



CTC Source Protection Region



Public Consultation Summary

Yonge Street Aquifer (YSA) Water Supply System – Aurora Well 4

Technical Work Completed to comply with requirements under the *Clean Water Act, 2006*

January 16 – February 20, 2020

PUBLIC CONSULTATION

SUMMARY OF PROPOSED AMENDMENTS TO THE

CTC SOURCE PROTECTION PLAN (INCLUDING TORONTO AND REGION ASSESSMENT REPORT)

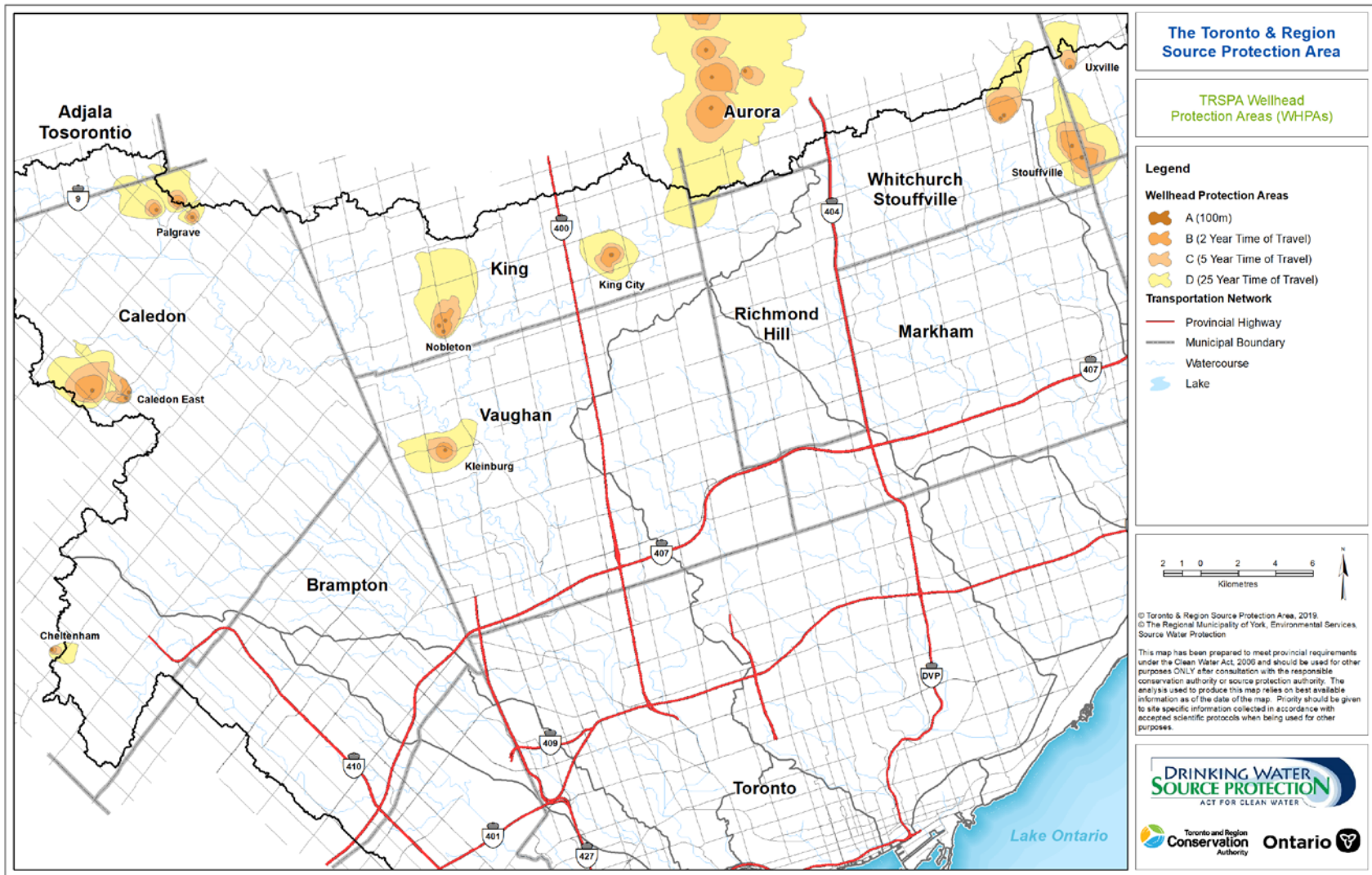
Pursuant to Section 34 of Ontario Regulation 287/07 of the Clean Water Act, 2006

January 16 – February 20, 2020

The Yonge Street Aquifer (YSA) Well Capacity Restoration Environmental Assessment identified a new well location in the Town of Aurora aimed at recovering lost well capacity due to aging infrastructure and water quality issues within the existing YSA well system. In 2016, a new production well was constructed in Aurora (Aurora PW7). A production well in Newmarket (Newmarket PW14) has had performance and water quality issues over the past few years and will be removed from the system for these reasons.

