AGENDA

COUNTY OF OXFORD COUNCIL

Wednesday, February 23, 2022, 7:00 p.m.
Online via oxfordcounty.ca/livestream
oxfordcounty.ca/livestream

1. CALL TO ORDER

2. APPROVAL OF AGENDA

   Proposed Resolution:

   Resolved that the Agenda be approved.

3. DISCLOSURES OF PECUNIARY INTEREST AND THE GENERAL NATURE THEREOF

4. ADOPTION OF COUNCIL MINUTES OF PREVIOUS MEETING

   4.1. February 9, 2022

   Proposed Resolution:

   Resolved that the Council minutes of February 9, 2022 be adopted.

   4.2. February 11, 2022

   Proposed Resolution:

   Resolved that the minutes of the Special Council meeting held February 11, 2022 be adopted.

5. PUBLIC MEETINGS

   5.1. Resolution to go into a Public Meeting pursuant to the Planning Act

   Proposed Resolution:

   Resolved that Council rise and go into a Public Meeting pursuant to the *Planning Act*, and that the Warden chair the Public Meeting.

   Time _____

   5.1.1. Application for Official Plan Amendment - Additional Residential Units – City of Woodstock OP 21-15-8

   The proposed Official Plan Amendment would allow for the establishment of an additional residential unit (ARU) in single-detached, semi-detached and row-house

dwellings and in a structure ancillary to such dwellings within the City of Woodstock.

*See Report No. CP 2022-65

5.2. Resolution to adjourn the Public Meeting

Proposed Resolution:

Resolved that Council adjourn the Public Meeting and reconvene as Oxford County Council with the Warden in the chair.

Time _____

5.3. Consideration of Report No. CP 2022-65 - Application for Official Plan Amendment - Additional Residential Units – City of Woodstock OP 21-15-8

Proposed Resolution:

Resolved that the recommendations contained in Report No. CP 2022-65, titled "Application for Official Plan Amendment - Additional Residential Units – City of Woodstock OP 21-15-8", be adopted.

6. DELEGATIONS, PRESENTATIONS AND CONSIDERATION THEREOF

6.1. Proclamation for the 150th Anniversary of Rev. George Leslie Mackay's arrival in Tamsui, Taiwan on March 9, 1872

7. CONSIDERATION OF CORRESPONDENCE

7.1. Community Futures Oxford

February 9, 2022
Re: Hub Feasibility Survey - Request for feedback from Oxford County Council

7.2. Southwestern Public Health

February 14, 2022
Re: Southwestern Public Health Board of Health Hires Dr. Ninh Tran as its New Medical Officer of Health

7.3. Ministry of Municipal Affairs and Housing

February 8, 2022
Re: Ontario Publishes Housing Affordability Task Force Report

Proposed Resolution:

Resolved that Correspondence Items 7.1 to 7.3 inclusive on the Open meeting agenda of February 23, 2022 be received as information.

8. REPORTS FROM DEPARTMENTS

8.1. COMMUNITY PLANNING

8.1.1. CP 2022-65 - Application for Official Plan Amendment - Additional Residential Units – City of Woodstock OP 21-15-8

RECOMMENDATIONS

1. That Oxford County Council approve Application No. OP 21-15-8, initiated by the City of Woodstock, to implement amendments to the Official Plan related to Additional Residential Units in the City of Woodstock;
2. And further, that Council approve the attached Amendment No. 271 to the County of Oxford Official Plan;
3. And further, that the necessary by-law to approve Amendment No. 271 be raised.

* See Item 5.3

8.1.2. CP 2022-78 - 2021 Census Data Release and Related Growth Updates

RECOMMENDATIONS

1. That County Council receive Report No. CP 2022-78 for information;
2. And further, that Report No. CP 2022-78 be circulated to the Area Municipalities for information.

Proposed Resolution:

Resolved that the recommendations contained in Report No. CP 2022-78, titled "2021 Census Data Release and Related Growth Updates", be adopted.

8.2. PUBLIC WORKS

8.2.1. PW 2022-05 - 2021 Drinking Water System Performance

RECOMMENDATION

1. That County Council receive Report PW 2022-05 entitled "2021 Drinking Water System Performance", including the attached 2021 Annual Drinking Water System Summary Reports.

Proposed Resolution:

Resolved that the recommendation contained in Report No. PW 2022-05, titled "2021 Drinking Water System Performance", be adopted.

8.2.2. PW 2022-06 - Managed Forest Plan Update: 2021 Review and Operational Activity Forecast

RECOMMENDATION

1. That County Council receive Report No. PW 2022-06 entitled "Managed Forest Plan Update: 2021 Review and Operational Activity Forecast" for information.

Proposed Resolution:

Resolved that the recommendation contained in Report No. PW 2022-06, titled "Managed Forest Plan Update: 2021 Review and Operational Activity Forecast", be adopted.

8.2.3. PW 2022-07 - Proposed Federal Government Single-Use Plastics Ban

RECOMMENDATION

1. That Oxford County Council endorse the submission comments in response to Environment and Climate Change Canada's proposed Single-Use Plastics Prohibition Regulations as outlined in Report No. PW 2022-07.

Proposed Resolution:

Resolved that the recommendation contained in Report No. PW 2022-07, titled "Proposed Federal Government Single-Use Plastics Ban", be adopted.

8.2.4. PW 2022-08 - Procurement of Tandem Axle Plow Trucks

RECOMMENDATION

1. That County Council authorize additional funding in the amount of $161,000 for the procurement of two tandem axle plow trucks, to be financed from the Roads Reserve.

Proposed Resolution:

Resolved that the recommendation contained in Report No. PW 2022-08, titled "Procurement of Tandem Axle Plow Trucks", be adopted.

9. UNFINISHED BUSINESS

9.1. Pending Items

10. MOTIONS

11. NOTICE OF MOTIONS

12. NEW BUSINESS/ENQUIRIES/COMMENTS

13. CLOSED SESSION

Proposed Resolution:

Resolved that Council rise and go into a Closed Session to consider Report No. CS (CS) 2022-08 regarding a position, plan, procedure, criteria or instruction to be applied to any negotiations carried on or to be carried on by or on behalf of the municipality or local board.

Time _____

13.1. Closed Session Begins

Time _____

13.2. CS (CS) 2022-08

13.3. Closed Session Ends

Proposed Resolution:

Resolved that Council reconvene in Open Session.

Time _____

14. CONSIDERATION OF MATTERS ARISING FROM THE CLOSED SESSION

Proposed Resolution:

Resolved that the recommendations contained in Report No. CS (CS) 2022-08 be adopted.

15. BY-LAWS

15.1. By-law No. 6415-2022

Being a By-Law to remove certain lands from Part Lot Control.

15.2. By-law No. 6416-2022

Being a By-Law to adopt Amendment Number 271 to the County of Oxford Official Plan.

15.3. By-law No. 6417-2022

Being a By-law to amend By-law No. 6268-2020, a By-law establishing County Council Procedures for governing the proceedings of the Council of the County of Oxford.

15.4. By-law No. 6418-2022

Being a By-law to confirm all actions and proceedings of the Council of the County of Oxford at the meeting at which this By-law is passed.

Proposed Resolution:

Resolved that the following by-laws be now read a first and second time: 6415-2022 to 6418-2022 inclusive.

Resolved that the following by-laws be now given a third and final reading: 6415-2022 to 6418-2022 inclusive.

16. ADJOURNMENT

OXFORD COUNTY COUNCIL
MINUTES

February 9, 2022

Council Present	Warden Larry Martin Deputy Warden Sandra Talbot Councillor Ted Comiskey Alternate Councillor Connie Lauder Councillor David Mayberry Councillor Don McKay Councillor Stephen Molnar Councillor Mark Peterson Councillor Marcus Ryan Councillor Deborah Tait
Council Absent	Councillor Trevor Birtch
Staff Present	M. Duben, Chief Administrative Officer B. Addley, Director of Paramedic Services L. Buchner, Director of Corporate Services M. Cowan, Manager of Information Services M. Dager, Director of Woodingford Lodge G. Hough, Director of Community Planning L. Lanthier, Acting Director of Human Services C. Senior, Clerk D. Simpson, Director of Public Works A. Smith, Director of Human Resources

1. CALL TO ORDER

Oxford County Council meets electronically in regular session this ninth day of February, 2022 at 9:30 a.m. with Warden Martin in the chair.

2. APPROVAL OF AGENDA

RESOLUTION NO. 1

Moved By: Connie Lauder
Seconded By: Deborah Tait

Resolved that the Agenda be approved.

DISPOSITION: Motion Carried

3. DISCLOSURES OF PECUNIARY INTEREST AND THE GENERAL NATURE THEREOF

NIL

4. ADOPTION OF COUNCIL MINUTES OF PREVIOUS MEETING

4.1 January 26, 2022

RESOLUTON NO. 2

Moved By: Deborah Tait
Seconded By: Ted Comiskey

Resolved that the Council minutes of January 26, 2022 be adopted.

DISPOSITION: Motion Carried

5. PUBLIC MEETINGS

NIL

6. DELEGATIONS, PRESENTATIONS AND CONSIDERATION THEREOF

NIL

7. CONSIDERATION OF CORRESPONDENCE

7.1 Ministry of Municipal Affairs and Housing

February 3, 2022
Re: Steps to Cautiously and Gradually Ease Public Health Measures While Protecting Hospital and Health Care Capacity

RESOLUTION NO. 3

Moved By: Ted Comiskey
Seconded By: Marcus Ryan

Resolved that Correspondence Item 7.1 on the Open meeting Agenda of February 9, 2022 be received as information.

DISPOSITION: Motion Carried

8. REPORTS FROM DEPARTMENTS

8.1 CAO

8.1.1 CAO 2022-02 - 2021 Annual Progress Report - 10 Year Shelter Plan

RECOMMENDATION

1. That Council approve the 2021 Annual Progress Report of the 10 Year Shelter Plan, as illustrated in Attachment 1 and as outlined in Report No. CAO 2022-02.

RESOLUTION NO. 4

Moved By: Ted Comiskey
Seconded By: Marcus Ryan

Resolved that the recommendation contained in Report No. CAO 2022-02, tilted “2021 Annual Progress Report - 10 Year Shelter Plan”, be adopted.

DISPOSITION: Motion Carried

8.2 PUBLIC WORKS

8.2.1 PW 2022-03 - Woodingford Lodge Domestic Water Booster System Replacement

RECOMMENDATION

1. That County Council authorize additional funding in the amount of $129,088 for the replacement of the domestic water booster system at Woodingford Lodge, Woodstock, to be funded from the Facilities Reserve.

RESOLUTION NO. 5

Moved By: Marcus Ryan
Seconded By: Stephen Molnar

Resolved that the recommendation contained in Report No. PW 2022-03, titled “Woodingford Lodge Domestic Water Booster System Replacement”, be adopted.

DISPOSITION: Motion Carried

8.3 CORPORATE SERVICES

8.3.1 CS 2022-04 - Investment Activity Report and Policy Review - 2021

RECOMMENDATION

1. That Report No. CS 2022-04 entitled “Investment Activity Report and Policy Review - 2021”, for the year ended December 31, 2021, be received as information.

RESOLUTION NO. 6

Moved By: Stephen Molnar
Seconded By: Mark Peterson

Resolved that the recommendation contained in Report No. CS 2022-04, titled “Investment Activity Report and Policy Review – 2021”, be adopted.

DISPOSITION: Motion Carried

8.3.2 CS 2022-05 - Council Remuneration and Expenses - 2021

RECOMMENDATION

1. That Report No. CS 2022-05 entitled “Council Remuneration and Expenses - 2021”, for the year ended December 31, 2021, be received as information.

RESOLUTION NO. 7

Moved By: Stephen Molnar
Seconded By: Mark Peterson

Resolved that the recommendation contained in Report No. CS 2022-05, titled “Council Remuneration and Expenses – 2021”, be adopted.

DISPOSITION: Motion Carried

8.3.3 CS 2022-06 - Future Oxford Legacy Fund – Partnership Agreement Renewal

RECOMMENDATION

1. That County Council authorizes the Chief Administrative Officer and Director of Corporate Services to execute a Partnership Agreement with the Oxford Small Business Support Centre Inc., as outlined in Report No. CS 2022-06 and attached as Attachment 1.

RESOLUTION NO. 8

Moved By: Mark Peterson
Seconded By: Stephen Molnar

Resolved that the recommendation contained in Report No. CS 2022-06, titled “Future Oxford Legacy Fund – Partnership Agreement Renewal”, be adopted.

DISPOSITION: Motion Carried

8.3.4 CS 2022-07 - County of Oxford Procedure By-law Amendments

RECOMMENDATION

1. That by-law No. 6268-2020, as amended, being a by-law to adopt a County of Oxford Procedure By-law, be amended to align with the 2022 term and future terms of office commencing on November 15.

RESOLUTION NO. 9

Moved By: Mark Peterson
Seconded By: Stephen Molnar

Resolved that the recommendation contained in Report No. CS 2022-07, titled “County of Oxford Procedure By-law Amendments”, be adopted.

DISPOSITION: Motion Carried

9. UNFINISHED BUSINESS

9.1 Pending Items

No discussion takes place regarding the Pending Items list.

10. MOTIONS

10.1 Councillor Tait

RESOLUTION NO. 10

Moved By: Deborah Tait
Seconded By: Stephen Molnar

Resolved that Section 9.1.2 of the Procedure By-law be amended as follows:

9.1.2 Notwithstanding Section 9.1.1, during Council’s review and consideration of annual business plans and budgets, amending motions may be tabled in writing and debated without previous notice at the Budget meeting specifically identified for budget debate. The Clerk will ensure that any budget motions received in advance as Notices of Motion are printed in full on the Agenda for the meeting when debate is scheduled to occur.

DISPOSITION: See Action of Council following Resolution No. 11

RESOLUTON NO. 11

Moved By: David Mayberry
Seconded By: Marcus Ryan

Resolved that the proposed amendment to Section 9.1.2 of the Procedure By-law be tabled.

DISPOSITION: A Recorded Vote is requested by Councillor Tait with the following results:

Those in Favour of the Motion	Those Opposed to the Motion
Warden Martin, Deputy Warden Talbot, Councillors Comiskey, Mayberry, McKay and Ryan	Alternate Councillor Lauder, Councillors Molnar, Peterson and Tait.
Total 6	Total 4

DISPOSITION: Motion Carried

10.2 Inaugural Meeting of Oxford County Council

That Section 3.2 (Inaugural Meeting) of the Procedure By-law be amended to align with the amendment to 6(1) of the *Municipal Elections Act*, 1996, that the 2022 term and future terms of office commence on November 15.

* See Report No. CS 2022-07

10.3 Councillor Ryan

RESOLUTION NO. 12

Moved By: Marcus Ryan
Seconded By: Mark Peterson

Whereas in 1998 the Thames Valley District School Board (TVDSB) was formed, through the amalgamation of the former Middlesex County Board of Education, Oxford County Board of Education, Elgin County Board of Education and the City of London Board of Education;

And Whereas upon amalgamation, the TVDSB Trustee distribution consisted of two Trustees elected in each the Counties of Middlesex, Elgin, and Oxford for a total of six Trustees and six Trustees elected in the City of London;

And Whereas the TVDSB electoral group population has remained consistent since amalgamation between 400,000 and 999,999 as such TVDSB qualifies for a total of 12 Trustees for the TVDSB geography, and one Indigenous Trustee appointed per Ontario Regulation 462/97;

And Whereas the number of elected Trustees and the distribution within a Board's jurisdiction is governed by Ontario Regulation 412/00, the Regulation (the Act) requires a School Board to pass a resolution by March 31st of an election year, either designating one or more municipalities as a low population or declaring that no such designation will be made;
And Whereas the electoral quotient (2018) for Middlesex County meets the

requirements for Middlesex County to be designated a low population municipality;

And Whereas by Board resolution, Middlesex County has historically been designated low population, thus allotted two Trustee representatives;

And Whereas as contained within the *Act,* the Board shall have regard based on the principles of: municipalities with low population shall receive reasonable representation; evidence of historical, traditional or geographic communities should be taken into account;

Therefore be it resolved that Middlesex County is deemed by Board resolution the designation as a low population municipality for the purpose of Trustee Distribution;

Therefore be it Resolved that Oxford County support the TVDSB Trustee Distribution of:

- 2 Trustees representing Middlesex County
- 2 Trustees representing Oxford County
- 2 Trustees representing Elgin County
- 6 Trustees representing the City of London
- Indigenous Trustee appointed per Ontario Regulation 462/97 and;

Therefore be it Resolved that Oxford County supports equitable representation that balances the rural interests within the geography of Thames Valley, and the Resolution be forwarded to the Oxford, Elgin, and Middlesex Councils, the Minister of Education, TVDSB Board, Minister of Municipal Affairs and Housing, and all Oxford, Elgin, and Middlesex MPPs.

DISPOSITION: Motion Carried

11. NOTICE OF MOTIONS

NIL

12. NEW BUSINESS/ENQUIRIES/COMMENTS

Warden Martin indicates that since the Province is expected to lift capacity limits where proof of vaccination is required effective February 21, 2022, it is expected that the February 23, 2022 Council meeting will be a hybrid style which would allow members of

Council to participate either in person in the Council Chamber or online, depending on their comfort level.

13. CLOSED SESSION

RESOLUTION NO. 13

Moved By: Stephen Molnar
Seconded By: David Mayberry

Resolved that Council rise and go into a Closed Session to consider Report No. PW (CS) 2022-04 regarding a proposed or pending acquisition or disposition of land by the County or local board.

DISPOSITION: Motion Carried at 10:04 a.m.

Oxford County Council meets electronically in Closed Session, as part of a regular meeting, this ninth day of February, 2021.

10:05 a.m. with Warden Martin in the chair.

All Members of Council present with the exception of Councillor Birtch.
Councillor Lauder was in attendance in place of Councillor Birtch.

Staff Participants
M. Duben, Chief Administrative Officer
B. Addley, Director of Paramedic Services
L. Buchner, Director of Corporate Services
M. Cowan, Manager of Information Services
M. Dager, Director of Woodingford Lodge
G. Hough, Director of Community Planning
L. Lanthier, Acting Director of Human Services
C. Senior, Clerk
D. Simpson, Director of Public Works
A. Smith, Director of Human Resources

DISCLOSURES OF PECUNIARY INTEREST AND THE GENERAL NATURE THEREOF:

NIL

CONSIDERATION OF CORRESPONDENCE:

NIL

REPORTS FROM DEPARTMENTS:

1. PW (CS) 2022-04

DELEGATIONS AND PRESENTATIONS:

NIL

UNFINISHED BUSINESS:
NIL

TIME OF COMPLETION OF CLOSED SESSION:

10:06 a.m.

RESOLUTION NO. 14

Moved By: Stephen Molnar
Seconded By: David Mayberry

Resolved that Council reconvene in Open session.

DISPOSITION: Motion Carried at 10:06 a.m.

14. CONSIDERATION OF MATTERS ARISING FROM THE CLOSED SESSION

14.1 PW (CS) 2022-04

RESOLUTION NO. 15

Moved By: David Mayberry
Seconded By: Sandra Talbot

Resolved that the recommendations contained in Report No. PW (CS) 2022-04 be adopted.

DISPOSITION: Motion Carried

15. BY-LAWS

15.1 By-law No. 6411-2022

Being a By-Law to remove certain lands from Part Lot Control.

15.2 By-law No. 6412-2022

Being a By-law to further amend By-law No. 5936-2017 being a By-law to remove certain lands from Part Lot Control;

15.3 By-law No. 6413-2022

Being a By-law to confirm all actions and proceedings of the Council of the County of Oxford at the meeting at which this By-law is passed.

RESOLUTION NO. 16

Moved By: Sandra Talbot
Seconded By: Connie Lauder

Resolved that the following by-laws be now read a first and second time: 6411-2022 to 6413-2022 inclusive.

DISPOSITION: Motion Carried

RESOLUTION NO. 17

Moved By: Sandra Talbot
Seconded By: Connie Lauder

Resolved that the following by-laws be now given a third and final reading: 6411-2022 to 6413-2022 inclusive.

DISPOSITION: Motion Carried

16. ADJOURNMENT

Council adjourns its proceedings at 10:09 a.m. until the next meeting scheduled for February 23, 2022 at 7:00 p.m.

Minutes adopted on _____by Resolution No. _____.

_____

WARDEN

_____

CLERK

OXFORD COUNTY COUNCIL

MINUTES

February 11, 2022

Council Present	Warden Larry Martin Deputy Warden Sandra Talbot Councillor Ted Comiskey Councillor Don McKay Councillor Mark Peterson Councillor Marcus Ryan Alternate Councillor George Way
Council Absent	Councillor Trevor Birtch Councillor David Mayberry Councillor Stephen Molnar Councillor Deb Tait
Staff Present	M. Duben, Chief Administrative Officer B. Addley, Director of Paramedic Services L. Buchner, Director of Corporate Services T. Conte, Manager of Strategic Communications and Engagement M. Cowan, Manager of Information Services R. Hall, Supervisor of Paramedic Operations C. Senior, Clerk D. Simpson, Director of Public Works

1. CALL TO ORDER

Oxford County Council meets electronically in a Special Meeting this eleventh day of February, 2022 at 1:31 p.m. with Warden Martin in the chair.

2. APPROVAL OF AGENDA

RESOLUTION NO. 1

Moved By: Marcus Ryan
Seconded By: Ted Comiskey

Resolved that the agenda be approved.

DISPOSITION: Motion Carried

3. DISCLOSURES OF PECUNIARY INTEREST AND THE GENERAL NATURE THEREOF

NIL

4. ADOPTION OF COUNCIL MINUTES OF PREVIOUS MEETING

NIL

5. PUBLIC MEETINGS

NIL

6. DELEGATIONS, PRESENTATIONS AND CONSIDERATION THEREOF

NIL

7. CONSIDERATION OF CORRESPONDENCE

NIL

8. REPORTS FROM DEPARTMENTS

NIL

9. UNFINISHED BUSINESS

NIL

10. MOTIONS

NIL

11. NOTICE OF MOTIONS

NIL

12. NEW BUSINESS/ENQUIRIES/COMMENTS

NIL

13. CLOSED SESSION

RESOLUTION NO. 2

Moved By: Marcus Ryan
Seconded By: Don McKay

Resolved that Council rise and go into a Closed Session to discuss the security of the property of the County of Oxford and the protection of public safety.

DISPOSITION: Motion Carried at 1:34 p.m.

Oxford County Council meets electronically in Closed Session, as part of a Special meeting, this eleventh day of February, 2022.

1:35 p.m. with Warden Martin in the chair.

All Members of Council present with the exception of Councillors Birtch, Mayberry, Molnar and Tait.
Councillor Way was in attendance as Councillor Mayberry's Alternate.

Staff Present	M. Duben, Chief Administrative Officer B. Addley, Director of Paramedic Services L. Buchner, Director of Corporate Services T. Conte, Manager of Strategic Communications and Engagement M. Cowan, Manager of Information Services R. Hall, Supervisor of Paramedic Operations C. Senior, Clerk D. Simpson, Director of Public Works
Others Present	K. DePrest, Chief Administrative Officer, Twp. of East Zorra-Tavistock M. Graves, Chief Administrative Officer, Town of Ingersoll M. Greb, Chief Administrative Officer, Twp. of South-West Oxford A. Hymers, Inspector, Ontario Provincial Police K. Kruger, Chief Administrative Officer, Twp. of Norwich D. Longworth, Chief, Woodstock Police Services R. Mordue, Chief Administrative Officer, Twp. of Blandford-Blenheim

DISCLOSURES OF PECUNIARY INTEREST AND THE GENERAL NATURE THEREOF:

NIL

CONSIDERATION OF CORRESPONDENCE:

NIL

REPORTS FROM DEPARTMENTS:

NIL

DELEGATIONS AND PRESENTATIONS:

Delegations from Emergency Personnel and other First Responder Support Services

UNFINISHED BUSINESS:

NIL

TIME OF COMPLETION OF CLOSED SESSION:

2:15 p.m.

RESOLUTION NO. 3

Moved By: Sandra Talbot
Seconded By: George Way

Resolved that Council reconvene in Open session.

DISPOSITION: Motion Carried at 2:15 p.m.

14. CONSIDERATION OF MATTERS ARISING FROM THE CLOSED SESSION

NIL

15. BY-LAWS

15.1 By-law No. 6414-2022

Being a By-law to confirm all actions and proceedings of the Council of the County of Oxford at the meeting at which this By-law is passed.

RESOLUTION NO. 4

Moved By: Ted Comiskey
Seconded By: Marcus Ryan

Resolved that By-law No. 6414-2022 be now read a first and second time.

DISPOSITION: Motion Carried

RESOLUTION NO. 5
Moved By: Ted Comiskey
Seconded By: Marcus Ryan

Resolved that By-law No. 6414-2022 be now given a third and final reading.

DISPOSITION: Motion Carried

16. ADJOURNMENT

Council adjourns its proceedings at 2:17 p.m. until the next meeting scheduled for February 23, 2022 at 7:00 p.m.

Minutes adopted on _____ by Resolution No. _____.

_____

WARDEN

_____

CLERK

From: Chloe Senior
To: Chloe Senior
Subject: Hub Feasibility Survey - Request for feedback from county council
Date: Wednesday, February 9, 2022 1:45:32 PM

Subject: Survey – how might an entrepreneurial hub in Oxford County support business in your Municipality?

Community Futures Oxford is exploring the possibility of creating and investing in an entrepreneurial hub to support the communities in Oxford County. Through providing access to a physical hub in Ingersoll, Community Futures Oxford would expand and scale their business support services and resources to local business owners, entrepreneurs, and aspiring entrepreneurs. This survey aims to understand how to best serve community needs through this space.

This survey aims to understand how this space aligns with the overall objectives of your municipality and consists of only six questions. Potential users of the hub and community stakeholders are being surveyed separately (i.e., Economic Development).

To complete the survey, please visit https://www.surveymonkey.com/r/ocmayors. This survey should take 5-10 minutes to complete. **Please complete by Friday, February 25th**. If you have any questions, or would like further information, please contact OxfordSurvey@innovationguelph.ca.

Note about confidentiality: this survey is specifically designed for the mayors to consider how this hub might align with the overall strategy of your municipality. Survey results will be confidential and will be administered by Innovation Guelph.

Lindsay Wilson (She/Her)
Community Economic Development (CED) Coordinator

*****Applications to the Oxford Economic Stimulus Fund close December 15, 2021. For more information: https://cfoxford.ca/oxford-county-economic-stimulus-fund/***

COMMUNITY FUTURES OXFORD
118 Oxford St.
Ingersoll, ON N5C 2V5
Tel 519-425-0401 Fax 519-425-0803

lwilson@cfoxford.ca
www.cfoxford.ca

Community Futures Oxford
Supporting Entrepreneurs for over 20 years

SOUTHWESTERN Public Health
Oxford • Elgin • St.Thomas

St. Thomas Site
Administrative Office
1230 Talbot Street
St. Thomas, ON
N5P 1G9

Woodstock Site
410 Buller Street
Woodstock, ON
N4S 4N2

News

February 14, 2022

Southwestern Public Health Board of Health Hires Dr. Ninh Tran as its New Medical Officer of Health

It was announced in mid-September that Dr. Joyce Lock would retire from the public health agency on March 31, 2022, following 8 years of service to the community.

Today, Southwestern Public Health's Board of Health announced that following a thorough recruitment process, it has recruited Dr. Ninh Tran as its new Medical Officer of Health, serving Oxford County, Elgin County, and the City of St. Thomas. Dr. Tran will be the public health unit's Acting Medical Officer of Health until the agency receives approval from the Minister of Health as outlined in the Health Protection and Health Promotion Act.

Dr. Tran's first day will be March 21, 2022.

Dr. Tran currently serves as the Associate Medical Officer of Health for Hamilton Public Health Services, a position he has held for more than 12 years. He is also a practicing primary care provider and has had both administrative and instructional duties with McMaster University's Public Health and Preventive Medicine Residency Program in the Department of Health Research Methods, Evaluation, and Impact. Dr. Tran holds a medical degree from Queen's University, a Master's degree in Nutritional Sciences from the University of Guelph, and a Master's degree in Health Research Methodology from McMaster University.

"In a field of excellent candidates, Dr. Tran stood out for his alignment with Southwestern Public Health's core values. His work in health research methods, evidence and impact will help us meet our goal of implementing the types of services that respond to local needs and

demonstrate value for residents," says Larry Martin, Chair, Southwestern Public Health Board of Health.

"I am confident that as our work combating COVID-19 decreases over time and we continue with our attention on the significant health and social inequities that impact our communities, Dr. Tran's leadership will help us in our work with individuals, partners, and the systems that impact population health," adds Cynthia St. John, Chief Executive Officer, Southwestern Public Health.

His experience collaborating with health providers, citizen groups, municipalities, school boards and other community partners will benefit the entire region in its pandemic recovery work.

Comment:

"I'm eager to bring my passion for population health and my experience as an Associate Medical Officer of Health to serve the residents of Oxford County, Elgin County and the City of St. Thomas. We're at a pivotal moment in the pandemic's evolution. I look forward to helping Southwestern Public Health achieve its vision of healthy people in vibrant communities after two very difficult years," Dr. Ninh Tran.

About Southwestern Public Health

Southwestern Public Health works with its partners to ensure the health of the whole community. Our programs respond to public health emergencies; promote healthy lifestyles; help prevent injuries, illness and disease in the community; and promote positive change and social conditions that improve health. Southwestern Public Health delivers mandated programs under the Ontario Public Health Standards and is regulated by the Ontario Health Protection and Promotion Act. The health unit maintains primary locations in Woodstock and St. Thomas. For more information, visit www.swpublichealth.ca.

Contacts

Megan Cornwell
Communications Manager | Southwestern Public Health
519-631-9900 x 1259 | 519-320-0819
mcornwell@swpublichealth.ca

From: Chloe Senior
To: Chloe Senior
Subject: FW: Ontario Publishes Housing Affordability Task Force Report
Date: Thursday, February 17, 2022 11:09:46 AM

NEWS RELEASE

Ontario Publishes Housing Affordability Task Force Report

Task Force report is part of the government's consultations with municipalities, public and industry to increase market housing supply

February 08, 2022
Ministry of Municipal Affairs and Housing

TORONTO — Ontario has published the report from the Housing Affordability Task Force, which highlights expert recommendations for additional measures to increase the supply of market housing to address the housing crisis. The Task Force is part of Ontario's ongoing three-part consultation with industry, municipalities, and the public to help the government identify and implement real solutions to address the housing supply crisis.

"Everyone has a role to play in addressing the housing supply crisis. As our government consults with municipalities, the public, and industry leaders and experts, we are balancing these perspectives to develop practical, forward-thinking policies that unlock and fast-track all types of housing for all types of Ontarians," said Steve Clark, Minister of Municipal Affairs and Housing. "I'd like to thank Jake Lawrence and the entire Task Force for their hard work, including conducting extensive consultations with other stakeholders, to develop their report."

The Task Force report's recommendations include five main areas to quickly increase the supply of market housing, to meet a goal of adding 1.5 million homes over the next 10 years:

- Make changes to planning policies and zoning to allow for greater density and increase the variety of housing.
- Reduce and streamline urban design rules to lower costs of development.

- Depoliticize the approvals process to address NIMBYism and cut red tape to speed up housing.
- Prevent abuse of the appeal process and address the backlog at the Ontario Land Tribunal by prioritizing cases that increase housing.
- Align efforts between all levels of government to incentivize more housing.

Additionally, the Task Force's report makes other recommendations to increase housing supply over the long-term, including to digitize and modernize the approvals and planning process, grow the skilled labour workforce, and encourage new pathways to home ownership.

"When Premier Ford and Minister Clark created the Task Force our instructions were clear: to deliver concrete, actionable recommendations to address the housing affordability crisis by getting more homes built," said Jake Lawrence, Chair of the Housing Affordability Task Force and Chief Executive Officer and Group Head, Global Banking and Markets at Scotiabank. "Lengthy reviews, bureaucratic red tape, and costly appeals are making it too difficult to build new housing. We propose an ambitious and achievable goal to build 1.5 million homes over the next ten years and the steps needed to get there."

The Task Force report is part of the government's broader plan to seek feedback from a variety of sources, including through municipal and public consultations, to identify and implement measures to address the housing supply crisis and get homes built faster. In January, Premier Ford and Minister Clark hosted the Ontario-Municipal Housing Summit and the Rural Housing Affordability Roundtable to coordinate efforts with municipalities, and the government recently held an online public consultation for Ontarians to share their input, which received over 2,000 responses.

Quick Facts

- The Task Force, chaired by Jake Lawrence, represents a diverse range of experts in not-for-profit housing, Indigenous housing, real estate, home builders, financial markets and economics. To develop their report, the Task Force also engaged with tenant and landlord associations, labour and economic development organizations, environmental groups, affordable housing advocates, municipal associations, academics and research groups, and more.
- A recent Scotiabank housing report found that Ontario is last in the country in the supply of homes per capita, and Canada has the lowest amount of housing per capita of any G7 country.
- The provincial government's housing policies under More Homes, More Choice: Ontario's Housing Supply Action Plan are working to increase the supply of the full range of housing options, from missing middle to high-rises and family-sized rentals, to single-

family homes.
- In 2021, two years after we implemented More Homes, More Choice, Ontario had the highest level of housing starts since 1987, and the highest level of rental starts in 30 years.
- The shortage of housing supply impacts all Ontarians, no matter your background or budget. The province's ongoing work to increase the supply of market housing complements our historic investments to increase the supply of supportive and affordable housing for our most vulnerable Ontarians.
- Through the Community Housing Renewal Strategy and Ontario's response to COVID-19, the province is providing more than $3 billion between 2020 and 2022 to strengthen the sector and increase the supply of supportive and affordable housing. This includes over $1 billion in flexible supports through the Social Services Relief Fund to municipal and Indigenous partners, which is one of the biggest investments the province has made in affordable housing and homelessness supports in Ontario's history.

Additional Resources

- The Housing Affordability Task Force report
- Ontario Appoints Housing Affordability Task Force

Media Contacts

Zoe Knowles
Minister's Office
Zoe.Knowles@ontario.ca
Conrad Spezowka
Communications Branch
mma.media@ontario.ca

Oxford County
Growing stronger together

Report No: CP 2022-65
COMMUNITY PLANNING
Council Date: February 23, 2022

To: **Warden and Members of County Council**

From: **Director of Community Planning**

Application for Official Plan Amendment Additional Residential Units – City of Woodstock OP 21-15-8

RECOMMENDATIONS

1. **That Oxford County Council approve Application No. OP 21-15-8, initiated by the City of Woodstock, to implement amendments to the Official Plan related to Additional Residential Units in the City of Woodstock;**

2. **And further, that Council approve the attached Amendment No. 271 to the County of Oxford Official Plan;**

3. **And further, that the necessary by-law to approve Amendment No. 271 be raised.**

REPORT HIGHLIGHTS

- The Province has implemented updates to various legislation and policies to require municipalities to establish Official Plan policies and Zoning provisions to allow for the establishment of an 'additional residential unit' (ARU) in single detached, semi-detached and row-house dwellings, and in a structure ancillary to such dwellings.

- The City of Woodstock has undertaken a review of the Provincial direction with respect to ARUs (e.g. Planning Act provisions and PPS policies) and related land use planning and implementation considerations, including an overview of how Provincial direction is being implemented in other municipalities in Ontario.

- The proposed amendments to the Official Plan attached to this report are relatively high level, enabling-type policies that will reflect and implement the current Provincial direction on ARUs, while establishing a comprehensive suite of review criteria to inform and support the City's development of appropriate zoning provisions, as well as other local implementation measures for such units.

- Planning staff are of the opinion that the proposed Official Plan amendment attached to this report is consistent with the policies of the Provincial Policy Statement and supports the strategic initiatives and objectives of the Official Plan.

Implementation Points

This application will be implemented in accordance with the relevant objectives, strategic initiatives and policies contained in the Official Plan.

Financial Impact

The approval of this application will have no financial impact beyond what has been approved in the current year's budget.

Communications

The application for Official Plan amendment (together with the application for Zone Change initiated by the City) was circulated to agencies and stakeholders that were considered to have an interest in the proposal in August 2021. Notice of Complete Application and Notice of Public Meeting were advertised in local newspapers in accordance with the requirements of the Planning Act in August 2021 and November 2021, respectively. Notice was also provided to persons and groups (such as the local real estate board) that had indicated interest in the proposed amendments.

In addition to the foregoing, a webpage specific to the issue of ARUs in the City of Woodstock was created on the County's Speak Up Oxford platform.

The City of Woodstock held a Public Meeting regarding the Official Plan amendment and the proposed Zoning amendments on December 6, 2021, and Woodstock Council passed a resolution supporting the proposed Official Plan amendment on January 13, 2022.

If the proposed Official Plan amendment is adopted by County Council, the decision will be advertised in local newspapers in accordance with the requirements of the Planning Act and will be provided directly to those persons, groups and agencies that have expressed interest in the matter.

Strategic Plan (2020-2022)

					
WORKS WELL TOGETHER	***WELL CONNECTED***	***SHAPES THE FUTURE***	***INFORMS & ENGAGES***	***PERFORMS & DELIVERS***	***POSITIVE IMPACT***
		3.ii. 3.iii.	4.i.		

DISCUSSION

Background

The Province has made amendments to various legislation and policies to place a stronger focus on increasing housing availability, choice and affordability as a matter of Provincial interest. One of the key ways the Province has chosen to further this interest is by requiring municipalities to enact Official Plan policies and Zoning provisions to allow for the establishment of 'additional residential units (ARUs)' in lower density housing types and removing a number of perceived barriers to the establishment of such units, including exempting such units from development charges, streamlining building code requirements, limiting the ability to appeal implementing policies and zone provisions, and dictating certain standards and requirements for such units.

This Provincial direction on ARUs was largely provided through Bill 108 - *More Homes, More Choice Act*, which was passed on June 6, 2019. Among other changes, the Bill amended the Planning Act to direct municipalities to enact Official Plan policies and Zoning provisions to allow for the establishment of an Additional Residential Unit (ARU) in a single detached, semi-detached or row house dwelling and/or within a building or structure ancillary to such dwellings.

Accompanying *Planning Act* regulations (O. Reg. 299/19) came into effect on September 3, 2019. The regulations provide requirements and standards with respect to ARUs, including the number and type of parking spaces required, and removing the ability to regulate the date of construction and who may occupy the principal and/or additional unit. The Provincial Policy Statement (PPS) was also amended in early 2020 to include specific policy references to 'additional residential units'.

City of Woodstock Council received a number of reports regarding the implementation of ARU policies and zoning provisions beginning with Report No. CP 2020-221 in November 2020 which provided an overview of the Provincial direction with respect to ARUs (e.g. Planning Act provisions and PPS policies) and related land use planning and implementation considerations, including the need to review and amend the Official Plan policies and Zoning By-law provisions for the City to reflect this Provincial direction.

Subsequently, the City received Report No. CP 2021-81 in March 2021, which provided further information regarding ARUs, including an overview of how Provincial direction is being implemented in other jurisdictions in Ontario and specific staff recommendations on proceeding with applications to amend the Official Plan and the City's Zoning By-law in this regard.

In May 2021, following consideration of the above-noted reports, Woodstock Council directed staff to proceed with public and agency consultation regarding amendments to the Official Plan and the City's Zoning By-law related to the implementation of policies and provisions enabling ARUs in accordance with Provincial direction as set out in the *More Homes, More Choices Act* and accompanying regulations.

City Council's specific direction in this regard was to approach the implementation of ARUs selectively within the City by identifying specific areas or neighbourhoods for ARU development based on neighbourhood characteristics and/or other criteria (e.g. density of development) or utilizing phased approach by limiting the development of ARUs initially to areas characterized by multi-unit residential development (e.g. two or more units) and excluding ARUs from those areas of the City that are more exclusively developed for single detached dwellings.

Comments

The following commentary provides an overview of the current legislative and policy framework that applies to Additional Residential Units (ARUs), as well as related land use planning and implementation considerations.

PLANNING ACT

The Planning Act requires that Official Plans shall contain policies that authorize the use of additional residential units by authorizing:

- The use of two residential units in a detached house, semi-detached house or rowhouse; and
- The use of a residential unit in a building or structure ancillary to a detached house, semi-detached house or rowhouse.

The Act also requires that each local municipality ensure that their Zoning by-laws give effect to the policies described above. The Planning Act does not specifically define 'additional residential units'. It is important to note that the Planning Act restricts appeals of ARU official plan policies and zoning by-law provisions so that only the Minister of Municipal Affairs and Housing has the right to appeal municipal decisions on such matters to the Local Planning Appeal Tribunal (LPAT). Therefore, any new policies and/or zoning provisions approved by County/City Council can only be appealed by the Minister.

The accompanying Planning Act regulations (O. Reg. 299/19) set out a number of specific requirements and standards with respect to additional residential units, as follows:

- Each additional residential unit shall have one parking space that is provided and maintained for the sole use of the occupant of the additional residential unit and it may be a tandem space;
- An additional residential unit may be occupied by any person regardless of whether the person who occupies the additional residential unit is related to the person who occupies the primary residential unit and whether the person who occupies either the primary or additional residential unit is the owner of the lot;
- Where the use of additional residential units is authorized, an additional residential unit is permitted, regardless of the date of construction of the primary residential unit.

2020 PROVINCIAL POLICY STATEMENT

The Provincial Policy Statement (PPS) provides policy direction on matters of provincial interest related to land use planning and development. Under Section 3 of the Planning Act, where a municipality is exercising its authority affecting a planning matter, such decisions "shall be consistent with" all policy statements issued under the Act.

The 2020 amendments to the PPS introduced a number of new and updated policies intended to increase the supply and mix of housing, including:

- Requiring that a range of 'housing options' and densities are to be planned for in order to meet projected housing demand;
- Added references to the terms 'affordable and market-based/market demand' to the policies pertaining to the determination of housing need;
- Requiring that planning decisions be aligned with Housing and Homelessness Plans; and
- Adding specific references to the term 'additional residential units' in the housing policies.

There are two sections of the PPS that specifically refer to the term 'additional residential units':

> *Section 1.1 Managing and Directing Land Use to Achieve Efficient and Resilient Development and Land Use Patterns* – As per Section 1.1.1 of the PPS, healthy, livable and safe communities are sustained by:
>
> - accommodating an appropriate affordable and market-based range and mix of residential types (including single-detached, additional residential units, multi-unit housing, affordable housing and housing for older persons), employment (including industrial and commercial), institutional (including places of worship, cemeteries and long-term care homes), recreation, park and open space, and other uses to meet long-term needs;
>
> *Section 1.4 Housing* - Planning authorities shall provide for an appropriate range and mix of housing options and densities to meet projected market-based and affordable housing needs of current and future residents of the regional market area by permitting and facilitating all types of residential intensification, including additional residential units, and redevelopment in accordance with policy 1.1.3.3.

The Provincial Policy Statement, similar to the Planning Act, does not offer a definition of Additional Residential Unit, but rather includes the term within definitions of "Housing Options" and "Residential Intensification" definitions as follows.

> *Housing Options* - means a range of housing types such as, but not limited to single-detached, semi-detached, rowhouses, townhouses, stacked townhouses, multiplexes, additional residential units, tiny homes, multi-residential buildings. The term can also

refer to a variety of housing arrangements and forms such as, but not limited to life lease housing, co-ownership housing, co-operative housing, community land trusts, land lease community homes, affordable housing, housing for people with special needs, and housing related to employment, institutional or educational uses.

Residential Intensification - includes the conversion or expansion of existing residential buildings to create new residential units or accommodation, including accessory apartments, additional residential units, rooming houses, and other housing options.

OFFICIAL PLAN - CITY OF WOODSTOCK LAND USE POLICIES:

With respect to the City of Woodstock, the Official Plan does not currently contain policies that specifically address the current Provincial direction with respect to Additional Residential Units. However, the Plan does contain policies that permit City Council to zone areas or properties to permit single detached, semi-detached and townhouse dwellings to be converted into two residential units, and to be converted into more than two units if a number of criteria can be met including:

- that the area is characterized by a mixture of dwelling types;
- lot sizes are generally sufficient to accommodate the required parking without detracting from the visual character of the area; and
- the existing dwellings are generally of sufficient size to accommodate the creation of additional dwelling units.

The policies further state that the Zoning By-law may limit the number of units that may be contained in a converted dwelling and specify minimum lot or dwelling size requirements for conversion. To maintain the external character of the dwelling, the Zoning By-law may also limit the extent of structural changes or additions that may be permitted. In addition, the policies state that converted dwellings with more than two dwelling units may be subject to site plan control.

The Official Plan also contains policies with respect to rear yard infilling in residential areas which allow for various forms of residential development in a rear yard including, but not limited to, the construction of a residential structure behind a building facing a street, the conversion of secondary structures for residential purposes and establishment of a granny flat or garden suite.

A number of criteria are provided for evaluating such forms of development, including:

- the nature of the proposed development will be evaluated having regard to the type of housing found in the surrounding residential neighbourhood;
- the exterior layout in terms of height, bulk, scale and layout of the proposed building is consistent with the present land uses in the area;
- the siting of any buildings and parking areas in relation to the size, configuration and topography of the lot is such that the effect on light, view and privacy of adjacent yards is minimal; and
- direct vehicular access to a public street is required and driveways will have sufficient width to allow efficient vehicular use and turning of both private and emergency vehicles and to provide snow storage.

These existing Official Plan policies allow City Council to zone properties or areas to allow for the establishment of an additional residential unit in a single detached, semi-detached or townhouse dwelling and/or in an ancillary structure on a residential property, in a manner similar to the current Provincial direction on ARUs.

These policies provide the general framework for the incorporation of specific ARU policies into the Official Plan, however, the Plan requires further amendments to ensure the relevant policies clearly reflect current Provincial direction on ARUs, including ensuring they specifically reference the term Additional Residential Units and direct that the Area Municipality must establish Zoning provisions to authorize the use of ARUs in accordance with the applicable Planning Act requirements and Official Plan policies.

It is expected that any updated policies would continue to provide flexibility for the Area Municipality to establish Zoning provisions that provide more detailed local direction with respect to where such units could be located and what standards apply.

PROPOSED OFFICIAL PLAN AMENDMENTS

In considering the development of policies regarding ARUs for the City of Woodstock, staff reviewed Official Plan amendments and proposed amendments from a broad range of municipalities across the province, consulted directly with selected municipalities and canvassed input via the County Planning Directors group, of which Oxford County is an active participant. This 'scan' provided staff with insight into the approaches that have been applied across Ontario with respect to Provincial direction in implementing policies and provisions in Official Plans and Zoning By-laws that authorize ARUs in certain lower density housing types and removing perceived barriers to the establishment of such units in Ontario communities.

With respect to Official Plan policies, staff's review revealed that the large majority of municipalities have taken a high level, permissive approach to authorizing ARUs, with some limited criteria to both inform and support appropriate implementation measures (e.g. zoning by-law provisions). There do not appear to be significant attempts in any of the policies reviewed to restrict or limit the establishment of ARUs in specific areas or circumstances beyond those identified in the Provincial direction, which is to say that these units are generally permitted in single detached, semi-detached and townhouse units, excepting areas that are subject to specific constraints (e.g. hazard lands, servicing capacity, restricted access such as private roads, lot sizes unsuitable for additional residential units, etc.).

Regarding the proposed policies that have been developed for the City of Woodstock, Planning staff are proposing relatively high level, enabling-type approach that will reflect and implement the current Provincial direction on ARUs, while also establishing a comprehensive suite of review criteria to inform and support the City's development of appropriate zoning provisions, as well as other local implementation measures for such units that may be considered appropriate. The general intent of the policy approach being that the detailed local direction with respect to the circumstances under which ARUs will be permitted, and what development standards will apply, will be provided through the development of appropriate Zoning By-law provisions for such units, undertaken as part of a comprehensive review by the City.

The proposed amendments to the Official Plan would predominantly affect the Low Density Residential policies for the City of Woodstock as contained in Section 7.2.4 and consist largely of clarifications to the existing policy direction with respect to residential intensification and low density housing forms (e.g. backyard infilling and converted dwellings), together with the inclusion of specific policies for ARUs (which replace the current policies for two-unit converted dwellings). The key elements of the proposed policy approach are summarized as follows:

- Establishing a definition for 'additional residential units';
- Requiring that the City establish appropriate zoning provisions to allow ARUs in single detached, semi-detached and townhouse dwellings (as required by Provincial legislation) where the City is satisfied that various development review criteria can be met, such as:

    - Maximum of two ARUs per lot (i.e. one in the principal dwelling and/or one in an ancillary dwelling;
    - Principal dwelling must have direct, individual vehicular access to a public street;
    - Any increased demand for on-street parking on nearby streets can be adequately addressed;
    - The ARU(s) must be clearly secondary and subordinate to the principal dwelling on the lot and limited in size (e.g. maximum percentage of the principal dwelling and maximum gross floor area caps);
    - Dwellings and lots are large enough to accommodate the ARU and provide for adequate parking, landscaping and outdoor amenity areas;
    - Any new buildings, additions and/or exterior alterations/features (e.g. parking areas, doors, windows, stairways, decks) will maintain the general architectural character of the principal dwelling and surrounding neighbourhood;
    - There is unobstructed pedestrian access from the street or parking area to the unit;
    - Not permitted where a lot or dwelling already contains other accessory units/uses (e.g. boarding/lodging house, garden suite, converted dwelling unit, bed and breakfast, etc.);
    - Existing infrastructure and public services serving the area are adequate to accommodate the establishment of ARUs;
    - Potential impacts on environmental and/or heritage resources and any environmental constraints (e.g. natural or man-made hazards, noise, vibration, emissions, etc.) can be adequately addressed;
    - Additional review criteria for ARUs in ancillary structures to ensure that the siting, design (e.g. height, window and door location, etc.) and orientation of the ancillary structure/unit, parking and outdoor amenity areas and any required landscaping, screening, fencing and/or other measures will limit potential privacy, visual and other impacts on abutting residential properties and be compatible with the character of the principal dwelling and the surrounding residential neighbourhood.

- The zoning provisions for ARUs shall be implemented through a comprehensive City-initiated amendment to the Zoning By-law or the zoning of new plans of subdivision. Site specific amendments to the Zoning By-law to consider the establishment of ARUs will not generally be permitted;
- An ARU cannot be severed from the lot containing the principal dwelling;
- Site plan control may be applied to ARUs in ancillary structures; and
- The City may consider the use of other supplementary tools and measures to assist in ensuring that ARUs are appropriately regulated, including registration and/or licensing,

on-street parking regulations, design guidelines, new/updated property standards by-laws, etc.

In summary, the proposed Official Plan policies for the City of Woodstock provide a high level, enabling approach to considering ARUs that is intended to reflect and implement the current Provincial direction while also establishing a comprehensive suite of review criteria to inform and support the development of zoning provisions for such units. Planning staff are of the opinion that the attached policies are generally consistent with the relevant policies of the Provincial Policy Statement and implement the legislative requirement contained in Section 16(3) of the Planning Act that an Official Plan shall contain policies that authorize ARUs in single detached, semi-detached and townhouse dwellings and in buildings accessory to these dwelling types. The draft policies are attached to this report as Attachment 1.

Comments

The applications initiated by the City of Woodstock to amend the Official Plan and Zoning By-law were initially circulated for agency comment in August 2021 and the Public Meeting notice was placed in local newspapers in November 2021. A website specifically created for the consideration of ARUs in Woodstock has also been in operation since August 2021. The following comments have been received in response to agency circulation:

The City of Woodstock Manager of Building & Facilities has provided general comments regarding the establishment of ARUs in the City as well as detailed comments regarding the draft zoning amendments.

The City's Engineering Department provided preliminary comments indicating that it is possible that an ARU could result in increased water demand for both the main dwelling and ARU combined. In some cases, the existing water service to the main dwelling may be undersized, or for other reasons, not capable of supplying enough water to meet the increased demand. If this were the case, a new adequately sized water service from the main in the street to the dwelling may be required. Property owners should be advised that the work associated with installing a new water service would be at the owner's expense.

The County Public Works Department indicated that they support the comments provided by the City's Engineering Department, but have no further comments at this time.

The Ministry of Municipal Affairs and Housing indicated in an email received on November 16, 2021 that the Ministry will be providing comments on the OPA, but that said comments may not be submitted prior to the City's December 6, 2021 Public Meeting. As of the date that this report, comments from the Ministry had not been received. As of the date that this report was completed, the Ministry had not provided comments regarding the proposed OPA.

In addition to agency comments, a number of comments from interested parties have also been received. These comments are attached to this report as Attachment 2.

Conclusions

Planning staff are of the opinion that the draft Official Plan amendment attached to this report provides a broad, high-level approach to the implementation of ARU development within the City of Woodstock that is consistent with Provincial policy and in-keeping with the guidance material and training on ARU implementation that has been released/provided by the Province to date.

At such time as the policy amendments are adopted, the appropriate amendments to the City's Zoning By-law will be presented to City Council for consideration.

SIGNATURES

Report Author:

Original signed by
Gordon K. Hough, RPP
Director of Community Planning

Approved for submission:

Original signed by
Michael Duben, B.A., LL.B.
Chief Administrative Officer

ATTACHMENTS

Attachment 1 Draft Official Plan Policies – Woodstock ARUs (track change version)
Attachment 2 Correspondence from Public Consultation
Attachment 3 OPA 271

DRAFT ARU POLICIES

7.2.4 Low Density Residential Districts

DESCRIPTION

Low Density Residential Districts are those lands that are primarily developed or planned for a variety of low-rise, low density housing forms including both executive and smaller single detached dwellings, semi-detached and, duplex dwellings, *additional residential units* and converted dwellings, street fronting townhouses, quadraplexes, low density cluster *development* and low rise apartments. In these Districts, it is intended that there will be a mixing and integration of different forms of housing to achieve a low overall density of use. It is not intended however that the full range of housing will be permitted in every individual neighbourhood or *development* and City Council may choose to restrict the range of uses permitted in a particular location through the Zoning By-Law. Low Density Residential Districts are identified on Schedule W-3.

DENSITY

The maximum *net residential density* for an individual *development* in the Low Density Residential District is 30 units per hectare (12 units per acre) and no building shall exceed three storeys in height at street elevation.

Within newly developing Low Density Residential Districts, the minimum overall *net residential density* shall be 22 units per hectare (9 units per acre). Individual *development* proposals may be approved at lower *net residential densities* provided that opportunities are available to achieve the minimum overall density requirement through *development* elsewhere in the Low Density Residential District. To achieve this density target, City and County Councils will support a variety of lot sizes and configurations, the *development* of low rise multiple units and will consider narrower road widths in plans of subdivision and private roads within condominium developments in area of new Lot Density Residential *development*.

CRITERIA FOR MULTIPLE UNITS

Multiple unit dwellings, such as cluster, townhouse and low rise apartments in Low Density Residential Districts, will generally be restricted to the following areas:

- site which abut arterial or collector roads or are situated such that traffic impacts from the site create a minimum disturbance on local streets;
- sites where the topography or other natural features would be best preserved by fewer buildings;
- sites which are close to community serving uses, schools, shopping plazas, day care facilities, churches, arenas and parks.

Notwithstanding the above criteria, sStreet oriented multiple units such as street fronting townhouses, quadraplexes and converted dwellings may be permitted on local streets.

SITE DESIGN CRITERIA

When considering any specific proposal for multiple unit *development*, City Council will be satisfied that the site design criteria of Section 7.2.8 are adequately addressed.

7.2.4.1 Infill Housing

For the purposes of this Plan, infill housing is defined as the placement of new residential *development* into established built-up areas on vacant or underutilized sites. In order to efficiently utilize the land supply designated residential and municipal servicing *infrastructure*, infill housing will be supported in Low Density Residential Districts. The County Land Division Committee and City Council will be guided by the following policies when considering proposals for infill *development* in Low Density Residential Districts.

7.2.4.1.1 Street Oriented Infill

EVALUATION CRITERIA

The introduction of new residential housing into an established streetscape pattern will only be permitted if the proposal is deemed to be consistent with the characteristics of existing *development* on both sides of the same street. In order that the street oriented infill projects are sensitive to the continuity of the existing residential streetscape, the County Land Division Committee and City Council will ensure that:

- the proposal is compatible~~consistent~~ with the street frontage, setbacks, lot area and spacing of existing *development* within a two block area on the same street;
- for proposals involving more than two dwelling units, the exterior design in terms of height, bulk, scale and layout of the proposed building is consistent with present land uses in the area;
- the proposal will comply with the requirements of Section 7.2.4.1.4.

SITE DESIGN CONTROL

Street oriented infill proposals in the Low Density Residential Districts may be subject to site plan control.

7.2.4.1.2 Backyard Infill

In Low Density Residential Districts, backyard infill *development* may involve ~~the construction of a residential structure behind a building facing a street, the conversion of secondary structures for residential purposes,~~ new residential *development* behind an existing building facing a street on a vacant lot~~s~~ with minimal street frontage (e.g. flag shaped lots), on small vacant remnant parcels of land which cannot be integrated into a plan of subdivision, or on under-utilized institutional sites. Backyard infill may involve development on existing lots or ~~include~~ the creation of new lots by consent ~~or the *development* of a granny flat or *garden suite*~~. *Additional residential units* and ~~*G*~~*garden suites* ~~and granny flats~~ may also be permitted ~~as backyard infill *development*~~ to the rear of an existing dwelling on a lot ~~subject to the criteria of this Section and~~ in accordance with the policies of Section *7.2.4.3* and 10.3.9. respectively.

EVALUATION CRITERIA

When considering proposals for backyard infilling, the County Land Division Committee and City Council will be guided by the following policies as well as the policies of Section 7.2.4.1.4:

- the nature of the proposed residential *development* will be evaluated having regard to the type of housing found in the surrounding residential neighbourhood;
- the exterior design in terms of height, bulk, scale and layout of the proposed building is consistent with present land uses in the area.
- the siting of any buildings and parking areas in relation to the size, configuration and topography of the lot is such that the effect on light, view and privacy of adjacent yards is minimal;
- direct vehicular access to a public street will be required and driveways will have sufficient width to allow efficient vehicular use and turning of both private and emergency vehicles and to provide for snow storage;
- any proposed multiple unit *development* is consistent with the requirements set out in this Plan for Low Density Residential Districts.

SITE PLAN CONTROL

Backyard infill proposals may be subject to site plan control.

7.2.4.1.3 Infill Subdivision

In addition to the policies of Sections 7.2.4.1.4 and 10.3.3, where infill *development* is proposed on vacant or underutilized sites within established residential areas by plan of subdivision, City Council and County Council will ensure that:

- the nature of the proposed residential *development* will be evaluated having regard to the type of housing found in the surrounding residential neighbourhood;

- any new residential lots with direct exposure to an established residential street will be consistent with the size of lots within a two block area on the same street and new residential *development* will maintain setbacks and spacing between dwellings consistent with the established built pattern;

- measures will be incorporated into the subdivision design to buffer and screen existing residential uses from the new *development*;

- proposed multiple unit developments will comply with the multiple unit requirements for Low Density Residential areas.

7.2.4.1.4 All Infill Proposals

In addition to the specific infill policies identified, the following policies will apply to all infill proposals:

- the location of vehicular access points, the effect of traffic generated by the proposal on the public road system, pedestrian and vehicular safety and surrounding properties is assessed and found to be acceptable;

- existing municipal services and community facilities will be adequate to accommodate the proposed infill project;

- stormwater run-off from the proposal will be adequately controlled and will not negatively affect adjacent properties;

- the extent to which the proposed *development* provides for the retention of any desirable vegetation or natural features that contribute to the visual character of the surrounding area;

- the effect of proposed *development* on environmental resources or the effects of environmental constraints on the proposed *development* will be addressed and mitigated in accordance with Section 3.2;

- compliance of the proposed *development* with the provisions of the Zoning By-Law of the City and other municipal by-laws;

- consideration of the potential effect of the *development* on natural and *heritage resources* and their settings.

EXISTING NON-RESIDENTIAL USES

7.2.4.2 Redevelopment or Conversion of Non-Residential Buildings

Existing non-residential uses in Low Density Residential Districts which do not meet the criteria of the Plan will be considered legal non-conforming uses in accordance with Section 10.3.5.

EVALUATION CRITERIA

Existing non-residential uses in Low Density Residential Districts proposed for redevelopment and reuse will be consistent with the following policies:

HEIGHT, BULK, SCALE OF DEVELOPMENT

- any new buildings or additions will respect the height, bulk, scale and setbacks of adjacent residential uses and shall not adversely impact adjacent residential uses in terms of light, views, privacy or traffic. Redevelopment will be in keeping with the height, density and use policies of the Low Density Residential District;

USES

- the range of residential unit types permitted in a particular location by the policies pertaining to Low Density Residential Districts may be expanded without amendment to this Plan by City Council where a non-residential building is being converted to residential use through an amendment to the Zoning By-Law;

LANDSCAPING, PRIVACY SCREENING

- landscaping, privacy screening or other appropriate measures will be incorporated into the *development* to provide and adequate buffer to minimize impacts and to maintain the low density character of the surrounding residential area;

TRAFFIC

- vehicular traffic generated from the *development* will create minimal impacts on local streets;

MUNICIPAL SERVICES

- existing municipal services and community facilities will be adequate to accommodate the *development* and its residents;

PARKING

- adequate off-street parking and outdoor amenity areas will be provided;

BROWNFIELDS

- redevelopment proposals within a designated Community Improvement Project Area as identified on Schedule W-6 will satisfy the requirements of Section 10.4, as appropriate;

ENVIRONMENT

- the effect of the proposed *development* on environmental resources or the potential effects of any environmental constraints on the proposed *development* will be addressed and mitigated in accordance with Section 3.2;

HERITAGE

- conversions which result in the preservation and/or upgrading of buildings considered by City Council to be of architectural or historical significance may be permitted to exceed the density limitations of Low Density Residential Districts if the policies of Section 10.3.10 are satisfied.

7.2.4.3 Additional Residential Units and Converted Dwellings

DEFINITION

Additional Residential Unit (ARU) means a separate, self-contained dwelling unit located within a single detached, semi-detached dwelling or street townhouse dwelling, or within a detached building ancillary to such dwelling, and which is located on the same lot as, and is clearly subordinate to the principal dwelling.

ADDITIONAL RESIDENTIAL UNITS

The development of *additional residential units* w~~W~~ithin the Low Density Residential Districts, shall be encouraged, where appropriate, with the goal/objective of increasing the range and availability of affordable *housing options* while maintaining the low density residential character of the housing and neighbourhoods comprising such districts.

The general intent is to allow for the establishment of such units in existing and newly developing residential areas, subject to complying with applicable zone provisions and development standards, where the City has deemed it to be appropriate based on such considerations as the location, nature and character of existing development, existing level of services and presence of natural hazards and/or other constraints.

To this end, City Council shall establish appropriate ~~may~~ zones ~~areas~~ and zoning provisions to permit the establishment of an *additional residential unit* in a single detached, semi-detached or ~~and~~ townhouse dwelling~~s~~ and/or a structure ancillary to such a dwellings ~~to be converted into two residential units~~ where they are satisfied that the following criteria can be addressed:~~.~~

- a maximum of two *additional residential units* are permitted on a lot, consisting of one in the principal dwelling and/or one in a structure ancillary to the principal dwelling;
- an *additional residential unit* shall not generally be permitted on a lot that contains a boarding/lodging house, garden suite, converted dwelling unit, group home, mobile home/park model trailer, bed and breakfast establishment, or other similar use;
- the *additional residential unit*(s) shall be clearly secondary and subordinate to the principal dwelling and limited in size to maintain affordability and minimize potential impacts on neighbourhood character and on *infrastructure* and *public service facilities*;

- the gross floor area of the *additional residential unit*(s) shall not total greater than 50% of the gross floor area of the principal dwelling. The City may establish lower maximum floor area limits and/or floor area caps in zoning, if deemed appropriate;
- existing dwellings and lots are of sufficient size to accommodate the creation of *additional residential unit(s)* and to provide for adequate parking, landscaping and outdoor amenity areas, without detracting from the visual character of the lot or area;
- any new/expanded structures and/or exterior alterations (e.g. new parking areas, doors, windows, stairways, decks) to accommodate an *additional residential unit* will maintain the general built form and architectural character of the principal dwelling and the surrounding residential neighbourhood;
- the principal dwelling must have direct, individual vehicular access to a public street. New additional driveways will not generally be permitted;
- there is adequate access from the front lot line or parking area to each *additional residential unit* for both occupant use and emergency response purposes;
- to the extent feasible, existing trees and other desirable vegetation are preserved to help maintain the character of the lot and area;
- the existing *infrastructure* and *public service facilities* serving the area are adequate to accommodate the establishment of *additional residential units*;
- stormwater run-off will be adequately controlled and will not negatively affect adjacent properties;
- any potential increase in on-street parking demand can be adequately accommodated and/or managed;
- land use compatibility concerns (e.g. due to proximity to industrial areas or *major facilities*) will not be created or intensified; and
- the potential effects on environmental and/or heritage resources and the avoidance or mitigation of environmental constraints can be addressed in accordance with the policies of Section 3.2.
- all other municipal requirements (e.g. servicing, emergency access, by-laws, standards etc.) can be adequately addressed.

ADDITIONAL RESIDENTIAL UNITS IN AN ANCILLARY BUILDING

The following additional criteria shall apply to the establishment of an *additional residential unit* in a structure ancillary to a single detached, semi-detached or row townhouse dwelling:

- the ancillary structure must be located in a rear or interior side yard;
- the siting, design and orientation of the ancillary structure/dwelling unit, parking area and outdoor amenity area(s) will allow for optimal privacy for the occupants of the *additional residential unit,* principal dwelling and abutting residential properties and minimize potential visual and shadowing impacts on adjacent residential yards;
- landscaping, privacy screening, fencing, and other appropriate measures may also be required to minimize potential visual and privacy impacts on abutting residential properties; and
- all other municipal requirements (e.g. servicing, emergency access, by-laws, standards etc.) can be adequately addressed.

SEVERANCE

Additional residential units must be located on the same lot as the principal dwelling and may not be severed from such lot, or converted into a separately transferable unit through plan of condominium.

ZONING

The City's Zoning By-Law shall establish the specific zoning provisions that must be met for an *additional residential unit* to be established on a lot. These zoning provisions will address the policy requirements of this subsection and any other matters deemed necessary by the City including, but not limited to: lot frontage and area; type of unit permitted; unit size and location; building height, location and setbacks; landscaping and amenity areas; parking and access etc.

To assist in maintaining the built form character of the principal dwelling and surrounding residential area and minimizing potential impacts on abutting residential properties, the Zoning By-Law may also limit the location and extent of structural additions, alterations and/or features (e.g. building additions, doorways, windows, stairways, decks etc.) that are permitted.

The zoning provisions for *additional residential units* will be implemented through a comprehensive, City initiated amendment to the Zoning By-law, or through the proposed zoning for new residential subdivisions. Site specific amendments to the Zoning By-law to permit the establishment of an *additional residential unit*(s) will not generally be permitted.

SITE PLAN CONTROL

The establishment of an *additional residential unit* in a structure ancillary to a single detached, semi-detached or townhouse dwelling may be subject to site plan control.

OTHER TOOLS AND MEASURES

Where deemed necessary and/or appropriate, the City may implement other supplementary tools and measures to assist with tracking and regulating *additional residential units* including, but not limited to, registration and/or licensing requirements, design guidelines, property standards by-laws, etc.

CONVERTED DWELLINGS*~~CRITERIA FOR MORE THAN TWO UNITS~~*

In addition, City Council may zone areas within the city to permit the conversion of a principal dwelling~~s~~ for more than two dwelling units in accordance with the following criteria:

- the area is characterized by a mixture of residential dwelling types including detached, semi-detached, townhouse and existing converted dwellings;
- lot sizes are generally sufficient to accommodate the required off-street parking without detracting from the visual character of the area;
- existing dwelling units are generally of a size sufficient to accommodate the creation of additional dwelling units.

NO FURTHER CONVERSION

Where an *additional residential unit* has been established within a principal dwelling, the conversion of the said dwelling to include additional units will generally not be permitted.

ZONING

The Zoning By-Law may limit the number of units that may be contained in a converted dwelling and specify minimum lot or dwelling size requirements for conversion. To maintain the external character of the dwelling the Zoning By-Law may also limit the extent of structural additions or changes that would be permitted.

SITE PLAN CONTROL

Such~~Any~~ converted dwellings ~~with more than two dwelling units~~ may be subject to site plan control.

Gordon Hough

Subject: RE: Potential Policy and zoning amendments

From: Zachary Jancsar [redacted]
Sent: November 9, 2021 12:08 PM
To: Planning <planning@oxfordcounty.ca>
Subject: Potential Policy and zoning amendments

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.
Hi There

I was told to reach out with some input for upcoming policy and zoning amendments. I know with the new bills that have been passed by the provincial government there has been some tension between the council members allowing some zone changes in the bills favour.

I do feel that as an investor, owner and a participant in the Woodstock community and of Oxford county that adapting these changes is going to be beneficial in many ways for the community.

As you know the real estate market is in high demand for greater supply this not only goes for properties for sale but also for properties for rent. In addition to this the most recent annexation of land to the west of Woodstock was just denied from OFA and East Zorra-Tavistock township which puts Woodstock in a challenging position for future residential growth. With the short fall of current inventory this need to adapt for potential basement apartments, legal duplexing and or tiny homes on the subject properties is not only going to help facilitate housing for many commuting to town for employment but it is also going to help increase Woodstock tax base to help create better community programs for the homeless crisis, before and after school programs, as well as other creative programs to give back to our community.

I feel strongly for this amendment and believe that it will incentives investors to come to Woodstock. The expansion of the Entrepreneurship zone downtown I also believe would help increase density in our downtown core attracting more restaurants shops and commercial enterprise with the increase in real estate value with new residential developments for luxury condos as well as high end and low end rental properties.

Happy to discuss further if you feel the desire

Warm Regards

Zachary Jancsar

Gordon Hough

Subject: RE: City of Woodstock Zoning By-law possible changes

From: Pamela Kent [redacted]
Sent: November 22, 2021 6:50 AM
To: Gordon Hough <ghough@oxfordcounty.ca>
Subject: Re: City of Woodstock Zoning By-law possible changes

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.
Good morning Mr. Hough,

Thank you for the detailed response, sorry it took me so long to reply!

I appreciate the insight about the 1000 sq metre figure, I know Haldimand had that same number and that it was related to minimum dwelling size and lot coverage provisions. My lot is 925.5 sq. metres (according to GLIMR) so it is just under that 929 that is needed for the garden suite in urban areas in Oxford County.

That is a good point about the phased approach too. My property is on Key Map 58 (28 Jubilee Pl) and does have apartment buildings very close by and also some properties zoned R2. I am thinking I would fall into the fist phase but maybe I should check into that just to be certain.

I will consider sending in a comment. I have put quite a bit of time into researching this over the last year. I certainly appreciate the challenges and effort that is needed to orchestrate growth in the City of Woodstock and that provisions are in place to deal with infrastructure, public safety, traffic flow, etc.

Thank you again and enjoy the day :)

Pamela Kent

On Tue, Nov 16, 2021 at 9:20 AM Gordon Hough <ghough@oxfordcounty.ca> wrote:

> Good morning Ms. Kent. Thanks for your email.
>
> The current draft provisions were created with a view to City Council's direction related to implementing Additional Residential Unit provisions. The 1000 sq metre figure that is currently in the draft is based on the existing Official Plan policies related to the establishment of a garden suite in an urban area. The actual figure contained in the OP is 929 sq metres or 10,000 sq feet. The larger lot size is generally intended to account accommodate sufficient space for a second, detached residential structure, appropriate setbacks from lot lines in-keeping with residential development, as well as space for amenity areas, parking, etc. At this point, the figure is considered to be a starting point for discussion and any comments/concerns that you have regarding any of the draft provisions are welcome and encouraged.
>
> Further to this, the City's direction regarding the ARU issue is to take a phased approach, in which the initial implementation will be limited to areas of the City that have historically been subject to multi-unit residential development (e.g. areas zoned R2 or C3). Areas that are largely (or exclusively) developed for single-detached dwellings would not be zoned to facilitate ARUs in this initial phase. City Council has not provided any direction as yet as to when a review of the broader community would be initiated.

I'm not sure what your property is zoned currently, but the above may impact your ability to establish an ARU based on the current direction/provisions. I would say again that these are draft provisions and would encourage you to provide any comments/concerns, either in writing, or at the scheduled public meeting for this matter on December 6 (or both). I've attached a copy of the public meeting notice as it appeared in the Oxford Review last Thursday, for your information.

Let me know if you have any questions. I can be reached via the phone #s below during normal business hours. Thanks GH

Gordon K. Hough, RPP
Director | Community Planning
County of Oxford
P.O. Box 1614 | 21 Reeve Street
Woodstock ON N4S 7Y3

P: 519 539 0015 ext 3207 | 1 800 755 0394 ext 3207
E-mail: ghough@oxfordcounty.ca

-----Original Message-----
From: Pamela Kent [redacted]
Sent: November-15-21 1:05 PM
To: Gordon Hough <ghough@oxfordcounty.ca>
Subject: City of Woodstock Zoning By-law possible changes

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.

Hi Mr. Hough,

I have been following the Provincial and Municipal progress on Additional Residential Units. I would like to know why City of Woodstock is looking at having the general provision that an ARU in a building or structure accessory to a residential use shall only be permitted on a lot that has a minimum lot area of 1000 meters square? So specifically why the 1000 meters square requirement?

I am a property owner in Woodstock and hoping to convert an existing detached accessory structure into a bachelor style apartment for my sister.

Thank you,

Pamela Kent

Gordon Hough

To: Scott Mason
Subject: RE: additional residential units (ARU) review - comments

From: Scott Mason [redacted]
Sent: October 19, 2021 10:11 AM
To: Planning <planning@oxfordcounty.ca>
Subject: additional residential units (ARU) review - comments

Morning,

Main concern I have is with the phased approach excluding R1 zoned lands which are to be dealt with at an unspecified future time.

Other municipalities have not utilized a phased approach when implementing zoning.

There are multiple oversized properties within the R1 zone in Woodstock already suited to comply with the proposed zoning and accommodate ARU's.

These additional residential units are urgently needed to deal with a shortage of suitable and affordable housing.

Please advise when the virtual public meeting will take place.

Regards,

Scott

Scott Mason | **Project Manager**
MTE Ontario Land Surveyors Ltd.
[redacted]
123 St George St., London, Ontario N6A 3A1
www.mte85.com | Twitter | LinkedIn | Instagram | Facebook

Gordon Hough

From: Pavlikas Pavlikas [redacted]
Sent: November 22, 2021 2:13 PM
To: Planning
Subject: Additonal residential unit (ARU) proposed changes

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.
Hi I'm writing in support for the additional residential unit project in Woodstock and would like more information or the process on utilizing my own property in Woodstock.
Thank you

Nicolas Pavlou

Gordon Hough

From: Cole Vanrooy [redacted]
Sent: September 22, 2021 1:00 PM
To: Gordon Hough
Cc: Justin Miller
Subject: ARU's Woodstock

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or on clicking links from unknown senders.
Good afternoon Gord,

I've been talking with Spencer Mcdonald regarding the additional residential unit matter in Woodstock. I have a house that I'm looking to add a basement apartment to in Woodstock on Short Ave. It's zoned R1.. I know there has been talk or provisions to allow ARU's but I'm not sure if this includes R1 zoned properties.

If you have time could you give me a call to discuss.

Regards,

Cole Vanrooy,
Project Coordinator

**We are moving to our new home on Monday, Sept 13.
Please ensure you use our new address noted below**

Sierra General Contracting Inc.
1193 Dundas Street, PO. Box 20053, Woodstock, ON N4S 8X8
Phone: (519) 421-7413 **Fax:** (519) 421-2018 [redacted]
Website: www.sierraconstruction.ca
[redacted]

SIERRA GENERAL CONTRACTING

Proud to be an ISO 9001, 14001 Managed Company

Gordon Hough

Subject: RE: Feedback RE Zone Amendment for ARUs

From: Brian & Catherine Harrington [redacted]
Sent: December 1, 2021 1:26 PM
To: Planning <planning@oxfordcounty.ca>
Subject: Feedback RE Zone Amendment for ARUs

I'm in agreement with allowing Additional Residential Units (ARU) in Woodstock, with one caveat – they should be included in the R1 zone in the current zoning amendment. When planned & implemented properly, ARUs can provide much needed affordable housing for Woodstock but this can only be achieved by including the R1 zone.

As it stands now, ARUs will be restricted to just the R2 & C3 zones in Woodstock. Of the municipalities in Southern Ontario that have zoned for ARUs I could not find ANY that don't include the R1 zone. In fact, the City of Brantford does the complete opposite from the Woodstock proposal. In Brantford, ARUs are included in R1 but do not apply to lands zoned R2 because that zone already permits additional residential units.
The R2 zone in Woodstock is already doing the heavy lifting with respect to intensification through multi-unit residential and infill development. City Council's decision to only include the R2 and C3 zones for ARUs should be reconsidered.

If Council sticks with a phased approach to implementing ARUs, several years will have passed before ARUs are even considered for the R1 zone. If Council is serious about creating an environment to encourage building additional dwelling units, it should consider including the R1 zone in the current zoning amendment.

The zoning amendment for ARUs feels more like an exercise to fulfill a Provincial mandate and less like an attempt to increase housing supply.

Regards,

Brian Harrington
Woodstock

Mark L. Dorfman, Planner Inc.
219 - 50 Westmount Road North, Waterloo, ON, N2L 2R5
Telephone: 519-888-6570 ~ Facsimilie: 519-888-6382 ~ E-mail: dmark@mldpi.ca

November 23, 2021

Report to: **David Creery**
Chief Administrative Officer
City of Woodstock

Subject: **Application of Additional Residential Units Policy and Zoning**

Council's Position Regarding ARUs

On August 6, 2021, the City of Woodstock made applications to comprehensively amend the Oxford Official Plan and Woodstock Zoning Bylaw 8626-10 to provide for Additional Residential Units ("ARUs") in dwellings.

At its meeting held on May 20, 2021, Woodstock Council received Report No. CP 2021-146 from the Director of Community Planning, and following discussion, adopted the following Resolution:

> That Woodstock City Council direct staff to proceed with public and agency consultation regarding amendments to the Official Plan and Zoning By-law related to the implementation of policies and provisions enabling Additional Residential Units in accordance with provincial direction as set out in the *More Homes, More Choices Act* and accompanying regulations;
>
> And further that City Council direct staff to proceed on the basis of Option 2 as discussed in Report No. CP 2021-146.

Option 2 in the Report states:

> As an alternative, or Option 2, Council may choose to direct staff to approach the implementation of ARUs more selectively, by identifying specific areas of neighborhoods within the City for ARU development using the *neighborhood characteristics* and/or *density* criteria discussed previously in this report, or phasing the implementation of ARUs by limiting such development initially to areas characterized by multi-unit (e.g. two or more units) residential development and excluding ARUs from those areas of the City that are more exclusively developed for single-detached dwellings.

Additional Residential Units

In Ontario, the issue of adding units to existing dwellings has been discussed and advanced since 1988. Policies, legislation and regulations have referred to these additional dwellings as "apartments in houses", "second units", and "additional residential units". The short history and chronology are found in **Appendix 1** to this Report.

The addition of second units in dwellings has a longer history in Ontario than in the United States. In the last several years, States and municipalities have surgically amended the laws and local zoning codes to eliminate single-family only dwelling zones. Part of the reason is to increase the supply of housing through infilling and densification in suburbs rather than encouraging more sprawl on the periphery of urban areas.

A fundamental reason for the United States model is that politically, there is a deliberate attempt to rid the suburbs of residential segregation that has been tinged by racial, ethnic and class discrimination. As a result, there is an estimate that 75% of the residential land in the U.S. is barred from multi-family housing. There is research that indicates that, in the post-war period, federal government funding subsidized the creation of "white" neighborhoods.

In Ontario and Canada, allowing single-detached only zones have not been an attempt to segregate people based on race, ethnicity and class. The planning of urban areas was driven by traditional land use policies that established higher residential densities close to downtowns, retail and service commercial areas. The rest of the residential land use pattern allowed for "suburban" single-detached housing.

This is the traditional housing pattern in Woodstock. Attached as **Appendix 2** to this Report is a generalized map that identifies the significant "R1" single-detached concentration (red) and the clusters of higher density "R2" (blue) and "C3" (orange) traditional areas.

In Ontario, these concentrations are not U.S. style "urban ghettos" surrounded by larger lot "white suburbs". In Woodstock, like other Ontario communities, people are free to choose where and how they shelter. Our tradition and law are that municipalities and Planners cannot "people zone".

As an aside, in the Toronto vernacular, the term "Yellow Belt" is used to describe the single-family dwellings that are concentrated in yellow areas on a land use map.

The Provincial/Municipal Approach to Additional Units

The rationale for ARUs is afforded a "fair, large and liberal interpretation" by the Minister's statement regarding second reading in the Legislature of Bill 108 and the Ministry's housing policy document. The Minister stated:

> The proposed changes before you here today would also lower costs for building second units. Second units, such as basement apartments, not only help homeowners pay their mortgages, but they also make more rental housing available. In fact, if passed, we would propose to put in place the necessary regulation so that one second unit in newly built homes would be completely exempted from development charges. This could reduce the cost of building a second unit and help increase the amount of rental housing in Ontario.

The provincial government's focus is on providing rental housing primarily in new housing and subdivisions and secondarily in existing dwellings, and in ancillary structures. Since 1996, the Province allowed municipal discretion to determine where these second units are to be located. Currently, section 16(3) of the *Planning Act* allows municipalities to establish official plan policy for second units in a detached house, semi-detached house or rowhouse and a residential unit in a building or structure ancillary (for example, a garage, coach house) to these types of houses. It is interpreted that there can be three residential units on a single property: the primary residential unit, a second unit in the primary residential unit, and a third residential unit in a building or structure that is ancillary to the primary residential unit.

Ontario Regulation 299/19 under the *Planning Act* defines "additional residential unit" to mean:

> an additional residential unit referred to in section 16(3) of the Act.

In my opinion, it is fair and reasonable to maintain the character of the "R1" Zone in Woodstock, and to not permit the proliferation of additional residential units in the single-detached dwelling or in the "backyard". There is sufficient space in the "R2" and "C3" zones either existing or in new areas to increase residential densities where they are near or in retail and service commercial areas. Certainly, additional rental housing in these latter zones will meet the political and planning objectives of the Ontario government.

Existing Woodstock Zoning By-law 8626-10

In the Bylaw, a "converted dwelling house" means:

> a *dwelling house* which has been *altered* or converted to provide two or more *dwelling units*

A "dwelling house" means:

> a *building* occupied or capable of being occupied as the home or residence of one or more persons, but shall not include a travel trailer, a motor home, a group home or mobile home as defined herein

The Zoning By-law permits a "converted dwelling house" in the "R2", "R3", and "C3" Zones.

When converted or altered, a single-detached dwelling house, a semi-detached dwelling house, a duplex dwelling house, and a multiple-attached dwelling house **are referred to as converted dwelling houses for zoning purposes.** In the Bylaw, there are general provisions, parking standards, and zone provisions for converted dwelling houses.

The Planning Applications

The two planning applications are intended to achieve the following results. Currently, prototype amendments have been crafted for purposes of the Statutory Public Meeting scheduled for December 6, 2021.

(a) Official Plan Amendment (Application OP 21-15-8)

The following proposed amendments reflect the proposed policy for ARUs.

7.2.4

- Additional Residential Units are added to the description of the Low Density Residential District designation. The types of dwellings include single-detached, semi-detached, duplex, converted dwellings, street fronting townhouses, quadraplexes, low density cluster development and low rise apartments.
- The criteria for multiple units is amended to allow for street oriented multiple units in addition to other site criteria.
- In **7.2.4.1.1**, new street oriented residential infill must be compatible with characteristics on the same street within a two block area.

- In **7.2.4.1.2,** policies for new Backyard Infill development are modified to allow for ARUs. The policy does not apply to the addition of a second unit in an ancillary building or structure.

