UTM NAD 83 Zone 17

Date : August 2021



**Figure 7.17**  
**Existing Significant Threat Areas**  
**Halton Region Intakes**



**Legend**

- Source Protection Region
- Source Protection Area
- Upper / Single Tier Municipality
- Lower Tier Municipality
- Niagara Escarpment

**Roads**

- Highway
- Regional
- ~~~~~ Hydrography
- ~~~~~ Waterbody
- Municipal Intake

**Event-Based Modelling**  
**Significant Threat Areas**

- Handling and Storage of Fuel
- Conveyance of Oil in a Pipeline
- Discharge from a wastewater treatment facility other than a bypass

***DRAFT***

Source : Halton Region / Lake Ontario Collaborative /  
Stantec Consulting Inc. as amended (2010).

Projection : UTM NAD 83 Zone 17

Date : March 2021

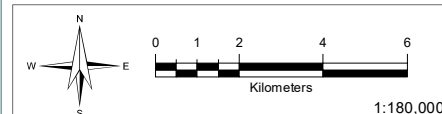




Figure 7.18

**Threats Affecting Intakes  
Outside Halton Source Protection Area**

**Legend**

- Municipal Intake
- Source Protection Area
- Activity Impacting Intakes**
  - Sewage System Operation
  - Conveyance of Oil in a Pipeline
  - Fuel Handling and Storage
- Event Based Areas**
  - Sewage System Operation
  - Conveyance of Oil in a Pipeline
  - Fuel Handling and Storage
  - Niagara Escarpment
- Roads**
  - Highway
  - Waterbody

***DRAFT***

Projection : UTM NAD 83 Zone 17

Date : March 2021