Although the existing maximum permitted water taking rates for the other YSA wells, and the overall YSA maximum permitted capacity will remain the same, the changes in water takings will alter the existing Aurora and Newmarket Wellhead Protection Areas (WHPAs). Although Aurora PW7 and Newmarket PW14 are over 5 kilometres from the Toronto and Region Source Protection Area (TRSPA), the changes do result in a small extension of the WHPA-D into TRSPA.

Per Section 34 of Ontario Regulation 287/07 of the *Clean Water Act, 2006*, this document summarizes the sections of the Assessment Report and mapping which have changed to reflect the proposed amendments (highlighted in yellow) listed in the attached Notice.



Figures ES:7; 4.5: Wellhead Protection Areas in the Toronto and Region Source Protection Area

CHAPTER 4 – ASSESSING VULNERABILITY OF DRINKING WATER SOURCES

4.2 GROUNDWATER VULNERABILITY - WELLHEAD PROTECTION AREAS (WHPAs)

The groundwater-based municipal supplies in the TRSPA are currently delivered through ~~seven~~ six active drinking water systems which have a total of 20 wells. In addition, the Aurora-Newmarket groundwater-based municipal system is located outside of the TRSPA, but the combined WHPA-D for these wells extends into the TRSPA.

Mapping of WHPAs has been completed by consultants working for the respective regional municipalities and then peer reviewed by consultants under the direction of the CTC SPC. The WHPAs have been mapped for all of the following 20 municipal wells in the TRSPA watersheds jurisdiction:

- Caledon East (3 wells);
- Palgrave (3 wells);
- Nobleton (3 wells);
- Kleinburg (2 wells);
- King City (2 wells);
- Whitchurch-Stouffville (5 wells); and
- Uxville (2 wells).

In 2019, York Region conducted a wellhead protection study for Aurora PW7, located at the Aurora PW5 site, located immediately outside of the TRSPA.

4.4 YORK REGION – TOWNS OF NOBLETON, KLEINBURG, KING, AND WHITCHURCH-STOUFFVILLE

4.4.1 Geological Setting

York Region operates four groundwater-based municipal drinking water supplies within the TRSPA. These systems include:

- Nobleton (3 wells);
- Kleinburg (2 wells);
- King City (2 wells); and
- Whitchurch-Stouffville (5 wells).

These systems are located in the headwaters of the Humber River System, with the exception of Whitchurch-Stouffville, which is in the headwaters of both the Rouge River and Duffins Creek watersheds. All of the wells are screened in the overburden, with depths ranging up to 100 m below grade. Further details on the setting for each wellfield are provided below.

York Region also operates two groundwater-based municipal drinking water supplies immediately adjacent to the TRSPA where the wellhead protection area extends into the TRSPA. These systems include:

- Aurora (7 wells); and
- Newmarket (5 wells).

These systems are located in the East Holland watershed.

4.4.7 Newmarket - Aurora WHPA Delineation and Vulnerability Scoring

In 2016, a new production well was constructed in Aurora (Aurora PW7) to recover lost well capacity due to aging infrastructure and water quality issues within the existing Yonge Street Aquifer (YSA) well system. In addition, a production well in Newmarket (Newmarket PW14) has had performance and water quality issues over the past few years and will be removed from the system for these reasons. Although the existing maximum permitted water taking rates for the other YSA wells, and the overall YSA maximum permitted capacity will remain the same, the changes in water takings will alter the existing Aurora and Newmarket Wellhead Protection Areas (WHPAs).

In 2013, Phase 1 of the York Tier 3 Water Budget study was developed and designed in accordance with the *Clean Water Act, 2006*, and the *Technical Rules* (November 2009). In 2019, the 2013 regional groundwater flow model went through a re-calibration process, within the YSA footprint, to reflect new data collected as part of the detailed hydrogeological investigation (AECOM, 2017).