- Subsection **7.2.4.3** (Converted Dwellings) is deleted and replaced with Additional Residential Units and Converted Dwellings. The summary policies are:

7.2.4.3

- **ARUs are encouraged in Low Density Residential Districts where appropriate.**
- **Goal/objective is to increase range and availability of affordable housing options.**
- **A condition is to maintain the low density residential character of the housing and neighborhoods in Low Density Residential Districts.**
- **The City of Woodstock may deem it appropriate to allow for ARUs in existing and newly developing residential areas.**
- **The City of Woodstock will allow ARUs considering the location, nature and character of existing development, existing level of services and presence of natural hazards and/or other constraints.**
- **The City of Woodstock shall establish appropriate zones and zoning provisions for ARUs.**
- **The appropriate zones shall allow ARUs in single-detached, semi-detached, townhouse dwellings or an ancillary structure.**
- **The City of Woodstock will apply criteria that must be satisfied when considering all ARU proposals:**

    - **Maximum two ARUs on a lot; one in the primary residential unit and/or one in an ancillary structure.**
    - **An ARU is not permitted on a lot where there is a boarding/lodging house, garden suite, converted dwelling unit, group home, mobile home/park model trailer, bed and breakfast establishment or similar use.**
    - **The ARU shall be secondary and subordinate to the primary residential unit.**
    - **The ARU shall be limited in size to maintain affordability and to minimize potential impacts on neighborhood character, infrastructure and public service facilities.**
    - **The maximum gross floor area of the ARU is 50% of the gross floor area of the primary unit.**
    - **The Bylaw may establish lower maximum floor area and/or floor area caps, if deemed appropriate.**
    - **The existing dwelling and lots are of sufficient size to accommodate ARUs without detracting from the visual character of the lot or the area.**
    - **The lots are of sufficient size to provide adequate parking, landscaping and outdoor amenity areas without detracting from the visual character of the lot or the area.**

- Any new/expanded structures and/or exterior alterations for an ARU will maintain the general built form and architectural character of the primary dwelling and the surrounding residential neighborhood.
- the primary dwelling must have direct, individual vehicular access to a public street.
- New additional driveways will not generally be permitted.
- There is adequate access from the front lot line or parking area to each ARU for both occupant use and emergency response.
- Existing trees and other desirable vegetation are preserved to the extent feasible, to help maintain the character of the lot and area.
- Existing infrastructure and public service facilities serving the area are adequate to accommodate the ARUs.
- Storm water run-off will be adequately controlled and will not negatively affect adjacent properties.
- The potential increase in on-street parking demand can be adequately accommodated and/or managed.
- Land use compatibility concerns will not be created or intensified, and
- Potential effects on environmental and/or heritage resources can be addressed according to Section 3.2 and
- The avoidance or mitigation on environmental constraints can be addressed according to section 3.2.

- The City of Woodstock will apply criteria that must be satisfied when considering ARU proposals in a structure ancillary to a single-detached, semi-detached or rowhouse dwelling:

  - The ancillary structure must be located in a rear or interior side yard.
  - The siting, design and orientation of the ancillary structure/dwelling unit, parking area and outdoor amenity area will allow for optimal privacy for the occupants of the ARU, the primary dwelling and abutting residential properties, and potential visual and shadowing impacts will be minimized on adjacent residential yards.
  - Landscaping, privacy screening, fencing and other appropriate measures may also be required to minimize potential visual and privacy impacts on abutting residential properties, and
  - all other municipal requirements can be adequately addressed.

- ARUs must be located on the same lot as the primary dwelling and may not be severed from such lot, or converted into a separately transferable unit through a plan of condominium.

- The Woodstock Zoning Bylaw shall establish the specific zoning provisions that must be met for an ARU to be established on a lot.

- **Zoning provisions will address the policy requirements of subsection 7.2.4.3 and any other matters deemed necessary by the City. These other matters are not limited to lot frontage, lot area, type of unit permitted, unit size, unit location, building height, building location, building setbacks, landscaping, amenity areas, parking and access, among others.**

- **The Zoning Bylaw may assist in maintaining the built form character of the primary dwelling and surrounding residential areas.**

- **The Zoning Bylaw may assist in minimizing potential impacts on abutting residential properties.**

- **The Zoning Bylaw may limit the location and extent of structural additions, alterations and/or features that are permitted.**

- **The zoning provisions for ADUs will be implemented by a comprehensive zoning bylaw amendment initiated by the City of Woodstock.**

- **Zoning provisions for new residential subdivisions may include provisions for ADUs.**

- **Zoning Bylaw amendments for site-specific ARU proposals will not generally be permitted.**

- **The proposal for an ARU in a structure ancillary to a single-detached. Semi-detached or townhouse dwelling may be subject to site plan control.**

- **The City of Woodstock may implement other supplementary tools and measures to assist with tracking and regulating ARUs including registration and/or licensing requirements, design guidelines, property standards bylaws, etc.**

<u>Concerns regarding the proposed Official Plan Amendment</u>

1. **The second paragraph under section 7.2.4 should be clarified to apply to new development in the Low Density Residential District and does not apply to the development of ARUs in single-detached, semi-detached, duplex and row townhouse dwellings and to ARUs in ancillary structures.**

2. **The term "Converted Dwelling" must be deleted from the Official Plan. A Converted Dwelling is an ARU and becomes redundant. As well, a dwelling and/or structure with an ARU do not lose their classification as a single-detached, semi-detached, duplex and rowhouse. The last paragraphs under subsection 7.2.4.3 should be removed since it considers Converted Dwellings.**

3. **An ARU is an ancillary structure should be given a class name. I suggest "Ancillary Residential Unit Structure".**

4. **In the Zoning Bylaw, dwellings and structures with ARUs should be considered as permitted uses. It should clear in the Zoning Bylaw that an Accessory Residential Unit is not a primary or principal permitted use in any of the zones.**

5. **The last point under the Ancillary structure criteria should also be included in the criteria for all ARUs. It should read: "all other municipal requirements (e.g. servicing, emergency access, by-laws, standards, etc.) can be adequately addressed.**

6. **The section that sets out the zoning bylaw policies will need to be carefully reviewed. The discretion for Woodstock to choose where ARUs are permitted and the zoning provisions is acceptable.**

7. **Although not a critical issue, there are suggestions that fractional ownership may be used by some owners to share the burden where there are ARUs in a dwelling.**

(b) Zoning Bylaw Amendment (ZN 8-21-17)

The proposed Table "ADDITIONAL RESIDENTIAL UNITS should be deferred until the official plan amendment is approved and in effect.

The zoning provision for Converted Dwellings must be removed and replaced with the provisions for dwellings with Additional Residential Units.

Mark L. Dorfman, F.C.I.P., R.P.P.

APPENDIX 1

ADDITIONAL RESIDENTIAL UNITS

Overview Chronology

1. In 1988, the provincial government introduced the matter of "Apartments in Houses". In the 1989 Land Use for Housing Policy Statement, the province supported municipalities to include official plan policies and zoning bylaws allowing Accessory Apartments as-of-right, but not in every residential area.

2. In 1994, Bill 120 *Residents Rights Act,1994* amended the *Planning Act* to allow an apartment as a second unit in a house. A municipality in an official plan or zoning bylaw cannot prohibit two residential units in a detached house, semi-detached house, rowhouse. This was implemented by O.R. 384/94 (Apartments in Houses) and by guidance in the Municipal Guide - "Apartments in Houses" (July 1994). The apartment must meet building, fire and planning standards. The provincial intent is to provide affordable rental housing in neighbourhoods.

3. In 1996, Bill 20 (*Land Use Planning and Protection Act)* amended the *Planning Act* and new rules for apartments in houses were established. **Municipal authority was returned to decide where new apartments in houses can go and what standards will apply.**

4. In 1996, the first Provincial Policy Statement encouraged all forms of residential intensification.

5. In 2005, the second Provincial Policy Statement provided for an appropriate range of housing types by permitting and facilitating residential intensification.

6. In 2007, terminology in Bill 51 (*Planning and Conservation Land Statute Amendment Act, 2006)* was changed to refer to "second units" in the *Planning Act.* Official Plan policies and zoning bylaws for second units were voluntary and cannot be appealed.

7. In Summer 2011, Municipal Affairs and Housing published a document, "Municipal Tools for Affordable Housing". The Ministry stated that **"municipalities are responsible for determining where second units are appropriate, as well as the appropriate standards for second units".**

8. In 2012, Bill 140 (*Strong Communities Through Affordable Housing Act, 2011)* amended the *Planning Act* to provide municipalities with the discretion to introduce second unit policies in official plans and to include provisions in zoning bylaws. These policies and bylaws cannot be appealed.

9. In 2014, the third Provincial Policy Statement stated that municipalities shall provide for an appropriate range and mix of housing types and densities. **The municipality shall permit and facilitate second units and identify appropriate locations for intensification.**

10. In May 2019, the province issued "More Homes, More Choice: Ontario's Housing Supply Action Plan". These policies laid the groundwork for amendments to the Planning Act under Bill 108. The relevant rationale stated:

> We're proposing changes to the Planning Act "to make it easier for homeowners to create residential units above garages, in basements and in laneways. (Page 8)
>
> We're encouraging small landlords to create new rental units too, by making it easier to build second suites (like basement apartments) and helping them navigate the complicated building code approvals process.
>
> As more rental units are built, tenants will have more choices, and rents will decrease.

11. In 2019, Bill 108 (*More Homes, More Choice Act, 2019)* amended the *Planning Act* to change the terminology to "additional residential units" and to allow municipalities to authorize three additional residential units on a residential property. O.R. 299/19 set some standards for Additional Residential Units. On May 8, 2019, the Minister of Municipal Affairs and Housing stated the political rationale for Bill 108 during debate on second reading:

> The proposed changes before you today would also lower costs for building second units. Second units, such as basement apartments, not only help homeowners pay their mortgages, but they also make more rental housing available. In fact, if passed, we would propose to putting in place the necessary regulation so that one second unit in newly built houses would be completely exempted from development charges. This could reduce the cost of building a second unit and help increase the amount of rental housing in Ontario.

12. In May 2020, the fourth Provincial Policy Statement encourages planning authorities to accommodate additional residential units to sustain healthy, livable and safe communities. Planning authorities shall provide for an appropriate range and mix of housing options and densities by permitting and facilitating additional residential units. [policies 1.1.1 and 1.4.3 b)]

13. On September 4, 2019 (updated on July 20, 2021), MMAH published "Add a second unit in your house". This is a user-friendly guide and checklist to build legal second units in houses and not in ancillary buildings or structures.

Current Statutory Direction

On January 1, 2012, the *Planning Act* was amended (Bill 140) to include the following Second Unit Policies:

> 16(3) Without limiting what an official plan is required to or may contain under subsection (1) or (2), an official plan shall contain policies that authorize the use of a second residential unit by authorizing,
>
> (a) the use of two residential units in a detached house, semi-detached house or rowhouse if no building or structure ancillary to the detached house, semi-detached house or rowhouse contains a residential unit; and
>
> (b) the use of a residential unit in a building or structure ancillary to a detached house, semi-detached house or rowhouse contains a single residential unit.

If an official plan is exempt from approval under section 17(24), Bill 140 provided that:

> (24.1) Despite subsection (24), there is no appeal in respect of the policies described in subsection 16(3), including, for greater certainty, any requirements or standards that are part of such policies.

If an official plan is not exempt from approval under section under 17(36), Bill140 provided that:

> (36.1) Despite subsection (36), there is no appeal in respect of the policies described in subsection 16(3), including, for greater certainty, any requirements or standards that are part of such policies.

Under Section 34, Bill 140 provided that:

> (19.1) Despite subsection (19), there is no appeal of a by-law that gives effect to the policies described in subsection 16(3), including for greater certainty, no appeal in respect of any requirement or standard in such a by-law.

Bill 140 added the following provisions to Section 35:

> (35.1) (1) The council of each local municipality shall ensure that the by-laws passed under section 34 give effect to the policies described in subsection 16(3);
>
> (2) The Minister may make regulations,
>
> (a) authorizing the use of residential units referred to in subsection 16(3);

(b) establishing requirements and standards with respect to residential units referred to in subsection 16(3).

(3) A regulation under subsection (2) applies as though it is a by-law passed under section 34.

(4) A regulation under subsection (2) prevails over a by-law passed under subsection 34 to the extent of any inconsistency, unless the regulation provides otherwise.

(5) A regulation under subsection (2) may provide that a by-law passed section 34 prevails over the regulation.

(6) A regulation under subsection (2) may be general or particular in its application and may be restricted to those municipalities or parts of municipalities set out in the regulation.

On March 7, 2017, the Ministry proposed a Regulation on the EBR for public consultation:

> Proposed Regulation for the establishment of requirements and standards with respect to second residential units: Parking requirements for second residential units; Occupancy requirements for the primary unit or second residential unit; and, Authorizing second residential units in all dwellings regardless of date of construction.

On April 12, 2018, the *Planning Act* was amended (Bill 7) to delete the following from subsection 16(3) "Without limiting what an official plan is required to or may contain under subsection (1) or (2)".

The subject Regulation came into force on September 3, 2019 after Bill 108 came into effect. The term second residential units was changed to additional residential units in Bill 108.

On September 3, 2019, the *Planning Act* was amended (Bill 108) to delete subsection 16(3) and replace it:

(16)(3) An official plan shall contain policies that authorize the use of additional residential units by authorizing;

(a) the use of two residential units in a detached house, semi-detached house or rowhouse; and

(b) the use of a residential unit in a building or structure ancillary to a detached house, semi-detached house or rowhouse.

There is no appeal of additional residential policies in the official plan and zoning bylaw.

On September 3, 2019, Ontario Regulation 299/19 (Additional Residential Units) came into force.

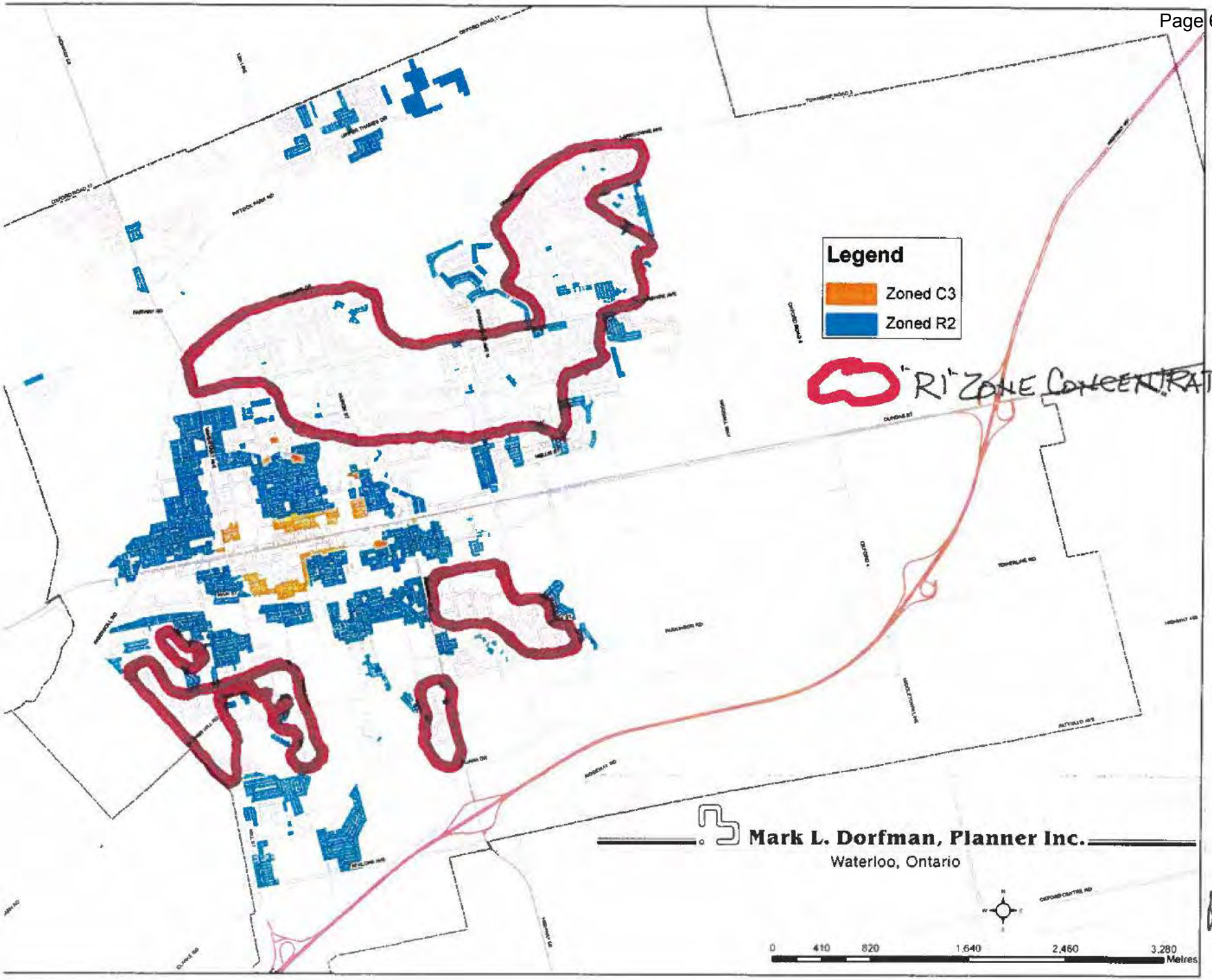
The Regulation set out requirements and standards for additional residential units.

- one parking space shall be provided for the sole use for each additional residential unit, and that such parking space may be provided through tandem parking, as defined.
- where a municipal zoning bylaw requires no parking spaces for the primary residential unit, no parking space would be required for the additional residential unit.
- where a municipal zoning bylaw is passed that sets a parking standard lower than a standard of one parking space, or no parking space, for each additional residential unit, the municipal zoning bylaw standard would prevail over the above requirement..
- an additional residential unit, where permitted in a zoning bylaw, may be occupied by any person regardless of whether the primary residential unit is occupied by the owner of the property or is related to the occupant of the primary residential unit.
- an additional residential unit, where permitted in a zoning bylaw, would be permitted without regard to the date of construction of the primary residential unit.

MLD.

Mark L. Dorfman, F.C.I.P., R.P.P.

APPENDIX 2


Legend
Zoned C3
Zoned R2
"R1" ZONE CONCENTRATION
Mark L. Dorfman, Planner Inc.
Waterloo, Ontario
0
410
820
1,640
2,460
3,280
Metres

Dear City Council:

Please consider this input at your meeting Dec 9 2021.

Official Plan Amendment & Zone Change re: ARU for City of Woodstock
Files OP 21-15-8 and ZN 8-21-17

1. Concerns with the City of Woodstock's Proposed Phased-in approach to ARUs by only allowing them for properties currently zoned R1 (which are properties that already allow for converted dwelling houses, duplexes and semi-detached dwelling houses)

2. Concern with City of Woodstock's 1000 square metre lot size requirement for ARUs as a detached accessory structure

I attended the City Council meeting last night and wish to voice the above concerns.

First, this phased-in approach is not consistent with the provincial direction with respect to affordable housing options that indicates broad implementation is expected and that restrictions/limits to facilitating ARUs should only be considered related to hazards or where provision of such units would be a strain on capacity to provide municipal services.

According to the public meeting last night, no other municipalities that County of Oxford is aware of are using the phased-in approach. This should provide some general guidance to the City of Woodstock as it contemplates the direction we are headed.

In addition, the County of Oxford is not recommending a phased-in approach.

The phased-in approach only allows ARUs where they already exist. Unlike R1 zones, R2 zones are currently zoned to permit more than one dwelling (by-law 8626-10, Section 7) such as converted dwelling houses, duplexes, and semi-detached dwelling houses.

I took note of Councillor Talbot's comments last night that many of us want to preserve our R1s and her concern that R1s will be complaining about

investors if the City of Woodstock does not adopt the phased-in approach. I would like to point out that this is also punishing R1 homeowners in the City of Woodstock who are struggling to pay mortgages and need the additional rental income and are in a position to assist with the housing crisis.

Councillor/Chair Talbot also mentioned in reference to the intended broad application of the Act, that the Province is forcing big city problems /solutions on the City of Woodstock. I would point out in reply that the housing crisis is happening in Woodstock too.

I can appreciate the concern about investors artificially inflating our housing prices and keeping them out of reach of first-time homebuyers. A possible solution that could use some further research would be in By-law 8626-10 under Section 5.2.4 on Garden Suites. Under 5.2.4.2 Conditions of garden suites iii) presently reads that they must be sited on same lots as main residential building and **the owner** of the lot must live on the property. If a term like this could be incorporated into the proposed changes, this may address the investor issues raised above.

The initial option presented last night by Mr. Hough was to re-evaluate how ARUs are working after 2 years for R2 and then consider expanding to R1. It was later contemplated that 1 year could be more appropriate. Either way, the City of Woodstock would be restricting rental income for R1 property owners on an artificial distinction based on current (archaic) zoning by-laws (when you consider the broad application the More Homes, More Choice Act is to have) and compounding the housing crisis by delaying the solution another year or two. I think it would be a worthwhile exercise to make it public how many properties in each R1, R2, R3 zoning criteria would meet the current requirements proposed for ARUs. From the comments at the meeting, it appears that in practice, as currently proposed, the amendments are quite restrictive. This would also only reflect the number of eligible properties to apply and not actual applications.

Second Concern from above

If ARU is to be a detached accessory structure, a minimum lot area of 1000 square metres is required. This is another archaic zoning regulation that needs to be re-evaluated. The rationale we were given at last night's meeting was that it is to ensure there is space for parking and amenities. Some/most of the intent here appears to be already covered in the parking

space provisions and by requiring 50% of the front yard to be landscaped open space (amongst other already existing criteria in the proposed changes).

We heard at the meeting that it is going to be very difficult for R2 properties to comply with the 1000 square metre lot size requirement.

Such a restrictive approach to ARUs by the City of Woodstock will have very little impact on the housing crisis and is inconsistent with the broad implementation contemplated by the More Homes, More Choice Act.

It is also prudent to consider surrounding areas and whether they are implementing this lot size requirement for detached accessory ARU structures. My understanding is that many are not. The only one I am personally aware of among abutting municipalities and other nearby cities along the 401 corridor is Haldimand County (and the rationale appears to be connected to their minimum area floor space requirements).

I am of the view that the phased-in approach is inconsistent with the legislation referred to above and selectively applies the benefits of the legislation to those lucky enough to have their properties already zoned as R2 in Woodstock and minimizes any impact the amendments could have on the housing crisis.

I am also of the view that maintaining the 1000 square metre minimum lot size for detached accessory structures is inconsistent with the goals of the new legislation (and clinging to an archaic zoning provision meant to deal with garden suites that existed prior to the housing crisis).

Thank you for your consideration of my input in this process. You have permission to publish my name and comments, but not my e-mail address or home address.

Sincerely,

Sandra Kent

On Fri, Jan 7, 2022 at 11:28 AM Jason Igras [redacted] wrote:

> Greetings Gordon Hough,
>
> I hope you and your family are doing well and that you enjoyed the holidays for what it was. I am following up with you after watching the Woodstock Planning Meeting from December 6th 2021. I am wondering if there are any developments since that meeting, specifically related to ADUs in the R1 zones? Are there any interim options available for R1 property owners to add an ADU to their property? Or is the only route to apply for a zone change from R1 to R2?
>
> Unfortunately, based on the proposed changes discussed in the meeting, it does not appear the City of Woodstock is making any changes to allow ADUs, except for zones that already allow additional units. The more Homes and More Choices Act was intended to help alleviate the housing shortage and provide more affordable options. It's too bad that those entering homeownership these days are doing so by stretching their budgets to the limit with no opportunity to use their home as an income stream to alleviate expenses. On the other side, many tenants have been looking for living accommodations for months and supply is low. ADUs are going to be especially important in the future as real estate value continues to rise and the Woodstock population increases. No doubt multi-generational housing where families are living together will be more in demand as real estate values climb.
>
> If a phased-in approach is being implemented, it would make sense that Phase 1 at least moved the ball forward and progress was made.
>
> I hope you and your family stay safe and keep well. Take care and all the best,
> Jason Igras

From: [redacted]
To: Planning
Subject: ARU
Date: January 8, 2022 11:11:05 PM

First I want to start off by stating that when speaking with other homeowners, they are not aware of any of this and assume that if there are any zoning changes directly affecting them that they would have been notified by mail. Secondly when plans are being done there are usually more options to choose from like A B or C, why would you only bring 1 option to council?
Since I want to keep this to a minimum I will only speak about my neighborhood which is Henry St, located between Wellington St and Butler.
I do not have any objects to ARU, but feel that they should not be clustered all on certain streets especially ones that have large amounts of foot and vehicle traffic. When you first turn on to Henry from Wellington St bridge you take the first left and there's the seniors center and the main entrance to Southside park where baseball/soccer fields playgrounds etc are located, or
If you go to the second left off Henry St is Finkle St which takes you to 2 other entrances to Southside Park.or continue to Southside Pool, Fanshawe College or the Complex where there are numerous activities baseball,soccer, ice hockey, gymnastics etc, and then the hospital which not only creates vehicle traffic on Henry St but is also the route used many times a day for the emergency vehicles.
We also have the footbridge which is currently closed but when opened creates more foot traffic and lets not forget the school buses stopping to pick up and drop off children on Henry St.
If you continue to the end of Henry St you will come to the dog park which creates vehicle and foot traffic, and across the dog park on Butler is the Purnia parking lot which creates transport traffic on Henry St. Remember all this is happening on a street that is about 400-425 meter long. With all this going on do you really think this street is a right fit?
We already have a lot of vehicles parked on the road as laneways are not bigger enough to accommodate when the homeowner has visitors so we honestly do not need more vehicles parked on the street, as turning from Finkle St to Henry is sometimes difficult to see around the parked vehicles, not sure how many times a day a car pulls into oncoming traffic as there view was blocked by vehicles parked on the street.
So when looking for options for ARU maybe look at the areas as a whole not just what zoning they are because some areas even though they are Zoned 2 might not be the right fit.
If you really want to go a good job (which i think the taxpayers deserve) you might start by NOT looking at how a home or area is zoned but what homes or areas have less foot and vehicle traffic and can accommodate a bit more traffic a side street or a cul d sac might be better option, also spread it throughout the whole city instead of clustering 90% of it in the center of the city.
Please feel free to contact me regarding anything on this matter.

Deb Lockwood
[redacted]

From: Mike Van Hemert [redacted]
Sent: February 1, 2022 9:52 PM
To: Planning <planning@oxfordcounty.ca>
Subject: Legals Suites - Woodstock

To Whom it May concern.
I would just like to express my concern. Your allowable sqft of basement apartments is way to small. You really need to be around 85% of the upstairs area, which will allow you to make a nice 2 bedroom unit under a typical bungalow. This improves the size of the basment unit as well as the pratical aspects of accessing the basement as otherwise you may need to add two stairs to get to the basement which is wasted space. Brantford, Welland, Kitchener, Hamilton are good cities to reivew their bylaws.
A bigger basement suite allows for a nice unit that the tenants can enjoy and perhaps start a family in. having a bunch of one bedroom basement suites is not great in the rental market.
Please consider increasing the allowable size of a basement suite.
Thanks
Mike VH

COUNTY OF OXFORD

BY-LAW NO. **xxxx-2022**

BEING a By-Law to adopt Amendment Number xxx to the County of Oxford Official Plan.

WHEREAS, Amendment Number 271 to the County of Oxford Official Plan has been recommended by resolution of the Council of the City of Woodstock and the County of Oxford has held a public hearing, and has recommended the Amendment for adoption.

NOW THEREFORE, the County of Oxford, pursuant to the provisions of the Planning Act, R.S.O. 1990, as amended, enacts as follows:

1. That Amendment Number 271 to the County of Oxford Official Plan, being the attached explanatory text, is hereby adopted.

2. This By-Law shall come into force and take effect on the day of the final passing thereof.

READ a first and second time this 23rd day of February, 2022.

READ a third time and finally passed this 23rd day of February, 2022.

LARRY MARTIN, WARDEN

CHLOE SENIOR, CLERK

AMENDMENT NUMBER 271

TO THE COUNTY OF OXFORD OFFICIAL PLAN

the following text attached hereto
constitutes Amendment Number 271 to the County of Oxford Official Plan

1.0 PURPOSE OF THE AMENDMENT

The purpose of this amendment is to update Chapter 7 – City of Woodstock Land Use Policies, as contained in the County Official Plan to implement policies regarding Additional Residential Units (ARUs) in the City. The proposed amendment will also make changes to Chapter 1 – Introduction, by adding a definition for an ARU and to modify the definition of Net Residential Density, which will apply to the County of Oxford as a whole.

2.0 LOCATION OF LANDS AFFECTED

This amendment includes the implementation, and modification of definitions for *Additional Residential Units* and *Net Residential Density*, respectively, that will apply to all lands located within the corporate boundary of the County of Oxford. The specific policy amendments to Chapter 7 of the Official Plan regarding ARUs will apply to the City of Woodstock exclusively.

3.0 BASIS FOR THE AMENDMENT

Bill 108, *More Homes, More Choices Act* and accompanying regulations came into effect in Ontario in September 2019, implementing measures and Provincial direction to increase the availability and affordability of housing to more Ontarians via, among other measures, amendments to the *Planning Act* and the *Development Charges Act*. The Planning Act amendments require municipalities to enact policies that authorize Additional Residential Units (ARUs) in low density housing types, specifically single and semi-detached dwellings and townhouses.

Provincial direction with respect to providing affordable housing options has been clear and consistent that broad implementation of provincial policy and regulations in this regard is expected and restrictions/limitations to facilitating ARUs should only be considered with respect to physical restrictions related to hazards (e.g. areas subject to flooding or erosion) or where the provision of such units would be a strain on a community's capacity to provide municipal services.

This amendment introduces high level, enabling-type policies that are intended to reflect and implement the current Provincial direction on ARUs, while also establishing a comprehensive suite of review criteria to inform and support the City's development of zoning provisions and, where deemed appropriate, other local implementation measures for such units. Council is satisfied that the policies contained in this amendment provide opportunity for detailed local direction regarding the circumstances under which ARUs will be permitted, and what standards will apply, via the development of appropriate zoning provisions, undertaken as part of a comprehensive, City-initiated Zoning By-law amendment.

While this amendment will largely affect Chapter 7 – City of Woodstock Land Use Policies, and will be specific to the City of Woodstock, the amendment also includes changes to Chapter 1 – Definitions, which will affect the County as a whole. Council is of the opinion that the proposed changes to Chapter 1 are appropriate and will be complimentary to anticipated amendments to the County Official Plan regarding the implementation of ARU policies affecting both the County's urban and rural communities.

4.0 DETAILS OF THE AMENDMENT

4.1 That Chapter 1 - INTRODUCTION, Section 1.6 - *Definitions*, as amended, is hereby amended by adding the following definition immediately before the definition of 'Adjacent Lands':

ADDITIONAL RESIDENTIAL UNIT

Additional Residential Unit (ARU) means a separate, self-contained dwelling unit located within a single detached, semi-detached or street townhouse dwelling, or within a detached building ancillary to such dwelling, and which is located on the same lot as, and is clearly subordinate to the principal dwelling.

4.2 That Chapter 1 – INTRODUCTION, Section 1.6 – *Definitions*, as amended, is hereby amended by inserting the sentence '*Additional Residential Units* shall not be included for the purposes of determining compliance with the net residential density requirements of this plan' at the end of the definition of *Net Residential Density*, so that the definition shall read as follows:

NET RESIDENTIAL DENSITY

Net Residential Density means the number of housing units per hectare of residentially designated land, exclusive of lands required for open space, environmentally sensitive areas and transportation and servicing *infrastructure*, including storm water management. *Additional Residential Units* shall not be included for the purposes of determining compliance with the net residential density requirements of this plan.

4.3 That Chapter 7 – CITY OF WOODSTOCK LAND USE POLICIES, Section 7.2 – *Housing Development and Residential Areas,* subsection 7.2.4, *Low Density Residential Areas*, as amended, is hereby amended by deleting the paragraph titled 'Description' and replacing it with the following paragraph:

DESCRIPTION

Low Density Residential Districts are those lands that are primarily developed or planned for a variety of low-rise, low density housing forms including both executive and smaller single detached dwellings, semi-detached and duplex dwellings, *additional residential units* and converted dwellings, street fronting townhouses, quadraplexes, low density cluster *development* and low rise apartments. In these Districts, it is intended that there will be a mixing and integration of different forms of housing to achieve a low overall density of use. It is not intended however that the full range of housing will be permitted in every individual neighbourhood or *development* and City Council may choose to restrict the range of uses permitted in a particular location through the Zoning By-law. Low Density Residential Districts are identified on Schedule W-3.

4.4 That Chapter 7 – CITY OF WOODSTOCK LAND USE POLICIES, Section 7.2 - *Housing Development and Residential Areas,* subsection 7.2.4, *Low Density Residential Districts*, as amended, is hereby amended by inserting the words 'Notwithstanding the above criteria' at the beginning of the last paragraph under the subsection titled 'Criteria for Multiple Units' so that the subsection shall read as follows:

Notwithstanding the above criteria, street oriented multiple unit *development* such as street fronting townhouses, quadraplexes and converted dwellings may be permitted on local streets.

4.5 That Chapter 7 – CITY OF WOODSTOCK LAND USE POLICIES, Section 7.2 – *Housing Development and Residential Areas,* subsection 7.2.4.1.1 - Street Oriented Infill, as amended, is hereby amended by deleting the word 'consistent' in the first bullet point under the heading 'Evaluation Criteria' and replacing it with the word 'compatible' so that the subsection shall read as follows:

- the proposal is compatible with the street frontage, setbacks, lot area and spacing of existing *development* within a two block area on the same street

4.6 That Chapter 7 – CITY OF WOODSTOCK LAND USE POLICIES, Section 7.2 – *Housing Development and Residential Areas,* subsection 7.2.4.1.2 – Backyard Infill, as amended, is hereby amended by deleting the first paragraph of the subsection and replacing it with the following:

In Low Density Residential Districts, backyard infill *development* may involve new residential *development* behind an existing building facing a street on a vacant lot with minimal frontage (e.g. flag shaped lots), on small vacant remnant parcels of land which cannot be integrated into a plan of subdivision, or on under-utilized institutional sites. Backyard infill may involve *development* on existing lots or the creation of new lots by consent. *Additional residential units* and *garden suites* may also be permitted to the rear of an existing dwelling on a lot in accordance with the policies of Sections 7.2.4.3 and 10.3.9, respectively.

4.7 That Chapter 7 – CITY OF WOODSTOCK LAND USE POLICIES, Section 7.2 – *Housing Development and Residential Areas*, as amended, is hereby amended by deleting subsection 7.2.4.3 – Converted Dwellings, and replacing it with the following subsection:

7.2.4.3 ***Additional Residential units and Converted Dwellings***

ADDITIONAL RESIDENTIAL UNITS

The development of *additional residential units* within the Low Density Residential Districts shall be encouraged, where appropriate, with the goal/objective of increasing the range and availability of affordable *housing options* while maintaining the low density residential character of the housing and neighbourhoods comprising such districts.

The general intent is to allow for the establishment of such units in existing and newly developing residential areas, subject to complying with applicable zone provisions and development standards, where the City has deemed it to be appropriate based on such considerations as the location, nature and character of existing development, existing level of services and presence of natural hazards and/or other constraints.

To this end, City Council shall establish appropriate zones and zoning provisions to permit the establishment of an *additional residential unit* in a single detached, semi-detached or row townhouse dwelling and/or a structure ancillary to such dwellings where they are satisfied that the following criteria can be addressed:

- a maximum of two *additional residential units* are permitted on a lot, consisting of one unit in the principal dwelling and/or one in a structure ancillary to the principal dwelling;

- an *additional residential unit* shall generally not be permitted on a lot that contains a boarding or lodging house, garden suite, converted dwelling unit, group home, mobile home/park model trailer, bed and breakfast establishment, or other similar use;

- the *additional residential unit(s)* shall be clearly secondary and subordinate to the principal dwelling and limited in size to maintain affordability and minimize potential impacts on neighbourhood character and on *infrastructure* and *public service facilities*;

- the gross floor area of the *additional residential unit(s)* shall not total greater than 50% of the gross floor area of the principal dwelling. The City may establish lower maximum floor area limits and/or floor area caps in zoning, if deemed appropriate.

- existing dwellings and lots are of sufficient size to accommodate the creation of *additional residential unit(s)* and to provide for adequate parking, landscaping and outdoor amenity areas, without detracting from the visual character of the lot or area;

- any new or expanded structures and/or exterior alterations (e.g. new parking areas, doors, windows, stairways, decks) to accommodate an *additional residential unit* will maintain the general built form and architectural character of the principal dwelling and the surrounding residential neighbourhood;

- the principal dwelling must have direct, individual vehicular access to a public street. New additional driveways will generally not be permitted;

- to the extent feasible, existing trees and other desirable vegetation are preserved to assist in maintaining the character of the lot and area;

- the existing *infrastructure* and *public service facilities* serving the area are adequate to accommodate the establishment of *additional residential unit(s)*;

- stormwater run-off will be adequately controlled and will not negatively affect adjacent properties;
- any potential increase in on-street parking demand can be adequately accommodated and/or managed;

- land use compatibility concerns (e.g. due to proximity to industrial areas or on *major facilities*) will not be created or intensified; and

- the potential effects on environmental and/or heritage resources, and the avoidance or mitigation of environmental constraints can be addressed in accordance with the policies of Section 3.2.

- all other municipal requirements (e.g. servicing, emergency access, by-laws, standards, etc.) can be adequately addressed.

ADDITIONAL RESIDENTIAL UNITS IN AN ANCILLARY BUILDING

The following additional criteria shall apply to the establishment of an additional residential unit in a structure ancillary to a single detached, semi-detached or row townhouse dwelling:

- the ancillary structure must be located in a rear or interior side yard;

- the siting, design and orientation of the ancillary structure/dwelling unit, parking area and outdoor amenity area (s) will allow for optimal privacy for the occupants of the additional residential unit, principal dwelling and abutting residential properties and minimize potential visual and shadowing impacts on adjacent residential yards;

- landscaping, privacy screening, fencing and other appropriate measures may also be required to minimize potential visual and privacy impacts on abutting residential properties; and

- all other municipal requirements (e.g. servicing, emergency access, by-laws, standards, etc.) can be adequately addressed.

SEVERANCE

Additional residential units must be located on the same lot as the principal dwelling and may not be severed from such lot, or converted into a separately transferable unit through plan of condominium.

ZONING

The City's Zoning By-law shall establish the specific zoning provisions that must be met for an *additional residential unit* to be established on a lot. These zoning provisions will address the policy requirements of this subsection and any other matters deemed necessary by the City including, but not limited to, lot frontage and area; type of unit permitted; unit size and location; building height; location and setbacks; landscaping and amenity areas; parking and access, etc.

To assist in maintaining the built form character of the principal dwelling and surrounding residential area, and minimizing potential impacts on abutting residential properties, the Zoning By-law may also limit the location and extent of structural additions, alterations and/or features (e.g. building additions, doorways, windows, stairways, decks, etc.) that are permitted.

The zoning provisions for *additional residential units* will be implemented through a comprehensive, City initiated amendment to the Zoning By-law, or through the proposed zoning for new residential subdivisions. Site specific amendments to the Zoning By-law to permit the establishment of an *additional residential unit* will generally not be permitted.

OTHER TOOLS AND MEASURES

Where deemed necessary and/or appropriate, the City may implement other supplementary tools and measures to assist with tracking and regulating *additional residential units* including, but not limited to, registration and/or licensing requirements, design guidelines, property standards by-laws, etc.

4.8 That Chapter 7 – CITY OF WOODSTOCK LAND USE POLICIES, Section 7.2 – *Housing Development and Residential Areas*, as amended, is hereby amended by changing the heading of the subsection titled '*Criteria For More Than Two Units*' as contained in Section 7.2.4.3 to '*Converted Dwellings*' and that the first paragraph of that subsection be deleted and replaced with the following:

In addition, City Council may zone areas within the City to permit the conversion of a principal dwelling for more than two dwelling units in accordance with the following criteria:

4.9 That Chapter 7 – CITY OF WOODSTOCK LAND USE POLICIES, Section 7.2 – *Housing Development and Residential Areas*, as amended, is hereby amended by adding the following subsection immediately after the subsection titled '*Converted Dwellings*', as contained in Section 7.2.4.3 (as amended by subsection 4.8 of this amendment):

NO FURTHER CONVERSION

Where an *additional residential unit* has been established within a principal dwelling, the conversion of the said dwelling to include additional units will generally not be permitted.

4.10 That Chapter 7 – CITY OF WOODSTOCK LAND USE POLICIES, Section 7.2 – *Housing Development and Residential Areas*, as amended, is hereby amended by deleting the paragraph titled '*Site Plan Control'* at the end of the newly titled '*Converted Dwellings*' subsection identified in Clause 4.8 of this amendment, and replacing it with the following:

SITE PLAN CONTROL

Such converted dwellings may be subject to site plan control.

5.0 IMPLEMENTATION

This Official Plan Amendment shall be implemented in accordance with the relevant implementation policies contained in the Official Plan.

6.0 INTERPRETATION

This Official Plan Amendment shall be interpreted in accordance with the relevant interpretation policies of the Official Plan.

Report No: CP 2022-78
COMMUNITY PLANNING
Council Date: February 23, 2022

To: **Warden and Members of County Council**

From: **Director of Community Planning**

2021 Census Data Release and Related Growth Updates

RECOMMENDATIONS

1. **That County Council receive Report No. CP 2022-78 for information;**

2. **And further, that Report No. CP 2022-78 be circulated to the Area Municipalities for information.**

REPORT HIGHLIGHTS

- The report provides a brief overview of the findings from the first 2021 Census Data Release (i.e. Population and Dwelling Counts), together with a comparison to the 2016 Census and current County and Area Municipal growth forecasts (i.e. County of Oxford Phase 1 Comprehensive Review, Hemson 2020) and initial planning staff observations.

- The data in this first release indicates that the County and most of the Area Municipalities in the County, have experienced substantial growth since the last Census was conducted in 2016, and are among some of the fastest growing municipalities in Southwestern Ontario.

Implementation Points

The 2021 Census releases are being monitored by planning staff and will be reviewed and compiled in preparation for formal updates to the County and Area Municipal growth forecasts to be initiated in early 2023. This Census information will also be used to update the County's demographic and statistical profile and inform various County and Area Municipal projects and initiatives.

Financial Impact

No immediate implications beyond this year's approved budget.

Communications

No specific communications beyond this report to County Council (and circulation to the Area Municipalities for their information) and updating the County's website to reflect the 2021 Census Population and Dwelling Count data, which is already underway.

Strategic Plan (2020-2022)

WORKS WELL TOGETHER	WELL CONNECTED	SHAPES THE FUTURE	INFORMS & ENGAGES	PERFORMS & DELIVERS	POSITIVE IMPACT
		3.ii. 3.iii.	4.i. 4.ii.		

DISCUSSION

Background

The first data set from the 2021 Census (Population and Dwelling Counts) was released on February 9th, 2022. The purpose of this report is simply to provide Council with a brief overview of the findings from this first data release and some initial planning staff observations.

Commentary

The following commentary provides an overview of the findings from the first 2021 Census release, together with a high level comparison to the 2016 Census and the current growth forecasts for the County and Area Municipalities (i.e. County Phase 1 Comprehensive Review, Hemson 2020).

a) Comparison of 2016 and 2021 Census Population and Dwellings Data

Municipality	2016 Census Population[1]	2021 Census Population	% Change	2016[2] Total Dwellings	2021[2] Total Dwellings	% Change
Woodstock	41,098	46,705	13.6%	17,601	19,528	10.9%
Tillsonburg	15,872	18,615	17.3%	7,297	8,494	16.4%
Ingersoll	12,757	13,693	7.3%	5,192	5,627	8.4%
Blandford-Blenheim	7,399	7,565	2.2%	2,817	2,857	1.4%
East Zorra-Tavistock	7,113	7,841	10.2%	2,769	3,055	10.3%
Norwich	10,835	11,151	2.9%	3,766	3,892	3.3%
South-West Oxford	7,634	7,583	-0.7%	2,742	2,708	-1.2%
Zorra	8,138	8,628	6%	3,161	3,284	3.9%
Oxford County	**110,846**	**121,781**	**9.9%**	**45,345**	**49,455**	**9.0%**

Table Notes:

[1] The 2016 Census population and dwellings were adjusted by Stats Can for Woodstock, Norwich and SWOX (i.e. to reflect recent changes in their municipal boundaries) and for East Zorra-Tavistock (to reflects a minor adjustment with Perth East). Note: the 2016 dwelling corrections are not shown in the Census profile tables.

[2] Total Private Dwellings (i.e. includes occupied and unoccupied dwellings and dwellings occupied by foreign/temporary residents). Would include vacant units and recently constructed units that were not yet occupied at the time the census was conducted.

The 2021 Census release also provided population growth data for a number of 'population centres' in the County (i.e. larger settlements/built up areas that are not a separate municipality). For example: Thamesford 23.9%, Norwich 6.5% and Tavistock 7.3%.

b) Comparison of 2021 Census Population & Dwellings to Current Growth Forecasts

Municipality	2021 Census Population (Adjusted)[1]	2021 Population Forecast[2]	Variation (%)	2021 Census Occupied Dwellings[4]	2021 Household Forecast[2]	Variation (%)
Woodstock	47,965	46,620[3]	-1,345 (-2.8%)	18,886	19,140	+254 (+1.3%)
Tillsonburg	19,120	17,380	-1,740 (-9.1%)	8,229	7,640	-589 (-7.1%)
Ingersoll	14,065	14,240	+175 (+1.2%)	5,467	5,580	+113 (+2.1%)
Blandford-Blenheim	7,770	7,980	+210 (+2.7%)	2,779	2,890	+111 (+4%)
East Zorra-Tavistock	8,050	7,940	-110 (-1.4%)	2,976	2,990	+14 (+0.5%)
Norwich	11,450	11,850[3]	+400 (+3.5%)	3,761	3,940	+179 (+4.8%)
South-West Oxford	7,785	8,140[3]	+355 (+4.5%)	2,616	2,810	+194 (+7.4%)
Zorra	8,860	8,740	-120 (-1.4%)	3,162	3,240	+78 (+2.5%)
Oxford County	**125,070**	122,890	-2,180 (-1.7%)	47,876	48,240	+364 (+0.8%)

Table Notes:

[1] As the official final 2021 undercount adjustment will not be available until late 2023, planning staff have adjusted the 2021 Census population figures by 2.7% (i.e. the adjustment factor for undercount used in the 2021 County population forecasts) to provide for a quick comparison of the 2021 Census and forecasted populations.

[2] These forecasted population and household figures are from the County Phase 1 Comprehensive Review (Hemson, 2020)

[3] The area municipal population changes (i.e. gain/loss) resulting from the recent Woodstock municipal boundary adjustments with Norwich and South-West Oxford were not accounted for in the Hemson population forecasts.

[4] Private Dwellings Occupied by Usual Residents (i.e. is the dwellings the population data relates to, so is the figure used for the household growth forecasts)

c) Initial Observations

Planning staff regularly monitor Ministry of Finance forecasts, inter-censal estimates, building permit and development trends etc., so there was nothing particularly unexpected in this first census release. The one exception is the decrease in population and total dwellings in South-West Oxford, which planning staff will be reviewing further internally and potentially following up on with Statistics Canada to confirm/investigate.

That said, following are some initial observations from a quick review of the data:

- Oxford as a whole, and a number of the area municipalities, experienced some of the highest percentage population growth in southwestern Ontario. Some sample municipal comparators are as follows:

Municipality	Percentage Change
Town of Milton	**20.7%**
City of London	**10%**
Waterloo Region	**9.7%**
• City of Kitchener	10.1%
• City of Waterloo	15.7%
• City of Cambridge	6.6%
Middlesex County	**9.2%**
• Thames Centre	6%
• Lucan Biddulph	20.9%
• Town of Strathroy	10.7%
City of Guelph	**9.1%**
Brant (incl. Brantford)	**7.4%**
• Paris	20.7%
• City of Brantford	6.2%
Elgin County	**6.5%**
• City of St. Thomas	10.1%
• Rest of Elgin County	3.7%
Perth (incl. Stratford/St. Mary's)	**6.2%**
• City of Stratford	5.6%
• Town of St. Mary's	1.7%
City of Hamilton	**6.0%**
Norfolk County	**5.4%**

- The variation between the rate of population growth and dwelling unit growth in the County and a number of the area municipalities seems to suggest that average household sizes are increasing. If so, that is a matter that will need to be carefully considered as part of any upcoming forecast updates (i.e. is it simply a short term anomaly due to Covid, or an emerging trend).

- The variation in the number of total private dwellings versus dwellings occupied by usual residents may be partially due to recent building activity in the County (i.e. total dwellings is capturing recently constructed units that were not yet occupied at the time of the Census). This will be examined further as part of any forecast updates.

- Planning staff review of residential building permits issued since the 2021 Census was conducted suggest that, overall, rates of population and dwelling unit growth in the County appear to be continuing and/or increasing, however, with considerable variation between area municipalities.

- Recent growth in some of the Area Municipalities has likely been limited to some extent by shorter term constraints, such as lot availability and/or servicing capacity. As such, recent levels of growth may not necessarily be fully indicative of expected future growth (i.e. once those limitations have been addressed).

Planning staff will be closely following the Census data releases over the remainder of the year, as much of that data (e.g. broader population demographics, household composition, employment, migration etc.) will be key to understanding how the County is changing and informing upcoming growth forecast updates and other County and Area Municipal plans and initiatives (i.e. Master Plans, Housing Strategies etc.)

Next Steps

Planning staff will be continuing to monitor the 2021 Census data releases (which are scheduled over the course of 2022), as well as ongoing building and development trends. This information will be compiled and organized so that it can feed into the formal updates to the County and Area Municipal growth forecasts (currently to be initiated beginning of 2023, once all the relevant 2021 Census data is available) to ensure they are as informed and accurate as possible. As in the past, the forecast updates will be undertaken by a qualified consultant on behalf of the County and take into consideration a full spectrum of relevant provincial, regional and local data and other information (i.e. 2021 Census data, development/building activity, economic, market, social trends etc.) as identified through planning staff review and consultation with each of the area municipalities.

Conclusions

This report provides an initial overview of the findings from the first 2021 Census data release and initial planning staff observations. Planning staff will be continuing to monitor future releases and will update Council as required. Further, once of the necessary information has been released, it will be used to inform formal updates to the County and Area Municipal growth forecasts planned for initiation in early 2023.

SIGNATURES

Report Author:

Original signed by
Paul Michiels
Manager of Planning Policy

Departmental Approval:

Original signed by
Gordon K. Hough
Director

Approved for submission:

Original signed by
Michael Duben, B.A., LL.B.
Chief Administrative Officer

Oxford County
Growing stronger together

Report No: PW 2022-05
PUBLIC WORKS
Council Date: February 23, 2022

To: **Warden and Members of County Council**

From: **Director of Public Works**

2021 Drinking Water System Performance

RECOMMENDATION

1. **That County Council receive Report PW 2022-05 entitled "2021 Drinking Water System Performance", including the attached 2021 Annual Drinking Water System Summary Reports.**

REPORT HIGHLIGHTS

- The Ministry of the Environment, Conservation and Parks (MECP) requires that an annual status summary report on the performance of the County's 17 municipal drinking water systems be prepared and provided to Council in accordance with the regulatory requirements of Schedule 22 and Section 11 of Ontario Regulation (O. Reg.) 170/03 under the *Safe Drinking Water Act, 2002*.

- 10 of the Oxford County (the County) municipal drinking water systems inspected since January 2021 by the MECP received 100 percent inspection ratings. At the time of preparation of this report, the MECP inspection reports for the County's municipal drinking water systems in Drumbo-Princeton and Embro had not been finalized. The remaining five (5) systems: Dereham Centre, Ingersoll, Plattsville, Tavistock, and Tillsonburg, have not yet been scheduled for inspection by the MECP.

- A summary of annual water system capital investments and an overview of key maintenance activities that were completed on the water infrastructure assets is also noted.

- This report also summarizes the Source Water Protection program implementation efforts undertaken over the last year across various watersheds within the County's jurisdiction.

Implementation Points

As required by legislation, the 2021 Annual Drinking Water Systems Summary Reports (Attachment 1) will be posted on the County's website by February 28, 2022. An update to Council will be provided after all remaining MECP inspections are complete and the findings will be provided by memorandum. In March 2022, a separate report to Council will include the results of the Management Review of the Drinking Water Quality Management System (DWQMS). In addition, staff will continue to implement Source Water Protection Plan policies to remain in compliance with the *Clean Water Act, 2006* requirements.

Financial Impact

There are no financial impacts to date as a result of this report. Any required actions that will result in expenditures have been accounted for in the 2022 Operating or Capital Budgets of the respective drinking water systems.

Communications

As indicated, the Drinking Water System Performance reports will be posted to the County website as legislatively required by February 28, 2022 at www.oxfordcounty.ca/water-wastewater. The results of each system's performance report will also be shared directly with area municipal CAOs and Public Works senior management respectively.

The County communicates the performance of key Public Works systems (Water, Wastewater, and Waste Management) annually to the public through an annual social media campaign after the last performance report has been submitted to Council (March 31, 2022).

Strategic Plan (2020-2022)

WORKS WELL TOGETHER	***WELL CONNECTED***	***SHAPES THE FUTURE***	***INFORMS & ENGAGES***	***PERFORMS & DELIVERS***	***POSITIVE IMPACT***
1.ii.				5.ii.	

DISCUSSION

Background

The Statutory Standard of Care provisions of the *Safe Drinking Water Act, 2002* make individuals with oversight responsibilities for municipal drinking water systems legally responsible for decisions made regarding the system. The intent of this Standard of Care is to ensure that owner representatives (Oxford County Council and CAO) and various levels of decision makers of the municipal drinking water systems are acting diligently and making informed decisions when required. These decisions can impact the quality and safety of the municipal drinking water provided to all customers.

Decision making authority over the County's drinking water systems include, but is not limited to, members of municipal Council. All persons who oversee the operating authority or exercise decision-making authority must:

- exercise the level of care, diligence and skill that a reasonably prudent person would be expected to exercise in a similar situation; and
- act honestly, competently and with integrity, with a view of ensuring the protection and safety of the users of the municipal drinking water system.

Some of the ways members of Council can provide diligent oversight under the Standard of Care requirements is to have awareness of governing drinking water legislation and regulations, the County's Operational Plans and the drinking water annual reporting (the County's Operational Plans will be reviewed in the upcoming DWQMS report to Council). Of note, the Annual Drinking Water System Performance Report is the primary method Senior Management and Council demonstrate due diligence in providing oversight of the County's municipal drinking water systems and meeting their Standard of Care legal requirement.

Municipal Drinking Water System Reporting

In accordance with the *Safe Drinking Water Act, 2002,* the 2021 Annual Drinking Water Systems Summary Reports (Attachment 1) have been prepared for each of the County's 17 municipal drinking water systems. Under Schedule 22 and Section 11 of O. Reg. 170/03, drinking water system owners must prepare reports that provide the following information:

- brief description of the system;
- any incidents of adverse test results, inadequate disinfection or where any mandatory requirement was not met;
- all test results; and
- a summary of the amount of water supplied with a comparison to the system's rated capacity.

Further, the *Clean Water Act, 2006* specifies that municipalities and the Risk Management Official must report yearly on activities undertaken to meet the requirements of the Source Protection Plans (SPPs) by February 1 of the following year. A summary of the submitted reports are provided in the sections below.

Comments

2021 Annual Water Systems Summary Reports

The individual annual water system reports will be available for review by the public on the County's website at www.oxfordcounty.ca/drinkingwater by February 28, 2022. Highlights include:

- 21 communities were served through 17 separate municipal drinking water systems.

- There were 62 active supply wells in 2021 receiving treatment ranging from disinfection by chlorination to more complex forms of treatment including filtration to remove parameters such as iron, manganese or hydrogen sulphide followed by disinfection through chlorination and/or Ultra Violet light (UV).

- Approximately 10.6 million cubic metres of drinking water was supplied to customers.

- 4,420 regulated bacteriological samples were collected, with 2 samples being adverse (<0.05 %). All adverse results were investigated, resampled and cleared.

- 3,401 non-reportable bacteriological samples were collected from the raw and treated water, with 499 being related to system maintenance and repair.

- Results for the approximately 60 different health-related chemical parameters tested (at 31 separate treatment points) all met MECP requirements.

- Source Water Quality:

    - Brownsville Supply Wells – Naturally occurring arsenic levels in untreated raw water remain notably present in Well 6 and are monitored quarterly. Raw water from Well 6 is currently blended with Well 5 in a reservoir to effectively manage overall drinking water arsenic levels within acceptable treated Ontario Drinking Water Standard (ODWS) limits prior to customer distribution. A Municipal Class Environmental Assessment (EA) Study for Well 6 is planned for 2022 to review any further operational enhancements.

    - Dereham Centre Supply Wells - Naturally occurring arsenic levels in untreated raw water remain notably present in Well 2. Raw water (Well 2) is treated using a new permanent treatment filtration system (completed in 2021) to remove arsenic and effectively manage overall drinking water arsenic levels within ODWS standards prior to customer distribution. Arsenic levels in the raw water (Well 2) and treated water continue to be monitored quarterly as per the Municipal Drinking Water Licence.

    - Springford Supply Wells - Naturally occurring arsenic levels in untreated raw water remain notably present in Well 4 and are monitored quarterly while the wells are in service. Water from Well 4 is blended with Well 5 to effectively manage overall drinking water arsenic levels within acceptable ODWS standards prior to customer distribution.

    - Norwich Supply Wells - Naturally occurring arsenic levels in untreated raw water remain high in Wells 2 and 5. The arsenic from the source water in these wells has been successfully reduced through filtration at the Pitcher Street Water Treatment facility (WTF) prior to distribution since 2008. Samples from the raw and treated water continue to be monitored quarterly.

    - Tillsonburg Supply Wells (Broadway Street) - Naturally occurring arsenic levels in untreated raw water remain notably present in Well 7A and are monitored quarterly. Water from Well 7A is blended with Wells 4 and 5 (North Street) at the Fairview WTF to effectively manage overall drinking water arsenic levels within acceptable treated ODWS limits prior to customer distribution. A Municipal Class EA Study for Well 7A is planned for 2022 to review any further operational enhancements.

    - Otterville Supply Wells – Nitrate levels in raw water remain notably present in Wells 3 and 4. Source water supplies from Wells 3 and 4 are blended to effectively manage nitrate levels within acceptable treated ODWS limits prior to customer distribution. In addition, the County upgraded an existing nitrate analyzer within the WTF in 2021 to continuously monitor this parameter of concern. Water samples are also taken from the treated water as part of an enhanced nitrate monitoring system.

- Tillsonburg Supply Wells (Brownsville Road) – Nitrate levels in raw water remain notably present in Wells 4 and 5. Raw water from Wells 4 and 5 is blended with Well 7 (Broadway Street) at the Fairview WTF to effectively manage and continuously monitor overall drinking water nitrate levels within acceptable treated ODWS limits prior to customer distribution. Water samples from the Fairview WTF are also taken as part of an enhanced nitrate monitoring system.

- Woodstock Supply Wells (Sweaburg Road) - Nitrate levels in raw water remain notably present in Wells 1, 3, 5, 8 and 11. Raw water from these wells is blended with other well supplies to effectively manage overall drinking water nitrate levels within acceptable treated ODWS limits prior to customer distribution. Continuous nitrate monitoring was implemented in 2021, in addition to raw and treated water sampling as part of an enhanced nitrate monitoring system.

- Five systems (Brownsville, Ingersoll, Lakeside, Mount Elgin and Oxford South -- Springford) have naturally occurring fluoride levels greater than 1.5 mg/L. At levels up to 2.4 mg/L, the water is considered safe for consumption; however, parents with children under the age of six are advised to limit exposure to other sources of fluoride when levels exceed 1.5 mg/L. For more information visit: https://www.swpublichealth.ca/en/partners-and-professionals/resources/Health-Care-Providers/Alerts-Advisories-Updates/Advisories/ADV_HIA-Fluoride-20201203.pdf

- Elevated levels of naturally occurring sodium greater than 20 mg/L exist in nine systems (Bright, Brownsville, Embro, Ingersoll, Mount Elgin, Oxford South, Thamesford, and parts of Woodstock and Tillsonburg). At levels up to 200 mg/L, the water is considered safe for consumption; however, levels above 20 mg/L may be of concern for individuals on a sodium-restricted diet due to various medical conditions. and illnesses. For more information visit https://www.swpublichealth.ca/en/partners-and-professionals/resources/Health-Care-Providers/Alerts-Advisories-Updates/Advisories/ADV_HIA-Sodium-20201203.pdf

2021 Water System Infrastructure Investments

As per the revised 2021 Forecast in the 2022 Business Plan and Budget, the County invested over $10 M in rate supported water infrastructure which includes, but is not limited to, several notable capital projects as follows:

- Townships Water Facility Improvements ($350,000)
- Tavistock New Well Supply Class EA Study and Well Exploration ($260,000)
- Itron AMR upgrade to FCS Software with Itron Mobile ($72,000)
- Water & Wastewater SCADA Master Plan ($720,000)
- Ingersoll Water Facility Improvements ($130,000)
- Ingersoll Watermain Replacements ($950,000)
- Woodstock Watermain Replacements ($2,145,000)
- Tillsonburg Watermain Replacement Projects/New Construction ($1,300,000)
- OR 4/Landsdowne Watermain Extension/Looping ($2,700,000)
- Woodstock Water Supply Feedermains Condition Assessment ($400,000)
- New Tillsonburg Bulk Water Station ($125,000)

In addition to the above noted capital investments in water infrastructure, Oxford continues to prioritize the long term sustainability of its water systems. In 2022, the current asset condition of the water system will be documented as part of the overall update to the County's 2017 Asset Management Plan, which will also identify revised asset replacement costs and sustainable long term funding requirements.

Of note, Oxford County manages its water infrastructure asset inventory, adds and tracks asset information and regularly generates asset maintenance work orders using a digital asset management system (Cartegraph). Through proactive asset management, the County strives to optimize the service life of its water assets and promote the overall long term sustainability of its water system. The County continues to integrate its water infrastructure, among other assets, within the corporate Asset Management Systems Enhancement project as part of overall compliance to O. Reg. 588/17 – Asset Management Planning for Municipal Infrastructure, under the *Infrastructure for Jobs and Prosperity Act, 2015*.

As well, Oxford County Public Works institutes industry best management standards to annually monitor the levels of service and financial performance of its water infrastructure and to ensure our water infrastructure assets are maintained in good condition through effective preventative maintenance, optimized infrastructure decision-making and strategic capital planning (replacement, repair, expansion). In this regard, the ongoing Modernization Service Delivery Review is currently assessing the most appropriate and cost effective way for Oxford County, and its service providers (Woodstock, Tillsonburg), to provide water distribution and wastewater collection services while maintaining or improving service levels.

In addition, the County is currently undertaking a County-wide Water Master Plan to identify preferred water servicing strategies to meet the County's growth needs to the year 2046 as well as provide effective on-going servicing continuity for existing settlement areas across the County as appropriate. Through this Master Plan, the long term ability of Oxford's water system to service existing water demand, as well as future growth needs, is being assessed in detail in terms of sustainable, affordable and reliable infrastructure.

2021 Maintenance of Water System Infrastructure

In addition to the drinking water system capital investments noted above, several planned preventative maintenance activities are carried out annually to help optimize the useful service life and efficiency of water infrastructure assets. A number of key maintenance activities are noted below for water distribution and water supply/treatment infrastructure respectively.

Water Distribution Infrastructure:

Preventative Maintenance Activity	Quantity
Critical Valve turning	972
Non-Critical Valve turning	1945
Watermain Cleaning (Swabbing)	27,400 m
Hydrant Flushing	4188
Hydrant Maintenance	1858
Hydrant Flow Testing	772
Backflow Preventer Inspections	997

In terms of corrective maintenance, Public Works also repaired 29 distribution watermain breaks and responded to approximately 480 customer water complaints within the various water distribution systems across the County in 2021.

Water Supply/Treatment Infrastructure:

Preventative Maintenance Activity	Quantity
Water Supply Main Cleaning (Swabbing)	2,816 m
Specialized Rehabilitation of Supply Wells	9
Reservoir Cleaning	5
Water Plant Filter Media Maintenance/Replacement	7
Chlorine, Turbidimeter & Nitrate Analyser Calibrations	564
Ultra-Violet Disinfection System Maintenance	10
Standby Power Generator Maintenance	29
Water Plant Flowmeter Calibrations	146
Facility Backflow Preventer Inspections	68

As well, Public Works performed condition assessment of approximately 7,100 m of raw water supply transmission mains as well as performed over 200 inspections on critical water supply wells, instruments, and storage facilities.

2021 MECP Inspection Reports

Every year, the MECP inspects each drinking water system to assess compliance with the requirements of the *Safe Drinking Water Act, 2002* and the *Ontario Water Resource Act, 1990*. As the provincial government's fiscal year is April to March and inspections take place throughout that period, inspection Reports are not always finalized in time to be included in the County's annual reports.

Overall, the 2021 year marked exceptional performance at the County's water treatment and distribution facilities as reflected in the MECP Inspection Reports and ratings. Of the 10 Inspection Reports finalized to date, all 10 received a rating of 100%. The inspection report ratings for Embro, Dereham Centre, and Drumbo-Princeton had not yet been finalized at the time of this report. The inspection of the Tavistock system has been scheduled to take place in February 2022. All other system inspections have not yet been scheduled by the MECP.

Though not considered non-compliances, some inspection reports outlined areas for improvement such as minor updates to system operations manuals and implementation of a Backflow Prevention Program.

The table below outlines the status of each system's MECP inspection reports and ratings.

System	MECP Inspection Rating
Beachville	100%
Bright	100%
Brownsville	100%
Dereham Centre	*MECP inspection took place on January 25, 2022**
Drumbo-Princeton	*MECP inspection report rating not yet finalized**
Embro	*MECP inspection report rating not yet finalized**
Hickson	100%
Ingersoll	*MECP Inspection not yet scheduled due to Covid-19**
Innerkip	100%
Lakeside	100%
Mount Elgin	100%
Oxford South (Norwich, Otterville & Springford)	100%
Plattsville	*MECP Inspection not yet scheduled due to Covid-19**
Tavistock	*MECP Inspection is scheduled for February 11, 2022**
Thamesford	100%
Tillsonburg	*MECP Inspection not yet scheduled due to Covid-19**
Woodstock	100%

***** An update to Council will be provided after all remaining MECP well inspections are complete and the findings will be provided by memorandum.

2021 Boil Water and Drinking Water Advisories

There were two precautionary Boil Water Advisories (BWA) in 2021:

- Bright - A precautionary BWA was enacted on September 29, 2021 for all residents following a watermain break that caused depressurization to the system. A third party contractor damaged the watermain when excavating and installing an adjacent new development watermain. Bacteriological water test samples were collected to confirm that there was no contamination to the drinking water system, and were found to be within acceptable ODWS levels.

- Tillsonburg - A precautionary BWA for 12 residents was enacted on May 5, 2021 following a watermain break until bacteriological samples were collected to confirm that there was no contamination to the drinking water system. A third party contractor damaged the watermain during excavation for a reconstruction project. After the watermain break was repaired and flushed, water test samples were taken and were confirmed to be within acceptable ODWS levels.

There was one operational Adverse Water Quality Incident (AWQI) in 2021:

- Mount Elgin – A low chlorine residual of 0.03 mg/L in the water distribution system was reported to the MECP and Medical Officer of Health (MOH) on November 26, 2021. The system was subsequently flushed, tested, and restored to an acceptable ODWS concentration (above 0.05 mg/L).

There were two bacteriological AWQIs in 2021:

- Woodstock – A bacteriological sample result for total coliforms of 2 cfu/100 mL in the water distribution system was reported to the MECP and MOH on June 30th, 2021. Resamples were collected at the site and two nearby locations and were determined to be within acceptable ODWS levels.
- Dereham Centre – A bacteriological sample result for total coliforms of 8 cfu/100 mL in the water distribution was reported to the MECP and MOH on July 21st, 2021. Resamples were taken at the site and two nearby locations and were determined to be within acceptable ODWS levels.

There were six chemical AWQIs in 2021:

- Dereham Centre - Four AWQIs related to arsenic concentrations (greater than 10 µg/L) in the treated water were reported to the MECP and MOH in May 2021. All four AWQIs were reported during the commissioning of a new water filtration system, which since being placed into service (late May 2021) has effectively managed (reduced) arsenic concentrations to within acceptable ODWS levels. The new treatment system has been designed to adequately manage the naturally occurring elevated levels of arsenic in the source water.
- Woodstock – A treated water sample for sodium had a concentration of 73 mg/L. Although drinking water is considered same for consumption at sodium levels up to 200 mg/L, water containing levels greater than 20 mg/L are required to be reported to the MECP and MOH. A confirmatory resample was taken and had sodium concentration of 93.5 mg/L. These sodium concentrations are considered typical for this drinking water system which has naturally elevated sodium levels.
- Mount Elgin - A treated water sample for fluoride had a concentration of 1.62 mg/L. Although drinking water is considered safe for consumption at fluoride levels up to 2.4 mg/L, levels greater than 1.5 mg/L are required to be reported to the MECP and MOH. A confirmatory resample was taken and had fluoride concentration of 1.71 mg/L. While Oxford County does not add fluoride to its municipal drinking water, naturally occurring levels of Fluoride are common in groundwater sources.

2021 Source Water Protection Program

In Q4 2021, a new Source Water Protection Coordinator was appointed as Risk Management Official for Oxford County and will be working with Area Municipalities and County Staff to continue to implement Source Protection Plan policies from the four Source Protection Areas.

Source Protection Plan implementation within the Catfish Creek Source Protection Area is 100% complete while implementation efforts continue in the Grand River, Long Point Region, and Upper Thames River Source Protection Areas. Across the four Source Protection Plans, it is estimated that their overall implementation to address potential drinking water threat activities on existing properties is 59% complete. It should be noted that amendments to the Long Point Region Source Protection Plan and Grand River Source Protection Plan included re-delineation of Wellhead Protection Areas (WHPAs) at several Oxford County municipal water supply wells, which resulted in a slight increase in the overall inventory of potential drinking water threats.

2021 Source Protection Undertakings

On February 1, 2022, the County submitted summary reports to each of the four Source Protection Regions summarizing the County's 2021 source water protection implementation actions which included:

- Issuing 14 Notices to Proceed (under Section 59 of the *Clean Water Act, 2006*) allowing development activities near municipal drinking water supplies (vulnerable areas) to proceed to planning approval stage as no risk to these water sources was identified during planning and building permit application screening. Staff continue to screen all development applications and building permits in vulnerable areas that have the potential to introduce a new threat to municipal drinking water.
- Reviewing 86 application reviews that did not require any source water protection measures (Notices to Proceed, Risk Management Plans etc.).
- Conducting 26 site drinking water threat inspections at industrial, commercial, residential and agricultural properties where there is a potential risk to municipal drinking water.
- Finalizing two Risk Management Plans with property owners to manage agricultural threat activities (manure application, manure storage, livestock grazing or pasturing of land, pesticide application, fertilizer application, and fertilizer storage and handling) using best management practices.
- Area Municipalities are responsible for sewage maintenance inspections under the Source Protection Plans and Part 8 of the *Building Code Act, 1992*. Septic systems, which are identified as potential significant drinking water threats, are required to be inspected every 5 years. In 2021, 14 septic tank maintenance inspections were completed by Norwich Township while South-West Oxford completed 11 of 37 planned septic tank maintenance inspections.

  For 2022, 52 septic tank inspections are planned by South-West Oxford (including 26 that were deferred in 2021), 9 septic tank inspections are planned by East Zorra Township, 11 septic tank inspections are planned by Zorra Township and 9 septic tank inspections are planned by Blandford-Blenheim Township.

Technical work was completed in 2021 to update the WHPAs for five of Oxford's municipal drinking water well supply systems (Beachville, Embro, Innerkip, Mount Elgin and Thamesford). Pending approval by the respective Source Protection Authorities, this work will be incorporated into an update to the Thames–Sydenham and Region Source Protection Plan in 2022. Similar technical WHPA delineation work is ongoing at Oxford's municipal drinking water well supply system in Ingersoll.

Updated modeling of the vulnerable areas around the County's municipal wells using the most up-to-date science and incorporating the latest technical field and operational data serves to ensure that Source Protection Plan policies applied and implemented in the appropriate geographical land areas.

Issue Contributing Areas

When municipal raw water (before treatment) demonstrates an exceedance of an ODWS or increasing trend of a contaminant of concern, the *Clean Water Act, 2006* allows local Source Protection Authorities (SPAs) to designate municipal wellhead protection areas as Issues Contributing Areas (ICA). An ICA delineates an area where certain current/past land use have or are likely inferred to contribute to the elevated contaminant concentation in raw water supplies.

In Oxford County, the local SPAs have identified and delineated three nitrate ICAs within the following water systems:

- *Woodstock:* Sweaburg Wells 2 and 4 have a nitrate ICA in place which is intented to manage and regulate surrounding area land uses (agriculture) which have been inferred to be contributing to the raw water supply nitrate issue due to historical nutrient loading (fertilizer and manure application activities).

  These similar activities may also be impacting nitrate levels in other Sweaburg water supplies (Wells 1, 3, 5, 8 and 11). Accordingly, the County is currently working with the University of Waterloo and the Upper Thames River SPA to further understand the potential land-use impacts on nitrate raw water quality at these wells and to potentially expand the delineation of the current Nitrate ICA as an enhanced source protection measure.

- *Tillsonburg*: Local SPAs had identified a nitrate ICA around Tillsonburg Wells 4 and 5 and instituted advanced source protection plan policy requirements to manage surrounding area land uses (agriculture) which have been inferred as contributing to the nitrate issue due to nutrient loading (fertilizer and manure application). Risk Management Plans are being implemented to manage land use drinking water threat activities being undertaken by several landowners within the nitrate ICA.

- *Otterville:* Local SPAs designated a nitrate ICA around Wells 3 and 4 in 2020 and instituted advanced source protection plan policy requirements to manage surrounding area land uses (agriculture) which have been inferred as contributing to the nitrate issue due to nutrient loading (fertilizer and manure application). Work has begun to verify potential landowner drinking water threat activities within the Otterville nitrate ICA from which future Risk Management Plans will be developed.

Conclusions

The 2021 Annual Water Systems Summary Reports demonstrate Public Works' continued oversight of the County's Municipal Drinking Water Systems in order to provide a safe, reliable and sustainable supply of municipal drinking water for its residents and businesses. The County continues to institute industry best management standards to annually monitor the levels of service and financial performance of its water infrastructure and to ensure water infrastructure assets are maintained in good condition through effective preventative maintenance, optimized infrastructure decision-making and strategic capital planning (replacement, repair, and expansion).

In this regard, the ongoing Modernization Service Delivery Review is currently assessing the most appropriate and cost effective way for the County, and its service providers (City of Woodstock and Town of Tillsonburg), to provide water distribution and wastewater collection services at levels which are consistent with industry standards and best practices.

SIGNATURES

Report Author:

Original signed by:

Don Ford, BA, CMM III, C.Tech.
Manager of Water and Wastewater Services

Departmental Approval:

Original signed by:

David Simpson, P.Eng., PMP
Director of Public Works

Approved for submission:

Original signed by

Michael Duben, B.A., LL.B.
Chief Administrative Officer

ATTACHMENT

Attachment 1: 2021 Annual Drinking Water System Summary Reports

Growing stronger together

2021 ANNUAL DRINKING WATER SYSTEM SUMMARY REPORT
Beachville Water System

1. GENERAL INFORMATION

Oxford County (the County) prepares a report summarizing system operation and water quality for every municipal drinking water system annually. The reports detail the latest water quality testing results, water quantity statistics and any adverse conditions that may have occurred for the previous year. They are available for review by the end of February on the County website at www.oxfordcounty.ca/drinkingwater or by contacting the Public Works Department.

All efforts have been made to ensure the information presented in this report is accurate. If you have any questions or comments concerning the report please contact the County at the address and phone number listed below or by email at publicworks@oxfordcounty.ca

Drinking Water System:	Beachville Water System
Drinking Water System Number:	2200000674
Drinking Water System Owner & Contact Information:	Oxford County Public Works Department Water Services P.O. Box 1614 21 Reeve Street Woodstock, ON N4S 7Y3 Telephone: 519-539-9800 Toll Free: 866-537-7778 Email: publicworks@oxfordcounty.ca
Reporting Period:	January 1, 2021 – December 31, 2021

1.1. System Description

The Beachville Water System is a Small Municipal Water system as defined by Ontario Regulation (O.Reg.) 170/03 and serves a population of approximately 207. The system consists of one well that is secure groundwater. The water is treated with sodium hypochlorite for disinfection and in 2021 approximately 268 L of the chemical was used in the water treatment process. This chemical is certified to meet standards set by the Standards Council of Canada or American National Standards Institute.

The treatment facility houses pumps, monitoring equipment and a 40 m^3 underground reservoir. A standby generator is available to run the facility in the event of a power failure. The system is maintained by licensed water system operators, who operate treatment and monitoring equipment and collect samples as specified by the Regulation. Alarms automatically notify operators in the event of failure of critical operational requirements.

1.2. Major Expenses

The Beachville Water System is one of 14 water systems that have revenues and expenses pooled for economy of scale purposes. The systems are combined into the Township Water financial system and in 2021 had an operating and maintenance expenditures of approximately $3,000,000.

Operations and maintenance expenditures included:

- $175,000 for the replacement of general operating equipment and well rehabilitations

In addition to regular operational and maintenance expenditures, Capital Improvement Projects for the Townships systems totaled $1,500,000 for improvements to water treatment systems and replacement of distribution mains in the Township System.

Township Capital Improvement Projects included:

- $65,000 groundwater modeling
- $350,000 for facilities improvements

Capital Improvement projects for all systems included:

- $720,000 to develop Countywide SCADA Master Plan for all water systems
- $14,000 for updated water systems modeling

2. MICROBIOLOGICAL TESTING

2.1. *E. coli and Total Coliform*

Bacteriological tests for *E. coli* and total coliforms are taken weekly from the raw water at the facility and from the distribution system. Samples of treated water are not required for Small Municipal systems but may be taken periodically. Extra samples are taken after major repairs or maintenance work. Any *E. coli* or total coliform results above 0 in treated water must be reported to the Ministry of Environment, Conservation and Parks (MECP) and Medical Officer of Health (MOH). Resamples and any other required actions are taken as quickly as possible. The results from the 2021 sampling program are shown on the table below. There were no adverse test results from 88 treated water samples in this reporting period.

	Number of Samples	*Range of E. coli Results Min - Max MAC = 0*	*Range of Total Coliform Results Min - Max MAC = 0*
Raw	52	0	0
Distribution	52	0	0
Treated	36	0	0

2.2. Heterotrophic Plate Count (HPC)

HPC analyses are completed weekly from the distribution water for small systems. HPC should be less than 500 colonies per 1 mL. Results over 500 colonies per 1 mL may indicate a change in water quality but it is not considered an indicator of unsafe water. The 2021 results are shown in the table below.

	Number of Samples	*Range of HPC Min - Max*
Distribution	52	0 - 420

3. CHEMICAL TESTING

The Safe Drinking Water Act requires periodic testing of the water for approximately 60 different chemical parameters. The latest results for all parameters are provided in Appendix A. The sampling frequency varies for different types and sizes of water systems and chemical parameters. If the concentration of a parameter is above half of the Maximum Allowable Concentration (MAC) under the Ontario Drinking Water Quality Standards, an increased testing frequency of once every three months is required by the Regulation. Where concerns regarding a parameter exist, the MECP can also require additional sampling be undertaken.

Information on the health effects and allowable limits of components in drinking water may be found on the MECP web page through the link provided in Appendix A. Additional information on common chemical parameters specific to the Beachville system is provided below.

3.1. Hardness

This is an aesthetic parameter that may affect the appearance of the water but is not related to health. Well water commonly has high levels of hardness and other minerals from being in contact with underground rock formations. Many households have water softeners to help reduce white calcium deposits and improve the efficiency of soaps. This information is included here to help set the water softener at the level recommended by the manufacturer. Samples for hardness are collected at a minimum every 3 years from raw or treated water. The average hardness for the Beachville Drinking Water System is 307 mg/L (18 grains/gallon) based on samples collected from 2006 to 2019.

3.2. Additional Testing Required by MECP

None.

4. OPERATIONAL MONITORING

4.1. Chlorine Residual

Free chlorine levels of the treated water are monitored continuously at the discharge point of the Water Treatment Facility. In the distribution system, free chlorine is checked twice weekly at various locations. As a target, free chlorine residual within the distribution system should be above 0.20 mg/L. A free chlorine level lower than 0.05 mg/L must be reported and corrective action taken. There were no reportable incidents in 2021. A summary of the chlorine residual readings is provided in the table below.

4.2. Turbidity

Turbidity of treated water is continuously monitored at the treatment facility, as a change in turbidity can indicate an operational problem. The turbidity of untreated water from the well is checked weekly. Turbidity is measured in nephelometric turbidity units (NTU). Under O.Reg. 170/03 turbidity in groundwater is not reportable however turbidity should be < 1 NTU at the treatment plant and < 5 NTU in the distribution system. A summary of the monitoring results for 2021 is provided in the table below.

Parameter	*Number of Tests or Monitoring Frequency*	*Range of Results (Min – Max) and Average*
Chlorine residual in distribution (mg/L)	103	(0.23 – 0.91) 0.51
Chlorine residual after treatment (mg/L)	Continuous	(0.70 – 1.39) 1.14
Turbidity after treatment (NTU)	Continuous	(0.22 – 4.00) 0.60

5. WATER QUANTITY

Continuous monitoring of flow rates from supply wells into the treatment system and from the Water Treatment Facility into the distribution system is required by O.Reg. 170/03. The Municipal Drinking Water License and Permit to Take Water (PTTW) issued by the MECP regulate the amount of water that can be utilized over a given time period. A summary of the 2021 flows are provided in the table below and presented graphically in Appendix B.

Flow Summary	*Quantity*
Permit to Take Water Limit	657 m^3/d
Municipal Drinking Water License Limit	656 m^3/d
2021 Average Daily Flow	32 m^3/d
2021 Maximum Daily Flow	85 m^3/d
2021 Average Monthly Flow	986 m^3
2021 Total Amount of Water Supplied	11,834 m^3

Firm Capacity is defined as the removal of the highest producing well in an emergency or operational / maintenance situation with the ability to transport a maximum of 100 m^3/day to maintain system integrity. Since this system comprises of only one supply well Firm Capacity restricts further growth and is rated at 100 m^3/day.

6. NON-COMPLIANCE FINDINGS AND ADVERSE RESULTS

This section documents any known incidents of non-compliance or adverse results and the associated correction actions taken to resolve the issue. Non-compliance issues are typically identified by either the Operating Authority or the MECP Drinking Water Inspectors. The issues and associated required actions are documented by the Inspectors in the system's Annual Inspection Report. All non-compliance issues are investigated, corrective actions taken and documented using the County's Drinking Water Quality Management System (DWQMS) procedures.

6.1. Non-Compliance Findings

The annual MECP inspection took place in June 2021. There were no non-compliance findings and the 2021 Inspection Report Rating was 100%.

6.2. Adverse Results

Any adverse results from bacteriological, chemical samples or observations of operational conditions that indicate adverse water quality are reported as required and corrective actions are taken. There were no adverse or reportable occurrences in 2021.

APPENDIX A: SUMMARY OF CHEMICAL RESULTS

UNDERSTANDING CHEMICAL TEST RESULTS

The following tables summarize the laboratory results of the chemical testing the County is required to complete. Different types of parameters are required to be tested for at different frequencies as noted below. Explanations on the health impacts of these parameters can be found in the MECP document at https://cvc.ca/wp-content/uploads/2011/03/std01_079707.pdf PSIB 4449e01 titled "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines".

Results are shown as concentrations with units of either milligrams per litre (mg/L) or micrograms per litre (ug/L). 1 mg/L is equal to 1000 ug/L. The Maximum Acceptable Concentration (MAC) is the highest amount of a parameter that is acceptable in Municipal drinking water and can be found in the MECP Drinking Water Standards. The Method Detection Limit (MDL) is the lowest amount to which the laboratory can confidently measure. A result of "ND" stands for "Not Detected" and means that the concentration of the chemical is lower than the laboratory's equipment is capable of measuring. In the event that some samples results are ND, and other results are above the MDL, the value of the MDL will be used in place of the ND where an average result must be calculated. Where all collected samples are ND the average sample result will be assumed to be ND.

Nitrate and nitrite samples are required every 3 months in normal operation.

