Authority Meeting Agenda

Thursday, July 18, 2024, 1:00 p.m.

Formosa Administrative Office

1. Land Acknowledgement

We begin our meeting today by respectfully acknowledging the Anishinaabeg Nation, the Haudenosaunee, the Neutral, and the Petun peoples as the traditional keepers of this land. We are committed to moving forward in the spirit of reconciliation with First Nation, Métis, and Inuit peoples.

2. Adoption of Agenda

THAT the agenda for the Saugeen Valley Conservation Authority meeting, July 18, 2024, be adopted as amended.

3. Declaration of Pecuniary Interest

4. Adoption of Minutes

4.1 Authority meeting – *May 16, 2024*

THAT the minutes of the Saugeen Valley Conservation Authority meeting, May 16, 2024, be adopted as presented.

4.2 Section 28 Hearing- May 16, 2024

THAT the minutes of the Section 28 Hearing, May 16, 2024, be adopted as presented.

5. Staff Introductions

6. Matters Arising from the Minutes – None at this time.

7. New Business

Corporate Services

7.1 GM-2024-09: General Manager's Report and Operational Plan – Erik Downing

7.2 GM-2024-10: Program Report

7.3 Correspondence None at this time.

7.4 Approved Committee Minutes

7.4.1 Executive Committee - June 6, 2024

7.4.2 Agricultural Advisory Committee - March 8, 2024

7.5 COR-2024-13: Bylaw Amendments – Erik Downing

THAT the Board of Directors of the Saugeen Valley Conservation Authority approves the recommended Administrative Bylaw amendments as presented in the report

7.6 COR-2024-14: Grey County Prosecution Agreement – Erik Downing

THAT SVCA signs Grey County Legal Services agreement, following the 2023 pilot project, to acquire legal services assistance from Grey County on Section 28 and Section 29 Conservation Authority's (CA) Act items.

Environmental Planning and Regulations

7.7 EPR-2024-18: Permits Issued for Endorsement – Matt Armstrong

THAT Development, Interference with Wetlands and Alterations to Shorelines and Watercourse applications and Prohibited Activities, Exemptions and Permits applications #24-068, 24-078 to 24-129, and 24-131 to 24-151, as approved by staff, be endorsed.

7.8 EPR-2024-19: Southampton Two Zone Floodplain

Forestry and Lands

7.9 Varney Pond update – Verbal – Donna Lacey

7.10 LAN-2024-05: Approval for Consultation – Conservation Areas Strategy – Donna Lacey

THAT the Board of Directors approve the Conservation Areas Strategy draft to support the next step of public consultation, as required by Section 21.1 (1) of the Conservation Authorities Act and Ontario Regulation 686/21 (9) (10).

7.11 LAN-2024-06: 2025 Campground fees – Donna Lacey

THAT camping and associated rates be increased as proposed for the 2025 camping season.

Water Resources

7.12 WR-2024-05: Flood Forecasting and Warning – Hydrometric Network Update – Jody Duncan

THAT the Board of Directors endorse the proposed plan for improvements to SVCA's hydrometric network; and further

THAT the Board of Directors support decommissioning the Teeswater River at Bruce Road 20 (Greenock) stream gauge station.

7.13 WR-2024-06: Information sharing with Municipal Partners – Erik Downing

THAT the Board of Directors support transparency with the applicable municipal partners through the sharing of all available documents, drawings, and reports, both historic and current, related to water and erosion control infrastructure that is deemed special benefitting.

7.14 WR-2024-07: Walkerton Hydro Dam – Next Steps– Erik Downing

THAT the SVCA Board of Directors support staff in pursuit of removal of the Walkerton Hydro Dam; and

THAT the SVCA Board of Directors endorses initiation of the Walkerton Hydro Dam Environmental Assessment, Phase 1 in 2024, pending a successful WECI application.

7.15 WR-2024-08: Watershed Resource Based Management Strategy – Erik Downing

THAT the Board of Directors approve the Watershed Based Resource Management Strategy draft to support the next step of public consultation, as required by Section 21.1 of the Conservation Authorities Act and Ontario Regulation 686/21 (Appendix A).

7.16 WR-2024-09: Ice Management Plan – Erik Downing

THAT the Board of Directors endorses the Ice Management Plan, as required by Section 21.1 of the Conservation Authorities Act and Ontario Regulation 686/21 (Appendix A).

7.17 WR-2024-10: Durham Upper Dam – A Historical Summary – Erik Downing

THAT the Board of Directors directs staff to address all operator and public safety recommendations, as detailed in the June 7, 2024, D.M. Wills letter, titled Durham Upper Dam, Operator and Public Safety Review; and further

THAT the Board of Directors support fulsome public consultation as it relates to past and current history of ice operations at the Durham Upper Dam.

8. Closed Session – to discuss a litigation matter and personal matters about identifiable individuals

THAT the Authority move to Closed Session, In Camera to discuss a litigation matter and personal matters about identifiable individuals; and further

THAT, Erik Downing, Matt Armstrong, Madeline McFadden, and Janice Hagan remain in the meeting as required.

9. Adjournment

THAT the meeting be adjourned.

Saugeen Valley Conservation Authority

Minutes – Board of Directors Meeting

Date:	Thursday May 16, 2024, 1:00 p.m.
Location:	Formosa Administrative Office
Chair:	Barbara Dobreen
Members present:	Paul Allen, Larry Allison, Kevin Eccles, Bud Halpin, Tom Hutchinson (remote), Greg McLean, Steve McCabe (remote), Dave Myette, Mike Niesen, Sue Paterson, Moiken Penner, Jennifer Prenger, Bill Stewart, Peter Whitten
Staff present:	Matt Armstrong, Erik Downing, Janice Hagan, Donna Lacey, Elise MacLeod, Laura Molson, Mike Oberle, Jennifer Stephens

Chair Dobreen called the meeting to order at 1:00 p.m.

1. Land Acknowledgement

We begin our meeting today by respectfully acknowledging the Anishinaabeg Nation, the Haudensaunee, the Neutral, and the Petun peoples as the traditional keepers of this land. We are committed to moving forward in the spirit of reconciliation with First Nations, Métis, and Inuit peoples.

2. Adoption of Agenda

The following items were added to the agenda:

i. Report 8.12 (GM-2024-09) Hiring Committee for new General Manager/Secretary-Treasurer

ii. Report 8.20 (EPR-2024-18) Review of the Proposed Policies for a new Provincial Planning Policy Instrument

iii. Report 8.22 (LAN-2024-02) Endorsement of the Greenock Swamp as a Wetland of Distinction

Motion #G24-46

Moved by Dave Myette

Seconded by Gregory McLean

THAT the agenda for the Saugeen Valley Conservation Authority meeting, March 21, 2024, be adopted as amended.

Carried

3. Declaration of Pecuniary Interest

There were no declarations of pecuniary interest relative to any item on the agenda.

Peter Whitten joined the meeting at 1:09 p.m.

4. Adoption of Minutes

4.1 Authority meeting – March 21, 2024

Motion #G24-47
Moved by Sue Paterson
Seconded by Larry Allison
THAT the minutes of the Saugeen Valley Conservation Authority meeting, March 21, 2024, be adopted as presented.

Carried

4.2 Section 28 Hearing – March 21, 2024

Motion #G24-48
Moved by Larry Allison
Seconded by Mike Niesen
THAT the minutes of the Section 28 Hearing, March 21, 2024, be adopted as presented.

Carried

5. Staff Introductions

New staff were unable to attend the meeting; therefore, introductions were postponed to a future meeting.

6. Delegations

6.1 2023 Audited Financial Statements

John Bujold, Baker Tilley LLP reviewed the draft financial report and noted that it is the opinion of Baker Tilly that the financial statements of SVCA present fairly the financial position as of December 31, 2023, and are in accordance with Canadian public sector accounting standards.

Motion #G24-49
Moved by Kevin Eccles
Seconded by Paul Allen
THAT the 2023 Audited Financial Statements, as prepared by Baker Tilly SGB LLP be approved as presented.

Carried

6.2 Children's Safety Village Contract/Update

Al Leach, Vice President of the Saugeen Valley Children's Safety Village (SVCSV), provided a presentation to the Board of Directors regarding updates to SVCSV programming. In 2020, SVCSV secured a five-year rent-free lease with SVCA for the Sulphur Spring Resources Centre, set to expire in fall 2025. The current lease agreement requires the Tenant to notify the Authority in writing of their intention to renew the lease at least one year before it expires. Mr. Leach has asked the Board of Directors to consider renewing the lease beginning in 2025. The Board directed staff to negotiate with the SVCSV and bring a recommendation to the Board at the July meeting.

Motion #G24-50
Moved by Dave Myette

Seconded by Bill Stewart
THAT the Saugeen Valley Children's Safety Village lease agreement be referred to Staff for discussion; and further

THAT a recommendation be brought to the July Authority meeting for approval.

Carried

7. Matters arising from the minutes – None at this time

8. New Business

Jennifer Stephens submitted her resignation April 29, 2024, indicating that her last working day would be May 31, 2024. She informed the Board that, due to her accrued vacation days, her actual final day would be May 16th. The Board expressed their gratitude for her contributions as the General Manager/Secretary-Treasurer.

Corporate Services

8.1 GM-2024-05: General Manager's Report and Operational Plan

The Directors discussed the G/M report and the Operational Plan.

Steve McCabe joined the meeting at 1:09 p.m.

8.2 GM-2024-08: Program Report

There was no discussion.

8.3 COR-2024-07: Finance Report – Laura Molson

There was no discussion.

8.4 Correspondence

Correspondence from Carl Kuhnke, Chair, Source Protection Committee (SPA), written to The Hon. Sylvia Jones, Minister of Health, regarding the plan to discontinue free private drinking water testing, was noted. Chair Dobreen advised that the Minister's reply was favourable, and that private water testing will continue to be provided at no cost. She congratulated the SPA, and all municipalities that had submitted correspondence to the Ministry of Health.

8.5 Approved Committee Minutes

8.5.1 Executive Committee – February 23, 2024
8.5.2 Property and Parks Committee – September 7, 2023
8.5.3 Forestry Committee -October 11, 2023

There was no discussion.

8.6 News Report

There was no discussion.

8.7 COR-2024-08: Accessibility Policy

There was no discussion.

Motion #G24-51
Moved by Bill Stewart

Seconded by Mike Niesen
THAT the Saugeen Valley Conservation Authority approve the proposed Accessibility Policy.

Carried

8.8 COR-2024-09: Records Retention Policy

There was no discussion.

Motion #G24-52
Moved by Paul Allen
Seconded by Larry Allison
THAT the Saugeen Valley Conservation Authority approve the proposed Records Retention Policy.

Carried

8.9 COR-2024-10: Conservation Ontario 2023 Annual Report

There was no discussion.

Motion #G24-53
Moved by Greg McLean
Seconded by Mike Niesen
THAT the Board of Directors of Saugeen Valley Conservation Authority receives Conservation Ontario's 2023 Annual Report.

Carried

8.10 COR-2024-11: MFIPPA 2023 Annual Report – Jennifer Stephens

There was no discussion.

Motion #G24-54
Moved by Jennifer Prenger
Seconded by Sue Paterson
THAT the Board of Directors of the Saugeen Valley Conservation Authority received the SVCA's Municipal Freedom of Information and Protection of Privacy Act 2023 Annual Report.

Carried

8.11 COR-2024-12: Final Programs and Services Inventory

There was no discussion.

Motion #G24-55
Moved by Tom Hutchinson
Seconded by Steve McCabe
THAT the Board of Directors of Saugeen Valley Conservation Authority approval the attached Programs and Services Inventory (Final version dated April 1, 2024) and direct staff to provide a copy to all member municipalities to complete the Transition Period outlined in Ontario Regulation 687/21.

Carried

8.12 GM-2024-09: Hiring Committee for New General Manager/Secretary-Treasurer

The SVCA Executive Committee has endorsed a procedure in which Grey County Human Resources will assist in recruiting a new GM/S-T. A Hiring Committee, appointed by the Board, will facility the procedure, draft the job posting, conduct candidate screenings and interviews, and then put forward recommendations to the full Board.

Motion #G24-56
Moved by Paul Allen
Seconded by Bill Stewart
THAT the Board of Directors appoint Larry Allison, Bud Halpin, and Jennifer Prenger to join Barbara Dobreen, Tom Hutchinson, Paul Allen, and Greg McLean to form the Hiring Committee for SVCA's new General Manager/Secretary-Treasurer; and

THAT the Hiring Committee be delegated the responsibility of finding a suitable candidate to fill the position of General Manager/Secretary-Treasurer; and

THAT the Hiring Committee engage the Grey County Human Resources Director to facilitate the recruitment process; and

THAT the Hiring Committee be authorized to engage third party support as required; and
FURTHER THAT the Hiring Committee propose a viable candidate for the position of General Manager/Secretary-Treasurer to the Board of Directors at a future meeting.

Carried

Environmental Planning and Regulations

8.13 EPR-2024-11: Permits Issued for Endorsement – Erik Downing

Motion #G24-57
Moved by Bill Stewart
Seconded by Sue Paterson
THAT the Development, Interference with Wetlands and Alterations to Shorelines and Watercourse applications (#24-032, 24-038, 24-040 to 24-059, 24-061 to 24-065, 24-069, 24- 072 to 24-074, and 24-076), pursuant to Ontario Regulation 169/06, as approved by staff, be endorsed; and further

THAT the Prohibited Activities, Exemptions and Permits applications (#24-060, 24- 066, 24-067, 24-070, 24-071, 24-074, and 24-077), pursuant to Ontario Regulation 41/24, as approved by staff, be endorsed.

Carried

8.14 EPR-2024-12: Permit Application and Template – Erik Downing

Motion #G24-58
Moved by Larry Allison
Seconded by Kevin Eccles
THAT the Board of Directors approve the use of the permit and permit application template prepared to comply with Ontario Regulation 41/24.