In general, the 2019 and 2007 WHPAs are similar in size and shape with a few minor differences. Adjustments resulted in an approximate 1.8 km long extension of the WHPA-D in the southwest direction (towards Bathurst St., between 15th Sideroad and King Road) into TRSPA. Adjustments to the WHPAs reflect minor updates in time-of-travel estimates and simulated flow directions as a result of the local model re-calibration effort. The resultant WHPA map is shown on **Figure 4.24**, while the mapping of vulnerability is shown on **Figure 4.25**. The map showing the vulnerability scores for the Newmarket – Aurora wellfield is shown on **Figure 4.26**.

Well	Uncertainty Type	WHPA-A	WHPA-B	WHPA-C	WHPA-D
Nobleton	Delineation of WHPA	Low	Low	Low	Low
	Vulnerability Scoring	Low	Low	Low	Low
	Overall – Vulnerability Scores	Low	Low	Low	Low
Kleinburg	Delineation of WHPA	Low	Low	Low	Low
	Vulnerability Scoring	Low	Low	High	Low
	Overall – Vulnerability Scores	Low	Low	Low	Low
King City	Delineation of WHPA	Low	Low	Low	Low
	Vulnerability Scoring	Low	Low	Low	Low
	Overall – Vulnerability Scores	Low	Low	Low	Low
Whitchurch-Stouffville	Delineation of WHPA	Low	Low	Low	Low
	AVI computation	Low	Low	Low	Low
	Overall – Vulnerability Scores	Low	Low	Low	Low
Aurora	Delineation of WHPA	Low	Low	Low	Low
	AVI computation	Low	Low	Low	Low
	Overall – Vulnerability Scores	Low	Low	Low	Low