Parameter	*Result Range* Min – Max *(mg/L)*	*Average Result (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Nitrite	ND	ND	1.0	0.003
Nitrate	1.69 – 2.12	1.95	10.0	0.006

Trihalomethane (THM) and total Haloacetic Acids (HAA) are by-products of the disinfection process. The samples are required every 3 months from the distribution system.

Parameter	*Annual Average*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Trihalomethane (THM)	2021	15.2	100	0.37
Haloacetic Acids (HAA)	2021	ND	80	5.3

The following Table summarizes the most recent test results for Sodium and Fluoride. Testing and reporting any adverse results is required every 5 years.

Parameter	*Sample Date*	*Result Value (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Sodium	August 16, 2021	15.7	20.0*	0.01
Fluoride	August 16, 2021	0.69	1.5**	0.06

*Sodium levels between 20 – 200 mg/L must be reported every 5 years.
**Natural levels of fluoride between 1.5 – 2.4 mg/L must be reported every 5 years.

The following Table summarizes the most recent results for the Lead Testing Program. Lead samples are taken every 3 years. Levels of alkalinity and pH are monitored twice per year in the distribution system to ensure water quality is consistent and does not facilitate leaching of lead into the water.

Parameter	*Result Range (Min - Max)*	*Number of Samples*	*Acceptable Level*
Distribution Alkalinity	232 - 239	2	30 – 500mg/L
Distribution pH	7.58 – 7.62	2	6.5 – 8.5
Distribution Lead 2019	0.34	1	10 ug/L MAC

The following Table summarizes the most recent test results for Schedule 23. Testing is required every 5 years for secure groundwater wells.

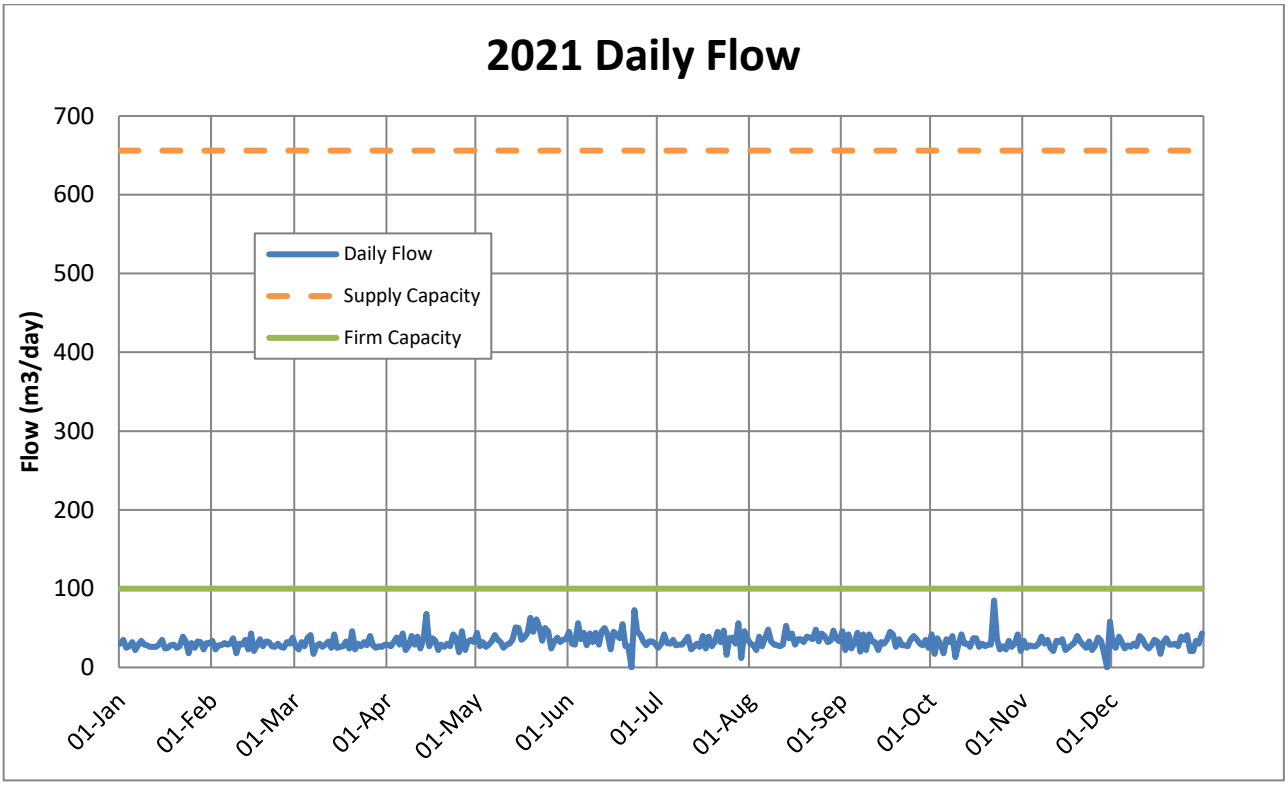
Parameter	*Sample Date*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Antimony	June 11/19	ND	6	0.09
Arsenic	"	1.0	10	0.2
Barium	"	78.2	1000	0.02
Boron	"	43.0	5000	2
Cadmium	"	0.032	5	0.003

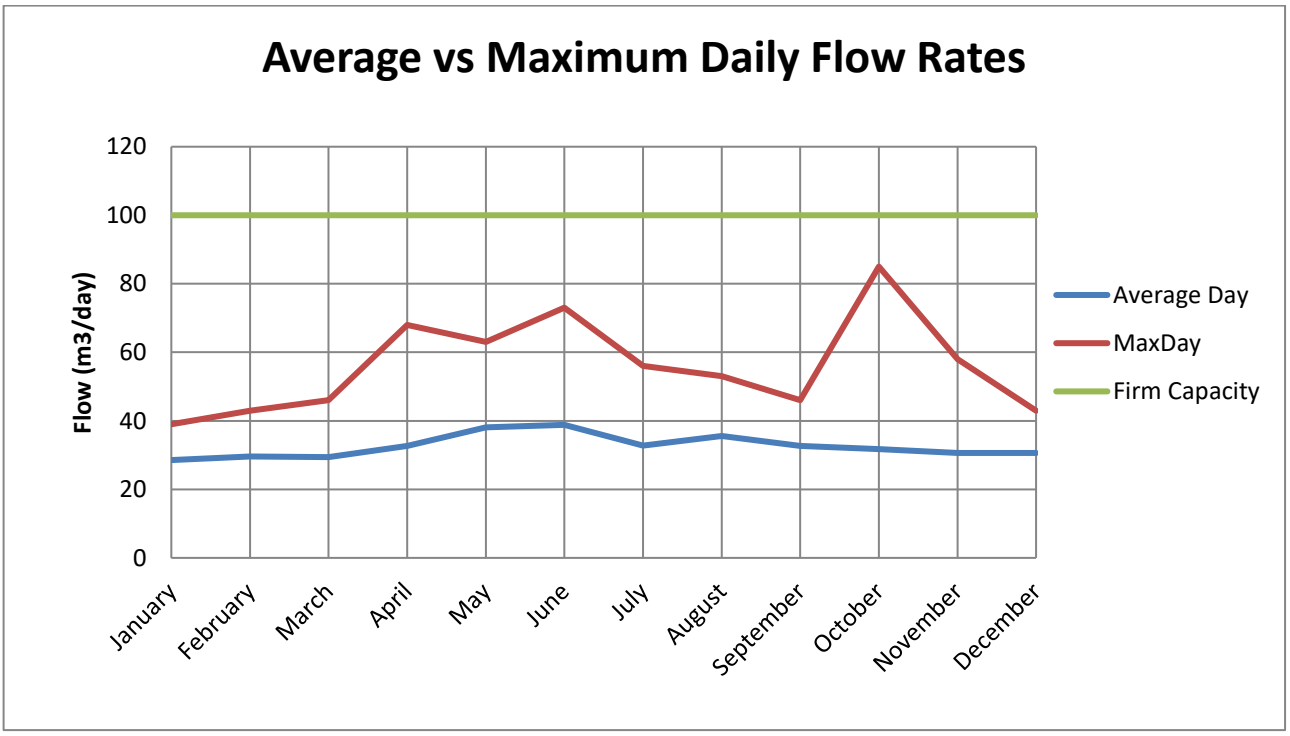
Chromium	“	0.25	50	0.08
Mercury	“	ND	1	0.01
Selenium	“	0.45	50	0.04
Uranium	“	0.716	20	0.002

The following Table summarizes the most recent test results for Schedule 24. Testing is required every 5 years for secure groundwater wells.

Parameter	*Sample Date*	*Result (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Alachlor	June 7, 2021	ND	5	0.02
Atrazine + N-dealkylatedmetobolites	“	ND	5	0.01
Azinphos-methyl	“	ND	20	0.01
Benzene	“	ND	1	0.32
Benzo(a)pyrene	“	ND	0.01	0.004
Bromoxynil	“	ND	5	0.33
Carbaryl	“	ND	90	0.05
Carbofuran	“	ND	90	0.02
Carbon Tetrachloride	“	ND	2	0.17
Chlorpyrifos	“	ND	90	0.02
Chlorpyrifos	“	ND	90	0.02
Diazinon	“	ND	20	0.02
Dicamba	“	ND	120	0.20
1,2-Dichlorobenzene	“	ND	200	0.41
1,4-Dichlorobenzene	“	ND	5	0.36
1,2-Dichloroethane	“	ND	5	0.35
1,1-Dichloroethylene (vinylidene chloride)	“	ND	14	0.33
Dichloromethane	“	ND	50	0.35
2-4 Dichlorophenol	“	ND	900	0.15
2,4-Dichlorophenoxy acetic acid (2,4-D)	“	ND	100	0.19
Diclofop-methyl	“	ND	9	0.40
Dimethoate	“	ND	20	0.06
Diquat	“	ND	70	1
Diuron	“	ND	150	0.03
Glyphosate	“	ND	280	1
Malathion	“	ND	190	0.01
2-methyl-4chlorophenoxyacetic acid (MCPA)	“	ND	100	0.12
Metolachlor	“	ND	50	0.01
Metribuzin	“	ND	80	0.02
Monochlorobenzene	“	ND	80	0.30
Paraquat	“	ND	10	1
Pentachlorophenol	“	ND	60	0.15
Phorate	“	ND	2	0.01
Picloram	“	ND	190	1
Polychlorinated Biphenyls(PCB)	“	ND	3	0.04
Prometryne	“	ND	1	0.03
Simazine	“	ND	10	0.01
Terbufos	“	ND	1	0.01
Tetrachloroethylene	“	ND	10	0.35
2,3,4,6-Tetrachlorophenol	“	ND	100	0.20
Triallate	“	ND	230	0.01
Trichloroethylene	“	ND	5	0.44
2,4,6-Trichlorophenol	“	ND	5	0.25
Trifluralin	“	ND	45	0.02
Vinyl Chloride	“	ND	1	0.17

APPENDIX B: WATER QUANTITY SUMMARY





Beachville Water System Firm Capacity 100 m^3/ day
Beachville Water System Supply Capacity 656 m^3/ day

Growing stronger together

2021 ANNUAL DRINKING WATER SYSTEM SUMMARY REPORT
Bright Water System

1. GENERAL INFORMATION

Oxford County (the County) prepares a report summarizing system operation and water quality for every municipal drinking water system annually. The reports detail the latest water quality testing results, water quantity statistics and any adverse conditions that may have occurred for the previous year. They are available for review by the end of February on the County website at www.oxfordcounty.ca/drinkingwater or by contacting the Public Works Department.

All efforts have been made to ensure the information presented in this report is accurate. If you have any questions or comments concerning the report please contact the County at the address and phone number listed below or by email at publicworks@oxfordcounty.ca

Drinking Water System:	Bright Water System
Drinking Water System Number:	220009050
Drinking Water System Owner & Contact Information:	Oxford County Public Works Department Water Services P.O. Box 1614 21 Reeve Street Woodstock, ON N4S 7Y3 Telephone: 519-539-9800 Toll Free: 866-537-7778 Email: publicworks@oxfordcounty.ca
Reporting Period:	January 1, 2021 – December 31, 2021

1.1. System Description

The Bright Water System is a Large Municipal Water system as defined by Ontario Regulation (O.Reg.) 170/03 and serves a population of approximately 436. The system consists of two well sources which are secure groundwater wells. The water is treated with sodium hypochlorite for disinfection and sodium silicate to sequester iron. In 2021, approximately 820 L of sodium hypochlorite and 820 L (1,160 kg) of sodium silicate were used in the water treatment process. These chemicals are certified to meet standards set by the Standards Council of Canada and American National Standards Institute.

The well facility houses pumps and treatment equipment. A separate pumping station houses high lift pumps, monitoring equipment, an 86 m^3 in-ground reservoir and a 180 m^3 standpipe. A standby generator is available to run the pump station in the event of a power failure. The system is maintained by licensed water system operators, who operate treatment and monitoring equipment and collect samples as specified by the Regulation. Alarms automatically notify operators in the event of failure of critical operational requirements.

1.2. Major Expenses

The Bright Water System is one of 14 water systems that have revenues and expenses pooled for the economy of scale purposes. The systems are combined into the Township Water financial system and in 2021 had operating and maintenance expenditures of approximately $3,000,000.

Operations and maintenance expenditures included:

- $175,000 for the replacement of general operating equipment and well rehabilitations

In addition to regular operational and maintenance expenditures, Capital Improvement Projects for the Townships systems totaled $1,500,000 for improvements to water treatment systems and replacement of distribution mains in the Township Systems.

Township Capital Improvement Projects included:

- $65,000 groundwater modeling
- $350,000 for facilities improvements

Capital Improvement projects for all systems included:

- $720,000 to develop Countywide SCADA Master Plan for all water systems
- $14,000 for updated water systems modeling

2. MICROBIOLOGICAL TESTING

2.1. *E. coli and Total Coliform*

Bacteriological tests for *E. coli* and total coliforms are required weekly from the raw and treated water at the facility and from the distribution system. Extra samples are taken after major repairs or maintenance work. Any *E. coli* or total coliform results above 0 in treated water must be reported to the Ministry of Environment, Conservation and Parks (MECP) and Medical Officer of Health (MOH). Resamples and any other required actions are taken as quickly as possible. The results from the 2021 sampling program are shown on the table below. There were no adverse test results from 164 treated water samples in this reporting period.

	Number of Samples	*Range of E. coli Results Min - Max MAC = 0*	*Range of Total Coliform Results Min - Max MAC = 0*
Raw	104	0	0
Treated	52	0	0
Distribution	112	0	0

2.2 Heterotrophic Plate Count (HPC)

HPC analyses are required from the treated and distribution water. The tests are required weekly for treated water and for 25% of the required distribution system bacteriological samples. HPC should be less than 500 colonies per 1 mL. Results over 500 colonies per 1 mL may indicate a change in water quality but it is not considered an indicator of unsafe water. 2021 results are shown in the table below.

	Number of Samples	*Range of HPC Min - Max*
Treated	52	0 - 10
Distribution	26	0 - 4

3. CHEMICAL TESTING

The Safe Drinking Water Act requires periodic testing of the water for approximately 60 different chemical parameters. The latest results for all parameters are provided in Appendix A. The sampling frequency varies for different types and sizes of water systems and chemical parameters. If the concentration of a parameter is above half of the Maximum Allowable Concentration (MAC) under the Ontario Drinking Water Quality Standards, an increased testing frequency of once every three months is required by the Regulation. Where concerns regarding a parameter exist, the MECP can also require additional sampling be undertaken.

Information on the health effects and allowable limits of components in drinking water may be found on the MECP web page through the link provided in Appendix A. Additional information on common chemical parameters specific to the Bright system is provided below.

3.1. Sodium

Sodium levels in drinking water are tested once every five years. The aesthetic objective is 200 mg/L meaning at levels less than this, the sodium will not impair the taste of the water.

When sodium levels are above 20 mg/L the MECP and MOH are notified. Southwestern Public Health maintain an information page on sodium in drinking water at https://www.swpublichealth.ca/en/partners-and-professionals/resources/Health-Care-Providers/Alerts-Advisories-Updates/Advisories/ADV_HIA-Sodium-20201203.pdf in order to help people on sodium restricted diets control their sodium intake. The average sodium level in Bright is 62.7 mg/L.

3.2. Hardness, Iron, and Manganese

These are aesthetic parameters that may affect the appearance of the water but are not related to health. Well water commonly has high levels of hardness and other minerals from being in contact with underground rock formations. Many households have water softeners to help reduce white calcium deposits, improve the efficiency of soaps and reduce iron levels. This information is included here to help set the water softener at the level recommended by the manufacturer. Levels of iron less than 0.30 mg/L (ppm) are not considered to cause aesthetic problems such as discoloured water. In Bright, sodium silicate is added to keep the iron in suspension. Manganese is commonly found in conjunction with iron and also causes discoloured water. Manganese levels in this system are at or above the aesthetic objective of 0.05 mg/L

- Samples for hardness are collected at a minimum every 3 years from raw or treated water. The average hardness for the Bright Drinking Water System is 425 mg/L (25 grains/gallon) based on samples collected from 2006 to 2019.
- Iron level was measured at 0.492 mg/L (ppm) in 2021
- Manganese level is 0.04 mg/L (ppm) in 2021

3.3. Additional Testing Required by MECP

None.

4. OPERATIONAL MONITORING

4.1. Chlorine Residual

Free chlorine levels of the treated water are monitored continuously at the discharge point of the Water Treatment Facility. In the distribution system, free chlorine is checked twice weekly at various locations. As a target, free chlorine residual within the distribution system should be above 0.20 mg/L. A free chlorine level lower than 0.05 mg/L must be reported and corrective action taken. There were no reportable incidents in 2021. A summary of the chlorine residual readings is provided in the table below.

4.2. Turbidity

Turbidity of treated water is continuously monitored at the treatment facility, as a change in turbidity can indicate an operational problem. The turbidity of untreated water from the well is checked weekly. Turbidity is measured in nephelometric turbidity units (NTU). Under Regulation 170/03 turbidity in groundwater is not reportable however turbidity should be < 1 NTU at the treatment plant and < 5 NTU in the distribution system. A summary of the monitoring results for 2021 is provided in the table below.

Parameter	*Number of Tests or Monitoring Frequency*	*Range of Results (Min – Max) and Average*
Chlorine residual in distribution (mg/L)	Continuous	(0.70 – 2.10) 1.19
Chlorine residual after treatment (mg/L)	Continuous	(0.69 – 1.75) 1.30
Turbidity after treatment (NTU)	Continuous	(0.24 – 4.00) 0.50

5. WATER QUANTITY

Continuous monitoring of flow rates from supply wells into the treatment system and from the Water Treatment Facility into the distribution system is required by O.Reg. 170/03. The Municipal Drinking Water License and Permit to Take Water (PTTW) issued by the MECP regulate the amount of water that can be utilized over a given time period. A summary of the 2021 flows are provided in the Table below and presented graphically in Appendix B.

Flow Summary	*Quantity*
Permit to Take Water Limit	327 m^3/d
Municipal Drinking Water License Limit	589 m^3/d
2021 Average Daily Flow	70 m^3/d
2021 Maximum Daily Flow	185 m^3/d
2021 Average Monthly Flow	2,142 m^3
2021 Total Amount of Water Supplied	25,699 m^3

While the PTTW for the system is 327 m^3/day though the wells are not capable of producing this quantity. A more realistic maximum capacity of the system is approximately 296 m^3/day. The County has begun exploration for an additional source.

Firm Capacity is defined as the removal of the highest producing well in an emergency or operational / maintenance situation with the ability to transport a maximum of 100 m^3/day if necessary to maintain system integrity. This system comprises of two supply wells. Well 4A is removed for Firm Capacity calculations. The remaining Well 5 has a water taking limit of 86 m^3/day. Firm Capacity of this system is rated at 186 m^3/day with storage capacity of 266 m^3.

6. NON-COMPLIANCE FINDINGS AND ADVERSE RESULTS

This section documents any known incidents of non-compliance or adverse results and the associated correction actions taken to resolve the issue. Non-compliance issues are typically identified by either the Operating Authority or the MECP Drinking Water Inspectors. The issues and associated required actions are documented by the Inspectors in the system's Annual Inspection Report. All non-compliance issues are investigated, corrective actions taken and documented using the County's Drinking Water Quality Management System (DWQMS) procedures.

6.1. Non-Compliance Findings

The annual MECP inspection for 2021 took place in August 2021. There were no non-compliance findings and the Inspection Report Rating was 100%.

6.2. Adverse Results

Any adverse results from bacteriological, chemical samples, or observations of operational conditions that indicate adverse water quality is reported as required and corrective actions are taken. Below is a summary of the one adverse/reportable occurrence for 2021 along with the corresponding resolution.

Operational Incident: Low Pressure Event and Precautionary Boil Water Advisory		
Prolonged low pressure following a watermain break on September 29, 2021. The watermain was damaged by a third party contractor who was working in the area.	A precautionary boil water advisory for all residents was enacted while bacteriological samples were collected to confirm that there was no contamination to the drinking water system.	All samples were acceptable on October 1, 2021.

APPENDIX A: SUMMARY OF CHEMICAL RESULTS

UNDERSTANDING CHEMICAL TEST RESULTS

The following tables summarize the laboratory results of the chemical testing the County is required to complete. Different types of parameters are required to be tested for at different frequencies as noted below. Explanations on the health impacts of these parameters can be found in the MECP document at https://cvc.ca/wp-content/uploads/2011/03/std01_079707.pdf PSIB 4449e01 titled "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines".

Results are shown as concentrations with units of either milligrams per litre (mg/L) or micrograms per litre (ug/L). 1 mg/L is equal to 1000 ug/L. The Maximum Acceptable Concentration (MAC) is the highest amount of a parameter that is acceptable in Municipal drinking water and can be found in the MECP Drinking Water Standards. The Method Detection Limit (MDL) is the lowest amount to which the laboratory can confidently measure. A result of "ND" stands for "Not Detected" and means that the concentration of the chemical is lower than the laboratory's equipment is capable of measuring (MDL). In the event that some samples results are ND, and other results are above the MDL, the value of the MDL will be used in place of the ND where an average result must be calculated. Where all collected samples are ND the average sample result will be assumed to be ND.

Nitrate and nitrite samples are required every 3 months in normal operation.

Parameter	*Result Range* Min – Max *(mg/L)*	*Average Result (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Nitrite	ND	ND	1.0	0.003
Nitrate	0.65-0.73	0.70	10.0	0.006

Trihalomethane (THM) and total Haloacetic Acids (HAA) are by-products of the disinfection process. The samples are required every 3 months from the distribution system.

Parameter	*Annual Average*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Trihalomethane (THM)	2021	20.8	100	0.37
Haloacetic Acids (HAA)	2021	5.83	80	5.3

The following Table summarizes the most recent test results for Sodium and Fluoride. Testing and reporting any adverse results is required every 5 years.

Parameter	*Sample Date*	*Result Value (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Sodium	May 21/19	66.2	20.0*	0.01
Fluoride	"	0.09	1.5**	0.06

*Sodium levels between 20 – 200 mg/L must be reported every 5 years.
**Natural levels of fluoride between 1.5 – 2.4 mg/L must be reported every 5 years.

The following Table summarizes the most recent results for the Lead Testing Program. Lead samples are taken every 3 years. Levels of alkalinity and pH are monitored twice per year in the distribution system to ensure water quality is consistent and does not facilitate leaching of lead into the water.

Parameter	*Result Range (Min - Max)*	*Number of Samples*	*Acceptable Level*
Distribution Alkalinity	331 - 378	2	30 – 500mg/L
Distribution pH	7.45 -7.53	2	7.5 – 7.53
Distribution Lead 2021	1.01 – 1.90	2	10 ug/L MAC

The following Table summarizes the most recent test results for Schedule 23. Testing is required every 3 years for secure groundwater wells.

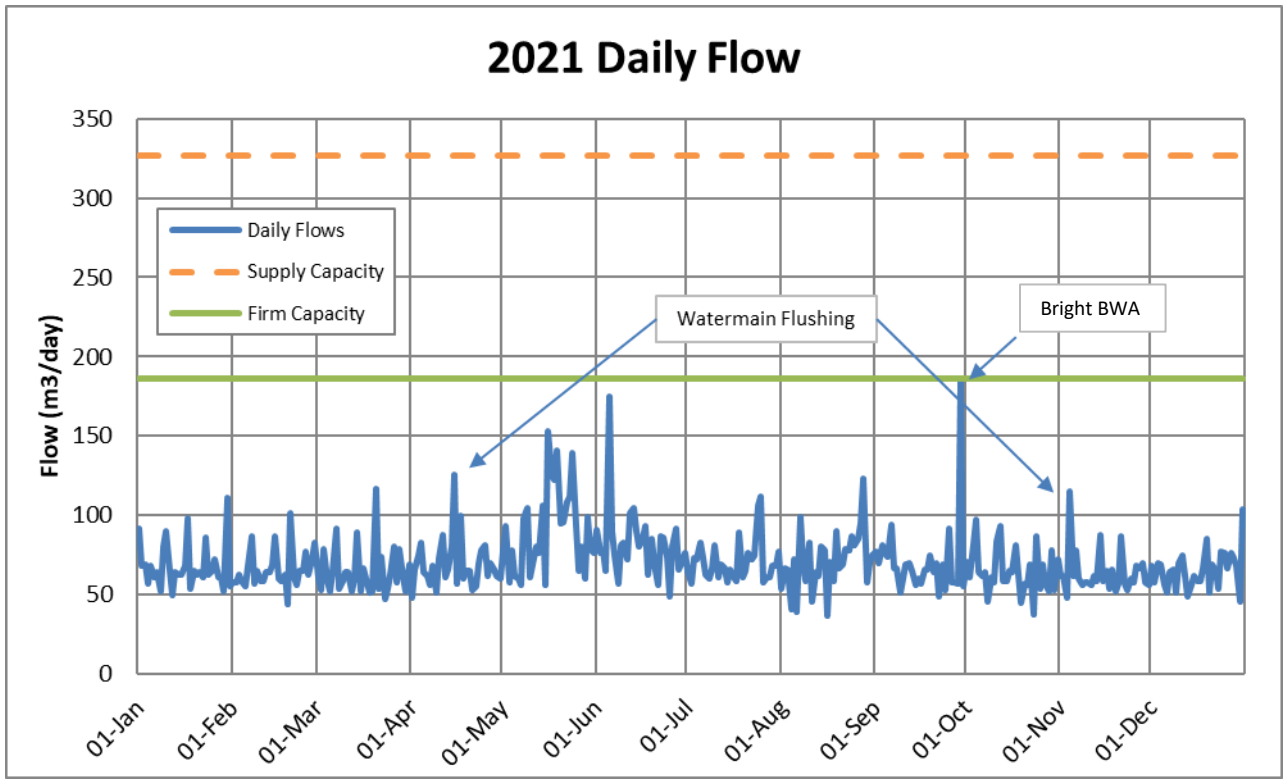
Parameter	*Sample Date*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Antimony	May 21/19	ND	6	0.09
Arsenic	"	1.9	10	0.2
Barium	"	135	1000	0.01
Boron	"	48	5000	2
Cadmium	"	0.014	5	0.003
Chromium	"	0.13	50	0.03
Mercury	"	ND	1	0.01

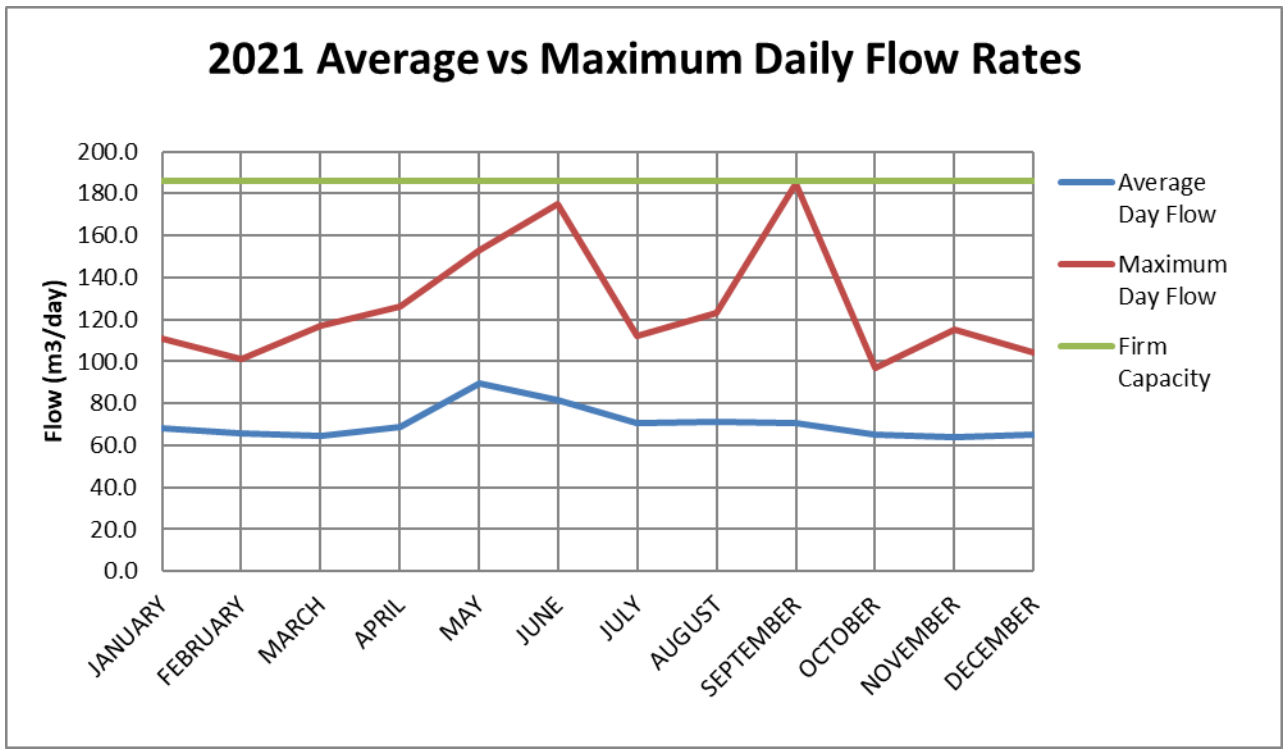
Parameter	*Sample Date*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Selenium	“	0.15	5	0.04
Uranium	“	2.02	20	0.002

The following Table summarizes the most recent test results for Schedule 24. Testing is required every 3 years for secure groundwater wells.

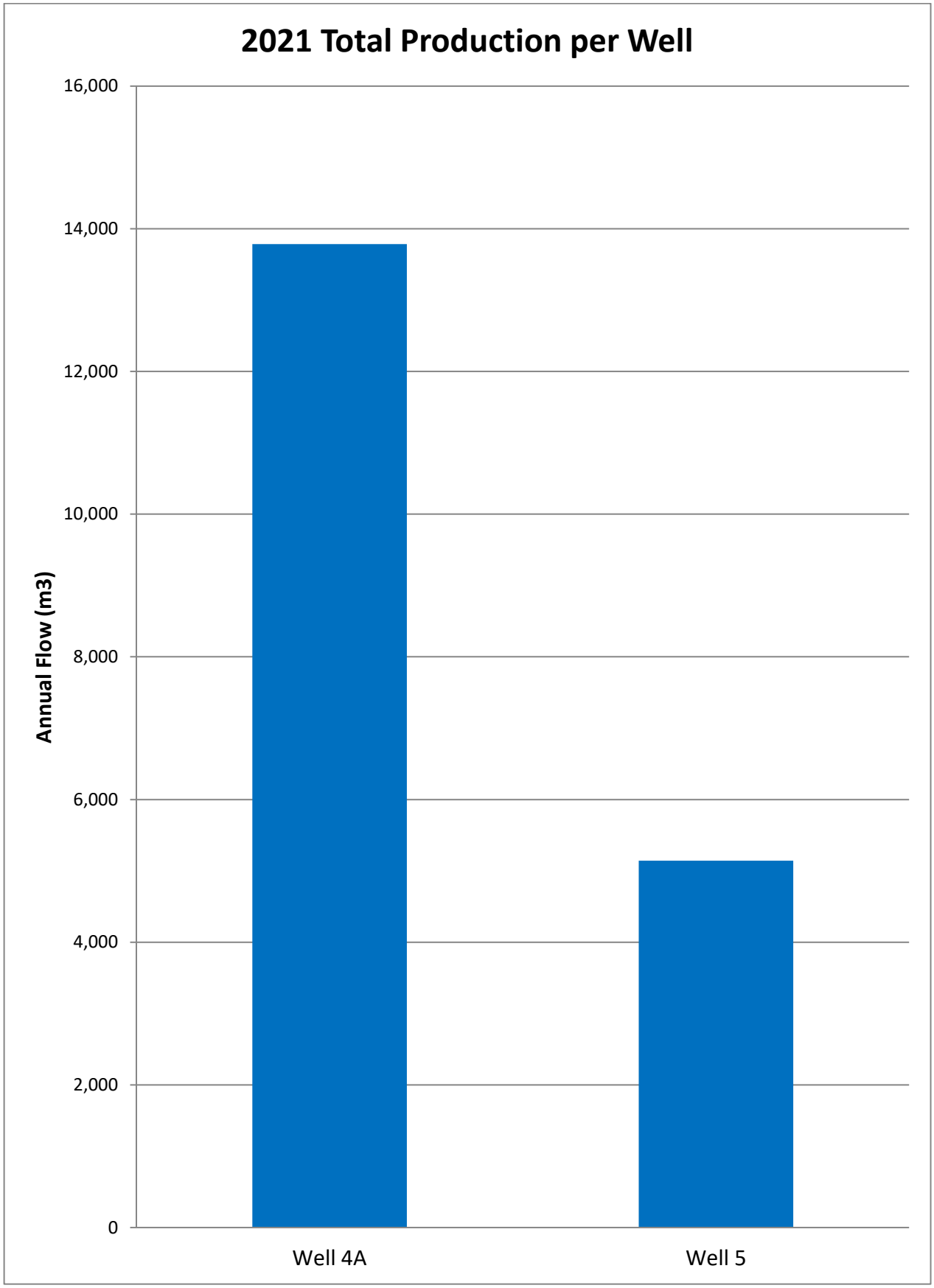
Parameter	*Sample Date*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Alachlor	June 7, 2021	ND	5	0.02
Atrazine + N-dealkylatedmetobolites	“	ND	5	0.01
Azinphos-methyl	“	ND	20	0.05
Benzene	“	ND	1	0.32
Benzo(a)pyrene	“	ND	0.01	0.004
Bromoxynil	“	ND	5	0.33
Carbaryl	“	ND	90	0.05
Carbofuran	“	ND	90	0.01
Carbon Tetrachloride	“	ND	2	0.17
Chlorpyrifos	“	ND	90	0.02
Diazinon	“	ND	20	0.02
Dicamba	“	ND	120	0.20
1,2-Dichlorobenzene	“	ND	200	0.41
1,4-Dichlorobenzene	“	ND	5	0.21
1,2-Dichloroethane	“	ND	5	0.36
1,1-Dichloroethylene(vinylidene chloride)	“	ND	14	0.35
Dichloromethane	“	ND	50	0.35
2-4 Dichlorophenol	“	ND	900	0.15
2,4-Dichlorophenoxy acetic acid (2,4-D)	“	ND	100	0.19
Diclofop-methyl	“	ND	9	0.40
Dimethoate	“	ND	20	0.06
Diquat	“	ND	70	1
Diuron	“	ND	150	0.03
Glyphosate	“	ND	280	1
Malathion	“	ND	190	0.02
Metolachlor	“	ND	50	0.01
2-methyl-4chlorophenoxyacetic acid (MCPA)	“	ND	100	0.12
Metribuzin	“	ND	80	0.02
Monochlorobenzene	“	ND	80	0.3
Paraquat	“	ND	10	1
Pentachlorophenol	“	ND	60	0.01
Phorate	“	ND	2	0.01
Picloram	“	ND	190	1
Polychlorinated Biphenyls(PCB)	“	ND	3	0.04
Prometryne	“	ND	1	0.03
Simazine	“	ND	10	0.01
Terbufos	“	ND	1	0.01
Tetrachloroethylene	“	ND	10	0.35
2,3,4,6-Tetrachlorophenol	“	ND	100	0.20
Triallate	“	ND	230	0.01
Trichloroethylene	“	ND	5	0.44
2,4,6-Trichlorophenol	“	ND	5	0.20
Trifluralin	“	ND	45	0.02
Vinyl Chloride	“	ND	1	0.17

APPENDIX B: WATER QUANTITY SUMMARY





Bright Water System Firm Capacity 186 m^3/ day
Bright Water System Supply Capacity 327 m^3 /day



Bright Water System Firm Capacity 186 m^3/ day
Bright Water System Supply Capacity 327 m^3 /day

Growing stronger together

2021 ANNUAL DRINKING WATER SYSTEM SUMMARY REPORT
Brownsville Water System

1. GENERAL INFORMATION

Oxford County (the County) prepares a report summarizing system operation and water quality for every municipal drinking water system annually. The reports detail the latest water quality testing results, water quantity statistics and any adverse conditions that may have occurred for the previous year. They are available for review by the end of February on the County website at www.oxfordcounty.ca/drinkingwater or by contacting the Public Works Department.

All efforts have been made to ensure the information presented in this report is accurate. If you have any questions or comments concerning the report please contact the County at the address and phone number listed below or by email at publicworks@oxfordcounty.ca

Drinking Water System:	Brownsville Water System
Drinking Water System Number:	220000638
Drinking Water System Owner & Contact Information:	Oxford County Public Works Department Water Services P.O. Box 1614 21 Reeve Street Woodstock, ON N4S 7Y3 Telephone: 519-539-9800 Toll Free: 866-537-7778 Email: publicworks@oxfordcounty.ca
Reporting Period:	January 1, 2021 – December 31, 2021

1.1. System Description

The Brownsville Water System is a Large Municipal Water system as defined by Ontario Regulation (O.Reg.) 170/03 and serves a population of approximately 505. The system consists of two well sources that are secure groundwater wells. The water is treated with sodium hypochlorite for disinfection and in 2021 approximately 1,236 L of sodium hypochlorite was used. The chemical is certified to meet standards set by the Standards Council of Canada or American National Standards Institute.

The two well facilities house pumps and treatment equipment. A separate pumping station houses high lift pumps, monitoring equipment and a 197 m^3 reservoir. A standby generator is available to run the pumping station in the event of a power outage. The system is maintained by licensed water system operators, who operate treatment and monitoring equipment and collect samples as specified by the Regulation. Alarms automatically notify operators in the event of failure of critical operational requirements.

1.2. Major Expenses

The Brownsville Water System is one of 14 water systems that have revenues and expenses pooled for the economy of scale purposes. The systems are combined into the Township Water financial system and in 2021 had operating and maintenance expenditures of approximately $3,000,000.

Operations and maintenance expenditures included:

- $175,000 for the replacement of general operating equipment and well rehabilitations

In addition to regular operational and maintenance expenditures, Capital Improvement Projects for the Townships systems totaled $1,500,000 for improvements to water treatment systems and replacement of distribution mains in the Township System.

Township Capital Improvement Projects included:

- $65,000 groundwater modeling
- $350,000 for facilities improvements

Capital Improvement projects for all systems included:

- $720,000 to develop Countywide SCADA Master Plan for all water systems
- $14,000 for updated water systems modeling

2. MICROBIOLOGICAL TESTING

2.1. *E. coli* and Total Coliform

Bacteriological tests for *E. coli* and total coliforms are required weekly on the raw and treated water at the facility and in the distribution system. Extra samples are taken after major repairs or maintenance work. Any *E. coli* or total coliform results above 0 in treated water must be reported to the Ministry of Environment, Conservation and Parks (MECP) and Medical Officer of Health (MOH). Resamples and any other required actions are taken as quickly as possible. The results from the 2021 sampling program are shown on the table below. There were no adverse test results from 162 treated water samples in this reporting period.

	Number of Samples	*Range of E. coli Results Min - Max MAC = 0*	*Range of Total Coliform Results Min - Max MAC = 0*
Raw	103	0	0
Treated	52	0	0
Distribution	110	0	0

2.2. Heterotrophic Plate Count (HPC)

HPC analyses are required from the treated and distribution water. The tests are required weekly for treated water and for 25% of the required distribution system bacteriological samples. HPC should be less than 500 colonies per 1 mL. Results over 500 colonies per 1 mL may indicate a change in water quality but it is not considered an indicator of unsafe water. 2021 results are shown in the table below.

	Number of Samples	*Range of HPC Min - Max*
Treated	52	0 - 4
Distribution	26	0 - 74

3. CHEMICAL TESTING

The Safe Drinking Water Act requires periodic testing of the water for approximately 60 different chemical parameters. The latest results for all parameters are provided in Appendix A. The sampling frequency varies for different types and sizes of water systems. If the concentration of a parameter is above half of the Maximum Allowable Concentration (MAC) under the Ontario Drinking Water Quality Standards, an increased testing frequency of once every three months is required by the Regulation. Where concerns regarding a parameter exist, the MECP can also require additional sampling be undertaken.

Information on the health effects and allowable limits of components in drinking water may be found on the MECP web page through the link provided in Appendix A. Additional information on common chemical parameters specific to the Brownsville system is provided below.

3.1. Sodium

Sodium levels in drinking water are tested once every five years. The aesthetic objective is 200 mg/L meaning at levels less than this, sodium will not impair the taste of the water.

When sodium levels are above 20 mg/L the MECP and MOH are notified. Southwestern Public Health maintains an information page on sodium in drinking water at https://www.swpublichealth.ca/en/partners-and-professionals/resources/Health-Care-Providers/Alerts-Advisories-Updates/Advisories/ADV_HIA-Sodium-20201203.pdf in order to help people on sodium restricted diets control their sodium intake. The average sodium level in Brownsville is 71.9 mg/L

3.2. Fluoride

Fluoride levels are sampled once every five years and levels above 1.5 mg/L must be reported to the MECP and MOH. Levels under 2.4 mg/L are considered safe for consumption however at levels between 1.5 and 2.4 mg/L fluoride may cause staining or pitting of teeth in children less than 6 years old. Further information on fluoride can be found on the Southwestern Public Health web page at https://www.swpublichealth.ca/en/partners-and-professionals/resources/Health-Care-Providers/Alerts-Advisories-Updates/Advisories/ADV_HIA-Fluoride-20201203.pdf

The County does not add fluoride to the water at any of its drinking water systems. The Brownsville system has naturally occurring fluoride levels that average 1.73 mg/L.

3.3. Hardness

This is an aesthetic parameter that may affect the appearance of the water but is not related to health. Well water commonly has high levels of hardness and other minerals from being in contact with underground rock formations. In Oxford County, many households have water softeners to help reduce white calcium deposits and improve the efficiency of soaps. Samples for hardness are collected at a minimum every 3 years from raw or treated water. The average hardness for the Brownsville Drinking Water System is 74 mg/L (4 grains/gallon) based on samples collected from 2006 to 2019. Water in the Brownsville System is of medium hardness and a water softener should not be needed.

3.4. Additional Testing Required by MECP

The Maximum Allowable Concentration (MAC) for arsenic was reduced from 25 ug/L to 10 ug/L in 2018. In Brownsville, an increased testing frequency of once every three months is required as the average arsenic level is above 5 ug/L. Results are summarized in Appendix A.

4. OPERATIONAL MONITORING

4.1. Chlorine Residual

Free chlorine levels of the treated water are monitored continuously at the discharge point of the pumping station and in the distribution system. As a target, free chlorine residual within the distribution system should be above 0.20 mg/L. A free chlorine level lower than 0.05 mg/L must be reported and corrective action taken. There were no reportable incidents in 2021. A summary of the chlorine residual readings is provided in the table below.

4.2. Turbidity

Turbidity of treated water is continuously monitored at the pumping station, as a change in turbidity can indicate an operational problem. The turbidity of untreated water from each well is checked weekly. Turbidity is measured in nephelometric turbidity units (NTU). Under O. Reg. 170/03 turbidity in groundwater is not reportable however turbidity should be < 1 NTU at the treatment plant and < 5 NTU in the distribution system. A summary of the monitoring results for 2021 is provided in the table below.

Parameter	*Number of Tests or Monitoring Frequency*	*Range of Results (Min – Max) and Average*
Chlorine residual in distribution (mg/L)	Continuous	(0.62 – 3.51) 1.18
Chlorine residual after treatment (mg/L)	Continuous	(0.19 – 2.21) 1.20
Turbidity after treatment (NTU)	Continuous	(0.07 – 4.00) 0.16

5. WATER QUANTITY

Continuous monitoring of flowrates from supply wells into the treatment system and from the facility into the distribution system is required by O.Reg. 170/03. The Municipal Drinking Water License and Permit to Take Water issued by the MECP regulate the amount of water that can be utilized over a given time period. A summary of the 2021 flows are provided in the table below and presented graphically in Appendix B.

Flow Summary	
Permit to Take Water Limit	378 m^3/d
Municipal Drinking Water License Limit	366 m^3/d
2021 Average Daily Flow	78 m^3/d
2021 Maximum Daily Flow	159 m^3/d
2021 Average Monthly Flow	2,386 m^3
2021 Total Amount of Water Supplied	28,627 m^3

A review of the available supply capacity and the anticipated growth forecasted for the community indicates that the system has sufficient capacity over the 20 year planning horizon.

Firm Capacity is defined as the removal of the highest producing well in an emergency or operational / maintenance situation with the ability to transport a maximum of 100 m^3/day if necessary to maintain system integrity. This system comprises of two supply wells. Well 5 is removed for Firm Capacity calculations. The remaining Well 6 has a limit of 181 m^3/day. Firm Capacity of this system is rated at 281 m^3/day. Reservoir storage capacity is 188 m^3.

6. NON-COMPLIANCE FINDINGS AND ADVERSE RESULTS

This section documents any known incidents of non-compliance or adverse results and the associated correction actions taken to resolve the issue. Non-compliance issues are typically identified by either the Operating Authority or the MECP Drinking Water Inspectors. The issues and associated required actions are documented by the Inspectors in the system's Annual Inspection Report.

All non-compliance issues are investigated, corrective actions taken and documented using the County's Drinking Water Quality Management System (DWQMS) procedures.

6.1. Non-Compliance Findings

The Annual MECP Inspection for the Brownsville Drinking Water System took place in July 2021. There were no noncompliance findings and the 2021 Inspection Report rating was 100%.

6.2. Adverse Results

Any adverse results from bacteriological, chemical samples or observations of operational conditions that indicate adverse water quality are reported as required and corrective actions are taken. There were no adverse or reportable occurrences in 2021.

APPENDIX A: SUMMARY OF CHEMICAL RESULTS

UNDERSTANDING CHEMICAL TEST RESULTS

The following tables summarize the laboratory results of the chemical testing the County is required to complete. Different types of parameters are required to be tested for at different frequencies as noted below. Explanations on the health impacts of these parameters can be found in the MECP document at https://cvc.ca/wp-content/uploads/2011/03/std01_079707.pdf PSIB 4449e01 titled "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines".

Results are shown as concentrations with units of either milligrams per litre (mg/L) or micrograms per litre (ug/L). 1 mg/L is equal to 1000 ug/L. The Maximum Acceptable Concentration (MAC) is the highest amount of a parameter that is acceptable in Municipal drinking water and can be found in the MECP Drinking Water Standards. The Method Detection Limit (MDL) is the lowest amount to which the laboratory can confidently measure. A result of "ND" stands for "Not Detected" and means that the concentration of the chemical is lower than the laboratory's equipment is capable of measuring. In the event that some samples results are ND, and other results are above the MDL, the value of the MDL will be used in place of the ND where an average result must be calculated. Where all collected samples are ND the average sample result will be assumed to be ND.

Nitrate and nitrite samples are required every 3 months in normal operation.

Parameter	*Result/Range Min – Max(mg/L)*	*Average Result (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Nitrite	ND	ND	1.0	0.003
Nitrate	0.006 – 0.009	0.007	10.0	0.006

Trihalomethane (THM) and total Haloacetic Acids (HAA) are by-products of the disinfection process. The samples are required every 3 months from the distribution system.

Parameter	*Annual Average*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Trihalomethane (THM)	2021	66.5	100	0.37
Total Haloacetic Acids (HAA)	2021	22.8	80	5.3

The following Table summarizes the most recent test results for Sodium and Fluoride. Testing and reporting any adverse results is required every 5 years.

Parameter	*Sample Date*	*Result Value (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Sodium	May 28 /19	81.6	20.0*	0.01
Fluoride	May 28 /19	1.77	1.5**	0.06

*Sodium levels between 20 – 200 mg/L must be reported every 5 years.
**Natural levels of fluoride between 1.5 – 2.4 mg/L must be reported every 5 years

The following Table summarizes the most recent results for the Lead Testing Program. Lead samples are taken every 3 years. Levels of alkalinity and pH are monitored twice per year in the distribution system to ensure water quality is consistent and does not facilitate leaching of lead into the water.

Parameter	*Result Range (Min – Max)*	*Number of Samples*	*Acceptable Level*
Distribution Alkalinity	147 - 158	2	30 – 500 mg/L
Distribution pH	7.87 - 8.18	2	6.5 – 8.5
Distribution Lead 2021	0.11 - 0.23	2	10 ug/L MAC

The following Table summarizes the most recent test results for Schedule 23. Testing is required every 3 years for secure groundwater wells.

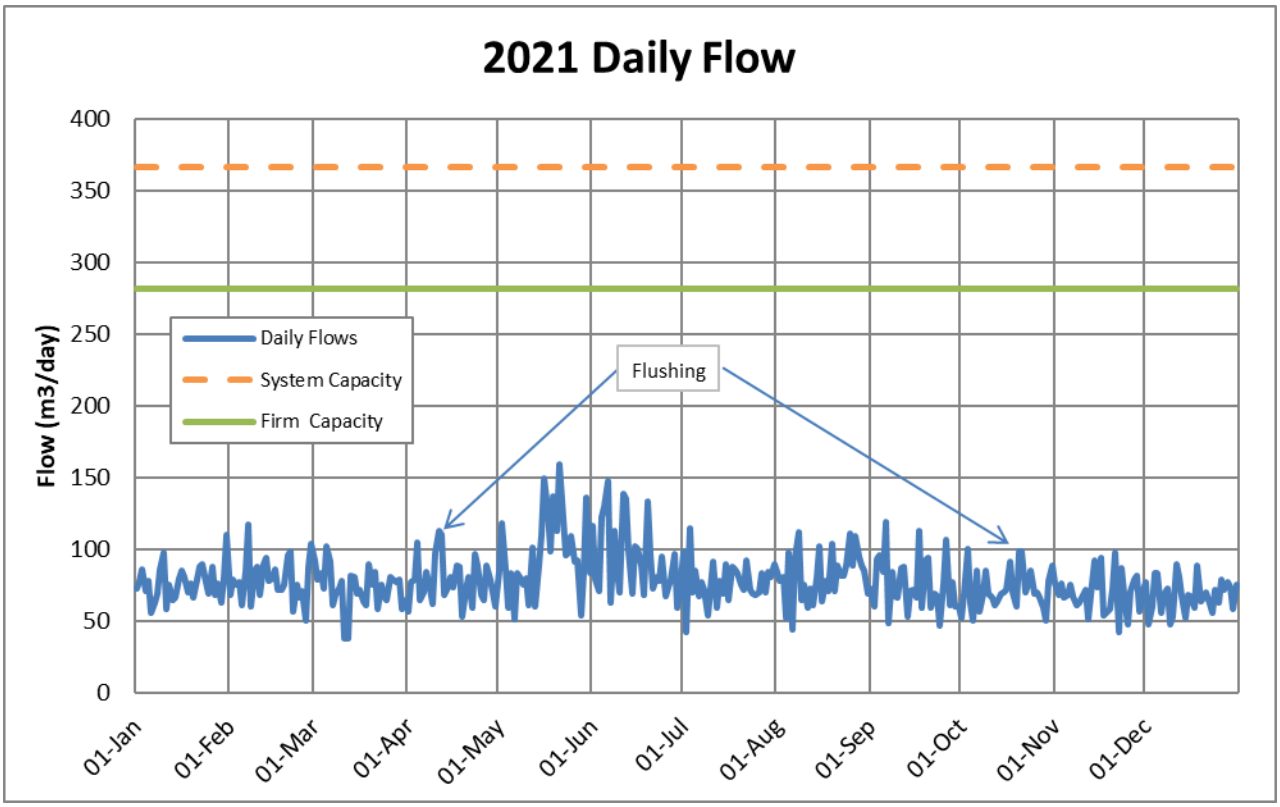
Parameter	*Sample Date*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Antimony	May 28/19	ND	6	0.09
Arsenic	Annual average	5.64	10	0.2
Barium	May 28/19	32.6	1000	0.01
Boron	"	259	5000	2
Cadmium	"	ND	5	0.003
Chromium	"	0.12	50	0.03
Mercury	"	ND	1	0.01

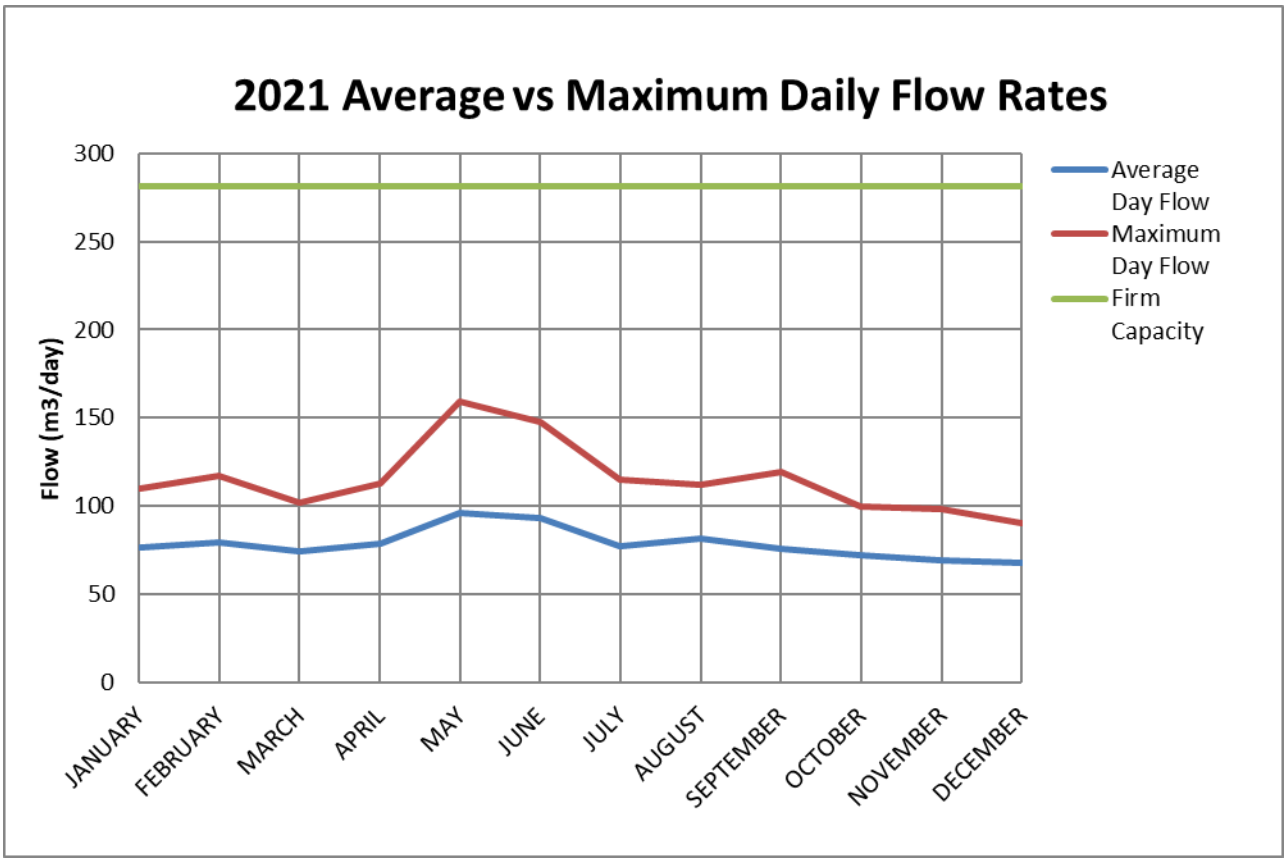
Parameter	*Sample Date*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Selenium	“	ND	5	0.04
Uranium	“	0.046	20	0.002

The following Table summarizes the most recent test results for Schedule 24. Testing is required every 3 years for secure groundwater wells.

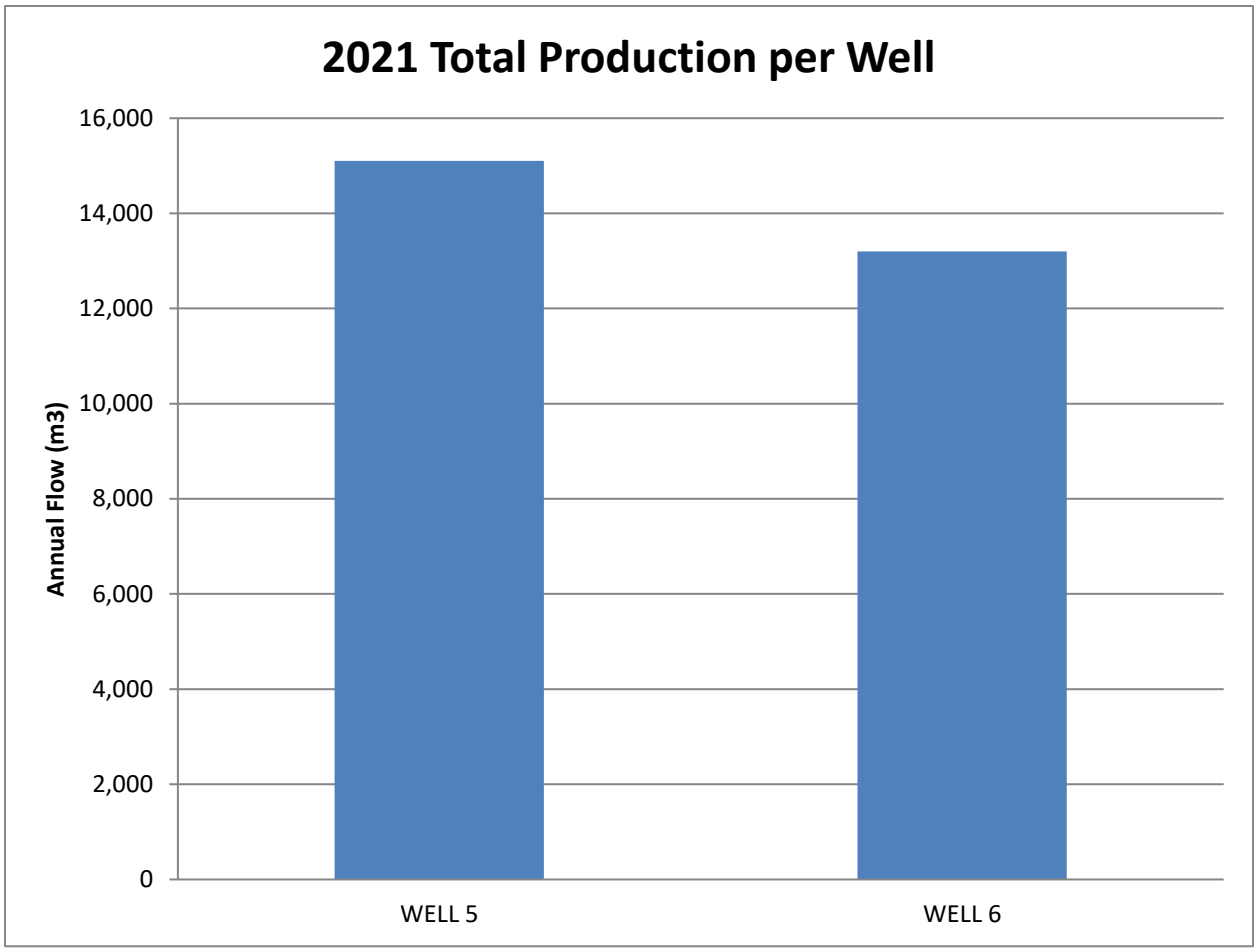
Parameter	Sample Date	Result Value (ug/L)	MAC (ug/L)	MDL (ug/L)
Alachlor	June 7, 2021	ND	5	0.02
Atrazine + N-dealkylatedmetobolites	“	ND	5	0.01
Azinphos-methyl	“	ND	20	0.05
Benzene	“	ND	1	0.32
Benzo(a)pyrene	“	ND	0.01	0.004
Bromoxynil	“	ND	5	0.33
Carbaryl	“	ND	90	0.05
Carbofuran	“	ND	90	0.01
Carbon Tetrachloride	“	ND	2	0.17
Chlorpyrifos	“	ND	90	0.02
Diazinon	“	ND	20	0.02
Dicamba	“	ND	120	0.20
1,2-Dichlorobenzene	“	ND	200	0.41
1,4-Dichlorobenzene	“	ND	5	0.36
1,2-Dichloroethane	“	ND	5	0.35
1,1-Dichloroethylene(vinylidene chloride)	“	ND	14	0.33
Dichloromethane	“	ND	50	0.35
2-4 Dichlorophenol	“	ND	900	0.15
2,4-Dichlorophenoxy acetic acid (2,4-D)	“	ND	100	0.19
Diclofop-methyl	“	ND	9	0.40
Dimethoate	“	ND	20	0.06
Diquat	“	ND	70	1
Diuron	“	ND	150	0.03
Glyphosate	“	ND	280	1
Malathion	“	ND	190	0.02
Metolachlor	“	ND	50	0.01
2-methyl-4chlorophenoxyacetic acid (MCPA)	“	ND	100	0.12
Metribuzin	“	ND	80	0.02
Monochlorobenzene	“	ND	80	0.03
Paraquat	“	ND	10	1
Pentachlorophenol	“	ND	60	0.15
Phorate	“	ND	2	0.01
Picloram	“	ND	190	0.25
Polychlorinated Biphenyls(PCB)	“	ND	3	0.04
Prometryne	“	ND	1	0.03
Simazine	“	ND	10	0.01
Terbufos	“	ND	1	0.01
Tetrachloroethylene	“	ND	10	0.35
2,3,4,6-Tetrachlorophenol	“	ND	100	0.20
Triallate	“	ND	230	0.01
Trichloroethylene	“	ND	5	0.44
2,4,6-Trichlorophenol	“	ND	5	0.25
Trifluralin	“	ND	45	0.02
Vinyl Chloride	“	ND	1	0.17

APPENDIX B: WATER QUANTITY SUMMARY





Brownsville Firm Capacity 281 m^3/day
Brownsville Water Supply Capacity 366 m^3 /day



Brownsville Firm Capacity 281 m^3/day
Brownsville Water System Capacity 366 m^3 /day

Growing stronger together

2021 ANNUAL DRINKING WATER SYSTEM SUMMARY REPORT
Dereham Centre Water System

1. GENERAL INFORMATION

Oxford County (the County) prepares a report summarizing system operation and water quality for every municipal drinking water system annually. The reports detail the latest water quality testing results, water quantity statistics and any adverse conditions that may have occurred for the previous year. They are available for review by the end of February on the County website at www.oxfordcounty.ca/drinkingwater or by contacting the Public Works Department.

All efforts have been made to ensure the information presented in this report is accurate. If you have any questions or comments concerning the report, please contact the County at the address and phone number listed below or by email at publicworks@oxfordcounty.ca

Drinking Water System:	Dereham Centre Water System
Drinking Water System Number:	220001510
Drinking Water System Owner & Contact Information:	Oxford County Public Works Department Water Services P.O. Box 1614 21 Reeve Street Woodstock, ON N4S 7Y3 Telephone: 519-539-9800 Toll Free: 866-537-7778 Email: publicworks@oxfordcounty.ca
Reporting Period:	January 1, 2021 – December 31, 2021

1.1. System Description

The Dereham Centre Water System is a Small Municipal Water system as defined by Ontario Regulation (O.Reg.) 170/03 and serves a population of approximately 48. The system consists of one groundwater well and a treatment facility. The water is treated with sodium hypochlorite for disinfection and sodium silicate to sequester iron. In spring 2021, an arsenic removal filtration system had been approved at the facility, treating a portion of the supplied water. Effective May 28, 2021, a dual filter arsenic removal system was placed online, fully treating all the supplied water.

In 2021, approximately 130 L of sodium hypochlorite and 61 L of sodium silicate was used in the water treatment process. The chemicals are certified to meet standards set by the Standards Council of Canada or American National Standards Institute. Upgrades to the water treatment facility have suspended the use of sodium silicate for iron sequestration. Iron is now removed through the filtration process.

The treatment facility houses pumps, MD-80 filters, treatment and monitoring equipment and a 37 m^3 underground reservoir. A standby generator is available to run the facility in the event of a power failure. The system is maintained by licensed water system operators, who operate treatment and monitoring equipment and collect samples as specified by the Regulation. Alarms automatically notify operators in the event of failure of critical operational requirements.

1.2. Major Expenses

The Dereham Centre Water System is one of 14 water systems that have revenues and expenses pooled for the economy of scale purposes. The systems are combined into the Township Water financial system and in 2021 had operating and maintenance expenditures of approximately $3,000,000.

Operations and maintenance expenditures included:

- $175,000 for the replacement of general operating equipment and well rehabilitations

In addition to regular operational and maintenance expenditures, Capital Improvement Projects for the Townships systems totaled $1,500,000 for improvements to water treatment systems and replacement of distribution mains in the Township System.

Township Capital Improvement Projects included:

- $150,000 for Dereham Centre filter upgrades
- $65,000 groundwater modeling
- $350,000 for facilities improvements

Capital Improvement projects for all systems included:

- $720,000 to develop Countywide SCADA Master Plan for all water systems
- $14,000 for updated water systems modelling

2. MICROBIOLOGICAL TESTING

2.1. *E. coli and Total Coliform*

Bacteriological tests for *E. coli* and total coliforms are taken weekly from the raw water at the facility and from the distribution system. Samples of treated water are not required for Small Municipal systems but may be taken periodically. Extra samples are taken after major repairs or maintenance work. Any *E. coli* or total coliform results above 0 in treated water must be reported to the Ministry of Environment, Conservation and Parks (MECP) and Medical Officer of Health (MOH). Resamples and any other required actions are taken as quickly as possible. The results from the 2021 sampling program are shown in the table below. There was one adverse result from 105 treated water samples in this reporting period the corrective actions for this are discussed in section 6.2.

	Number of Samples	*Range of E. coli Results Min - Max MAC = 0*	*Range of Total Coliform Results Min - Max MAC = 0*
Raw	52	0	0
Distribution	62	0	0-8
Treated	43	0	0

2.2. Heterotrophic Plate Count (HPC)

HPC analyses are completed weekly from the distribution water for small systems. HPC should be less than 500 colonies per 1 mL. Results over 500 colonies per 1 mL may indicate a change in water quality but it is not considered an indicator of unsafe water. 2021 results are shown in the table below.

	Number of Samples	*Range of HPC Min - Max*
Distribution	52	0 - 45

3. CHEMICAL TESTING

The Safe Drinking Water Act requires periodic testing of the water for approximately 60 different chemical parameters. The latest results for all parameters are provided in Appendix A. The sampling frequency varies for different types and sizes of water systems and chemical parameters. If the concentration of a parameter is above half of the Maximum Allowable Concentration (MAC) under the Ontario Drinking Water Quality Standards, an increased testing frequency of once every three months is required by the Regulation. Where concerns regarding a parameter exist, the MECP can also require additional sampling be undertaken.

Information on the health effects and allowable limits of components in drinking water may be found on the MECP web page through the link provided in Appendix A. Additional information on common chemical parameters specific to the Dereham Centre system is provided below.

3.1. Hardness and Iron

These are aesthetic parameters that may affect the appearance of the water but are not related to health. Well water commonly has high levels of hardness and other minerals from being in contact with underground rock formations. Many households have water softeners to help reduce white calcium deposits and improve the efficiency of soaps. This information is included here to help set the water softener at the level recommended by the manufacturer. Levels of iron less than 0.30 mg/L (ppm) are not considered to cause problems such as discoloured water. In Dereham Centre sodium silicate was added to keep iron in suspension for the first half of 2021. New filter upgrades that came into service June 2021 mean that iron will be removed from the drinking water through the filtration process.

- Samples for hardness are collected at a minimum every 3 years from raw or treated water. The average hardness for the Dereham Centre Drinking Water System is 258 mg/L (15 grains/gallon) based on samples collected from 2006 to 2019.
- The average iron concentration in the treated drinking water for 2021 is 0.35 mg/L

3.2. Additional Testing Required by MECP

In January of 2018, the Maximum Allowable Concentration (MAC) for arsenic was reduced from 25 ug/L to 10 ug/L. In Dereham Centre, the average arsenic concentrations in the raw well water are naturally above 10 ug/L. In 2021 arsenic concentrations in the treated water ranged from 0.6 to 55.3 ug/L and averaged 4.5 ug/L over the whole year. Filter treatment is now required to manage arsenic levels in the treated drinking water. Treated water samples for arsenic were collected weekly during the commissioning and following the installation of the permanent filtration system. The weekly samples were used to monitor the efficacy of the filtration system and the effect of various operations such as before and after backwash cycles. The MECP approved quarterly sampling for arsenic after reviewing these results and successful removal had been demonstrated. Arsenic in treated drinking water following the implementation of the new filter ranges from 0.06 – 3.4 ug/L. The average arsenic concentration in the treated drinking water is now 2.1ug/L.

4. OPERATIONAL MONITORING

4.1. Chlorine Residual

Free chlorine levels of the treated water are monitored continuously at the discharge point of the Water Treatment Facility. In the distribution system, free chlorine is checked twice weekly at various locations. As a target, free chlorine residual within the distribution system should be above 0.20 mg/L. A free chlorine level lower than 0.05 mg/L must be reported and corrective actions taken. There were no reportable incidents in 2021. A summary of the chlorine residual readings is provided in the table below.

4.2. Turbidity

Turbidity of treated water is continuously monitored at the treatment facility, as a change in turbidity can indicate an operational problem. The turbidity of untreated water from the well is checked weekly. Turbidity is measured in nephelometric turbidity units (NTU). Under O. Reg. 170/03 turbidity in groundwater is not reportable however turbidity should be < 1 NTU at the treatment plant and < 5 NTU in the distribution system. A summary of the monitoring results for 2021 is provided in the table below.

Parameter	*Number of Tests or Monitoring Frequency*	*Range of Results (Min – Max) and Average*
Chlorine residual in distribution (mg/L)	104	(1.03 – 2.10) 1.47
Chlorine residual after treatment (mg/L)	Continuous	(0.60– 3.81) 1.49
Turbidity after treatment (NTU)	Continuous	(0.10 – 4.07) 0.13

5. WATER QUANTITY

Continuous monitoring of flowrates from the well into the treatment system and from the facility into the distribution system is required by O.Reg. 170/03. The Municipal Drinking Water License and Permit to Take Water issued by the MECP regulate the amount of water that can be utilized over a given time period. A summary of the 2021 flows are provided in the Table below and presented graphically in Appendix B.

Flow Summary	*Quantity*
Water Taking Limit	50 m^3/d
Municipal Drinking Water License Limit	78 m^3/d
2021 Average Daily Flow	8 m^3/d
2021 Maximum Daily Flow	44 m^3/d
2021 Average Monthly Flow	233 m^3
2021 Total Amount of Water Supplied	2,791 m^3

A review of the available supply capacity and the anticipated growth forecasted for the community indicates that the system has sufficient capacity over the 20 year planning horizon.

Firm Capacity of this system is rated at 50 m^3/day. Firm Capacity is defined as the removal of the highest producing well in an emergency or operational / maintenance situation with the ability to transport water if necessary to maintain system integrity. This system comprises of one supply well that is limited to 50 m^3/day. When this well is not in service 50 m^3/day can be supplied via trucked water.

6. NON-COMPLIANCE FINDINGS AND ADVERSE RESULTS

This section documents any known incidents of non-compliance or adverse results and the associated correction actions taken to resolve the issue. Non-compliance issues are typically identified by either the Operating Authority or the MECP Drinking Water Inspectors. The issues and associated required actions are documented by the Inspectors in the system's Annual Inspection Report.

All non-compliance issues are investigated, corrective actions taken and documented using the County's Drinking Water Quality Management System (DWQMS) procedures.

6.1. Non-Compliance Findings

At the time of this report, an inspection into non-compliance findings of the Dereham Centre Drinking Water System had not been undertaken in 2021.

6.2. Adverse Results

Any adverse results from bacteriological, chemical samples or observations of operational conditions that indicate adverse water quality are reported as required and corrective actions taken. Below is a summary of the four adverse/reportable occurrences for 2021 along with the corresponding resolution.

Incident / Date	*Corrective Action*	*Resolution / Date*
Treated Water Sample with Chemistry Exceedance		
April 26, 2021 Arsenic of 10.9 ug/L taken at the Dereham Centre WTF	Reported on May 3, 2021 resamples collected May 3 & 4, 2021 for confirmation	May 3, 2021 resample result was reported adverse on May 7, 2021
May 3, 2021 Arsenic of 11.7 ug/L taken at the Dereham Centre WTF	Reported on May 7, 2021, moved Sodium silicate injection to post filter, trucked in water and resampled.	May 4, 2021 resample result was also reported adverse on May 11, 2021.
May 4, 2021 Arsenic of 11.8 ug/L taken at the Dereham Centre WTF	Reported on May 11, 2021 after trucked water and May 7, 2021 resample taken.	May 7, 2021 resample result was reported as adverse, trucked water had disturbed sediment in the reservoir causing the arsenic sample result to increase.
May 7, 2021 Arsenic of 55.3 ug/L taken at the Dereham Centre WTF	Reported on May 12, 2021, samples collected on May 12 & 13, 2021 for confirmation.	Samples taken on May 12 & 13, 2021 were acceptable
Treated or Distribution Water Sample with Positive Test for *E.Coli* or *Total Coliform* Bacteria		
July 21, 2021 8 TC cfu/100mL in a treated distribution sample result. The free chlorine at the time of the sample was 1.41 mg/L.	Reported and resamples were taken.	Resample results acceptable July 23, 2021.

APPENDIX A: SUMMARY OF CHEMICAL RESULTS

UNDERSTANDING CHEMICAL TEST RESULTS

The following tables summarize the laboratory results of the chemical testing the County is required to complete. Different types of parameters are required to be tested for at different frequencies as noted below. Explanations on the health impacts of these parameters can be found in the MECP document at https://cvc.ca/wp-content/uploads/2011/03/std01_079707.pdf PSIB 4449e01titled "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines".

Results are shown as concentrations with units of either milligrams per litre (mg/L) or micrograms per litre (ug/L). 1 mg/L is equal to 1000 ug/L. The Maximum Acceptable Concentration (MAC) is the highest amount of a parameter that is acceptable in Municipal drinking water and can be found in the MECP Drinking Water Standards. The Method Detection Limit (MDL) is the lowest amount to which the laboratory can confidently measure. A result of "ND" stands for "Not Detected" and means that the concentration of the chemical is lower than the laboratory's equipment is capable of measuring. In the event that some samples results are ND, and other results are above the MDL, the value of the MDL will be used where an average result must be calculated. Where all collected samples are ND the average sample result will be assumed to be ND.

Nitrate and nitrite samples are required every 3 months in normal operation.

Parameter	*Result Range* Min – Max *(mg/L)*	*Average Result (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Nitrite	ND – 0.013	0.006	1.0	0.003
Nitrate	0.009 – 0.013	0.011	10.0	0.006

Trihalomethane (THM) and total Haloacetic Acids (HAA) are by-products of the disinfection process. The samples are required every 3 months from the distribution system.

Parameter	*Annual Average*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Trihalomethane (THM)	2021	9.3	100	0.37
Haloacetic Acids (HAA)	2021	ND	80	5.3

The following Table summarizes the most recent test results for Sodium and Fluoride. Testing and reporting any adverse results is required every 5 years.

Parameter	*Sample Date*	*Result Value (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Sodium	August 16, 2021	11.6	20.0*	0.01
Fluoride	August 16, 2021	0.59	1.5**	0.06

*Sodium levels between 20 – 200 mg/L must be reported every 5 years.
**Natural levels of fluoride between 1.5 – 2.4 mg/L must be reported every 5 years.

The following Table summarizes the most recent results for the Lead Testing Program. Lead samples are taken every 3 years. Levels of alkalinity and pH are monitored twice per year in the distribution system to ensure water quality is consistent and does not facilitate leaching of lead into the water.

Parameter	*Result Range (Min - Max)*	*Number of Samples*	*Acceptable Level*
Distribution Alkalinity	223 – 228	2	30 – 500mg/L
Distribution pH	7.78 – 8.21	2	7.7 – 8.0
Distribution Lead 2021	0.22 – 0.41	2	10 ug/L MAC

The following Table summarizes the most recent test results for Schedule 23. Testing is required every 5 years for secure groundwater wells.

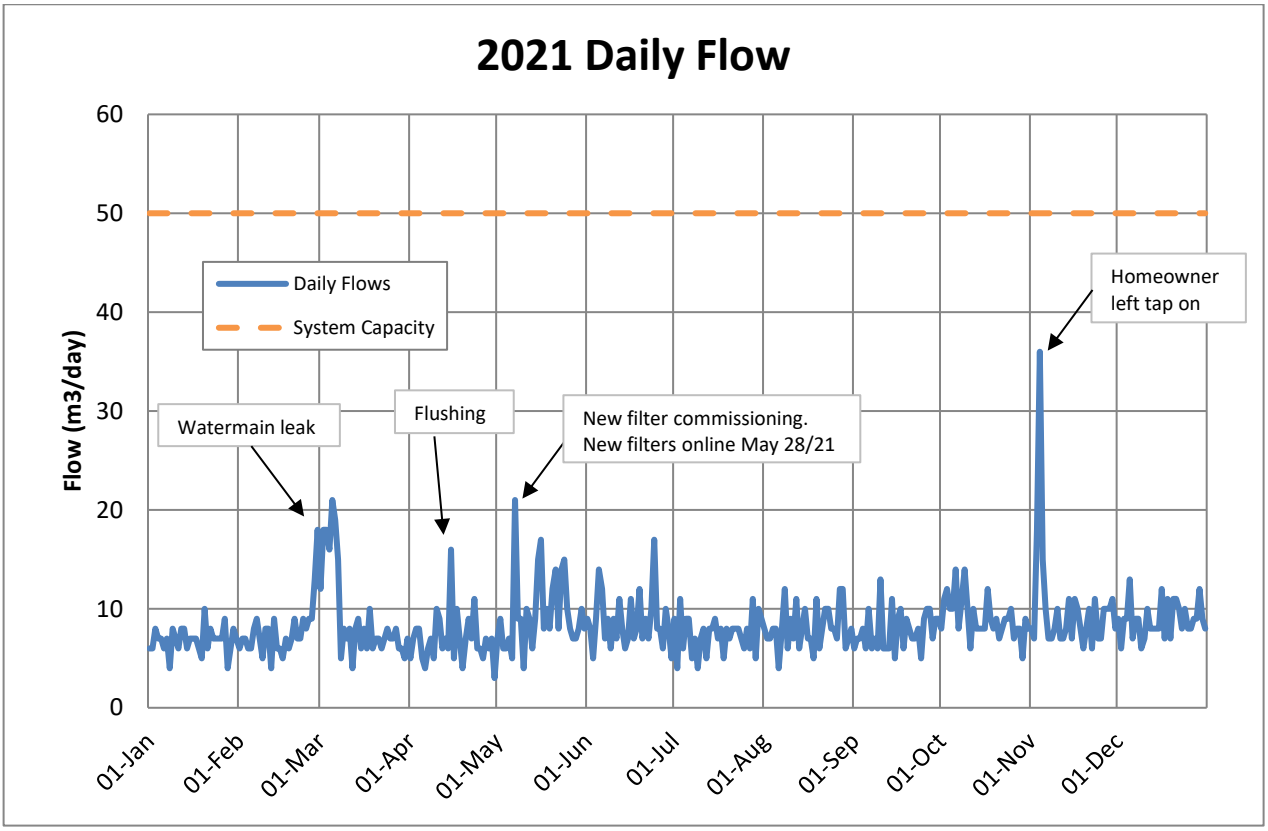
Parameter	*Sample Date*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Antimony	Dec 2/19	ND	6	0.09
Arsenic	Annual Average	4.5	10	0.2
Barium	Dec 2/19	239	1000	0.01
Boron	"	29	5000	0.2
Cadmium	"	ND	5	0.003

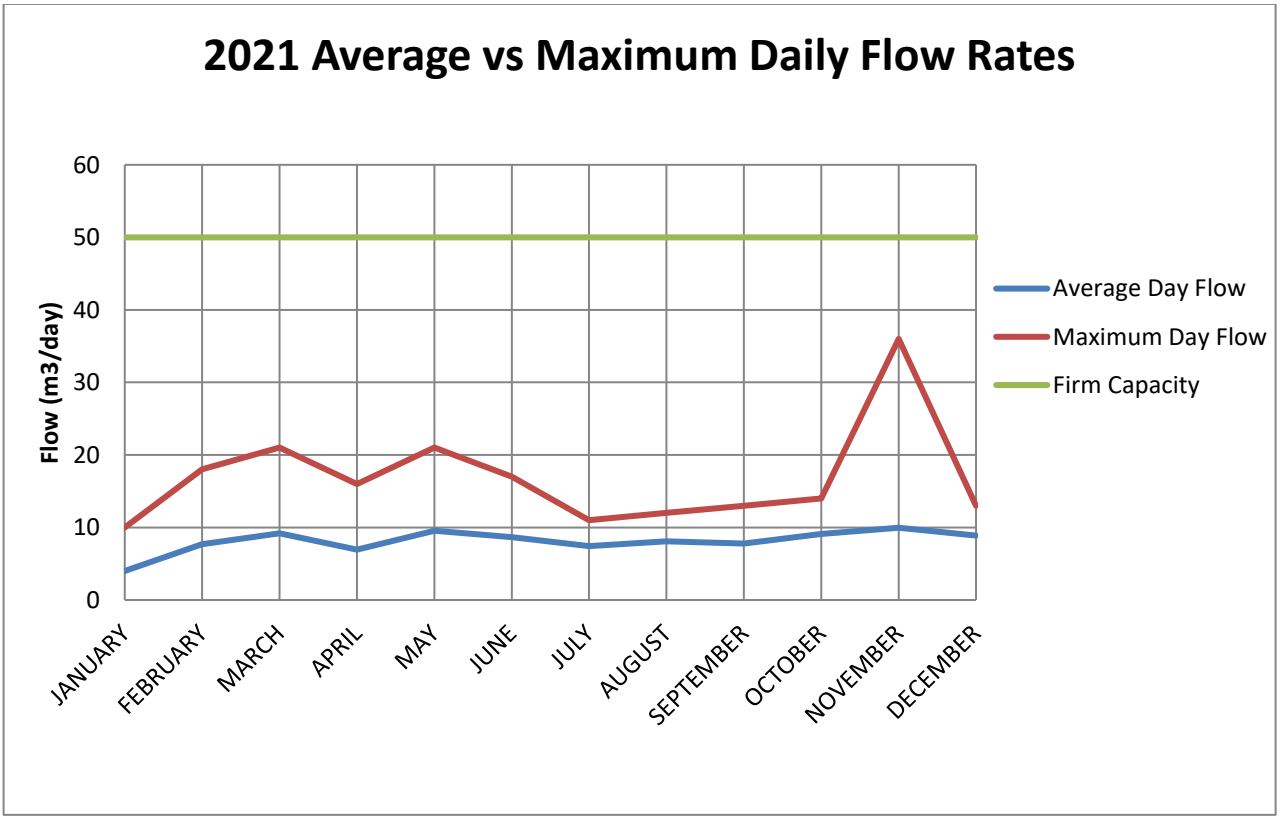
Parameter	*Sample Date*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Chromium	“	0.10	50	0.5
Mercury	“	0.01	1	0.02
Selenium	“	ND	5	1
Uranium	“	0.112	20	0.001

The following Table summarizes the most recent test results for Schedule 24. Testing is required every 5 years for secure groundwater wells.