Carried

8.15 EPR-2024-13: Annual Reporting – Permits Issued in 2023

Motion #G24-59
Moved by Mike Niesen
Seconded by Dave Myette
THAT the Board of Directors of the Saugeen Valley Conservation Authority receive the SVCA's annual reporting on 2023 permit timelines.

Carried

8.16 EPR-2024-14: Stop Work Order Standard Operating Procedure and Template

Motion #G24-60
Moved by Jennifer Prenger
Seconded by Bill Stewart
THAT the Board of Directors endorse the Stop Order Standard Operating Procedure and template for use by SVCA Provincial Offences Officers.

Carried

8.17 EPR-2024-15: Violations Ranking Changes

Motion #G24-61
Moved by Moiken Penner
Seconded by Bill Stewart
That the violation ranking system approved in the 2021 Violations Strategy be revised in accordance with this report.

Carried

8.18 EPR-2024-16: Status of Active Violations

Staff are managing 19 fewer violation files now compared with November 2023, largely due to a significant reduction in violations that rank as Category 3. Many of these violations were resolved over the past 6 months and several more were downgraded to Category 2 after partial remediation was completed. One violation file is presently in Provincial Offences Court and could proceed to trial.

8.19 EPR-2024-17: Regulation detailing new Minister's Permit and Review Powers under the *Conservation Authorities Act*

On April 1st, 2024, new regulations under the *Conservation Authorities Act* granted the Minister additional powers. These powers allow the Minister to either prevent a conservation authority from issuing a permit or potentially override a permit refusal by the conservation authority. Staff provided comments to Conservation Ontario that reflected SVCA concerns.

Motion #G24-61
Moved by Paul Allen
Seconded by Dave Myette
THAT the Board of Directors of Saugeen Valley Conservation Authority receive this report on the proposed regulation detailing new Minister's Permit and Review powers under the Conservation Authorities Act.

Carried

8.20 EPR-2024-18: Review of Proposed Policies for a New Provincial Planning Policy Instrument

After discussion the following motion carried:

Motion #G24-62
Moved by Bill Stewart
Seconded by Bud Halpin
THAT the Board of Directors receive the staff report outlining the proposed policies for a new Provincial Planning Policy Instrument

Carried

Forestry and Lands

8.21 LAN-2024-01: Varney Pond Update

An application submitted to the Department of Fisheries and Oceans by SVCA is still pending, awaiting a decision regarding water diversion. The estimated total cost associated with reopening and operating the pond at Varney Conservation Area is $800,500. Staff recommend that with consideration to the costs associated addressing structural deficiencies, public safety concerns, permitting and general remediation, disposal of the property should be explored.

Motion #G24-63
Moved by Bill Stewart
Seconded by Jennifer Prenger
THAT the Board of Directors receive the Varney Conservation Area Update.

Carried

8.22 *LAN-2024-02:* Endorsement of the Greenock Swamp as a Wetland of Distinction

After discussion the following motion carried:

Motion #G24-64
Moved by Bud Halpin
Seconded by Greg McLean
THAT the Board of Directors direct staff to advise Dr. Glasauer that Saugeen Valley Conservation Authority endorses the University of Guelph application to the Society of Wetland Scientists to designate Greenock Swamp as a Wetland of Distinction.

Carried

8.23 LAN-2024-03: Provincial Offences Officer Designation – Donna Lacey

There was no discussion.

Motion #G24-65
Moved by Mike Niesen
Seconded by Bill Stewart
THAT Alex Duszczyszyn (Forestry Technician) be designated by the SVCA Board of Directors as a

Provincial Offences Officer for the purpose of enforcing Section 29 (O. Reg. 688/21) of the *Conservation Authorities Act*.

Carried

8.24 LAN-2024-04: Durham Campground Improvements

SVCA Staff have explored strategies to boost revenue at the Durham Campground. Based on a 2024 poll of seasonal staff, they identified interest in introducing winter camping. After assessing costs, they recommend proceeding with the project with a budget of no more than $35,000, sourced from the campground reserve fund. After further discussion, the following motion carried:

Motion #G24-66
Moved by Larry Allison
Seconded by Jennifer Prenger
THAT the Saugeen Valley Conservation Authority Board of Directors approve the use of $35,000 from campground reserves to fund the proposed campground improvements at Durham Conservation Area for the purposes of making the site compatible for winter camping.

Carried

Water Resources

8.25 WR-2024-03: Durham Upper Dam – Hazard Classification – Elise MacLeod

D.M. Wills Associates has reviewed the condition of the Durham Upper Dam as part of the Phase 1 Class Environmental Assessment (EA) and has reported that the dam is in poor condition. The report concludes that the dam does not have sufficient hydraulic capacity to convey the inflow design flood and the dam and dyke will overtop. D.M. Wills recommends that an Emergency Preparedness and Response Plan be developed and implemented in coordination with the Municipality of West Grey.

Motion #G24-67
Moved by Bill Stewart
Seconded by Greg McLean
THAT the Board of Directors receive Staff Report #WR-2024-03, dated May 16, 2024, regarding the Durham Upper Dam Hazard Potential Classification for information.

Carried

Tom Hutchinson left the meeting at 4:14

8.26 WR-2024-04: Dam Public Safety Plans – Elise MacLeod

Motion #G24-68
Moved by Moiken Penner
Seconded by Peter Whitten
THAT the Board of Directors authorize SVCA's General Manager/Secretary-Treasurer to endorse the Durham Lower Dam and Glenelg Dam public safety plans, as presented.

Carried

9. Closed Session – to discuss a litigation matter and personal matters about identifiable individuals (interim coverage of GM/Secretary-Treasurer position)

Motion #G24-69
Moved by Bill Stewart
Seconded by Paul Allen
THAT the Authority move to Closed Session, In Camera to discuss a litigation matter and personal matters about identifiable individuals; and

THAT Jennifer Stephens, Erik Downing, Matt Armstrong, Madeline McFadden, and Janice Hagan remain in the meeting as required.

Carried

Motion #G24-75
Moved by Greg McLean
Seconded by Sue Paterson
THAT the Board of Directors adjourn from Closed Session, In Camera, and rise and report.

Carried

Chair Dobreen reported that only the items pertaining to the reasons for the Closed Session were discussed.

10. Adjournment
There being no further business, the meeting adjourned at 4:51 p.m. on the motion of Kevin Eccles and Jennifer Prenger.

_____ _____

Barbara Dobreen
Chair

Janice Hagan
Recording Secretary

Saugeen Valley Conservation Authority

Minutes – Section 28 Hearing

Date:	Thursday May 16, 2024, 10:30 a.m.
Location:	Virtual (Zoom)
Chair:	Barbara Dobreen
Members present:	Paul Allen, Larry Allison, Bud Halpin, Tom Hutchinson, Dave Myette, Mike Niesen, Sue Paterson, Moiken Penner, Bill Stewart,
Members absent:	Kevin Eccles, Steve McCabe, Greg McLean, Jennifer Prenger, Peter Whitten
Staff present:	Jennifer Stephens, Erik Downing, Darren Kenny, Janice Hagan
Others present:	Tony and Janine Lovsin

Application to Alter a Regulated Area:

Applicant: Tony and Janine Lovsin
642571 McCullough Lake Drive
South Part Lot 19, Concession 3
Being Part 1 & 2, RP 16R-4537
Geographic Township of Sullivan

Director Kevin Eccles was absent and did not participate in the Section 28 Hearing due to his involvement on the previous Hearing for Mr Lovsin, and the original decision to grant. (Section 28 Hearing Guidelines, 2.0 (a) Apprehension of Bias).

Chair Dobreen called the meeting to order at 10:30 a.m. The Board of Directors convened as a Hearing under Section 28.1 (5) of the *Conservation Authorities Act*, R.S.O. 1990, Chapter C.27 and amendments.

1. **Motion to convene as a Hearing Board**

Motion #G24-43
Moved by Bill Stewart
Seconded by Sue Paterson

THAT this meeting of the Saugeen Valley Conservation Authority is convened as a Hearing under Section 28.1 (5) of the *Conservation Authorities Act*, R.S.O. 1990, Chapter C.27 and amendments thereto, to consider an application for a permit under the Authority's Development, Interference with Wetlands and Alterations to Shorelines and Watercourses published by the Province of Ontario as Ontario Regulation 169/06, as amended.

Carried

2. Opening remarks by Chair

Chair Dobreen convened the Hearing with opening remarks, introducing the Applicant, and identifying the nature of the application. The procedures were noted along with the requirements of the *Canada Evidence Act*. The Board did not require staff or the Applicant to testify under oath.

3. Introductions

Jennifer Stephens, GM/S-T, introduced Erik Downing, Manager, Environmental Planning and Regulations, who introduced Darren Kenny, Regulations Officer, and Tony and Janine Lovsin, Applicants.

4. Staff report and presentations

Darren Kenny presented the staff report to the Hearing Board who heard that the application to build a 1,900.91 ft^2 dwelling in the Regulatory Floodplain of Hamilton Creek had originally been requested in 2016. The SVCA Executive Committee approved the proposed development in September 2017; however, the permit expired in September 2019. A second permit was issued for the proposed house by SVCA in October 2019 with an expiry date of October 2021. In September 2021, SVCA was informed that the Township of Chatsworth had revoked the building permit, which was later reinstated by court order.

The Lovsins are proposing the construction of a new, 1,735 ft^2, two-story single detached home, installation of a new septic system, and related excavation, filling, and grading. The specific square footage of the new proposed dwelling is significantly larger than the previously existing house (724 ft^2) on the property. A floodplain analysis by C.F. Crozier and Associates Inc. confirmed that the property lies entirely within the Regional Flood Plain of Hamilton Creek and could experience over 1 meter of flooding during a regional storm event. According to the SVCA Policies Manual, staff may approve a new dry flood-proofed dwelling, provided it does not exceed the original habitable floor area or footprint of the previous dwelling. Staff are not authorized to deny the permit; therefore, this matter has been referred to the Authority as a Section 28 Hearing Board.

5. Applicant presentation

The Applicant did not have a presentation.

6. Additional information sharing

The Board of Directors discussed the application and asked staff and the Applicant to clarify several details.

7. Deliberation

The Board members deliberated in open session and there was no requirement to go In Camera. After discussion, the following motion carried:

8. Motion #G24-44

Moved by Bill Stewart
Seconded by Moiken Penner

THAT Application to Alter a Regulated Area, seeking permission to construction of a new 161.2 square metre (1,735 square foot), two-story single detached home, installation of a new septic system, and related excavation, filling, and grading at 642571 McCullough Lake Drive, South Part Lot 19, Concession 3 in the Township of Chatsworth, is approved with the following specific conditions:

1. The Applicant shall hire a certified Ontario Land Surveyor or qualified engineer to complete an elevation survey to verify that the grades and elevations proposed in the Application are achieved and the foundation is built as designed.

Carried

Adjournment
There being no further business, the meeting adjourned at 11:09 a.m. on the motion of Bill Stewart and Bud Halpin.

_____	_____
Barbara Dobreen	Janice Hagan
Chair	Recording Secretary

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Report #GM-2024-09

To: Chair and Directors, Saugeen Valley Conservation Authority

From: Erik Downing, Acting General Manager/Secretary-Treasurer

Date: July 18, 2024

Subject: General Manager's Report

Department News

- On June 14, the General Manager/Secretary-Treasurer (GM/S-T) met with Environment, Sustainability & Net Zero Bruce Power staff regarding shoreline management planning.
- On July 24, the GM/S-T met with Andrea Khanjin, Ontario's Minister of the Environment, Conservation, and Parks, and Lisa Thompson, Minister of Rural Affairs. The discussion centered around securing funding for Healthy Lake Huron in 2024. Also present were the Chairs of Saugeen Valley Conservation Authority (SVCA) and Maitland Valley Conservation Authority (MVCA), as well as the General Manager of MVCA.
- On June 25-26, the GM/S-T participated in the Conservation Ontario General Manager (GM) and Chief Administrative Officer (CAO) Strategy Meeting, which was attended by representatives from several other Conservation Authorities (CAs). The meeting was highly productive, covering topics such as the 2025 budget, mapping initiatives, the political landscape, artificial intelligence (AI), ongoing legal cases, and updates on new regulations and legislation.