Table 1: Uncertainty Assessment - York Region

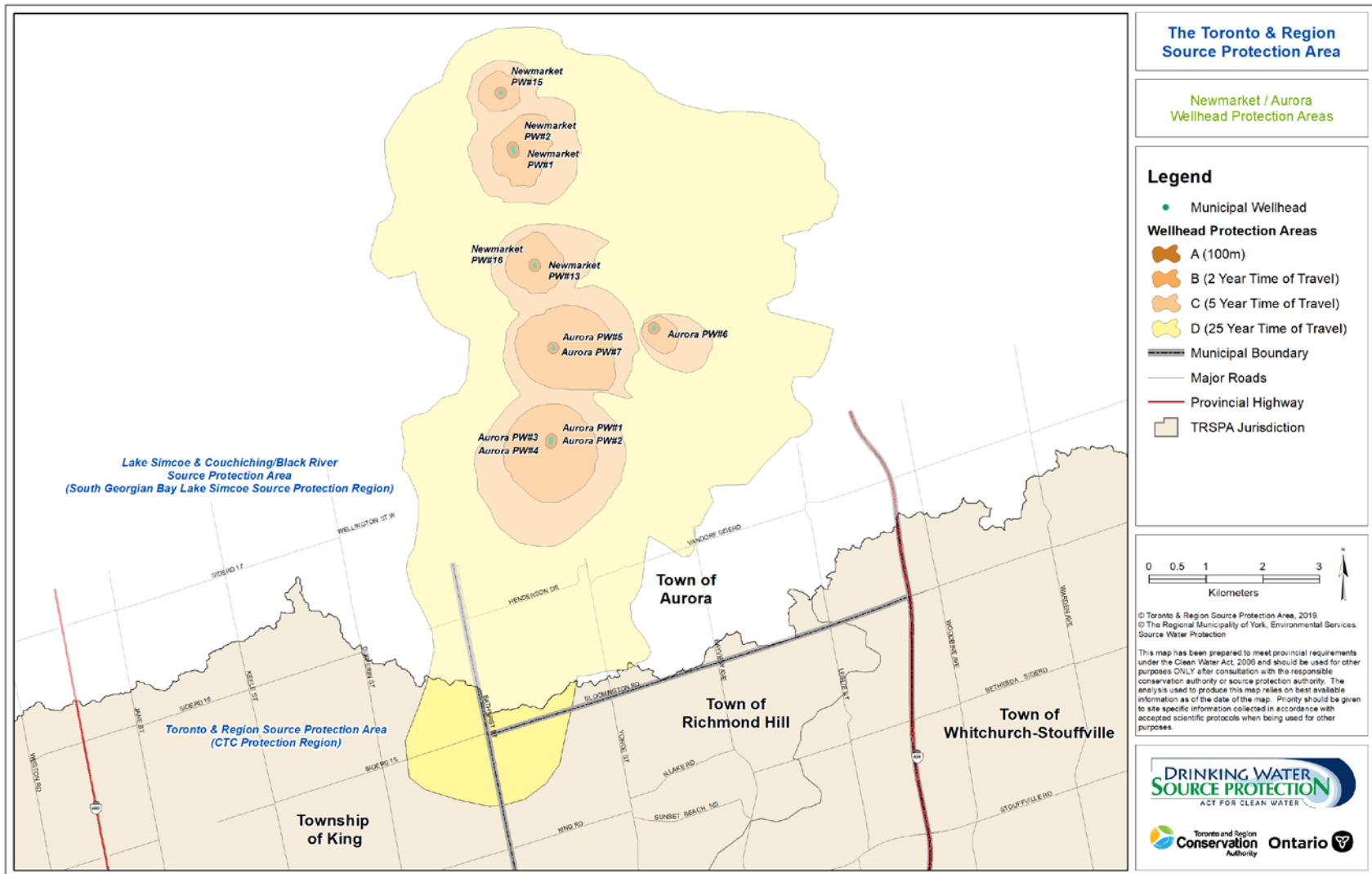


Figure 4.24: Wellhead Protection Areas (WHPAs) – Yonge Street Aquifer (YSA) Water Supply System – Aurora