Parameter	Sample Date	Result Value (ug/L)	MAC (ug/L)	MDL (ug/L)
Alachlor	Dec 2/19	ND	5	0.02
Atrazine + N-dealkylatedmetobolites	“	ND	5	0.01
Azinphos-methyl	“	ND	20	0.05
Benzene	“	ND	1	0.32
Benzo(a)pyrene	“	ND	0.01	0.004
Bromoxynil	“	ND	5	0.33
Carbaryl	“	ND	90	0.05
Carbofuran	“	ND	90	0.01
Carbon Tetrachloride	“	ND	2	0.17
Chlorpyrifos	“	ND	90	0.02
Diazinon	“	ND	20	0.02
Dicamba	“	ND	120	0.20
1,2-Dichlorobenzene	“	ND	200	0.41
1,4-Dichlorobenzene	“	ND	5	0.36
1,2-Dichloroethane	“	ND	5	0.35
1,1-Dichloroethylene(vinylidene chloride)	“	ND	14	0.33
Dichloromethane	“	ND	50	0.35
2-4 Dichlorophenol	“	ND	900	0.15
2,4-Dichlorophenoxy acetic acid (2,4-D)	“	ND	100	0.19
Diclofop-methyl	“	ND	9	0.40
Dimethoate	“	ND	20	0.06
Diquat	“	ND	70	1
Diuron	“	ND	150	0.03
Glyphosate	“	ND	280	1
Malathion	“	ND	190	0.02
Metolachlor	“	ND	50	0.01
2-methyl-4chlorophenoxyacetic acid (MCPA)	“	ND	100	0.12
Metribuzin	“	ND	80	0.02
Monochlorobenzene	“	ND	80	0.3
Paraquat	“	ND	10	1
Pentachlorophenol	“	ND	60	0.15
Phorate	“	ND	2	0.01
Picloram	“	ND	190	0.1
Polychlorinated Biphenyls(PCB)	“	ND	3	0.04
Prometryne	“	ND	1	0.03
Simazine	“	ND	10	0.01
Terbufos	“	ND	1	0.01
Tetrachloroethylene	“	ND	10	0.45
2,3,4,6-Tetrachlorophenol	“	ND	100	0.25
Triallate	“	ND	230	0.01
Trichloroethylene	“	ND	5	0.44
2,4,6-Trichlorophenol	“	ND	5	0.25
Trifluralin	“	ND	45	0.19
Vinyl Chloride	“	ND	1	0.17

APPENDIX B: WATER QUANTITY SUMMERY





Dereham Centre Firm Capacity 50 m^3/day
Dereham Centre Water Supply Capacity 50 m^3 /day

Growing stronger together

2021 ANNUAL DRINKING WATER SYSTEM SUMMARY REPORT
Drumbo-Princeton Water System

1. GENERAL INFORMATION

Oxford County (the County) prepares a report summarizing system operation and water quality for every municipal drinking water system annually. The reports detail the latest water quality testing results, water quantity statistics and any adverse conditions that may have occurred for the previous year. They are available for review by the end of February on the County website at www.oxfordcounty.ca/drinkingwater or by contacting the Public Works Department.

All efforts have been made to ensure the information presented in this report is accurate. If you have any questions or comments concerning the report please contact the County at the address and phone number listed below or by email at publicworks@oxfordcounty.ca

Drinking Water System:	Drumbo-Princeton Water System
Drinking Water System Number:	220007515
Drinking Water System Owner & Contact Information:	Oxford County Public Works Department Water Services P.O. Box 1614 21 Reeve Street Woodstock, ON N4S 7Y3 Telephone: 519-539-9800 Toll Free: 866-537-7778 Email: publicworks@oxfordcounty.ca
Reporting Period:	January 1, 2021 – December 31, 2021

1.1. System Description

The Drumbo-Princeton Drinking Water System is a Large Municipal Water system as defined by Ontario Regulation (O.Reg.) 170/03 and serves a population of approximately 1,573.

The system consists of three wells that are secure groundwater, connected to a central treatment facility all located in Drumbo. The facility houses high lift pumps, monitoring equipment, and a 516 m³ reservoir. Treatment consists of the addition of sodium hypochlorite for disinfection and sodium silicate to sequester iron. A standby generator is available to run the facility in the event of a power failure. The two communities are linked by a transmission main. In Princeton, there is a pressure control facility with chlorine residual monitoring, re-chlorination equipment, and a 271 m³ storage standpipe.

In 2021, approximately 3,690 L of sodium hypochlorite and 2255 L (3190 kg) of sodium silicate were used in the water treatment process. These chemicals are certified to meet standards set by the Standards Council of Canada or the American National Standards Institute.

The system is maintained by licensed water system operators, who operate treatment and monitoring equipment and collect samples as specified by the Regulation. Alarms automatically notify operators in the event of failure of critical operational requirements.

1.2. Major Expenses

The Drumbo Princeton Water System is one of 14 water systems that have revenues and expenses pooled for the economy of scale purposes. The systems are combined into the Township Water financial system and in 2021 had operating and maintenance expenditures of approximately $3,000,000.

Operations and maintenance expenditures included:

- $175,000 for the replacement of general operating equipment and well rehabilitations

In addition to regular operational and maintenance expenditures, Capital Improvement Projects for the Townships systems totaled $1,500,000 for improvements to water treatment systems and replacement of distribution mains in the Township System.

Township Capital Improvement Projects included:

- $65,000 groundwater modeling
- $350,000 for facilities improvements

Capital Improvement projects for all systems included:

- $720,000 to develop Countywide SCADA Master Plan for all water systems
- $14,000 for updated water systems modeling

2. MICROBIOLOGICAL TESTING

2.1. *E. coli and Total Coliform*

Bacteriological tests for *E. coli* and total coliforms are required weekly on the raw and treated water at the facility and in the distribution system. Extra samples are taken after major repairs or maintenance work. Any *E. coli* or total coliform results above 0 in treated water must be reported to the Ministry of Environment, Conservation and Parks (MECP) and Medical Officer of Health (MOH). Resamples and any other required actions are taken as quickly as possible. The results from the 2021 sampling program are shown on the table below. There were no adverse test results from 206 treated water samples in this reporting period.

	Number of Samples	*Range of E. coli Results Min - Max MAC = 0*	*Range of Total Coliform Results Min - Max MAC = 0*
Raw	152	0	0-1
Treated	52	0	0
Distribution	154	0	0

2.2. Heterotrophic Plate Count (HPC)

HPC analyses are required from the treated and distribution water. The tests are required weekly for treated water and for 25% of the required distribution system bacteriological samples. HPC should be less than 500 colonies per 1 mL Results over 500 colonies per 1 mL may indicate a change in water quality but it is not considered an indicator of unsafe water. 2021 results are shown in the table below.

	Number of Samples	*Range of HPC Min - Max*
Treated	52	0-8
Distribution	38	0-4

3. CHEMICAL TESTING

The Safe Drinking Water Act requires periodic testing of the water for approximately 60 different chemical parameters. The latest results for all parameters are provided in Appendix A. The sampling frequency varies for different types and sizes of water systems and chemical parameters. If the concentration of a parameter is above half of the Maximum Allowable Concentration (MAC) under the Ontario Drinking Water Quality Standards, an increased testing frequency of once every three months is required by the Regulation. Where concerns regarding a parameter exist, the MECP can also require additional sampling be undertaken.

Information on the health effects and allowable limits of components in drinking water may be found on the MECP web page through the link provided in Appendix A. Additional information on common chemical parameters specific to the Drumbo-Princeton system is provided below.

3.1. Hardness, Iron and Manganese

These are aesthetic parameters that may affect the appearance of the water but are not related to health. Well water commonly has high levels of hardness and other minerals from being in contact with underground rock formations. Many households have water softeners to help reduce white calcium deposits, improve soap efficiency and reduce iron levels. This information is included here to help set the water softener at the level recommended by the manufacturer.

- Samples for hardness are collected at a minimum every 3 years from raw or treated water. The average hardness for the Drumbo-Princeton Drinking Water System is 300 mg/L (18 grains/gallon) based on samples collected from 2006 to 2019.

Levels of iron less than 0.30 mg/L (ppm) are not considered to cause aesthetic problems such as discoloured water. In Drumbo-Princeton, sodium silicate is added to keep the iron in suspension at wells 1 and 2A.

- The average iron level in 2021 was 0.395 mg/L (ppm)

Manganese is commonly found in conjunction with iron and also causes discoloured water. Manganese levels in this system are above a new proposed aesthetic objective of 0.02 mg/L

- The average manganese level in 2021 was 0.031 mg/L (ppm)

3.2. Additional Testing Required by MECP

None.

4. OPERATIONAL MONITORING

4.1. Chlorine Residual

Free chlorine levels of the treated water are monitored continuously at the discharge point of the Water Treatment Facility. In the distribution system, free chlorine is checked twice weekly at various locations. As a target, free chlorine residual within the distribution system should be above 0.20 mg/L. A free chlorine level lower than 0.05 mg/L must be reported and corrective action taken. There were no reportable incidents in 2021. A summary of the chlorine residual readings is provided in the table below. The maximum free chlorine residual in the distribution system may exceed that of the residual collected post treatment due to re-chlorination of the distribution water in Princeton.

4.2. Turbidity

Turbidity of treated water is continuously monitored at the treatment facility, as a change in turbidity can indicate an operational problem. The turbidity of untreated water from the well is checked weekly. Turbidity is measured in nephelometric turbidity units (NTU). Under O.Reg. 170/03 turbidity in groundwater is not reportable however turbidity should be < 1 NTU at the treatment plant and < 5 NTU in the distribution system. A summary of the monitoring results for 2021 is provided in the table below.

Parameter	*Number of Tests or Monitoring Frequency*	*Range of Results (Min – Max) and Average*
Chlorine residual in distribution (mg/L)	Continuous	(0.52 – 2.57) 1.33
Chlorine residual after treatment (mg/L)	Continuous	(0.20 – 1.97) 1.36
Turbidity after treatment (NTU)	Continuous	(0.10 – 4.00) 0.29

5. WATER QUANTITY

Continuous monitoring of flowrates from supply wells into the treatment system and from the facility into the distribution system is required by O.Reg. 170/03. The Municipal Drinking Water License and Permit to Take

Water issued by the MECP regulate the amount of water that can be utilized over a given time period. A summary of the 2021 flows are provided in the Table below and presented graphically in Appendix B.

Flow Summary	*Quantity*
Permit to Take Water Limit	1,329 m^3/d
Municipal Drinking Water License Limit	1,329 m^3/d
2021 Average Daily Flow	286 m^3/d
2021 Maximum Daily Flow	565 m^3
2021 Average Monthly Flow	8,699 m^3
2021 Total Amount of Water Supplied	104,391 m^3

A review of the available supply capacity and the anticipated growth forecasted for the community indicates that the system has sufficient capacity over the 20 year planning horizon.

Firm Capacity of this system is rated at 709 m^3/day. Firm Capacity is defined as the removal of the highest producing well in an emergency or operational / maintenance situation with the ability to transport a maximum of 100 m^3/day if necessary to maintain system integrity. This system comprises of three supply wells. Well 3 is removed for Firm Capacity calculations. The remaining Wells 1 and 2 have a capacity of 609 m^3/day.

6. NON-COMPLIANCE FINDINGS AND ADVERSE RESULTS

This section documents any known incidents of non-compliance or adverse results and the associated correction actions taken to resolve the issue. Non-compliance issues are typically identified by either the Operating Authority or the MECP Drinking Water Inspectors. The issues and associated required actions are documented by the Inspectors in the system's Annual Inspection Report.

All non-compliance issues are investigated, corrective actions taken and documented using the County's Drinking Water Quality Management System (DWQMS) procedures.

6.1. Non-Compliance Findings

The inspection of the Drumbo-Princeton Drinking Water System took place on December 16, 2021. The final report and inspection rating were not available at the time this report was drafted.

6.2. Adverse Results

Any adverse results from bacteriological, chemical samples or observations of operational conditions that indicate adverse water quality are reported as required and corrective actions are taken. There were no adverse or reportable occurrences in 2021.

APPENDIX A: SUMMARY OF CHEMICAL RESULTS

UNDERSTANDING CHEMICAL TEST RESULTS

The following tables summarize the laboratory results of the chemical testing the County is required to complete. Different types of parameters are required to be tested for at different frequencies as noted below. Explanations on the health impacts of these parameters can be found in the MECP document at https://cvc.ca/wp-content/uploads/2011/03/std01_079707.pdf PSIB 4449e01.titled "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines".

Results are shown as concentrations with units of either milligrams per litre (mg/L) or micrograms per litre (ug/L). 1 mg/L is equal to 1000 ug/L. The Maximum Acceptable Concentration (MAC) is the highest amount of a parameter that is acceptable in Municipal drinking water and can be found in the MECP Drinking Water Standards. The Method Detection Limit (MDL) is the lowest amount to which the laboratory can confidently measure. A result of "ND" stands for "Not Detected" and means that the concentration of the chemical is lower than the laboratory's equipment is capable of measuring. In the event that some samples results are ND, and other results are above the MDL, the value of the MDL will be used in place of the ND where an average result must be calculated. Where all collected samples are ND the average sample result will be assumed to be ND.

Nitrate and nitrite samples are required every 3 months in normal operation.

Parameter	*Result Range* Min – Max *(mg/L)*	*Average Result (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Nitrite	ND	ND	1.0	0.003
Nitrate	0.360 – 0.728	0.538	10.0	0.006

Trihalomethane (THM) and total Haloacetic Acids (HAA) are by-products of the disinfection process. The samples are required every 3 months from the distribution system.

Parameter	*Annual Average*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Trihalomethane (THM)	2021	15.5	100	0.37
Haloacetic Acids (HAA)	2021	ND	80	5.3

The following Table summarizes the most recent test results for Sodium and Fluoride. Testing and reporting any adverse results is required every 5 years.

Parameter	*Sample Date*	*Result Value (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Sodium	August 16, 2021	11.4	20.0*	0.01
Fluoride	August 16, 2021	0.16	1.5**	0.06

*Sodium levels between 20 – 200 mg/L must be reported every 5 years.
**Natural levels of fluoride between 1.5 – 2.4 mg/L must be reported every 5 years.

The following Table summarizes the most recent results for the Lead Testing Program. Lead samples are taken every 3 years. Levels of alkalinity and pH are monitored twice per year in the distribution system to ensure water quality is consistent and does not facilitate leaching of lead into the water.

Parameter	*Result Range (Min - Max)*	*Number of Samples*	*Acceptable Level*
Distribution Alkalinity	243 – 248	4	30 – 500mg/L
Distribution pH	7.67 -7.78	4	6.5 – 8.5
Distribution Lead 2018	0.10 – 0.16	4	10 ug/L MAC

The following Table summarizes the most recent test results for Schedule 23. Testing is required every 3 years for secure groundwater wells.

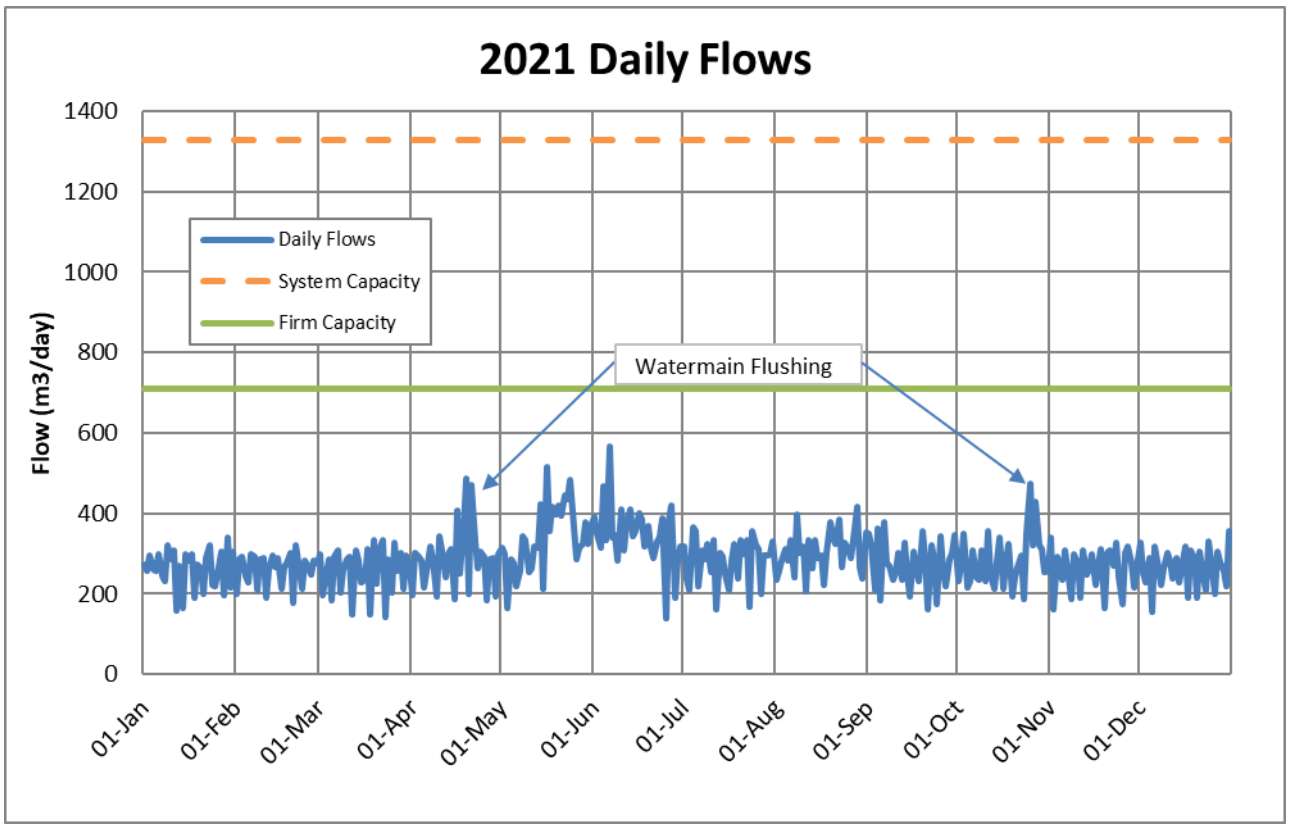
Parameter	*Sample Date*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Antimony	May 21/19	ND	6	0.09
Arsenic	"	1.0	10	0.2
Barium	"	175	1000	0.01
Boron	"	18	5000	2
Cadmium	"	0.009	5	0.003

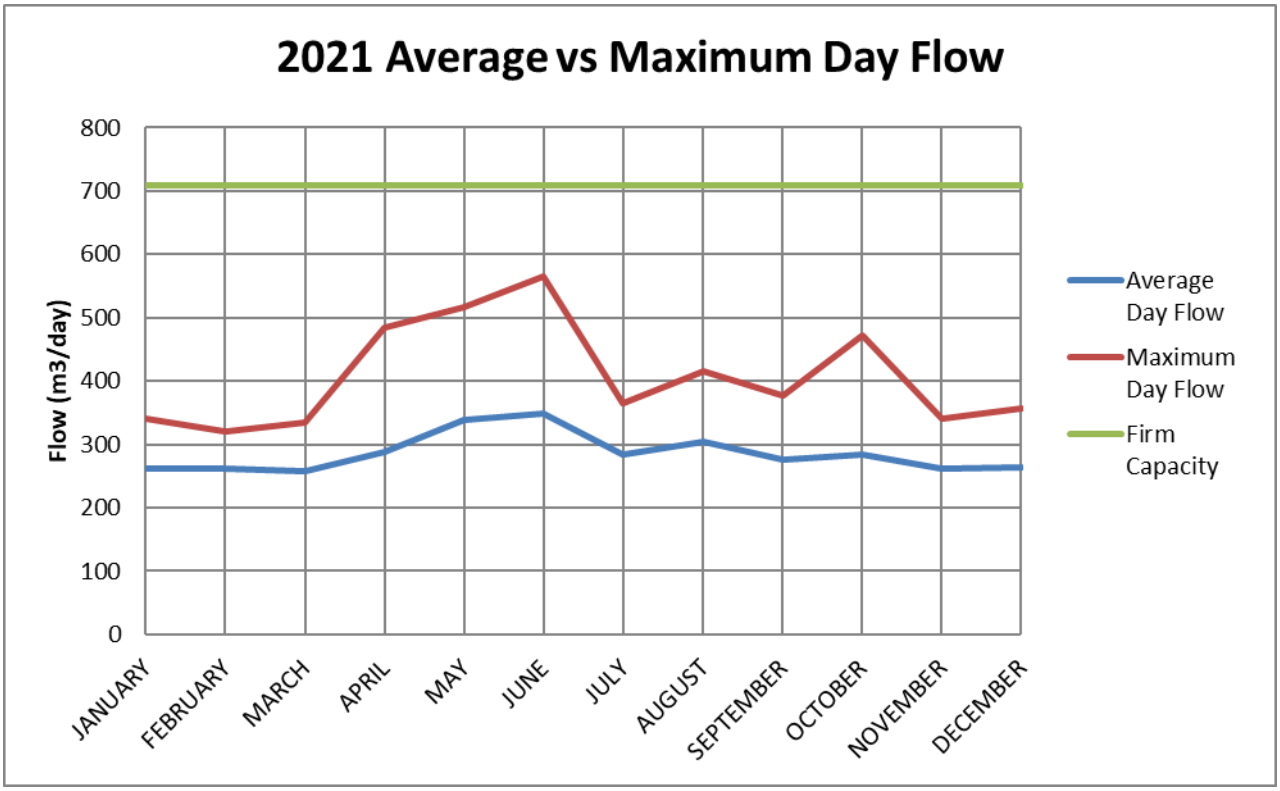
Parameter	*Sample Date*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Chromium	“	0.14	50	0.03
Mercury	“	ND	1	0.01
Selenium	“	ND	5	0.04
Uranium	“	0.884	20	0.002

The following Table summarizes the most recent test results for Schedule 24.Testing is required every 3 years for secure groundwater wells.

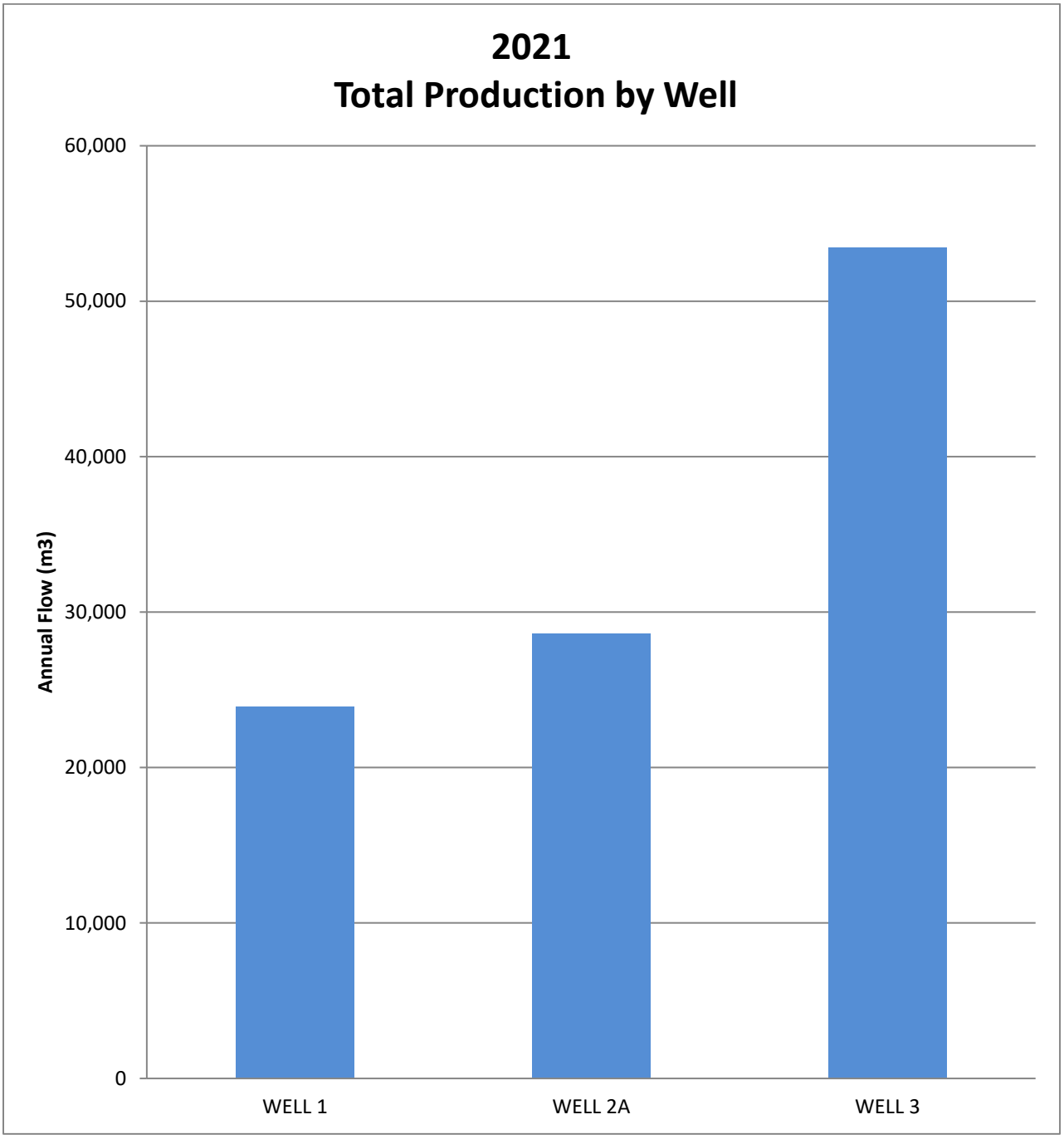
Parameter	*Sample Date*	Result Value (ug/L)	*MAC (ug/L)*	*MDL (ug/L)*
Alachlor	June 7, 2021	ND	5	0.02
Atrazine + N-dealkylatedmetobolites	“	ND	5	0.01
Azinphos-methyl	“	ND	20	0.05
Benzene	“	ND	1	0.32
Benzo(a)pyrene	“	ND	0.01	0.004
Bromoxynil	“	ND	5	0.33
Carbaryl	“	ND	90	0.05
Carbofuran	“	ND	90	0.01
Carbon Tetrachloride	“	ND	2	0.17
Chlorpyrifos	“	ND	90	0.02
Diazinon	“	ND	20	0.02
Dicamba	“	ND	120	0.20
1,2-Dichlorobenzene	“	ND	200	0.41
1,4-Dichlorobenzene	“	ND	5	0.21
1,2-Dichloroethane	“	ND	5	0.36
1,1-Dichloroethylene(vinylidene chloride)	“	ND	14	0.33
Dichloromethane	“	ND	50	0.34
2-4 Dichlorophenol	“	ND	900	0.15
2,4-Dichlorophenoxy acetic acid (2,4-D)	“	ND	100	0.19
Diclofop-methyl	“	ND	9	0.35
Dimethoate	“	ND	20	0.06
Diquat	“	ND	70	1
Diuron	“	ND	150	0.03
Glyphosate	“	ND	280	1
Malathion	“	ND	190	0.02
Metolachlor	“	ND	50	0.01
2-methyl-4chlorophenoxyacetic acid (MCPA)	“	ND	100	0.19
Metribuzin	“	ND	80	0.02
Monochlorobenzene	“	ND	80	0.03
Paraquat	“	ND	10	1
Pentachlorophenol	“	ND	60	0.15
Phorate	“	ND	2	0.01
Picloram	“	ND	190	1
Polychlorinated Biphenyls(PCB)	“	ND	3	0.04
Prometryne	“	ND	1	0.03
Simazine	“	ND	10	0.01
Terbufos	“	ND	1	0.01
Tetrachloroethylene	“	ND	10	0.35
2,3,4,6-Tetrachlorophenol	“	ND	100	0.20
Triallate	“	ND	230	0.01
Trichloroethylene	“	ND	5	0.44
2,4,6-Trichlorophenol	“	ND	5	0.25
Trifluralin	“	ND	45	0.02
Vinyl Chloride	“	ND	1	0.17

APPENDIX B: WATER QUANTITY SUMMARY





Drumbo-Princeton Firm Capacity 709 m^3/day
Drumbo-Princeton Water Supply Capacity 1,329 m^3/day



Drumbo-Princeton Firm Capacity 709 m^3/day
Drumbo-Princeton Water Supply Capacity 1,329 m^3/day

Oxford County
Growing stronger together

2021 ANNUAL DRINKING WATER SYSTEM SUMMARY REPORT
Embro Water System

1. GENERAL INFORMATION

Oxford County (the County) prepares a report summarizing system operation and water quality for every municipal drinking water system annually. The reports detail the latest water quality testing results, water quantity statistics and any adverse conditions that may have occurred for the previous year. They are available for review by the end of February on the County website at www.oxfordcounty.ca/drinkingwater or by contacting the Public Works Department.

All efforts have been made to ensure the information presented in this report is accurate. If you have any questions or comments concerning the report please contact the County at the address and phone number listed below or by email at publicworks@oxfordcounty.ca

Drinking Water System:	Embro Water System
Drinking Water System Number:	220000665
Drinking Water System Owner & Contact Information:	Oxford County Public Works Department Water Services P.O. Box 1614 21 Reeve Street Woodstock, ON N4S 7Y3 Telephone: 519-539-9800 Toll Free: 866-537-7778 Email: publicworks@oxfordcounty.ca
Reporting Period:	January 1, 2021 – December 31, 2021

1.1. System Description

The Embro Water System is a Large Municipal Water system as defined by Ontario Regulation (O.Reg.) 170/03 and serves a population of approximately 841. The system consists of two well sources which are secure groundwater wells. The water is treated by filtration to remove iron and sodium hypochlorite for disinfection.

In 2021, approximately 3,107 L of sodium hypochlorite was used in the water treatment process. The chemical is certified to meet standards set by the Standards Council of Canada or American National Standards Institute.

The treatment facility houses two MD-80 filters, pumps, treatment equipment and a 350 m^3 reservoir. A standby generator is available to run the facility in the event of a power failure. The system is maintained by licensed water system operators, who operate treatment and monitoring equipment and collect samples as specified by the Regulation. Alarms automatically notify operators in the event of failure of critical operational requirements.

1.2. Major Expenses

The Embro Water System is one of 14 water systems that have revenues and expenses pooled for the economy of scale purposes. The systems are combined into the Township Water financial system and in 2021 had operating and maintenance expenditures of approximately $3,000,000.

Operations and maintenance expenditures included:

- $175,000 for the replacement of general operating equipment and well rehabilitations

In addition to regular operational and maintenance expenditures, Capital Improvement Projects for the Townships systems totaled $1,500,000 for improvements to water treatment systems and replacement of distribution mains in the Township System.

Township Capital Improvement Projects included:

- $65,000 groundwater modeling
- $350,000 for facilities improvements

Capital Improvement projects for all systems included:

- $720,000 to develop Countywide SCADA Master Plan for all water systems
- $14,000 for updated water systems modeling

2. MICROBIOLOGICAL TESTING

2.1. *E. coli* and Total Coliform

Bacteriological tests for *E. coli* and total coliforms are required weekly on the raw and treated water at the facility and in the distribution system. Extra samples are taken after major repairs or maintenance work. Any *E. coli* or total coliform results above 0 in treated water must be reported to the Ministry of Environment, Conservation and Parks (MECP) and Medical Officer of Health (MOH). Resamples and any other required actions are taken as quickly as possible. The results from the 2021 sampling program are shown in the table below. There were no adverse results from the 200 treated water samples in this reporting period.

	Number of Samples	*Range of E. coli Results Min - Max MAC = 0*	*Range of Total Coliform Results Min - Max MAC = 0*
Raw	98	0	0 - 7
Treated	52	0	0
Distribution	148	0	0

2.2. Heterotrophic Plate Count (HPC)

HPC analyses are required from the treated and distribution water. The tests are required weekly for treated water and for 25% of the required distribution system bacteriological samples. HPC should be less than 500 colonies per 1 mL. Results over 500 colonies per 1 mL may indicate a change in water quality but it is not considered an indicator of unsafe water. 2021 results are shown in the table below.

	Number of Samples	*Range of HPC Min - Max*
Treated	52	0 - 17
Distribution	39	0 - 18

3. CHEMICAL TESTING

The Safe Drinking Water Act requires periodic testing of the water for approximately 60 different chemical parameters. The latest results for all parameters are provided in Appendix A. The sampling frequency varies for different types and sizes of water systems and chemical parameters. If the concentration of a parameter is above half of the Maximum Allowable Concentration (MAC) under the Ontario Drinking Water Quality Standards, an increased testing frequency of once every three months is required by the Regulation. Where concerns regarding a parameter exist, the MECP can also require additional sampling to be undertaken.

Information on the health effects and allowable limits of components in drinking water may be found on the MECP web page through the link provided in Appendix A. Additional information on common chemical parameters specific to the Embro system is provided below.

3.1. Sodium

Sodium levels in drinking water are tested once every five years. The aesthetic objective is 200 mg/L meaning at levels less than this, the sodium will not impair the taste of the water. When sodium levels are above 20 mg/L the MECP and MOH are notified. Southwestern Public Health maintains an information page on sodium in drinking water https://www.swpublichealth.ca/en/partners-and-professionals/resources/Health-Care-Providers/Alerts-Advisories-Updates/Advisories/ADV_HIA-Sodium-20201203.pdf in order to help people on sodium-restricted diets control their sodium intake. The maximum measured sodium level in Embro is 20.2 mg/L.

3.2. Hardness

This is an aesthetic parameter that may affect the appearance of the water but is not related to health. Well water commonly has high levels of hardness and other minerals from being in contact with underground rock formations. Many households have water softeners to help reduce white calcium deposits and improve the efficiency of soaps. This information is included here to help set the water softener at the level recommended by the manufacturer. Samples for hardness are collected at a minimum every 3 years from raw or treated water. The average hardness for the Embro Drinking Water System is 483 mg/L (28 grains/gallon) based on samples collected from 2006 to 2019.

3.2. Additional Testing Required by MECP

None.

4. OPERATIONAL MONITORING

4.1. Chlorine Residual

Free chlorine levels of the treated water are monitored continuously at the discharge point of the Water Treatment Facility. In the distribution system, free chlorine is checked twice weekly at various locations. As a target, free chlorine residual within the distribution system should be above 0.20 mg/L. A free chlorine level lower than 0.05 mg/L must be reported and corrective action taken. There were no reportable incidents in 2021. A summary of the chlorine residual readings is provided in the table below.

4.2. Turbidity

Turbidity of treated water is continuously monitored at the treatment facility, as a change in turbidity can indicate an operational problem. The turbidity of untreated water from the well is checked weekly. Turbidity is measured in nephelometric turbidity units (NTU). Under O. Reg. 170/03 turbidity in groundwater is not reportable however turbidity should be < 1 NTU at the treatment plant and < 5 NTU in the distribution system. A summary of the monitoring results for 2021 is provided in the table below.

Parameter	*Number of Tests or Monitoring Frequency*	*Range of Results (Min – Max) and Average*
Chlorine residual in distribution (mg/L)	Continuous	(1.02 – 1.85) 1.29
Chlorine residual after treatment (mg/L)	Continuous	(0.95 – 2.11) 1.48
Turbidity after treatment (NTU)	Continuous	(0.04 – 2.29) 0.07

5. WATER QUANTITY

Continuous monitoring of flowrates from supply wells into the treatment system and from the facility into the distribution system is required by O.Reg. 170/03. The Municipal Drinking Water License and Permit to Take Water issued by the MECP regulate the amount of water that can be utilized over a given time period. A summary of the 2021 flows are provided in the Table below and presented graphically in Appendix B.

Flow Summary	*Quantity*
Permit to Take Water Limit	917 m^3/d
Municipal Drinking Water License Limit	916 m^3/d
2021 Average Daily Flow	191 m^3/d
2021 Maximum Daily Flow	280 m^3/d
2021 Average Monthly Flow	5,797 m^3
2021 Total Amount of Water Supplied	69,564 m^3

A review of the available supply capacity and the anticipated growth forecasted for the community indicates that the system has sufficient capacity over the 20 year planning horizon.

Firm Capacity of this system is rated at 916 m^3/day. Firm Capacity is defined as the removal of the highest producing well in an emergency or operational / maintenance situation. This system comprises of two supply wells. MDWL limits pumping rate of either well to 916 m^3/day for Firm Capacity calculations.

6. NON-COMPLIANCE FINDINGS AND ADVERSE RESULTS

This section documents any known incidents of non-compliance or adverse results and the associated correction actions taken to resolve the issue. Non-compliance issues are typically identified by either the Operating Authority or the MECP Drinking Water Inspectors. The issues and associated required actions are documented by the Inspectors in the system's Annual Inspection Report. All non-compliance issues are investigated, corrective actions taken and documented using the County's Drinking Water Quality Management System (DWQMS) procedures.

6.1. Non-Compliance Findings

The 2021 MECP annual inspection of the Embro drinking water system took place on November 5, 2021. There was no non-compliance findings at the time of inspection. Due to a change in IT systems used by the MECP, the Inspection Rating Report (IRR) could not be generated at the same time as the inspection report. The IRR was not available at the time this annual report was drafted.

6.2. Adverse Results

Any adverse results from bacteriological, chemical samples or observations of operational conditions that indicate adverse water quality is reported as required and corrective actions are taken. There were no adverse or reportable occurrences in 2021.

APPENDIX A: SUMMARY OF CHEMICAL RESULTS

UNDERSTANDING CHEMICAL TEST RESULTS

The following tables summarize the laboratory results of the chemical testing the County is required to complete. Different types of parameters are required to be tested for at different frequencies as noted below. Explanations on the health impacts of these parameters can be found at the MECP web site https://cvc.ca/wp-content/uploads/2011/03/std01_079707.pdf document # 4449e01 titled "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines".

Results are shown as concentrations with units of either milligrams per litre (mg/L) or micrograms per litre (ug/L). 1 mg/L is equal to 1000 ug/L. The Maximum Acceptable Concentration (MAC) is the highest amount of a parameter that is acceptable in Municipal drinking water and can be found in the MECP Drinking Water Standards. The Method Detection Limit (MDL) is the lowest amount to which the laboratory can confidently measure. A result of "ND" stands for "Not Detected" and means that the concentration of the chemical is lower than the laboratory's equipment is capable of measuring. In the event that some samples results are ND, and other results are above the MDL, the value of the MDL will be used in place of the ND where an average result must be calculated. Where all collected samples are ND the average sample result will be assumed to be ND.

Nitrate and nitrite samples are required every 3 months in normal operation.

Parameter	*Result Range* Min – Max *(mg/L)*	*Average Result (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Nitrite	ND	ND	1.0	0.003
Nitrate	0.010 – 0.017	0.013	10.0	0.006

Trihalomethane (THM) and total Haloacetic Acids (HAA) are by-products of the disinfection process. The samples are required every 3 months from the distribution system.

Parameter	*Annual Average*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Trihalomethane (THM)	2021	18.5	100	0.37
Haloacetic Acids (HAA)	2021	12.7	80	5.3

The following Table summarizes the most recent test results for Sodium and Fluoride. Testing and reporting any adverse results is required every 5 years.

Parameter	*Sample Date*	*Result Value (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Sodium	May 21, 2019	20.2	20.0*	0.01
Fluoride	Aug 16, 2021	1.26	1.5**	0.06

*Sodium levels between 20 – 200 mg/L must be reported every 5 years.
**Natural levels of fluoride between 1.5 – 2.4 mg/L must be reported every 5 years.

The following Table summarizes the most recent results for the Lead Testing Program. Lead samples are taken every 3 years. Levels of alkalinity and pH are monitored twice per year in the distribution system to ensure water quality is consistent and does not facilitate the leaching of lead into the water.

Parameter	*Result Range (Min - Max)*	*Number of Samples*	*Acceptable Level*
Distribution Alkalinity	198 – 203	4	30 – 500mg/L
Distribution pH	7.50 – 7.54	4	6.5 – 8.5
Distribution Lead 2021	0.13 – 1.19	4	10 ug/L MAC

The following Table summarizes the most recent test results for Schedule 23. Testing is required every 3 years for secure groundwater wells.

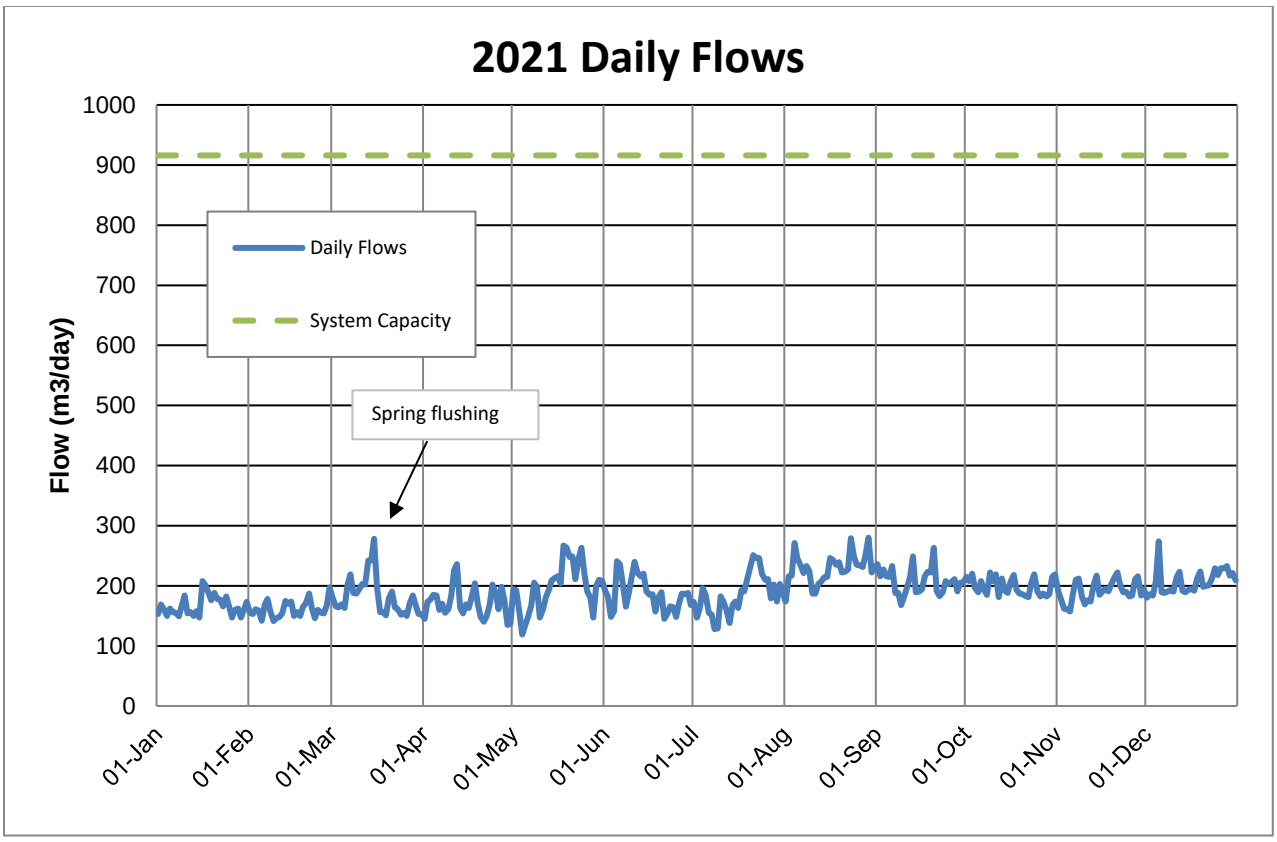
Parameter	*Sample Date*	*Result Value(ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Antimony	May 21/19	ND	6	0.09
Arsenic	"	0.3	10	0.2
Barium	"	56.3	1000	0.01
Boron	"	78	5000	2
Cadmium	"	ND	5	0.003
Chromium	"	ND	50	0.08
Mercury	"	ND	1	0.02

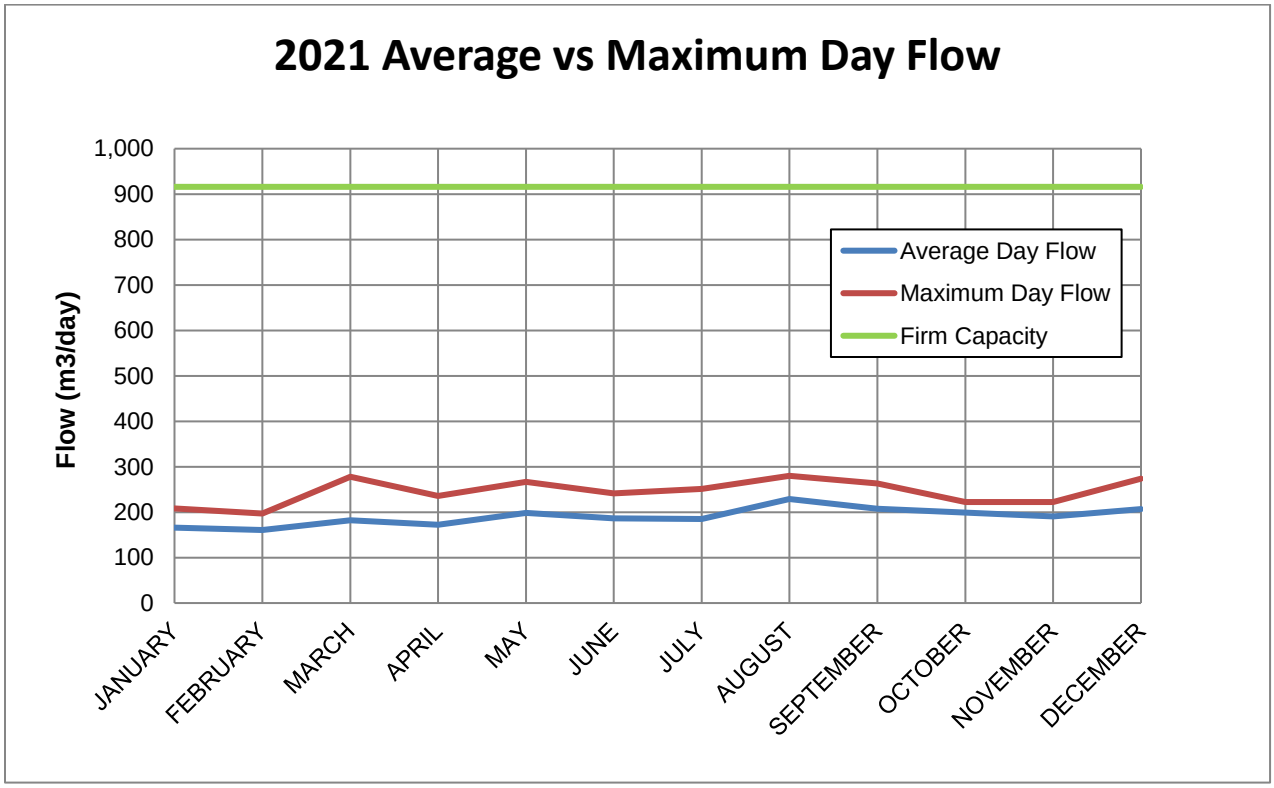
Selenium	“	ND	5	0.04
Uranium	“	0.032	20	0.002

The following table summarizes the most recent test results for Schedule 24. Testing is required every 3 years for secure groundwater wells.

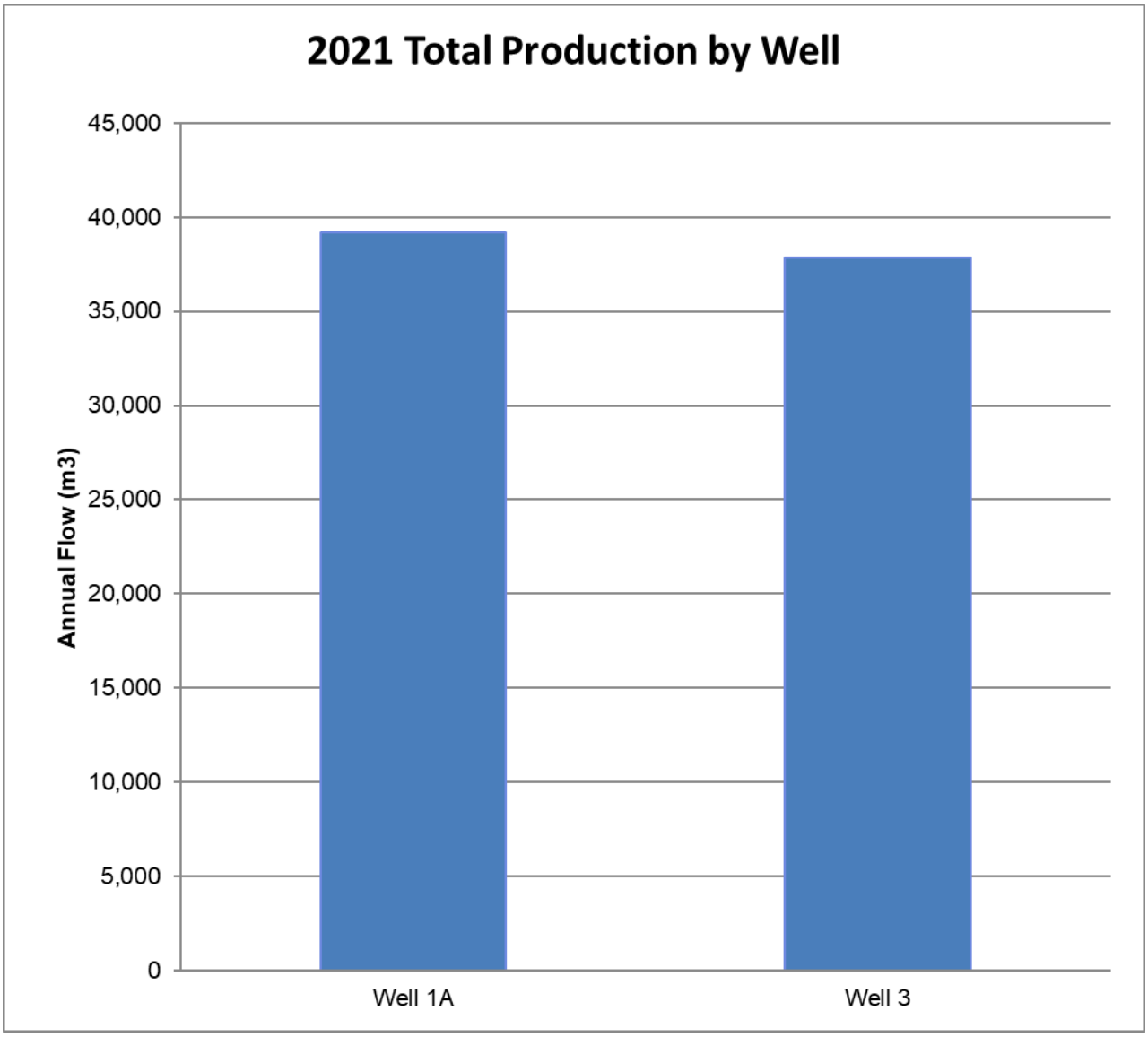
Parameter	Sample Date	Result Value (ug/L)	MAC (ug/L)	MDL (ug/L)
Alachlor	June 7, 2021	ND	5	0.02
Atrazine + N-dealkylatedmetobolites	“	ND	5	0.01
Azinphos-methyl	“	ND	20	0.05
Benzene	“	ND	1	0.32
Benzo(a)pyrene	“	ND	0.01	0.004
Bromoxynil	“	ND	5	0.33
Carbaryl	“	ND	90	0.05
Carbofuran	“	ND	90	0.01
Carbon Tetrachloride	“	ND	2	0.17
Chlorpyrifos	“	ND	90	0.02
Diazinon	“	ND	20	0.02
Dicamba	“	ND	120	0.20
1,2-Dichlorobenzene	“	ND	200	0.41
1,4-Dichlorobenzene	“	ND	5	0.36
1,2-Dichloroethane	“	ND	5	0.35
1,1-Dichloroethylene(vinylidene chloride)	“	ND	14	0.33
Dichloromethane	“	ND	50	0.35
2-4 Dichlorophenol	“	ND	900	0.15
2,4-Dichlorophenoxy acetic acid (2,4-D)	“	ND	100	0.19
Diclofop-methyl	“	ND	9	0.40
Dimethoate	“	ND	20	0.06
Diquat	“	ND	70	1
Diuron	“	ND	150	0.03
Glyphosate	“	ND	280	1
Malathion	“	ND	190	0.02
Metolachlor	“	ND	50	0.01
2-methyl-4chlorophenoxyacetic acid (MCPA)	“	ND	100	0.19
Metribuzin	“	ND	80	0.02
Monochlorobenzene	“	ND	80	0.30
Paraquat	“	ND	10	1
Pentachlorophenol	“	ND	60	0.15
Phorate	“	ND	2	0.01
Picloram	“	ND	190	1
Polychlorinated Biphenyls(PCB)	“	ND	3	0.04
Prometryne	“	ND	1	0.03
Simazine	“	ND	10	0.01
Terbufos	“	ND	1	0.01
Tetrachloroethylene	“	ND	10	0.35
2,3,4,6-Tetrachlorophenol	“	ND	100	0.20
Triallate	“	ND	230	0.01
Trichloroethylene	“	ND	5	0.44
2,4,6-Trichlorophenol	“	ND	5	0.25
Trifluralin	“	ND	45	0.02
Vinyl Chloride	“	ND	1	0.17

APPENDIX B: WATER QUANTITY SUMMARY





Embro Water System Firm Capacity is 916 m^3/day
Embro Water Supply Capacity 916 m^3/day



Embro Water System Firm Capacity is 916 m^3/day
Embro Water Supply Capacity 916 m^3/day

Growing stronger together

2021 ANNUAL DRINKING WATER SYSTEM SUMMARY REPORT
Hickson Water System

1. GENERAL INFORMATION

Oxford County (the County) prepares a report summarizing system operation and water quality for every municipal drinking water system annually. The reports detail the latest water quality testing results, water quantity statistics and any adverse conditions that may have occurred for the previous year. They are available for review by the end of February on the County website at www.oxfordcounty.ca/drinkingwater or by contacting the Public Works Department.

All efforts have been made to ensure the information presented in this report is accurate. If you have any questions or comments concerning the report please contact the County at the address and phone number listed below or by email at publicworks@oxfordcounty.ca

Drinking Water System:	Hickson Water System
Drinking Water System Number:	2200006124
Drinking Water System Owner & Contact Information:	Oxford County Public Works Department Water Services P.O. Box 1614 21 Reeve Street Woodstock, ON N4S 7Y3 Telephone: 519-539-9800 Toll Free: 866-537-7778 Email: publicworks@oxfordcounty.ca
Reporting Period:	January 1, 2021 – December 31, 2021

1.1. System Description

The Hickson Water System is a Small Municipal Water system as defined by Ontario Regulation (O.Reg.) 170/03 and serves a population of approximately 102. The system consists of one groundwater well and a treatment facility. The water is treated with sodium hypochlorite (liquid chlorine) for disinfection.

In 2021, approximately 184 L of the chemical was used in the water treatment process. This chemical is certified to meet standards set by the Standards Council of Canada or American National Standards Institute.

The treatment facility houses pumps, monitoring equipment, and a 62 m^3 underground reservoir. A standby generator is available to run the facility in the event of a power failure. The system is maintained by licensed water system operators, who operate treatment and monitoring equipment and collect samples as specified by the Regulation. Alarms automatically notify operators in the event of failure of critical operational requirements.

1.2. Major Expenses

The Hickson Water System is one of 14 water systems that have revenues and expenses pooled for the economy of scale purposes. The systems are combined into the Township Water financial system and in 2021 had operating and maintenance expenditures of approximately $3,000,000.

In addition to regular operational and maintenance expenditures, Capital Improvement Projects for the Townships systems totaled $1,500,000 for improvements to water treatment systems and replacement of distribution mains in the Township Systems.

Capital Improvement projects for the Township systems included:

- 65,000 for groundwater modelling
- 350,000 for facilities improvements
- 175,000 for the replacement of general operating equipment including well rehabilitations

Capital Improvement projects for all systems included:

- $720,000 to develop Countywide SCADA Master Plan for all water systems
- $14,000 for Updated Water Systems Modelling

2. MICROBIOLOGICAL TESTING

2.1. *E. coli* and Total Coliform

Bacteriological tests for *E. coli* and total coliforms are taken weekly from the raw water at the facility and from the distribution system. Samples of treated water are not required for Small Municipal systems but may be taken periodically. Extra samples are taken after major repairs or maintenance work. Any *E. coli* or total coliform results above 0 in treated water must be reported to the Ministry of the Environment, Conservation and Parks (MECP) and Medical Officer of Health (MOH). Resamples and any other required actions are taken as quickly as possible. The results from the 2021 sampling program are shown in the table below. There were no adverse test results from 88 treated water samples in this reporting period.

	Number of Samples	*Range of E. coli Results Min - Max MAC = 0*	*Range of Total Coliform Results Min - Max MAC = 0*
Raw	52	0 - 0	0 - 39
Treated	36	0 - 0	0 - 0
Distribution	52	0 - 0	0 - 0

2.2. Heterotrophic Plate Count (HPC)

HPC analyses are completed weekly from the distribution water for small systems. HPC should be less than 500 colonies per 1 mL. Results over 500 colonies per 1 mL may indicate a change in water quality but it is not considered an indicator of unsafe water. The 2021 results are shown in the table below.

	Number of Samples	*Range of HPC Min - Max*
Distribution	52	0 - 56

3. CHEMICAL TESTING

The Safe Drinking Water Act requires periodic testing of the water for approximately 60 different chemical parameters. The latest results for all parameters are provided in Appendix A. The sampling frequency varies for different types and sizes of water systems and chemical parameters. If the concentration of a parameter is above half of the Maximum Allowable Concentration (MAC) under the Ontario Drinking Water Quality Standards, an increased testing frequency of once every three months is required by the Regulation. Where concerns regarding a parameter exist, the MECP can also require additional sampling be undertaken.

Information on the health effects and allowable limits of components in drinking water may be found on the MECP web page through the link provided in Appendix A. Additional information on common chemical parameters specific to the Hickson system is provided below.

3.1. Hardness

Hardness is an aesthetic parameter that may affect the appearance of the water but is not related to health. Well water commonly has high levels of hardness and other minerals from being in contact with underground rock

formations. Many households have water softeners to help reduce white calcium deposits and improve the efficiency of soaps. This information is included here to help set the water softener at the level recommended by the manufacturer. Samples for hardness are collected at a minimum every 3 years from either raw or treated water. The average hardness for the Hickson System is 308 mg/L (18 grains/gallon) based on samples collected from 2006 to 2019.

3.2. Additional Testing Required by MECP

None.

4. OPERATIONAL MONITORING

4.1. Chlorine Residual

Free chlorine levels of the treated water are monitored continuously at the discharge point of the Water Treatment Facility. In the distribution system, free chlorine is checked twice weekly at various locations. As a target, free chlorine residual within the distribution system should be above 0.20 mg/L. A free chlorine level lower than 0.05 mg/L must be reported and corrective action taken. There were no reportable incidents in 2021. A summary of the chlorine residual readings is provided in the table below.

4.2. Turbidity

Turbidity of treated water is continuously monitored at the treatment facility, as a change in turbidity can indicate an operational problem. The turbidity of untreated water from the well is checked weekly. Turbidity is measured in nephelometric turbidity units (NTU). Under O.Reg. 170/03 turbidity in groundwater is not reportable however turbidity should be < 1 NTU at the treatment plant and < 5 NTU in the distribution system. A summary of the monitoring results for 2021 is provided in the table below.

Parameter	*Number of Tests or Monitoring Frequency*	*Range of Results (Min – Max) and Average*
Chlorine residual in distribution (mg/L)	104	(0.51 – 1.42) 0.93
Chlorine residual after treatment (mg/L)	Continuous	(0.58 – 3.11) 1.15
Turbidity after treatment (NTU)	Continuous	(0.15 – 4.00) 0.24

5. WATER QUANTITY

Continuous monitoring of flow rates from supply wells into the treatment system and from the facility into the distribution system is required by O.Reg. 170/03. The Municipal Drinking Water License and Permit to Take Water issued by the MECP regulate the amount of water that can be utilized over a given time period. A summary of the 2021 flows are provided in the Table below and presented graphically in Appendix B.

Flow Summary	*Quantity*
Permit to Take Water Limit	300 m^3/d
Municipal Drinking Water License Limit	389 m^3/d
2021 Average Daily Flow	20 m^3/d
2021 Maximum Daily Flow	137 m^3/d
2021 Average Monthly Flow	595 m^3
2021 Total Amount of Water Supplied	7,143 m^3

A review of the available supply capacity and the anticipated growth forecasted for the community indicates that the system has sufficient capacity over the 20 year planning horizon.

Firm Capacity of this system is rated at 100 m^3/day. Firm Capacity is defined as the removal of the highest producing well in an emergency or operational / maintenance situation with the ability to transport a maximum of 100 m^3/day if necessary to maintain system integrity. This system comprises of one supply well. The reservoir capacity is 62 m^3/day.

6. NON-COMPLIANCE FINDINGS AND ADVERSE RESULTS

This section documents any known incidents of non-compliance or adverse results and the associated corrective actions taken to resolve the issue. Non-compliance issues are typically identified by either the Operating Authority or the MECP Drinking Water Inspectors. The issues and associated required actions are documented by the Inspectors in the system's Annual Inspection Report. All non-compliance issues are investigated, corrective actions taken and documented using the County's Drinking Water Quality Management System (DWQMS) procedures.

6.1. Non-Compliance Findings

The Annual MECP Inspection for the Hickson Drinking Water System took place in June 2021. There were no non-compliance findings and the 2021 Inspection Report rating was 100%.

6.2. Adverse Results

Any adverse results from bacteriological, chemical samples or observations of operational conditions that indicate adverse water quality is reported as required and corrective actions are taken. There were no adverse or reportable occurrences in 2021.

APPENDIX A: SUMMARY OF CHEMICAL RESULTS

UNDERSTANDING CHEMICAL TEST RESULTS

The following tables summarize the laboratory results of the chemical testing the County is required to complete. Different types of parameters are required to be tested for at different frequencies as noted below. Explanations on the health impacts of these parameters can be found in the MECP document PSIB 4449e01, titled "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines".

Results are shown as concentrations with units of either milligrams per litre (mg/L) or micrograms per litre (ug/L). 1 mg/L is equal to 1000 ug/L. The Maximum Acceptable Concentration (MAC) is the highest amount of a parameter that is acceptable in Municipal drinking water and can be found in the MECP Drinking Water Standards. The Method Detection Limit (MDL) is the lowest amount to which the laboratory can confidently measure. A result of "ND" stands for "Not Detected" and means that the concentration of the chemical is lower than the laboratory's equipment is capable of measuring. In the event that some samples results are ND, and other results are above the MDL, the value of the MDL will be used where an average result must be calculated. Where all collected samples are ND the average sample result will be assumed to be ND.

Nitrate and nitrite samples are required every 3 months in normal operation.

Parameter	*Result Range* Min – Max *(mg/L)*	*Average Result (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Nitrite	ND	ND	1.0	0.003
Nitrate	ND – 0.012	0.007	10.0	0.006

Trihalomethanes (THM) and total Haloacetic Acids (HAA) are by-products of the disinfection process. The samples are required every 3 months from the distribution system.

Parameter	*Annual Average*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Trihalomethane (THM)	2021	14.5	100	0.37
Haloacetic Acids (HAA)	2021	7.0	80	5.3

The following Table summarizes the most recent test results for Sodium and Fluoride. Testing and reporting of any adverse results is required every 5 years.

Parameter	*Sample Date*	*Result Value (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Sodium	Aug 16/21	10.9	20.0*	0.01
Fluoride	Aug 16/21	1.29	1.5**	0.06

*Sodium levels between 20 – 200 mg/L must be reported every 5 years.
**Natural levels of fluoride between 1.5 – 2.4 mg/L must be reported every 5 years.

The following Table summarizes the most recent results for the Lead Testing Program. Lead samples are taken every 3 years. Levels of alkalinity and pH are monitored twice per year in the distribution system to ensure water quality is consistent and does not facilitate leaching of lead into the water.

Parameter	*Result Range (Min - Max)*	*Number of Samples*	*Acceptable Level*
Distribution Alkalinity	231 – 238	2	30 – 500mg/L
Distribution pH	7.28 – 7.57	2	6.5 – 8.5
Distribution Lead 2021	0.14 – 0.23	2	10 ug/L MAC

The following Table summarizes the most recent test results for Schedule 23. Testing is required every 5 years for secure groundwater wells.

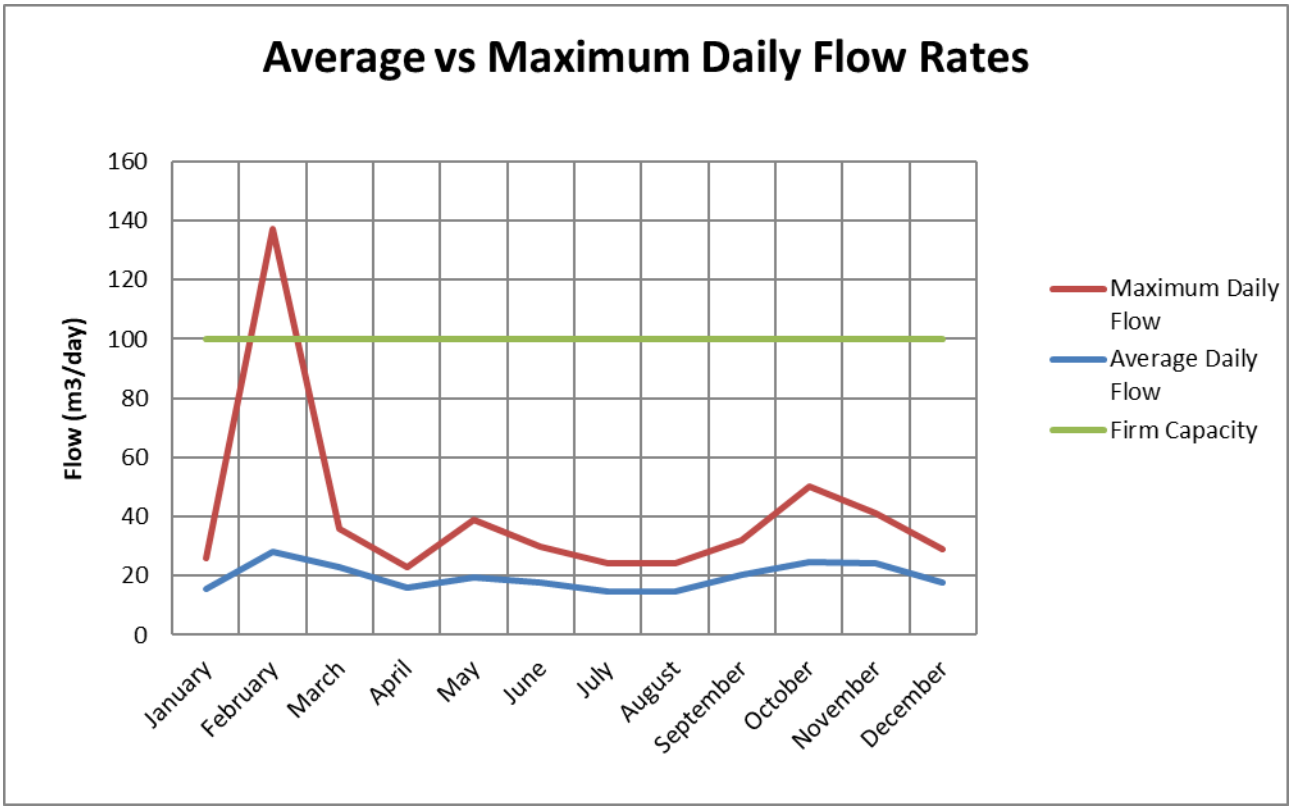
Parameter	*Sample Date*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Antimony	May 21, 2019	ND	6	0.09
Arsenic	"	ND	10	0.20
Barium	"	53.5	1000	0.02
Boron	"	27	5000	2.0
Cadmium	"	ND	5	0.003
Chromium	"	0.18	50	0.08
Mercury	"	ND	1	0.01
Selenium	"	ND	50	0.04

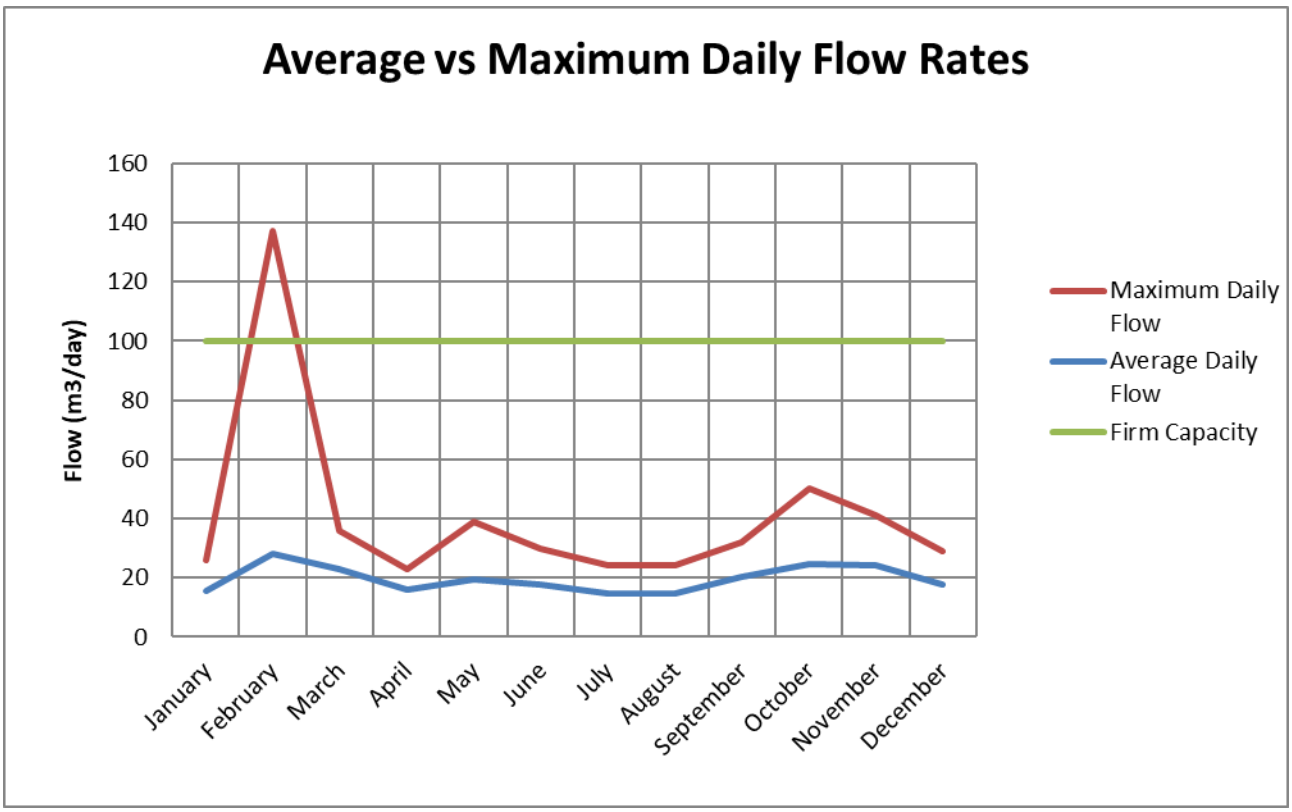
Parameter	*Sample Date*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Uranium	"	0.04	20	0.002

The following Table summarizes the most recent test results for the Organic parameters in Schedule 24. Testing is required every 5 years for secure groundwater wells.

Parameter	*Sample Date*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Alachlor	June 7, 2021	ND	5	0.02
Atrazine + N-dealkylated metobolites	"	ND	5	0.01
Azinphos-methyl	"	ND	20	0.05
Benzene	"	ND	1	0.32
Benzo(a)pyrene	"	ND	0.01	0.004
Bromoxynil	"	ND	5	0.33
Carbaryl	"	ND	90	0.05
Carbofuran	"	ND	90	0.01
Carbon Tetrachloride	"	ND	2	0.16
Chlorpyrifos	"	ND	90	0.02
Diazinon	"	ND	20	0.02
Dicamba	"	ND	120	0.20
1,2-Dichlorobenzene	"	ND	200	0.41
1,4-Dichlorobenzene	"	ND	5	0.36
1,2-Dichloroethane	"	ND	5	0.35
1,1-Dichloroethylene (vinylidene chloride)	"	ND	14	0.33
Dichloromethane	"	ND	50	0.35
2-4 Dichlorophenol	"	ND	900	0.15
2,4-Dichlorophenoxy acetic acid (2,4-D)	"	ND	100	0.19
Diclofop-methyl	"	ND	9	0.40
Dimethoate	"	ND	20	0.03
Diquat	"	ND	70	1
Diuron	"	ND	150	0.03
Glyphosate	"	ND	280	1
Malathion	"	ND	190	0.02
MCPA	"	ND	100	0.12
Metolachlor	"	ND	50	0.01
Metribuzin	"	ND	80	0.02
Monochlorobenzene	"	ND	80	0.30
Paraquat	"	ND	10	1
Pentachlorophenol	"	ND	60	0.15
Phorate	"	ND	2	0.01
Picloram	"	ND	190	1
Polychlorinated Biphenyls (PCB)	"	ND	3	0.04
Prometryne	"	ND	1	0.03
Simazine	"	ND	10	0.01
Terbufos	"	ND	1	0.01
Tetrachloroethylene	"	ND	10	0.35
2,3,4,6-Tetrachlorophenol	"	ND	100	0.2
Triallate	"	ND	230	0.01
Trichloroethylene	"	ND	5	0.44
2,4,6-Trichlorophenol	"	ND	5	0.25
Trifluralin	"	ND	45	0.02
Vinyl Chloride	"	ND	1	0.17

APPENDIX B: WATER QUANTITY SUMMARY





Hickson Water System Firm Capacity 100 m^3/day
Hickson Water System Supply Capacity 300 m^3/day

Growing stronger together

2021 ANNUAL DRINKING WATER SYSTEM SUMMARY REPORT
Ingersoll Water System

1. GENERAL INFORMATION

Oxford County (the County) prepares a report summarizing system operation and water quality for every municipal drinking water system annually. The reports detail the latest water quality testing results, water quantity statistics and any adverse conditions that may have occurred for the previous year. They are available for review by the end of February on the County website at www.oxfordcounty.ca/drinkingwater or by contacting the Public Works Department.

All efforts have been made to ensure the information presented in this report is accurate. If you have any questions or comments concerning the report please contact the County at the address and phone number listed below or by email at publicworks@oxfordcounty.ca.

Drinking Water System:	Ingersoll Water System
Drinking Water System Number:	220000692
Drinking Water System Owner & Contact Information:	Oxford County Public Works Department Water & Wastewater Services P.O. Box 1614 21 Reeve Street Woodstock, ON N4S 7Y3 Telephone: 519-539-9800 Toll Free: 866-537-7778 Email: publicworks@oxfordcounty.ca
Reporting Period:	January 1, 2021 – December 31, 2021

1.1. System Description

The Ingersoll Water System is a Large Municipal Water system as defined by Ontario Regulation (O.Reg.) 170/03 and serves a population of approximately 13,600. There are seven groundwater wells and Water Treatment Facilities (WTF) serving the Ingersoll systems as follows:

Merritt Street WTF – Well 2
Hamilton Road WTF – Well 3
Canterbury Street WTF – Well 5
West Street WTF – Well 7 (Not operational in 2021)
Dunn's Road WTF – Well 8
Thompson Road WTF – Well 10
Wallace Line WTF – Well 11 (Not operational in 2021)

Due to the elevated levels of naturally occurring hydrogen sulphide, the WTF's with the exception of Wallace Line have hydrogen sulphide removal equipment consisting of an oxidation and filtration process. The filters also improve the water quality by reducing other parameters such as turbidity and iron.

Each WTF has an in-ground reservoir, automated chlorine injection system, monitoring and alarm equipment, and supplies water directly to the distribution system. In 2021, approximately 171,111 litres of sodium hypochlorite (liquid chlorine) and 952 kg of chlorine gas were used in the water treatment process. Also 284 litres of ferric sulfate was used at the Dunn's Rd and Merritt St WTF's to improve filter performance. These chemicals are certified to meet standards set by the Standards Council of Canada or American National Standards Institute.

Storage capacity is provided by a 2,840 m³ water tower and a 3,290 m³ reservoir at the Merritt Street WTF. Standby generators are located at Merritt Street, Thompson Road and Dunn's Road WTF's to provide electrical power to these facilities during power outages.

The system is maintained by licensed water system operators, who operate the treatment and monitoring equipment and collect samples as specified by the Regulations. Microbiological and chemical samples are analyzed at certified laboratories. A SCADA (Supervisory Control and Data Acquisition) system controls the normal operation of the facilities and collects operational data. Alarms automatically notify operators in the event of failure of critical operational requirements.

1.2. Major Expenses

In 2021, the Ingersoll Water System had forecasted operating and maintenance expenditures of approximately $1,800,000.

In addition to regular operational and maintenance expenditures Capital improvement projects for Ingersoll totaled $1,600,000 for improvements to water treatment systems and replacement of distribution mains in the Ingersoll System.

Capital improvement projects included:

- $950,000 for the replacement of aging watermains
- $150,000 for groundwater model
- $130,000 for water quality and treatment enhancements
- $55,000 for facilities improvements
- $200,000 for the replacement of general operating equipment including well rehabilitations

Capital Improvement projects for all systems included:

- $720,000 to develop Countywide SCADA Master Plan for all water systems
- $14,000 for Updated Water Systems Modelling

2. MICROBIOLOGICAL TESTING

2.1. *E. coli* and Total Coliform

Bacteriological tests for *E. coli* and total coliforms are required weekly on the raw and treated water at each facility and in the distribution system. Extra samples are taken after major repairs or maintenance work. Any *E. coli* or total coliform results above 0 in treated water must be reported to the Ministry of the Environment, Conservation and Parks (MECP) and Medical Officer of Health (MOH). Resamples and any other required actions are taken as quickly as possible. The results from the 2021 sampling program are shown in the table below. There were no adverse test result from 504 treated water samples in this reporting period.

	Number of Samples	*Range of E. coli Results Min - Max MAC = 0*	*Range of Total Coliform Results Min - Max MAC = 0*
Raw	213	0	0 - 22
Treated	211	0	0
Distribution	293	0	0

2.2 Heterotrophic Plate Count (HPC)

HPC analyses are required from the treated and distribution water. The tests are required weekly for treated water and for 25% of the required distribution system's bacteriological samples. HPC should be less than 500 colonies per 1 mL. Results over 500 colonies per 1 mL may indicate a change in water quality but it is not considered an indicator of unsafe water. The 2021 results are shown in the table below.

	Number of Samples	*Range of HPC Min - Max*
Treated	211	0 - 8
Distribution	83	0 – 18

3. CHEMICAL TESTING

The Safe Drinking Water Act requires periodic testing of the water for approximately 60 different chemical parameters. The latest results for all parameters are provided in Appendix A. The sampling frequency varies for different types and sizes of water systems and chemical parameters. If the concentration of a parameter is above half of the Maximum Allowable Concentration (MAC) under the Ontario Drinking Water Quality Standards, an increased testing frequency of once every three months is required by the Regulation. Where concerns regarding a parameter exist, the MECP can also require additional sampling be undertaken.

Information on the health effects and allowable limits of components in drinking water may be found on the MECP web page through the link provided in Appendix A. Additional information on common chemical parameters specific to the Ingersoll system is provided below.

3.1. Sodium

Sodium levels in drinking water are tested once every five years. The aesthetic objective is 200 mg/L meaning at levels less than this, sodium will not impair the taste of water.

When sodium levels are above 20 mg/L the MECP and MOH are notified. Southwestern Public Health Unit maintains an information page on sodium in drinking water at https://www.swpublichealth.ca/en/partners-and-professionals/resources/Health-Care-Providers/Alerts-Advisories-Updates/Advisories/ADV_HIA-Sodium-20201203.pdf in order to help people on sodium restricted diets control their sodium intake. The average sodium level in the water is 59 mg/L (ranging from 31 to 91 mg/L) and the test results for each treatment facility are provided in Appendix A.

3.2. Fluoride

Fluoride levels are tested once every five years and levels above 1.5 mg/L must be reported to the MECP and MOH. Levels under 2.4 mg/L are considered safe for consumption, however at levels between 1.5 and 2.4 mg/L fluoride may cause staining or pitting of teeth in children less than 6 years old. Further information on fluoride can be found on the Southwestern Public Health Unit webpage at https://www.swpublichealth.ca/en/partners-and-professionals/resources/Health-Care-Providers/Alerts-Advisories-Updates/Advisories/ADV_HIA-Fluoride-20201203.pdf

The County does not add fluoride to the water at any of its drinking water systems. The Ingersoll system has naturally occurring fluoride levels averaging 1.8 mg/L (ranging from 0.8 to 2.4 mg/L). The test results for each treatment facility are provided in Appendix A.

3.3. Hardness

Hardness is an aesthetic parameter that may affect the appearance of the water but is not related to health. Well water commonly has high levels of hardness and other minerals from being in contact with underground rock formations. Many households have water softeners to help reduce white calcium deposits and improve the efficiency of soaps. This information is included here to help set a water softener at the level recommended by the manufacturer. Samples for hardness are collected at a minimum every 3 years from either raw or treated water. The average hardness for the Ingersoll System is 329 mg/L (equivalent to 19 grains) based on samples collected from 2006 to 2021.

3.4. Additional Testing Required by MECP

Additional testing for Sulfides is required for the Ingersoll Water System to monitor levels. The results are summarized in the table below.

Type of legal instrument: MECP Municipal Drinking Water License – June 9, 2020					
Parameter	*Date Sampled*	*Result Raw Water*	*Result Treated Water*	*Aesthetic Objective (mg/L)*	MDL (mg/L)
Sulfides – Merritt St	Nov 22, 2021	0.10	ND	0.05	0.006
Sulfides – Hamilton Rd	Dec 6, 2021	0.08	ND	0.05	0.006
Sulfides – Canterbury St	Nov 22, 2021	0.09	ND	0.05	0.006
Sulfides – Dunn's Rd	Nov 22, 2021	0.46	ND	0.05	0.006
Sulfides – Dunn's Rd	Dec 12, 2021	3.19		0.05	0.006
Sulfides – Thompson Rd	Nov 22, 2021	0.05	ND	0.05	0.006

4. OPERATIONAL MONITORING

4.1. Chlorine Residual

Free chlorine levels of the treated water are monitored continuously at the discharge point of each Water Treatment Facility. In the distribution system, free chlorine is monitored continuously at the water tower. As the target, the free chlorine residual within the distribution system should be above 0.20 mg/L. A free chlorine level lower than 0.05 mg/L must be reported and corrective action taken. A summary of the chlorine residual readings is provided in the table below.

4.2. Turbidity

Turbidity of treated water is continuously monitored at each treatment facility. A change in turbidity can indicate an operational problem. The turbidity of untreated water from each well is checked weekly. Turbidity is measured in nephelometric turbidity units (NTU). Under O.Reg. 170/03 turbidity in groundwater is not reportable however turbidity should be < 1 NTU at the treatment plant and < 5 NTU in the distribution system. A summary of the monitoring results for 2021 is provided in the table below.

Parameter	*Monitoring Frequency*	*Range of Results (Min – Max) and Average*
Chlorine Residual in Distribution (mg/L)	Continuous	(0.47 – 2.63) 1.02
Chlorine – Merritt St. WTF (mg/L)	Continuous	(0.45 – 2.56) 1.18
Chlorine – Hamilton Rd. WTF (mg/L)	Continuous	(0.44 – 2.77) 1.41
Chlorine – Canterbury St. WTF (mg/L)	Continuous	(0.31 – 2.85) 1.40
Chlorine – Dunn's Rd. WTF (mg/L)	Continuous	(0.35 – 3.99) 1.39
Chlorine – Thompson Rd. WTF (mg/L)	Continuous	(0.34 – 2.41) 1.48
Turbidity – Merritt St. WTF (NTU)	Continuous	(0.07 – 5.02) 0.14
Turbidity – Hamilton Rd. WTF (NTU)	Continuous	(0.04 – 2.94) 0.10
Turbidity – Canterbury St. WTF (NTU)	Continuous	(0.03 – 4.57) 0.15
Turbidity – Dunn's Rd. WTF (NTU)	Continuous	(0.07 – 4.32) 0.13
Turbidity – Thompson Rd. WTF (NTU)	Continuous	(0.05 – 3.52) 0.06

5. WATER QUANTITY

Continuous monitoring of flow rates from supply wells into the treatment system and from the facility into the distribution system is required by O.Reg. 170/03. The Municipal Drinking Water License and Permit to Take Water issued by the MECP regulate the amount of water that can be utilized over a given time period. A summary of the 2021 flows are provided in the Table below and presented graphically in Appendix B.