All Departments

2024 Operational Task	Status	Target Completion Date	Revised Target Date
2023 Performance Evaluations	In Progress	May 31, 2024	July 2024
Job Descriptions for Market Compensation Review	In Progress	May 31, 2024	Compensation Review Proceeding, Outstanding Job Descriptions will be included
Job Hazard Analysis – Creation of Task Lists	In Progress	October 2024	
Content Management System – Beta System ready with EPR information	In Progress	June 2024	Beta Available to staff
Annual 2023 SVCA Report	In Progress	June 2024	July 2024
Staff Training	Ongoing	December 2024	December 2024
Mapping Working Group	In Progress	December 2024	December 2024

Department: Corporate Services

Significant Activity	2024 Operational Task	Target Completion Date	Revised Target Date	Responsible for Deliverable
Communications	General support to all departments (marketing, document preparation, social media, website maintenance)	Ongoing	Ongoing	A. Richards
GIS	Update regulation and hazard mapping with new information	Ongoing	Ongoing	R. Kleinecke
Finance	Day-to-day processing of payables and receivables	Ongoing	Ongoing	J. Hagan, K. Porter
Administration	Continue to develop and / or renew health and safety policies.	Ongoing	Ongoing	Joint Health and Safety Committee
Administration	Accessibility for Ontarians with Disabilities Act Compliance	Ongoing	Ongoing	J. Hagan
Administration	Negotiate Category 2 Agreements with municipalities	Complete	Ongoing	E. MacLeod
Administration	Submission of MFIPPA reporting for 2023	Complete	Complete	J. Hagan
Human Resources	Modernize SVCA's Personnel Policy	May 31, 2024	September 2024	E. Downing
Human Resources	Accessibility Policy Development	May 16, 2024	Complete	J. Hagan
Human Resources	Code of Conduct	May 31, 2024	September 2024	J. Hagan
Finance	Complete 2023 Audit	May 16, 2024	Complete	L. Molson
Administration	Document Retention Policy	May 16, 2024	Complete	E. Downing
Human Resources	Compensation Policy	July 2024	July 2024	J. Hagan
Human Resources	Volatile Client Plan	July 2024	July 2024	J. Hagan
Human Resources	Emergency Communication Plan	July 2024	July 2024	J. Hagan

Significant Activity	2024 Operational Task	Target Completion Date	Revised Target Date	Responsible for Deliverable
GIS/IT	Critical Failure Information Technology Plan	December 2024	December 2024	R. Kleinecke
Administration	Civic Address Assignment for SVCA Properties	December 2024	December 2024	A. Richards
Administration	Public Consultation: Accessibility for Ontarians with Disabilities Act	December 2024	December 2024	J. Hagan
Administration	Professional Development Strategy Planning	December 2024	December 2024	L. Molson
Administration	Revenue Generation Strategy	December 2024	December 2024	E. Downing

Department: Environmental Planning and Regulations

Significant Activity	2024 Operational Task	Target Completion Date	Responsible for Deliverable
Environmental Planning	Plan review of applications and pre-consultation meetings/site visits.	Ongoing	M. Armstrong
Environmental Planning	Review of Comprehensive Planning Documents (Official Plans, Comprehensive Zoning By-Laws)	Ongoing	M. Armstrong
Section 28 of Conservation Authorities Act	Continue implementation of the Violations Strategy to resolve outstanding violations.	Ongoing	M. Armstrong
Section 28 of Conservation Authorities Act	Review permit applications, conduct site visits, issue permits.	Ongoing	M. Armstrong
Regulatory Mapping	Update regulation limits on mapping.	Complete	M. Armstrong
General	Revise Complete Application Checklist and post online.	Complete	M. Armstrong
General	Website Updates	Complete	M. Armstrong, A. Richards
Environmental Planning	Completion of Environmental Planning and Regulations Policy Manual Revisions	November 2024	M. Armstrong
Environmental Planning	Update Planning Service Agreements to reflect Bill 23 changes	October 2024	M. Armstrong
General	Board of Directors Hearing Training – Section 28	October 2024	M. Armstrong
General	Landowner Recognition Program Brainstorming	December 2024	M. Armstrong
General	Amish and Mennonite Outreach Strategy Planning	December 2024	M. Armstrong, A.Richards
General	Professional Development Strategy Planning	December 2024	M. Armstrong

Department: Water Resources

Significant Activity	2024 Operational Task	Target Completion Date	Responsible for Deliverable
Water Resources Committee	Conduct meetings to discuss matters requiring direction.	As needed	E. MacLeod
Flood Forecasting and Warning	Flood and low water monitoring, forecasting, and communication.	Ongoing	J. Duncan
Program Funding	Research and apply for program funding (where applicable)	Ongoing	E. MacLeod
Water and Erosion Control Infrastructure	Complete database of existing easements and identify additional easement requirements, if needed.	Ongoing	E. MacLeod, K. Hope
Water and Erosion Control Infrastructure	Confirmation of infrastructure ownership.	Ongoing	E. MacLeod, K. Hope
Flood Forecasting and Warning	Floodwatch Training	Internal – Complete External - Ongoing	J. Duncan
Water and Erosion Control Infrastructure	Apply for Water and Erosion Control Infrastructure (WECI) funding	Complete	E. MacLeod
NWMO	Environmental Monitoring Baseline Program – Year 2 Final Report	May 2024	N. Gibson
Ontario Low Water Response	Creation of Low Water Response Committee	June 2024	J. Duncan
Water Quality	Completion of SVCA Water Quality Report	Complete	E. MacLeod, E.Williamson
Flood Forecasting and Warning	Launch “Flood Watch” program for public involvement, complete with information sessions for municipal partners.	October 2024	J. Duncan
General	Working In and Around Water Policy	October 2024	E. MacLeod

Significant Activity	2024 Operational Task	Target Completion Date	Responsible for Deliverable
General	Professional Development Strategy Planning	December 2024	E. MacLeod
General	Risk Evaluation Planning	December 2024	E. MacLeod
Ice Management Plan	Complete Ice Management Plan for SVCA watershed.	December 2024	E. MacLeod, J. Duncan
Ontario Benthos Biomonitoring Network	Collection of benthic macroinvertebrates to assist in the characterization of surface water quality	December 2024	E. Williamson
Provincial Groundwater Monitoring Network	Monitoring of groundwater quality and quantity.	December 2024	E. Williamson
Surface Water Quality Characterization	Monthly collection of water quality samples from Provincial Water Quality Monitoring Network sites and SVCA sites.	December 2024	E. Williamson
NWMO	Environmental Monitoring Baseline Program Years 1 through 3 Final Report	December 2024	N. Gibson
Water and Erosion Control Infrastructure	Complete an operational plan for SVCA structures.	December 2024	E. MacLeod, K. Hope
Water and Erosion Control Infrastructure	Complete an asset management plan for SVCA structures.	December 2024	E. MacLeod, K. Hope
Water and Erosion Control Infrastructure	Complete draft 10-year capital working plan for SVCA water and erosion control structures that were inspected in 2022, 2023.	December 2024	E. MacLeod, K. Hope
Watershed Management	Complete a watershed-based resource management strategy.	December 2024	E. MacLeod, R.Southcote

Department: Forestry and Lands

Significant Activity	2024 Operational Task	Target Completion Date	Responsible for Deliverable
Forestry Committee	Conduct meetings to discuss matters requiring direction.	As needed	D. Lacey
Property and Parks Committee	Conduct meetings to discuss matters requiring direction.	As needed	D. Lacey
Forest Management	Carry out Forest Management Activities on SVCA and private properties including tree marking, tree inventories, harvest supervision, Managed Forest Tax Incentive Plans.	Ongoing	D. Lacey, A. Duszczyszyn
Tree Planting	Plant trees on private properties.	Ongoing	D. Lacey, A. Duszczyszyn
Lands Management	Varney Pond – Working with regulatory agencies to provide necessary information to support the application submitted.	Ongoing	D. Lacey
Lands Management	Complete Kincardine Cross Country Ski Agreement	July 2024	D. Lacey
Lands Management	Develop Land Acquisition and Disposition Policies	October 2024	D. Lacey
Forestry	Complete ash hazard tree removal from Stoney Island properties.	December 2024	D. Lacey
Lands Management	Complete Conservation Areas Strategy for SVCA.	December 2024	D. Lacey
Lands Management	Complete Conservation Lands Inventory for SVCA.	December 2024	D. Lacey, J. Wiersma
Lands Management	Civic Address Assignment for SVCA Properties	December 2024	D. Lacey
General	Professional Development Strategy Planning	December 2024	D. Lacey

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Programs Report #GM-2024-10

July 18, 2024

Forestry and Lands

Staff completed another tree planting season before the end of May. The season started a little later than usual, but staff worked quite hard to get the trees in the ground in a timely fashion. May and June have seen favourable amounts of rain, and the plantings are faring well. Tree planting is carried out with multiple departments working together. Forestry and Lands would like to thank our SVCA colleagues for all their assistance and understanding during this very hectic season.

Managed forest plans are being written and submitted for many landowners.

Our Campgrounds are running smoothly. We are pleased to announce that Mary Lyness has been promoted to Assistant Superintendent of Saugeen Bluffs.

We are still experiencing staff shortages and hope to have everyone back and positions filled soon.

Sulphur Spring CA was one of the locations for the Walk for Alzheimer's. For the second year, this walk brought many visitors to the park to raise funds and walk the Sulphur Spring trail

Allan Park CA hosted two Bluewater District School Board Mountain Bike race days.

Schmidt Lake hosted another tour run by the Cargill Greenock Swamp Promotional Association.

Staff are continuing to maintain trails, properties, and infrastructure.

Hand planting crew that completed a large project

Environmental Planning & Regulations (EPR)

Department News

- EPR organized a valuable three-day wetland training session for SVCA staff, alongside colleagues from Maitland Valley CA. The program covered topics like hydric soils, hydrophytic plants, and wetland evaluation.
- Staff continue to work with CLOCA staff on the new content management system. Staff were recently granted access to test a beta version of the system and early impressions are positive.
- EPR staff participated in a workshop with the Shared Path Consultation Initiative to hear perspectives on the rights and interests of Indigenous communities in Ontario planning practice.
- An update to the Environmental Planning and Regulations Policy Manual continues to be drafted by staff.
- Updated floodplain mapping in Southampton and Huron-Kinloss related to the FHIMP program is now 'live' and in use by EPR staff.
- One Regulations Officer position remains vacant related to the GM/S-T vacancy.

Water Resources

SVCA Flood and Erosion Control Project Activity

Staff are continuing internal inspections of all SVCA dams and Category 2 dams, in accordance with our quarterly internal dam inspection program.

Capital Projects

WECI funding opened in late May and closed in early June. SVCA staff submitted applications for several studies, major repairs, and public safety projects, at a total project cost of $900,000 over the next two years. SVCA staff are awaiting confirmation of funding in early to mid-July. Projects that are dependent on WECI funding include:

- Paisley Dyke Improvements Phase 1 and 2 (2024 and 2025)
- Class EA Phase 1 & 2 Walkerton Hydro Dam Study (2024 and 2025)
- Class EA Phase 2 Durham Upper Dam (2025)
- Tree Remediation Assessments for six projects (2024)
- 4 Public Safety and Risk Assessments (3 in 2024, and 1 in 2025)
- 4 Public Safety Fencing Projects and Repairs (3 in 2024, and 1 in 2025)
- Public Safety Signage (2024 and 2025)
- 2 Hazard Potential Classification Studies (2025)

SVCA staff are currently working on preparing tender documents, request for proposals, technical specifications, etc. to support all 2024 capital projects.

The Annual Dam Inspection RFP was awarded to DM Wills Associates. This program involves the inspection of nine dams, annually over a five-year term. The 2024 dam inspections were completed in May and draft reports have been submitted to SVCA staff for review.

Operations

Nevtro was retained to review pump conditions and confirm maintenance requirements at the Paisley pump. Nevtro concluded that SVCA staff were doing an excellent job maintaining the pump but recommended that an emergency plan be developed if the pump ever failed. SVCA staff could rent a backup pump from Sunbelt if needed.

Some public safety signage has been installed by SVCA staff at the Durham Upper Dam, Durham Lower Dam, the Glenelg property, and the Walkerton Hydro Dam. The signage installed at the Durham Lower Dam and the Glenelg property has been installed in accordance with the Public Safety Plans prepared for each structure.

All Durham dams are now in summer configuration.

Flood Forecasting and Warning (FFW)

SVCA staff are pleased to announce that Mitchell Demers has been hired as SVCA's Water Resources Technician to support the Flood Forecasting and Warning program throughout the summer. This position is made possible by funding from Canada Summer Jobs. The Water Resources Technician is responsible for assisting with equipment inspections and maintenance, fieldwork, and day-to-day office tasks as well as surface water sampling.

One flood message has been issued since the May Board of Directors meeting (July 10-14 associated with Hurricane Beryl remnant).

Environment Canada extended forecasts are predicting above seasonal temperatures and a dry July; this is important information to inform the SVCA's Low Water Response program, which monitors drought conditions throughout the watershed.

Equipment Upgrades

A camera has been installed at the Durham Upper Dam to allow staff to monitor conditions remotely. SVCA staff will consider installing cameras at other locations in the watershed where visual monitoring would be beneficial, pending success at this site.

Presentations

- On June 10th, 2024, staff provided an overview of SVCA's Flood Forecasting and Warning program to the Municipality of Arran-Elderslie Council.
- An update on the status of the hydrometric network was provided to the Water Resources Committee. In the past year, staff have upgraded three stream gauge stations. An updated cost estimate was provided for the three remaining stream gauge stations requiring upgrade. SVCA has applied for external funding to support these upgrades.

Water Quality (WQ)

Annual Water Quality Report

SVCA staff have completed the 2023 Annual Water Quality Report, appended to this program report. The 2023 Annual Water Quality report represents a significant milestone for SVCA, as it is the first of its kind in over 15 years. The report provides a detailed summary of 2023 water quality and the past 20 years' worth of water quality data and trending. The report also touches on best

management practices that can be implemented by landowners and member municipalities to improve water quality. General findings of the report include:

- Annual average total phosphorus concentrations exceeded objectives annually
- Annual average nitrogen concentrations exceeded objectives annually at six of ten subwatersheds
- Chloride concentrations met objectives for all subwatersheds
- From 2012 to 2023, 90% of sample sites exceeded objectives for annual *E.coli* concentrations
- Most sites met total suspended solids objectives since 2012.

The 2023 Annual Water Quality Report will be released publicly in July 2024 and will be promoted through social media, print media, radio, and presentations to member municipalities.

Surface Water Program

Surface water sampling for the Provincial Water Quality Monitoring Network and SVCA's internal program continues to take place monthly throughout the summer.

Benthic macroinvertebrate sampling was completed in May and the samples will be processed and sent for analysis over the summer; this data will be used in future reports to enhance the understanding of water quality in our watershed.

Groundwater Monitoring

Summer maintenance for the Provincial Groundwater Monitoring Network will take place in the next few weeks.

Water Quality Annual Report (2002 - 2023)

An Analysis: Current Conditions & Trends

Presented by Saugeen Valley Conservation Authority

July 2024

Table of Contents

1. Introduction

The Saugeen watershed is one of the largest drainage basins in the region. Spanning 4,675 km^2 of southwestern Ontario, it comprises three primary river systems that stretch from the Osprey Wetlands to the Lake Huron shoreline: Pine River, Penetangore River, and the Saugeen River. These watercourses are influenced by underlying soil types, and land use such as agriculture and development. The Saugeen watershed can be divided into ten distinct subwatersheds, each with unique natural and human-made features (Figure 1). Most of the land within the Saugeen watershed is dedicated to agricultural use.