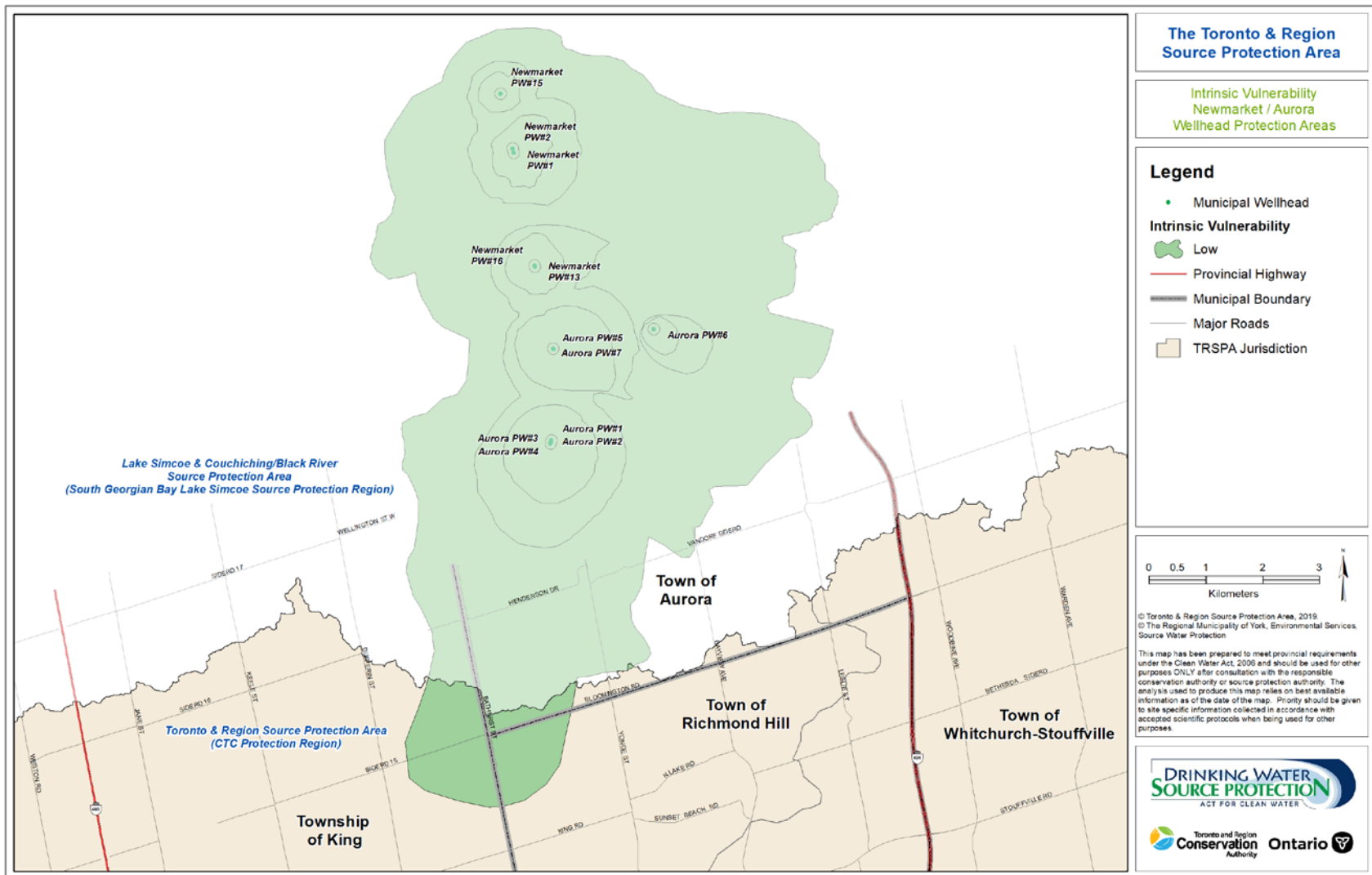


Figure 4.25: Groundwater Vulnerability of WHPAs — Yonge Street Aquifer (YSA) Water Supply System – Aurora