Flow Summary	*Quantity*
Permit to Take Water Limit	26,413 m^3/d
Municipal Drinking Water License Limit	26,521 m^3/d
2021 Average Daily Flow	4,131 m^3/d
2021 Maximum Daily Flow	6,745 m^3/d
2021 Average Monthly Flow	125,632 m^3
2021 Total Amount of Water Supplied	1,507,578 m^3

A review of the available supply capacity and the anticipated growth forecasted for the community indicates that the system has sufficient capacity over the 20 year planning horizon.

Firm Capacity of this system is rated at 10,454 m3/day. Firm Capacity is defined as the removal of the highest producing well in an emergency or operational / maintenance situation. This system comprises of seven supply wells with only five active wells. Wells 2, 3, 5 and 8 were used to calculate Firm Capacity.

6. NON-COMPLIANCE FINDINGS AND ADVERSE RESULTS

This section documents any known incidents of non-compliance or adverse results and the associated correction actions taken to resolve the issue. Non-compliance issues are typically identified by either the Operating Authority or the MECP Drinking Water Inspectors. The issues and associated required actions are documented by the Inspectors in the system's Annual Inspection Report. All non-compliance issues are investigated, corrective actions taken and documented using the County's Drinking Water Quality Management System (DWQMS) procedures.

6.1. Non-Compliance Findings

The annual MECP inspection has not been scheduled yet with the final report likely to be issued in late Q1 2022. Therefore a current Inspection Report rating and any non-compliance findings are unavailable from the final report.

6.2. Adverse Results

Any adverse results from bacteriological, chemical or observations of operational conditions that indicate adverse water quality are reported as required to the MECP and the MOH and corrective actions taken. There were no adverse or reportable occurrences in 2021.

APPENDIX A: SUMMARY OF CHEMICAL RESULTS

UNDERSTANDING CHEMICAL TEST RESULTS

The following tables summarize the laboratory results of the chemical testing the County is required to complete. Different types of parameters are required to be tested for at different frequencies as noted below. Explanations on the health impacts of these parameters can be found in the MECP document at https://cvc.ca/wp-content/uploads/2011/03/std01_079707.pdf PSIB 4449e01 titled "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines".

Results are shown as concentrations with units of either milligrams per litre (mg/L) or micrograms per litre (ug/L). 1 mg/L is equal to 1000 ug/L. The Maximum Acceptable Concentration (MAC) is the highest amount of a parameter that is acceptable in Municipal drinking water and can be found in the MECP Drinking Water Standards. The Method Detection Limit (MDL) is the lowest amount to which the laboratory can confidently measure. A result of "ND" stands for "Not Detected" and means that the concentration of the chemical is lower than the laboratory's equipment is capable of measuring. In the event that some samples results are ND, and other results are above the MDL, the value of the MDL will be used where an average result must be calculated. Where all collected samples are ND the average sample result will be assumed to be ND.

Nitrate and nitrite samples are required every 3 months in normal operation.

Parameter & Location	*Result Range* Min – Max *(mg/L)*	*Average Result (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Nitrite				
Merritt St.	ND	ND	1.0	0.003
Hamilton Rd.	ND – 0.006	0.004	1.0	0.003
Canterbury St.	ND	ND	1.0	0.003
Dunn's Rd.	ND	ND	1.0	0.003
Thompson Rd.	ND	ND	1.0	0.003
Nitrate				
Merritt St.	0.008 – 0.030	0.019	10.0	0.006
Hamilton Rd.	ND – 0.011	0.009	10.0	0.006
Canterbury St.	0.010 – 0.012	0.011	10.0	0.006
Dunn's Rd.	ND – 0.009	0.007	10.0	0.006
Thompson Rd.	0.006 – 0.048	0.017	10.0	0.006

Trihalomethane (THM) and total Haloacetic Acids (HAA) are by-products of the disinfection process. The samples are required every 3 months from the distribution system.

Parameter	*Annual Average*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Trihalomethane (THM)	2021	22	100	0.37
Haloacetic Acids (HAA)	2021	10	80	5.3

The following Table summarizes the most recent test results for Sodium and Fluoride. Testing and reporting any adverse results is required every 5 years.

Parameter & Location	*Sample Date*	*Result Value (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Sodium				
Merritt St.	July 10/19	51.4	20.0*	0.01
Hamilton Rd.	June 5/19	47.9	20.0*	0.01
Canterbury St.	June 3/19	55.2	20.0*	0.01
Dunn's Rd.	June 3/19	61.2	20.0*	0.01
Thompson Rd.	June 3/19	45.5	20.0*	0.01
Fluoride				
Merritt St.	July 10/19	2.12	1.5**	0.06
Hamilton Rd.	May 27/19	0.77	1.5**	0.06
Canterbury St.	June 3/19	1.50	1.5**	0.06
Dunn's Rd.	June 3/19	1.96	1.5**	0.06
Thompson Rd.	June 3/19	1.57	1.5**	0.06

*Sodium levels between 20 – 200 mg/L must be reported every 5 years.
**Natural levels of fluoride between 1.5 – 2.4 mg/L must be reported every 5 years.

The following Table summarizes the most recent results for the Lead Testing Program. Lead samples are taken every 3 years. Levels of alkalinity and pH are monitored twice per year in the distribution system to ensure water quality is consistent and does not facilitate leaching of lead into the water.

Parameter	*Result Range (Min - Max)*	*Number of Samples*	*Acceptable Level*
Distribution Alkalinity	216 – 251	8	30 – 500mg/L
Distribution pH	7.49 – 7.61	8	6.5 – 8.5
Distribution Lead 2021	ND – 0.57	8	10 ug/L MAC

The following Tables summarize the most recent test results for the Inorganic parameters in Schedules 23. Testing is required every 3 years for secure groundwater wells.

Parameter	***Well 2*** *Result Value (ug/L) July 10, 2019*	***Well 3*** *Result Value (ug/L) May 27, 2019*	***Well 5*** *Result Value (ug/L) May 27, 2019*	*MAC (ug/L)*	*MDL (ug/L)*
Antimony	ND	ND	ND	6	0.09
Arsenic	ND	ND	0.3	10	0.2
Barium	46.4	117	55.0	1000	0.02
Boron	132	44	88	5000	2
Cadmium	0.003	ND	ND	5	0.003
Chromium	ND	0.14	0.14	50	0.08
Mercury	ND	ND	ND	1	0.01
Selenium	ND	ND	ND	50	0.04
Uranium	0.045	0.091	0.187	20	0.002

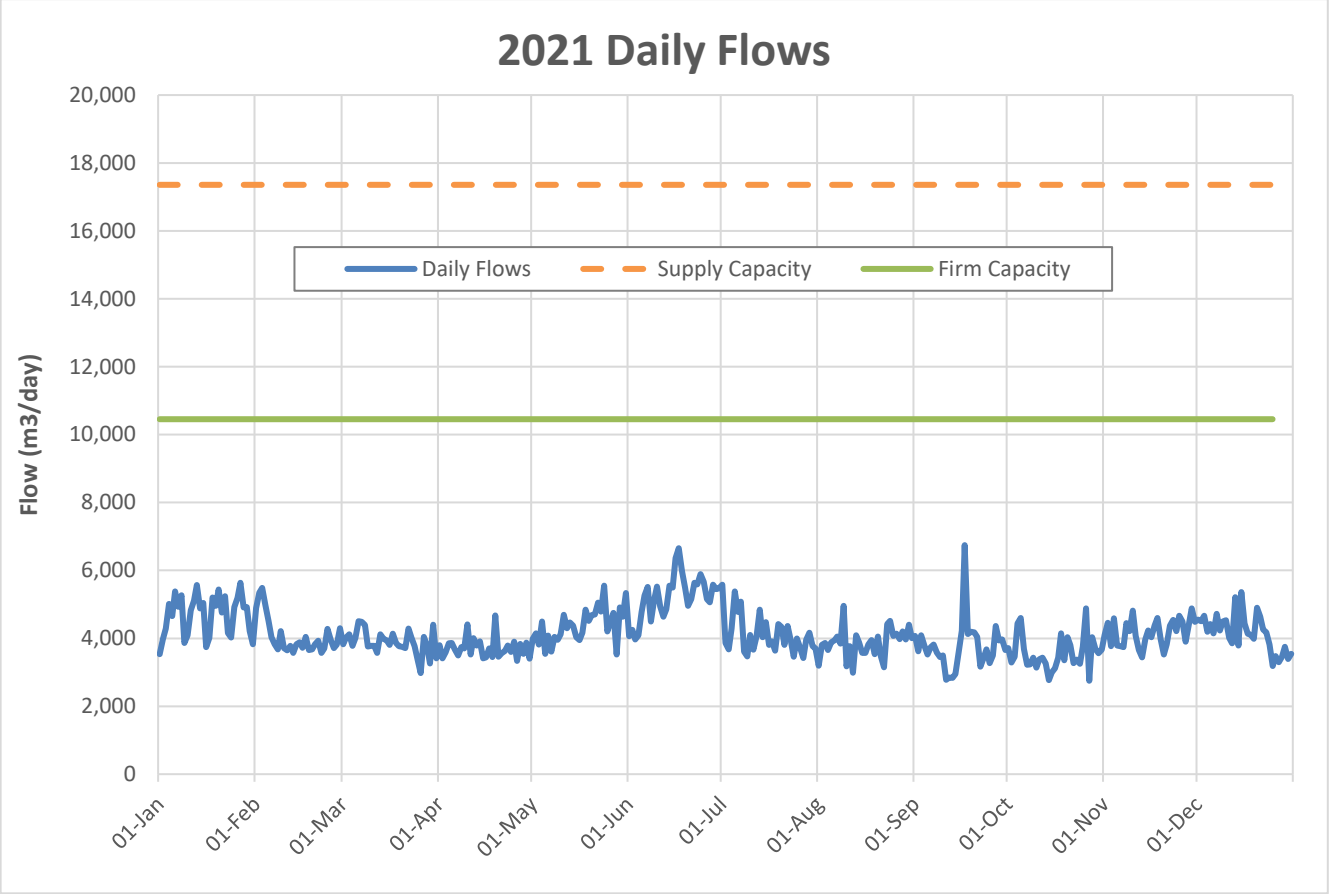
Parameter	***Well 8*** *Result Value (ug/L) May 27, 2019*	***Well 10*** *Result Value (ug/L) May 27, 2019*	*MAC (ug/L)*	*MDL (ug/L)*
Antimony	ND	ND	6	0.09
Arsenic	ND	ND	10	0.2
Barium	30.1	65.3	1000	0.02
Boron	157	103	5000	2
Cadmium	ND	ND	5	0.003
Chromium	0.24	0.11	50	0.08
Mercury	ND	ND	1	0.01
Selenium	ND	ND	50	0.04
Uranium	0.076	0.082	20	0.002

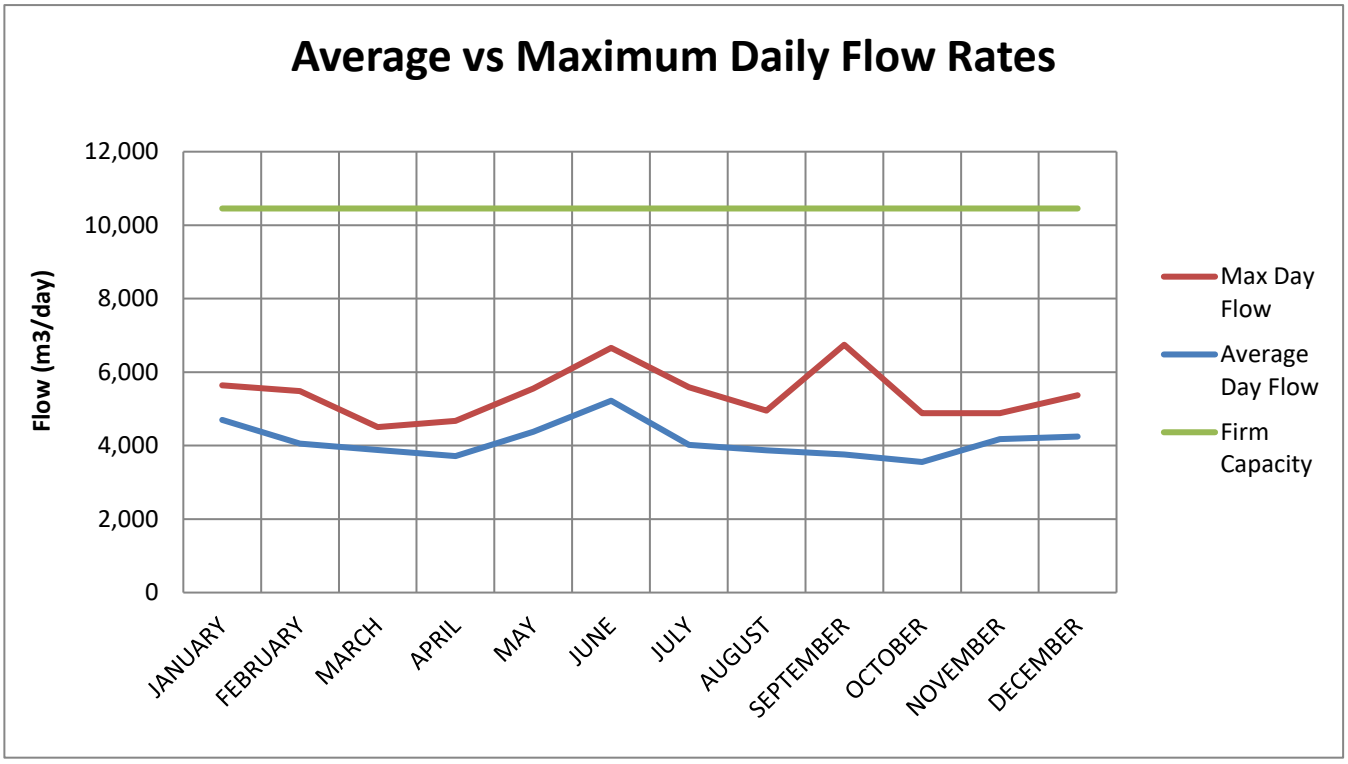
The following Tables summarize the most recent test results for the Organic parameters in Schedules 24.
Testing is required every 3 years for secure groundwater wells.

Parameter	***Well 2*** *Result Value (ug/L) Aug 16, 2021*	***Well 3*** *Result Value (ug/L) June 7, 2021*	***Well 5*** *Result Value (ug/L) May 20, 2021*	*MAC (ug/L)*	*MDL (ug/L)*
Alachlor	ND	ND	ND	5	0.02
Atrazine + N-dealkylatedmetobolites	ND	ND	ND	5	0.01
Azinphos-methyl	ND	ND	ND	20	0.05
Benzene	ND	ND	ND	1	0.32
Benzo(a)pyrene	ND	ND	ND	0.01	0.004
Bromoxynil	ND	ND	ND	5	0.33
Carbaryl	ND	ND	ND	90	0.05
Carbofuran	ND	ND	ND	90	0.01
Carbon Tetrachloride	ND	ND	ND	2	0.16
Chlorpyrifos	ND	ND	ND	90	0.02
Diazinon	ND	ND	ND	20	0.02
Dicamba	ND	ND	ND	120	0.20
1,2-Dichlorobenzene	ND	ND	ND	200	0.41
1,4-Dichlorobenzene	ND	ND	ND	5	0.36
1,2-Dichloroethane	ND	ND	ND	5	0.35
1,1-Dichloroethylene (vinylidene chloride)	ND	ND	ND	14	0.33
Dichloromethane	ND	ND	ND	50	0.35
2-4 Dichlorophenol	ND	ND	ND	900	0.15
2,4-Dichlorophenoxy acetic acid (2,4-D)	ND	ND	ND	100	0.19
Diclofop-methyl	ND	ND	ND	9	0.40
Dimethoate	ND	ND	ND	20	0.03
Diquat	ND	ND	ND	70	1
Diuron	ND	ND	ND	150	0.03
Glyphosate	ND	ND	ND	280	1
Malathion	ND	ND	ND	190	0.02
2-methyl-4chlorophenoxyacetic acid (MCPA)	ND	ND	ND	100	0.12
Metolachlor	ND	ND	ND	50	0.01
Metribuzin	ND	ND	ND	80	0.02
Monochlorobenzene	ND	ND	ND	80	0.30
Paraquat	ND	ND	ND	10	1
Pentachlorophenol	ND	ND	ND	60	0.15
Phorate	ND	ND	ND	2	0.01
Picloram	ND	ND	ND	190	1
Polychlorinated Biphenyls(PCB)	ND	ND	ND	3	0.04
Prometryne	ND	ND	ND	1	0.03
Simazine	ND	ND	ND	10	0.01
Terbufos	ND	ND	ND	1	0.01
Tetrachloroethylene	ND	ND	ND	10	0.35
2,3,4,6-Tetrachlorophenol	ND	ND	ND	100	0.20
Triallate	ND	ND	ND	230	0.01
Trichloroethylene	ND	ND	ND	5	0.44
2,4,6-Trichlorophenol	ND	ND	ND	5	0.25
Trifluralin	ND	ND	ND	45	0.02
Vinyl Chloride	ND	ND	ND	1	0.17

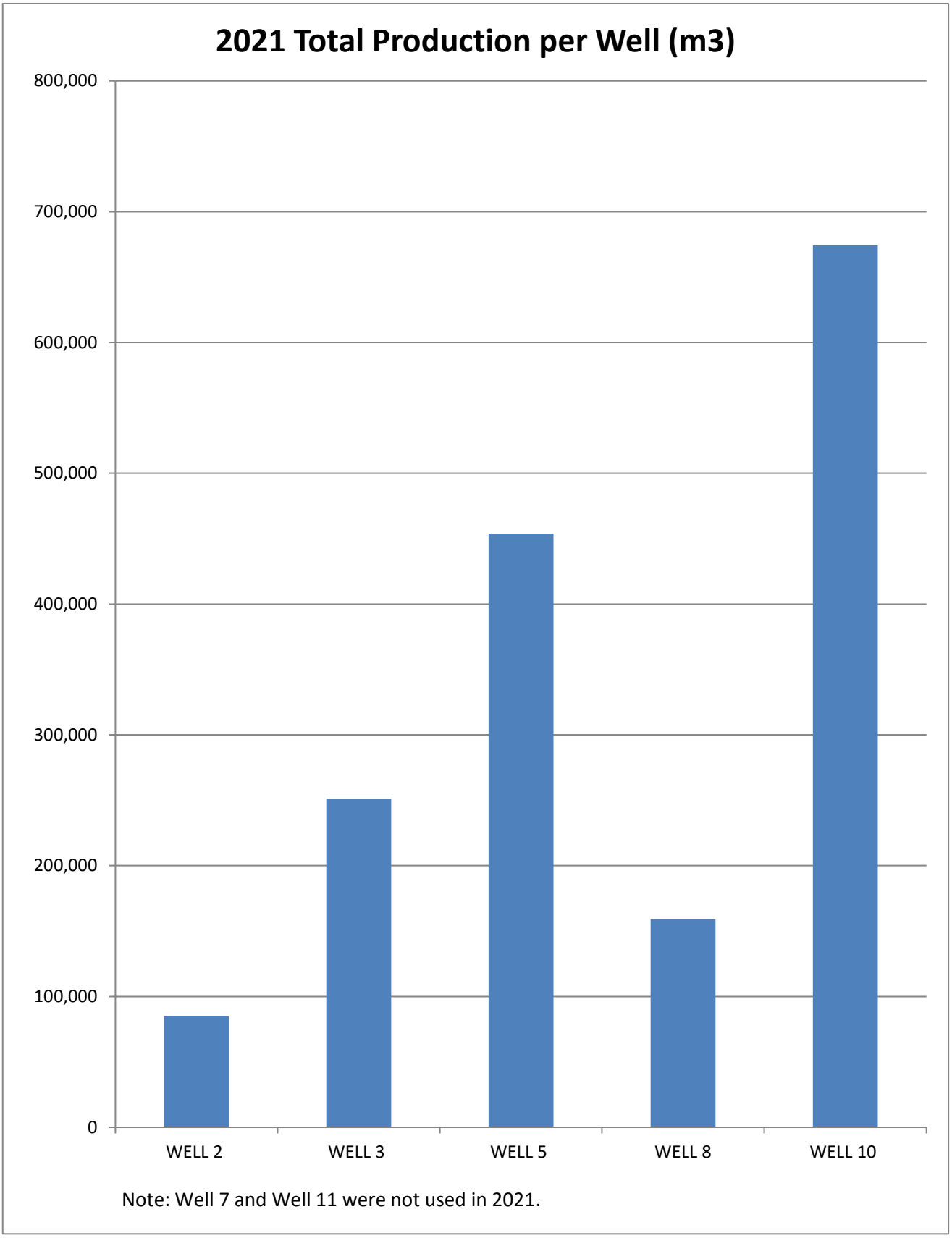
Parameter	***Well 8*** *Result Value (ug/L) June 7, 2021*	***Well 10*** *Result Value (ug/L) June 7, 2021*	*MAC (ug/L)*	*MDL (ug/L)*
Alachlor	ND	ND	5	0.02
Atrazine + N-dealkylatedmetobolites	ND	ND	5	0.01
Azinphos-methyl	ND	ND	20	0.05
Benzene	ND	ND	1	0.32
Benzo(a)pyrene	ND	ND	0.01	0.004
Bromoxynil	ND	ND	5	0.33
Carbaryl	ND	ND	90	0.05
Carbofuran	ND	ND	90	0.01
Carbon Tetrachloride	ND	ND	2	0.16
Chlorpyrifos	ND	ND	90	0.02
Diazinon	ND	ND	20	0.02
Dicamba	ND	ND	120	0.20
1,2-Dichlorobenzene	ND	ND	200	0.41
1,4-Dichlorobenzene	ND	ND	5	0.36
1,2-Dichloroethane	ND	ND	5	0.35
1,1-Dichloroethylene (vinylidene chloride)	ND	ND	14	0.33
Dichloromethane	ND	ND	50	0.35
2-4 Dichlorophenol	ND	ND	900	0.15
2,4-Dichlorophenoxy acetic acid (2,4-D)	ND	ND	100	0.19
Diclofop-methyl	ND	ND	9	0.40
Dimethoate	ND	ND	20	0.03
Diquat	ND	ND	70	1
Diuron	ND	ND	150	0.03
Glyphosate	ND	ND	280	1
Malathion	ND	ND	190	0.02
2-methyl-4chlorophenoxyacetic acid (MCPA)	ND	ND	100	0.12
Metolachlor	ND	ND	50	0.01
Metribuzin	ND	ND	80	0.02
Monochlorobenzene	ND	ND	80	0.30
Paraquat	ND	ND	10	1
Pentachlorophenol	ND	ND	60	0.15
Phorate	ND	ND	2	0.01
Picloram	ND	ND	190	1
Polychlorinated Biphenyls(PCB)	ND	ND	3	0.04
Prometryne	ND	ND	1	0.03
Simazine	ND	ND	10	0.01
Terbufos	ND	ND	1	0.01
Tetrachloroethylene	ND	ND	10	0.35
2,3,4,6-Tetrachlorophenol	ND	ND	100	0.20
Triallate	ND	ND	230	0.01
Trichloroethylene	ND	ND	5	0.44
2,4,6-Trichlorophenol	ND	ND	5	0.25
Trifluralin	ND	ND	45	0.02
Vinyl Chloride	ND	ND	1	0.17

APPENDIX B: 2021 WATER QUANTITY SUMMARY





Ingersoll Water System Supply Capacity 17,357 m^3/day
Ingersoll Water System Firm Capacity 10,454 m^3/day



Ingersoll Water System Supply Capacity 17,357 m^3/day
Ingersoll Water System Firm Capacity 10,454 m^3/day

Growing stronger together

2021 ANNUAL DRINKING WATER SYSTEM SUMMARY REPORT
Innerkip Water System

1. GENERAL INFORMATION

Oxford County prepares a report summarizing system operation and water quality for every municipal drinking water system annually. The reports detail the latest water quality testing results, water quantity statistics and any adverse conditions that may have occurred for the previous year. They are available for review by the end of February on the Oxford County website at www.oxfordcounty.ca/drinkingwater or by contacting the Public Works Department.

All efforts have been made to ensure the information presented in this report is accurate. If you have any questions or comments concerning the report please contact the County of Oxford at the address and phone number listed below or by email at publicworks@oxfordcounty.ca.

Drinking Water System:	Innerkip Water System
Drinking Water System Number:	260046995
Drinking Water System Owner & Contact Information:	Oxford County Public Works Department Water Services P.O. Box 1614 21 Reeve Street Woodstock, ON N4S 7Y3 Telephone: 519-539-9800 Toll Free: 866-537-7778 Email: publicworks@oxfordcounty.ca
Reporting Period:	January 1, 2021 – December 31, 2021

1.1. System Description

The Innerkip Water System is a Large Municipal Water system as defined by Ontario Regulation (O.Reg.) 170/03 and serves a population of approximately 1,290. The system consists of two well sources which are secure groundwater wells. The water is filtered to remove iron and manganese. Sodium hypochlorite is added as an oxidant and for disinfection.

In 2021, approximately 6,970 L of sodium hypochlorite was used in the water treatment process. This chemical is certified to meet standards set by the Standards Council of Canada or American National Standards Institute.

The treatment facility houses filters, high lift pumps, monitoring equipment, and a 700 m^3 storage standpipe. There is a retention lagoon for backwash water from the filters which discharges to a tributary of the Thames River. A standby generator is available to run the facility in the event of a power failure. The system is maintained by licensed water system operators, who operate treatment and monitoring equipment and collect samples as specified by the Regulation. Alarms automatically notify operators in the event of failure of critical operational requirements.

1.2. Major Expenses

The Innerkip Water System is one of 14 water systems that have revenues and expenses pooled for the economy of scale purposes. The systems are combined into the Township Water financial system and in 2021 had operating and maintenance expenditures of approximately $3,000,000.

Operations and maintenance expenditures included:

- $175,000 for the replacement of general operating equipment and well rehabilitations

In addition to regular operational and maintenance expenditures, Capital Improvement Projects for the Townships systems totaled $1,500,000 for improvements to water treatment systems and replacement of distribution mains in the Township System.

Township Capital Improvement Projects included:

- $65,000 groundwater modeling
- $350,000 for facilities improvements

Capital Improvement projects for all systems included:

- $720,000 to develop Countywide SCADA Master Plan for all water systems
- $14,000 for updated water systems modeling

2. MICROBIOLOGICAL TESTING

2.1. *E. coli and Total Coliform*

Bacteriological tests for *E. coli* and total coliforms are taken weekly from the raw and treated water at the facility and from the distribution system. Extra samples are taken after major repairs or maintenance work. Any *E. coli* or total coliform results above 0 in treated water must be reported to the Ministry of Environment, Conservation and Parks (MECP) and Medical Officer of Health (MOH). Resamples and any other required actions are taken as quickly as possible. The results from the 2021 sampling program are shown in the table below. There were no adverse test results from 200 treated water samples in this reporting period.

	Number of Samples	*Range of E. coli Results Min - Max MAC = 0*	*Range of Total Coliform Results Min - Max MAC = 0*
Raw	103	0	0 - 1
Treated	52	0	0
Distribution	148	0	0

2.2. Heterotrophic Plate Count (HPC)

HPC analyses are required from the treated and distribution water. The tests are required weekly for treated water and for 25% of the required distribution system bacteriological samples. HPC should be less than 500 colonies per 1 mL. Results over 500 colonies per 1 mL may indicate a change in water quality but it is not considered an indicator of unsafe water. The 2021 results are shown in the table below.

	Number of Samples	*Range of HPC Min - Max*
Treated	52	0 - 39
Distribution	39	0 - 22

3. CHEMICAL TESTING

The Safe Drinking Water Act requires periodic testing of the water for approximately 60 different chemical parameters. The latest results for all parameters are provided in Appendix A. The sampling frequency varies for different types and sizes of water systems and chemical parameters. If the concentration of a parameter is above half of the Maximum Allowable Concentration (MAC) under the Ontario Drinking Water Quality Standards, an increased testing frequency of once every three months is required by the Regulation. Where concerns regarding a parameter exist, the MECP can also require additional sampling be undertaken.

Information on the health effects and allowable limits of components in drinking water may be found on the MECP web page through the link provided in Appendix A. Additional information on common chemical parameters specific to the Innerkip system is provided below.

3.1. Hardness

This is an aesthetic parameter that may affect the appearance of the water but is not related to health. Well water commonly has high levels of hardness and other minerals from being in contact with underground rock formations. Many households have water softeners to help reduce white calcium deposits and improve the

efficiency of soaps. This information is included here to help set the water softener at the level recommended by the manufacturer. Samples for hardness are collected at a minimum every 3 years from raw or treated water. The average hardness for the Innerkip Drinking Water System is 935 mg/L (55 grains/gallon) based on samples collected from 2006 to 2019.

3.2. Additional Testing Required by MECP

Testing of the lagoon backwash discharge is required for the Innerkip Water System. A summary of the monitoring results for 2021 is below.

Legal instrument: Municipal Drinking Water License issued December 1, 2018					
Parameter	*Result Range (Min–Max) mg/L*	*Average mg/L*	*Number of Samples*	*Limit*	*MDL (mg/L)*
Suspended Solids from lagoon backwash discharge	(3.00 - 32.0)	14.0	52	25 mg/L Annual Average	2.0

4. OPERATIONAL MONITORING

4.1. Chlorine Residual

Free chlorine levels of the treated water are monitored continuously at the discharge point of the Water Treatment Facility. In the distribution system, free chlorine is checked twice weekly at various locations. As a target, free chlorine residual within the distribution system should be above 0.20 mg/L. A free chlorine level lower than 0.05 mg/L must be reported and corrective action is taken. There were no reportable incidents in 2021. A summary of the chlorine residual readings is provided in the table below.

4.2. Turbidity

Turbidity of treated water is continuously monitored at the treatment facility, as a change in turbidity can indicate an operational problem. The turbidity of untreated water from the well is checked weekly. Turbidity is measured in nephelometric turbidity units (NTU). Under O.Reg. 170/03 turbidity in groundwater is not reportable however turbidity should be < 1 NTU at the treatment plant and < 5 NTU in the distribution system. A summary of the monitoring results for 2021 is provided in the table below.

Parameter	*Number of Tests or Monitoring Frequency*	*Range of Results (Min – Max) and Average*
Chlorine residual in distribution (mg/L)	Continuous	(0.67– 1.55) 1.14
Chlorine residual after treatment (mg/L)	Continuous	(0.44 – 3.74) 1.37
Turbidity after treatment (NTU)	Continuous	(0.06 – 1.84) 0.09

5. WATER QUANTITY

Continuous monitoring of flowrates from supply wells into the treatment system and from the facility into the distribution system is required by O.Reg. 170/03. The Municipal Drinking Water License and Permit to Take Water issued by the MECP regulate the amount of water that can be utilized over a given time period. A summary of the 2021 flows are provided in the Table below and presented graphically in Appendix B.

Flow Summary	*Quantity*
Permit to Take Water Limit	1,728 m^3/d
Municipal Drinking Water License Limit	1,296 m^3/d
2021 Average Daily Flow	310 m^3/d
2021 Maximum Daily Flow	621 m^3/d
2021 Average Monthly Flow	9,433 m^3
2021 Total Amount of Water Supplied	113,201 m^3

A review of the available supply capacity and the anticipated growth forecasted for the community indicates that the system has sufficient capacity over the 20 year planning horizon.

Firm Capacity of this system is rated at 1,296 m^3/day. Firm Capacity is defined as the removal of the highest producing well in an emergency or operational / maintenance. This system comprises of two supply wells. MDWL Limits pumping rate to 1,296 m^3/day for Firm Capacity calculations.

6. NON-COMPLIANCE FINDINGS AND ADVERSE RESULTS

This section documents any known incidents of non-compliance or adverse results and the associated correction actions taken to resolve the issue. Non-compliance issues are typically identified by either the Operating Authority or the MECP Drinking Water Inspectors. The issues and associated required actions are documented by the Inspectors in the system's Annual Inspection Report.

All non-compliance issues are investigated, corrective actions taken and documented using the County's Drinking Water Quality Management System (DWQMS) procedures.

6.1. Non-Compliance Findings

The 2021 MECP annual inspection of the Innerkip drinking water system took place on June 23, 2021. There were no non-compliance findings and the 2021 Inspection Report rating was 100%.

6.2. Adverse Results

Any adverse results from bacteriological, chemical samples or observations of operational conditions that indicate adverse water quality are reported as required and corrective actions are taken. There were no adverse or reportable occurrences in 2021.

APPENDIX A: SUMMARY OF CHEMICAL RESULTS

UNDERSTANDING CHEMICAL TEST RESULTS

The following tables summarize the laboratory results of the chemical testing the County is required to complete. Different types of parameters are required to be tested for at different frequencies as noted below. Explanations on the health impacts of these parameters can be found in the MECP document https://cvc.ca/wp-content/uploads/2011/03/std01_079707.pdf PIBS 4449e01 titled "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines".

Results are shown as concentrations with units of either milligrams per litre (mg/L) or micrograms per litre (ug/L). 1 mg/L is equal to 1000 ug/L. The Maximum Acceptable Concentration (MAC) is the highest amount of a parameter that is acceptable in Municipal drinking water and can be found in the MECP Drinking Water Standards. The Method Detection Limit (MDL) is the lowest amount to which the laboratory can confidently measure. A result of "ND" stands for "Not Detected" and means that the concentration of the chemical is lower than the laboratory's equipment is capable of measuring. In the event that some samples results are ND, and other results are above the MDL, the value of the MDL will be used in place of the ND where an average result must be calculated. Where all collected samples are ND the average sample result will be assumed to be ND.

Nitrate and nitrite samples are required every 3 months in normal operation.

Parameter	*Result Range* Min – Max *(mg/L)*	*Average Result (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Nitrite	ND	ND	1.0	0.003
Nitrate	0.046 - 0.062	0.054	10.0	0.006

Trihalomethane (THM) and total Haloacetic Acids (HAA) are by-products of the disinfection process. The samples are required every 3 months from the distribution system.

Parameter	*Annual Average*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Trihalomethane (THM)	2021	17.3	100	0.37
Haloacetic Acids (HAA)	2021	15.3	80	5.3

The following Table summarizes the most recent test results for Sodium and Fluoride. Testing and reporting any adverse results is required every 5 years.

Parameter	*Sample Date*	*Result Value (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Sodium	August 16, 2021	17.7	20.0*	0.01
Fluoride	February 18, 2020	0.74	1.5**	0.06

*Sodium levels between 20 – 200 mg/L must be reported every 5 years.
**Natural levels of fluoride between 1.5 – 2.4 mg/L must be reported every 5 years.

The following Table summarizes the most recent results for the Lead Testing Program. Lead samples are taken every 3 years. Levels of alkalinity and pH are monitored twice per year in the distribution system to ensure water quality is consistent and does not facilitate leaching of lead into the water.

Parameter	*Result Range (Min -- Max)*	*Number of Samples*	*Acceptable Level*
Distribution Alkalinity	220 – 259	4	30 – 500mg/L
Distribution pH	7.15 – 7.24	4	6.5 – 8.5
Distribution Lead 2021	ND – 0.02	4	10 ug/L MAC

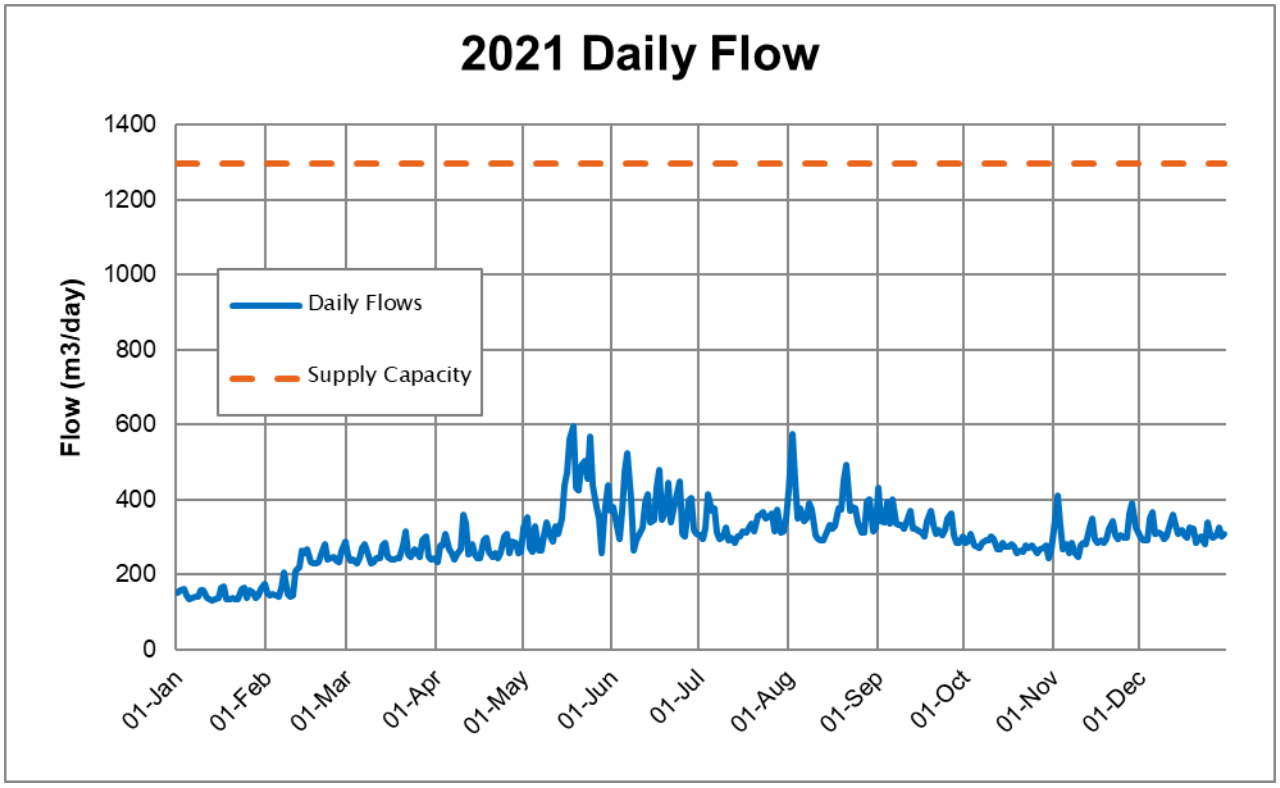
The following Table summarizes the most recent test results for Schedule 23. Testing is required every 3 years for secure groundwater wells.

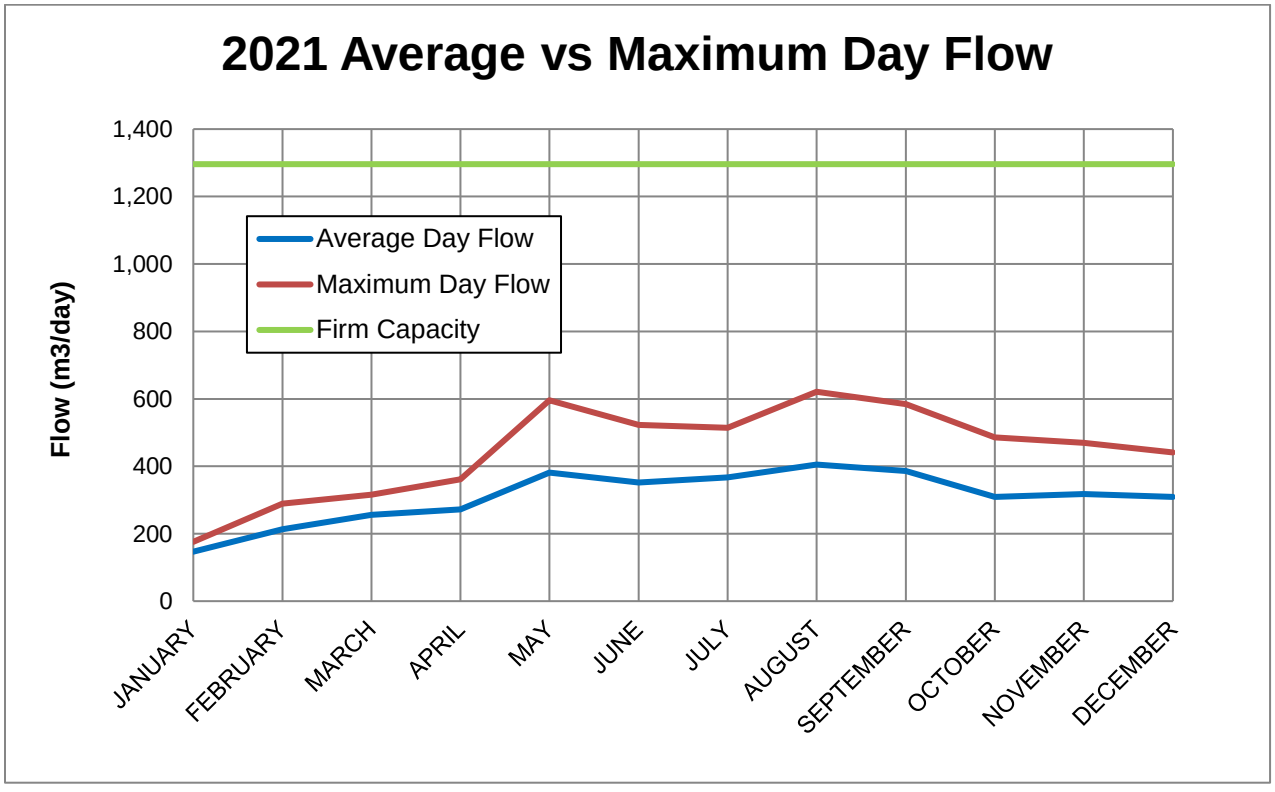
Parameter	*Sample Date*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Antimony	Feb 18/20	0.09	6	0.02
Arsenic	"	ND	10	0.2
Barium	"	72.5	1000	0.01
Boron	"	102	5000	2
Cadmium	"	0.007	5	0.003
Chromium	"	0.12	50	0.03
Mercury	"	ND	1	0.01
Selenium	"	ND	5	1
Uranium	"	0.697	20	0.001

The following Table summarizes the most recent test results for Schedule 24. Testing is required every 3 years for secure groundwater wells.

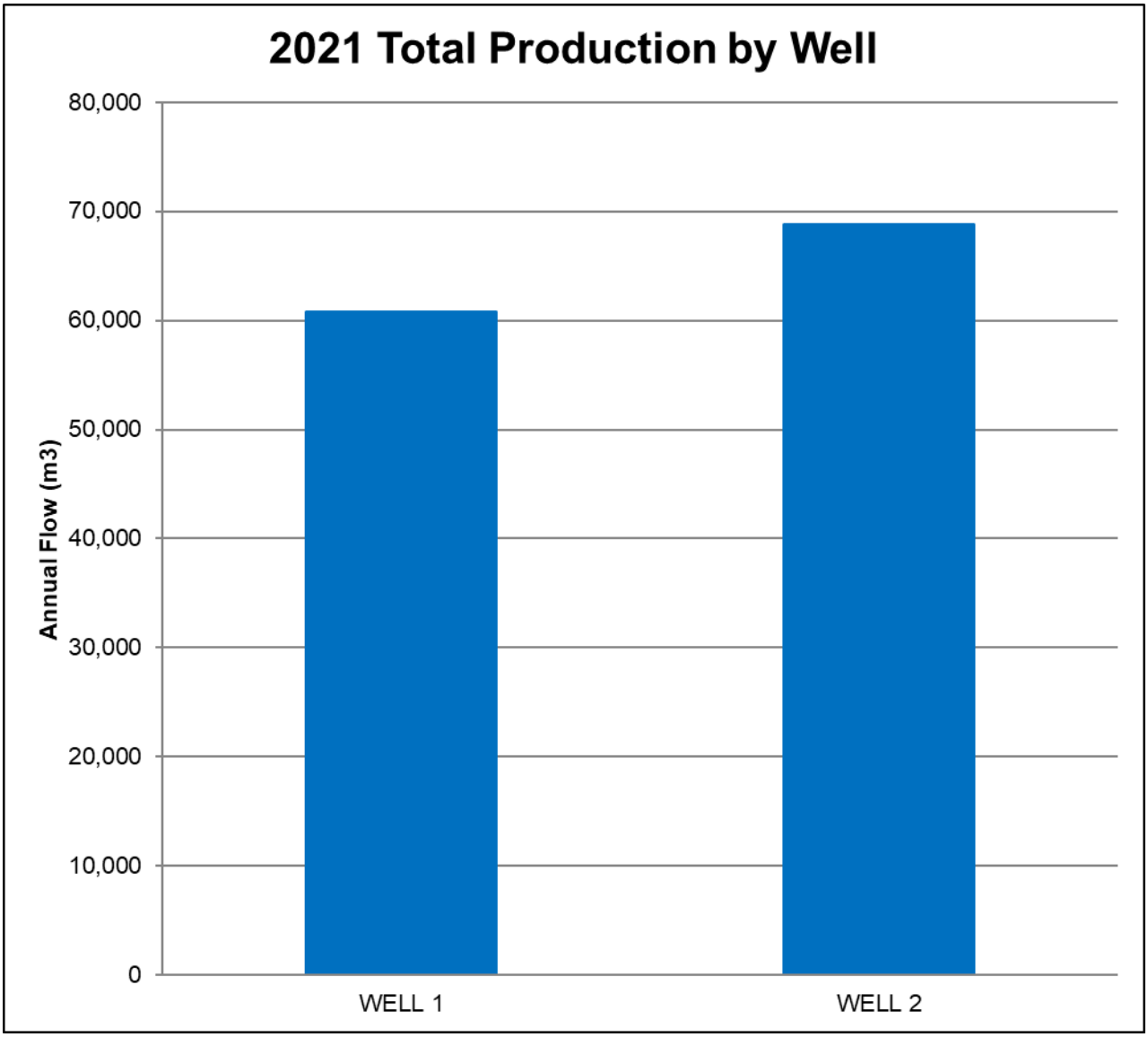
Parameter	Sample Date	Result Value (ug/L)	MAC (ug/L)	MDL (ug/L)
Alachlor	Feb 18/20	ND	5	0.11
Atrazine + N-dealkylatedmetobolites	“	ND	5	0.12
Azinphos-methyl	“	ND	20	0.21
Benzene	“	ND	1	0.37
Benzo(a)pyrene	“	ND	0.01	0.004
Bromoxynil	“	ND	5	0.33
Carbaryl	“	ND	90	0.16
Carbofuran	“	ND	90	0.37
Carbon Tetrachloride	“	ND	2	0.41
Chlorpyrifos	“	ND	90	0.18
Diazinon	“	ND	20	0.081
Dicamba	“	ND	120	0.20
1,2-Dichlorobenzene	“	ND	200	0.50
1,4-Dichlorobenzene	“	ND	5	0.21
1,2-Dichloroethane	“	ND	5	0.43
1,1-Dichloroethylene(vinylidene chloride)	“	ND	14	0.41
Dichloromethane	“	ND	50	0.34
2-4 Dichlorophenol	“	ND	900	0.15
2,4-Dichlorophenoxy acetic acid (2,4-D)	“	ND	100	0.19
Diclofop-methyl	“	ND	9	0.40
Dimethoate	“	ND	20	0.12
Diquat	“	ND	70	1
Diuron	“	ND	150	0.87
Glyphosate	“	ND	280	6
Malathion	“	ND	190	0.091
Metolachlor	“	ND	50	0.092
2-methyl-4chlorophenoxyacetic acid (MCPA)	“	ND	100	0.12
Metribuzin	“	ND	80	0.12
Monochlorobenzene	“	ND	80	0.58
Paraquat	“	ND	10	1
Pentachlorophenol	“	ND	60	0.15
Phorate	“	ND	2	0.11
Picloram	“	ND	190	0.25
Polychlorinated Biphenyls(PCB)	“	ND	3	0.04
Prometryne	“	ND	1	0.23
Simazine	“	ND	10	0.15
Terbufos	“	ND	1	0.12
Tetrachloroethylene	“	ND	10	0.45
2,3,4,6-Tetrachlorophenol	“	ND	100	0.14
Triallate	“	ND	230	0.10
Trichloroethylene	“	ND	5	0.38
2,4,6-Trichlorophenol	“	ND	5	0.25
Trifluralin	“	ND	45	0.12
Vinyl Chloride	“	ND	1	0.17

APPENDIX B: WATER QUANTITY SUMMARY





Innerkip Firm Capacity 1,296 m^3/day
Innerkip Water Supply Capacity 1,296 m^3/day



Innerkip Firm Capacity 1,296 m^3/day
Innerkip Water Supply Capacity 1,296 m^3/day

2021 ANNUAL DRINKING WATER SYSTEM SUMMARY REPORT
Lakeside Water System

1. GENERAL INFORMATION

Oxford County (the County) prepares a report summarizing system operation and water quality for every municipal drinking water system annually. The reports detail the latest water quality testing results, water quantity statistics and any adverse conditions that may have occurred for the previous year. They are available for review by the end of February on the County website at www.oxfordcounty.ca/drinkingwater or by contacting the Public Works Department.

All efforts have been made to ensure the information presented in this report is accurate. If you have any questions or comments concerning the report please contact the County at the address and phone number listed below or by email at publicworks@oxfordcounty.ca

Drinking Water System:	Lakeside Water System
Drinking Water System Number:	220007533
Drinking Water System Owner & Contact Information:	Oxford County Public Works Department Water Services P.O. Box 1614 21 Reeve Street Woodstock, ON N4S 7Y3 Telephone: 519-539-9800 Toll Free: 866-537-7778 Email: publicworks@oxfordcounty.ca
Reporting Period:	January 1, 2021 – December 31, 2021

1.1. System Description

The Lakeside Water System is a Large Municipal Water system as defined by Ontario Regulation (O.Reg.) 170/03 and serves a population of approximately 384. The system consists of one groundwater well with treatment that consists of disinfection with sodium hypochlorite and sodium silicate to sequester iron. Approximately 661 L of sodium hypochlorite and 410 L (580 kg) of sodium silicate were used in the water treatment process. The chemicals are certified to meet standards set by the Standards Council of Canada or American National Standards Institute.

The treatment facility houses high lift pumps, monitoring equipment and a 150 m^3 water standpipe to provide storage. A standby generator is available to run the facility in the event of a power failure. The system is maintained by licensed water system operators, who operate treatment and monitoring equipment and collect samples as specified by the Regulation. Alarms automatically notify operators in the event of failure of critical operational requirements.

1.2. Major Expenses

The Lakeside Water System is one of 14 water systems that have revenues and expenses pooled for the economy of scale purposes. The systems are combined into the Township Water financial system and in 2021 had operating and maintenance expenditures of approximately $3,000,000.

Operations and maintenance expenditures included:

- $175,000 for the replacement of general operating equipment and well rehabilitations

In addition to regular operational and maintenance expenditures, Capital Improvement Projects for the Townships systems totaled $1,500,000 for improvements to water treatment systems and replacement of distribution mains in the Township System.

Township Capital Improvement Projects included:

- $65,000 groundwater modeling
- $350,000 for facilities improvements

Capital Improvement projects for all systems included:

- $720,000 to develop Countywide SCADA Master Plan for all water systems
- $14,000 for updated water systems modeling

2. MICROBIOLOGICAL TESTING

2.1. *E. coli* and Total Coliform

Bacteriological tests for *E. coli* and total coliforms are required weekly from the raw and treated water at the facility and from the distribution system. Extra samples are taken after major repairs or maintenance work. Any *E. coli* or total coliform results above 0 in treated water must be reported to the Ministry of Environment, Conservation and Parks (MECP) and Medical Officer of Health (MOH). Resamples and any other required actions are taken as quickly as possible. The results from the 2021 sampling program are shown in the table below. There were no adverse test results from 159 treated water samples in this reporting period.

	Number of Samples	*Range of E. coli Results Min - Max MAC = 0*	*Range of Total Coliform Results Min - Max MAC = 0*
Raw	52	0	0
Treated	54	0	0
Distribution	104	0	0

2.2. Heterotrophic Plate Count (HPC)

HPC analyses are required from the treated and distribution water for small systems. The tests are required weekly for treated water and for 25% of the required distribution system bacteriological samples. HPC should be less than 500 colonies per 1 mL. Results over 500 colonies per 1 mL may indicate a change in water quality but it is not considered an indicator of unsafe water. The 2021 results are shown in the table below.

	Number of Samples	*Range of HPC Min - Max*
Treated	52	0 - 3
Distribution	26	0 - 4

3. CHEMICAL TESTING

The Safe Drinking Water Act requires periodic testing of the water for approximately 60 different chemical parameters. The latest results for all parameters are provided in Appendix A. The sampling frequency varies for different types and sizes of water systems and chemical parameters. If the concentration of a parameter is above half of the Maximum Allowable Concentration (MAC) under the Ontario Drinking Water Quality Standards, an increased testing frequency of once every three months is required by the Regulation. Where concerns regarding a parameter exist, the MECP can also require additional sampling to be undertaken.

Information on the health effects and allowable limits of components in drinking water may be found on the MECP web page through the link provided in Appendix A. Additional information on common chemical parameters specific to the Lakeside system is provided below.

3.1. Fluoride

Fluoride levels are sampled once every five years and levels above 1.5 mg/L must be reported to the MECP and MOH. Levels under 2.4 mg/L are considered safe for consumption however at levels between 1.5 and 2.4 mg/L fluoride may cause staining or pitting of teeth in children less than 6 years old. Further information on fluoride can be found on the Southwestern Public Health web page at https://www.swpublichealth.ca/en/partners-and-professionals/resources/Health-Care-Providers/Alerts-Advisories-Updates/Advisories/ADV_HIA-Fluoride-20201203.pdf

Oxford County does not add fluoride to the water at any of its drinking water systems however the Lakeside system has naturally occurring fluoride levels of 1.65 mg/L.

3.2. Hardness and Iron

These are aesthetic parameter that may affect the appearance of the water but is not related to health. Well water commonly has high levels of hardness and other minerals from being in contact with underground rock formations. Many households have water softeners to help reduce white calcium deposits, improve the efficiency of soaps and reduce iron levels. This information is included here to help set the water softener at the level recommended by the manufacturer. In Lakeside, chemicals are used to keep iron in suspension.

- Samples for hardness are collected at a minimum every 3 years from raw or treated water. The average hardness for the Lakeside Drinking Water System is 203 mg/L (12 grains/gallon) based on samples collected from 2006 to 2019.
- The average iron level in 2021 was 0.43 mg/L (ppm)

3.3. Additional Testing Required by MECP

None.

4. OPERATIONAL MONITORING

4.1. Chlorine Residual

Free chlorine levels of the treated water are monitored continuously at the discharge point of the Water Treatment Facility. In the distribution system, free chlorine is checked twice weekly at various locations. As a target, free chlorine residual within the distribution system should be above 0.20 mg/L. A free chlorine level lower than 0.05 mg/L must be reported and corrective action is taken. There were no reportable incidents in 2021. A summary of the chlorine residual readings is provided in the table below.

4.2. Turbidity

Turbidity of treated water is continuously monitored at the treatment facility, as a change in turbidity can indicate an operational problem. The turbidity of untreated water from the well is checked weekly. Turbidity is measured in nephelometric turbidity units (NTU). Under O.Reg. 170/03 turbidity in groundwater is not reportable however turbidity should be < 1 NTU at the treatment plant and < 5 NTU in the distribution system. A summary of the monitoring results for 2021 is provided in the table below.

Parameter	*Number of Tests or Monitoring Frequency*	*Range of Results (Min – Max) and Average*
Chlorine residual in distribution (mg/L)	366	(0.59 – 1.63) 1.27
Chlorine residual after treatment (mg/L)	Continuous	(0.12 – 2.45) 1.34
Turbidity after treatment (NTU)	Continuous	(0.05 – 0.49) 0.07

5. WATER QUANTITY

Continuous monitoring of flowrates from supply wells into the treatment system and from the facility into the distribution system is required by O.Reg. 170/03. The Municipal Drinking Water License and Permit to Take Water issued by the MECP regulate the amount of water that can be utilized over a given time period. A summary of the 2021 flows are provided in the Table below and presented graphically in Appendix B.

Flow Summary	*Quantity*
Permit to Take Water Limit	270 m^3/d
Municipal Drinking Water License Limit	432 m^3/d
2021 Average Daily Flow	47 m^3/d
2021 Maximum Daily Flow	125 m^3
2021 Average Monthly Flow	1,442 m^3
2021 Total Amount of Water Supplied	17,306 m^3

Firm Capacity of this system is rated at 100 m^3/day. Firm Capacity is defined as the removal of the highest producing well in an emergency or operational / maintenance situation with the ability to transport a maximum of 100 m^3/day to maintain system integrity. Since this system comprises of only one supply well Firm Capacity restricts further growth.

6. NON-COMPLIANCE FINDINGS AND ADVERSE RESULTS

This section documents any known incidents of non-compliance or adverse results and the associated correction actions taken to resolve the issue. Non-compliance issues are typically identified by either the Operating Authority or the MECP Drinking Water Inspectors. The issues and associated required actions are documented by the Inspectors in the system's Annual Inspection Report. All non-compliance issues are investigated, corrective actions taken, and documented using the County's Drinking Water Quality Management System (DWQMS) procedures.

6.1. Non-Compliance Findings

The annual MECP inspection took place in June 2021. There were no non-compliance findings and the 2021 Inspection Report rating was 100%.

6.2. Adverse Results

Any adverse results from bacteriological, chemical samples or observations of operational conditions that indicate adverse water quality is reported as required and corrective actions taken. There were no adverse or reportable occurrences in 2021.

APPENDIX A: SUMMARY OF CHEMICAL RESULTS

UNDERSTANDING CHEMICAL TEST RESULTS

The following tables summarize the laboratory results of the chemical testing the County is required to complete. Different types of parameters are required to be tested for at different frequencies as noted below. Explanations on the health impacts of these parameters can be found in the MECP document https://cvc.ca/wp-content/uploads/2011/03/std01_079707.pdf PIBS4449e01 titled "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines".

Results are shown as concentrations with units of either milligrams per litre (mg/L) or micrograms per litre (ug/L). 1 mg/L is equal to 1000 ug/L. The Maximum Acceptable Concentration (MAC) is the highest amount of a parameter that is acceptable in Municipal drinking water and can be found in the MECP Drinking Water Standards. The Method Detection Limit (MDL) is the lowest amount to which the laboratory can confidently measure. A result of "ND" stands for "Not Detected" and means that the concentration of the chemical is lower than the laboratory's equipment is capable of measuring. In the event that some samples results are ND, and other results are above the MDL, the value of the MDL will be used in place of the ND where an average result must be calculated. Where all collected samples are ND the average sample result will be assumed to be ND.

Nitrate and nitrite samples are required every 3 months in normal operation.

Parameter	*Result Range* Min – Max *(mg/L)*	*Average Result (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Nitrite	ND	ND	1.0	0.003
Nitrate	0.008 – 0.009	0.0085	10.0	0.006

Trihalomethane (THM) and total Haloacetic Acids (HAA) are by-products of the disinfection process. The samples are required every 3 months from the distribution system.

Parameter	*Annual Average*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Trihalomethane (THM)	2021	16.3	100	0.37
Haloacetic Acids (HAA)	2021	ND	80	5.3

The following Table summarizes the most recent test results for Sodium and Fluoride. Testing and reporting any adverse results is required every 5 years.

Parameter	*Sample Date*	*Result Value (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Sodium	August 06, 2019	12.1	20.0*	0.01
Fluoride	August 06, 2019	1.65	1.5**	0.06

*Sodium levels between 20 – 200 mg/L must be reported every 5 years.
**Natural levels of fluoride between 1.5 – 2.4 mg/L must be reported every 5 years.

The following Table summarizes the most recent results for the Lead Testing Program. Lead samples are taken every 3 years. Levels of alkalinity and pH are monitored twice per year in the distribution system to ensure water quality is consistent and does not facilitate leaching of lead into the water.

Parameter	*Result Range (Min - Max)*	*Number of Samples*	*Acceptable Level*
Distribution Alkalinity	199 - 201	2	30 – 500mg/L
Distribution pH	7.75 - 7.76	2	6.5 – 8.5
Distribution Lead 2020	0.04	1	10 ug/L MAC

The following Table summarizes the most recent test results for Schedule 23. Testing is required every 3 years for secure groundwater wells.

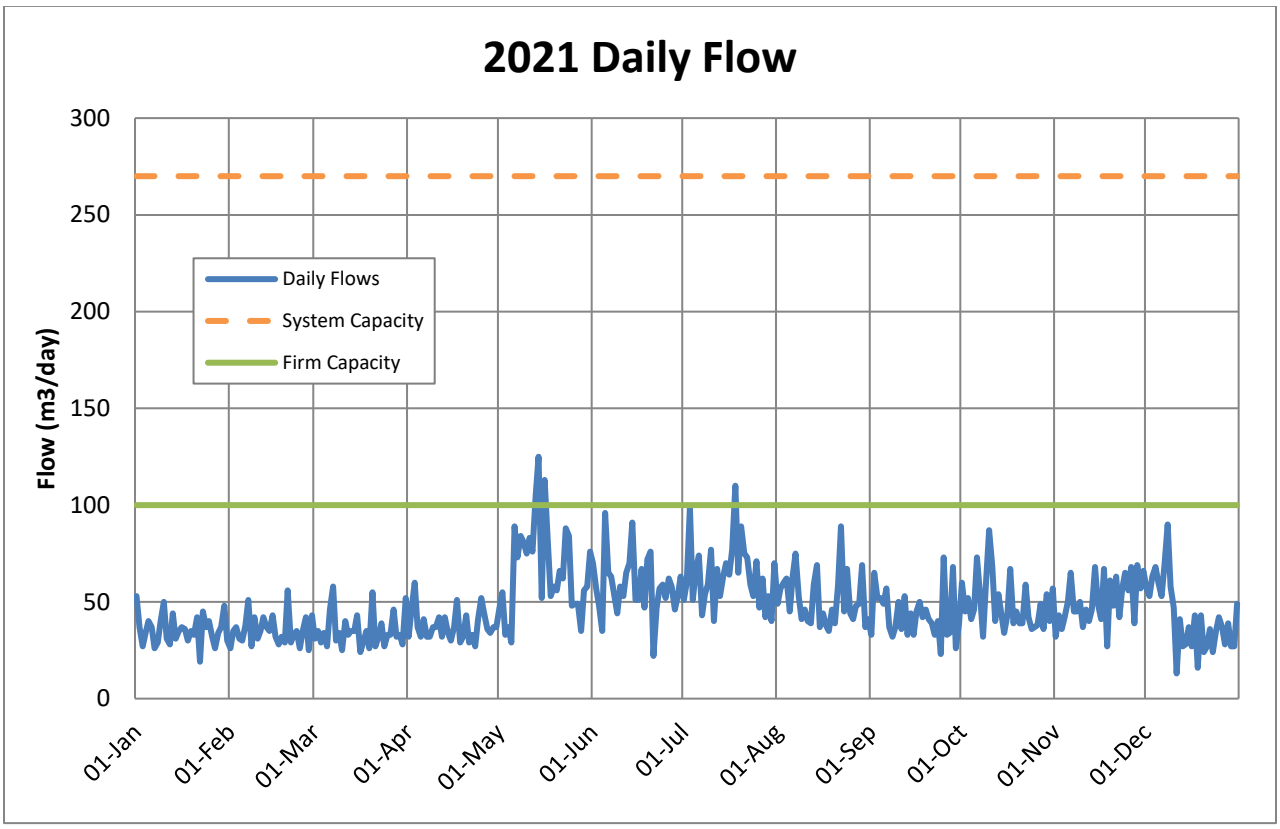
Parameter	*Sample Date*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Antimony	May 21, 2019	ND	6	0.09
Arsenic	"	0.5	10	0.2
Barium	"	351	1000	0.01
Boron	"	20	5000	2
Cadmium	"	ND	5	0.003
Chromium	"	0.14	50	0.03
Mercury	"	ND	1	0.02

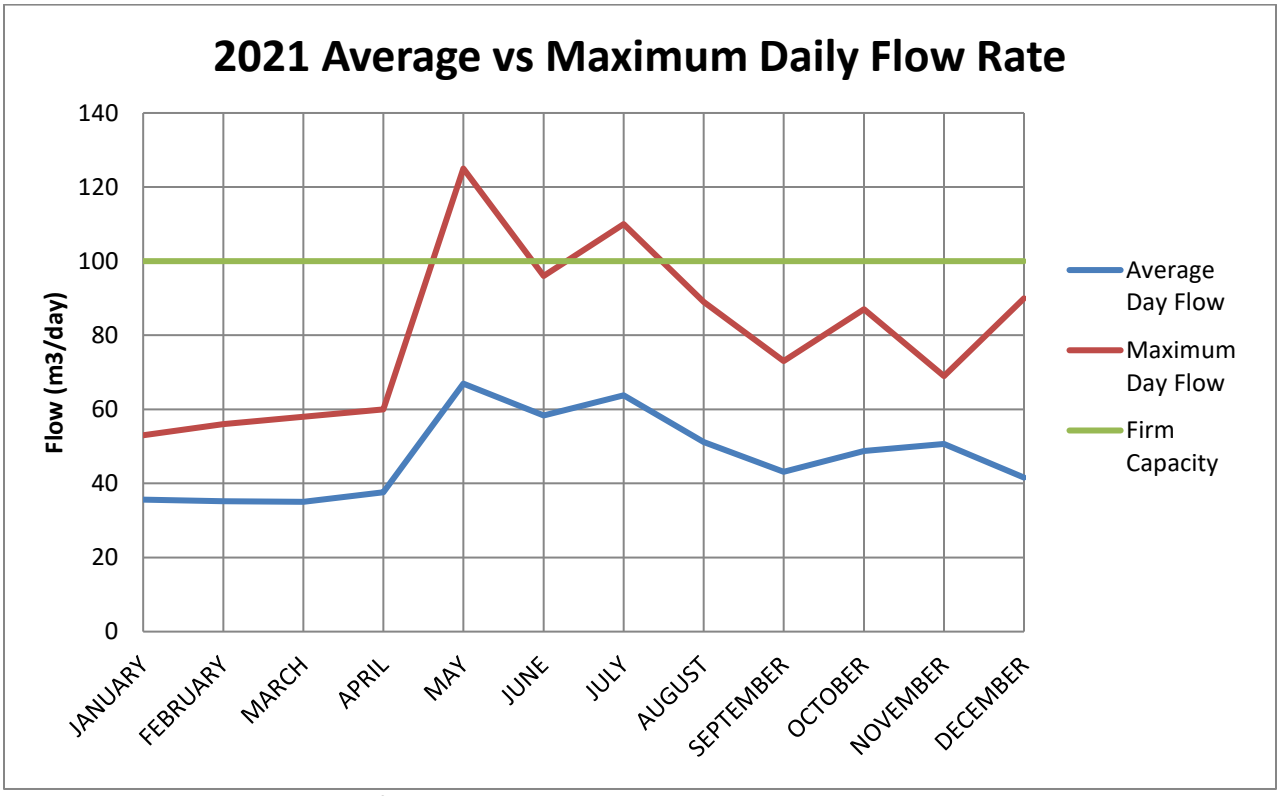
Selenium	“	ND	5	0.04
Uranium	“	0.20	20	0.002

The following Table summarizes the most recent test results for Schedule 24. Testing is required every 3 years for secure groundwater wells.

Parameter	*Sample Date*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Alachlor	June 7, 2021	ND	5	0.02
Atrazine + N-dealkylatedmetobolites	“	ND	5	0.01
Azinphos-methyl	“	ND	20	0.05
Benzene	“	ND	1	0.32
Benzo(a)pyrene	“	ND	0.01	0.004
Bromoxynil	“	ND	5	0.33
Carbaryl	“	ND	90	0.05
Carbofuran	“	ND	90	0.01
Carbon Tetrachloride	“	ND	2	0.17
Chlorpyrifos	“	ND	90	0.02
Diazinon	“	ND	20	0.02
Dicamba	“	ND	120	0.20
1,2-Dichlorobenzene	“	ND	200	0.41
1,4-Dichlorobenzene	“	ND	5	0.36
1,2-Dichloroethane	“	ND	5	0.35
1,1-Dichloroethylene(vinylidene chloride)	“	ND	14	0.33
Dichloromethane	“	ND	50	0.35
2-4 Dichlorophenol	“	ND	900	0.15
2,4-Dichlorophenoxy acetic acid (2,4-D)	“	ND	100	0.19
Diclofop-methyl	“	ND	9	0.40
Dimethoate	“	ND	20	0.06
Diquat	“	ND	70	1
Diuron	“	ND	150	0.03
Glyphosate	“	ND	280	1
Malathion	“	ND	190	0.02
Metolachlor	“	ND	50	0.01
2-methyl-4chlorophenoxyacetic acid (MCPA)	“	ND	100	0.12
Metribuzin	“	ND	80	0.02
Monochlorobenzene	“	ND	80	0.3
Paraquat	“	ND	10	1
Pentachlorophenol	“	ND	60	0.15
Phorate	“	ND	2	0.01
Picloram	“	ND	190	1
Polychlorinated Biphenyls(PCB)	“	ND	3	0.04
Prometryne	“	ND	1	0.03
Simazine	“	ND	10	0.01
Terbufos	“	ND	1	0.01
Tetrachloroethylene	“	ND	10	0.35
2,3,4,6-Tetrachlorophenol	“	ND	100	0.20
Triallate	“	ND	230	0.01
Trichloroethylene	“	ND	5	0.44
2,4,6-Trichlorophenol	“	ND	5	0.25
Trifluralin	“	ND	45	0.02
Vinyl Chloride	“	ND	1	0.17

APPENDIX B: WATER QUANTITY SUMMARY





Lakeside Firm Capacity is 100 m^3/day
Lakeside Water System Capacity 270 m^3 /day

Growing stronger together

2021 ANNUAL DRINKING WATER SYSTEM SUMMARY REPORT
Mount Elgin Water System

1. GENERAL INFORMATION

Oxford County (the County) prepares a report summarizing system operation and water quality for every municipal drinking water system annually. The reports detail the latest water quality testing results, water quantity statistics and any adverse conditions that may have occurred for the previous year. They are available for review by the end of February on the County website at www.oxfordcounty.ca/drinkingwater or by contacting the Public Works Department.

All efforts have been made to ensure the information presented in this report is accurate. If you have any questions or comments concerning the report please contact the County at the address and phone number listed below or by email at publicworks@oxfordcounty.ca

Drinking Water System:	Mount Elgin Water System
Drinking Water System Number:	220000629
Drinking Water System Owner & Contact Information:	Oxford County Public Works Department Water Services P.O. Box 1614 21 Reeve Street Woodstock, ON N4S 7Y3 Telephone: 519-539-9800 Toll Free: 866-537-7778 Email: publicworks@oxfordcounty.ca
Reporting Period:	January 1, 2021 – December 31, 2021

1.1. System Description

The Mount Elgin Water System is a Large Municipal Water system as defined by Ontario Regulation (O.Reg.) 170/03 and serves a population of approximately 603. The system consists of two groundwater wells and two treatment facilities. The water from Mount Elgin Well 3A was treated with approximately 1,956 litres of sodium hypochlorite (liquid chlorine) for disinfection and the water from Well 5 was treated with approximately 310 litres of sodium hypochlorite and 6,142 kg of carbon dioxide for pH adjustment. These chemicals are certified to meet standards set by the Standards Council of Canada or American National Standards Institute.

The two treatment facilities house pumps, monitoring equipment, and there is a 380 m^3 underground reservoir at the Well 3A facility. A standby generator is available to run the Well 3A facility in the event of a power failure and a generator is planned to be installed at the Well 5 facility. The system is maintained by licensed water system operators, who operate treatment and monitoring equipment and collect samples as specified by the Regulation. Alarms automatically notify operators in the event of a failure of critical operational requirements.

1.2. Major Expenses

The Mount Elgin Water System is one of 14 water systems that have revenues and expenses pooled for the economy of scale purposes. The systems are combined into the Township Water financial system and in 2021 had operating and maintenance expenditures of approximately $3,000,000.

In addition to regular operational and maintenance expenditures, Capital Improvement Projects for the Townships systems totaled $1,500,000 for improvements to water treatment systems and replacement of distribution mains in the Township System.

Capital Improvement projects for the Township systems included:

- 65,000 for groundwater modelling
- 350,000 for facilities improvements
- 175,000 for the replacement of general operating equipment including well rehabilitations

Capital Improvement projects for all systems included:

- $720,000 to develop Countywide SCADA Master Plan for all water systems
- $14,000 for Updated Water Systems Modelling

Capital Construction project:

- $1,900,000 for the Graydon WTF 2021 construction costs

2. MICROBIOLOGICAL TESTING

2.1. *E. coli* and Total Coliform

Bacteriological tests for *E. coli* and total coliforms are required weekly from the raw and treated water at the facility and from the distribution system. Extra samples are taken after major repairs or maintenance work. Any *E. coli* or total coliform results above 0 in treated water must be reported to the Ministry of the Environment, Conservation and Parks (MECP) and Medical Officer of Health (MOH). Resamples and any other required actions are taken as quickly as possible. The results from the 2021 sampling program are shown in the table below. There were no adverse test results from 176 treated water samples in this reporting period.

	Number of Samples	*Range of E. coli Results Min - Max MAC = 0*	*Range of Total Coliform Results Min - Max MAC = 0*
Raw	74	0 - 0	0 - 2
Treated	75	0 - 0	0 - 0
Distribution	104	0 - 0	0 - 0

2.2. *Heterotrophic Plate Count (HPC)*

HPC analyses are required from the treated and distribution water. The tests are required weekly for treated water and for 25% of the required distribution system bacteriological samples. The HPC should be less than 500 colonies per 1 mL. Results over 500 colonies per 1 mL may indicate a change in water quality but it is not considered an indicator of unsafe water. The 2021 results are shown in the table below.

	Number of Samples	*Range of HPC Min - Max*
Treated	75	0 - 9
Distribution	26	0 - 22

3. CHEMICAL TESTING

The Safe Drinking Water Act requires periodic testing of the water for approximately 60 different chemical parameters. The latest results for all parameters are provided in Appendix A. The sampling frequency varies for different types and sizes of water systems and chemical parameters. If the concentration of a parameter is above half of the Maximum Allowable Concentration (MAC) under the Ontario Drinking Water Quality Standards, an increased testing frequency of once every three months is required by the Regulation. Where concerns regarding a parameter exist, the MECP can also require additional sampling be undertaken.

Information on the health effects and allowable limits of components in drinking water may be found on the MECP web page through the link provided in Appendix A. Additional information on common chemical parameters specific to the Mount Elgin system is provided below.

3.1. Hardness

This is an aesthetic parameter that may affect the appearance of the water but is not related to health. Well water commonly has high levels of hardness and other minerals from being in contact with underground rock formations. Many households have water softeners to help reduce white calcium deposits and improve the efficiency of soaps. This information is included here to help set the water softener at the level recommended by the manufacturer. Samples for hardness are collected at a minimum every 3 years from either raw or treated water. The average hardness for the Mount Elgin System is 231 mg/L (14 grains/gallon) based on samples collected from 2006 to 2019.

3.2. Sodium

Sodium levels in drinking water are tested once every five years. The aesthetic objective is 200 mg/L meaning at levels less than this, sodium will not impair the taste of the water.

When sodium levels are above 20 mg/L the MECP and MOH are notified. Southwestern Public Health Unit maintains an information page on sodium in drinking water at https://www.swpublichealth.ca/en/partners-and-professionals/resources/Health-Care-Providers/Alerts-Advisories-Updates/Advisories/ADV_HIA-Sodium-20201203.pdf in order to help people on sodium restricted diets control their sodium intake. The average sodium level in the Mount Elgin water system is 29.2 mg/L (ranging from 21.3 to 37.0 mg/L).

3.3. Fluoride

Fluoride levels are tested once every five years and levels above 1.5 mg/L must be reported to the MECP and MOH. Levels under 2.4 mg/L are considered safe for consumption, however at levels between 1.5 and 2.4 mg/L fluoride may cause staining or pitting of teeth in children less than 6 years old. Further information on fluoride can be found on the Southwestern Public Health Unit webpage at https://www.swpublichealth.ca/en/partners-and-professionals/resources/Health-Care-Providers/Alerts-Advisories-Updates/Advisories/ADV_HIA-Fluoride-20201203.pdf

The County does not add fluoride to the water at any of its drinking water systems however the Mount Elgin system has naturally occurring fluoride levels averaging 1.5 mg/L (ranging from 1.4 to 1.7 mg/L). The test results for each treatment facility are provided in Appendix A.

3.4. Additional Testing Required by MECP

None.

4. OPERATIONAL MONITORING

4.1. Chlorine Residual

Free chlorine levels of the treated water are monitored continuously at the discharge point of the Water Treatment Facility. In the distribution system, free chlorine is checked twice weekly at various locations. As a target, free chlorine residual within the distribution system should be above 0.20 mg/L. A free chlorine level lower than 0.05 mg/L must be reported and corrective action taken. A summary of the chlorine residual readings is provided in the table below. There was one incident reported to the MECP and MOH in 2021 the details of which are provided in Section 6.2.

4.2. Turbidity

Turbidity of treated water is continuously monitored at the treatment facility, as a change in turbidity can indicate an operational problem. The turbidity of untreated water from the well is checked weekly. Turbidity is measured in nephelometric turbidity units (NTU). Under O. Reg. 170/03 turbidity in groundwater is not reportable however turbidity should be < 1 NTU at the treatment plant and < 5 NTU in the distribution system. A summary of the monitoring results for 2021 is provided in the table below.

Parameter	*Number of Tests or Monitoring Frequency*	*Range of Results (Min – Max) and Average*
Chlorine residual in distribution (mg/L)	360	(0.03 – 2.40) 1.20
Mount Elgin Well 3A WTF		
Chlorine residual after treatment (mg/L)	Continuous	(0.53 – 2.63) 1.31
Turbidity after treatment (NTU)	Continuous	(0.04 – 4.53) 0.14
Graydon Well 5 WTF		
Chlorine residual after treatment (mg/L)	Continuous	(0.23 – 4.64) 1.29
Turbidity after treatment (NTU)	Continuous	(0.19 – 5.00) 0.55

5. WATER QUANTITY

Continuous monitoring of flow rates from supply wells into the treatment system and from the facility into the distribution system is required by O. Reg. 170/03. The Municipal Drinking Water License and Permit to Take Water issued by the MECP regulate the amount of water that can be utilized over a given time period. A summary of the 2021 flows are provided in the Table below and presented graphically in Appendix B.

Flow Summary	*Quantity*
Permit to Take Water Limit	1,649 m^3/d
Municipal Drinking Water License Limit	1,192 m^3/d
2021 Average Daily Flow	129 m^3/d
2021 Maximum Daily Flow	314 m^3/d
2021 Average Monthly Flow	3,916 m^3
2021 Total Amount of Water Supplied	46,991 m^3

Construction of the Mount Elgin Graydon Well 5 treatment facility started in 2020 and was operational in September 2021. With this facility now operational there will be sufficient supply capacity to meet the community's long term growth needs.

Firm Capacity of this system is rated at 428 m3/day. Firm Capacity is defined as the removal of the highest producing well in an emergency or operational / maintenance situation with the ability to transport a maximum of 100 m^3/day to maintain system integrity. This system comprises of two supply wells with a 380 m^3 underground reservoir at the Well 3A facility.

6. NON-COMPLIANCE FINDINGS AND ADVERSE RESULTS

This section documents any known incidents of non-compliance or adverse results and the associated correction actions taken to resolve the issue. Non-compliance issues are typically identified by either the Operating Authority or the MECP Drinking Water Inspectors. The issues and associated required actions are documented by the Inspectors in the system's Annual Inspection Report.

All non-compliance issues are investigated, corrective actions taken and documented using the County's Drinking Water Quality Management System (DWQMS) procedures.

6.1. Non-Compliance Findings

The 2021 MECP annual inspection of the Mount Elgin drinking water system took place on July 15, 2021. There were no non-compliance findings and the 2021 Inspection Report rating was 100%.

6.2. Adverse Results

Any adverse results from bacteriological, chemical samples or observations of operational conditions that indicate adverse water quality are reported as required and corrective actions taken. Below is a summary of the adverse/reportable occurrence in 2021 along with the corresponding resolution.

Incident / Date	*Corrective Action*	*Resolution / Date*
Treated Water Sample with Chemistry Exceedance		
Fluoride of 1.62 mg/L taken Aug 24, 2021 at the Graydon Well 5 WTF	Reported, sample collected for confirmation	Sample result was confirmed (1.71 mg/L) Sep 7, 2021
Chlorine Residual in Distribution System < 0.05 mg/L		
Chlorine residual = 0.03 mg/L on November 26, 2021	Report, flush and retest	Acceptable chlorine residual restored November 26, 2021

APPENDIX A: SUMMARY OF CHEMICAL RESULTS

UNDERSTANDING CHEMICAL TEST RESULTS

The following tables summarize the laboratory results of the chemical testing the County is required to complete. Different types of parameters are required to be tested for at different frequencies as noted below. Explanations on the health impacts of these parameters can be found in the MECP document https://cvc.ca/wp-content/uploads/2011/03/std01_079707.pdf PIBS 4449e01 titled "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines".

Results are shown as concentrations with units of either milligrams per litre (mg/L) or micrograms per litre (ug/L). ario Drinking Water Standards, Objectives and Guidelines". 1 mg/L is equal to 1000 ug/L. The Maximum Acceptable Concentration (MAC) is the highest amount of a parameter that is acceptable in Municipal drinking water and can be found in the MECP Drinking Water Standards. The Method Detection Limit (MDL) is the lowest amount to which the laboratory can confidently measure. A result of "ND" stands for "Not Detected" and means that the concentration of the chemical is lower than the laboratory's equipment is capable of measuring.

Nitrate and nitrate samples are required every 3 months in normal operation.

Parameter	*Result Range* Min – Max *(mg/L)*	*Average Result (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Nitrite				
Mount Elgin WTF	ND	ND	1.0	0.003
Graydon WTF	ND	ND	1.0	0.003
Nitrate				
Mount Elgin WTF	0.013 – 0.020	0.017	10.0	0.006
Graydon WTF	0.010 – 0.012	0.011	10.0	0.006

Trihalomethane (THM) and total Haloacetic Acids (HAA) are by-products of the disinfection process. The samples are required every 3 months from the distribution system.

Parameter	*Annual Average*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Trihalomethane (THM)	2021	12	100	0.37
Haloacetic Acids (HAA)	2021	ND	80	5.3

The following Table summarizes the most recent test results for Sodium and Fluoride. Testing and reporting any adverse results is required every 5 years.

Parameter	*Sample Date*	*Result Value (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Sodium				
Mount Elgin WTF	May 28, 2019	21.3	20.0*	0.01
Graydon WTF	Aug 18, 2021	37.0	20.0*	0.01
Fluoride				
Mount Elgin WTF	May 28, 2019	1.39	1.5**	0.06
Graydon WTF	Aug 18, 2021	1,62	1.5**	0.06
Graydon WTF	Aug 26, 2021	1,71	1.5**	0.06

*Sodium levels between 20 – 200 mg/L must be reported every 5 years.
**Natural levels of fluoride between 1.5 – 2.4 mg/L must be reported every 5 years.

The following Table summarizes the most recent results for the Lead Testing Program. Lead samples are taken every 3 years. Levels of alkalinity and pH are monitored twice per year in the distribution system to ensure water quality is consistent and does not facilitate leaching of lead into the water.

Parameter	*Result Range (Min – Max)*	*Number of Samples*	*Acceptable Level*
Distribution Alkalinity	216 – 224	2	30 – 500mg/L
Distribution pH	7.71 – 7.85	2	6.5 – 8.5
Distribution Lead 2021	0.22 – 0.49	2	10 ug/L MAC

The following Table summarizes the most recent test results for Schedule 23. Testing is required every 3 years for secure groundwater wells.