Figure 1. Map of the Saugeen watershed boundary, also known as the Saugeen Valley Conservation Authority. Featured are each of the 10 subwatersheds, major watercourses and neighbouring authorities.

Saugeen Valley Conservation Authority (SVCA) actively monitors surface water quality at 14 sites within the Saugeen watershed through the Provincial Water Quality Monitoring Network (PWQMN), a collaborative effort with the Ministry of the Environment, Conservation and Parks (MECP). The PWQMN program is a crucial source of water quality data for the Saugeen watershed; however, information gaps existed. In 2012, SVCA addressed this through an internal monitoring program that included 15 additional sites throughout the watershed. Together, there are 29 monitoring sites that are used to gather the data required to understand the health of our watershed.

SVCA conducts a biomonitoring program which involves the collection of benthic macroinvertebrates (bottom-dwelling aquatic organisms) at 20 locations across the watershed.

These sites are aligned with other surface water sampling locations to offer a better understanding of watershed health.

Monitoring and management of surface water conditions has become increasingly important with population growth, agricultural intensification, and shifting climate patterns. Water quality monitoring programs collect valuable information to quantify current and long-term water quality conditions.

2. Methods

2.1 Surface Water

Surface water samples are collected using in-stream grab techniques throughout the year. Sampling occurs in the first week of every month during ice free periods (April to November). These samples are collected in accordance with PWQMN sample protocols. Additionally, field measurements of water temperature, pH, conductivity, turbidity, and dissolved oxygen are taken at the time of sample collection. Sampling was conducted regardless of rainfall events, or temperature fluctuations.

In 2023, surface water samples were collected at 29 sites within SVCA's watershed. All samples collected under the PWQMN program were analyzed at the MECP laboratory, while SVCA samples were sent to SGS laboratories located in Lakefield, ON. Sample collection in 2020 was variable due to laboratory shutdowns associated with the pandemic.

All surface water samples were analyzed using a standard set of water quality parameters. A complete list of sample parameters for PWQMN and SVCA sampling programs can be found in Appendix A.

For this report, five parameters were selected for discussion: total phosphorus, nitrogen; nitrate-nitrite, chloride, total suspended solids, and *E. coli*. The results for each parameter were compared to the Provincial Water Quality Objectives (PWQO) or the Canadian Water Quality Guidelines (CWQG) (Table 1).

The PWQO and CWQG were established to protect public health (*E. coli*), as well as aquatic life and aquatic life cycles.

Parameter (Unit)	Water Quality Objectives/Guidelines (Unit)	PWQO or CWQG
Total Phosphorus (mg/L)	0.03 mg/L	PWQO
Nitrogen; nitrate-nitrite (mg/L)	2.93 mg/L	CWQG
Total Suspended Solids (TSS) (mg/L)	30 mg/L	CWQG
Escherichia coli (*E. coli*) cfu/100mL)	(100 cfu/100mL) for swimming	PWQO
Chloride (mg/L)	120 mg/L	CWQG

Table 1. PWQO & CWQG for the five parameters covered in this report.

2.2 Benthic Macroinvertebrates

Benthic macroinvertebrates were collected at 20 sites throughout the Saugeen watershed using the Ontario Benthic Biomonitoring Network (OBBN) stream sampling protocol. Samples were collected every other year in the springtime using the kick-and-sweep method with a D-net.

As per the OBBN protocol, three samples were collected per site to cover different sections of the watercourse. At each site, two riffles (fast/shallow area) and one pool (slow/deep area) were sampled. A minimum of a 100-individual count was obtained across the width of the river, at each sample area. Samples were then sieved and placed into plastic containers and preserved with 95% ethanol. Large debris and organic material were discarded. Finally, samples were transported and stored in a cool environment until sorting was completed.

Identification of benthic macroinvertebrates requires specific skills and certification under the OBBN. Generally, samples were mixed, and a subsample viewed under a microscope. Samples were then analyzed until a minimum of 100 individual organisms were obtained. At minimum, all organisms were identified to the 27-group taxonomic level. The 27-group level is the minimum requirement for identification under the OBBN protocol.

3. Parameters

3.1 Total Phosphorus

Phosphorus is an essential nutrient for the growth and productivity of aquatic plants and animals. Phosphorus is naturally found in weathering rocks, but is also a common element in fertilizers, livestock manure, industrial emissions, and wastewater discharges. Phosphorus can act as a pollutant in high concentrations.

Phosphorus can easily enter a watercourse following events such as storms or spring melt. High total phosphorus concentrations in a watercourse can lead to eutrophication, which is an increased supply of nutrients. This can cause excess algae growth, dead zones, and the suffocation of aquatic organisms due to lack of oxygen in the water.

PWQO recommends total phosphorus concentrations below 0.03 mg/L to limit excessive plant and algae growth.

3.2 Nitrogen; Nitrate-Nitrite

Like phosphorus, nitrogen is an essential nutrient for aquatic plants and animals. Although naturally occurring, additional nitrogen can be introduced through fertilizers, livestock manure, and septic systems.

Nitrogen occurs in various forms, including:

- Nitrite (NO_2-): dissolved inorganic nitrogen that can be toxic at low concentrations, especially when sewage is present
- Nitrate (NO_3-): is the most common dissolved inorganic nitrogen used by bacteria and algae. Nitrates are not absorbed by plants and can enter a watercourse through runoff. High concentrations can cause excess plant and algae growth, which can be toxic to aquatic life

To protect aquatic life, CWQG recommends nitrogen; nitrate-nitrite concentrations below 2.93 mg/L.

3.3 Chloride

Chloride can be naturally occurring and is generally present at low concentrations. According to Health Canada, drinking water concentrations are normally less than 10 mg/L.

Chlorides runoff into watercourses through human activities, such as applying road salt and industrial production. Chloride does not readily absorb onto surfaces, and therefore concentrations can be high in surface water and shallow aquifers.

High chloride concentrations can be toxic to aquatic life. The CWQG has two guidelines for chloride: acute, or short term (640 mg/L), and chronic, or long-term (120 mg/L). In this report, the guidelines for long-term chloride concentrations were considered.

3.4 Total Suspended Solids

Total suspended solids are a measure of the number of suspended particles in water. The particles that contribute to total suspended solids come from a wide variety of materials including sediment, silt, sand, clay, organic and inorganic matter, and microscopic organisms.

Total suspended solids can exist naturally through erosion and high watercourse flows but can also be increased by stormwater runoff, development, and agricultural processes. If total suspended solids concentrations are high, sunlight will not reach the lower depths of a watercourse, thereby impacting aquatic plants and animals. Organics and metals can attach to suspended solids and may be absorbed by aquatic organisms when the particles settle.

The CWQG suggests total suspended solids should be no more than 30 mg/L higher than background concentrations to protect aquatic life.

3.5 E. coli

Escherichia coli (*E. coli*) are a group of bacteria often found in the digestive systems of warm-blooded animals. *E. coli* are commonly used to indicate the presence of fecal contamination in water as they do not occur naturally in aquatic ecosystems.

E.coli can affect human health by causing serious gastrointestinal illnesses, which can lead to death. SVCA's *E. coli* data helps to determine overall water quality for aquatic organisms and should not be used to assess water conditions for human consumption.

The PWQO suggests that water is safe for swimming when *E. coli* concentrations are less than 100 colony-forming units (cfu) per 100mL. The maximum acceptable concentration of *E. coli* in drinking water is nondetectable.

3.6 Benthic Macroinvertebrates

Benthic macroinvertebrates (benthics) are the most common group of freshwater organisms used in assessing water quality. They are an important food source for numerous fish species and are partially responsible for recycling nutrients in a watercourse. Benthics are common and diverse, with a range of sensitivities to environmental stressors. Certain species are more sensitive to pollution than others, and therefore their presence can indicate the quality of water in which they are found.

4. Data Analysis

4.1 Surface Water

An annual and long-term data analysis was completed for each of the 10 subwatersheds. The data collected was compared to the water quality objectives listed in Table 1.

4.2 Benthic Macroinvertebrates

A review of benthic data was conducted for each of the 10 subwatersheds using local abundance, species richness and Hilsenhoff's Family-level Biotic Index (FBI).

- Local abundance refers to the number of individual organisms per species in each sample.
- Species richness is the number of different species collected in each sample. Generally, species richness increases with improved water quality, habitat diversity, and habitat suitability.
- The FBI summarizes overall pollution tolerances of benthic communities with a single value (0-10) (Table 2). Only species with an assigned pollution tolerance value were used in this calculation.

Through their biology, the benthic data was analyzed using each of these methods to understand watercourse health.

Family Biotic Index Values	Water Quality	Degree of Organic Pollution
0.0 - 3.75	Excellent	Organic pollution unlikely
3.76 - 4.25	Very good	Possible slight organic pollution
4.26 – 5.00	Good	Some organic pollution probable
5.01 – 5.75	Fair	Fairly substantial pollution likely
5.76 – 6.50	Fairly poor	Substantial pollution likely
6.51 – 7.25	Poor	Very substantial pollution likely
7.26 – 10.00	Very poor	Severe organic pollution likely

Table 2. Evaluation of the family-level Hilsenhoff Biotic Index as an indication of water quality (Hilsenhoff 1998).

5. Subwatershed Results

5.1 South Saugeen River

With a drainage area of 798 km^2, the South Saugeen subwatershed primarily consists of agricultural land, which constitutes 72% of its expanse. With a length of 97 km, the South Saugeen River features tributaries such as Carrick, Meux, Bell's, and Fairbanks Creeks, along with smaller, unnamed watercourses. The South Saugeen River outlets into the Main Saugeen River, south of Hanover.

Three long term water quality monitoring sites are established in the South Saugeen subwatershed (Figure 2). These sites are a combination of the PWQMN (Q10 and Q14) and SVCA's internal monitoring program (S13). Two benthic biomonitoring sites are located at two of the water quality sites (S13 and Q14).

All graphical data representation for the South Saugeen subwatershed can be found in Appendix B.

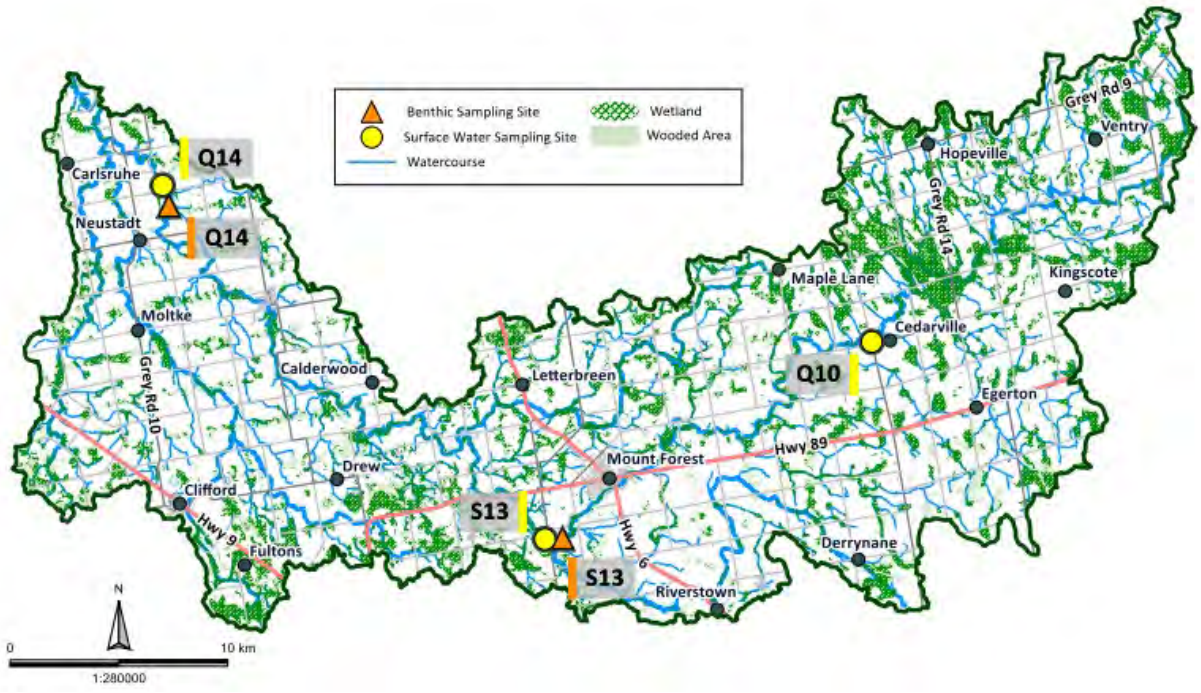

Figure 2. Map of the South Saugeen subwatershed showing locations of surface water and benthic sampling sites. Major roadways (Highways 9, 6 and 89, and Grey Road 10), towns (including Neustadt, Clifford and Mount Forest), wooded areas, wetlands and watercourses are also featured.

5.1.1 Surface Water Results – 2023

The 2023 review of the South Saugeen subwatershed indicated overall concentrations generally well below water quality objectives for total suspended solids and chloride.

Total phosphorous had three exceedances and *E. coli* had five exceedances in 2023. Nitrogen; nitrate-nitrite concentrations were highest in the Spring and Fall. There were ten nitrogen;

nitrate-nitrite exceedances in 2023, this value was in exceedance 42% of the time. There were two suspended solids exceedances across the subwatershed in 2023.

There were no recorded exceedances for chloride across all three sites.

5.1.2 Surface Water Results – Long-term

The long-term review of this subwatershed revealed annual average exceedances for total phosphorus, *E.coli*, and nitrogen.

Across all three sites, there were five average total phosphorus exceedances (from 2002 to 2023) and nine average annual *E. coli* exceedances (from 2012 to 2023).

There was one average annual nitrogen exceedance at Q14 in 2020 (3.35 mg/L). At Q10, nitrogen has generally shown an increasing trend since 2002. S13 has also shown a gradual increase in nitrogen while Q14 data suggests no significant changes are occurring. There were two annual total suspended solids exceedances at Q14 in 2010 and 2014 (29.87 mg/L and 37.05 mg/L respectively).