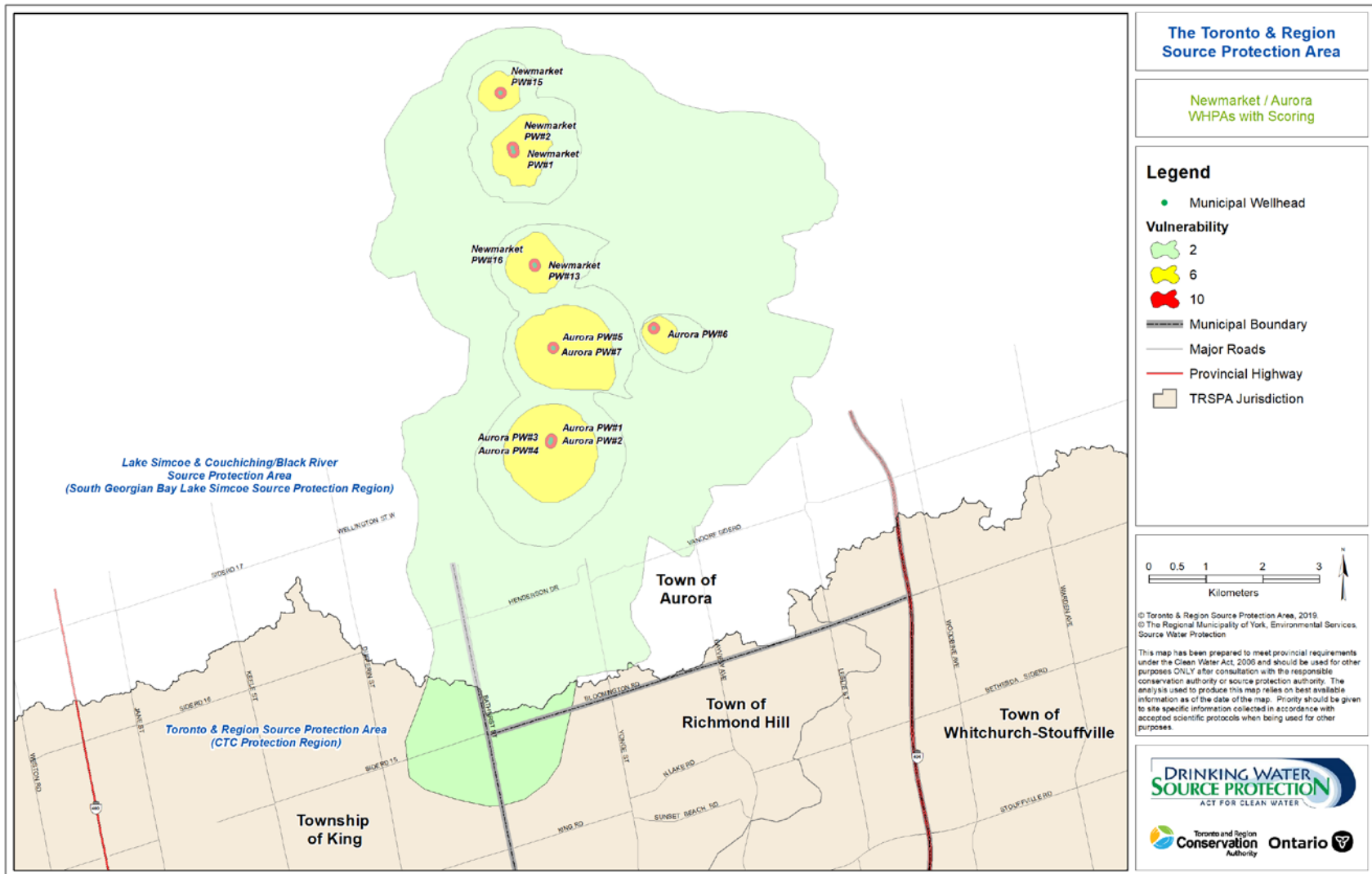


Figure 4.26: Vulnerability Scores for WHPAs - Yonge Street Aquifer (YSA) Water Supply System – Aurora

CHAPTER 5 – ASSESSING VULNERABILITY OF DRINKING WATER SOURCES

5.5.2 DRINKING WATER THREATS - YORK REGION

Newmarket – Aurora Threats and Issues

There are no significant drinking water threats from the Newmarket - Aurora Drinking Water System within the TRSPA given that the WHPA-D has a vulnerability score of 2.

CHAPTER 7 – REFERENCES

AECOM. (2017). *Hydrogeological Report in Support of Yonge Street Aquifer Permit to Take Water Amendment, draft for discussion*. September 29, 2017.

York, Region of. (2019). *Wellhead protection Area Delineation, Vulnerability Assessment and Threat Assessment in Support of Updates to the Newmarket and Aurora Wellfields*. July 2019. Newmarket, ON: Region of York.

APPENDIX D – ASSESSING VULNERABILITY OF DRINKING WATER SOURCES

D2 VULNERABILITY ANALYSIS

D.2.1 Wellhead Protection Areas

As described in **Chapter 4** of the Assessment Report, there are **20 21** Well Head Protection Areas (WHPAs) for six groundwater-based municipal drinking water systems within the TRSPA. In addition, the WHPA-D for the Newmarket – Aurora groundwater-based system extends into the TRSPA. The groundwater-based municipal drinking water systems service the following communities:

- Palgrave-Caledon East (Palgrave 3 wells, Caledon East 3 wells);
- Kleinburg (2 wells);
- Nobleton (3 wells);
- King City (2 wells);
- Whitchurch-Stouffville (5 wells); and
- Uxville (2 wells).

D2.5 References

York, Region of. (2019). *Wellhead protection Area Delineation, Vulnerability Assessment and Threat Assessment in Support of Updates to the Newmarket and Aurora Wellfields*. July 2019. Newmarket, ON: Region of York.

Regional Municipality	Component	Wells	Consultant: Study Title: Study Date
York	WHPA A-D Delineation & Vulnerability Scoring	King City 3 & 4 Kleinberg 3 & 4 Nobleton 2, 3 & 5 Stouffville 1, 2, 3, 5 & 6 Aurora 1, 2, 3, 4, 5, 6 & 7	EarthFx Incorporated: November 2007 - <i>Vulnerability Assessment and Scoring of Wellhead Protection Areas Regional Municipality of York (Earthfx, 2007b)</i> October 2008 - <i>Vulnerability Assessment and Scoring of Wellhead Protection Areas Regional Municipality of York (Earthfx, 2008c)</i> November 2009 - <i>Updated Vulnerability Assessment and Scoring Wellhead Protection Areas Region of York (Earthfx, 2009)</i> July 2019 – <i>Wellhead Protection Area Delineation, Vulnerability Assessment and Threat Assessment in Support of Updates to the Newmarket and Aurora Wellfields (York, 2019)</i>

Table D2-1: Wellhead Protection Area Reports

APPENDIX E – DRINKING WATER THREATS ASSESSMENT

E4.3.5 Newmarket – Aurora

The Yonge Street Aquifer Water Supply System is located in the South Georgian Bay – Lake Simcoe Source Protection Region. As described in York Region (2019), changes in water takings associated with the addition of Aurora Well PW7 and the removal of Newmarket Well 14, will alter existing Wellhead Protection Areas (WHPAs). The WHPA-D associated with the Newmarket – Aurora Wellfield now extends into the Toronto and Region Source Protection Area. The methodology and assumptions outlined in Technical Memorandum A3 (Stantec, 2010) were used to determine the managed land, livestock density, and impervious surfaces in the WHPA-D.