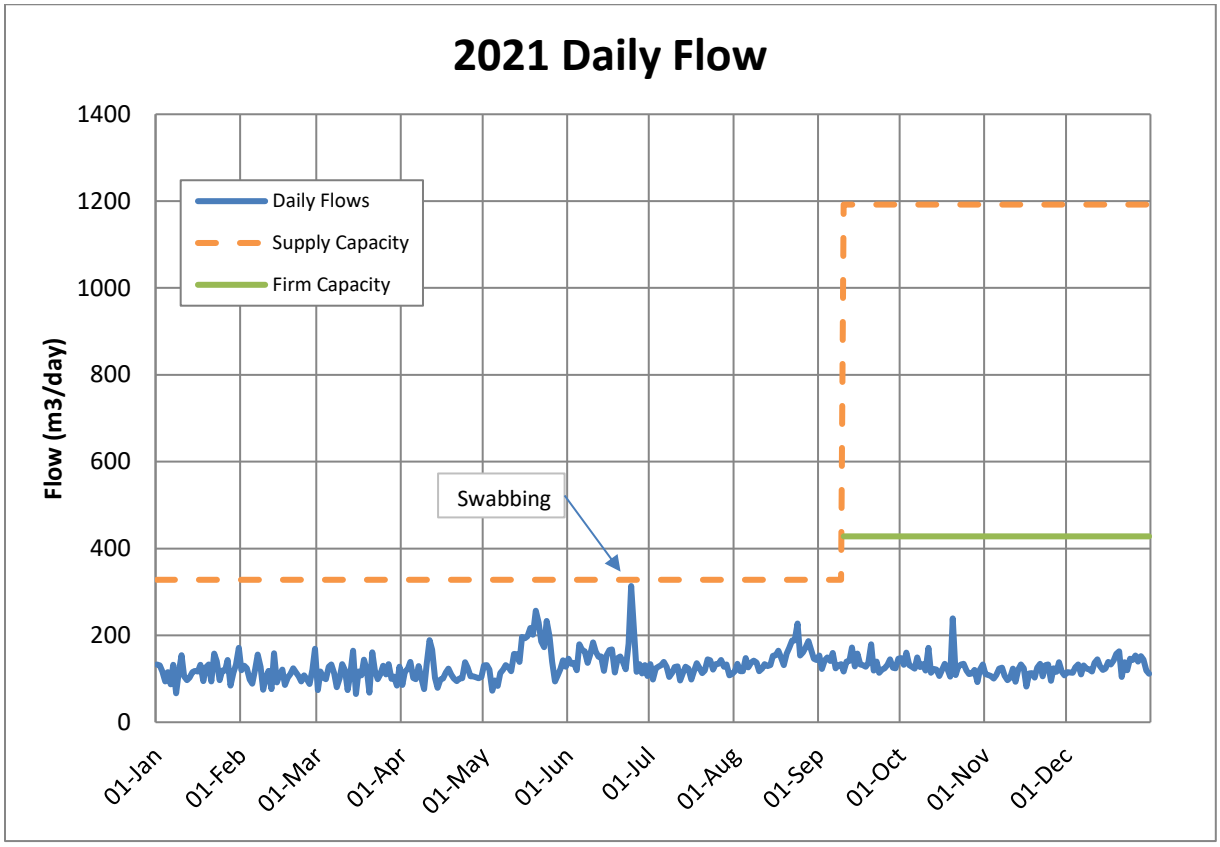
Parameter	***Mt Elgin Well 3A WTF*** *Result Value (ug/L)* Feb 24, 2020	***Graydon Well 5 WTF*** *Result Value (ug/L)* Aug 18, 2021	*MAC (ug/L)*	*MDL (ug/L)*
Antimony	ND	ND	6	0.9
Arsenic	ND	ND	10	0.2
Barium	142	139	1000	0.02
Boron	80	117	5000	2
Cadmium	0.003	0.007	5	0.003
Chromium	0.65	0.27	50	0.08
Mercury	ND	ND	1	0.01
Selenium	ND	ND	50	0.04
Uranium	0.011	0.013	20	0.002

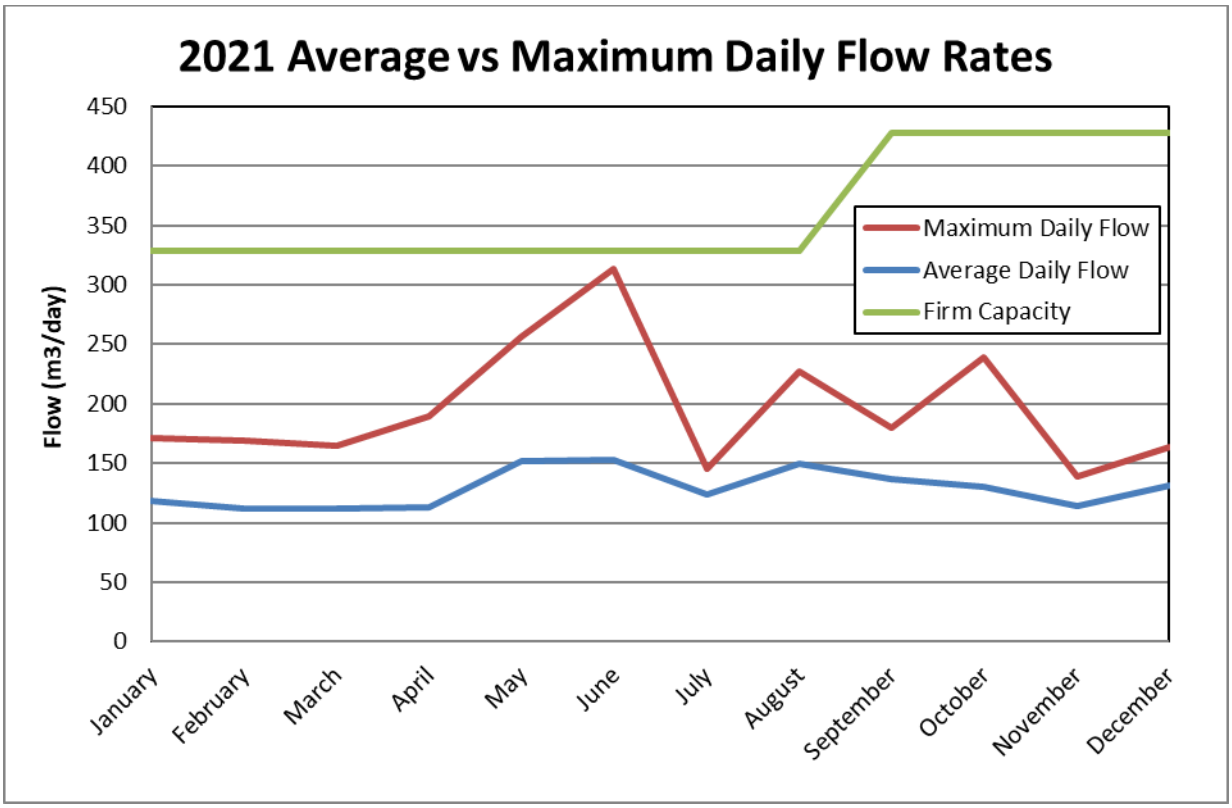
The following Table summarizes the most recent test results for the Organic parameters in Schedule 24. Testing is required every 3 years for secure groundwater wells.

Parameter	***Well 3A WTF*** *Result Value (ug/L)* Feb 24, 2020	***Well 5 WTF*** *Result Value (ug/L)* Aug 18, 2021	*MAC (ug/L)*	*MDL (ug/L)*
Alachlor	ND	ND	5	0.02
Atrazine + N-dealkylatedmetobolites	ND	ND	5	0.01
Azinphos-methyl	ND	ND	20	0.05
Benzene	ND	ND	1	0.32
Benzo(a)pyrene	ND	ND	0.01	0.004
Bromoxynil	ND	ND	5	0.33
Carbaryl	ND	ND	90	0.05
Carbofuran	ND	ND	90	0.01
Carbon Tetrachloride	ND	ND	2	0.16
Chlorpyrifos	ND	ND	90	0.02
Diazinon	ND	ND	20	0.02
Dicamba	ND	ND	120	0.20
1,2-Dichlorobenzene	ND	ND	200	0.41
1,4-Dichlorobenzene	ND	ND	5	0.36
1,2-Dichloroethane	ND	ND	5	0.35
1,1-Dichloroethylene (vinylidene chloride)	ND	ND	14	0.33
Dichloromethane	ND	ND	50	0.35
2-4 Dichlorophenol	ND	ND	900	0.15
2,4-Dichlorophenoxy acetic acid (2,4-D)	ND	ND	100	0.19
Diclofop-methyl	ND	ND	9	0.40
Dimethoate	ND	ND	20	0.03
Diquat	ND	ND	70	1
Diuron	ND	ND	150	0.03
Glyphosate	ND	ND	280	1
Malathion	ND	ND	190	0.02
MCPA	ND	ND	100	0.12
Metolachlor	ND	ND	50	0.01
Metribuzin	ND	ND	80	0.02
Monochlorobenzene	ND	ND	80	0.30

Paraquat	ND	ND	10	1
Pentachlorophenol	ND	ND	60	0.15
Phorate	ND	ND	2	0.01
Picloram	ND	ND	190	1
Polychlorinated Biphenyls(PCB)	ND	ND	3	0.04
Prometryne	ND	ND	1	0.03
Simazine	ND	ND	10	0.01
Terbufos	ND	ND	1	0.01
Tetrachloroethylene	ND	ND	10	0.35
2,3,4,6-Tetrachlorophenol	ND	ND	100	0.20
Triallate	ND	ND	230	0.01
Trichloroethylene	ND	ND	5	0.44
2,4,6-Trichlorophenol	ND	ND	5	0.25
Trifluralin	ND	ND	45	0.02
Vinyl Chloride	ND	ND	1	0.17

APPENDIX B: WATER QUANTITY SUMMARY

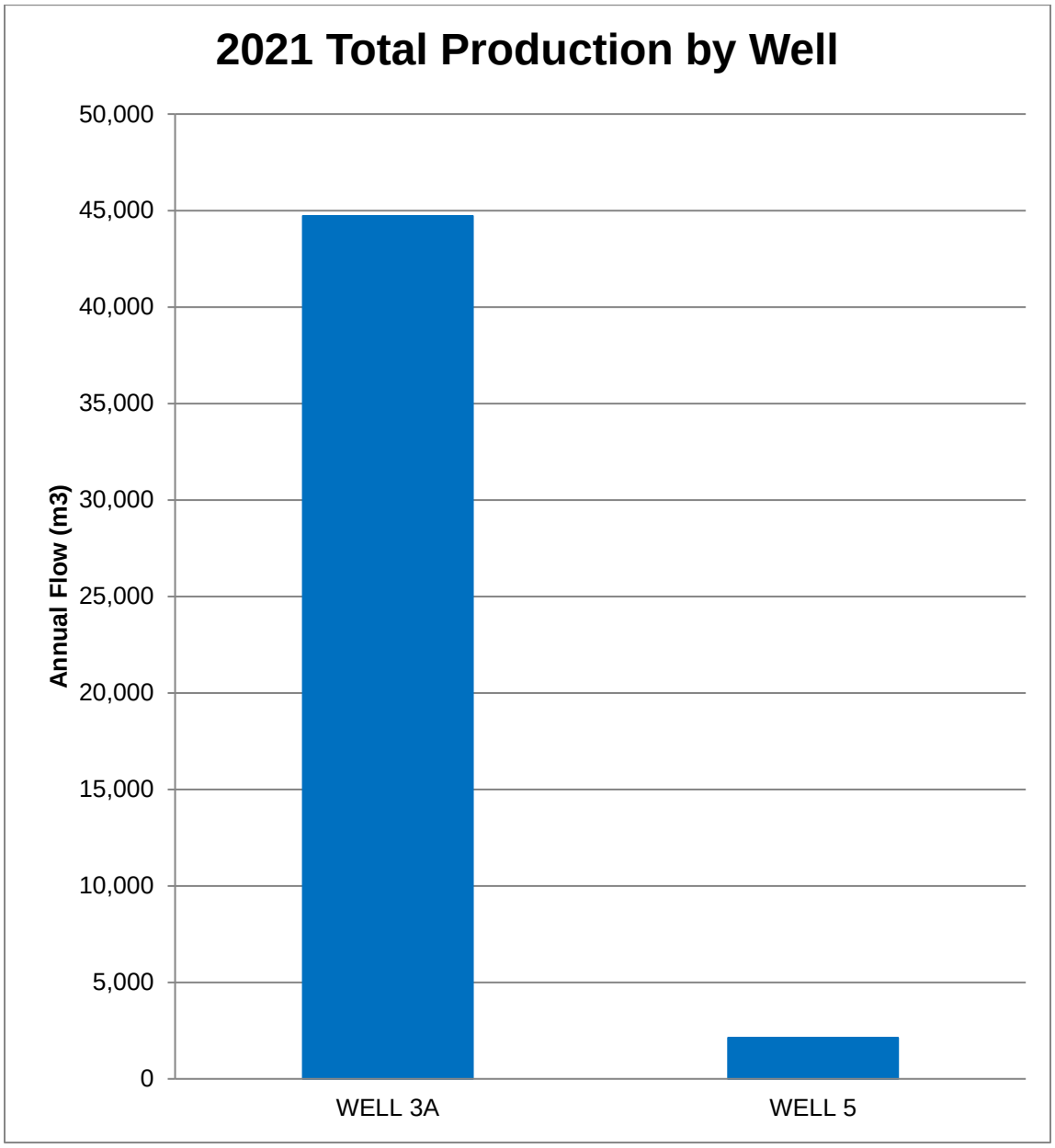




Mount Elgin Water System Supply Capacity 1,192m³/day

Mount Elgin Water System Firm Capacity 428 m³/day

APPENDIX B: WATER QUANTITY SUMMARY



Mount Elgin Water System Supply Capacity 1,192m^3/day

Mount Elgin Water System Firm Capacity 428 m^3/day

Growing stronger together

2021 ANNUAL DRINKING WATER SYSTEM SUMMARY REPORT
Oxford South Water System

1. GENERAL INFORMATION

Oxford County (the County) prepares a report summarizing system operation and water quality for every municipal drinking water system annually. The reports detail the latest water quality testing results, water quantity statistics and any adverse conditions that may have occurred for the previous year. They are available for review by the end of February on the County website at www.oxfordcounty.ca/drinkingwater or by contacting the Public Works Department.

All efforts have been made to ensure the information presented in this report is accurate. If you have any questions or comments concerning the report please contact the County at the address and phone number listed below or by email at publicworks@oxfordcounty.ca

Drinking Water System:	Oxford South Water System
Drinking Water System Number:	220000601
Drinking Water System Owner & Contact Information:	Oxford County Public Works Department Water Services P.O. Box 1614 21 Reeve Street Woodstock, ON N4S 7Y3 Telephone: 519-539-9800 Toll Free: 866-537-7778 Email: publicworks@oxfordcounty.ca
Reporting Period:	January 1, 2021- December 31, 2021

1.1. System Description

The Oxford South Water System is a Large Municipal Water system as defined by Ontario Regulation (O.Reg.) 170/03 and serves a population of approximately 5,340. Transmission watermains interconnect the communities of Otterville, Springford, and Norwich.

The system consists of seven secure groundwater wells and four treatment facilities as follows:

Treatment Facility	*Location*	*Wells*	*Treatment*
Pitcher Street	Norwich	N2 N5	Filtration for iron removal and disinfection with sodium hypochlorite
Main Street	Norwich	N4	Iron sequestering with sodium silicate and disinfection with sodium hypochlorite
Otterville	Otterville	O3 O4	Disinfection with sodium hypochlorite
Springford	Springford	S4 S5	Disinfection with sodium hypochlorite

The treatment facilities each house high lift pumps, and monitoring and treatment equipment for the supply wells. A 1,818 m^3 water tower at Norwich and a 1,440 m^3 water tower in Otterville provide storage and maintain pressure in the system.

In 2021, approximately 15,785 L of sodium hypochlorite and 1,740 L of sodium silicate was used in the water treatment process. These chemicals are certified to meet standards set by the Standards Council of Canada or American National Standards Institute.

Standby generators are available at Norwich and Otterville to run the facilities in the event of a power failure. The system is maintained by licensed water system operators, who operate treatment and monitoring equipment and collect samples as specified by the Regulation. Alarms automatically notify operators in the event of failure of critical operational requirements.

1.2. Major Expenses

The Oxford South Water System is one of 14 water systems that have revenues and expenses pooled for the economy of scale purposes. The systems are combined into the Township Water financial system and in 2021 had operating and maintenance expenditures of approximately $3,000,000.

Operations and maintenance expenditures included:

- $175,000 for the replacement of general operating equipment and well rehabilitations

In addition to regular operational and maintenance expenditures, Capital Improvement Projects for the Townships systems totaled $1,500,000 for improvements to water treatment systems and replacement of distribution mains in the Township System.

Township Capital Improvement Projects included:

- $65,000 groundwater modeling
- $350,000 for facilities improvements

Capital Improvement projects for all systems included:

- $720,000 to develop Countywide SCADA Master Plan for all water systems
- $14,000 for updated water systems modeling

2. MICROBIOLOGICAL TESTING

2.1. E. coli and Total Coliform

Bacteriological tests for *E. coli* and total coliforms are required weekly from the raw and treated water at the facility and from the distribution system. Extra samples are taken after major repairs or maintenance work. Any *E. coli* or total coliform results above 0 in treated water must be reported to the Ministry of Environment, Conservation and Parks (MECP) and Medical Officer of Health (MOH). Resamples and any other required actions are taken as quickly as possible. The results from the 2021 sampling program are shown on the table below. There were no adverse test results from 484 treated water samples in this reporting period.

	Number of Samples	*Range of E. coli Results Min - Max MAC = 0*	*Range of Total Coliform Results Min - Max MAC = 0*
Raw	364	0-2	0-13
Treated	261	0	0
Distribution	223	0	0

2.2. Heterotrophic Plate Count (HPC)

HPC analyses are required from the treated and distribution water. The tests are required weekly for treated water and for 25% of the required distribution system bacteriological samples. HPC should be less than 500 colonies per 1 mL. Results over 500 colonies per 1 mL may indicate a change in water quality but it is not considered an indicator of unsafe water. The 2021 results are shown in the table below.

	Number of Samples	*Range of HPC Min - Max*
Treated	156	0-15
Distribution	52	0-50

3. CHEMICAL TESTING

The Safe Drinking Water Act requires periodic testing of the water for approximately 60 different chemical parameters. The latest results for all parameters are provided in Appendix A. The sampling frequency varies for different types and sizes of water systems and chemical parameters. If the concentration of a parameter is above half of the Maximum Allowable Concentration (MAC) under the Ontario Drinking Water Quality Standards, an increased testing frequency of once every three months is required by the Regulation. Where concerns regarding a parameter exist, the MECP can also require additional sampling be undertaken.

Information on the health effects and allowable limits of components in drinking water may be found on the MECP web page through the link provided in Appendix A. Additional information on common chemical parameters specific to the Oxford South system is provided below.

3.1. Sodium

Sodium levels in drinking water are tested once every five years. The aesthetic objective is 200 mg/L meaning at levels less than this, sodium will not impair the taste of water.

When sodium levels are above 20 mg/L the MECP and Medical Officer of Health (MOH) are notified. Southwest Public Health maintains an information page on sodium in drinking water at https://www.swpublichealth.ca/en/partners-and-professionals/resources/Health-Care-Providers/Alerts-Advisories-Updates/Advisories/ADV_HIA-Sodium-20201203.pdf in order to help people on sodium-restricted diets control their sodium intake. The sodium levels in the Oxford South system range from 23.2 to 48.4 mg/L, depending on which wells are in use.

3.2. Fluoride

Fluoride levels are sampled once every five years and levels above 1.5 mg/L must be reported to the MECP and MOH. Levels under 2.4 mg/L are considered safe for consumption, however at levels between 1.5 and 2.4 mg/L of fluoride may cause staining or pitting of teeth in children less than 6 years old. Further information on fluoride can be found on the Southwest Public Health web page at https://www.swpublichealth.ca/en/partners-and-professionals/resources/Health-Care-Providers/Alerts-Advisories-Updates/Advisories/ADV_HIA-Fluoride-20201203.pdf

The County does not add fluoride to the water at any of its drinking water systems, however, the Springford wells have naturally occurring fluoride levels. The fluoride levels in the Springford wells are 1.68 mg/L. All the other wells in the system have fluoride levels below the reportable levels.

3.3. Hardness, Iron, and Manganese

These are aesthetic parameters that may affect the appearance of the water but is not related to health. Well water commonly has high levels of hardness and other minerals from being in contact with underground rock formations. Many households have water softeners to help reduce white calcium deposits and improve the efficiency of soaps. This information is included here to help set the water softener at the level recommended by the manufacturer.

The hardness in the Oxford South system depends on the wells being used. The Norwich wells supply a larger proportion of the water to the entire system and a weighted average was used to give an accurate representation for the average hardness of the Otterville-Springford system. Samples for hardness are collected at a minimum every 3 years from raw or treated water.

- The average hardness in Norwich is 275 mg/L (16 grains/gallon) based on samples collected from 2006-2019.
- The average hardness in Otterville-Springford is 309 mg/L (18 grains/gallon) based on samples collected 2006 to 2019.

Iron levels less than 0.30 mg/L (ppm) are not considered to cause aesthetic problems such as discoloured water.

- The Otterville and Springford wells have less than 0.30 mg/L iron.
- Iron is removed by filtration at the Norwich Pitcher St. facility, wells N2 and N5.

- The iron level at the Norwich Main St. facility well N4 is 0.51 mg/L (ppm) and sodium silicate is added to keep the iron in suspension.

Manganese is commonly found in conjunction with iron and also causes discoloured water. Currently, levels of manganese under 0.05 mg/L are not considered to cause aesthetic issues. However, a new aesthetic objective of 0.02 mg/L has been proposed though not yet take effect.

- The Norwich Main St. facility (W4) average manganese level in 2021 was 0.03 mg/L.
- The Springford water treatment facility average manganese level in 2021 was 0.03 mg/L.

3.2. Additional Testing Required by MECP

None.

4. OPERATIONAL MONITORING

4.1. Chlorine Residual

Free chlorine levels of the treated water are monitored continuously at the discharge point of the Water Treatment Facility. In the distribution system, free chlorine is checked twice weekly at various locations. As a target, free chlorine residual within the distribution system should be above 0.20 mg/L. A free chlorine level lower than 0.05 mg/L must be reported and corrective action taken. There were no reportable incidents in 2021. A summary of the chlorine residual readings is provided in the table below.

4.2. Turbidity

Turbidity of treated water is continuously monitored at the treatment facility, as a change in turbidity can indicate an operational problem. The turbidity of untreated water from each well is checked weekly. Turbidity is measured in nephelometric turbidity units (NTU). Under O.Reg. 170/03 turbidity in groundwater is not reportable however turbidity should be < 1 NTU at the treatment plant and < 5 NTU in the distribution system. A summary of the monitoring results for 2021 is provided in the table below.

	Number of Tests or Monitoring Frequency	*Range of Results (Min – Max) and Average*
Chlorine residual in distribution (mg/L)	Continuous	(0.36 – 1.55) 1.17
Norwich Main St. E. WTF		
Chlorine Residual (mg/L)	Continuous	(0.39 – 3.51) 1.19
Turbidity (NTU)	Continuous	(0.04 – 2.64) 0.07
Norwich Pitcher St. WTF		
Chlorine Residual (mg/L)	Continuous	(0.56 – 1.64) 1.34
Turbidity (NTU)	Continuous	(0.02 – 2.51) 0.26
Otterville WTF		
Chlorine (mg/L)	Continuous	(0.63 – 2.44) 1.35
Turbidity (NTU)	Continuous	(0.01 – 4.00) 0.12
Springford WTF		
Chlorine (mg/L)	Continuous	(0.71 – 4.03) 1.13
Turbidity (NTU)	Continuous	(0.04 – 4.03) 0.23

5. WATER QUANTITY

Continuous monitoring of flow rates from supply wells into the treatment system and from the facility into the distribution system is required by O.Reg. 170/03. The Municipal Drinking Water License and Permit to Take Water issued by the MECP regulate the amount of water that can be utilized over a given time period. A summary of the 2021 flows are provided in the Table below and presented graphically in Appendix B.

Flow Summary	*Quantity*
Permit to Take Water Limit	6,054 m^3/d
Municipal Drinking Water License Limit	6,054 m^3/d
2021 Average Daily Flow	1,205 m^3/d
2021 Maximum Daily Flow	2,277 m^3/d
2021 Average Monthly Flow	36,629 m^3
2021 Total Amount of Water Supplied	439,663 m^3

A review of the available supply capacity and the anticipated growth forecasted for the community indicates that the system has sufficient capacity over the 20 year planning horizon.

Firm Capacity of this system is rated at 2,454 m^3/day. Firm Capacity is defined as the removal of the highest producing well in an emergency or operational / maintenance situation with the ability to transport a maximum of 100 m^3/day if necessary to maintain system integrity. This system comprises of seven supply wells with only three active in the Village of Norwich. Wells located in Otterville and Springford are currently operational at this time however are not used in the firm capacity rating as their supply remains unreliable due to elevated nitrate levels (Otterville wells) and water quantity issues (Springford wells).

6. NON-COMPLIANCE FINDINGS AND ADVERSE RESULTS

This section documents any known incidents of non-compliance or adverse results and the associated correction actions taken to resolve the issue. Non-compliance issues are typically identified by either the Operating Authority or the MECP Drinking Water Inspectors. The issues and associated required actions are documented by the Inspectors in the system's Annual Inspection Report. All non-compliance issues are investigated, corrective actions taken and documented using the County's Drinking Water Quality Management System (DWQMS) procedures.

6.1. Non-Compliance Findings

The annual MECP inspection took place in October 2021. There were no non-compliance findings and the 2021 Inspection Report Rating was 100%.

6.2. Adverse Results

Any adverse results from bacteriological, chemical samples or observations of operational conditions that indicate adverse water quality is reported as required and corrective actions taken. There were no adverse or reportable occurrences in 2021.

APPENDIX A: SUMMARY OF CHEMICAL RESULTS

UNDERSTANDING CHEMICAL TEST RESULTS

The following tables summarize the laboratory results of the chemical testing the County is required to complete. Different types of parameters are required to be tested for at different frequencies as noted below. Explanations on the health impacts of these parameters can be found in the MECP document at https://cvc.ca/wp-content/uploads/2011/03/std01_079707.pdf PSIB 4449e01 titled "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines".

Results are shown as concentrations with units of either milligrams per litre (mg/L) or micrograms per litre (ug/L). 1 mg/L is equal to 1000 ug/L. The Maximum Acceptable Concentration (MAC) is the highest amount of a parameter that is acceptable in Municipal drinking water and can be found in the MECP Drinking Water Standards. The Method Detection Limit (MDL) is the lowest amount to which the laboratory can confidently measure. A result of "ND" stands for "Not Detected" and means that the concentration of the chemical is lower than the laboratory's equipment is capable of measuring. In the event that some samples results are ND, and other results are above the MDL, the value of the MDL will be used in place of the ND where an average result must be calculated. Where all collected samples are ND the average sample result will be assumed to be ND.

Nitrate and nitrite samples are required every 3 months in normal operation.

Parameter & Location	*Result Range* Min – Max *(mg/L)*	*Average Result (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Nitrite			1.0	0.003
Norwich Main St. WTF	ND	ND		
Norwich Pitcher St. WTF	ND	ND		
Otterville WTF	ND	ND		
Springford WTF	ND	ND		
Nitrate			10.0	0.006
Norwich Main St. WTF	ND-0.035	0.013		
Norwich Pitcher St. WTF	ND-0.031	0.013		
Otterville WTF	6.28-7.92	7.25		
Springford WTF	0.006-0.043	0.014		

Trihalomethane (THM) and total Haloacetic Acids (HAA) are by-products of the disinfection process. The samples are required every 3 months from the distribution system.

Parameter	*Annual Average*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Trihalomethane (THM)	2021	9.3	100	0.37
Haloacetic Acids (HAA)	2021	ND	80	5.3

The following Table summarizes the most recent test results for Sodium and Fluoride. Testing and reporting any adverse results is required every 5 years.

Parameter & Location	*Sample Date*	*Result Value (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Sodium			20.0*	0.01
Norwich Main St. WTF	May 27/2019	17.9		
Norwich Pitcher St. WTF	Feb 19/2019	23.2		
Otterville WTF	May 27/2019	34.0		
Springford WTF	April 17/2017	51.4		
Fluoride			1.5**	0.06
Norwich Main St. WTF	Aug. 16/2021	0.93		
Norwich Pitcher St. WTF	Aug 16/2021	0.89		
Otterville WTF	April 24/2021	0.08		
Springford WTF	April 17/2017	1.67		

*Sodium levels between 20 – 200 mg/L must be reported every 5 years.
**Natural levels of fluoride between 1.5 – 2.4 mg/L must be reported every 5 years.

The following Table summarizes the most recent results for the Lead Testing Program. Lead samples are taken every 3 years. Levels of alkalinity and pH are monitored twice per year in the distribution system to ensure water quality is consistent and does not facilitate leaching of lead into the water.

Parameter	*Result Range (Min - Max)*	*Number of Samples*	*Acceptable Level*
Distribution Alkalinity	211-244	6	30 – 500mg/L
Distribution pH	7.48-7.55	6	6.5 – 8.5
Distribution Lead 2021	0.03-1.31	6	10 ug/L MAC

The following Table summarizes the most recent test results for Schedules 23.Testing is required every 3 years for secure groundwater wells.

Parameter	*Result Value (ug/L) Norwich Pitcher St. December 7, 2020*	*Result Value (ug/L) Norwich Main St. December 7, 2020*	*MAC (ug/L)*	*MDL (ug/L)*
Antimony	ND	ND	6	0.02
Arsenic	1.1*	1.5	10	0.2
Barium	174	226	1000	0.01
Boron	79	51	5000	2
Cadmium	ND	ND	5	0.003
Chromium	0.62	0.80	50	0.03
Mercury	ND	ND	1	0.01
Selenium	ND	ND	5	1
Uranium	0.088	0.386	20	0.001

Parameter	*Result Value (ug/L) Otterville WTF May 27, 2019*	*Result Value (ug/L) Springford WTF July 7, 2020*	*MAC (ug/L)*	*MDL (ug/L)*
Antimony	ND	ND	6	0.02
Arsenic	0.2	5.7*	10	0.2
Barium	35.0	116	1000	0.01
Boron	17	204	5000	2
Cadmium	0.012	0.003	5	0.003
Chromium	0.29	0.09	50	0.08
Mercury	ND	ND	1	0.01
Selenium	0.36	ND	5	0.04
Uranium	0.552	0.067	20	0.002

**average of all annual samples (collected in 2021)*

The following Tables summarize the most recent test results for Schedule 24. Testing is required every 3 years for secure groundwater wells.

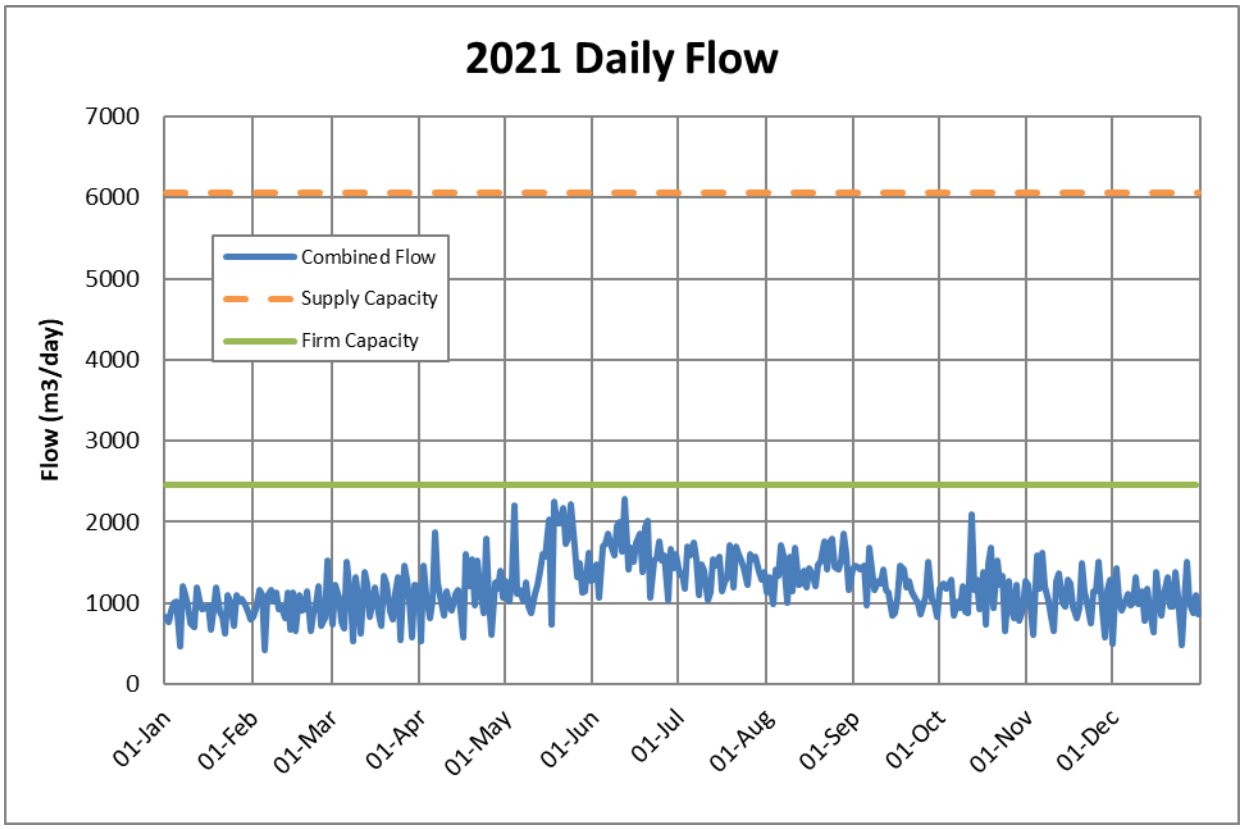
Parameter	*Result Value (ug/L) Norwich Pitcher St December 7, 2020*	*Result Value (ug/L) Norwich Main St. December 7, 2020*	*MAC (ug/L)*	*MDL (ug/L)*
Alachlor	ND	ND	5	0.02
Atrazine + N-dealkylated metobolites	ND	ND	5	0.01
Benzene	ND	ND	1	0.32
Benzo(a)pyrene	ND	ND	0.01	0.004
Bromoxynil	ND	ND	5	0.33
Carbaryl	ND	ND	90	0.01
Carbofuran	ND	ND	90	0.01
Carbon Tetrachloride	ND	ND	2	0.16
Chlorpyrifos	ND	ND	90	0.02
Cyanazine	ND	ND	10	0.03
Diazinon	ND	ND	20	0.02

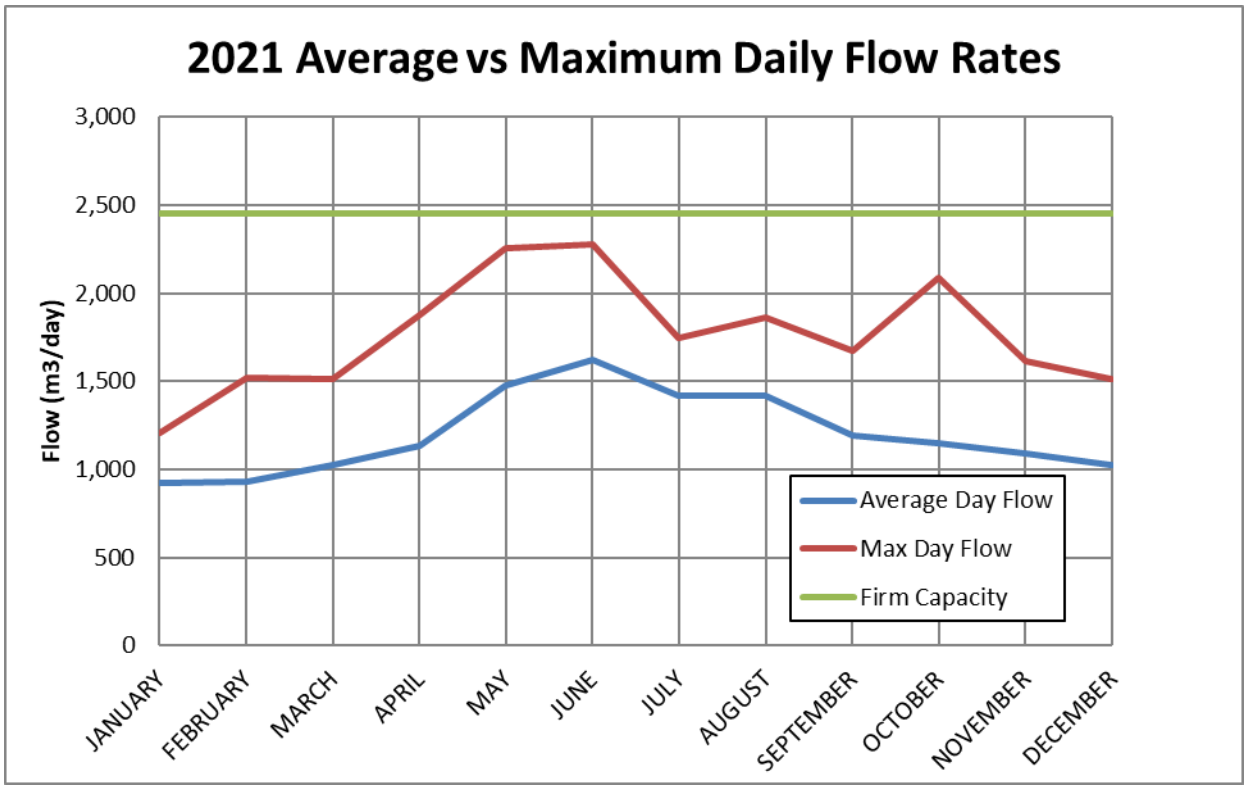
Parameter	*Result Value (ug/L) Norwich Pitcher St December 7, 2020*	*Result Value (ug/L) Norwich Main St. December 7, 2020*	*MAC (ug/L)*	*MDL (ug/L)*
Dicamba	ND	ND	120	0.20
1,2-Dichlorobenzene	ND	ND	200	0.36
1,4-Dichlorobenzene	ND	ND	5	0.36
1,2-Dichloroethane	ND	ND	5	0.35
1,1-Dichloroethylene (vinylidene chloride)	ND	ND	14	0.33
Dichloromethane	ND	ND	50	0.35
2-4 Dichlorophenol	ND	ND	900	0.15
2,4-Dichlorophenoxy acetic acid (2,4-D)	ND		100	0.19
Diclofop-methyl	ND	ND	9	0.40
Dimethoate	ND	ND	20	0.03
Dinoseb				
Diquat	ND	ND	70	1
Diuron	ND	ND	150	0.003
Glyphosate	ND	ND	280	6
Malathion	ND	ND	190	0.02
2-methyl-4chlorophenoxyacetic acid (MCPA)	ND	ND	100	0.12
Methoxychlor	ND	ND	900	0.01
Metolachlor	ND	ND	50	0.01
Metribuzin	ND	ND	80	0.02
Monochlorobenzene	ND	ND	80	0.30
Paraquat	ND	ND	10	1
Pentachlorophenol	ND	ND	60	0.15
Phorate	ND	ND	2	0.01
Picloram	ND	ND	190	0.25
Polychlorinated Biphenyls(PCB)	ND	ND	3	0.04
Prometryne	ND	ND	1	0.03
Simazine	ND	ND	10	0.01
Terbufos	ND	ND	1	0.01
Tetrachloroethylene	ND	ND	10	0.44
2,3,4,6-Tetrachlorophenol	ND	ND	100	0.14
Triallate	ND	ND	230	0.01
Trichloroethylene	ND	ND	5	0.44
2,4,6-Trichlorophenol	ND	ND	5	0.25
Trifluralin	ND	ND	45	0.02
Vinyl Chloride	ND	ND	1	0.17

Parameter	*Result Value (ug/L) Otterville WTF June 7, 2021*	MDL (ug/L)	*Result Value (ug/L) Springford WTF July 6, 2020*	MDL (ug/L)	*MAC (ug/L)*
Alachlor	ND	0.02	ND	0.02	5
Atrazine + N-dealkylated metobolites	ND	0.01	ND	0.01	5
Azinphos-methyl	ND	0.02	ND	0.02	20
Benzene	ND	0.32	ND	0.32	1
Benzo(a)pyrene	ND	0.004	ND	0.004	0.01
Bromoxynil	ND	0.33	ND	0.33	5
Carbaryl	ND	0.05	ND	0.01	90
Carbofuran	ND	0.01	ND	0.01	90
Carbon Tetrachloride	ND	0.17	ND	0.16	2
Chlorpyrifos	ND	0.02	ND	0.02	90

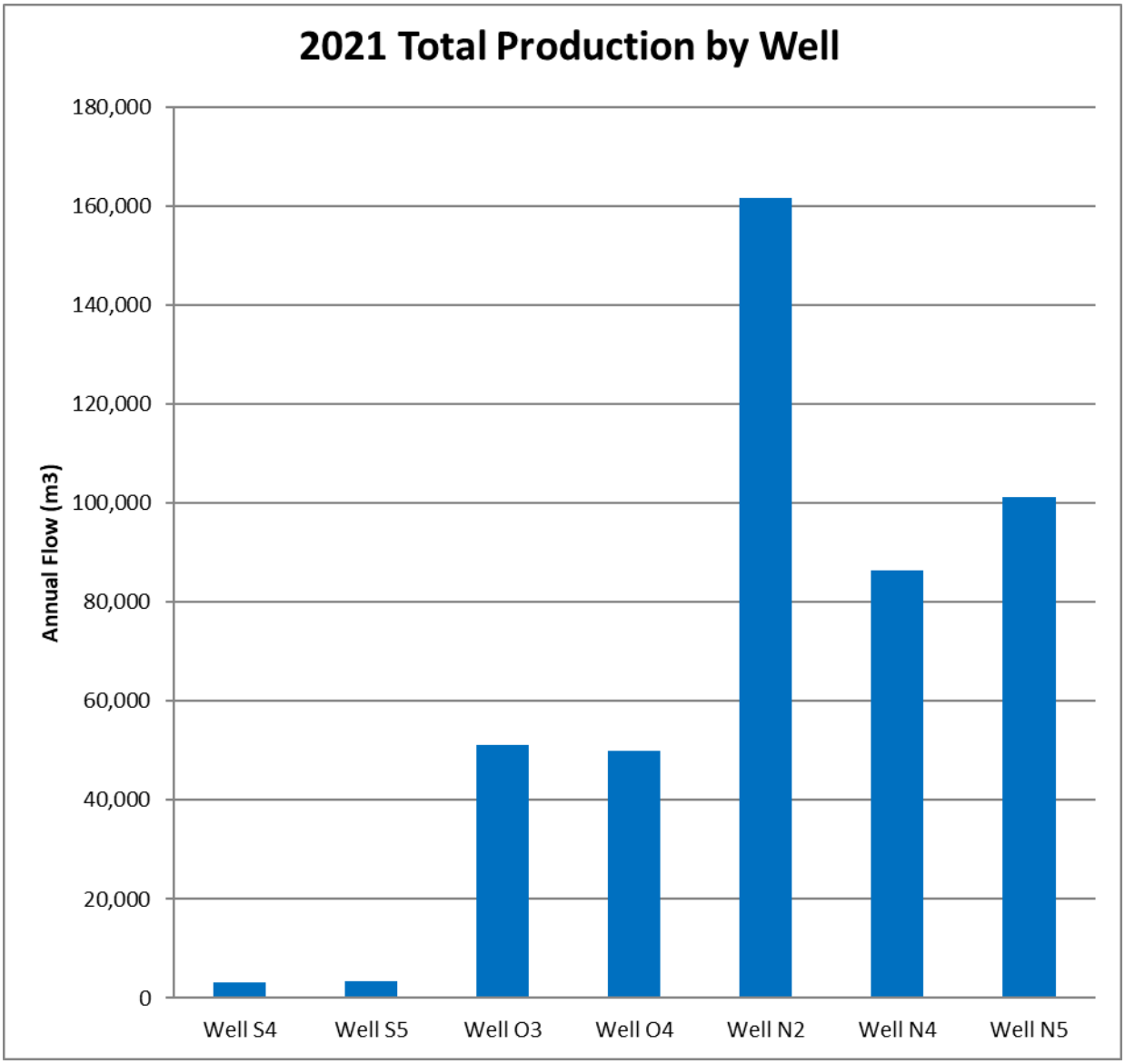
Parameter	*Result Value (ug/L) Otterville WTF June 7, 2021*	MDL (ug/L)	*Result Value (ug/L) Springford WTF July 6, 2020*	MDL (ug/L)	*MAC (ug/L)*
Diazinon	ND	0.02	ND	0.02	20
Dicamba	ND	0.20	ND	0.20	120
1,2-Dichlorobenzene	ND	0.41	ND	0.36	200
1,4-Dichlorobenzene	ND	0.36	ND	0.36	5
1,2-Dichloroethane	ND	0.35	ND	0.35	5
1,1-Dichloroethylene (vinylidene chloride)	ND	0.33	ND	0.33	14
Dichloromethane	ND	0.35	ND	0.35	50
2-4 Dichlorophenol	ND	0.15	ND	0.15	900
2,4-Dichlorophenoxy acetic acid (2,4-D)	ND	0.19	ND	0.19	100
Diclofop-methyl	ND	0.40	ND	0.40	9
Dimethoate	ND	0.03	ND	0.03	20
Diquat	ND	1	ND	1	70
Diuron	ND	0.03	ND	0.003	150
Glyphosate	ND	1	ND	6	280
Malathion	ND	0.02	ND	0.02	190
2-methyl-4chlorophenoxyacetic acid (MCPA)	NA	0.12	ND	0.12	100
Metolachlor	ND	0.01	ND	0.01	50
Metribuzin	ND	0.02	ND	0.02	80
Monochlorobenzene	ND	0.30	ND	0.30	80
Paraquat	ND	1	ND	1	10
Pentachlorophenol	ND	0.15	ND	0.15	60
Phorate	ND	0.01	ND	0.01	2
Picloram	ND	0.25	ND	0.25	190
Polychlorinated Biphenyls(PCB)	ND	0.04	ND	0.04	3
Prometryne	ND	0.03	ND	0.03	1
Simazine	ND	0.01	ND	0.01	10
Terbufos	ND	0.01	ND	0.01	1
Tetrachloroethylene	ND	0.35	ND	0.35	10
2,3,4,6-Tetrachlorophenol	ND	0.20	ND	0.14	100
Triallate	ND	0.01	ND	0.01	230
Trichloroethylene	ND	0.44	ND	0.44	5
2,4,6-Trichlorophenol	ND	0.25	ND	0.25	5
Trifluralin	ND	0.02	ND	0.02	45
Vinyl Chloride	ND	0.17	ND	0.17	1

APPENDIX B: WATER QUANTITY SUMMARY





Oxford South Water System Firm Capacity 2,454 m^3/day
Oxford South Water System Capacity 6,054 m3 /day



Oxford South Water System Firm Capacity 2,454 m^3/day
Oxford South Water System Capacity 6,054 m3 /day

2021 ANNUAL DRINKING WATER SYSTEM SUMMARY REPORT
Plattsville Water System

1. GENERAL INFORMATION

Oxford County (the County) prepares a report summarizing system operation and water quality for every municipal drinking water system annually. The reports detail the latest water quality testing results, water quantity statistics and any adverse conditions that may have occurred for the previous year. They are available for review by the end of February on the County website at www.oxfordcounty.ca/drinkingwater or by contacting the Public Works Department.

All efforts have been made to ensure the information presented in this report is accurate. If you have any questions or comments concerning the report, please contact the County at the address and phone number listed below or by email at publicworks@oxfordcounty.ca

Drinking Water System:	Plattsville Water System
Drinking Water System Number:	210001291
Drinking Water System Owner & Contact Information:	Oxford County Public Works Department Water Services P.O. Box 1614 21 Reeve Street Woodstock, ON N4S 7Y3 Telephone: 519-539-9800 Toll Free: 866-537-7778 Email: publicworks@oxfordcounty.ca
Reporting Period:	January 1, 2021 – December 31, 2021

1.1. System Description

The Plattsville Water System is a Large Municipal Water system as defined by Ontario Regulation (O.Reg.) 170/03 and serves a population of approximately 1,607. The system consists of two well sources which are secure groundwater wells. The water is treated with sodium hypochlorite for disinfection and sodium silicate to sequester iron.

In 2021, approximately 4,158 L of sodium hypochlorite and 2,285 L of sodium silicate were used in the water treatment process. These chemicals are certified to meet standards set by the Standards Council of Canada or American National Standards Institute.

The treatment facility houses pumps and monitoring equipment. A 1,830 m^3 water tower provides storage and maintains pressure in the distribution system. A standby generator is available to run the facility in the event of a power failure. The system is maintained by licensed water system operators, who operate treatment and monitoring equipment and collect samples as specified by the Regulation. Alarms automatically notify operators in the event of failure of critical operational requirements.

1.2. Major Expenses

The Plattsville Water System is one of 14 water systems that have revenues and expenses pooled for the economy of scale purposes. The systems are combined into the Township Water financial system and in 2021 had operating and maintenance expenditures of approximately $3,000,000.

Operations and maintenance expenditures included:

- $175,000 for the replacement of general operating equipment and well rehabilitations

In addition to regular operational and maintenance expenditures, Capital Improvement Projects for the Townships systems totaled $1,500,000 for improvements to water treatment systems and replacement of distribution mains.

Township Capital Improvement Projects included:

- $12,000 for Plattsville water quality report
- $65,000 groundwater modeling
- $350,000 for facilities improvements

Capital Improvement projects for all systems included:

- $720,000 to develop Countywide SCADA Master Plan for all water systems
- $14,000 for updated water systems modeling

2. MICROBIOLOGICAL TESTING

2.1. *E. coli and Total Coliform*

Bacteriological tests for *E. coli* and total coliforms are required weekly on the raw and treated water at the facility and in the distribution system. Extra samples are taken after major repairs or maintenance work. Any *E. coli* or total coliform results above 0 in treated water must be reported to the Ministry of Environment, Conservation and Parks (MECP) and Medical Officer of Health (MOH). Resamples and any other required actions are taken as quickly as possible. The results from the 2021 sampling program are shown on the table below. There were no adverse test results from 204 treated water samples in this reporting period.

	Number of Samples	*Range of E. coli Results Min - Max MAC = 0*	*Range of Total Coliform Results Min - Max MAC = 0*
Raw	104	0	0 -1
Treated	52	0	0
Distribution	152	0	0

2.2. Heterotrophic Plate Count (HPC)

HPC analyses are required from the treated and distribution water. The tests are required weekly for treated water and for 25% of the required distribution system bacteriological samples. HPC should be less than 500 colonies per 1 mL. Results over 500 colonies per 1 mL may indicate a change in water quality but it is not considered an indicator of unsafe water. The 2021 results are shown in the table below.

	Number of Samples	*Range of HPC Min - Max*
Treated	52	0 - 3
Distribution	40	0 - 2

3. CHEMICAL TESTING

The Safe Drinking Water Act requires periodic testing of the water for approximately 60 different chemical parameters. The latest results for all parameters are provided in Appendix A. The sampling frequency varies for different types and sizes of water systems and chemical parameters. If the concentration of a parameter is above half of the Maximum Allowable Concentration (MAC) under the Ontario Drinking Water Quality Standards, an increased testing frequency of once every three months is required by the Regulation. Where concerns regarding a parameter exist, the MECP can also require additional sampling be undertaken.

Information on the health effects and allowable limits of components in drinking water may be found on the MECP web page through the link provided in Appendix A. Additional information on common chemical parameters specific to the Plattsville system is provided below.

3.1. Hardness, Iron and Manganese

These are aesthetic parameters that may affect the appearance of the water but is not related to health. Well water commonly has high levels of hardness and other minerals from being in contact with underground rock formations. Many households have water softeners to help reduce white calcium deposits and improve the efficiency of soaps and reduce iron levels. This information is included here to help set the water softener at the level recommended by the manufacturer. Samples for hardness are collected at a minimum every 3 years from raw or treated water.

- The average hardness for the Plattsville Drinking Water System is 1241 (73 grains/gallon) based on samples collected from 2006 to 2019.

Levels of iron less than 0.30 mg/L (ppm) are not considered to cause aesthetic problems such as discoloured water. In Plattsville, sodium silicate is added to help keep iron in suspension.

- The average iron level in 2021 was 0.62 mg/L

Manganese is commonly found in conjunction with iron and also causes discoloured water. Manganese levels in this system are at or above the aesthetic objective of 0.05 mg/L.

- The average manganese level in 2021 was 0.07 mg/L (ppm)

3.2. Additional Testing Required by MECP

None.

4. OPERATIONAL MONITORING

4.1. Chlorine Residual

Free chlorine levels of the treated water are monitored continuously at the discharge point of the Water Treatment Facility. In the distribution system, free chlorine is checked twice weekly at various locations. As a target, free chlorine residual within the distribution system should be above 0.20 mg/L. A free chlorine level lower than 0.05 mg/L must be reported and corrective action taken. There were no reportable incidents in 2021. A summary of the chlorine residual readings is provided in the table below.

4.2. Turbidity

Turbidity of treated water is continuously monitored at the treatment facility, as a change in turbidity can indicate an operational problem. The turbidity of untreated water from the well is checked weekly. Turbidity is measured in nephelometric turbidity units (NTU). Under O.Reg. 170/03 turbidity in groundwater is not reportable however turbidity should be < 1 NTU at the treatment plant and < 5 NTU in the distribution system. A summary of the monitoring results for 2021 is provided in the table below.

Parameter	*Number of Tests or Monitoring Frequency*	*Range of Results (Min – Max) and Average*
Chlorine residual in distribution (mg/L)	Continuous	(0.81 – 1.67) 1.14
Chlorine residual after treatment (mg/L)	Continuous	(0.08 – 4.00) 1.32
Turbidity after treatment (NTU)	Continuous	(0.04 – 4.00) 0.36

5. WATER QUANTITY

Continuous monitoring of flowrates from supply wells into the treatment system and from the facility into the distribution system is required by O.Reg. 170/03. The Municipal Drinking Water License and Permit to Take Water issued by the MECP regulate the amount of water that can be utilized over a given time period. A summary of the 2021 flows are provided in the Table below and presented graphically in Appendix B.

Flow Summary	*Quantity*
Permit to Take Water Limit	4,579 m^3/d
Municipal Drinking Water License Limit	2,290 m^3/d
2021 Average Daily Flow	403 m^3/d
2021 Maximum Daily Flow	1,184 m^3/d
2021 Average Monthly Flow	12,259 m^3
2021 Total Amount of Water Supplied	147,103 m^3

A review of the available supply capacity and the anticipated growth forecasted for the community indicates that the system has sufficient capacity over the 20 year planning horizon. The Plattsville system is currently operated to maximize turnover within the water tower during hot or cold weather in order to minimize temperature change of the water. This operational practice artificially increases the maximum daily flow. A more realistic maximum day is 983 m^3/d which averages flow over a three day period to moderate the variance in pumping.

This system comprises of two supply wells. Firm Capacity is defined as the removal of the highest producing well in an emergency or operational / maintenance situation with the ability to transport a maximum of 100 m^3/day if necessary to maintain system integrity. Firm Capacity of this system is rated at 1,296 m^3/day.

6. NON-COMPLIANCE FINDINGS AND ADVERSE RESULTS

This section documents any known incidents of non-compliance or adverse results and the associated correction actions taken to resolve the issue. Non-compliance issues are typically identified by either the Operating Authority or the MECP Drinking Water Inspectors. The issues and associated required actions are documented by the Inspectors in the system's Annual Inspection Report.

All non-compliance issues are investigated, corrective actions taken and documented using the County's Drinking Water Quality Management System (DWQMS) procedures.

6.1. Non-Compliance Findings

At the time this report was draft the annual inspection by the MECP had not been undertaken in 2021.

6.2. Adverse Results

Any adverse results from bacteriological, chemical samples or observations of operational conditions that indicate adverse water quality are reported as required and corrective actions are taken. There were no adverse or reportable occurrences in 2021.

APPENDIX A: SUMMARY OF CHEMICAL RESULTS

UNDERSTANDING CHEMICAL TEST RESULTS

The following tables summarize the laboratory results of the chemical testing the County is required to complete. Different types of parameters are required to be tested for at different frequencies as noted below. Explanations on the health impacts of these parameters can be found in the MECP document at https://cvc.ca/wp-content/uploads/2011/03/std01_079707.pdf PSIB 4449e01titled "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines".

Results are shown as concentrations with units of either milligrams per litre (mg/L) or micrograms per litre (ug/L). 1 mg/L is equal to 1000 ug/L. The Maximum Acceptable Concentration (MAC) is the highest amount of a parameter that is acceptable in Municipal drinking water and can be found in the MECP Drinking Water Standards. The Method Detection Limit (MDL) is the lowest amount to which the laboratory can confidently measure. A result of "ND" stands for "Not Detected" and means that the concentration of the chemical is lower than the laboratory's equipment is capable of measuring. In the event that some samples results are ND, and other results are above the MDL, the value of the MDL will be used in place of the ND where an average result must be calculated. Where all collected samples are ND the average sample result will be assumed to be ND.

Nitrate and nitrate samples are required every 3 months in normal operation.

Parameter	*Result Range* Min – Max *(mg/L)*	*Average Result (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Nitrite	ND	ND	1.0	0.003
Nitrate	0.085 – 0.258	0.156	10.0	0.006

Trihalomethane (THM) and total Haloacetic Acids (HAA) are by-products of the disinfection process. The samples are required every 3 months from the distribution system.

Parameter	*Annual Average*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Trihalomethane (THM)	2021	15	100	0.37
Haloacetic Acids (HAA)	2021	ND	80	5.3

The following Table summarizes the most recent test results for Sodium and Fluoride. Testing and reporting any adverse results is required every 5 years.

Parameter	*Sample Date*	*Result Value (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Sodium	August 16, 2021	19.1	20.0*	0.01
Fluoride	August 16, 2021	1.08	1.5**	0.06

*Sodium levels between 20 – 200 mg/L must be reported every 5 years.
**Natural levels of fluoride between 1.5 – 2.4 mg/L must be reported every 5 years.

The following Table summarizes the most recent results for the Lead Testing Program. Lead samples are taken every 3 years. Levels of alkalinity and pH are monitored twice per year in the distribution system to ensure water quality is consistent and does not facilitate leaching of lead into the water.

Parameter	*Result Range (Min - Max)*	*Number of Samples*	*Acceptable Level*
Distribution Alkalinity	212 - 218	4	30 – 500mg/L
Distribution pH	7.08 – 7.21	4	6.5 – 8.5
Distribution Lead 2021	0.10 – 1.60	4	10 ug/L MAC

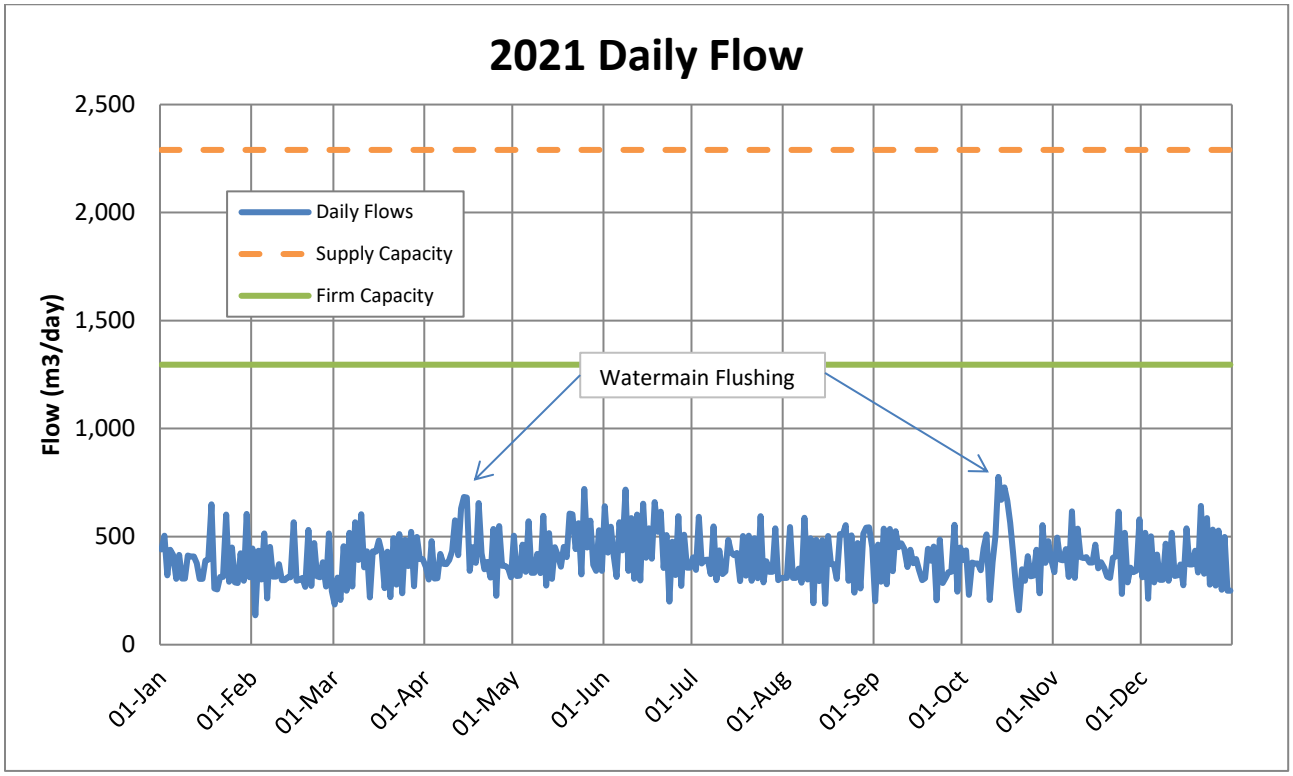
The following Table summarizes the most recent test results for Schedule 23. Testing is required every 3 years for secure groundwater wells.

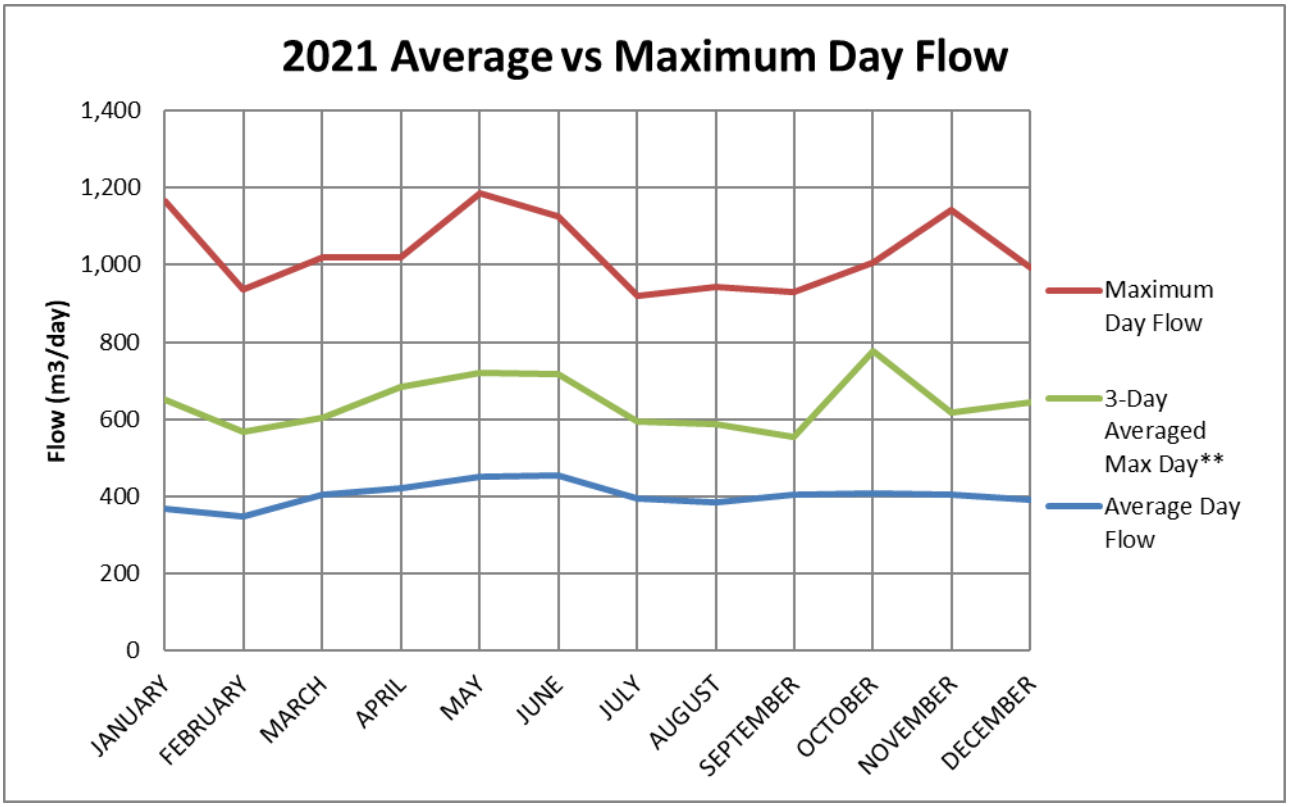
Parameter	*Sample Date*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Antimony	May 21/19	0.11	6	0.09
Arsenic	"	0.4	10	0.2
Barium	"	11.2	1000	0.01
Boron	"	106	5000	2
Cadmium	"	0.033	5	0.003
Chromium	"	0.15	50	0.03
Mercury	"	ND	1	0.01
Selenium	"	0.08	5	0.04
Uranium	"	0.519	20	0.002

The following Table summarizes the most recent test results for Schedule 24. Testing is required every 3 years for secure groundwater wells.

Parameter	*Sample Date*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Alachlor	June 7, 2021	ND	5	0.02
Atrazine + N-dealkylatedmetobolites	“	ND	5	0.01
Azinphos-methyl	“	ND	20	0.05
Benzene	“	ND	1	0.32
Benzo(a)pyrene	“	ND	0.01	0.004
Bromoxynil	“	ND	5	0.33
Carbaryl	“	ND	90	0.05
Carbofuran	“	ND	90	0.01
Carbon Tetrachloride	“	ND	2	0.17
Chlorpyrifos	“	ND	90	0.02
Diazinon	“	ND	20	0.02
Dicamba	“	ND	120	0.20
1,2-Dichlorobenzene	“	ND	200	0.41
1,4-Dichlorobenzene	“	ND	5	0.36
1,2-Dichloroethane	“	ND	5	0.35
1,1-Dichloroethylene(vinylidene chloride)	“	ND	14	0.33
Dichloromethane	“	ND	50	0.35
2-4 Dichlorophenol	“	ND	900	0.15
2,4-Dichlorophenoxy acetic acid (2,4-D)	“	ND	100	0.19
Diclofop-methyl	“	ND	9	0.40
Dimethoate	“	ND	20	0.06
Diquat	“	ND	70	1
Diuron	“	ND	150	0.03
Glyphosate	“	ND	280	1
Malathion	“	ND	190	0.02
Metolachlor	“	ND	50	0.01
2-methyl-4chlorophenoxyacetic acid (MCPA)	“	ND	100	0.12
Metribuzin	“	ND	80	0.02
Monochlorobenzene	“	ND	80	0.3
Paraquat	“	ND	10	1
Pentachlorophenol	“	ND	60	0.15
Phorate	“	ND	2	0.01
Picloram	“	ND	190	1
Polychlorinated Biphenyls(PCB)	“	ND	3	0.04
Prometryne	“	ND	1	0.03
Simazine	“	ND	10	0.01
Terbufos	“	ND	1	0.01
Tetrachloroethylene	“	ND	10	0.35
2,3,4,6-Tetrachlorophenol	“	ND	100	0.20
Triallate	“	ND	230	0.01
Trichloroethylene	“	ND	5	0.44
2,4,6-Trichlorophenol	“	ND	5	0.25
Trifluralin	“	ND	45	0.02
Vinyl Chloride	“	ND	1	0.17

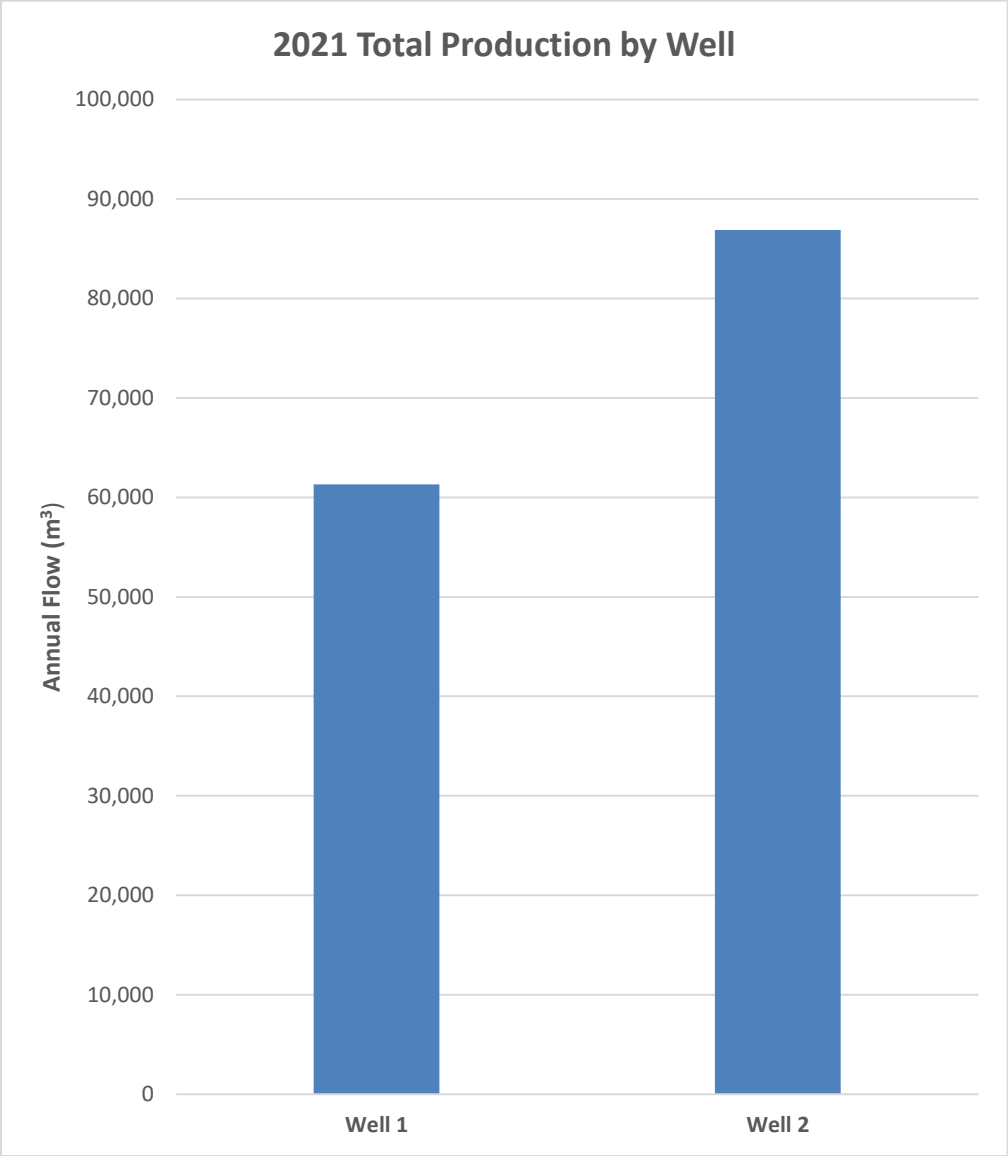
APPENDIX B: WATER QUANTITY SUMMARY





** Operational practices artificially elevate the maximum day flows and they are recalculated to a 3 day maximum average day flow. See Section 5 of Annual Report

Plattsville Water System Firm Capacity 1,296 m^3/ day
Plattsville Water System Capacity 2,290 m^3/ day



Plattsville Water System Firm Capacity 1,296 m^3/ day
Plattsville Water System Capacity 2,290 m^3/ day

Growing stronger together

2021 ANNUAL DRINKING WATER SYSTEM SUMMARY REPORT
Tavistock Water System

1. GENERAL INFORMATION

Oxford County (the County) prepares a report summarizing system operation and water quality for every municipal drinking water system annually. The reports detail the latest water quality testing results, water quantity statistics and any adverse conditions that may have occurred for the previous year. They are available for review by the end of February on the County website at www.oxfordcounty.ca/drinkingwater or by contacting the Public Works Department.

All efforts have been made to ensure the information presented in this report is accurate. If you have any questions or comments concerning the report please contact the County at the address and phone number listed below or by email at publicworks@oxfordcounty.ca.

Drinking Water System:	Tavistock Water System
Drinking Water System Number:	2200000647
Drinking Water System Owner & Contact Information:	Oxford County Public Works Department Water Services P.O. Box 1614 21 Reeve Street Woodstock, ON N4S 7Y3 Telephone: 519-539-9800 Toll Free: 866-537-7778 Email: publicworks@oxfordcounty.ca
Reporting Period:	January 1, 2021 – December 31, 2021

1.1. System Description

The Tavistock Water System is a Large Municipal Water system as defined by Ontario Regulation (O.Reg.) 170/03 and serves a population of approximately 3,008. The system consists of three well sources which are secure groundwater wells. The water is treated with sodium hypochlorite for disinfection and sodium silicate to sequester iron. In 2021, approximately 26,855 L of sodium hypochlorite and 14,760 L (20,880 kg) of sodium silicate were used in the water treatment process. These chemicals are certified to meet standards set by the Standards Council of Canada or the American National Standards Institute.

The 1,590 m^3 water tower provides storage and maintains pressure in the system. The water tower also houses high lift pumps, treatment, and monitoring equipment. A standby generator is available to run the facility in the event of a power failure. The system is maintained by licensed water system operators, who operate treatment and monitoring equipment and collect samples as specified by the Regulation. Alarms automatically notify operators in the event of failure of critical operational requirements.

1.2. Major Expenses

The Tavistock Water System is one of 14 water systems that have revenues and expenses pooled for the economy of scale purposes. The systems are combined into the Township Water financial system and in 2021 had operating and maintenance expenditures of approximately $3,000,000.

Operations and maintenance expenditures included:

- $175,000 for the replacement of general operating equipment and well rehabilitations

In addition to regular operational and maintenance expenditures, Capital Improvement Projects for the Townships systems totaled $1,500,000 for improvements to water treatment systems and replacement of distribution mains in the Township System.

Township Capital Improvement Projects included:

- $260,000 for Tavistock well exploration
- $65,000 groundwater modeling
- $350,000 for facilities improvements

Capital Improvement projects for all systems included:

- $720,000 to develop Countywide SCADA Master Plan for all water systems
- $14,000 for updated water system modelling

2. MICROBIOLOGICAL TESTING

2.1. *E. coli and Total Coliform*

Bacteriological tests for *E. coli* and total coliforms are required weekly on the raw and treated water at the facility and in the distribution system. Extra samples are taken after major repairs or maintenance work. Any *E. coli* or total coliform results above 0 in treated water must be reported to the Ministry of Environment, Conservation and Parks (MECP) and Medical Officer of Health (MOH). Resamples and any other required actions are taken as quickly as possible. The results from the 2021 sampling program are shown on the table below. There were no adverse test results from 209 treated water samples in this reporting period.

	Number of Samples	*Range of E. coli Results Min - Max MAC = 0*	*Range of Total Coliform Results Min - Max MAC = 0*
Raw	146	0-OG	0 - OG
Treated	54	0	0
Distribution	155	0	0

*OG Means over grown bacteria growth resulted in a sample where the colonies could not be counted. This results did not impact treated water quality and is not reportable as an adverse condition.

2.2. Heterotrophic Plate Count (HPC)

HPC analyses are required from the treated and distribution water. The tests are required weekly for treated water and for 25% of the required distribution system bacteriological samples. HPC should be less than 500 colonies per 1 mL. Results over 500 colonies per 1 mL may indicate a change in water quality but it is not considered an indicator of unsafe water. The 2021 results are shown in the table below.

	Number of Samples	*Range of HPC Min - Max*
Treated	52	0 - 4
Distribution	39	0 - 12

3. CHEMICAL TESTING

The Safe Drinking Water Act requires periodic testing of the water for approximately 60 different chemical parameters. The latest results for all parameters are provided in Appendix A. The sampling frequency varies for different types and sizes of water systems and chemical parameters. If the concentration of a parameter is above half of the Maximum Allowable Concentration (MAC) under the Ontario Drinking Water Quality Standards, an increased testing frequency of once every three months is required by the Regulation. Where concerns regarding a parameter exist, the MECP can also require additional sampling be undertaken.

Information on the health effects and allowable limits of components in drinking water may be found on the MECP web page through the link provided in Appendix A. Additional information on common chemical parameters specific to the Tavistock system is provided below.

3.1. Hardness, Iron, and Manganese

These are aesthetic parameters that may affect the appearance of the water but is not related to health. Well water commonly has high levels of hardness and other minerals from being in contact with underground rock formations. Many households have water softeners to help reduce white calcium deposits and improve the efficiency of soaps and reduce iron levels. This information is included here to help set the water softener at the level recommended by the manufacturer. Samples for hardness are collected at a minimum every 3 years from raw or treated water.

- The average hardness for the Tavistock Drinking Water System is 315 mg/L (18 grains/gallon) based on samples collected from 2006 to 2019.

Levels of iron less than 0.30 mg/L (ppm) are not considered to cause aesthetic problems such as discoloured water. In Tavistock sodium silicate is added to keep the iron in suspension.

- The average iron level in 2021 was 0.66 mg/L

Manganese is commonly found in conjunction with iron and also causes discoloured water. A new proposed aesthetic objective of 0.02 mg/L for manganese has been recommended but not yet issued. The current aesthetic objective for manganese is 0.05 mg/L. Tavistock treated water meets the current manganese objective but average concentrations in the system may require additional treatment considerations when the new aesthetic objective takes effect.

- The average manganese level in 2021 was 0.015 mg/L

3.2. Additional Testing Required by MECP

None.

4. OPERATIONAL MONITORING

4.1. Chlorine Residual

Free chlorine levels of the treated water are monitored continuously at the discharge point of the Water Treatment Facility. In the distribution system, free chlorine is checked twice weekly at various locations. As a target, free chlorine residual within the distribution system should be above 0.20 mg/L. A free chlorine level lower than 0.05 mg/L must be reported and corrective action taken. There were no reportable incidents in 2021. A summary of the chlorine residual readings is provided in the table below.

4.2. Turbidity

Turbidity of treated water is continuously monitored at the treatment facility, as a change in turbidity can indicate an operational problem. The turbidity of untreated water from the well is checked weekly. Turbidity is measured in nephelometric turbidity units (NTU). Under O.Reg. 170/03 turbidity in groundwater is not reportable however turbidity should be < 1 NTU at the treatment plant and < 5 NTU in the distribution system. A summary of the monitoring results for 2021 is provided in the table below.

Parameter	*Number of Tests or Monitoring Frequency*	*Range of Results (Min – Max) and Average*
Chlorine residual in distribution (mg/L)	Continuous	(0.69 – 1.67) 1.18
Chlorine residual after treatment (mg/L)	Continuous	(0.83 – 1.77) 1.35
Turbidity after treatment (NTU)	Continuous	(0.01 – 2.64) 0.04

5. WATER QUANTITY

Continuous monitoring of flowrates from supply wells into the treatment system and from the facility into the distribution system is required by O.Reg. 170/03. The Municipal Drinking Water License and Permit to Take Water issued by the MECP regulate the amount of water that can be utilized over a given time period. A summary of the 2021 flows are provided in the Table below and presented graphically in Appendix B.

Flow Summary	*Quantity*
Permit to Take Water Limit	5,616 m^3/d
Municipal Drinking Water License Limit	5,616 m^3/d
2021 Average Daily Flow	1,581 m^3/d
2021 Maximum Daily Flow	2,660 m^3/d
2021 Average Monthly Flow	48,083 m^3
2021 Total Amount of Water Supplied	576,995 m^3

The County is undertaking the Tavistock Well 4 Municipal Class Environmental Assessment to help ensure a reliable and efficient existing water supply for the community, as well as ensure expanded water supply if needed to support future growth and development.

Firm Capacity of this system is rated at 4,061 m^3/day. Firm Capacity is defined as the removal of the highest producing well in an emergency or operational / maintenance situation with the ability to transport a maximum of 100 m^3/day if necessary to maintain system integrity. This system comprises of three supply wells.

6. NON-COMPLIANCE FINDINGS AND ADVERSE RESULTS

This section documents any known incidents of non-compliance or adverse results and the associated correction actions taken to resolve the issue. Non-compliance issues are typically identified by either the Operating Authority or the MECP Drinking Water Inspectors. The issues and associated required actions are documented by the Inspectors in the system's Annual Inspection Report. All non-compliance issues are investigated, corrective actions taken and documented using the County's Drinking Water Quality Management System (DWQMS) procedures.

6.1. Non-Compliance Findings

The 2021 MECP annual inspection had not taken place at the time this annual report was drafted. No investigation into non-compliances or inspection report rating was available at this time.

6.2. Adverse Results

Any adverse results from bacteriological, chemical samples or observations of operational conditions that indicate adverse water quality are reported as required and corrective actions taken. There were no adverse or reportable occurrences in 2021.

APPENDIX A: SUMMARY OF CHEMICAL RESULTS

UNDERSTANDING CHEMICAL TEST RESULTS

The following tables summarize the laboratory results of the chemical testing the County is required to complete. Different types of parameters are required to be tested for at different frequencies as noted below. Explanations on the health impacts of these parameters can be found can be found in the MECP document at https://cvc.ca/wp-content/uploads/2011/03/std01_079707.pdf PSIB 4449e01 titled "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines".

Results are shown as concentrations with units of either milligrams per litre (mg/L) or micrograms per litre (ug/L). 1 mg/L is equal to 1000 ug/L. The Maximum Acceptable Concentration (MAC) is the highest amount of a parameter that is acceptable in Municipal drinking water and can be found in the MECP Drinking Water Standards. The Method Detection Limit (MDL) is the lowest amount to which the laboratory can confidently measure. A result of "ND" stands for "Not Detected" and means that the concentration of the chemical is lower than the laboratory's equipment is capable of measuring. In the event that some samples results are ND, and other results are above the MDL, the value of the MDL will be used in place of the ND where an average result must be calculated. Where all collected samples are ND the average sample result will be assumed to be ND.

Nitrate and nitrate samples are required every 3 months in normal operation.

Parameter	*Result Range* Min – Max *(mg/L)*	*Average Result (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Nitrite	ND	ND	1.0	0.003
Nitrate	ND – 0.017	0.015	10.0	0.006

Trihalomethane (THM) and total Haloacetic Acids (HAA) are by-products of the disinfection process. The samples are required every 3 months from the distribution system.

Parameter	*Annual Average*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Trihalomethane (THM)	2021	18.75	100	0.37
Haloacetic Acids (HAA)	2021	8.0	80	5.3

The following Table summarizes the most recent test results for Sodium and Fluoride. Testing and reporting any adverse results is required every 5 years.

Parameter	*Sample Date*	*Result Value (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Sodium	August 16, 2021	18.3	20.0*	0.01
Fluoride	August 16, 2021	0.74	1.5**	0.06

*Sodium levels between 20 – 200 mg/L must be reported every 5 years.
**Natural levels of fluoride between 1.5 – 2.4 mg/L must be reported every 5 years.

The following Table summarizes the most recent results for the Lead Testing Program. Lead samples are taken every 3 years. Levels of alkalinity and pH are monitored twice per year in the distribution system to ensure water quality is consistent and does not facilitate leaching of lead into the water.