There were no average annual chloride exceedances.

5.1.3 Benthic Biomonitoring Results (2015-2020)

From 2015 to 2020, the local abundance of species observed varied widely, ranging from 153 to 509. Since 2015, the species richness, or the number of different species, remained relatively stable with an average of 13.8 species per sampling event.

There has been a significant decline in the FBI for this subwatershed since 2015, which suggests an improvement in water quality. In 2015, the FBI stood at 6.51, indicating that the water quality was poor. By 2020, the FBI has dropped to 2.67, which is considered excellent.

5.2 Beatty Saugeen River

The Beatty Saugeen subwatershed drains an area of approximately 274 km^2. The Beatty Saugeen River originates in wetlands within the Township of Southgate, and spans 46km in length. Drainage within this subwatershed occurs slowly, leading to the formation of swamps, and poorly drained depressions. The system outlets into the South Saugeen River, west of Hanover.

Two long-term water quality monitoring sites are established in the Beatty Saugeen subwatershed (Figure 3). These sites are a combination of the PWQMN (Q13) and SVCA's internal monitoring program (S14). One benthic biomonitoring site exists (Q13).

All graphical data representation for the Beatty Saugeen subwatershed can be found in Appendix C.

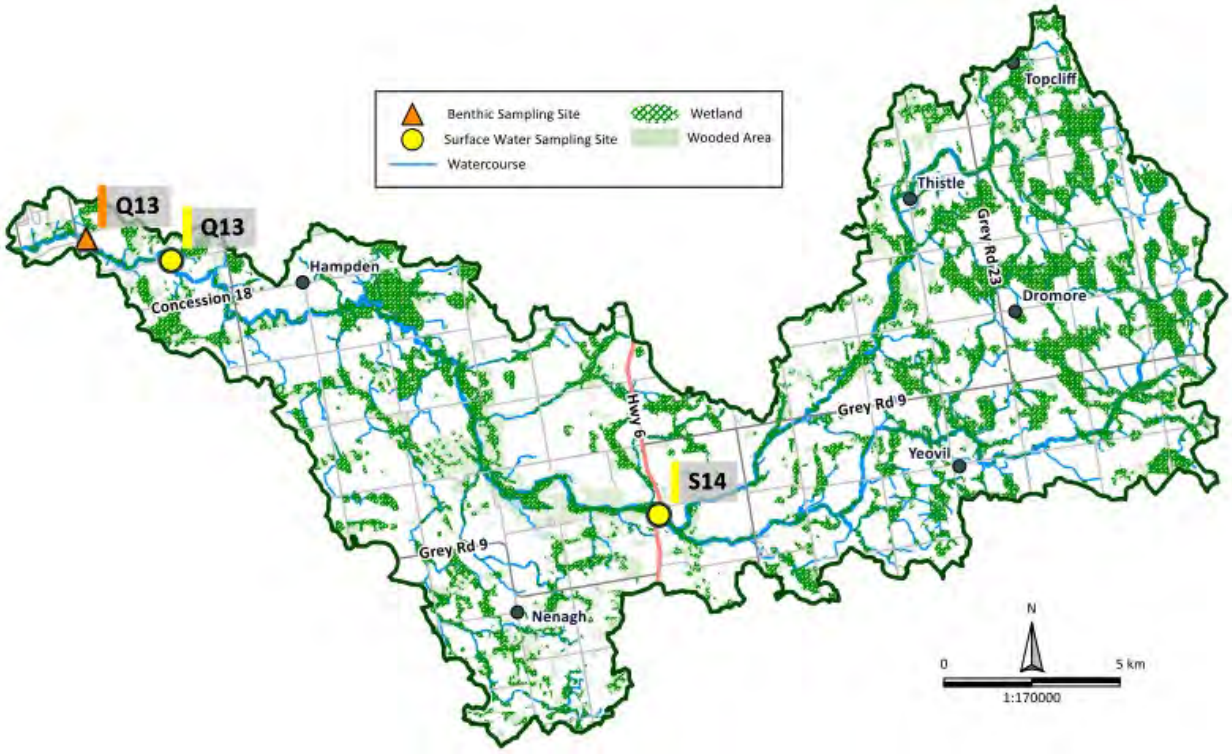

Figure 3. Map of the Beatty Saugeen subwatershed showing the locations of the surface water and benthic sampling sites. Major roadways (Grey Road 9 and 23 and Concession 18), towns (including Hampden and Yeovil), wooded areas, wetlands and watercourses are also featured.

5.2.1 Surface Water Results – 2023

The 2023 review of the Beatty Saugeen subwatershed indicated overall concentrations generally below the water quality objectives, with no exceedances reported for nitrogen, total suspended solids, or chloride.

Total phosphorus showed exceedances in one S14 sample (July). There were six *E. coli* exceedances: three Q13 samples (September, October, November), and three S14 samples (July, September, October). The highest recorded *E. coli* concentration was at S14 in July, at 1280 cfu/100mL.

At S14, nitrogen concentrations peaked in June before decreasing throughout the summer. Q13 nitrogen concentrations remained relatively stable until November.

5.2.2 Surface Water Results – Long-term

The long-term review of this subwatershed revealed no annual average exceedances for total suspended solids, nitrogen, and chloride. A slight trend suggests that nitrogen levels have increased throughout the years for both Q13 and S14.

At S14, there was one average annual total phosphorus exceedance, recorded in 2022 (0.0424 mg/L).

Since 2012, *E. coli* had eight exceedances above the PWQO, four at each sample site (Q13 and S14). Both sites had exceedances of the PWQO in 2014, 2018 and 2023.

5.2.3 Benthic Biomonitoring Results (2019-2021)

The local abundance of species present in this subwatershed has increased from 98 to 219 individuals from 2019 to 2021. Species richness increased from 13 species to 27 between 2019 and 2021.

The FBI has decreased from 5.33 to 4.21, suggesting an improvement in water quality. The three-year average of 4.07 suggests overall water quality in this subwatershed is in very good condition.

5.3 Upper Main Saugeen River

Approximately 782 km^2 of land is drained in the Upper Main Saugeen subwatershed. The river spans 116 km in length, with key tributaries including Habermehl and Camp Creek, as well as the Styx River. The subwatershed is primarily composed of agricultural land.

Five long-term monitoring sites are established in the Upper Main Saugeen subwatershed (Figure 4). These sites are a combination of the PWQMN (Q9 and Q11) and SVCA's internal monitoring program (S9, S10, and S15).

All graphical data representation for the Upper Main Saugeen subwatershed can be found in Appendix D.

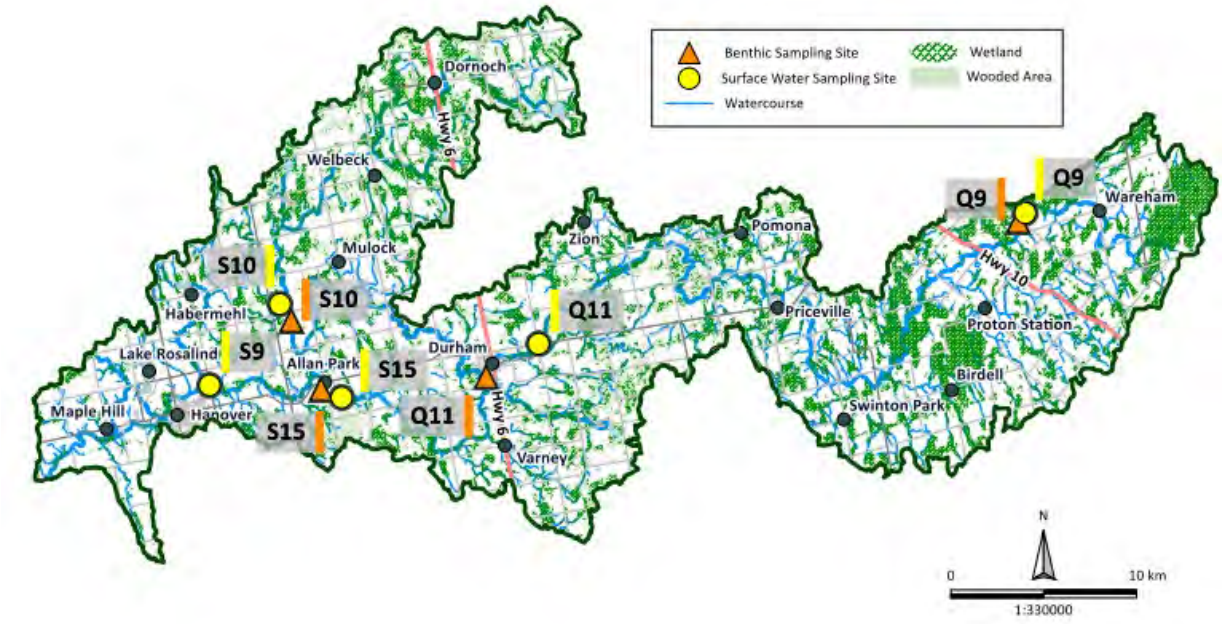

Figure 4. Map of the Upper Main Saugeen subwatershed surface water and benthic sampling sites. Major roadways (Highways 6 and 10), towns (including Dornoch, Durham, Priceville and Proton Station), wooded areas, wetlands and watercourses are also featured.

5.3.1 Surface Water Results – 2023

The 2023 review of the Upper Main Saugeen subwatershed indicated exceedances for total phosphorus, nitrogen; nitrate-nitrite, and *E. coli*.

Total phosphorus concentrations at S15 exceeded the PWQO five times in 2023, between June to November. There was one exceedance at Q9 in July. Nitrogen; nitrate-nitrite had one exceedance at Q11 in November (3.13 mg/L).

Total suspended solids and chloride concentrations remained below the water quality objectives with no exceedances detected.

E. coli concentrations exceeded PWQO objectives at multiple sites from June to November (seven exceedances).

5.3.2 Surface Water Results – Long-term

The long-term review of the Upper Main Saugeen subwatershed indicated exceedances for annual average total phosphorus, and *E. coli* concentrations.

At S15, annual average total phosphorus concentrations exceeded the PWQO in 2022 for the first time, since monitoring began in 2012. An exceedance was also noted in 2023 at S15.

Nitrogen, chloride, and total suspended solids concentrations remained well below the water quality objectives with no exceedances. Nitrogen concentrations displayed a gradual increase at Q11, Q9, and S9.

There was a total of eleven exceedances for annual average *E. coli* concentrations: one at Q11, five at Q9, three at S10, and two at S15.

5.3.3 Benthic Biomonitoring Results (2015-2021)

The local abundance of species in this subwatershed, ranged from 308 to 400 individuals per sample. The lowest species richness was recorded at 14 species in 2015 and 2016. The highest species richness was recorded at 20 species in 2018.

The FBI has decreased from 6.07 to 3.75 from 2015 to 2021. This suggests water quality has improved from fairly poor to excellent.

5.4 Rocky Saugeen River

The Rocky Saugeen River stretches for 51.4km and drains an area of 282 km^2. Its tributaries include McKechnie, Blacks, Traverston, and Barhead Creeks, as well as the West Arm Rocky Saugeen River. As one of the most forested watersheds, this system is known for its rolling landscape, rocky outcrops, and winding streams. The river's source can be traced to significant wetlands (Bells Lake and the Beaverdale Bog); primarily owned by Saugeen Conservation.

Two long term monitoring sites are established in the Rocky Saugeen subwatershed (Figure 5). These sites are a combination of the PWQMN (Q12) and SVCA's internal monitoring program (S12).

All graphical data representation for the Rocky Saugeen subwatershed can be found in Appendix E.

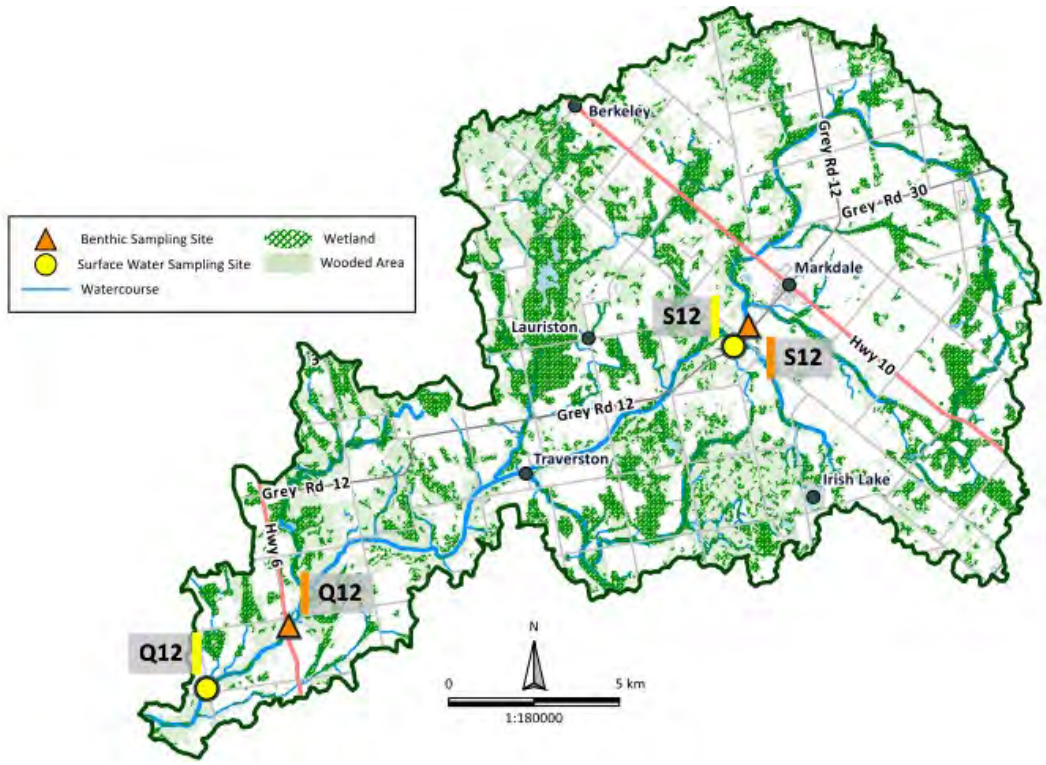

Figure 5. Map of the Rocky Saugeen River subwatershed and locations of the surface water and benthic sampling sites. Major roadways (Highways 6 & 10, Grey Roads 12 and 30), towns (including Markdale and Traverston), wooded areas, wetlands and watercourses are also featured.