E4.3.5.1 Managed Land and Livestock Density

The managed land calculations were completed in accordance with the Technical Bulletin issued in December 2009. Although the managed land percentage for the WHPA-D is not required under the *Technical Rules*, it was calculated at more than 40% and less than 80% (Figure E3-25). Livestock density in the WHPA-D was determined to be less than 0.5 nutrient units by acre (Figure E3-26).

E4.3.5.2 Impervious Surfaces

The road network was compiled by York Region, which includes primary and secondary roads in the Region. Sidewalks, parking lots and driveways (which could receive road salt) were excluded from this assessment, following the methodology of previous assessments (Stantec, 2010). The 1 km² grid was provided by Lake Simcoe Region Conservation Authority (LSRCA) and was overlain on the road network.

Most of the WHPA-D footprint was categorized as greater than 8% and less than 80% impervious (Figure E3-26). Some areas were categorized as greater than 1% and less than or equal to 8% impervious.

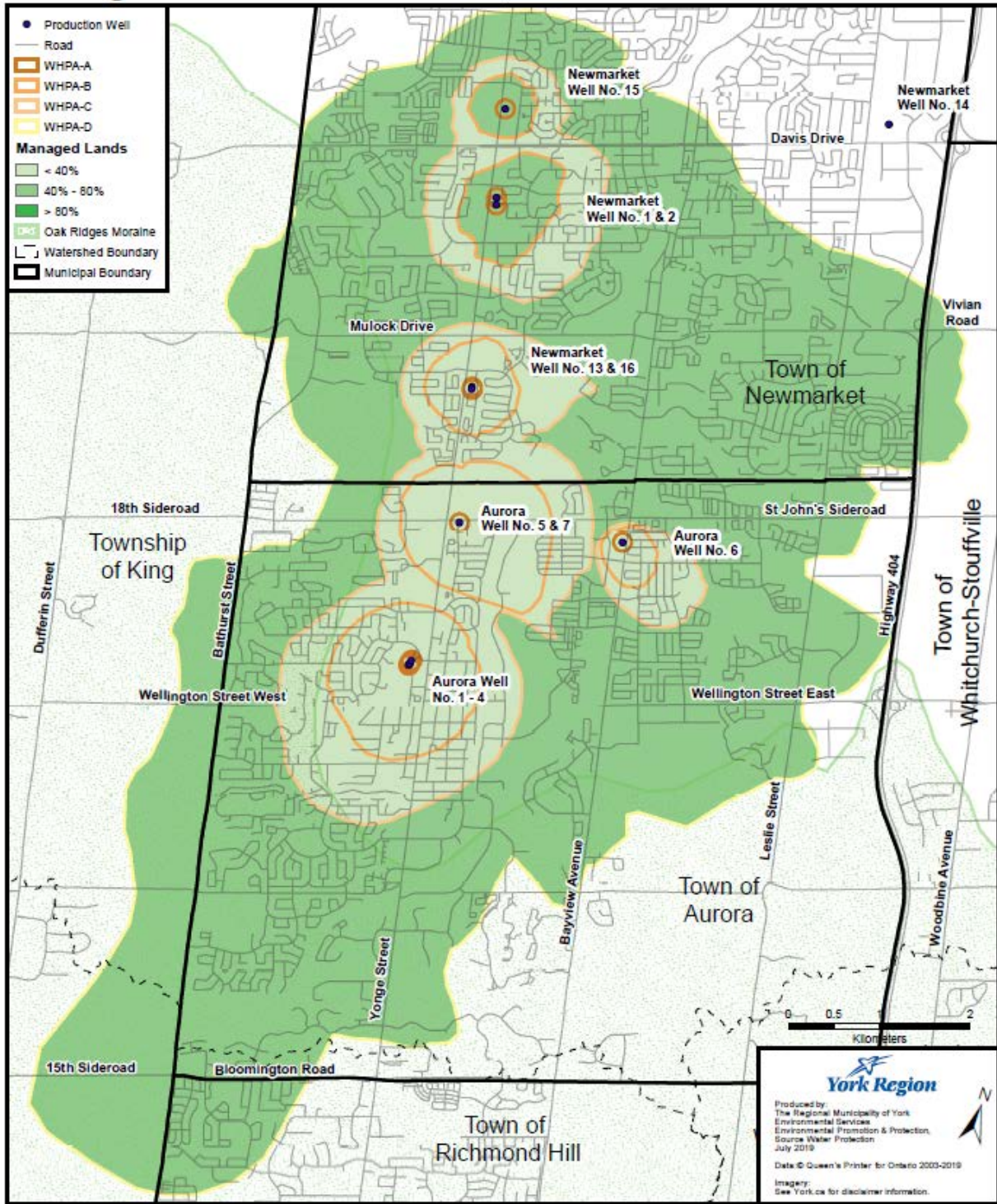


Figure E3-25: Percent Managed Land – Newmarket - Aurora (York Region, 2019)