Parameter	*Result Range (Min - Max)*	*Number of Samples*	*Acceptable Level*
Distribution Alkalinity	231 - 243	4	30 – 500mg/L
Distribution pH	7.63 - 7.71	4	6.5 – 8.5
Distribution Lead 2021	0.01 – 1.00	4	10 ug/L MAC

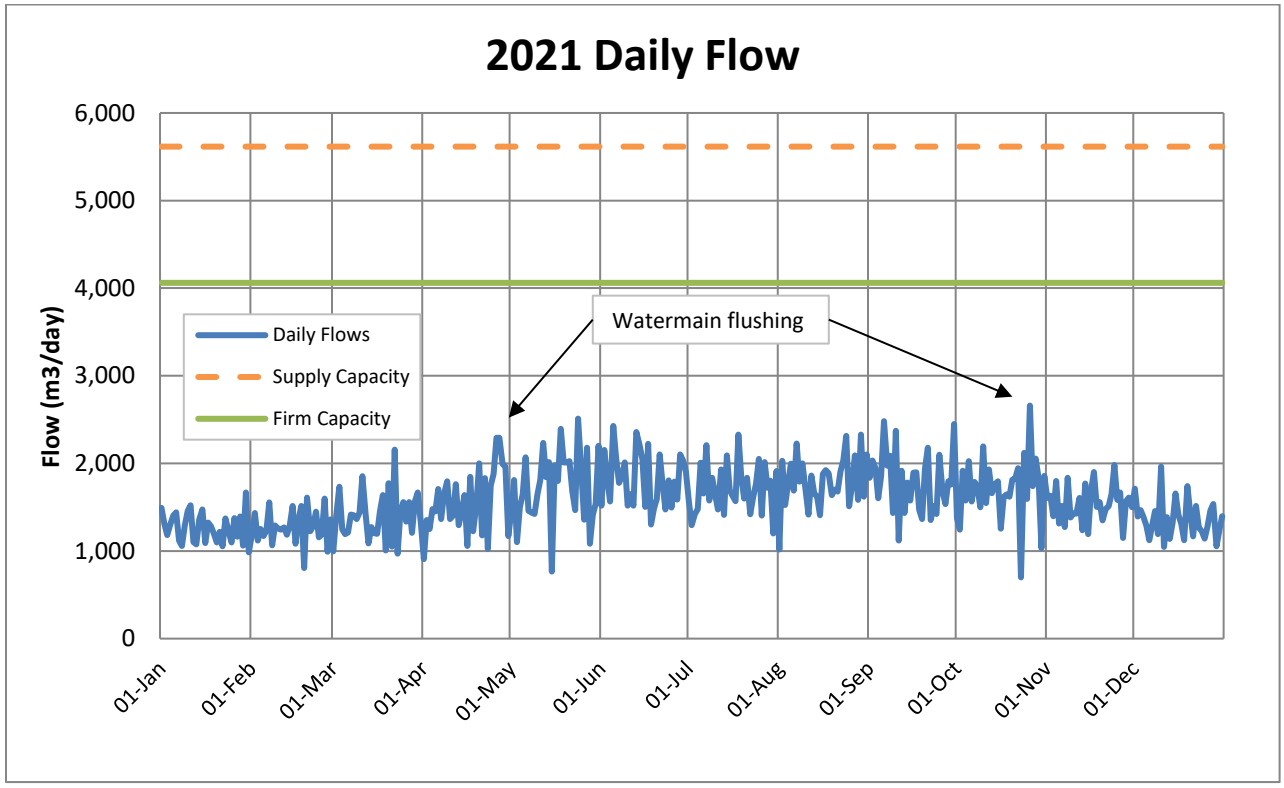
The following Table summarizes the most recent test results for Schedule 23. Testing is required every 3 years for secure groundwater wells.

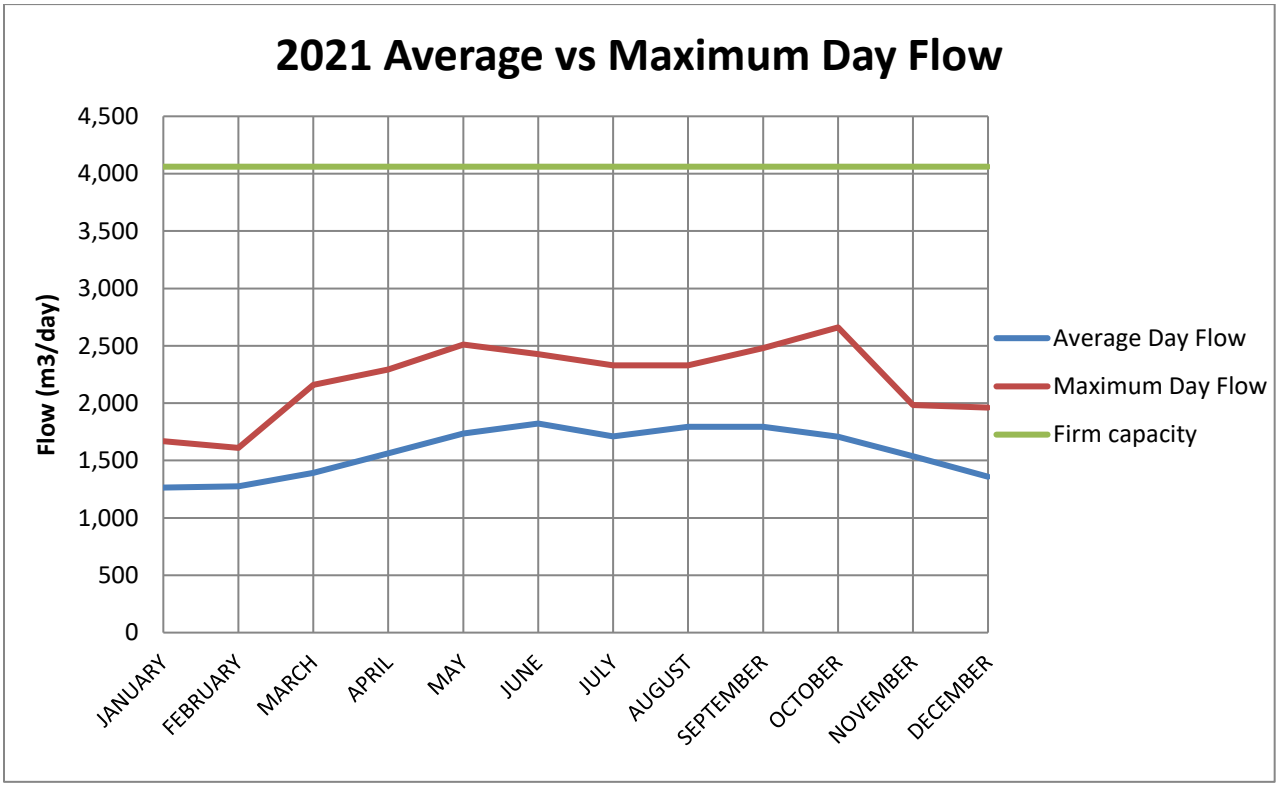
Parameter	*Sample Date*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Antimony	May 21/19	ND	6	0.09
Arsenic	"	1.4	10	0.2
Barium	"	266	1000	0.01
Boron	"	37	5000	2
Cadmium	"	ND	5	0.003
Chromium	"	0.13	50	0.03
Mercury	"	ND	1	0.01
Selenium	"	ND	5	0.04
Uranium	"	0.116	20	0.002

The following table summarizes the most recent test results for Schedule 24. Testing is required every 3 years for secure groundwater wells.

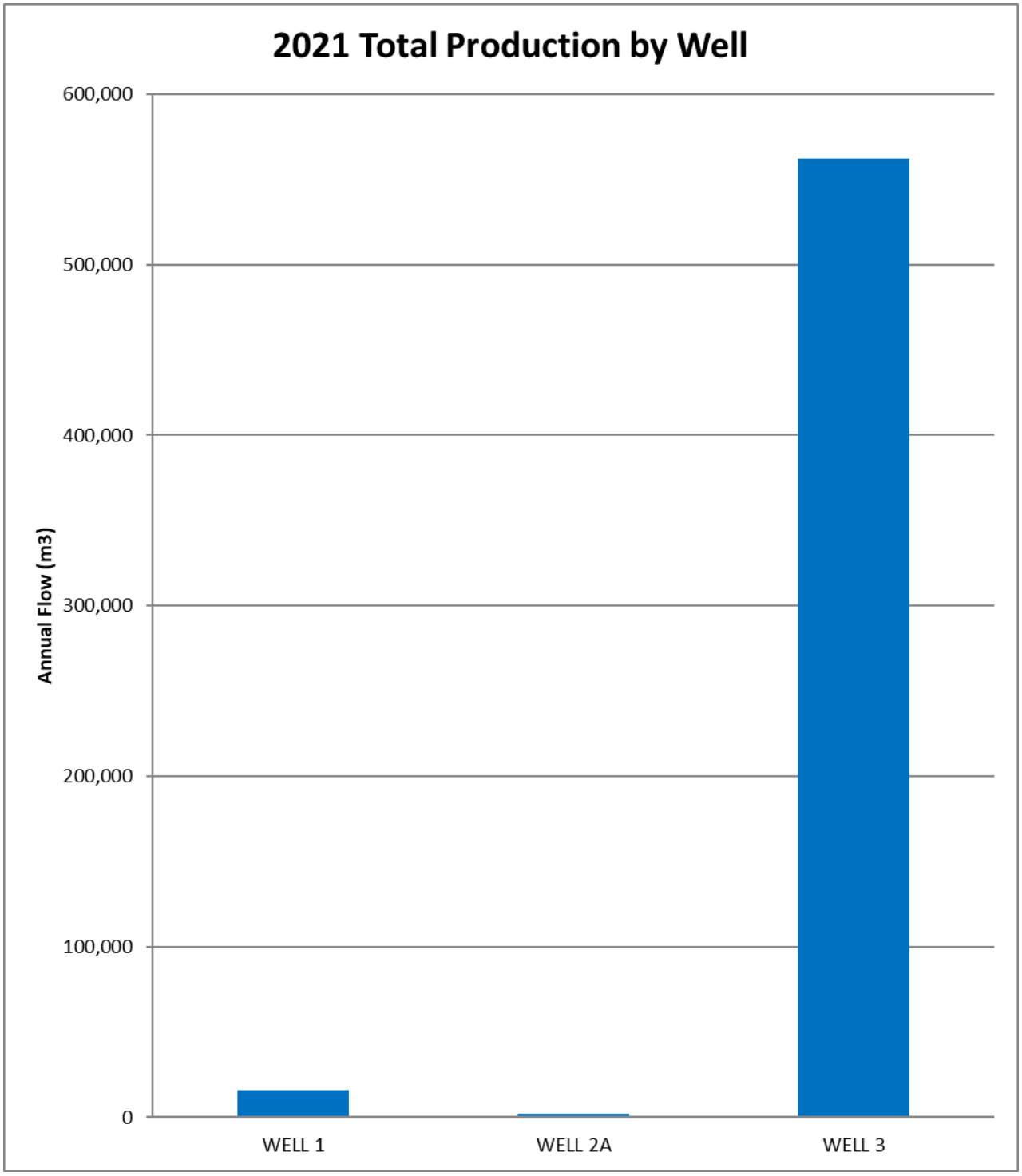
Parameter	*Sample Date*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Alachlor	June 7, 2021	ND	5	0.02
Atrazine + N-dealkylatedmetobolites	“	ND	5	0.01
Azinphos-methyl	“	ND	20	0.05
Benzene	“	ND	1	0.32
Benzo(a)pyrene	“	ND	0.01	0.004
Bromoxynil	“	ND	5	0.33
Carbaryl	“	ND	90	0.05
Carbofuran	“	ND	90	0.01
Carbon Tetrachloride	“	ND	2	0.17
Chlorpyrifos	“	ND	90	0.02
Diazinon	“	ND	20	0.02
Dicamba	“	ND	120	0.20
1,2-Dichlorobenzene	“	ND	200	0.41
1,4-Dichlorobenzene	“	ND	5	0.36
1,2-Dichloroethane	“	ND	5	0.35
1,1-Dichloroethylene(vinylidene chloride)	“	ND	14	0.33
Dichloromethane	“	ND	50	0.35
2-4 Dichlorophenol	“	ND	900	0.15
2,4-Dichlorophenoxy acetic acid (2,4-D)	“	ND	100	0.19
Diclofop-methyl	“	ND	9	0.40
Dimethoate	“	ND	20	0.06
Diquat	“	ND	70	1
Diuron	“	ND	150	0.03
Glyphosate	“	ND	280	1
Malathion	“	ND	190	0.02
Metolachlor	“	ND	50	0.01
2-methyl-4chlorophenoxyacetic acid (MCPA)	“	ND	100	0.12
Metribuzin	“	ND	80	0.02
Monochlorobenzene	“	ND	80	0.3
Paraquat	“	ND	10	1
Pentachlorophenol	“	ND	60	0.15
Phorate	“	ND	2	0.01
Picloram	“	ND	190	1
Polychlorinated Biphenyls(PCB)	“	ND	3	0.04
Prometryne	“	ND	1	0.03
Simazine	“	ND	10	0.01
Terbufos	“	ND	1	0.01
Tetrachloroethylene	“	ND	10	0.35
2,3,4,6-Tetrachlorophenol	“	ND	100	0.20
Triallate	“	ND	230	0.01
Trichloroethylene	“	ND	5	0.44
2,4,6-Trichlorophenol	“	ND	5	0.25
Trifluralin	“	ND	45	0.02
Vinyl Chloride	“	ND	1	0.17

APPENDIX B: WATER QUANTITY SUMMARY





Tavistock Firm Capacity 4,061 m^3/day
Tavistock Water Supply Capacity 5,616 m^3/day



Tavistock Firm Capacity 4,061 m^3/day
Tavistock Water Supply Capacity 5,616 m^3/day

Oxford County
Growing stronger together

2021 ANNUAL DRINKING WATER SYSTEM SUMMARY REPORT
Thamesford Water System

1. GENERAL INFORMATION

Oxford County (the County) prepares a report summarizing system operation and water quality for every municipal drinking water system annually. The reports detail the latest water quality testing results, water quantity statistics and any adverse conditions that may have occurred for the previous year. They are available for review by the end of February on the County website at www.oxfordcounty.ca/drinkingwater or by contacting the Public Works Department.

All efforts have been made to ensure the information presented in this report is accurate. If you have any questions or comments concerning the report, please contact the County at the address and phone number listed below or by email at publicworks@oxfordcounty.ca

Drinking Water System:	Thamesford Water System
Drinking Water System Number:	2200000610
Drinking Water System Owner & Contact Information:	Oxford County Public Works Department Water Services P.O. Box 1614 21 Reeve Street Woodstock, ON N4S 7Y3 Telephone: 519-539-9800 Toll Free: 866-537-7778 Email: publicworks@oxfordcounty.ca
Reporting Period:	January 1, 2021 – December 31, 2021

1.1. System Description

The Thamesford Water System is a Large Municipal Water system as defined by Ontario Regulation (O.Reg.) 170/03 and serves a population of approximately 2,430. The system consists of four well sources, three of which are classified as GUDI (Groundwater Under the Direct Influence of surface water). The third is a secure groundwater well. Well 4 at the River wells site was connected in March 2021.The water is treated by filtration for iron and manganese removal followed by disinfection by Ultra Violet (UV) light and sodium hypochlorite. In 2021, approximately 9,448 L of sodium hypochlorite was used in the water treatment process. The chemical is certified to meet standards set by the Standards Council of Canada or American National Standards Institute.

The 2,050 m^3 water tower provides storage and maintains system pressure. A standby generator is available to run the facility in the event of a power failure. The system is maintained by licensed water system operators, who operate treatment and monitoring equipment and collect samples as specified by the Regulation. Alarms automatically notify operators in the event of failure of critical operational requirements.

1.2. Major Expenses

The Thamesford Water System is one of 14 water systems that have revenues and expenses pooled for economy of scale purposes. The systems are combined into the Township Water financial system and in 2021 had forecasted operating and maintenance expenditures of approximately $3,000,000.

In addition to regular operational and maintenance expenditures, Capital Improvement Projects for the Townships systems totaled $1,500,000 for improvements to water treatment systems and replacement of distribution mains in the Township System.

Capital Improvement projects for the Township systems included:

- 65,000 for groundwater modelling
- 350,000 for facilities improvements
- 175,000 for the replacement of general operating equipment including well rehabilitations

Capital Improvement projects for all systems included:

- $720,000 to develop Countywide SCADA Master Plan for all water systems
- $14,000 for Updated Water Systems Modelling

2. MICROBIOLOGICAL TESTING

2.1. *E. coli and Total Coliform*

Bacteriological tests for *E. coli* and total coliforms are required weekly on the raw and treated water at the facility and in the distribution system. Extra samples are taken after major repairs or maintenance work. Any *E. coli* or total coliform results above 0 in treated water must be reported to the Ministry of Environment, Conservation and Parks (MECP) and Medical Officer of Health (MOH). Resamples and any other required actions are taken as quickly as possible. The results from the 2021 sampling program are shown on the table below. There were no adverse test results from the 205 treated water samples in this reporting period.

	Number of Samples	*Range of E. coli Results Min - Max MAC = 0*	*Range of Total Coliform Results Min - Max MAC = 0*
Raw	206	0	0 - 29
Treated	52	0	0
Distribution	153	0	0

2.2. Heterotrophic Plate Count (HPC)

HPC analyses are required from the treatment and distribution water. The tests are required weekly for treated water and for 25% of the required distribution system bacteriological samples. HPC should be less than 500 colonies per 1 mL. Results over 500 colonies per 1 mL may indicate a change in water quality but it is not considered an indicator of unsafe water. The 2021 results are shown in the table below.

	Number of Samples	*Range of HPC Min - Max*
Treated	52	0 - 9
Distribution	42	0 - 33

3. CHEMICAL TESTING

The Safe Drinking Water Act requires periodic testing of the water for approximately 60 different chemical parameters. The latest results for all parameters are provided in Appendix A. The sampling frequency varies for different types and sizes of water systems and chemical parameters. If the concentration of a parameter is above half of the Maximum Allowable Concentration (MAC) under the Ontario Drinking Water Quality Standards, an increased testing frequency of once every three months is required by the Regulation. Where concerns regarding a parameter exist, the MECP can also require additional sampling be undertaken.

Information on the health effects and allowable limits of components in drinking water may be found on the MECP web page through the link provided in Appendix A. Additional information on common chemical parameters specific to the Thamesford System is provided below.

3.1. Sodium

Sodium levels in drinking water are tested once every five years. The aesthetic objective is 200 mg/L meaning at levels less than this, sodium will not impair the taste of water.

When sodium levels are above 20 mg/L the MECP and MOH are notified. Southwestern Public Health maintain an information page on sodium in drinking water at https://www.swpublichealth.ca/en/partners-and-professionals/resources/Health-Care-Providers/Alerts-Advisories-Updates/Advisories/ADV_HIA-Sodium-20201203.pdf in order to help people on sodium restricted diets control their sodium intake. The average sodium level in Thamesford is 26.0 mg/L.

3.2. Hardness

This is an aesthetic parameter that may affect the appearance of the water but is not related to health. Well water commonly has high levels of hardness and other minerals from being in contact with underground rock formations. Many households have water softeners to help reduce white calcium deposits and improve the efficiency of soaps. This information is included here to help set the water softener at the level recommended by the manufacturer. Samples for hardness are collected at a minimum every 3 years from either raw or treated water. The average hardness for the Thamesford System is 308 mg/L (18 grains/gallon) based on samples collected from 2007 to 2019.

3.3. Additional Testing Required by MECP

None.

4. OPERATIONAL MONITORING

4.1. Chlorine Residual

Free chlorine levels of the treated water are monitored continuously at the discharge point of the Water Treatment Facility. In the distribution system, free chlorine is checked twice weekly at various locations. As a target, free chlorine residual within the distribution system should be above 0.20 mg/L. A free chlorine level lower than 0.05 mg/L must be reported and corrective action taken. There were no reportable incidents in 2021. A summary of the chlorine residual readings is provided in the table below.

4.2. Turbidity

Turbidity of treated water is continuously monitored at the treatment facility, as a change in turbidity can indicate an operational problem. The turbidity of untreated water from the well is checked weekly. Turbidity is measured in nephelometric turbidity units (NTU). Under O.Reg. 170/03 turbidity in groundwater is not reportable however turbidity should be < 1 NTU at the treatment plant and < 5 NTU in the distribution system. A summary of the monitoring results for 2021 is provided in the table below.

Parameter	*Number of Tests or Monitoring Frequency*	*Range of Results (Min – Max) and Average*
Chlorine residual in distribution (mg/L)	Continuous	(0.53 – 3.01) 1.04
Chlorine residual after treatment (mg/L)	Continuous	(0.44 – 2.86) 1.32
Turbidity after treatment (NTU)	Continuous	(0.03 – 3.98) 0.06

4.3. Ultra Violet (UV) Disinfection

Supply wells that have been classified as being GUDI require “enhanced disinfection” through UV followed by chlorination. A minimum UV dosage of 40 mJ/cm² is maintained to inactivate any microorganisms that may be present from contact with surface water. Insufficient dosage of UV lasting more than 10 minutes must be reported as inadequate disinfection. There were no occurrences of inadequate UV disinfection in 2021.

5. WATER QUANTITY

Continuous monitoring of flowrates from supply wells into the treatment system and from the facility into the distribution system is required by O.Reg. 170/03. The Municipal Drinking Water License and Permit to Take Water issued by the MECP regulate the amount of water that can be utilized over a given time period. A summary of the 2021 flows are provided in the Table below and presented graphically in Appendix B.

Flow Summary	*Quantity*
Permit to Take Water Limit	5,583 m^3/d
Municipal Drinking Water License Limit	5,391 m^3/d
2021 Average Daily Flow	688 m^3/d
2021 Maximum Daily Flow	1,370 m^3/d
2021 Average Monthly Flow	20,923 m^3
2021 Total Amount of Water Supplied	251,070 m^3

A review of the available supply capacity and the anticipated growth forecasted for the community indicates that the system has sufficient capacity over the 20 year planning horizon.

Firm Capacity of this system is rated at 2,765 m^3/day and the GUDI portion of this is 1,468 m^3/day. Firm Capacity is defined as the removal of the highest producing well in an emergency or operational / maintenance situation. This system comprises of four supply wells. Firm capacity could increase with confirmation of dam restoration.

6. NON-COMPLIANCE FINDINGS AND ADVERSE RESULTS

This section documents any known incidents of non-compliance or adverse results and the associated correction actions taken to resolve the issue. Non-compliance issues are typically identified by either the Operating Authority or the MECP Drinking Water Inspectors. The issues and associated required actions are documented by the Inspectors in the system's Annual Inspection Report. All non-compliance issues are investigated, corrective actions taken and documented using the County's Drinking Water Quality Management System (DWQMS) procedures.

6.1. Non-Compliance Findings

The annual MECP inspection took place in October 2021. There were no non-compliance findings and the 2021 Inspection Report rating was 100%.

6.2. Adverse Results

There were no adverse or reportable occurrences in 2021. Any adverse results from bacteriological, chemical samples or observations of operational conditions that indicate adverse water quality are reported as required and corrective actions are taken.

APPENDIX A: SUMMARY OF CHEMICAL RESULTS

UNDERSTANDING CHEMICAL TEST RESULTS

The following tables summarize the laboratory results of the chemical testing the County is required to complete. Different types of parameters are required to be tested for at different frequencies as noted below. Explanations on the health impacts of these parameters can be found can be found in the MECP document at https://cvc.ca/wp-content/uploads/2011/03/std01_079707.pdf PSIB 4449e01 titled "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines".

Results are shown as concentrations with units of either milligrams per litre (mg/L) or micrograms per litre (ug/L). 1 mg/L is equal to 1000 ug/L. The Maximum Acceptable Concentration (MAC) is the highest amount of a parameter that is acceptable in Municipal drinking water and can be found in the MECP Drinking Water Standards. The Method Detection Limit (MDL) is the lowest amount to which the laboratory can confidently measure. A result of "ND" stands for "Not Detected" and means that the concentration of the chemical is lower than the laboratory's equipment is capable of measuring.

Nitrate and nitrite samples are required every 3 months in normal operation.

Parameter	*Result Range* Min – Max *(mg/L)*	*Average Result (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Nitrite	ND – 0.003	ND	1.0	0.003
Nitrate	2.36 – 3.31	2.76	10.0	0.006

Trihalomethane (THM) and total Haloacetic Acids (HAA) are by-products of the disinfection process. The samples are required every 3 months from the distribution system.

Parameter	*Annual Average*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Trihalomethane (THM)	2021	33	100	0.37
Haloacetic Acids (HAA)	2021	13.6	80	5.3

The following Table summarizes the most recent test results for Sodium and Fluoride. Testing and reporting any adverse results is required every 5 years.

Parameter	*Sample Date*	*Result Value (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Sodium	May 21 /19	26.0	20.0*	0.01
Fluoride	May 21 /19	0.89	1.5**	0.06

*Sodium levels between 20 – 200 mg/L must be reported every 5 years.
**Natural levels of fluoride between 1.5 – 2.4 mg/L must be reported every 5 years.

The following Table summarizes the most recent results for the Lead Testing Program. Lead samples are taken every 3 years. Levels of alkalinity and pH are monitored twice per year in the distribution system to ensure water quality is consistent and does not facilitate leaching of lead into the water.

Parameter	*Result Range (Min - Max)*	*Number of Samples*	*Acceptable Level*
Distribution Alkalinity	235 - 283	4	30 – 500mg/L
Distribution pH	7.5 - 7.65	4	6.5 – 8.5
Distribution Lead 2021	ND - 1.58	4	10 ug/L MAC

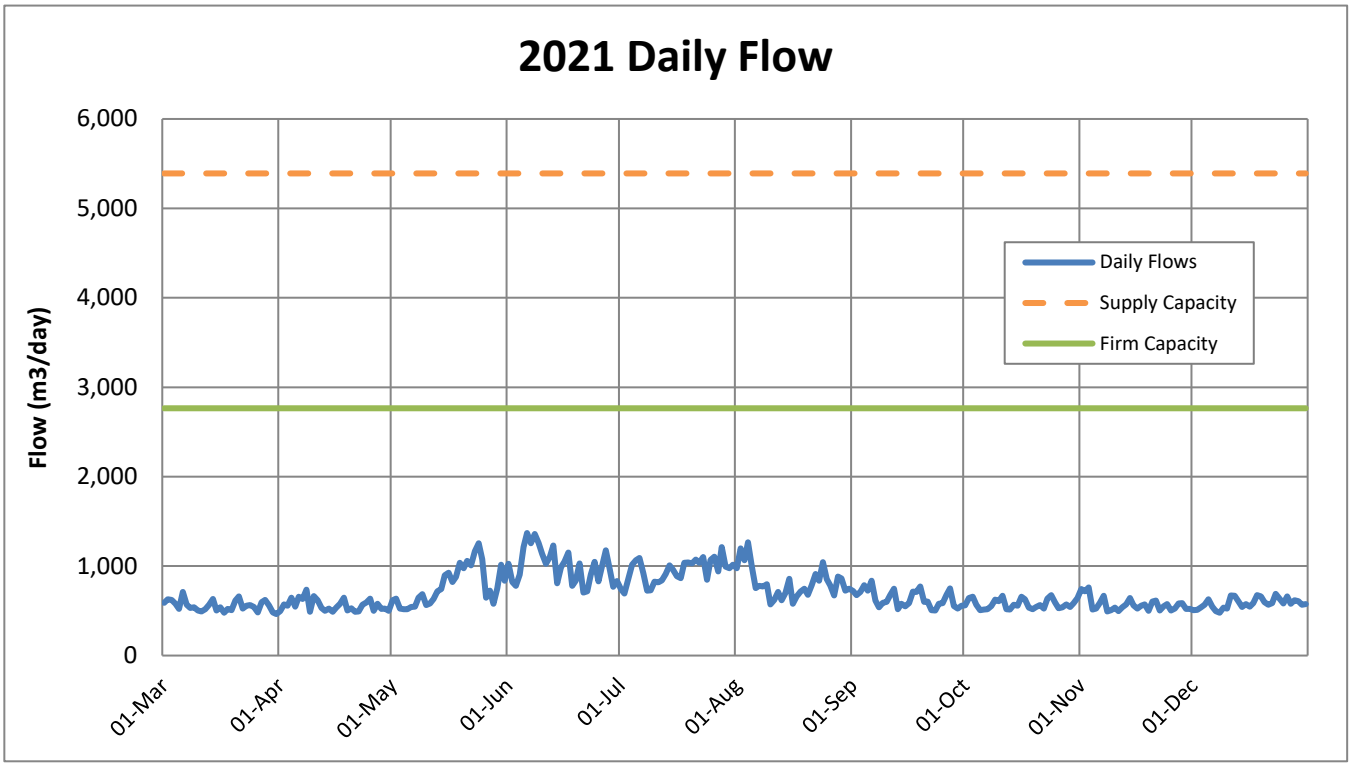
The following Table summarizes the most recent test results for Schedule 23. Testing is required annually for GUDI wells.

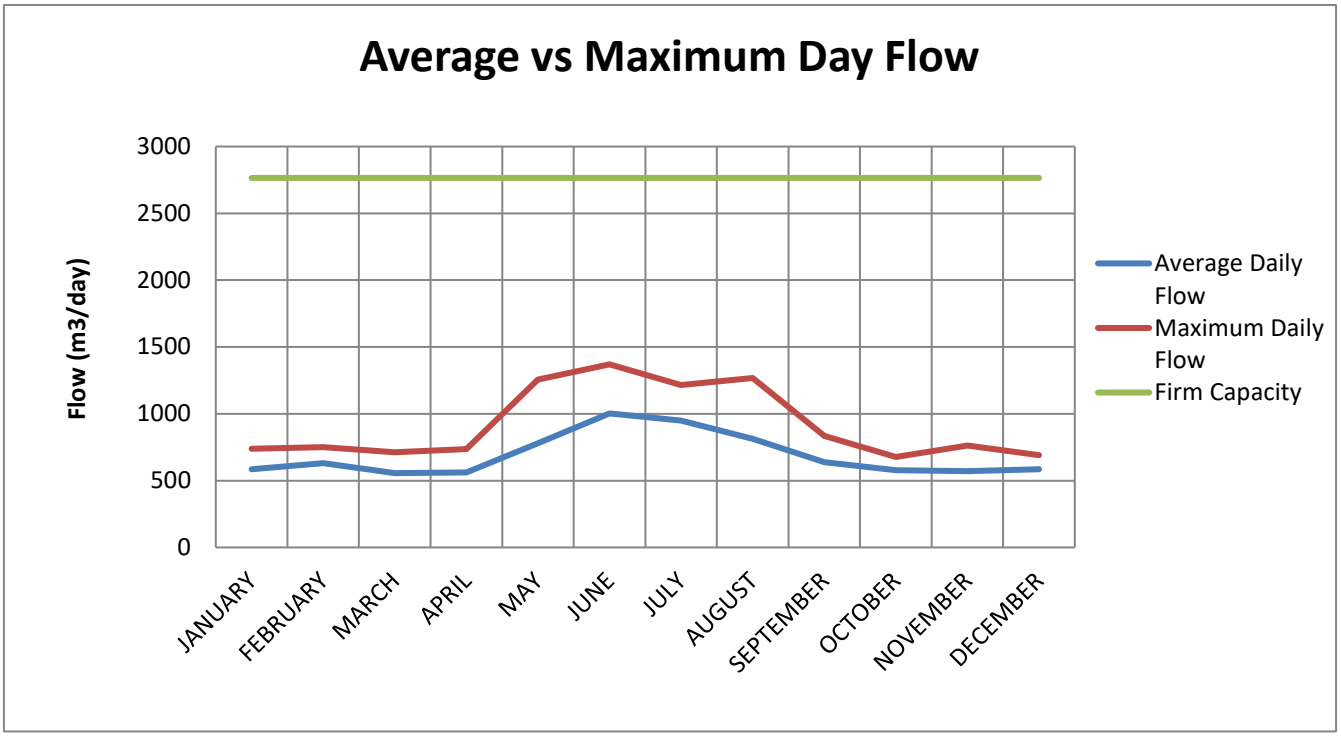
Parameter	*Sample Date*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Antimony	Jun 7/21	ND	6	0.9
Arsenic	"	0.2	10	0.2
Barium	"	65.0	1000	0.02
Boron	"	66	5000	2
Cadmium	"	ND	5	0.003
Chromium	"	0.17	50	0.08
Mercury	"	ND	1	0.01
Selenium	"	0.18	5	0.04
Uranium	"	0.378	20	0.002

The following Table summarizes the most recent test results for Schedule 24. Testing is required annually for GUDI wells.

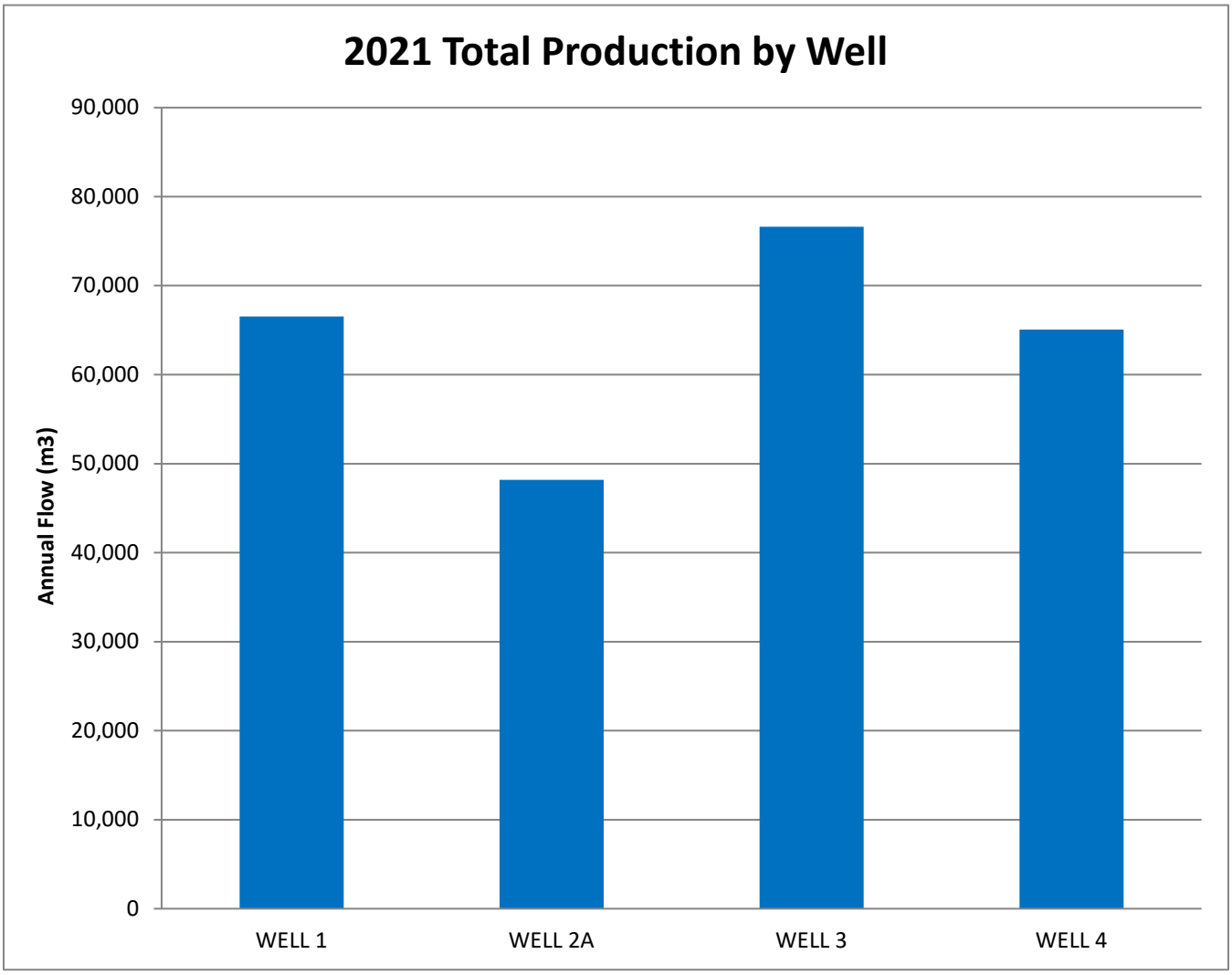
Parameter	*Sample Date*	*Result (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Alachlor	Jun 7/21	ND	5	0.02
Atrazine + N-dealkylatedmetobolites	“	ND	5	0.01
Azinphos-methyl	“	ND	20	0.01
Benzene	“	ND	1	0.32
Benzo(a)pyrene	“	ND	0.01	0.004
Bromoxynil	“	ND	5	0.33
Carbaryl	“	ND	90	0.05
Carbofuran	“	ND	90	0.01
Carbon Tetrachloride	“	ND	2	0.16
Chlorpyrifos	“	ND	90	0.02
Chlorpyrifos	“	ND	90	0.02
Diazinon	“	ND	20	0.02
Dicamba	“	ND	120	0.20
1,2-Dichlorobenzene	“	ND	200	0.41
1,4-Dichlorobenzene	“	ND	5	0.36
1,2-Dichloroethane	“	ND	5	0.35
1,1-Dichloroethylene (vinylidene chloride)	“	ND	14	0.33
Dichloromethane	“	ND	50	0.35
2-4 Dichlorophenol	“	ND	900	0.15
2,4-Dichlorophenoxy acetic acid (2,4-D)	“	ND	100	0.19
Diclofop-methyl	“	ND	9	0.40
Dimethoate	“	ND	20	0.03
Diquat	“	ND	70	1
Diuron	“	ND	150	0.03
Glyphosate	“	ND	280	1
Malathion	“	ND	190	0.02
2-methyl-4chlorophenoxyacetic acid (MCPA)	“	ND	100	0.12
Metolachlor	“	ND	50	0.01
Metribuzin	“	ND	80	0.02
Monochlorobenzene	“	ND	80	0.30
Paraquat	“	ND	10	1
Pentachlorophenol	“	ND	60	0.15
Phorate	“	ND	2	0.01
Picloram	“	ND	190	1
Polychlorinated Biphenyls(PCB)	“	ND	3	0.04
Prometryne	“	ND	1	0.03
Simazine	“	ND	10	0.01
Terbufos	“	ND	1	0.01
Tetrachloroethylene	“	ND	10	0.35
2,3,4,6-Tetrachlorophenol	“	ND	100	0.14
Triallate	“	ND	230	0.01
Trichloroethylene	“	ND	5	0.43
2,4,6-Trichlorophenol	“	ND	5	0.25
Trifluralin	“	ND	45	0.02
Vinyl Chloride	“	ND	1	0.17

APPENDIX B: 2021 WATER QUANTITY SUMMARY





Thamesford Water System Supply Capacity 5,391 m^3/day
Thamesford Water System Firm Capacity 2,765 m^3/day



Thamesford Water System Supply Capacity 5,391 m^3/day
Thamesford Water System Firm Capacity 2,765 m^3/day

Oxford County
Growing stronger together

2021 ANNUAL DRINKING WATER SYSTEM SUMMARY REPORT
Tillsonburg Water System

1. GENERAL INFORMATION

Oxford County (the County) prepares a report summarizing system operation and water quality for every municipal drinking water system annually. The reports detail the latest water quality testing results, water quantity statistics and any adverse conditions that may have occurred for the previous year. They are available for review by the end of February on the County website at www.oxfordcounty.ca/drinkingwater or by contacting the Public Works Department.

All efforts have been made to ensure the information presented in this report is accurate. If you have any questions or comments concerning the report please contact the County at the address and phone number listed below or by email at publicworks@oxfordcounty.ca

Drinking Water System:	Tilsonburg Water System
Drinking Water System Number:	220000683
Drinking Water System Owner & Contact Information:	Oxford County Public Works Department Water Services P.O. Box 1614 21 Reeve Street Woodstock, ON N4S 7Y3 Telephone: 519-539-9800 Toll Free: 866-537-7778 Email: publicworks@oxfordcounty.ca
Reporting Period:	January 1, 2021- December 31, 2021

1.1. System Description

The Tillsonburg Water System is a Large Municipal Water system as defined by Ontario Regulation (O.Reg.) 170/03 and services a population of approximately 16,950. The system consists of ten well sources, seven of which are classified as GUDI (Groundwater Under Direct Influence of surface water) and three are secure groundwater wells. The treatment for each site is summarized below.

Treatment Facility	*Wells*	*Treatment*
Mall Road WTF	1A & 2	Filtration for iron removal and disinfection with ultraviolet (UV) and chlorine gas.
Fairview WTF	4, 5 & 7A	Disinfection with UV and chlorine gas. Sodium hypochlorite is added for disinfection at Well 7A and for secondary disinfection.
Plank Line WTF	6A	Disinfection with chlorine gas
Bell Mill Road WTF	9, 10 & 11	Filtration for iron removal and disinfection with UV and chlorine gas.
Rokeby Road WTF	12	Disinfection with chlorine gas.

The treatment facilities each house high lift pumps, monitoring and treatment equipment for the supply wells. Three standby generators are available to run facilities in the event of a power failure. Water storage is provided by a 9,100 m^3 reservoir located north of the Town of Tillsonburg. There is a pressure boosting station on Fairview Street.

In 2021, approximately 4,080 kg of chlorine gas and 7,585 L of sodium hypochlorite were used in the water treatment process. The chemicals are certified to meet standards set by the Standards Council of Canada or American National Standards Institute.

The system is maintained by licensed water system operators, who operate treatment and monitoring equipment and collect samples as specified by the Regulation. Alarms automatically notify operators in the event of a failure of critical operational requirements.

1.2. Major Expenses

In 2021, the Tillsonburg Water System had operations and maintenance expenditures of $2,500,000. Operations and maintenance expenditures included:

- $60,000 for the replacement of general operating equipment and well rehabilitations

In addition to regular operational and maintenance expenditures, Capital Improvement projects for Tillsonburg totaled $1,700,000 for improvements to water treatment systems and distribution mains in the water system. Capital improvement projects included:

- $1,300,000 for the replacement of aging watermains
- $125,000 for bulk water station
- $20,000 for standby power
- $30,000 for facilities improvements

Capital Improvement projects for all drinking water systems included:

- $720,000 develop Countywide SCADA Master Plan for all water systems
- $14,000 Updated Water Modelling

2. MICROBIOLOGICAL TESTING

2.1. *E. coli* and Total Coliform

Bacteriological tests for *E. coli* and total coliforms are taken weekly from the raw and treated water at the facility and from the distribution system. Extra samples are taken after major repairs or maintenance work. Any *E. coli* or total coliform results above 0 in treated water must be reported to the Ministry of Environment, Conservation and Parks (MECP) and Medical Officer of Health (MOH). Resamples and any other required actions are taken as quickly as possible. The results from the 2021 sampling program are shown on the table below. There were 0 adverse test results from 611 treated water samples in this reporting period.

	Number of Samples	*Range of E. coli Results Min - Max MAC = 0*	*Range of Total Coliform Results Min - Max MAC = 0*
Raw	451	0	0 - 7
Treated	252	0	0
Distribution	359	0	0

2.2. Heterotrophic Plate Count (HPC)

HPC analyses are required from the treated and distribution water. The tests are required weekly for treated water and for 25% of the required distribution system bacteriological samples. HPC should be less than 500 colonies per 1 mL. Results over 500 colonies per 1 mL may indicate a change in water quality but it is not considered an indicator of unsafe water. 2021 results are shown in the table below.

	Number of Samples	*Range of HPC Min - Max*
Treated	250	0 - 23
Distribution	99	0 - 190

3. CHEMICAL TESTING

The Safe Drinking Water Act requires periodic testing of the water for approximately 50 different chemical parameters. The latest results for all parameters are provided in Appendix A. The sampling frequency varies for different types and sizes of water systems and chemical parameters. If the concentration of a parameter is above half of the Maximum Allowable Concentration (MAC) under the Ontario Drinking Water Quality Standards, an

increased testing frequency of once every three months is required by the Regulation. Where concerns regarding a parameter exist, the MECP can also require additional sampling be undertaken.

Information on the health effects and allowable limits of components in drinking water may be found on the MECP web page through the link provided in Appendix A. Additional information on common chemical parameters specific to the Tillsonburg Water System is provided below.

3.2. Sodium

Sodium levels in drinking water are tested once every five years. The aesthetic objective is 200 mg/L meaning at levels less than this, sodium will not impair the taste of the water.

When sodium levels are above 20 mg/L the MECP and MOH are notified. Southwestern Public Health maintain an information page on sodium in drinking water at https://www.swpublichealth.ca/en/partners-and-professionals/resources/Health-Care-Providers/Alerts-Advisories-Updates/Advisories/ADV_HIA-Sodium-20201203.pdf in order to help people on sodium restricted diets control their sodium intake.

The sodium level in water from the Tillsonburg Fairview WTF is 40.8 mg/L. Well 6A at Plank Line has sodium at 39.3 mg/L, however it was not running in 2021. All other locations are under 20 mg/L.

3.3. Hardness

This is an aesthetic parameter that may affect the appearance of the water but is not related to health. Well water commonly has high levels of hardness and other minerals from being in contact with underground rock formations. Many households have water softeners to help reduce white calcium deposits and improve the efficiency of soaps. This information is included here to help set the water softener at the level recommended by the manufacturer.

Samples for hardness are collected at a minimum every 3 years from raw or treated water. The average hardness for the Tillsonburg Drinking Water System is 251 mg/L (15 grains/gallon) based on samples collected from 2006 to 2019.

3.4. Additional Testing Required by MECP

None.

4. OPERATIONAL MONITORING

4.1 Chlorine Residual

Free chlorine levels of the treated water are monitored continuously at the discharge point of the Water Treatment Facility. In the distribution system, free chlorine is checked at least twice weekly at various locations. As a target, free chlorine residual within the distribution system should be above 0.20 mg/L. A free chlorine level lower than 0.05 mg/L must be reported and corrective action taken. A summary of the chlorine residual readings is provided in the table below.

A precautionary boil water advisory was enacted following a watermain break that could have impacted the free chlorine residual. A summary of this incident can be found in section 6.2.

4.2. Turbidity

Turbidity of treated water is continuously monitored at the treatment facility, as a change in turbidity can indicate an operational problem. The turbidity of untreated water from the well is checked weekly. Turbidity is measured in nephelometric turbidity units (NTU). Under O.Reg. 170/03 turbidity in groundwater is not reportable however turbidity should be < 1 NTU at the treatment plant and < 5 NTU in the distribution system. A summary of the monitoring results for 2021 is provided in the table below.

Parameter & Location	*Monitoring Frequency*	*Range of Results (Min – Max) and Average*
Chlorine residual in distribution (mg/L)	Continuous	(0.19 – 2.65) 1.23
Bell Mill Road WTF		
Chlorine mg/L	Continuous	(0.37 – 1.43) 2.44
Turbidity NTU	Continuous	(0.03 – 0.04) 0.72
Fairview WTF/North Street West		
Chlorine mg/L	Continuous	(0.19 – 2.65) 1.18
Turbidity NTU	Continuous	(0.03 – 1.04) 0.06
Mall Road WTF		
Chlorine mg/L	Continuous	(0.96 – 1.93) 1.43
Turbidity NTU	Continuous	(0.02 – 2.69) 0.05
Plank Line WTF		
Chlorine mg/L	Continuous	Not running
Turbidity NTU	Continuous	Not running
Rokeby Road WTF		
Chlorine mg/L	Continuous	(0.34 – 1.69) 1.19
Turbidity NTU	Continuous	(0.03 – 4) 0.08

4.3. Ultra Violet (UV) Disinfection

Supply wells that have been classified as being GUDI require “enhanced disinfection” through ultra violet light (UV) followed by chlorination. A minimum UV dosage of 40 mJ/cm^2 is maintained to inactivate any microorganisms that may be present from contact with surface water. Insufficient dosage of UV lasting more than 10 minutes must be reported as inadequate disinfection. There were no occurrences of inadequate UV disinfection in 2021.

5. WATER QUANTITY

Continuous monitoring of flowrates from supply wells into the treatment system and from the facility into the distribution system is required by O.Reg. 170/03. The Municipal Drinking Water License and Permit to Take Water issued by the MECP regulate the amount of water that can be utilized over a given time period. A summary of the 2021 flows are provided in the Table below and presented graphically in Appendix B.

Flow Summary	*Quantity*
Permit to Take Water Limit	17,913 m^3/d
Municipal Drinking Water License Limit	17,440 m^3/d
2021 Average Daily Flow	5,315 m^3/d
2021 Maximum Daily Flow	8,694 m^3/d
2021 Average Monthly Flow	161,679 m^3/d
2021 Total Amount of Water Supplied	1,940,152 m^3/d

In order to meet the long-term growth need of the Town, the County intends to construct a transmission main from Tillsonburg to the Oxford South system in Springford. The construction is currently anticipated to occur within the 20-year planning horizon.

Firm Capacity of this system is rated at 10,627 m^3/day. Firm Capacity is defined as the removal of the highest producing well in an emergency or operational / maintenance situation with the ability to transport a maximum of 100 m^3/day if necessary to maintain system integrity. This system comprises of 10 supply wells, seven of which are GUDI. The GUDI wells contribute 6,739 m^3/day to the firm capacity.

6. NON-COMPLIANCE FINDINGS AND ADVERSE RESULTS

This section documents any known incidents of non-compliance or adverse results and the associated correction actions taken to resolve the issue. Non-compliance issues are typically identified by either the Operating Authority or the MECP Drinking Water Inspectors. The issues and associated required actions are documented by the Inspectors in the system’s Annual Inspection Report. All non-compliance issues are investigated, corrective actions taken and documented using the County’s Drinking Water Quality Management System (DWQMS) procedures.

6.1 Non-Compliance Findings

At the time of this report being drafted the annual MECP inspection had not taken place for 2021. No inspection report rating was available.

6.2. Adverse Results

Any adverse results from bacteriological, chemical samples or observations of operational conditions that indicate adverse water quality are reported as required and corrective actions taken. Below is a summary of the one adverse/reportable occurrences for 2021 along with the corresponding resolution.

Operational Incident: Low Pressure Event and Precautionary Boil Water Advisory		
Potential contamination following a watermain break on May 5, 2021. The watermain was damaged when a third party contractor was excavating in the area.	A precautionary boil water advisory for 12 residents was enacted while bacteriological samples were collected to confirm that there was no contamination to the drinking water system. The break was repaired, flushed, and water samples were collected.	All samples were acceptable on May 6, 2021.

APPENDIX A: SUMMARY OF CHEMICAL RESULTS

UNDERSTANDING CHEMICAL TEST RESULTS

The following tables summarize the laboratory results of the chemical testing the County is required to complete. Different types of parameters are required to be tested for at different frequencies as noted below. Explanations on the health impacts of these parameters can be found in the MECP document at https://cvc.ca/wp-content/uploads/2011/03/std01_079707.pdf PSIB 4449e01, titled "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines".

Results are shown as concentrations with units of either milligrams per litre (mg/L) or micrograms per litre (ug/L). 1 mg/L is equal to 1000 ug/L. The Maximum Acceptable Concentration (MAC) is the highest amount of a parameter that is acceptable in Municipal drinking water and can be found in the MECP Drinking Water Standards. The Method Detection Limit (MDL) is the lowest amount to which the laboratory can confidently measure. A result of "ND" stands for "Not Detected" and means that the concentration of the chemical is lower than the laboratory's equipment is capable of measuring. In the event that some samples results are ND, and other results are above the MDL, the value of the MDL will be used in place of the ND where an average result must be calculated. Where all collected samples are ND the average sample result will be assumed to be ND.

Nitrate and nitrite samples are required every 3 months in normal operation.

Parameter & Location	*Result Range* Min – Max *(mg/L)*	*Average Result (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Nitrite			1.0	0.003
Bell Mill Road WTF	ND	ND		
Fairview WTF	ND	ND		
Mall Road WTF	ND	ND		
Plank Line WTF+	NA	NA		
Rokeby Road WTF	ND	ND		
Nitrate			10.0	0.006
Bell Mill Road WTF	2.98 – 4.28	3.63		
Fairview WTF	6.52 – 8.72	7.15		
Mall Road WTF	1.50 – 1.96	1.76		
Plank Line WTF+	NA	NA		
Rokeby Road WTF	5.28 – 5.57	5.45		

+not running in 2020

Trihalomethane (THM) and total Haloacetic Acids (HAA) are by-products of the disinfection process. The samples are required every 3 months from the distribution system.

Parameter	*Annual Average*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Trihalomethane (THM)	2021	24.8	100	0.37
Haloacetic Acids (HAA)	2021	ND	80	5.3

The following Table summarizes the most recent test results for Sodium and Fluoride. Testing and reporting any adverse results is required every 5 years.

Parameter & Location	*Sample Date*	*Result Value (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Sodium			20.0*	0.01
Bell Mill Road WTF	August 16, 2021	6.52		
Fairview WTF	May 27, 2019	40.8		
Mall Road WTF	August 16, 2021	11.1		
Plank Line WTF+	August 22, 2016	39.3		
Rokeby Road WTF	August 16, 2021	2.55		
Fluoride			1.5**	0.06
Bell Mill Road WTF	August 16, 2021	0.07		
Fairview WTF	May 27, 2019	0.35		
Mall Road WTF	August 16, 2021	ND		
Plank Line WTF+	August 22, 2016	1.51		
Rokeby Road WTF	August 16, 2021	ND		

*Sodium levels between 20 – 200 mg/L must be reported every 5 years

**Natural levels of fluoride between 1.5 – 2.4 mg/L must be reported every 5 years.

+not running in 2021

The following Table summarizes the most recent results for the Lead Testing Program. Lead samples are taken every 3 years. Levels of alkalinity and pH are monitored twice per year in the distribution system to ensure water quality is consistent and does not facilitate leaching of lead into the water.

Parameter	*Result Range (Min - Max)*	*Number of Samples*	*Acceptable Level*
Distribution Alkalinity	172 – 249	8	30 – 500mg/L
Distribution pH	7.32 – 7.56	8	6.5 – 8.5
Distribution Lead 2021	0.07– 2.29	8	10 ug/L MAC

The following Table summarizes the most recent test results for Schedules 23. Testing is required annually for GUDI wells at Bell Mill Road, Fairview and Mall Road.

Parameter	*Results (ug/L) Bell Mill Road WTF November 22, 2021*	*Results (ug/L) Fairview WTF November 22, 2021*	*Results (ug/L) Mall Road WTF November 22, 2021*	*MAC (ug/L)*	*MDL (ug/L)*
Antimony	ND	ND	ND	6	0.09
Arsenic	ND	1.7	ND	10	0.02
Barium	31.6	126	60.5	1000	0.01
Boron	18	68	22	5000	2.0
Cadmium	ND	0.008	0.003	5	0.003
Chromium	0.30	0.40	0.12	50	0.08
Mercury	ND	ND	ND	1	0.01
Selenium	0.18	0.39	0.07	5	0.04
Uranium	0.571	0.345	1.79	20	0.002

The following Table summarizes the most recent test results for Schedules 23.Testing is required every 3 years in secure, Non-GUDI wells at Plank Line and Rokeby Road.

Parameter	*Results (ug/L) Plank Line WTF June 6/16+*	*Results (ug/L) Rokeby Road WTF May 27/19*	*MAC (ug/L)*	*MDL (ug/L)*
Antimony	ND	ND	6	0.02
Arsenic	10.0	1.2	10	0.2
Barium	52.4	29.6	1000	0.01
Boron	153	14	5000	2.0
Cadmium	ND	ND	5	0.003
Chromium	3.94	0.52	50	0.03
Mercury	ND	ND	1	0.01
Selenium	0.09	0.26	5	0.04
Uranium	0.185	1.63	20	0.002

+not running in 2021

Summary of Organic parameters in Schedule 24 sampled during this reporting period or the most recent sample results. Testing is required annually for GUDI wells at Bells Mill Road, Fairview and Mall Road.

Parameter	*Results (ug/L) Bell Mill Rd. WTF November 22, 2021*	*Results (ug/L) Fairview WTF November 22, 2021*	*Results (ug/L) Mall Road WTF November 22, 2021*	*MAC (ug/L)*	*MDL (ug/L)*
Alachlor	ND	ND	ND	5	0.02
Atrazine + N-dealkylatedmetobolites	0.01	0.01	ND	5	0.01
Azinphos-methyl	ND	ND	ND	20	0.05
Benzene	ND	ND	ND	1	0.32
Benzo(a)pyrene	ND	ND	ND	0.01	0.004
Bromoxynil	ND	ND	ND	5	0.33
Carbaryl	ND	ND	ND	90	0.05
Carbofuran	ND	ND	ND	90	0.01
Carbon Tetrachloride	ND	ND	ND	2	0.17
Chlorpyrifos	ND	ND	ND	90	0.02
Diazinon	ND	ND	ND	120	0.02
Dicamba	ND	ND	ND	200	0.20
1,2-Dichlorobenzene	ND	ND	ND	5	0.41
1,4-Dichlorobenzene	ND	ND	ND	30	0.36
1,2-Dichloroethane	ND	ND	ND	14	0.35

Parameter	*Results (ug/L) Bell Mill Rd. WTF November 22, 2021*	*Results (ug/L) Fairview WTF November 22, 2021*	*Results (ug/L) Mall Road WTF November 22, 2021*	*MAC (ug/L)*	*MDL (ug/L)*
1,1-Dichloroethylene (vinylidene chloride)	ND	ND	ND	50	0.33
Dichloromethane	ND	ND	ND	900	0.35
2-4 Dichlorophenol	ND	ND	ND	100	0.15
2,4-Dichlorophenoxy acetic acid (2,4-D)	ND	ND	ND	9	0.19
Diclofop-methyl	ND	ND	ND	20	0.40
Dimethoate	ND	ND	ND	10	0.06
Diquat	ND	ND	ND	150	1
Diuron	ND	ND	ND	280	0.03
Glyphosate	ND	ND	ND	3	1
Malathion	ND	ND	ND	900	0.02
2-methyl-4chlorophenoxyacetic acid (MCPA)	ND	ND	ND	100	0.12
Metolachlor	ND	ND	ND	80	0.01
Metribuzin	ND	ND	ND	80	0.02
Monochlorobenzene	ND	ND	ND	10	0.30
Paraquat	ND	ND	ND	50	1
Pentachlorophenol	ND	ND	ND	2	0.15
Phorate	ND	ND	ND	190	0.01
Picloram	ND	ND	ND	3	1
Polychlorinated Biphenyls(PCB)	ND	ND	ND	1	0.04
Prometryne	ND	ND	ND	10	0.03
Simazine	ND	ND	ND	280	0.01
Terbufos	ND	ND	ND	30	0.01
Tetrachloroethylene	ND	ND	ND	100	0.35
2,3,4,6-Tetrachlorophenol	ND	ND	ND	230	0.20
Triallate	ND	ND	ND	5	0.01
Trichloroethylene	ND	ND	ND	5	0.44
2,4,6-Trichlorophenol	ND	ND	ND	280	0.25
Trifluralin	ND	ND	ND	2	0.02
Vinyl Chloride	ND	ND	ND	1	0.17

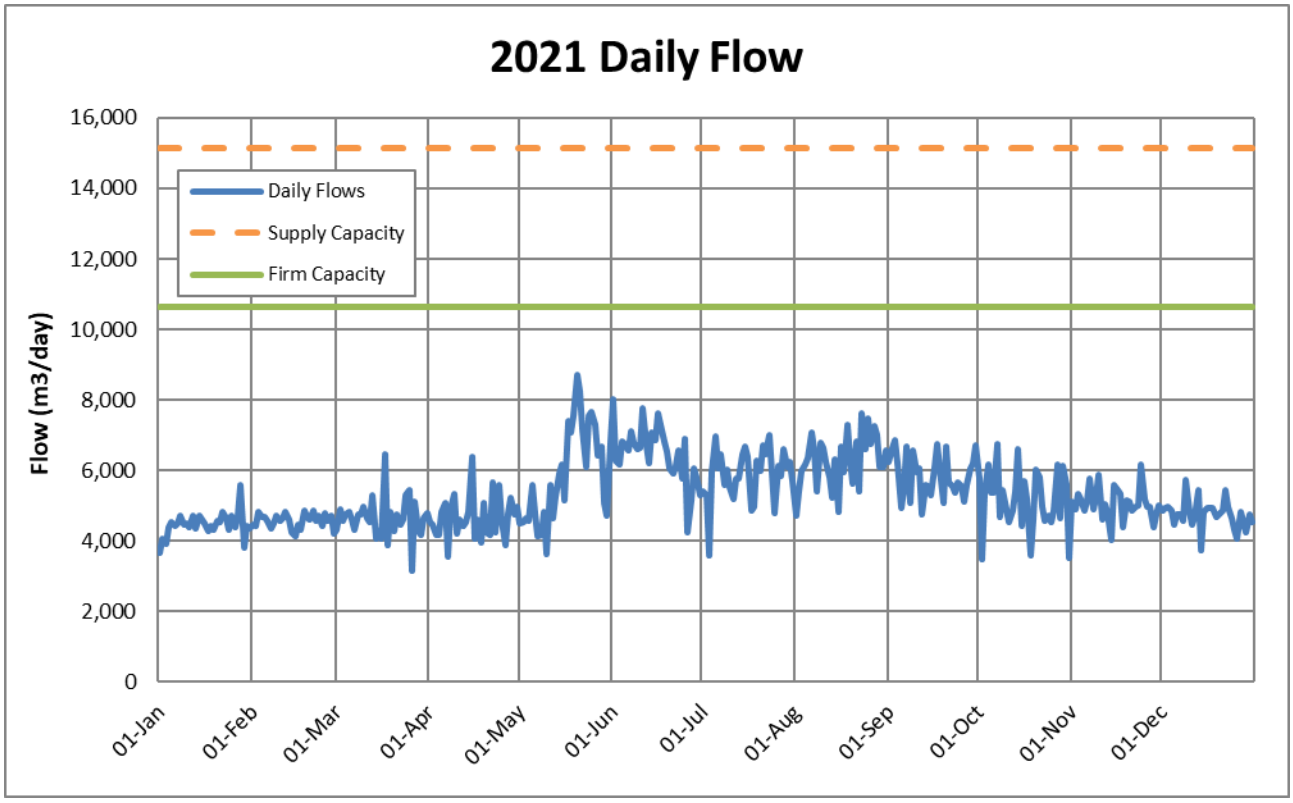
Summary of Organic parameters in Schedule 24 sampled during this reporting period or the most recent sample results. Testing is required every 3 years in secure, Non-GUDI wells at Plank Line and Rokeby Road.

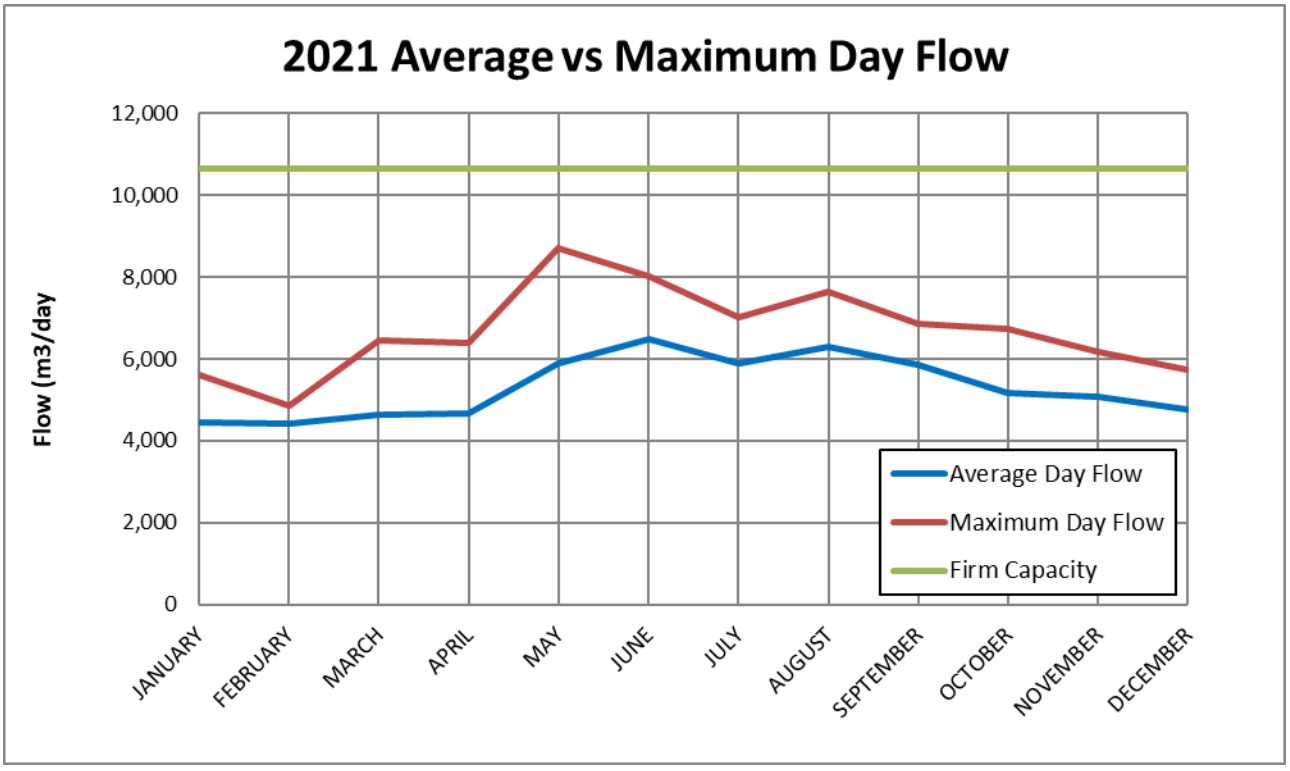
Parameter	*Results (ug/L) Plank Line WTF June 6, 2016 ***	*Plank MDL (ug/L)*	*Results (ug/L) Rokeby Road WTF June 7, 2021*	*MAC (ug/L)*	*Rokeby MDL (ug/L)*
Alachlor	ND	0.02	ND	5	0.02
Atrazine + N-dealkylatedmetobolites	ND	0.01	0.02	5	0.01
Azinphos-methyl	ND	0.01	ND	20	0.05
Benzene	ND	0.32	ND	1	0.32
Benzo(a)pyrene	ND	0.004	ND	0.01	0.004
Bromoxynil	ND	0.33	ND	5	0.33
Carbaryl	ND	0.05	ND	90	0.05
Carbofuran	ND	0.01	ND	90	0.01
Carbon Tetrachloride	ND	0.16	ND	2	0.17
Chlorpyrifos	ND	0.002	ND	90	0.02
Diazinon	ND	0.02	ND	20	0.02
Dicamba	ND	0.02	ND	120	0.20
1,2-Dichlorobenzene	ND	0.20	ND	200	0.41
1,4-Dichlorobenzene	ND	0.41	ND	5	0.36
1,2-Dichloroethane	ND	0.36	ND	5	0.35

Parameter	*Results (ug/L) Plank Line WTF June 6, 2016 ** *	*Plank MDL (ug/L)*	*Results (ug/L) Rokeby Road WTF June 7, 2021*	*MAC (ug/L)*	*Rokeby MDL (ug/L)*
1,1-Dichloroethylene (vinylidene chloride)	ND	0.35	ND	14	0.33
Dichloromethane	ND	0.33	ND	50	0.35
2-4 Dichlorophenol	ND	0.35	ND	900	0.15
2,4-Dichlorophenoxy acetic acid (2,4-D)	ND	0.15	ND	100	0.19
Diclofop-methyl	ND	0.19	ND	9	0.40
Dimethoate	ND	0.40	ND	20	0.06
Diquat	ND	0.03	ND	70	1
Diuron	ND	1	ND	150	0.03
Glyphosate	ND	0.03	ND	280	1
Malathion	ND	1	ND	190	0.02
2-methyl-4chlorophenoxyacetic acid (MCPA) *	*	0.02	ND	100	0.12
Metolachlor	ND	0.12	ND	50	0.01
Metribuzin	ND	0.01	ND	80	0.02
Monochlorobenzene	ND	0.02	ND	80	0.30
Paraquat	ND	0.30	ND	10	1
Pentachlorophenol	ND	1	ND	60	0.15
Phorate	ND	0.15	ND	2	0.01
Picloram	ND	0.01	ND	190	1
Polychlorinated Biphenyls(PCB)	ND	1	ND	3	0.04
Prometryne	ND	0.04	ND	1	0.03
Simazine	ND	0.03	ND	10	0.01
Terbufos	ND	0.01	ND	1	0.01
Tetrachloroethylene	ND	0.01	ND	10	0.35
2,3,4,6-Tetrachlorophenol	ND	0.35	ND	100	0.20
Triallate	ND	0.14	ND	230	0.01
Trichloroethylene	ND	0.01	ND	5	0.44
2,4,6-Trichlorophenol	ND	0.43	ND	5	0.25
Trifluralin	ND	0.25	ND	45	0.02
Vinyl Chloride	ND	0.02	ND	1	0.17
		0.17			

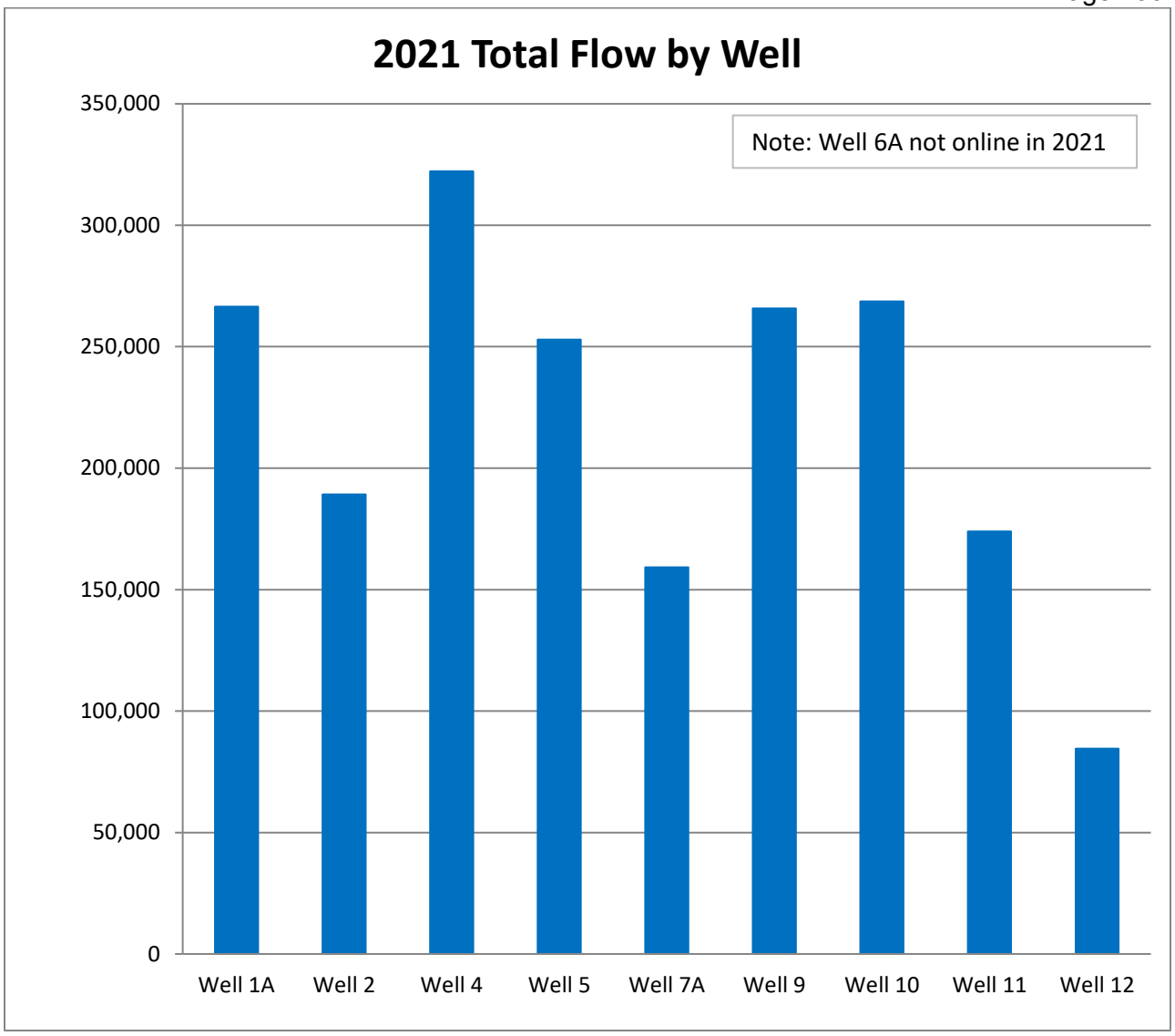
***not running in 2021, * MCPA was added in 2017*

APPENDIX B: WATER QUANTITY SUMMARY





Tillsonburg Firm Capacity 10,627 m^3/day
Tillsonburg Water Supply Capacity 15,300 m^3/day



Tillsonburg Firm Capacity 10,627 m^3/day
Tillsonburg Water Supply Capacity 15,300 m^3/day

Growing stronger together

2021 ANNUAL DRINKING WATER SYSTEM SUMMARY REPORT
Woodstock Water System

1. GENERAL INFORMATION

Oxford County (the County) prepares a report summarizing system operation and water quality for every municipal drinking water system annually. The reports detail the latest water quality testing results, water quantity statistics, and any adverse conditions that may have occurred for the previous year. They are available for review by the end of February on the County website at www.oxfordcounty.ca/drinkingwater or by contacting the Public Works Department.

All efforts have been made to ensure the information presented in this report is accurate. If you have any questions or comments concerning the report please contact the County at the address and phone number listed below or by email at publicworks@oxfordcounty.ca

Drinking Water System:	Woodstock Water System
Drinking Water System Number:	220000709
Drinking Water System Owner & Contact Information:	Oxford County Public Works Department Water Services P.O. Box 1614 21 Reeve Street Woodstock, ON N4S 7Y3 Telephone: 519-539-9800 Toll Free: 866-537-7778 Email: publicworks@oxfordcounty.ca
Reporting Period:	January 1, 2021 – December 31, 2021

1.1. System Description

The Woodstock Water System is a Large Municipal Water system as defined by Ontario Regulation (O.Reg.) 170/03 and serves a population of approximately 44,790. The system consists of 11 well sources, six of which are classified as GUDI (Groundwater Under Direct Influence of surface water) and five are secure groundwater wells.

The Woodstock Water System consists of four water treatment facilities (WTF), as follows:

Treatment Facility	*Wells*	*Treatment*
Thornton WTF	1, 2, 3, 4, 5, 8 & 11	Ultra violet (UV) light and gas chlorination for disinfection
Southside WTF	6 & 9	Disinfection with gas chlorination & sodium hypochlorite respectively
Sutherland WTF	7	Filtration for iron removal and disinfection with gas chlorination
Trillium Line WTF	12	Disinfection with sodium hypochlorite

The treatment facilities each house high lift pumps, monitoring equipment, and treatment equipment for the supply wells. In 2021, approximately 9,588 kg of chlorine gas and 3,895 L of sodium hypochlorite was used in the water treatment process.

Approximately 32,745 m^3 of water storage is provided within the Bower Hill and Southside Park reservoirs and the Northwest and East water towers. There are pressure boosting stations on Athlone Street, Nellis Street, County Road 17, and Universal Road that maintain pressure and monitor chlorine residual in segments of the distribution

system. Chlorine gas and sodium hypochlorite are certified to meet standards set by the Standards Council of Canada or American National Standards Institute.

1.2. Major Expenses

In 2021 the Woodstock Water System had operating and maintenance expenditures of approximately $5,200,000. Operations and maintenance expenditures included:

- $30,000 for the replacement of general operating equipment

In addition to regular operational and maintenance expenditures Capital Improvement projects for Woodstock totaled $3,780,000 for improvements to water treatment systems and replacement of distribution mains in the Woodstock System. Woodstock Capital Improvement projects included:

- $30,000 for facilities improvements
- $2,100,000 for the replacement of aging watermains
- $2,800,000 for the expansion of the water distribution system and servicing
- $400,000 for feeder main replacement study

Capital Improvement projects for all systems included:

- $720,000 develop Countywide SCADA Master Plan for all water systems
- $14,000 updated water system modeling

2. MICROBIOLOGICAL TESTING

2.1. *E. coli* and Total Coliform

Bacteriological tests for *E. coli* and total coliforms are taken weekly from the raw and treated water at the facility. Extra samples are taken after major repairs or maintenance work. Any *E. coli* or total coliform results above 0 in treated water must be reported to the Ministry of Environment, Conservation and Parks (MECP) and Medical Officer of Health (MOH). Resamples and any other required actions are taken as quickly as possible. The results from the 2021 sampling program are shown in the table below. There was one adverse test result from 1,503 treated water samples collected in this reporting period. A summary of this incident and resolution can be found in section 6.2 of this report.

	Number of Samples	*Range of E. coli Results Min - Max MAC = 0*	*Range of Total Coliform Results Min - Max MAC = 0*
Raw	572	0	0 - 9
Treated	502	0	0 - 4
Distribution	1,001	0	0 - 4

2.2. Heterotrophic Plate Count (HPC)

HPC analyses are required from the treated and distribution water. The tests are required weekly for treated water and for 25% of the required distribution system bacteriological samples. HPC should be less than 500 colonies per 1 mL. Results over 500 colonies per 1 mL may indicate a change in water quality but it is not considered an indicator of unsafe water. The 2021 results are shown in the table below.

	Number of Samples	*Range of HPC Min - Max*
Treated	207	0 - 19
Distribution	162	0 - 29

3. CHEMICAL TESTING

The Safe Drinking Water Act requires periodic testing of the water for approximately 60 different chemical parameters. The latest results for all parameters are provided in Appendix A. The sampling frequency varies for different types and sizes of water systems and chemical parameters. If the concentration of a parameter is above half of the Maximum Allowable Concentration (MAC) under the Ontario Drinking Water Quality Standards, an increased testing frequency of once every three months is required by the Regulation. Where concerns regarding a parameter exist, the MECP can also require additional sampling be undertaken.

Information on the health effects and allowable limits of components in drinking water may be found on the MECP web page through the link provided in Appendix A. Additional information on common chemical parameters specific to the Woodstock system is provided below.

3.1. Sodium

Sodium levels in drinking water are tested once every five years. The aesthetic objective is 200 mg/L meaning at levels less than this, sodium will not impair the taste of the water.

When sodium levels are above 20 mg/L, the MECP and MOH are notified. Southwestern Public Health maintain an information page on sodium in drinking water at https://www.swpublichealth.ca/en/partners-and-professionals/resources/Health-Care-Providers/Alerts-Advisories-Updates/Advisories/ADV_HIA-Sodium-20201203.pdf in order to help people on sodium restricted diets control their sodium intake.

The sodium level in water from the Woodstock Sutherland WTF averages 83.3 mg/L from samples collected in 2021. These results are reported to the MECP and MOH. All other locations had sodium levels under 20 mg/L.

3.2. Hardness

This is an aesthetic parameter that may affect the appearance of the water but is not related to health. Well water commonly has high levels of hardness and other minerals from being in contact with underground rock formations. Many households have water softeners to help reduce white calcium deposits and improve the efficiency of soaps. This information is included here to help set the water softener at the level recommended by the manufacturer.

Samples for water hardness are collected at least every three years. The average hardness in the Woodstock Water System is approximately 404 mg/L (equivalent to 24 grains).

3.3. Additional Testing Required by MECP

Weekly nitrate samples of the treated water from Thornton WTF are required by the Municipal Drinking Water License issued June 9, 2020. Nitrate concentrations must be less than 10.0 mg/L in drinking water.

The 2021 nitrate results ranged from 4.44 to 6.73 mg/L.

4. OPERATIONAL MONITORING

4.1. Chlorine Residual

Free chlorine levels of the treated water are monitored continuously at the discharge point of the WTF. In the distribution system, free chlorine is checked twice weekly at various locations. As a target, free chlorine residuals within the distribution system should be above 0.20 mg/L. A free chlorine level lower than 0.05 mg/L must be reported and corrective action taken. There were no reportable incidents in 2021. A summary of the chlorine residual readings is provided in the table below.

4.2. Turbidity

Turbidity of treated water is continuously monitored at the treatment facility, as a change in turbidity can indicate an operational problem. The turbidity of untreated water from the well is checked weekly. Turbidity is measured

in nephelometric turbidity units (NTU). Under O.Reg. 170/03 turbidity in groundwater is not reportable however turbidity should be < 1 NTU at the treatment plant and < 5 NTU in the distribution system. A summary of the monitoring results for 2021 is provided in the table below.

Parameter & Location	*Monitoring Frequency*	*Range of Results (Min – Max) and Average*
Chlorine residual in distribution (mg/L)	Continuous	(0.48 – 3.80) 1.17
Thornton WTF after treatment		
Chlorine mg/L	Continuous	(0.94 – 1.54) 1.29
Turbidity NTU	Continuous	(0.01 – 4) 0.03
Southside WTF after treatment		
Chlorine mg/L	Continuous	(0.49 – 1.69) 1.24
Turbidity NTU	Continuous	(0.02 – 3.93) 0.05
Sutherland WTF after treatment		
Chlorine mg/L	Continuous	(0.19– 2.36) 1.13
Turbidity NTU	Continuous	(0.05 – 2.38) 0.09
Trillium Line WTF after treatment		
Chlorine mg/L	Continuous	(0.51 – 3.06) 1.27
Turbidity NTU	Continuous	(0.03 – 5) 0.06

4.3. Ultra Violet (UV) Disinfection

Supply wells that have been classified as being GUDI require “enhanced disinfection” through ultra violet light (UV) followed by chlorination. A minimum UV dosage of 40 mJ/cm² is maintained to inactivate any microorganisms that may be present from contact with surface water. Insufficient dosage of UV lasting more than 10 minutes must be reported as inadequate disinfection. There were no occurrences of inadequate UV disinfection in 2021.

5. WATER QUANTITY

Continuous monitoring of flow rates from supply wells into the treatment system and from the facility into the distribution system is required by O.Reg. 170/03. The Municipal Drinking Water License and Permit to Take Water issued by the MECP regulate the amount of water that can be utilized over a given time period. A summary of the 2021 flows are provided in the Table below and presented graphically in Appendix B.

Flow Summary	*Quantity*
Permit to Take Water Limit	57,775 m^3/d
Municipal Drinking Water License Limit	56,325 m^3/d
2021 Average Daily Flow	14,692 m^3/d
2021 Maximum Daily Flow	22,147 m^3/d
2021 Average Monthly Flow	446,876 m^3
2021 Total Amount of Water Supplied	5,362,512 m^3

A review of the available supply capacity and the anticipated growth forecasted for the community indicates that the system has sufficient capacity over the 20 year planning horizon.

Firm Capacity of this system is rated at 45,533 m^3/day. Firm Capacity is defined as the removal of the highest producing well in an emergency or operational / maintenance situation. This system comprises of 11 supply wells, six of which are GUDI. The GUDI wells contribute 30,772 m^3/day of the Firm Capacity.

6. NON-COMPLIANCE FINDINGS AND ADVERSE RESULTS

This section documents any known incidents of non-compliance or adverse results and the associated correction actions taken to resolve the issue. Non-compliance issues are typically identified by either the Operating Authority or the MECP Drinking Water Inspectors. The issues and associated required actions are documented by the Inspectors in the system's Annual Inspection Report. All non-compliance issues are investigated, corrective actions taken and documented using the County's Drinking Water Quality Management System (DWQMS) procedures.

6.1. Non-Compliance Findings

The annual MECP inspection took place in September 2021. There were no non-compliance findings and the Inspection Report rating was 100%.

6.2. Adverse Results

Any adverse results from bacteriological, chemical samples or observations of operational conditions that indicate adverse water quality are reported as required and corrective actions are taken. There were two adverse or reportable occurrences in 2021. A summary of these events and their corrective actions can be found in the table below.

Incident / Date	Corrective Action	Resolution / Date
Treated Water Sample with Chemistry Exceedance		
August 24, 2021 Sodium of 73 mg/L taken at the Sutherland WTF.	Reported result and a second sample was collected for confirmation.	Re-sample result was confirmed (93.5 mg/L) September 7, 2021. The results were discussed with Southwestern Public Health who will update health advisory information for area residents.
Treated or Distribution Water Sample with Positive Test for *E. Coli* or *Total Coliform* Bacteria		
June 30, 2021 2 TC cfu/100mL in a treated distribution sample result. The free chlorine at the time the sample was 1.25 mg/L	Reported and resamples were taken.	Resample results acceptable July 2, 2021.

APPENDIX A: SUMMARY OF CHEMICAL RESULTS

UNDERSTANDING CHEMICAL TEST RESULTS

The following tables summarize the laboratory results of the chemical testing the County is required to complete. Different types of parameters are required to be tested for at different frequencies as noted below. Explanations on the health impacts of these parameters can be found in the MECP document https://cvc.ca/wp-content/uploads/2011/03/std01_079707.pdf PSIB4449e01 titled "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines".