5.4.1 Surface Water Results – 2023

The 2023 review of the Rocky Saugeen subwatershed indicated water quality objective exceedances for total phosphorus and *E. coli*.

Total phosphorus concentrations exceeded the PWQO at S12 in July, reaching 0.036 mg/L.

E. coli concentrations were typically below the PWQO, with exceedances noted in July (S12 and Q12).

No exceedances occurred for nitrogen; nitrate-nitrite, chloride, and total suspended solids in 2023.

5.4.2 Surface Water – Long-term

The long-term review of this subwatershed indicated parameter exceedances for total phosphorus and *E. coli*.

There were no annual average total phosphorus exceedances at Q12. In 2014 and 2022, S12 had exceeded PWQO at 0.032mg/L and 0.037mg/L, respectively.

From 2012 to 2023, average *E. coli* concentrations were frequently elevated at S12, with 66% of annual averages exceeding the PWQO. There were no *E. coli* exceedances at Q12.

There were no exceedances recorded for nitrogen, chloride, and total suspended solids for either site. Although below objectives, nitrogen at S12 has shown a slight increase since 2012.

5.4.3 Benthic Biomonitoring Results (2015-2021)

From 2019 to 2021, the local abundance of species per sample has decreased significantly. However, the 2021 abundance was still above the minimum 100 animal count. Species richness has been variable, ranging from 22 to 13 species per sample.

Since 2015, FBI has shown a general decrease from 5.83 to 3.35. This suggests significant improvement has occurred during the review period, with water quality now in very good condition.

5.5 North Saugeen River

The North Saugeen subwatershed drains an area of 269 km^2 and is primarily composed of agricultural and forested land. The North Saugeen River spans 52 km in length, with tributaries including Negro and Hamilton Creeks, as well as several smaller unnamed creeks. The watershed is home to natural ponds and lakes, including Robson Lake and McCullough Lake.

Three long term monitoring sites are established in the North Saugeen subwatershed (Figure 6). These sites are a combination of the PWQMN (Q5 and Q8) and the SVCA's internal monitoring program (S11).

All graphical data representation for the North Saugeen subwatershed can be found in Appendix F.

Figure 6. Map of the North Saugeen subwatershed and the location of the surface water and benthic sampling sites. Major roadways (Highways 10 and 6) towns (including Lockerby, Chesley and Holland Centre), wooded areas, wetlands and watercourses are also featured.

5.5.1 Surface Water Results – 2023

The 2023 review of the North Saugeen subwatershed indicated concentrations were generally below the water quality objectives, with exceedances noted for total suspended solids, total phosphorus and *E. coli.*

Q5 exceeded objectives for total suspended solids in July and November reaching 30.7 mg/L and 56.6 mg/L, respectively.

Total phosphorus has three exceedances in 2023 in February, October, and November. All exceedances occurred at Q5.

E. coli exceeded objectives at Q5 (September, October and November), Q8 (September), and S11 (July).

Nitrogen and chloride were both well below water quality objectives.

5.5.2 Surface Water Results – Long-term

A long-term annual average review of parameters reveals exceedances for total phosphorus, total suspended solids, and *E. coli.*

There were nine annual average total phosphorus exceedances, most occurring at Q5 (89% of the time). S11 had one average total phosphorus exceedance in 2022 at 0.034mg/L. There were no total phosphorus exceedances at Q8.

There were two annual average total suspended solids exceedances: Q5 in 2014 (68.22mg/L) and Q5 in 2003 (31.58 mg/L). All Q5 samples were elevated when compared to Q8 and S11.

Between 2012 and 2023, average *E. coli* concentrations at Q5 exceeded the PWQO 66% of the time (eight exceedances total). Q8 had two annual average *E.* coli exceedances, in 2019 and 2022.

Annual average chloride and nitrogen concentrations were below the CWQG for all sites. Although below the objectives, S11 has showed a slight, steady increase in nitrogen since 2012.

5.5.3 Benthic Biomonitoring Results (2015-2020)

Since 2015, local abundance of individuals present per sample has been consistent, with a slight increase in 2020.

Species richness ranged from 28 to 16 species from 2015 to 2020.

The average FBI score for this subwatershed is 4.73, suggesting the overall water quality is good. FBI ranged from 5.42 (2019) to 3.83 (2020).

5.6 Teeswater River

Spanning 75 km in length, the Teeswater River drains an area of 683 km^2. Its tributaries consist of Greenock, Formosa, Alps, Plum, Kinlough, Schmidt, and Allen Creeks. The Teeswater subwatershed contains the Greenock Swamp, the largest forested wetland in Southern Ontario.

Four long term monitoring sites are established in the Teeswater subwatershed (Figure 7). These sites are a combination of the PWQMN (Q6) and the SVCA's internal monitoring program (S1, S2, and S7).

All graphical data representation for the Teeswater subwatershed can be found in Appendix G.

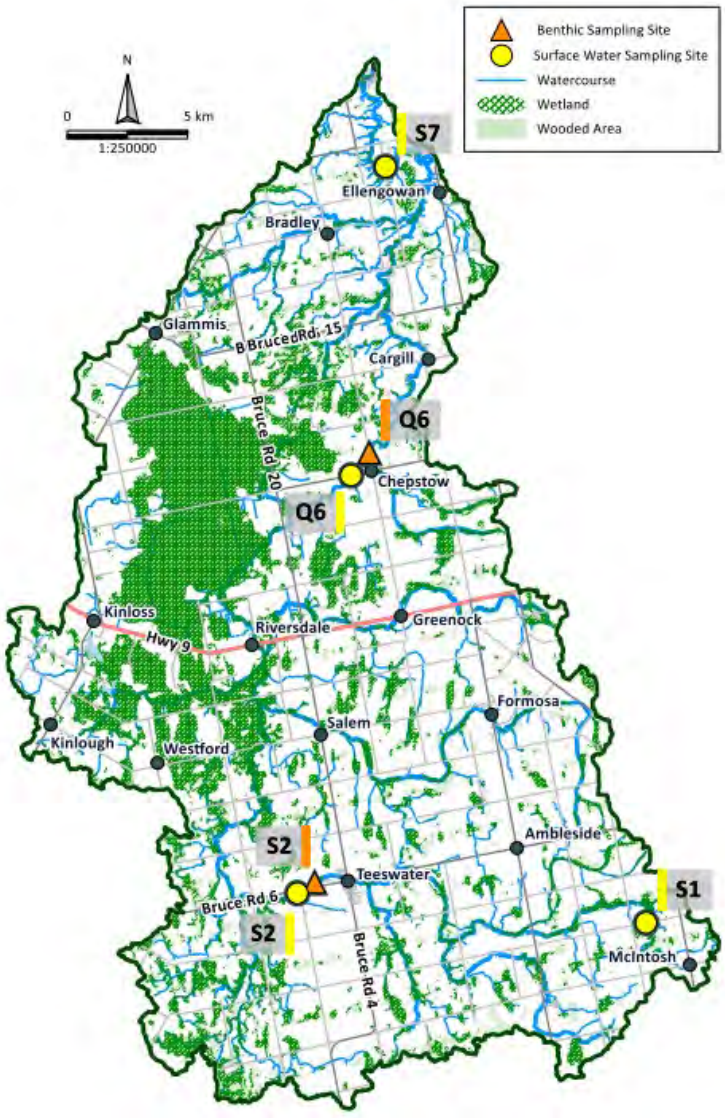

Figure 7. Map of the Teeswater subwatershed surface water and benthic sampling sites. Major roadways (Highway 9, Bruce Roads 6 and 15), towns (including Chepstow, Teeswater and Formosa), wooded areas, wetlands and watercourses are also featured.

5.6.1 Surface Water Results – 2023

The 2023 review of the Teeswater subwatershed indicated numerous total phosphorus, *E. coli*, and nitrogen exceedances. There were also two total suspended solids exceedances.

There were a total of four total phosphorous exceedances in 2023: October and November (S2 and S7).

All nitrogen samples at S2 exceeded the CWQG in 2023. S7 had exceedances in October and November, Q6 had one exceedance in January and S1 had one exceedance in April.

Chloride concentrations were well below the water quality objectives for all sites.

E. coli exceedances were observed at Q6, S2 and S7 from September to November. These results occurred following rain in the 3 days leading up to the sampling event, 10mm in September, 20mm in October, and 6.8 mm in November.

5.6.2 Surface Water Results – Long-term

The long-term review within the Teeswater subwatershed showed numerous exceedances for total phosphorus, nitrogen, and *E. coli*.

There were nine annual average exceedances for total phosphorus: three at Q6, two at S2, and four at S7. S1 consistently remained below objectives.

Average nitrogen; nitrate-nitrite concentrations were generally below the CWQG, except for S2 which had eleven annual exceedances. Concentrations at S2 and S7 suggest a gradual average increase from 2016 to 2022.

Average chloride and total suspended solids concentrations were below the water quality objectives with no exceedances. Chloride concentrations at S2 indicated an overall increase.

From 2012 to 2023, *E. coli* concentrations were frequently elevated, with multiple exceedances. S1 had the highest number of exceedances (six), followed by S2 (five). S7 had four annual exceedances and Q6 had three annual exceedances.

5.6.3 Benthic Biomonitoring Results (2015-2021)

The local abundance of species observed generally increased from 336 to 383 from 2015 to 2020. Species richness has been consistent, with an average of 16 species per sample.

The FBI has decreased from 6.67 to 4.48 from 2015 to 2021. This suggests water quality has improved in this subwatershed.

5.7 Lower Main Saugeen River

With a drainage area of 908 km^2, the Saugeen River within this watershed spans 76 kilometers in length. Its main tributaries consist of Mill, Burgoyne, Snake, Vesta, Pearl, Deer, Otter, Willow, and Silver Creeks, along with numerous smaller watercourses.

Four long term monitoring sites are established in the Lower Main Saugeen subwatershed. These sites are a combination of the PWQMN (Q3, Q4, and Q7) and the SVCA's internal monitoring program (S8). (Figure 8).

All graphical data representation for the Lower Main Saugeen subwatershed can be found in Appendix H.

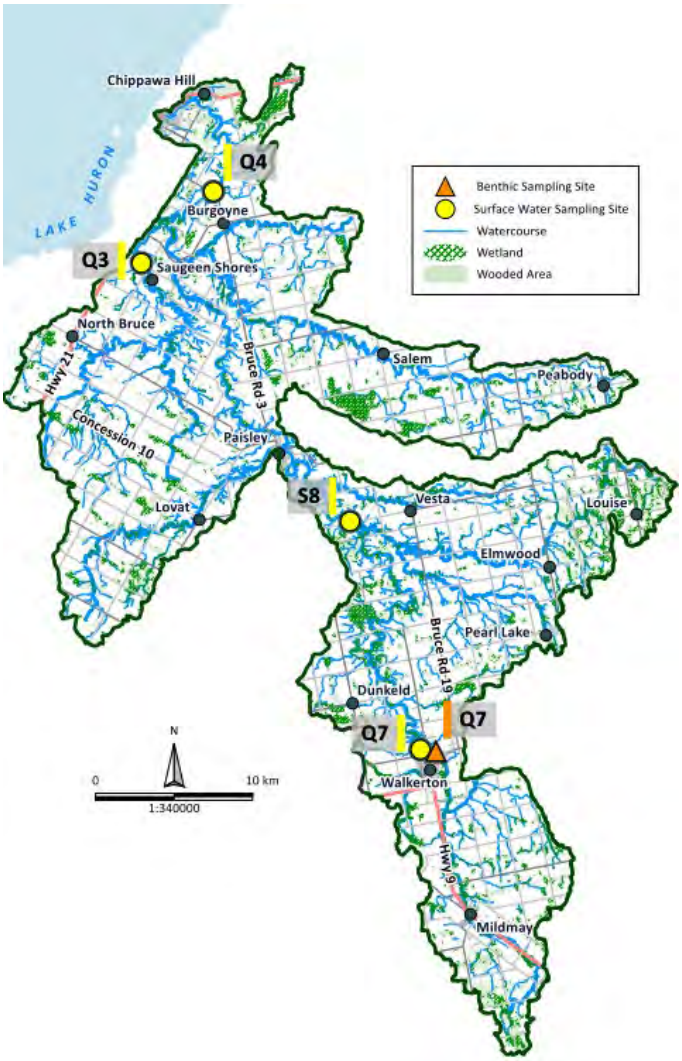

Figure 8. Map of the Lower Main Saugeen subwatershed and the locations of the surface water and benthic sampling sites. Major roadways (Highways 21 and 9, Bruce Roads 3 and 19), towns (including Saugeen Shores, Paisley, Elmwood and Walkerton), wooded areas, wetlands and watercourses are also featured.

5.7.1 Surface Water Results – 2023

The 2023 review indicated concentrations exceeded water quality objectives for all parameters except chloride.

There were seven total phosphorus exceedances at Q3 in 2023. Q4 had three exceedances and S8 had 2 exceedances.

All sites had nitrogen; nitrate- nitrite, *E. coli* and total suspended solids exceedances.

5.7.2 Surface Water Results – Long-term

Between 2002 and 2023, average total phosphorus concentrations at Q3 exceeded PWQO 81% of the time. During this time, Q4 had six exceedances and S8 had two exceedances.

Average nitrogen concentrations were below the CWQG for all sites except for Q3 in 2015, 2018, 2021, and 2023. Average total suspended solids had annual exceedances at all sites apart from Q7. Q3 and Q4 had three exceedances, and S8 had one.