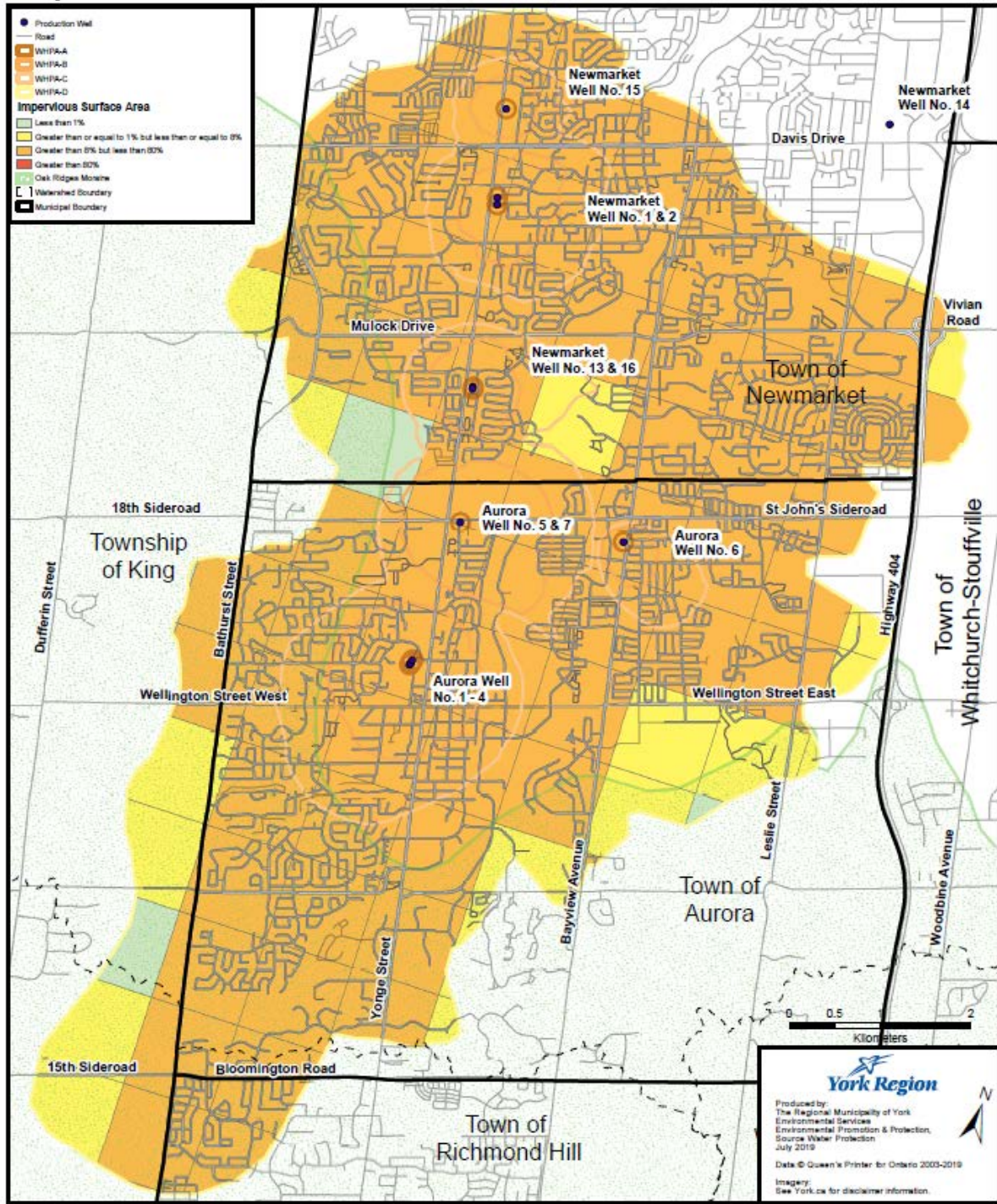


Figure E3-27: Impervious Surfaces – Newmarket - Aurora (York Region, 2019)