Results are shown as concentrations with units of either milligrams per litre (mg/L) or micrograms per litre (ug/L). 1 mg/L is equal to 1000 ug/L. The Maximum Acceptable Concentration (MAC) is the highest amount of a parameter that is acceptable in Municipal drinking water and can be found in the MECP Drinking Water Standards. The Method Detection Limit (MDL) is the lowest amount to which the laboratory can confidently measure. A result of "ND" stands for "Not Detected" and means that the concentration of the chemical is lower than the laboratory's equipment is capable of measuring. In the event that some samples results are ND, and other results are above the MDL, the value of the MDL will be used in place of the ND where an average result must be calculated. Where all collected samples are ND the average sample result will be assumed to be ND.

Nitrate and nitrite samples are normally required every 3 months of operation. Weekly nitrate sampling is required at the Thornton WTF.

Parameter & Location	*Result Range* Min – Max *(mg/L)*	*Average Result (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Nitrite			1.0	0.003
Thornton WTF	ND – 0.010	0.05		
Southside WTF	ND	ND		
Sutherland WTF	ND	ND		
Trillium Line WTF	ND – 0.003	0.003		
Nitrate			10.0	0.006
Thornton WTF	4.44 – 6.73	5.84		
Southside WTF	4.28 – 5.10	4.76		
Sutherland WTF	0.01 – 0.013	0.01		
Trillium Line WTF	1.97 – 2.08	2.04		

Trihalomethane (THM) and total Haloacetic Acids (HAA) are by-products of the disinfection process. The samples are required every 3 months from the distribution system.

Parameter	*Annual Average*	*Result Value (ug/L)*	*MAC (ug/L)*	*MDL (ug/L)*
Trihalomethane (THM)	2021	8.2	100	0.37
Haloacetic Acids (HAA)	2021	ND	80	5.3

The following Table summarizes the most recent test results for Sodium and Fluoride. Testing and reporting any adverse results is required every 5 years.

Parameter & Location	*Sample Date*	*Result Value (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Sodium			20.0*	0.01
Thornton WTF	May 27, 2019	14.4		
Southside WTF	March 12, 2018	17.0		
Sutherland WTF	August 16, 2021 +	83.3 +		
Trillium Line WTF	August 16, 2021	16.9		
Fluoride			1.5**	0.06
Thornton WTF	May 27/19	0.27		
Southside WTF	Mar 12/18	0.41		
Sutherland WTF	August 16, 2021	0.98		
Trillium Line WTF	August 17, 2021	0.41		

*Sodium levels between 20 – 200 mg/L must be reported every 5 years.
**Natural levels of fluoride between 1.5 – 2.4 mg/L must be reported every 5 years.
+ average result, the date indicates the date the first sample was taken

The following table summarizes the most recent results for the Lead Testing Program. Lead samples are taken every 3 years. Levels of alkalinity and pH are monitored twice per year in the distribution system to ensure water quality is consistent and does not facilitate leaching of lead into the water.

Parameter	*Result Range (Min - Max)*	*Number of Samples*	*Acceptable Level*
Distribution Alkalinity	248 – 290	8	30 – 500mg/L
Distribution pH	7.28 - 7.58	8	6.5 – 8.5
Distribution Lead 2021	0.08 – 1.32	8	10 ug/L MAC

The following Table summarizes the most recent test results for Schedule 23. Testing is required annually for GUDI wells at Thornton.

Parameter	*Result (ug/L) Thornton WTF November 22, 2021*	*MAC (ug/L)*	*MDL (ug/L)*
Antimony	ND	6	0.09
Arsenic	0.3	10	0.2
Barium	52.7	1000	0.02
Boron	14	5000	2
Cadmium	ND	5	0.003
Chromium	0.30	50	0.08
Mercury	ND	1	0.01
Selenium	0.39	5	0.04
Uranium	0.737	20	0.002

The following Table summarizes the most recent test result for Schedule 23. Testing is required every 3 years for secure, Non-GUDI wells at Southside, Sutherland and Trillium Line.

Parameter	*Result (ug/L) Trillium Line WTF February 19, 2019*	*Result (ug/L) Southside WTF November* 29, 2019	*Result (ug/L) Sutherland WTF June 7, 2021*	*MAC (ug/L)*	*MDL (ug/L)*
Antimony	ND	ND	ND	6	0.09
Arsenic	0.4	0.2	0.4	10	0.2
Barium	60.9	44.7	172	1000	0.02
Boron	9	41	77	5000	2
Cadmium	0.004	ND	ND	5	0.003
Chromium	ND	0.28	0.21	50	0.08
Mercury	ND	ND	ND	1	0.01
Selenium	0.16	0.26	ND	5	0.04
Uranium	1.07	0.690	0.142	20	0.002

The following Table summarizes the Organic parameters in Schedule 24 sampled during this reporting period or the most recent sample results. Testing is required annually for GUDI wells at Thornton.

Parameter	*Result (ug/L) Thornton WTF November 22, 2021*	*MAC (ug/L)*	*MDL (ug/L)*
Alachlor	ND	5	0.02
Atrazine + N-dealkylatedmetobolites	ND	5	0.01
Azinphos-methyl	ND	20	0.05
Benzene	ND	1	0.32
Benzo(a)pyrene	ND	0.01	0.004
Bromoxynil	ND	5	0.33
Carbaryl	ND	90	0.05
Carbofuran	ND	90	0.05
Carbon Tetrachloride	ND	2	0.17
Chlorpyrifos	ND	90	0.02
Diazinon	ND	20	0.02
Dicamba	ND	120	0.20
1,2-Dichlorobenzene	ND	200	0.41
1,4-Dichlorobenzene	ND	5	0.36
1,2-Dichloroethane	ND	5	0.35
1,1-Dichloroethylene (vinylidene chloride)	ND	14	0.33
Dichloromethane	ND	50	0.35
2-4 Dichlorophenol	ND	900	0.15
2,4-Dichlorophenoxy acetic acid (2,4-D)	ND	100	0.19
Diclofop-methyl	ND	9	0.40
Dimethoate	ND	20	0.06

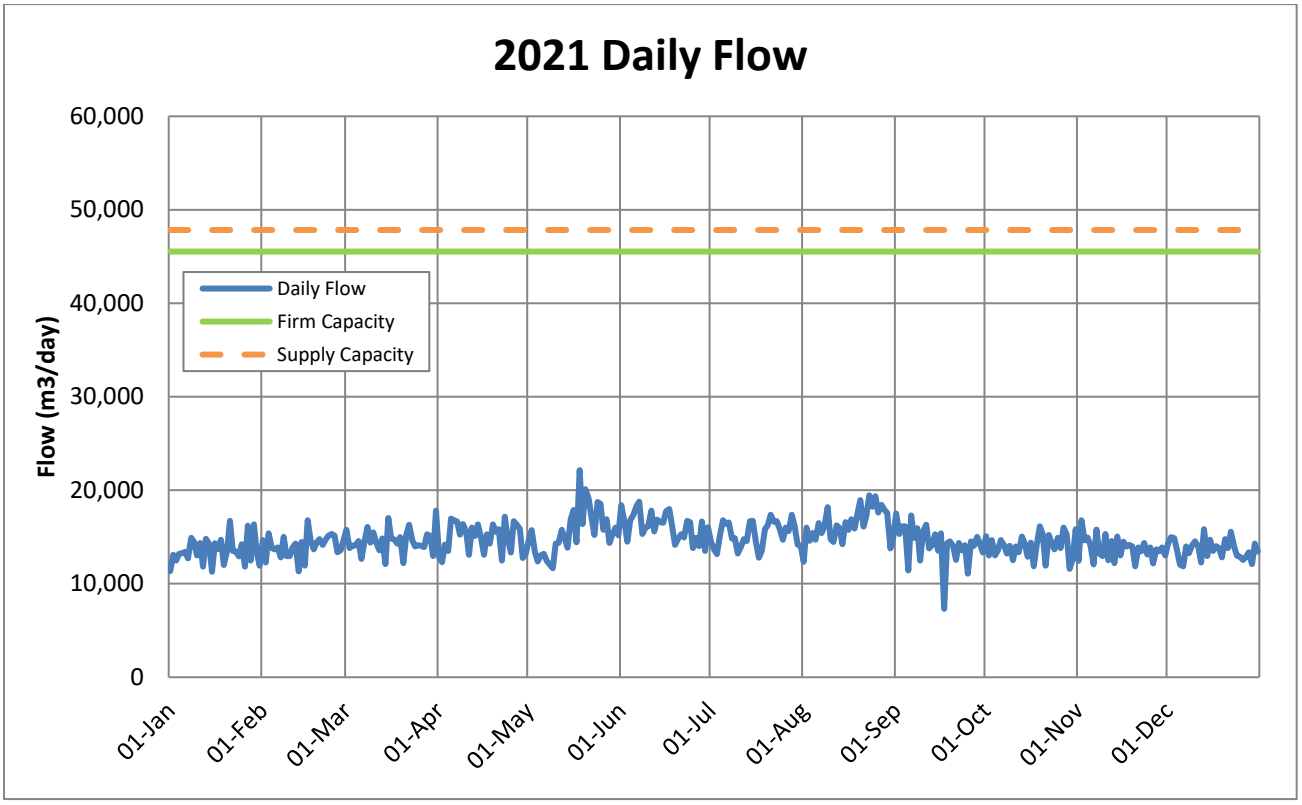
Parameter	*Result (ug/L) Thornton WTF November 22, 2021*	*MAC (ug/L)*	*MDL (ug/L)*
Diquat	ND	70	1
Diuron	ND	150	0.03
Glyphosate	ND	280	1
Malathion	ND	190	0.02
2-methyl-4chlorophenoxyacetic acid (MCPA)	ND	100	0.12
Metolachlor	ND	50	0.01
Metribuzin	ND	80	0.02
Monochlorobenzene	ND	80	0.30
Paraquat	ND	10	1
Pentachlorophenol	ND	60	0.15
Phorate	ND	2	0.01
Picloram	ND	190	1
Polychlorinated Biphenyls(PCB)	ND	3	0.04
Prometryne	ND	1	0.03
Simazine	ND	10	0.01
Terbufos	ND	1	0.01
Tetrachloroethylene	ND	10	0.35
2,3,4,6-Tetrachlorophenol	ND	100	0.20
Triallate	ND	230	0.01
Trichloroethylene	ND	5	0.44
2,4,6-Trichlorophenol	ND	5	0.25
Trifluralin	ND	45	0.02
Vinyl Chloride	ND	1	0.17

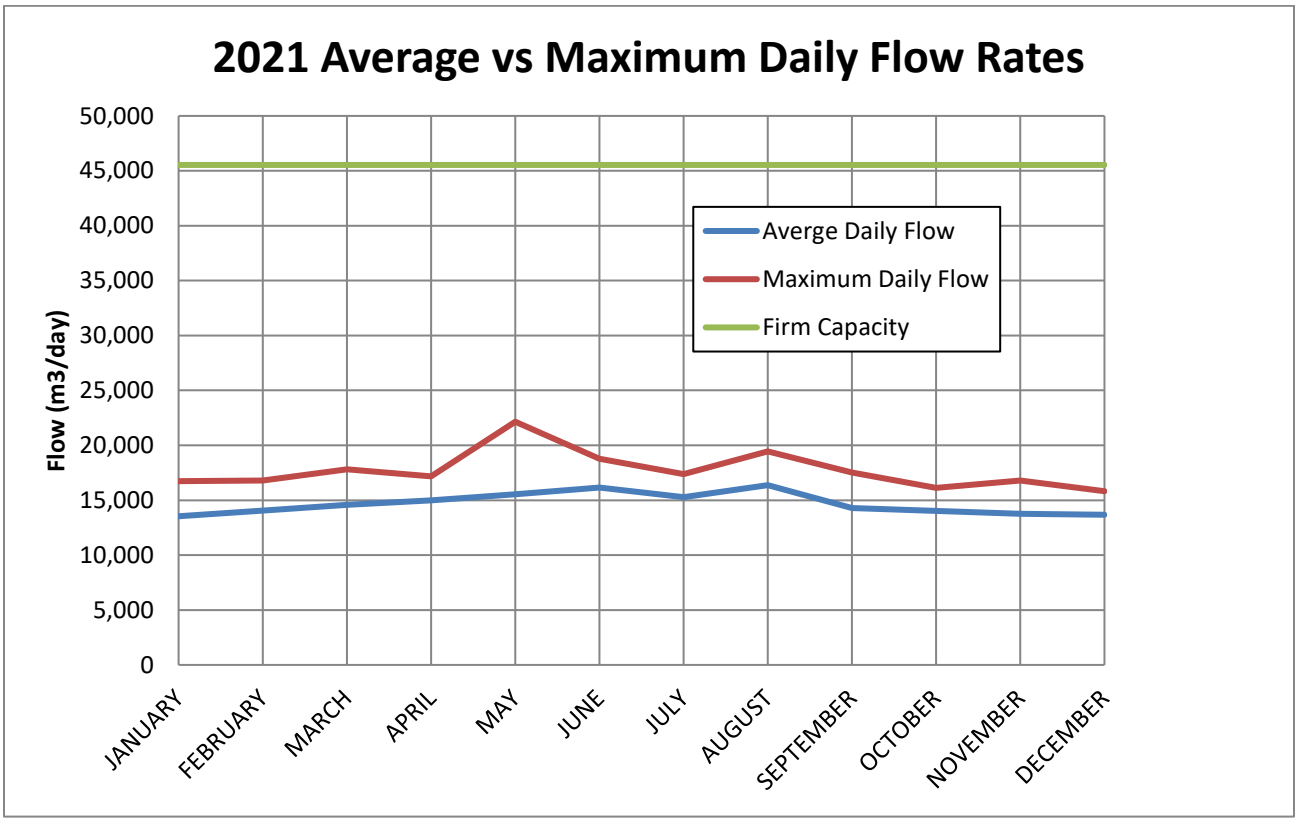
The following Table is a summary of Organic parameters in Schedule 24 sampled during this reporting period or the most recent sample results. Testing is required annually every 3 years for secure, Non-GUDI wells at Southside, Sutherland and Trillium Line.

Parameter	*Result (ug/L) Trillium Line WTF February 19, 2019*	*Result (ug/L) Southside WTF November* 29, 2019	*2019 MDL (ug/L)*	*Result (ug/L) Sutherland WTF June 7, 2021*	*2021MDL (ug/L)*	*MAC (ug/L)*
Alachlor	ND	ND	0.02	ND	0.02	5
Atrazine + N-dealkylatedmetobolites	ND	ND	0.01	ND	0.01	5
Azinphos-methyl	ND	ND	0.02	ND	0.05	20
Benzene	ND	ND	0.32	ND	0.32	1
Benzo(a)pyrene	ND	ND	0.004	ND	0.004	0.01
Bromoxynil	ND	ND	0.33	ND	0.33	5
Carbaryl	ND	ND	0.01	ND	0.05	90
Carbofuran	ND	ND	0.01	ND	0.01	90
Carbon Tetrachloride	ND	ND	0.16	ND	0.17	2
Chlorpyrifos	ND	ND	0.02	ND	0.02	90
Diazinon	ND	ND	0.02	ND	0.02	20
Dicamba	ND	ND	0.20	ND	0.20	120
1,2-Dichlorobenzene	ND	ND	0.41	ND	0.41	200
1,4-Dichlorobenzene	ND	ND	0.36	ND	0.36	5
1,2-Dichloroethane	ND	ND	0.35	ND	0.35	5
1,1-Dichloroethylene (vinylidene chloride)	ND	ND	0.33	ND	0.33	14
Dichloromethane	ND	ND	0.35	ND	0.35	50
2-4 Dichlorophenol	ND	ND	0.15	ND	0.15	900
2,4-Dichlorophenoxy acetic acid (2,4-D)	ND	ND	0.19	ND	0.19	100
Diclofop-methyl	ND	ND	**0.40**	ND	0.40	9
Dimethoate	ND	ND	0.03	ND	0.06	20
Diquat	ND	ND	1	ND	1	70
Diuron	ND	ND	0.03	ND	0.3	150

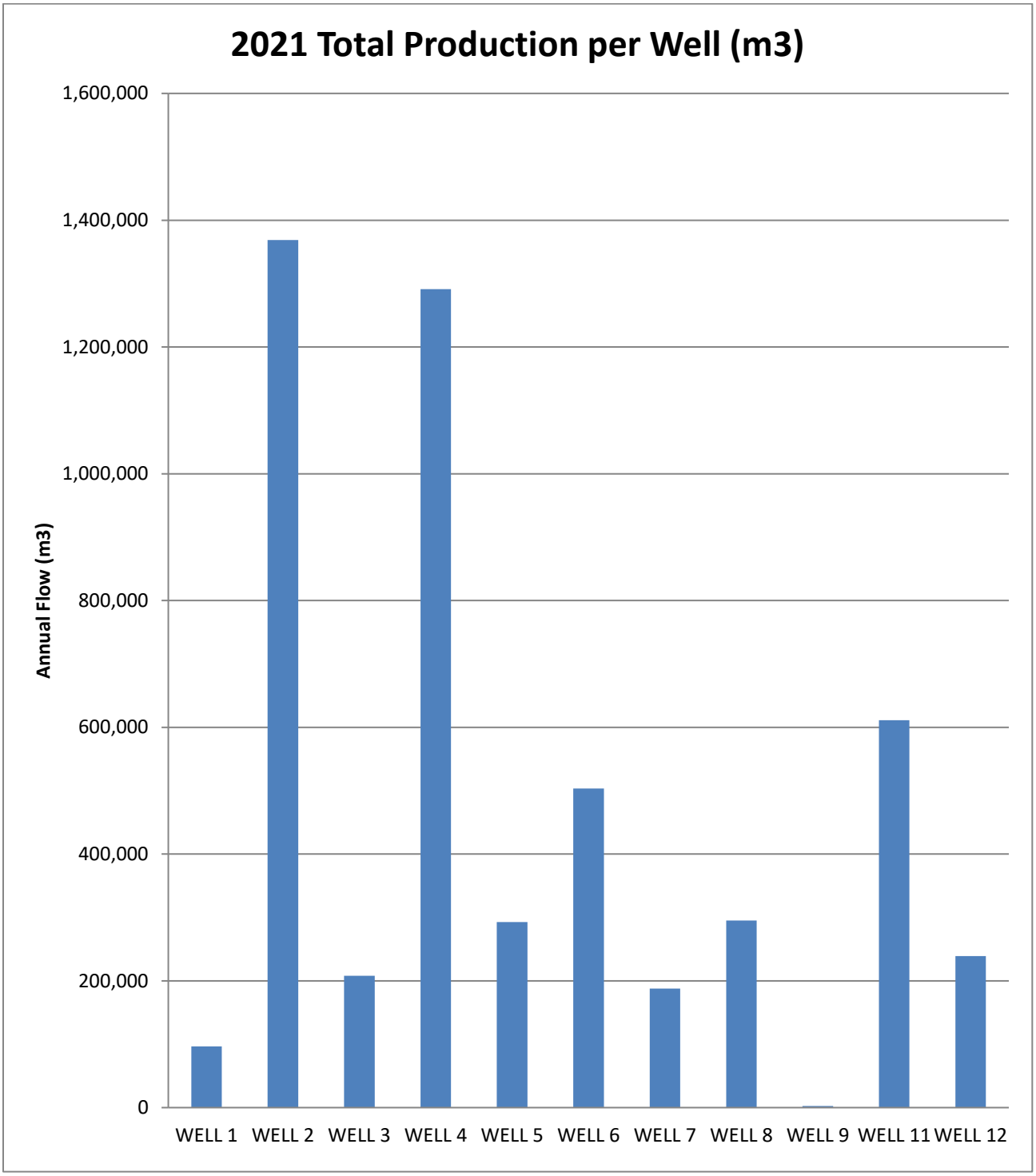
Parameter	*Result (ug/L) Trillium Line WTF February 19, 2019*	*Result (ug/L) Southside WTF November 29, 2019*	*2019 MDL (ug/L)*	*Result (ug/L) Sutherland WTF June 7, 2021*	*2021MDL (ug/L)*	*MAC (ug/L)*
Glyphosate	ND	ND	1	ND	1	280
Malathion	ND	ND	0.02	ND	0.02	190
2-methyl-4chlorophenoxyacetic acid (MCPA)	ND	ND	0.12	ND	0.12	100
Metolachlor	ND	ND	0.01	ND	0.01	50
Metribuzin	ND	ND	0.02	ND	0.02	80
Monochlorobenzene	ND	ND	0.30	ND	0.30	80
Paraquat	ND	ND	1	ND	1	10
Pentachlorophenol	ND	ND	0.15	ND	0.15	60
Phorate	ND	ND	0.01	ND	0.01	2
Picloram	ND	ND	1	ND	1	190
Polychlorinated Biphenyls(PCB)	ND	ND	0.04	ND	0.04	3
Prometryne	ND	ND	0.03	ND	0.03	1
Simazine	ND	ND	0.01	ND	0.01	10
Terbufos	ND	ND	0.01	ND	0.01	1
Tetrachloroethylene	ND	ND	0.35	ND	0.35	10
2,3,4,6-Tetrachlorophenol	ND	ND	0.14	ND	0.20	100
Triallate	ND	ND	0.01	ND	0.01	230
Trichloroethylene	ND	ND	0.44	0.85	0.44	5
2,4,6-Trichlorophenol	ND	ND	0.14	ND	0.25	5
Trifluralin	ND	ND	0.02	ND	0.02	45
Vinyl Chloride	ND	ND	0.17	ND	0.17	1

APPENDIX B: WATER QUANTITY SUMMARY





Woodstock Firm Capacity 45,533 m^3/day
Woodstock Water Supply Capacity 47,842 m^3 /day



Woodstock Firm Capacity 45,533 m^3/day
Woodstock Water Supply Capacity 47,842 m^3 /day

Oxford County
Growing stronger together

Report No. PW 2022-06
PUBLIC WORKS
Council Date: February 23, 2022

To: **Warden and Members of County Council**

From: **Director of Public Works**

Managed Forest Plan Update: 2021 Review and Operational Activity Forecast

RECOMMENDATION

1. **That County Council receive Report No. PW 2022-06 entitled "Managed Forest Plan Update: 2021 Review and Operational Activity Forecast" for information.**

REPORT HIGHLIGHTS

- This report provides an update on 2021 Managed Forest Plan undertakings, including, but not limited to:
    - Commercial timber harvesting generating over $11,000 in revenue, including harvests on 5.7 ha. across Zenda and Hall Tracts;
    - Afforestation plantings of 14,900 trees across 11.6 ha. of fallow land;
    - Reforestation plantings of 3,600 trees across 3.6 ha. of previously-harvested woodland; and
    - Invasive species management across 51.4 ha.
- Details of the proposed upcoming operational activity forecast associated with the active management of both the Agreement Forests and forested sections of other County-owned rural properties are also highlighted.

Implementation Points

Implementation of the recommended activities included within the 20 year Managed Forest Plan (MFP) began in 2018.

In previous years, a primary focus of forest management has been the salvage/harvest of ash and beech trees on affected properties. With the percentage and quality of ash declining severely, it is no longer a driver for logging.

In accordance with the MFP, secondary and tertiary thinning of conifer plantation in Agreement Forests as well as tree planting, invasive species management and wetland rehabilitation initiatives are currently the driving forces behind active management. In future years, activities will be selected based on priorities listed within the Plan, funding availability and workload.

Financial Impact

Approximately $15,000 in harvesting revenue was forecasted under the MFP in 2021 through harvesting that was planned to be undertaken at the Embro Tract (North) and Lakeside Closed Landfill; however, these harvests were deferred to 2022 due to poor market conditions. In lieu, alternative Woodlands revenue of over $11,000 was generated in the 2021 operating period through commercial harvesting at the Zenda Tract and Hall Tract as noted below:

- Zenda Tract generated $3,000 from a second thinning in a white pine parcel; and
- Hall Tract generated $8,000 from a second thinning in a red pine parcel.

The total Woodlands Conservation 2021 operating budget included expenses of $206,000 in 2021. The 2021 operating budget included MFP activity expenses related to the management of County-owned forested properties and wetlands (approximately $111,000) as well as activities associated with landowner engagement / enforcement of the County's Woodlands Conservation By-law and enforcement of the County's Weed Control By-law.

Communications

The County's forest management work is outlined for the public in the Managed Forest Plan as posted on the County website. Closer to the 2027 update of this plan, Public Works will share progress from this 10-year period.

A copy of Report No. PW 2022-06 will be shared with Ontario Woodlot Association, Woodland Owners Association, Ducks Unlimited, Upper Thames River Conservation Authority, and the Ministry of Natural Resources and Forestry.

Strategic Plan (2020-2022)

WORKS WELL TOGETHER	***WELL CONNECTED***	***SHAPES THE FUTURE***	***INFORMS & ENGAGES***	***PERFORMS & DELIVERS***	***POSITIVE IMPACT***
1.ii.		3.ii. 3.iii.	4.i.		

DISCUSSION

Background

In August 2017, County Council adopted Report No. CAO 2017-11, "County Managed Forest Properties Review." The Report recommended the continued public ownership and active management of the forest tracts owned by the County, in accordance with good forestry practices and for staff to consider partnership opportunities to advance the forest properties' natural environment and public value.

As per Report No. PW 2019-26, staff retained forestry consulting services to develop a 20-year Managed Forest Plan (MFP) from 2018 to 2037 which concentrates resources on commercial harvesting, tree planning and invasive species management. The MFP included a detailed 10-year Operational Work Schedule for the first ten-year period (2018 to 2027) in which 14 parcels were identified as a priority for commercial harvest.

While the MFP identifies 14 parcels for management, it should be noted that harvesting activities are not strictly limited to these parcels. Several other parcels from both Agreement Forests and Source Water Protection forests are assessed on a yearly basis for ideal tree stocking, weather conditions and contractor availability.

Tree planting and invasive species management, while included in the MFP, were not associated with any specific timeline. Recognizing that a tree planting and invasive species management program would be established and gradually increased year-over-year, only general framework and parcel management recommendations were given. The work schedule for the second ten-year period (2028 to 2037) will be refined upon review and evaluation of the undertakings completed in the first ten-year period.

Comments

Summary of 2021 Managed Forest Plan Undertakings

Consistent with the MFP, a number of projects and/or programs were undertaken in 2021 in support of the active management of the County's forested properties as detailed below.

i) Tree Harvesting

Two parcels not included in the MFP commercial harvest schedule (Hall Tract and Zenda Tract) were added to the list of 2021 undertakings.

The red pine parcel at the Hall Tract was considered, on its own, too small of an acreage to be commercially viable so it had sat idle for several years; however, in May 2021, there was a dramatic increase in the value of red pine. The 50% increase in standing timber value in combination with unseasonably dry weather created ideal conditions for this small parcel to be subject to a second thinning.

The conifer plantations at the Zenda Tract were slated for a full scale harvest in the fall of 2021 but the risk of a market freeze on material used to make pressure-treated products was looming. Rather than risk a price drop or market freeze during a large-scale machine-harvest, a smaller parcel was set aside to be harvested by hand to feed the demand of independent, local sawmills.

These two properties were originally omitted from the MFP harvest schedule as the red pine in the Hall Tract was heavily harvested in 2006 and 2007, and sections with adequate stocking were small and isolated. The white pine plantation at the Zenda Tract is mostly small diameter "second thinning" material and as the previous red pine salvage left highly variable residual stocking there was no urgency to include it in the MFP harvest schedule. The parcel set aside for 2021 was only 4 acres in size but the size and quality of the timber was appropriate for the demand of local sawmills.

The two properties scheduled for 2021 harvest in the MFP, Embro Tract (North) and Lakeside Closed Landfill, were pushed to 2022 due to the aforementioned market conditions. This will also allow for buckthorn management prior to harvest. Further, the Tavistock lagoons property was planned for 2021; however, harvesting was placed on hold due to weather conditions. Frozen weather conditions, hardwood regeneration and tree stocking are all ideal to advance the Tavistock lagoons for harvesting in 2022.

In accordance with the MFP, the 2021 harvesting activities were focused on conifer plantation thinning as well as habitat improvement. Conifer plantations, while primarily intended as a nurse crop for shade tolerant deciduous hardwoods, function as a valuable habitat type and source of quality timber. Periodic thinning is required to allow the diameter and timber quality of the conifers to increase as well as increase the amount of natural regeneration and the number of trees in the future forest. Trails and access points used by logging equipment in turn allow for greater access for the public to enjoy hiking and hunting. Wildlife habitat quality increases dramatically in the years following a timber harvest as new growth establishes.

A summary of tree harvesting activities by property is shown below in Table 1.

Table 1: Tree Harvesting Projects/Programs Undertaken in 2021

Operation	Objective	Acreage	MFP Timeframe	Actual Timeframe Completed
Hall Tract (agreement forest)	Second thinning of red pine	4 ha.	No timeframe given	June 2021
Zenda Tract (agreement forest)	Second thinning of white pine plantation	1.7 ha.	No timeframe given	Fall 2021

ii) Tree Reforestation and Afforestation

Afforestation projects in 2021 included 14,900 trees across 11.6 ha. of fallow land. Reforestation plantings of 3,600 trees occurred across 3.6 ha. of previously-harvested woodland. Overall, a total of 18,500 seedlings were planted.

Afforestation, which is the planting of trees in an area not previously forested, focused on the Thames River Wetlands (Beachville Park: ‘C’ & ‘D’) as well as Thornton Wellfield - Hodge’s Pond ‘B’ and ‘P’.

- In Beachville Park: ‘C’, to improve the diversity of tree species and increase forest cover along Beachville Road, 1,550 seedlings were planted in order to improve the wildlife corridor along the bank of the Thames River.
- In Beachville Park: ‘D’, 2,000 seedlings were planted between both constructed and natural wetlands and the Thames River.

- In Thornton Wellfield, Hodges Pond – 'B', to further increase forest cover, 1,850 seedlings were planted between existing woodland and farm field along Curry Road.
- Also in Thornton Wellfield, Hodges Pond – 'P', to help advance the woodland edge along Cedar Creek, 9,500 seedlings were planted adjacent to 10 newly excavated wetland cells at the Hodge's Pond property.

The woodland parcels subject to commercial harvest in 2020 all received some degree of reforestation in 2021, which is the planting of a parcel of woodlands after a commercial harvest, as hardwood regeneration is seldom uniform and a greater diversity of species may be needed. The Thornton Wellfield; Hodge's Pond: 'O' was devoid of any hardwood regeneration. All 3,600 seedlings allocated for reforestation were planted in this parcel.

A summary of tree planting activities by property is shown below in Table 2.

Table 2: Tree Afforestation and Reforestation Undertaken in 2021

Operation	Objective	Acreage	MFP Timeframe	Actual Timeframe Completed
Thames River Wetlands (Beachville Park: 'C'): afforestation (seedlings)	**Hand plant:** 550 hybrid poplar; 500 silver maple; 500 red oak	1 ha. Planted in continuous block adjacent to wetland cells and river bank	No given timeframe	May 2021
Thames River Wetlands (Beachville Park: 'D'): afforestation (seedlings)	**Hand plant:** 750 silver maple; 1,000 white pine; 250 white oak.	1.3 ha. Planted in continuous block between Beachville Rd and woodland edge	No given timeframe	May 2021
Thornton Wellfield, Hodges Pond – 'B': afforestation (seedlings)	**Hand plant:** 500 Norway spruce; 500 tamarack; 500 white pine; 350 grey dogwood	1.2 ha. Planted in continuous block between woodland edge and farmland	No given timeframe	May 2021
Thornton Wellfield, Hodges Pond – 'P': afforestation (seedlings)	**Hand plant:** 9,000 white cedar; 500 tamarack;	8.1 ha. Planted in clumps adjacent to trail and wetland cells	No given timeframe	May 2021
Thornton Wellfield, Hodges Pond – 'O': reforestation (seedlings)	**Hand plant:** 3,000 red oak; 600 white oak.	3.6 ha. Scatter-planted	Post-harvest	May 2021

iii) Invasive Species Management

Management of invasive species in County woodlands is often guided by commercial logging activity. The rationale being that heavy equipment activity and the change of canopy density have the greatest influence on the spread of seed and the growth rate of established plants. Invasive species management is not strictly limited to non-native plants. Within woodlands, European buckthorn (invasive shrub) and American beech root clones (native plant displaying qualities of an invasive species) are of greatest concern. In woodland edges and open ground, Japanese knotweed and Phragmites Australis (phragmites) are of greatest concern.

Much of the phragmites present on rural County properties has been, or is in the process of being, eradicated. Therefore, the focus has started to move toward other non-native grasses that form monocultures. Reed canary grass presents many of the same concerns as phragmites as they both form dense monocultures that prevent the establishment of native species.

The vast majority of the non-wooded areas along cedar creek in the Hodge's Pond property were, not long ago, completely taken over by phragmites and, while much of it has been controlled, sections still persist along with reed canary grass. In an attempt to eradicate the residual phragmites and any reed canary grass in the 8 ha. section at the Thornton Wellfield, Hodge's Pond: 'P' parcel adjacent to the 10 newly excavated wetland cells, a foliar herbicide application was carried out in April with a follow-up spot-spray in August.

While no harvest activity was planned, 24.2 ha. of woodland in the Thornton Wellfield, Hodge's Pond: 'P' were also treated for invasive shrubs.

European buckthorn, tatarian honeysuckle, beech root clones and several less common understory species are actively being targeted for eradication within County woodlands. As heavy equipment use is a common vector for the spread of invasive species, approximately 19.2 ha. across three properties were treated with a basal spray of Garlon RTU in order to control the population of invasive shrubs prior to harvest activity. This will allow native hardwood species to establish in the understory and a commercial harvest may be considered in future years.

A summary of invasive species management activities by property is shown below in Table 3.

Table 3: Invasive Species Management Activities Undertaken in 2021

Operation	Objective	Acreage	MFP Timeframe	Actual Timeframe Completed
Thornton Wellfield, Hodge's Pond: P: invasive spp.	Arsenal Powerline foliar application on Phragmites and reed canary grass	8 ha.	No given timeframe	August 2021
Thornton Wellfield, Hodge's Pond: P: invasive spp. management	Garlon RTU application on European buckthorn & Tatarian honeysuckle	24.2 ha.	No given timeframe	July 2021
Chesney Tract (agreement forest): invasive spp. Management	Garlon RTU application on beech root clones	5.2 ha.	No given timeframe	December 2021
Tavistock Lagoons (woodland): invasive spp. Management	Garlon RTU application on beech root clones	6 ha.	No given timeframe	December 2021
Zenda Tract (agreement forest): invasive spp. Management	Garlon RTU application on European buckthorn	8 ha.	No given timeframe	July 2021

Planned 2022 Managed Forest Plan Undertakings

Consistent with the MFP, the projects and/or programs planned to be initiated in 2022 are detailed below in Table 4. The entire lowland hardwood section of the Hall Tract is scheduled in the MFP to be harvested in 2025, but frozen weather conditions, hardwood regeneration and tree stocking are all ideal to advance harvesting to 2022 for a 4.6 ha. section of this Tract. The same conditions apply to the Tavistock lagoons property which can be advanced for harvesting in 2022. As previously noted, both the Embro Tract and Lakeside closed landfill were scheduled in the MFP for 2021 but market conditions justified pushing them to 2022. Both parcels are well-stocked conifer plantations ready for the second of three periodic thinnings. As mentioned earlier in the report the remaining conifer plantation at the Zenda tract will be subject to a second thinning as well.

Overall, as per the 2022 budget, approximately 16.4 ha of woodland parcels are planned for commercial harvesting in 2022, along with the planting of 15,000 trees and invasive species management across 28.0 ha. In addition, 16.6 ha. of woodlands carried over from 2021 will be added.

Table 4: Planned 2022 Undertakings

Operation	Objective	Acreage	MFP Timeframe	Anticipated Timeframe
Tree Harvesting				
Hall Tract (agreement forest)	Ash salvage; single tree selection of soft maple and white pine; crown thinning of black walnut	4.6 ha.	2025	February 2022
Tavistock Lagoons (woodland)	Beech salvage; single tree selection of mixed hardwoods	7.5 ha.	No given timeframe	February 2022
Embro Tract North (agreement forest)	Spruce/pine plantation (first thinning)	7.6 ha.	2021	Summer 2022
Lakeside (closed landfill)	Pine plantation (second thinning)	9 ha.	2021	Summer 2022
Zenda Tract (agreement forest)	Pine plantation (second thinning)	4.3 ha.	No given timeline	Summer 2022
Tree Reforestation and Afforestation				
Hall Tract: 2021 red pine harvest block: reforestation	Hand plant red oak & poplar (2000)	4 ha.	No given timeframe	Spring 2022
Holbrook closed landfill: buffer lands: afforestation (seedlings and tall stock)	Machine plant coniferous and deciduous seedlings (7000 trees)	3.3 ha.	No given timeframe	Spring 2022
Thames River Wetlands (Beachville Park: 'C'): afforestation (seedlings)	Hand plant coniferous and deciduous seedlings: low density (6000 seedlings	3.8 ha.	No given timeframe	Spring 2022 – *may be deferred to fall 2022 if spring conditions are too wet to access the parcel.

Operation	Objective	Acreage	MFP Timeframe	Anticipated Timeframe
Invasive Species Management				
Embro Tract (2022 harvest block): invasive spp. management	Garlon RTU application on European buckthorn	7.6 ha.	No given timeframe	Spring 2022
Lakeside closed landfill (2022 harvest block): invasive spp. management	Garlon RTU application on European buckthorn	9 ha.	No given timeframe	Spring 2022
Lakeside Tract: invasive spp. management	Garlon RTU application on European buckthorn	7.6 ha.	No given timeframe	Summer 2022
Thames River Wetlands - Beachville Park 'C': invasive spp. management	Glyphosate foliar application on reed canary grass & wild parsnip	3.8 ha.	No given timeframe	Spring 2022

Challenges

As no detailed inventory of County-owned forest tracts has been completed and historical management data is limited, many smaller-scale timber harvesting activities have not been given a specific timeframe for completion. As many woodland tracts are seasonally flooded, the window of harvest opportunity is restricted to persistent sub-zero winter temperatures or dry summer weather. Ideal winter conditions are becoming less common with the change in climate, adding additional challenges to harvesting on schedule. The window for offsetting the impacts of Emerald Ash Borer and Beech Scale through commercial harvesting is narrowing as a result of timber quality decline.

By breaking down large tracts into smaller parcels, actively monitoring each property and maintaining high level communication with logging contractors, mills and local forestry professionals, staff are able to operate under shorter timeframes. This allows for a larger percentage of forest stands to be actively managed under ideal conditions and presents the opportunity to eradicate invasive species and reforest cut-over areas with greater efficacy.

Conclusions

The Managed Forest Plan serves as a framework to guide the activities associated with active management of County-owned forested lands. The ultimate goal is not restricted to maximizing the revenue generated over the short term, but rather the long-term sustainable supply of forestry products.

The operational activities identified will improve the overall health of the forest lands and has the potential to serve as a role model for sustainable environmental management practices through habitat enhancement and good forestry practices.

SIGNATURES

Report Author:

Original signed by

Travis Lockhart
Woodlands Conservation Municipal Law Enforcement Officer

Departmental Approval:

Original signed by

David Simpson, P.Eng., PMP
Director of Public Works

Approved for submission:

Original signed by

Michael Duben, B.A., LL.B.
Chief Administrative Officer

Report No: PW 2022-07
PUBLIC WORKS
Council Date: February 23, 2022

To: **Warden and Members of County Council**

From: **Director of Public Works**

Proposed Federal Government Single-Use Plastics Ban

RECOMMENDATION

1. **That Oxford County Council endorse the submission comments in response to Environment and Climate Change Canada's proposed Single-Use Plastics Prohibition Regulations as outlined in Report No. PW 2022-07.**

REPORT HIGHLIGHTS

- The purpose of this report is to seek Oxford County Council endorsement of submission comments prepared by Staff in response to Environment and Climate Change Canada's draft Single-Use Plastics Prohibition Regulations, which was posted on the Canada Gazette, Part 1, Volume 155, Number 52 for public consultation until March 5, 2022.
- The proposed Federal regulations would ban plastic checkout bags, cutlery, food service ware, ring carriers, stir sticks, and straws. Regulatory standards would be established to increase the use of recycled content in plastic products (50% by 2030) and strive towards a 90% diversion target for plastic beverage containers.
- Submission comments in response to the draft regulations were prepared in collaboration with municipal staff (City of Woodstock, Township of South-West Oxford) and the Zero Waste Oxford (ZWO) Advisory Committee.

Implementation Points

Following Council endorsement of this report, Staff will submit final comments along with a copy of the Council resolution to Environment and Climate Change Canada by March 5, 2022.

Financial Impact

No financial impacts will result from adopting the recommendations contained in this report.

Report No: PW 2022-07
PUBLIC WORKS
Council Date: February 23, 2022

Communications

The attached submission to the Federal Government is a coordinated effort between the County, the City of Woodstock, the Township of South-West Oxford and Zero Waste Oxford.

Report No. PW 2022-07 will be circulated to Area Municipalities for information and forwarded to Environment and Climate Change Canada, upon endorsement by County Council.

Strategic Plan (2020-2022)

WORKS WELL TOGETHER	WELL CONNECTED	SHAPES THE FUTURE	INFORMS & ENGAGES	PERFORMS & DELIVERS	POSITIVE IMPACT
		3.i	4.i.		

DISCUSSION

Background

County Council received Report No. PW 2020-22 prepared by staff in response to a Delegation request to impose a ban on single-use plastic shopping bags (checkout bags). This report analyzed the issues, complexities, and opportunities associated with implementing such a ban at the County level as well as Provincial and Federal undertakings to address adverse environmental impacts related to single-use plastics. Staff recommended support of a harmonized Provincial and/or Federal ban on single-use plastic shopping bags which could be universally implemented in a manner which would be fair and balanced for all impacted businesses and one which services the overall end goal of reducing plastic waste and litter.

On December 21, 2021, the Federal government released draft regulations under the Canadian Environmental Protection Act, 1999 (CEPA) banning certain single-use plastics, for public consultation. The proposed regulations would ban plastic checkout bags, cutlery, food service ware, ring carriers, stir sticks, and straws. Regulatory standards would be established to increase the use of recycled content in plastic products (50% by 2030) and strive towards a 90% diversion target for plastic beverage containers.

Following the public consultation period that ends on March 5, 2022, the government plans to finalize the Regulations after reviewing and considering comments received and bring the ban into force as early as late 2022 with a one-year transition period.

Comments

The submission comments (Attachment 1) in response to the proposed Federal single use plastics ban regulations was prepared in collaboration with municipal staff from the City of Woodstock and the Township of South-West Oxford and the ZWO Advisory Committee. Commentary from ZWO is included in Attachment 2.

The Single-Use Plastics Prohibition Regulations is the result of over three (3) years of stakeholder consultations and scientific research into the plastic pollution problem and its impact nationwide. Through their research, the federal government estimates that only 9% of plastics are recycled with the remaining material either going to landfill or ending up as litter. On an annual basis in Oxford County, approximately 2% of residential household waste and 13% of Industrial, Commercial and Institutional (IC&I) waste is comprised of non-recyclable plastics which end up in landfill.

The regulation proposes several actions that will begin to address the plastic pollution issue in Canada. Specifically, through the regulation, the federal government proposes the implementation of a unified approach to the reduction/elimination of the ban materials across Canada. A unified approach will result in more consistent promotion and educational messaging which will hopefully ignite change among the public to switch to using viable non-plastics alternatives. Additionally, this unified approach is expected to complement existing provincial extended producer responsibility programs.

The elimination/reduction of the six materials banned under the regulation will reduce the burden placed on municipalities to manage these problematic materials. However, the County has requested further clarification regarding how enforcement responsibilities and associated costs are to be managed.

To better understand how businesses will comply with the regulations and their impact on municipalities, the federal government intends to develop a guidance document. This guidance document will address things like consistent product labeling and developing products which can be managed through municipal programs like the blue box program as well as reporting and achievement of targets. The County and its municipal partners would like to see stakeholder consultation undertaken for this document as all levels of government will be affected by the actions of the IC&I sector.

Conclusions

Staff support the proposed federal initiative to ban single-use plastics and will provide Environment and Climate Change Canada with comments on the proposed regulation. It is anticipated that further consultation may occur around the development of the guidance document associated with this regulation targeting the IC&I sector; staff will continue to participate in any related consultations.

SIGNATURES

Report Author:

Original signed by:

Pamela Antonio, BES, MPA
Supervisor of Waste Management

Departmental Approval:

Original signed by:

David Simpson, P.Eng., PMP
Director of Public Works

Approved for submission:

Original signed by:

Michael Duben, B.A., LL.B.
Chief Administrative Officer

ATTACHMENTS

Attachment 1: Oxford County Submission - Proposed Single-Use Plastics Prohibition Regulations, Environment and Climate Change Canada's Canada Gazette, Part 1, Volume 155, Number 52 posting Single-Use Plastics Prohibition Regulations

Attachment 2: Zero Waste Commentary Letter

Oxford County
Growing stronger together

Oxford County Submission
Canada Gazette, Part 1, Volume 155, Number 52

Proposed Single-Use Plastics Prohibition Regulations
Canada Gazette, Part 1, Volume 155, Number 52

Overview

Oxford County is a regional government in the Province of Ontario with eight (8) Area Municipalities and serves as the waste management Operating Authority.

Resdiential curbside garbage and recycling material is collected through contracted services and municipal service agreements. Municipal solid waste from residential and industrial, commercial, and institutional sectors (IC&I) is received and managed at the Oxford County Waste Management Facility (OCWMF) that includes landfill waste disposal and waste diversion programs such as blue box recyclables, yard waste composting, construction and demolition waste recycling, scrap metal, municipal biosolids, electronic waste collection, and Municipal Hazardous or Special Waste (MHSW).

As identified by the federal government, single-use plastics are a problematic material managed by all levels of government, having an estimated recycling rate of 9%, with the remaining material either ending up in landfills or as pollution. In Oxford County, approximately 2% of waste material generated annually by residential households are non-recyclable plastics which are managed through the curbside garbage and blue box collection programs. Another 13% of non-recyclable plastic materials generated by the Industrial, Commercial, and Institutional (IC&I) sector is managed (landfilled) at the OCWMF.

The County and its municipal service providers - City of Woodstock, Township of South-West Oxford - and the community advocacy group Zero Waste Oxford support product bans to address this problematic material. Through manufacturing bans and aggressive recycling targets, producers of single-use plastics will be encouraged to explore new and innovative options for finding suitable alternatives to single-use plastics. To achieve these targets the federal government must consider a fair and balanced approach with the implementation of this regulation as it is anticipated that such an approach will yield the bests results for reducing plastic waste and litter.

The County, Zero Waste Oxford, the City of Woodstock, and the Township of South-West Oxford support the federal government’s Single-Use Plastics Prohibition Regulations as released in the Canada Gazette, Part 1, Volume 155, Number 52 on December 21, 2021. The County and its partners further support the development of an IC&I guidance document that will help the business sector achieve the targets and goals of this regulation by eliminating unnecessary single-use plastics.

Comments

Oxford County appreciates the opportunity to provide comments and feedback on the federal government's Single-Use Plastics Prohibition Regulations and offers the following comments.

The Oxford County Submission, in response to the Canada Gazette, Part 1, Volume 155, Number 52, was endorsed by County Council at the February 23, 2022, Council meeting and a copy of the Council resolution has been attached to this submission.

Materials Bans

Recognizing that the federal government is moving forward to ban single-use plastics as part of a long-term plan to address plastic pollution, Oxford County and its partners approve of the six federally-targeted categories (i.e., checkout bags, cutlery, food service ware made with/containing problematic plastics, ring carriers, stir sticks, and straws) designated for elimination and/or significant reduction under this regulation. The targeted materials not only contributes to the overall plastic pollution issue but they are costly to manage. Municipal recycling programs cannot process most, if not all of the materials identified under the ban due to their low material quality, lack of available markets, and low material value. Further, most of the subject materials are not captured during the sorting process at material recovery facilities due to their size and thus end up in the waste stream destine in most cases for landfill.

Exceptions to Material Bans

The proposed regulation shows clear thinking combined with compassion to accommodate individuals who may benefit from the use of such things as flexible straws and other such items for their day-to-day needs.

Producer Focused

The proposed regulation demonstrates clear support for producer responsibility and end-of-life management of single-use plastics which supports the Province of Ontario's producer responsibility efforts under the *Resource Recovery and Circular Economy Act, 2016*.

Establishing viable regulatory standards which include attainable targets to increase the use of recycled content in plastic products as well as increasing the amount of recycled content in plastic packing by 2030 gives producers of these materials something tangible to work towards. The enforcement of these regulatory standards and targets will be critical in ensuring that producers are held accountable for their products and modify the type of products entering the market and ultimately the environment.

Implementation of a consistent approach nationwide of this proposed regulation and targets will increase the chances of success through uniform messaging and promotion and education. This includes prohibiting misleading recycling labels and manufacturing products not supported by recycling facilities.

Enforcement and Funding

The proposed regulation does not speak to how businesses will need to comply with the regulation and who will be responsible for enforcement and associated cost. It is assumed that compliance with the proposed regulation will be outlined in detail in the Guidance Document yet to be drafted for the IC&I sector. The County and its partners hope that the federal government will provide opportunities for all levels of government to comment on the development of this Guidance Document. Recognizing that all levels of government will play a role in the management of these materials, insight from all stakeholders (government, producers, etc.) will be key in developing a viable guidance document that the IC&I sector can successfully follow.

Support for Remote and Rural Communities

To achieve the goal of 90% diversion of plastic beverage containers and other recycling targets consideration should be given to assisting remote and rural communities with their diversion efforts. The higher costs of recycling programs in these areas often negatively impact the sustainability of these programs. Federal support for innovation and the development of sustainable material recovery programs in more remote and rural areas should be explored.

Promotion and Education

Through this proposed regulation there is a need to develop nationwide publicity programs which educate the public on the benefits of non-plastic solutions as well as a need for proper disposal. In addition to regulatory oversite, market demand will drive change which will ultimately affect the type of products and packaging produced by manufacturers.

Prepared for:

Matthew Watkinson — Director, Regulatory Analysis and Valuation Division, Environment and Climate Change Canada (ec.darv-ravd.ec@ec.gc.ca)

Tracey Spack — Director, Plastics Regulatory Affairs Division, Environment and Climate Change Canada (ec.plastiques-plastics.ec@ec.gc.ca)

Further Information:

Frank Gross — Manager of Transportation and Waste Management (fgross@oxfordcounty.ca)

Report No. PW 2022-07
Attachment No. 2

Zero Waste Oxford

Commentary

on

Canada Gazette, Part I, Volume 155, Number 52

Single-Use Plastics Prohibition Regulations

Zero Waste Oxford is proud to support the Oxford County Staff analysis of Canada's proposed Single-Use Plastics Prohibitions Regulations for the following reasons:

- Oxford County staff's analysis brings forward useful information related to the production, use and final destinations of plastics in Canada
- Single-use plastics are high percentage of waste, and are both expensive and difficult to treat
- Subnational approaches can only be of some limited effect.

The last of these points does not negate the fact that subnational governments, for instance Ontario's in the promulgation of the 'Waste-Free Ontario" and the "Resource Recovery and Circular Economy" acts can have outsized impacts. Further, Zero Waste Oxford notes that the proposed regulations account for the medical and similar needs of the population, showing clear thinking combined with compassion. None the less, Zero Waste Oxford comments and recommendations to the Government of Canada expand on those of staff.

Zero Waste Oxford notes and approves of the six federally-targeted categories for elimination or significant reduction of single-use plastics for

- Check-out bags, also known as grocery bags or T-shirt bags
- Disposable cutlery, traditional or sporks
- Foodservice wares, e.g., plastic takeout dishes
- Ring-carriers e.g., to hold six-packs of beverages
- Stir-sticks aka beverage stirrers
- Straws (though the medical exemption is important here).

While these are only 6% of plastic waste, they are easily replaced by sustainable alternatives, are visible reminders to the public and therefore educational as well as symbolic, address waste in the industrial and commercial sectors, and offer opportunities to cause thinking about other plastics which could be prevented from entering the waste stream where plastics constitute 4.7 million tonnes annually.

Recycling rates, even after decades of blue box programs, only move about 9% of plastic materials to recovery. 86% of plastic wastes go to landfills. 4% of plastics are burned, of which a fraction for energy, in itself controversial. The 1% of plastics which end up in water, soils, and by that combination in plant and animal life imperil human and environmental health. Micro-plastics from a variety of sources and processes, including from oxo-degradables, have already been identified as a health hazard and have been phased out in facial scrubs in Canada since 2017. Marcus Eriksen, a American scientist “found more [micro-plastics] in the Great Lakes than in any sample anywhere in the world's oceans”[1]. As residents upstream from Lake Erie, where these are in higher counts than Lake Superior, there are reasons for concern for people in Oxford.

Clarity and celerity are present in the development of this regulation. For instance, substitutes for standard plastic check-out bags have variously considered compostable, biodegradable and oxo-degradable bags. All these pose problems. Compostable bags, while suitable for residential waste gathered in the kitchen on its way to underground green-cone digesters or above-ground composters, if mixed with high- or low-density polyethylene film headed to a landfill makes the mix waste, not reusable. Their physical characteristics make sorting difficult. Biodegradable bags can be a variety of materials, including some not suitable for home, industrial or municipal composting programs. They taint a resource recovery stream. Oxo-degradable bags are reduced in size through a variety of processes but with no guarantee that the reduction in size is coupled with a reduction in threat to environmental and human health. Both the comment period and implementation of parts of the regulations come in 2022. It is time to remove toxicants and physical hazards from the environment.

Many aspects of the regulation, backed by scientific theory and evidence, are practical. It recognizes that collection for recycling is more costly in remote and

rural regions. Oxford is the latter. It suggests though that prevention reduces costs; in Oxford County, surpassing the substitutions and suggested reuse rates may require additional education. If a reusable plastic bag represents progress at 100 reuses in urban areas, a higher number is achievable and desirable in rural areas. Any plan to implement the federal regulation needs to recognize that the reduction in littering on land and water is valuable and can be assisted by positive peer pressure by those who engage in roadside clean-ups and maintenance as well as who do riverside and shoreline clean-ups like the Thames River clean-up. In some pilot projects substituting multi-use plastic bags for single-use ones they too were treated as throw-aways. That meant a perverse result where more plastics by volume was discarded where the intent was to reduce plastic waste. This can be avoided by better labelling, public and popular education as well as peer support such as making durable substitutes aspirational. In Europe, it is not only acceptable by fashionable to have a bag in hand when heading out to shop. The stereotype of the baguette in hand, filet of fresh vegetables is useful social marketing. Images of autopsied animals dead from ingestion of plastic bags, struggle or deceased due to being strangled with bag handles, or deformed by the hoops of ring-carriers around their turtle shells, can be part of a moving marketing program for the prevention of single use plastics.

Targets for 90% recycling rates for plastic beverage containers and 50% for other packaging are attainable. In the latter case, the rate could be higher, in particular if the government supports a reduction of mixed materials in packaging. Plastic adhered to cardboard and metals makes for more waste. Packaging needs to contain less to be more environmentally responsible. The 86% of plastics heading to landfills means that the public is directly or indirectly, in the case of municipal and private landfills respectively, subsidizing the petroleum and chemical industries. Similarly, the fact that the petroleum industry is highly subsidized by all Canadians means that virgin plastics are and may remain cheaper than recycling processes and products. Putting a price on carbon that represents the full-cost recovery over its entire lifecycle can have economic, environmental and human health benefits.

Recommendations:

- Encourage residents of Oxford to surpass the substitution rates, using durable and reusable products instead of those with fewer uses
- Recognize the higher costs of recycling programs in rural areas, and therefore offer federal support for innovation and sustainable recovery models [2]
- Engage in nation-wide publicity programs which education on the benefits of non-plastic solutions and fund similar public and popular education at a local level
- Ensure that the costs of the full lifecycle of plastics is applied at the use of virgin product to equalize costs more rapidly[3]
- Given that Canada is not immune to the impacts of the pollution of waterways and oceans, the 40% of plastic bags which Canada exports will ultimately rebound on our environmental and human health. Canada should find alternatives for international as well as internal markets.
- Continue at a federal level to find markets for recoverable plastics, to encourage innovation, to eliminate by importation and production bans, to analyse the harmful impacts of plastics[4] and act on them quickly and effectively.

Sources

Note that all unassigned quotations and references are from Canada Gazette, Part I, Volume 155, Number 52: Single-Use Plastics Prohibition Regulations

Additional sources:

1. https://www.cbc.ca/news/canada/thunder-bay/facial-scrubs-polluting-great-lakes-with-plastic-1.1327850
2. https://ofa.on.ca/northern-ontario-plastics-disposal-pilot-project/ offers a model that could be supported in other rural areas.
3. https://environmentaldefence.ca/report/the-elephant-in-the-room-canadas-fossil-fuel-subsidies/
4. https://abcnews.go.com/US/plastic-bag-bans-helping-environment-results/story?id=68459500

5. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2873020/

Oxford County
Growing stronger together

Report No: PW 2022-08
PUBLIC WORKS
Council Date: February 23, 2022

To: **Warden and Members of County Council**

From: **Director of Public Works**

Procurement of Tandem Axle Plow Trucks

RECOMMENDATION

1. **That County Council authorize additional funding in the amount of $161,000 for the procurement of two tandem axle plow trucks, to be financed from the Roads Reserve.**

REPORT HIGHLIGHTS

- The purpose of this report is to obtain County Council approval for additional funds to proceed with the procurement of two tandem axle plow trucks in accordance with the *Asset Management Plan*.
- Upon authorization from County Council of additional funds, and notification to Team Truck Center, it is anticipated that delivery of tandem axle plow trucks to Oxford County will be approximately 52 weeks.

Implementation Points

Upon approval of the recommendation contained in this report, staff will finalize the procurement of two tandem axle plow trucks and plow equipment with the approved bidder.

Financial Impact

Through the 2022 Budget, $660,000 was allocated for the purchase of two tandem axle diesel plow trucks. Upon completion of the public tendering process, and analysis of the bid submissions, staff are requesting that an additional $161,000 be allocated from the Roads Reserve in order to fund the budget shortfall and allow for the contract to be awarded to the selected bidder.

Contract amounts and funding sources for this contract are summarized in Table 1 below.

Report No: PW 2022-08
PUBLIC WORKS
Council Date: February 23, 2022

Table 1: Funding Summary for Two Tandem Axle Plow Trucks

2022 Budget Summary Account / Description	Bid Amount (excluding HST)
220374 – R-H-TANDEM Fleet Contract (Team Truck Center) New tandem axle plow truck.	$393,865
220391 – R-H-TANDEM Fleet Contract (Team Truck Center) New tandem axle plow truck.	412,570
Non-Refundable HST (1.76%)	**14,193**
TOTAL ESTIMATED EXPENDITURES	**$820,628**
Available 2022 Budget	**660,000**
BUDGET SHORTFALL	**$160,628**

The Fleet Reserve is funded based on anticipated replacement costs, and is therefore unable to sustain the additional requirement resulting from this tender while continuing to meet ongoing capital replacement requirements. The 2022 budgeted closing balance of the Roads Reserve is $11,748,028, which is sufficient to fund the additional requirement.

Communications

The two tandem plow trucks were publicly tendered on December 20, 2021, and closed on January 20, 2022. Once awarded, the tender results will be publicly displayed on the *Bids&Tenders* online portal and all bidders will be notified of the results.

Strategic Plan (2020-2022)

					
WORKS WELL TOGETHER	***WELL CONNECTED***	***SHAPES THE FUTURE***	***INFORMS & ENGAGES***	***PERFORMS & DELIVERS***	***POSITIVE IMPACT***
		3.iii.			

DISCUSSION

Background

The 2022 approved budget included funding to procure two new tandem snow plows and associated equipment to replace units 374 and 391 in accordance with the *Asset Management Plan*. The assets are nearing the end of their target useful life (nine years) and are scheduled to be replaced.

In order to align with the *Green Fleet Plan*, the units were tendered to include an anti-idling system. Due to the long lead time of this type of equipment, early procurement was approved in Report No. PW 2021-34, and the tender was released in December of 2021.

Comments

As with a number of industries, heavy vehicle manufacturing has been faced with unprecedented challenges related to supply and demand. Delivery timelines for heavy truck orders are increasing and backlogging due to manufacturing shortages of products available to build vehicles, coupled with the costs of these materials reaching significant highs due to increased steel prices and general inflation.

At tender close on January 20, 2022, there were two submissions received which were evaluated by County staff. Upon review, it was noted that the two submissions were both over the approved budget, but were within 1% of one another, thus confirming that the pricing provided is in line with current market conditions. Further review validated that both submissions met the basic specifications, and also resulted in a number of highlights between the two submissions, which factored into the recommendation. The submissions received are outlined in Table 2 below.

Table 2: Tender Submission Highlights

Bid Price (incl. non refundable HST)	Submissions	Brand	Delivery Time	Emissions Warranty Coverage	Heated Windshield
$820,628	**Team Truck Center**	**Western Star**	**52 weeks**	**5 Years**	**Yes**
$810,788	Carrier Center	International	68 weeks	2 Years	No

While the Carrier Center bid price was lower, it included a clause that price change surcharges, resulting from an uncertain supply market, will be added to final truck invoices as separate line items upon final invoicing. While this bid was slightly less, this clause brings risk of financial escalation. Therefore, the submission received from Team Truck Center was determined to be the most appropriate bid for the County.

As made evident through this tendering process, the current market challenges have impacted the price of tandem snow plows and associated equipment. While manufacturing capacity has been reduced due to material and shipping factors, the demand side of the market has not changed, as validated by industry contacts.

This has caused a backlog which will not be rectified in the near term, as multiple clients, including Oxford County, continue to update their respective fleets. Based on these factors, it is expected that replacement costs for future procurement of tandem axle plow trucks will remain at a higher level for years to come. Staff feel it is still good value to proceed with the procurement, as maintenance costs from 2020 to 2021 increased by 19% and 23% for units 391 and 374, respectively. The increase in replacement cost will be factored into the annual charge out through the 2023 Business Plan and Budget process.

Conclusions

Staff recommend that $161,000 be transferred from the Roads Reserve to address the budget shortfall in procuring two new tandem plows in order to align with the County's *Asset Management Plan.*

SIGNATURES

Report Author:

Original signed by

James Wagner
Fleet Technician

Departmental Approval:

Original signed by

David Simpson, P.Eng., PMP
Director of Public Works

Approved for submission:

Original signed by

Michael Duben, B.A., LL.B.
Chief Administrative Officer

PENDING ITEMS **Copied for Council Meeting of February 23, 2022**

Council Meeting Date	Issue	Pending Action	Lead Dept.	Time Frame
12-Feb-20	"Resolved that Council adopt in principle CAO 2020-01 and that the plan be circulated to all Oxford Area Municipalities for input before adoption.	CAO 2020-01 - Leading Oxford County to "100% Housed" Future	CAO	22-Apr
26-May-21	Commemoration of 150th Anniversary of arrival in Taiwan of George Leslie Mackay	Warden to extend invitation to appropriate number of members of the Tamsui governing council to visit Oxford in July, 2022	WDN	TBA
14-Jul-21	Community Safety and Well-being Plan Coordinating Committee delegation	Staff report regarding resolution adopted by Council on July 14/21	CAO	TBA
22-Sep-21	COVID-19 Workplace Vaccination Policy	Policy to be circulated to Area Municipalities	CAO	TBA
13-Oct-21	Correspondence from Blandford-Blenheim re Medical Tiered Response	Paramedic Services to prepare a follow up report	PS	TBA
8-Dec-21	"Whereas in the County of Oxford, housing is an upper tier responsibility; And whereas with approximately 2,400 people on the County's waiting list for housing assistance, there is clear need for more housing across the housing continuum; Therefore be it resolved that the housing portion of the Human Services budget be increased by $1.5 million with 50% coming from Landfill Reserves and 50% coming from Reserves and/or the sale of surplus county lands; And further, that staff bring forward a report on how this additional funding could be maximized across the housing continuum in the first quarter of 2022; And further, that the area municipalities be asked to re-examine any available municipally-owned land for potential housing sites; And further, that the Warden and Council advocate to both the Provincial and Federal governments for matching partnership funding to maximize the County's commitment to addressing our housing and homelessness situation."	- Staff report on how additional housing funding could be maximized across the housing continuum in Q1 of 2022; - Ask AM's to re-examine any available municipally owned land for potential housing sites; - Advocate Provincial and Federal governments for matching partnership funding to maximize the County's commitment to addressing our housing and homelessness situation.	HS	Q1 2022
9-Feb-22	Resolved that Section 9.1.2 of the Procedure By-law be amended as follows:9.1.2 Notwithstanding Section 9.1.1, during Council's review and consideration of annual business plans and budgets, amending motions may be tabled in writing and debated without previous notice at the Budget meeting specifically identified for budget debate. The Clerk will ensure that any budget motions received in advance as Notices of Motion are printed in full on the Agenda for the meeting when debate is scheduled to occur.	Resolved that the proposed amendment to Section 9.1.2 of the Procedure By-law be tabled.	Council	TBA

COUNTY OF OXFORD

BY-LAW NO. **6415-2022**

BEING a By-Law to remove certain lands from Part Lot Control.

WHEREAS, Hunt Homes Inc, has applied to the County of Oxford to delete, by by-law, certain lands for six (6) residential lots in a registered subdivision from Part Lot Control.

AND WHEREAS pursuant to Subsection 77(1) of the Planning Act, R.S.O. 1990, c. P.13, as amended, the County of Oxford may pass a by-law under subsection 50(7) of the Planning Act, R.S.O. 1990, Chapter P.13, as amended;

NOW THEREFORE, the Council of the County of Oxford enacts as follows:

1. Pursuant to subsection 50(7), subsection 50(5) of the Planning Act, R.S.O. 1990, c. P.13, as amended, does not apply to:

   Lot 10, Registered Plan 41M-373, being PARTS 1 & 2, designated on a Plan of Survey deposited in the Land Registry Office for Oxford No. 41 as Reference Plan 41R-10243; Lot 11, Registered Plan 41M-373, being PARTS 1 & 2, designated on a Plan of Survey deposited in the Land Registry Office for Oxford No. 41 as Reference Plan 41R-10244, and Lot 12, Registered Plan 41M-373 being PARTS 1 & 2, designated on a Plan of Survey deposited in the Land Registry Office for Oxford No. 41 as Reference Plan 41R-10245, Township of East Zorra-Tavistock, County of Oxford, comprising a total of six (6) parcels and each parcel to be conveyed to individual transferees in accordance with the following descriptions:

   i. Part of Lot 10, Plan 41M-373, being PART 1, Plan 41R-10243 alone;
   ii. Part of Lot 10, Plan 41M-371, being PART 2, Plan 41R-10243 alone;
   iii. Part of Lot 11, Plan 41M-371, being PART 1, Plan 41R-10244 alone;
   iv. Part of Lot 11, Plan 41M-371, being PART 2, Plan 41R-10244 alone;
   v. Part of Lot 12, Plan 41M-371, being PART 1, Plan 41R-10245 alone; and
   vi. Part of Lot 12, Plan 41M-371, being PART 2, Plan 41R-10245 alone.

2. Pursuant to subsection 50 (7.3) of the Planning Act, R.S.O. 1990, c. P.13, as amended, this By-Law shall expire on **February 23, 2023**, unless it shall have prior to that date been repealed or extended by the Council of the County of Oxford.

3. That this By-Law shall become effective on the date of third and final reading.

4. That after the lots or any portion thereof have been conveyed to individual transferees this By-Law may be repealed by the Council of the County of Oxford.

READ a first and second time this 23rd day of February, 2022.

READ a third time and finally passed this 23rd day of February, 2022.

LARRY G. MARTIN, WARDEN

CHLOÉ J. SENIOR, CLERK

COUNTY OF OXFORD

BY-LAW NO. **6416-2022**

BEING a By-Law to adopt Amendment Number 271 to the County of Oxford Official Plan.

WHEREAS, Amendment Number 271 to the County of Oxford Official Plan has been recommended by resolution of the Council of the City of Woodstock and the County of Oxford has held a public hearing, and has recommended the Amendment for adoption.

NOW THEREFORE, the County of Oxford, pursuant to the provisions of the Planning Act, R.S.O. 1990, as amended, enacts as follows:

1. That Amendment Number 271 to the County of Oxford Official Plan, being the attached explanatory text, is hereby adopted.

2. This By-Law shall come into force and take effect on the day of the final passing thereof.

READ a first and second time this 23rd day of February, 2022.

READ a third time and finally passed this 23rd day of February, 2022.

LARRY G. MARTIN, WARDEN

CHLOÉ J. SENIOR, CLERK

AMENDMENT NUMBER 271

TO THE COUNTY OF OXFORD OFFICIAL PLAN

the following text attached hereto
constitutes Amendment Number 271 to the County of Oxford Official Plan

1.0 PURPOSE OF THE AMENDMENT

The purpose of this amendment is to update Chapter 7 – City of Woodstock Land Use Policies, as contained in the County Official Plan to implement policies regarding Additional Residential Units (ARUs) in the City. The proposed amendment will also make changes to Chapter 1 – Introduction, by adding a definition for an ARU and to modify the definition of Net Residential Density, which will apply to the County of Oxford as a whole.

2.0 LOCATION OF LANDS AFFECTED

This amendment includes the implementation, and modification of definitions for *Additional Residential Units* and *Net Residential Density*, respectively, that will apply to all lands located within the corporate boundary of the County of Oxford. The specific policy amendments to Chapter 7 of the Official Plan regarding ARUs will apply to the City of Woodstock exclusively.

3.0 BASIS FOR THE AMENDMENT

Bill 108, *More Homes, More Choices Act* and accompanying regulations came into effect in Ontario in September 2019, implementing measures and Provincial direction to increase the availability and affordability of housing to more Ontarians via, among other measures, amendments to the *Planning Act* and the *Development Charges Act*. The Planning Act amendments require municipalities to enact policies that authorize Additional Residential Units (ARUs) in low density housing types, specifically single and semi-detached dwellings and townhouses.

Provincial direction with respect to providing affordable housing options has been clear and consistent that broad implementation of provincial policy and regulations in this regard is expected and restrictions/limitations to facilitating ARUs should only be considered with respect to physical restrictions related to hazards (e.g. areas subject to flooding or erosion) or where the provision of such units would be a strain on a community's capacity to provide municipal services.

This amendment introduces high level, enabling-type policies that are intended to reflect and implement the current Provincial direction on ARUs, while also establishing a comprehensive suite of review criteria to inform and support the City's development of zoning provisions and, where deemed appropriate, other local implementation measures for such units. Council is satisfied that the policies contained in this amendment provide opportunity for detailed local direction regarding the circumstances under which ARUs will be permitted, and what standards will apply, via the development of appropriate zoning provisions, undertaken as part of a comprehensive, City-initiated Zoning By-law amendment.

While this amendment will largely affect Chapter 7 – City of Woodstock Land Use Policies, and will be specific to the City of Woodstock, the amendment also includes changes to Chapter 1 – Definitions, which will affect the County as a whole. Council is of the opinion that the proposed changes to Chapter 1 are appropriate and will be complimentary to anticipated amendments to the County Official Plan regarding the implementation of ARU policies affecting both the County's urban and rural communities.

4.0 DETAILS OF THE AMENDMENT

4.1 That Chapter 1 - INTRODUCTION, Section 1.6 - *Definitions*, as amended, is hereby amended by adding the following definition immediately before the definition of 'Adjacent Lands':

ADDITIONAL RESIDENTIAL UNIT

Additional Residential Unit (ARU) means a separate, self-contained dwelling unit located within a single detached, semi-detached or street townhouse dwelling, or within a detached building ancillary to such dwelling, and which is located on the same lot as, and is clearly subordinate to the principal dwelling.

4.2 That Chapter 1 – INTRODUCTION, Section 1.6 – *Definitions*, as amended, is hereby amended by inserting the sentence '*Additional Residential Units* shall not be included for the purposes of determining compliance with the net residential density requirements of this plan' at the end of the definition of *Net Residential Density*, so that the definition shall read as follows:

NET RESIDENTIAL DENSITY

Net Residential Density means the number of housing units per hectare of residentially designated land, exclusive of lands required for open space, environmentally sensitive areas and transportation and servicing *infrastructure*, including storm water management. *Additional Residential Units* shall not be included for the purposes of determining compliance with the net residential density requirements of this plan.

4.3 That Chapter 7 – CITY OF WOODSTOCK LAND USE POLICIES, Section 7.2 – *Housing Development and Residential Areas,* subsection 7.2.4, *Low Density Residential Areas*, as amended, is hereby amended by deleting the paragraph titled 'Description' and replacing it with the following paragraph:

DESCRIPTION

Low Density Residential Districts are those lands that are primarily developed or planned for a variety of low-rise, low density housing forms including both executive and smaller single detached dwellings, semi-detached and duplex dwellings, *additional residential units* and converted dwellings, street fronting townhouses, quadraplexes, low density cluster *development* and low rise apartments. In these Districts, it is intended that there will be a mixing and integration of different forms of housing to achieve a low overall density of use. It is not intended however that the full range of housing will be permitted in every individual neighbourhood or *development* and City Council may choose to restrict the range of uses permitted in a particular location through the Zoning By-law. Low Density Residential Districts are identified on Schedule W-3.

4.4 That Chapter 7 – CITY OF WOODSTOCK LAND USE POLICIES, Section 7.2 - *Housing Development and Residential Areas,* subsection 7.2.4, *Low Density Residential Districts*, as amended, is hereby amended by inserting the words 'Notwithstanding the above criteria' at the beginning of the last paragraph under the subsection titled 'Criteria for Multiple Units' so that the subsection shall read as follows:

Notwithstanding the above criteria, street oriented multiple unit *development* such as street fronting townhouses, quadraplexes and converted dwellings may be permitted on local streets.

4.5 That Chapter 7 – CITY OF WOODSTOCK LAND USE POLICIES, Section 7.2 – *Housing Development and Residential Areas,* subsection 7.2.4.1.1 - Street Oriented Infill, as amended, is hereby amended by deleting the word 'consistent' in the first bullet point under the heading 'Evaluation Criteria' and replacing it with the word 'compatible' so that the subsection shall read as follows:

- the proposal is compatible with the street frontage, setbacks, lot area and spacing of existing *development* within a two block area on the same street

4.6 That Chapter 7 – CITY OF WOODSTOCK LAND USE POLICIES, Section 7.2 – *Housing Development and Residential Areas,* subsection 7.2.4.1.2 – Backyard Infill, as amended, is hereby amended by deleting the first paragraph of the subsection and replacing it with the following:

In Low Density Residential Districts, backyard infill *development* may involve new residential *development* behind an existing building facing a street on a vacant lot with minimal frontage (e.g. flag shaped lots), on small vacant remnant parcels of land which cannot be integrated into a plan of subdivision, or on under-utilized institutional sites. Backyard infill may involve *development* on existing lots or the creation of new lots by consent. *Additional residential units* and *garden suites* may also be permitted to the rear of an existing dwelling on a lot in accordance with the policies of Sections 7.2.4.3 and 10.3.9, respectively.

4.7 That Chapter 7 – CITY OF WOODSTOCK LAND USE POLICIES, Section 7.2 – *Housing Development and Residential Areas*, as amended, is hereby amended by deleting subsection 7.2.4.3 – Converted Dwellings, and replacing it with the following subsection:

7.2.4.3 ***Additional Residential units and Converted Dwellings***

ADDITIONAL RESIDENTIAL UNITS

The development of *additional residential units* within the Low Density Residential Districts shall be encouraged, where appropriate, with the goal/objective of increasing the range and availability of affordable *housing options* while maintaining the low density residential character of the housing and neighbourhoods comprising such districts.

The general intent is to allow for the establishment of such units in existing and newly developing residential areas, subject to complying with applicable zone provisions and development standards, where the City has deemed it to be appropriate based on such considerations as the location, nature and character of existing development, existing level of services and presence of natural hazards and/or other constraints.

To this end, City Council shall establish appropriate zones and zoning provisions to permit the establishment of an *additional residential unit* in a single detached, semi-detached or row townhouse dwelling and/or a structure ancillary to such dwellings where they are satisfied that the following criteria can be addressed:

- a maximum of two *additional residential units* are permitted on a lot, consisting of one unit in the principal dwelling and/or one in a structure ancillary to the principal dwelling;

- an *additional residential unit* shall generally not be permitted on a lot that contains a boarding or lodging house, garden suite, converted dwelling unit, group home, mobile home/park model trailer, bed and breakfast establishment, or other similar use;

- the *additional residential unit(s)* shall be clearly secondary and subordinate to the principal dwelling and limited in size to maintain affordability and minimize potential impacts on neighbourhood character and on *infrastructure* and *public service facilities*;

- the gross floor area of the *additional residential unit(s)* shall not total greater than 50% of the gross floor area of the principal dwelling. The City may establish lower maximum floor area limits and/or floor area caps in zoning, if deemed appropriate.

- existing dwellings and lots are of sufficient size to accommodate the creation of *additional residential unit(s)* and to provide for adequate parking, landscaping and outdoor amenity areas, without detracting from the visual character of the lot or area;

- any new or expanded structures and/or exterior alterations (e.g. new parking areas, doors, windows, stairways, decks) to accommodate an *additional residential unit* will maintain the general built form and architectural character of the principal dwelling and the surrounding residential neighbourhood;

- the principal dwelling must have direct, individual vehicular access to a public street. New additional driveways will generally not be permitted;

- to the extent feasible, existing trees and other desirable vegetation are preserved to assist in maintaining the character of the lot and area;

- the existing *infrastructure* and *public service facilities* serving the area are adequate to accommodate the establishment of *additional residential unit(s)*;

- stormwater run-off will be adequately controlled and will not negatively affect adjacent properties;
- any potential increase in on-street parking demand can be adequately accommodated and/or managed;

- land use compatibility concerns (e.g. due to proximity to industrial areas or on *major facilities*) will not be created or intensified; and

- the potential effects on environmental and/or heritage resources, and the avoidance or mitigation of environmental constraints can be addressed in accordance with the policies of Section 3.2.

- all other municipal requirements (e.g. servicing, emergency access, by-laws, standards, etc.) can be adequately addressed.

ADDITIONAL RESIDENTIAL UNITS IN AN ANCILLARY BUILDING

The following additional criteria shall apply to the establishment of an additional residential unit in a structure ancillary to a single detached, semi-detached or row townhouse dwelling:

- the ancillary structure must be located in a rear or interior side yard;

- the siting, design and orientation of the ancillary structure/dwelling unit, parking area and outdoor amenity area (s) will allow for optimal privacy for the occupants of the additional residential unit, principal dwelling and abutting residential properties and minimize potential visual and shadowing impacts on adjacent residential yards;

- landscaping, privacy screening, fencing and other appropriate measures may also be required to minimize potential visual and privacy impacts on abutting residential properties; and

- all other municipal requirements (e.g. servicing, emergency access, by-laws, standards, etc.) can be adequately addressed.

SEVERANCE

Additional residential units must be located on the same lot as the principal dwelling and may not be severed from such lot, or converted into a separately transferable unit through plan of condominium.

ZONING

The City's Zoning By-law shall establish the specific zoning provisions that must be met for an *additional residential unit* to be established on a lot. These zoning provisions will address the policy requirements of this subsection and any other matters deemed necessary by the City including, but not limited to, lot frontage and area; type of unit permitted; unit size and location; building height; location and setbacks; landscaping and amenity areas; parking and access, etc.

To assist in maintaining the built form character of the principal dwelling and surrounding residential area, and minimizing potential impacts on abutting residential properties, the Zoning By-law may also limit the location and extent of structural additions, alterations and/or features (e.g. building additions, doorways, windows, stairways, decks, etc.) that are permitted.

The zoning provisions for *additional residential units* will be implemented through a comprehensive, City initiated amendment to the Zoning By-law, or through the proposed zoning for new residential subdivisions. Site specific amendments to the Zoning By-law to permit the establishment of an *additional residential unit* will generally not be permitted.

OTHER TOOLS AND MEASURES

Where deemed necessary and/or appropriate, the City may implement other supplementary tools and measures to assist with tracking and regulating *additional residential units* including, but not limited to, registration and/or licensing requirements, design guidelines, property standards by-laws, etc.

4.8 That Chapter 7 – CITY OF WOODSTOCK LAND USE POLICIES, Section 7.2 – *Housing Development and Residential Areas*, as amended, is hereby amended by changing the heading of the subsection titled '*Criteria For More Than Two Units*' as contained in Section 7.2.4.3 to '*Converted Dwellings*' and that the first paragraph of that subsection be deleted and replaced with the following:

In addition, City Council may zone areas within the City to permit the conversion of a principal dwelling for more than two dwelling units in accordance with the following criteria:

4.9 That Chapter 7 – CITY OF WOODSTOCK LAND USE POLICIES, Section 7.2 – *Housing Development and Residential Areas*, as amended, is hereby amended by adding the following subsection immediately after the subsection titled '*Converted Dwellings*', as contained in Section 7.2.4.3 (as amended by subsection 4.8 of this amendment):

NO FURTHER CONVERSION

Where an *additional residential unit* has been established within a principal dwelling, the conversion of the said dwelling to include additional units will generally not be permitted.

4.10 That Chapter 7 – CITY OF WOODSTOCK LAND USE POLICIES, Section 7.2 – *Housing Development and Residential Areas*, as amended, is hereby amended by deleting the paragraph titled '*Site Plan Control'* at the end of the newly titled '*Converted Dwellings*' subsection identified in Clause 4.8 of this amendment, and replacing it with the following:

SITE PLAN CONTROL

Such converted dwellings may be subject to site plan control.

5.0 IMPLEMENTATION

This Official Plan Amendment shall be implemented in accordance with the relevant implementation policies contained in the Official Plan.

6.0 INTERPRETATION

This Official Plan Amendment shall be interpreted in accordance with the relevant interpretation policies of the Official Plan.

COUNTY OF OXFORD

BY-LAW NO. 6417-2022

BEING a By-law to amend By-law No. 6268-2020, a By-law establishing County Council Procedures for governing the proceedings of the Council of the County of Oxford.

WHEREAS, Section 238 of the *Municipal Act, 2001, S.O. 2001, C. 25*, provides that every municipality and local board shall pass a procedure by-law for governing the calling, place and proceedings of meetings.

AND WHEREAS, it is deemed necessary and expedient to amend Procedure By-law no. 6268-2020.

NOW THEREFORE, the Council of the County of Oxford enacts as follows:

THAT Section 3.2 be amended to read as follows: The Inaugural Meeting of the municipal Council of the County of Oxford after a regular election held pursuant to Sections 3, 4 and 5 of the *Municipal Elections Act, S.O. 1996, Chap. 32*, shall be held on the fourth Wednesday of November at 2:00 p.m. This Inaugural Meeting will be only for the purposes of Filing of Certificates, presenting Declarations of Office and Oaths of Allegiance, and electing the Warden and Deputy Warden pursuant to the provisions of Sections 4.1 and 5.1.

THAT this amendment to Procedure By-law No. 6268-2020 be hereby declared to be part of that By-law as though written therein.

THAT this By-law shall come into full force and effect upon passing.

READ a first and second time this 23rd day of February, 2022.

READ a third time and finally passed this 23rd day of February, 2022.

LARRY G. MARTIN, WARDEN

CHLOÉ J. SENIOR, CLERK

COUNTY OF OXFORD

BY-LAW NO. 6418-2022

BEING a By-law to confirm all actions and proceedings of the Council of the County of Oxford at the meeting at which this By-law is passed.

The Council of the County of Oxford enacts as follows:

1. That all decisions made by Council at the meeting at which this By-law is passed, in respect of each report, resolution or other action passed and taken by the Council at this meeting, are hereby adopted, ratified and confirmed.

2. That the Warden and/or the proper officers of the County are hereby authorized and directed to do all things necessary to give effect to the said decisions referred to in Section 1 of this By-law, to obtain approvals where required, and except where otherwise provided, to execute all necessary documents and the Clerk is hereby authorized and directed to affix the corporate seal where necessary.

3. That nothing in this By-law has the effect of giving to any decision the status of a By-law where any legal prerequisite to the enactment of a specific By-law has not been satisfied.

4. That all decisions, as referred to in Section 1 of this By-law, supersede any prior decisions of Council to the contrary.

READ a first and second time this 23rd day of February, 2022.

READ a third time and finally passed this 23rd day of February, 2022.

LARRY G. MARTIN, WARDEN

CHLOÉ J. SENIOR, CLERK