From 2012 to 2023, Q3 exceeded average *E. coli* concentrations for PQWO 32% of the time. Exceedances occurred at Q4 (2015, 2020, and 2023), Q7 (2022), and S8 (2020 and 2023). In 2014, Q3 had the highest average *E. coli* concentration at 2366 cfu/100mL, 23 times higher than the PWQO.

There were no chloride exceedances.

5.7.3 Benthic Biomonitoring Results (2015-2021)

The local abundance of species decreased from 318 to 273 from 2015 to 2021. Species richness has increased from 11 to 17 species from 2015 to 2021.

In 2015 the FBI score was 6.07, suggesting water quality was in fairly poor condition. By 2021, the FBI dropped to 4.63, suggesting water quality has improved. Over the review period, the average FBI was 5.37.

5.8 Lake Fringe

Stretching from north of Kincardine to Southampton, the Lake Fringe subwatershed has a drainage area of 254 km^2. Small tributaries flow directly into Lake Huron, including Lorne, Andrews, Tiverton, and Underwood Creeks, as well as the Little Sauble River. This subwatershed is predominantly agricultural, with intense development along the lakeshore. Lake Fringe subwatershed contains the coastal wetland, Baie du Dore.

Three long term monitoring sites are established in the Lake Fringe subwatershed (S4, S5, S6) (Figure 9). These sites are part of the SVCA's internal monitoring program established in 2012.

All graphical data representation for the Lake Fringe subwatershed can be found in Appendix I.

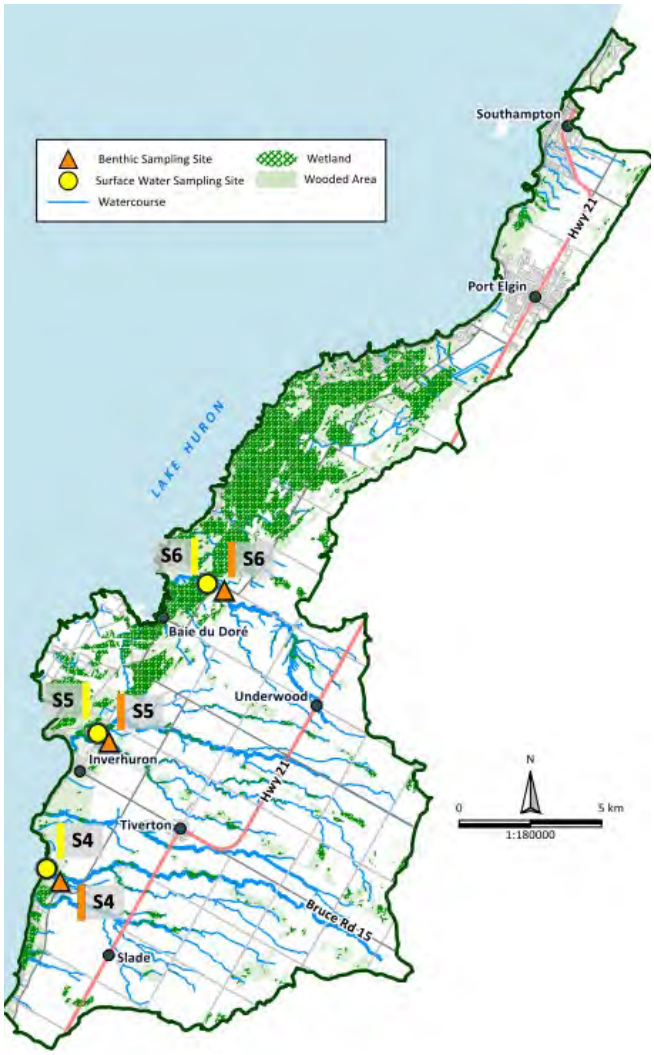

Figure 9. Map of the Lake Fringe subwatershed surface water and benthic sampling sites. Major roadways (Highway 21, Bruce Road 15), towns (including Southampton, Port Elgin and Tiverton), wooded areas, wetlands and watercourses are also featured.

5.8.1 Surface Water Results – 2023

The 2023 review indicated exceedances for all parameters apart from chloride which had none.

In 2023, nitrogen concentrations exceeded the CWQG at five times at S4, three times at S5 and once at S6. S4 had the highest recorded concentration at 10.1 mg/L in July.

Total phosphorus exceeded the PWQO ten times, twice at S4, and four times each at S5 and S6.

Total suspended solids were generally below the CWQG with only one exceedance at each site. There were no exceedances in chloride concentration.

E. coli concentrations exceeded the PWQO three times at S5, twice at S4 and twice at S6. S4 had the highest *E. coli* concentration in October at 3100 cfu/100mL. All three sites exceeded the PWQO in September and October.

5.8.2 Surface Water Results – Long-term

The long-term averages in the Lake Fringe subwatershed indicate concentrations were generally below the objectives for each parameter except for total phosphorus, nitrogen, and *E. coli.*

Since 2012, there were five total phosphorous exceedances at S6 (2014, 2015, 2020, 2022, 2023). S6 had the highest average concentration of total phosphorus at 0.06 mg/L in 2022, double the PWQO. S4 had two exceedances (2015, 2023), and S5 had two (2015, 2023).

Average nitrogen; nitrate-nitrite concentrations were typically below the CWQG, except for S4 in 2015 and 2023, S6 in 2015, and S5 in 2018. Nitrogen concentrations were variable and did not show any trends.

There were six *E. coli* exceedances at S6, five at S5, and five at S4.

All three sites exceeded objectives for *E. coli* in 2015, 2020, and 2023. S5 had the highest average for *E. coli* counts at 1385 cfu/100mL in 2014, 13 times higher than the PWQO.

Chloride and total suspended solids did not have any average exceedances.

5.8.3 Benthic Biomonitoring Results (2015-2020)

The local abundance of individuals collected has been generally consistent. However, the 2018 sample event had a significant increase in individuals (520, up from 364 in 2016). Species richness was fairly consistent, ranging between 12 to 17 species per sample.

From 2015 to 2020, the FBI decreased from 6.86 to 5.12. This suggests water quality has improved in this subwatershed. The average FBI score is 5.95, indicating overall water quality in this subwatershed is in fairly poor condition.

5.9 Pine River

The Pine River in southern Bruce County flows through agricultural and densely developed lakeshore areas, before outletting into Lake Huron. Its main tributaries are Royal Oak and Clark Creeks, and the South Pine River, with a drainage area of 195km^2. The region's fertile soil has supported agricultural development, leading to removal of wetlands and forests for land use purposes.

Two long term monitoring sites are established in the Pine River subwatershed. These sites are a combination of the PWQMN (Q1) and the SVCA's internal monitoring program (S3). (Figure 10).

All graphical data representation for the Pine River subwatershed can be found in Appendix J.

Figure 10. Map of the Pine River subwatershed showing locations of surface water and benthic sampling sites. A major roadway (Highway 21), towns (including Point Clark and Ripley), wooded areas, wetlands and watercourses are also featured.

5.9.1 Surface Water Results – 2023

The 2023 review of surface water indicated overall concentrations were frequently above the water quality objectives for each parameter except for chloride, which had no exceedances.

Total phosphorus exceeded the PWQO at Q1 three times, and five times at S3. S3 displayed the lowest results in the spring and increased through to October before decreasing in November. Q1 had the highest concentration at 0.18 mg/L in October.

Nitrogen concentrations exceeded the CWQG several times at each site; Q1 had 3 exceedances (April, October, November) and S3 had 6 exceedances (April, May, June, July, October, November). S3 had the highest concentration of nitrogen at 12 mg/L in May, four times higher than the CWQO.

E. coli counts indicated three exceedances at Q1 (September, October, November), and five at S3 (June, July, August, September, October). Q1 had the highest E. coli concentration recorded of 3260 CFU/100mL in October.

Chloride concentrations across both sites recorded no exceedances in water quality objectives in 2023.

5.9.2 Surface Water Results – Long-term

The long-term review revealed similar findings to the 2023 period with concentrations generally above the water quality objectives.

There were exceedances for total phosphorus at Q1 for 27% of the samples. S3 exceeded the PWQO for 91% of the yearly averages. Q1 had the highest average concentration of total phosphorus at 0.25 mg/L in 2005, eight times higher than the PWQO.

Average nitrogen; nitrate-nitrite concentrations at S3 consistently exceeded the CWQG, except for 2016. Average concentrations at Q1 exceeded objectives 77% of the time. S3 had the highest average concentration of nitrogen at 9.32 mg/L in 2021.

Average *E. coli* exceedances occurred at Q1 (66% of samples) and S3 (92% of samples). S3 consistently exceeded the PWQO since 2017. The highest sample at S3 was 1301.50 cfu/100mL in 2017, thirteen times higher than the PWQO.

There were no exceedances for chloride in the Pine River subwatershed. Chloride concentrations at S3 showed a slight increase from 2012 to 2023.

5.9.3 Benthic Biomonitoring Results (2015-2021)

The local abundance of individuals in this subwatershed has decreased since 2015. Abundance has ranged from 359 to 107 (2016 to 2020, respectively). Species richness has remained consistent, with an average of 13.7 species per sample event.

The FBI had an average score of 5.7 over the reporting period. This indicates water quality in fair condition. In 2020, the FBI decreased to 3.71, but increased again in 2021.

5.10 Penetangore River

The Penetangore River subwatershed, consists of two main tributaries, the North and Main Penetangore Rivers, and two intermediate ones, Millarton and Kincardine Creeks. The river drains a 192 km^2 area and spans 51.2 km in length. The subwatershed, mainly used for agriculture (83%), is smooth, gently sloping terrain.

One long term monitoring station is established in the Penetangore subwatershed, as part of the PWQMN, Q2. (Figure 11).

All graphical data representation for the Penetangore River subwatershed can be found in Appendix K.

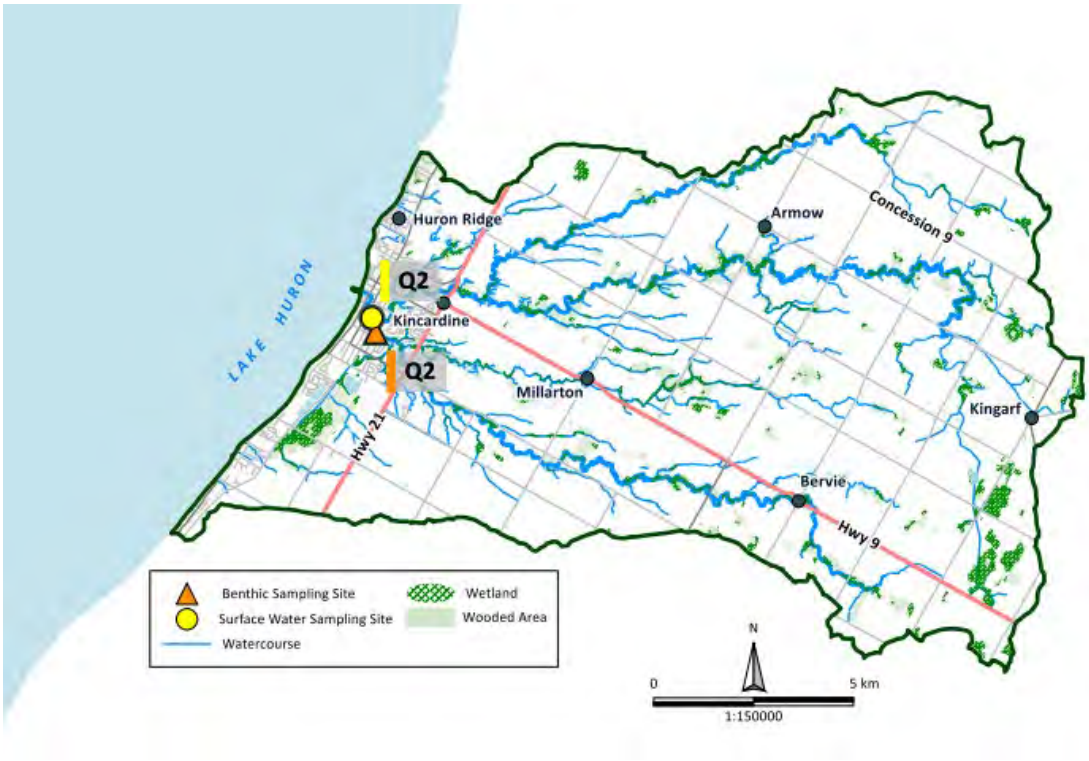

Figure 11. Map of the Penetangore subwatershed and the locations of the surface water and benthic sampling sites. Major roadways (Highways 21 and 9), towns (including Kincardine and Bervie), wooded areas, wetlands and watercourses are also featured.

5.10.1 Surface Water Results – 2023

The 2023 review indicated concentrations were generally below the water quality objectives, except for a few events where exceedances were recorded. There were no chloride exceedances in 2023.

There were four total phosphorus exceedances in 2023. There were also four nitrogen exceedances.

Chloride concentrations were slightly elevated from June to September, although all samples remained below the CWQG. Total suspended solids were below the CWQG for 2023.

E. coli concentrations exceeded the PWQO in September and October.

5.10.2 Surface Water Results – Long-term

The long-term review indicated that concentrations for all parameters, except chloride, were often above the water quality objectives.

Average total phosphorus concentrations frequently exceeded PWQO from 2002 to 2023, 52% of the time. The highest average concentration of total phosphorus was 0.133 mg/L in 2020, over four times higher than the PWQO.

Average nitrogen concentrations were generally below the CWQG, except for three exceedances in 2010, 2015, and 2023.

Average chloride concentrations had no exceedances. Total suspended solids were also typically below the CWQG, with three exceedances in 2004, 2010, and 2014.

E. coli concentrations were frequently elevated, with 75% of yearly averages exceeding the PWQO.

5.10.3 Benthic Biomonitoring Results (2015-2021)

The local abundance of individuals per sample increased from 2019 to 2021 (from 304 to 2108). Although the species richness has decreased since 2015, it has been consistent the past two sample years of 2019 and 2021.

FBI has gradually been decreasing since 2017. The average FBI for this subwatershed is 5.79, indicating water quality is fairly poor.

6. Summary of Results

6.1 2023 Results – All Subwatersheds

In 2023, surface water quality in the Saugeen watershed was fair to poor. Total phosphorus concentrations often exceeded the PWQO, a common occurrence in agricultural watersheds. Of the 29 sampled sites, 18 exceeded the PWQO at least once. The highest exceedance was in the Lower Saugeen subwatershed. Total phosphorous concentrations tended to be more variable from July through September.

Nitrogen levels exceeded the PWQO in seven out of ten subwatersheds during at least one sample event. Sample sites in Beatty Saugeen, North Saugeen, and Rocky Saugeen did not show any nitrogen exceedances. The highest nitrogen concentration was in the Pine River subwatershed. Studies have demonstrated commonality between fluctuations in nitrogen levels and seasonal agricultural practices, other contributing factors may exist.

E. coli concentrations at all sites exceeded the PWQO at least once during 2023. The highest number of exceedance events occurred in the Pine River subwatershed (five events). Rainfall events could be connected to increased *E. coli* counts in all subwatersheds.

Total suspended solids concentrations were generally below the CWQG in most subwatersheds. Total suspended solids exceedances were observed closer to river outlets, along with other parameter exceedances, potentially indicating a transport mechanism for other nutrients. There were no identifiable trends for total suspended solids.

Chloride concentrations stayed below the CWQG across all subwatersheds, with the highest concentration event in the Pine River subwatershed. High chloride concentrations are commonly related to road salt application. Based on the report findings, the Saugeen watershed appears to be largely unaffected by this application. This could be attributed to the presence of riparian buffers in the SVCA watershed. As climate change intensifies, winter storms and urban development expands, chloride levels might be impacted.

6.2 Long-Term Results – All Subwatersheds

A long-term assessment of the Saugeen watershed's surface water quality has now been completed, extending the reporting made through Watershed Report Cards. This 2002-2023 study has the following general findings:

Total Phosphorous

- Annual average total phosphorus concentrations exceeded the PWQO of 0.03 mg/L every year.
- Q1 in the Pine River subwatershed had the highest annual average in 2005 at 0.25 mg/L, eight times higher than the PWQO.
- In 2023 all subwatersheds exceeded the PWQO for total phosphorus.

Nitrogen: Nitrate-Nitrite

- Six out of the ten subwatersheds (Lake Fringe, Lower Saugeen, Penetangore River, Pine River, South Saugeen, Teeswater River) exceeded the CWQG of 2.93 mg/L for nitrogen from 2002 to 2023.
- S3 in the Pine River subwatershed had the highest average nitrogen concentration at 14.8 mg/L, five times higher than the CWQG.

Chloride

- All subwatersheds maintained chloride concentrations below the CWQG of 120 mg/L.
- S6 in the Lake Fringe subwatershed had the highest chloride concentration at 35.8 mg/L.
- Chloride concentrations remained relatively stable over time, with no noticeable trend.

E.Coli

- From 2012 to 2023, 90% of the sampling sites exceeded the PWQO of 100 cfu/100mL for annual average *E. coli* concentrations.
- The highest *E. coli* concentrations were at Q2 (Penetangore subwatershed) with 2400 cfu/100mL, twenty-four times the PWQO.

Total Suspended Solids

- Most sites remained below the CWQG of 30 mg/L for total suspended solids since 2012. Q2, Q3, Q4, Q5, S8, Q1, and Q14 exceeded the CWQG at least once.
- Q1 (Pine River) had the highest total suspended solids concentration in 2010 at 100.17 mg/L, three times the CWQG.

6.3 Benthic Macroinvertebrates

The Saugeen watershed demonstrates fluctuations in species abundance and richness. Species richness varies from 12.7 in Penetangore to 19.8 in North Saugeen. All but North Saugeen and Upper Main Saugeen had increased richness, although they maintain a higher richness than other subwatersheds. Despite a decline in species abundance at 70% of subwatersheds, all samples contained a minimum of 100 individuals. (OBBN standard).

The FBI decreased in all but Pine River and Beatty Saugeen subwatersheds. Beatty Saugeen has the lowest average FBI of 4.07, indicating excellent water quality. The Lake Fringe subwatershed has the highest FBI of 5.95, indicating possible pollution.

7. Discussion

7.1 Surface Water

The Saugeen watershed has both short and long term trends observed in total phosphorus and nitrogen concentrations. Agriculturally dominant areas can commonly experience high phosphorus and nitrogen concentrations through over-fertilization, excess manure, and soil erosion (Burdon, McIntosh & Harding, 2013). Research suggests cropping systems, particularly row crops like corn and soybeans, have more significant nutrient losses compared to perennial crops such as hay (Randall et al. 1997; Schilling & Spooner, 2006). Over-fertilization can lead to excess phosphorus and nitrogen in the soils, eventually entering our surface waters through erosion.

High *E. coli* concentrations can come from sources such as livestock manure, rural area wastewater treatment and leaking septic systems (Brendel & Soupir, 2017). Excessive manure application or post-application rainfall can also lead to *E. coli* transportation into streams via tile drains.

How might farming practices and waste management systems be altered to mitigate nutrient pollution and *E. coli* contamination in the Saugeen watershed?

7.2 Benthic Macroinvertebrates

Aquatic organisms are crucial for maintaining healthy aquatic ecosystems. Biodiversity, reflected by high species presence and variability, can be indicators of good water quality, especially when the species present have a low pollution tolerance.

Wooded riparian zones often have a positive influence on benthic diversity due to lower runoff potential and the ability to capture water in plants and soils (Stauffer et al. 1999). For example, the North Saugeen subwatershed, characterized by managed forests and buffered watercourses, has demonstrated an average species richness of 19.8 species from 2015 to 2020. In contrast, the more urbanized and agriculturally intensive Penetangore subwatershed, shows an average species richness of 12.7 species from 2015 to 2021.

Previous studies found that implementing conservation tillage practices yielded higher species richness and lower FBI scores than conventional tillage streams (Barton and Farmer); this further highlights the influence of land use on benthic diversity.

How could land management strategies be effectively implemented to improve water quality?

7.3 Agricultural Best Management Practices

Implementing best management practices (BMPs) in agriculture can improve water quality. Practices include riparian buffer strips, alterations in tillage practices, planting cover crops, proper nutrient management, and livestock exclusion fencing:

- Riparian buffers (i.e., vegetation surrounding a watercourse) are instrumental in filtering out nutrients and bacteria, moderating water temperature, providing habitats, and reducing erosion.
- Livestock exclusion fencing prevents livestock from entering watercourses, which can degrade water quality and damage riparian vegetation (Agriculture and Agri-Food

Canada, 2019). Heavy livestock presence around a watercourse can lead to increased soil erosion and high *E. coli* concentrations. Despite the initial costs, the long-term environmental and livestock health benefits make it a worthy investment.

- Over tilling can leave soil bare and susceptible to soil erosion and moisture loss; this can cause water pollution and degraded soil health through reduced infiltration and high runoff potential. Soil erosion can further cause significant nutrient inputs into our watercourses as well as high total suspended solids concentrations. Implementation of conservation tillage practices can leave crop residue on the soil surface, thereby reducing erosion and nutrient runoff (Agriculture and Agri-Food Canada, 2019; Busari et al. 2015). Conservation tillage can range from no tillage to minimum tillage or mulch tillage.
- Cover crops provide benefits similar to those of riparian buffers, including increased water infiltration and retention, decreased surface runoff, and reduced nutrient loss through soil erosion. They also can reduce wind erosion, recycle soil nitrogen and control weeds without the use of herbicides (Dabney, Delgado & Reeves, 2001).

Historically, a large percentage of southern Ontario's small streams were in poor condition, and the subsequent 32 years have witnessed significant scientific advancements and improvement in water quality through implementation of BMPs (Barton and Farmer).

Given these findings, what can be done to improve awareness and implementation of these best management practices?

7.4 Economic Benefits to the Community

Key economic drivers in the Saugeen watershed are energy, agriculture, and tourism. These economic drivers all benefit from water quality monitoring:

- Regular water monitoring helps safeguard our watershed's environmental resources for energy operations and ensure no negative impact to our local aquatic ecosystems. Energy production is a substantial economic driver in the Saugeen watershed.
- Agriculture thrives on clean water for optimal crop and livestock health.
- Lake Huron's shoreline and recreational river systems are very appealing to tourists. This industry also benefits from a healthy watershed.

How can our watershed further optimize the use of water quality monitoring to boost these economic sectors?

8. Conclusion

SVCA's water quality monitoring programs are an integral part of understanding the health of the watershed. The purpose of this report is to identify trends in present water quality data and prepare for the future.

As development increases across the Saugeen watershed, the ongoing monitoring of water quality becomes increasingly important. Urban expansion drastically transforms the natural environment. SVCA staff provide insight on ecosystem health that will guide decision-making processes, foster sustainable development, and help adapt to evolving climate change.

This data analysis can be used to support municipal land use planning and development. Since SVCA subwatershed boundaries do not correspond to municipal boundaries, we must continue to collaborate at the watershed level.

The 2023 Water Quality Annual Report equips decision-makers with the knowledge needed to promote sustainable growth while protecting the natural resources within the Saugeen watershed.

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Appendix A – Sample Suite of Parameters

Parameters analyzed for PWQMN and SVCA sampling sites.

Parameter	Units	PWQMN ('Q') Sites (Y/N)	SVCA ('S') Sites (Y/N)
Alkalinity, Total as CaCO3	mg/L	Y	Y
Carbon, dissolved inorganic carbon	mg/L	Y	N
Carbon, dissolved organic	mg/L	Y	N
Chloride	mg/L	Y	Y
Conductivity	Varies	Y (µS/cm)	Y (mS/cm)
E. coli	[cfu/100mL]	Y	Y
Nitrogen, Ammonia + Ammonium	mg/L	Y	N
Nitrogen, Nitrite	mg/L	Y	Y
Nitrogen, Nitrate	mg/L	Y	Y
Nitrogen, Nitrate + Nitrite	mg/L	Y	Y
Nitrogen, Total Kjeldahl	mg/L	Y	Y
pH		Y	Y
Phosphorus, phosphate	mg/L	Y	N
Temperature	°C	N	Y
Total Phosphorus	Varies	Y (µg/L)	Y (mg/L)
Total Suspended Solids	mg/L	Y	Y
Silicon, reactive silicate	mg/L	Y	N
Sulphate	mg/L	N	Y

*Metals are analyzed at select sites: Q1, Q4, Q12, and Q14

Appendix B – South Saugeen Subwatershed

2023 Results

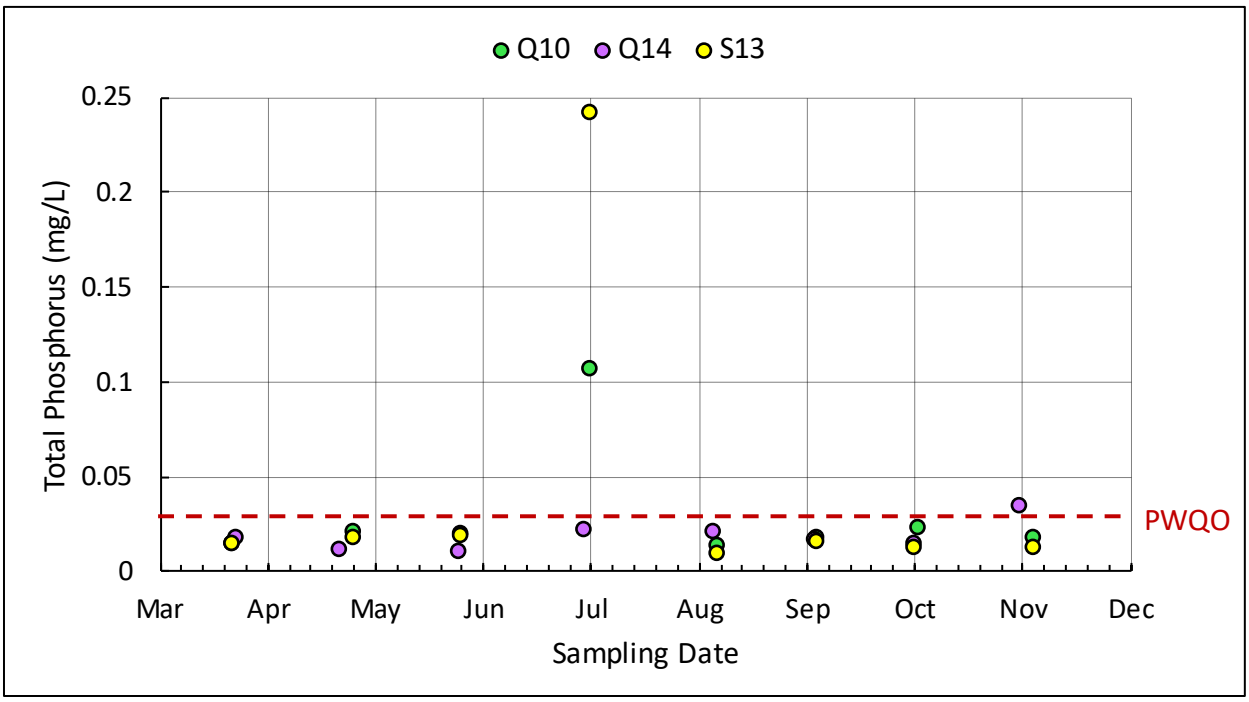

Figure B.1 2023 South Saugeen subwatershed total phosphorus concentrations (mg/L) in a graph format. Graph shows Q10, Q14 and S13 sampling sites, the horizontal line indicates the PWQO of 0.03 mg/L. There are 3 exceedances of the PWQO.

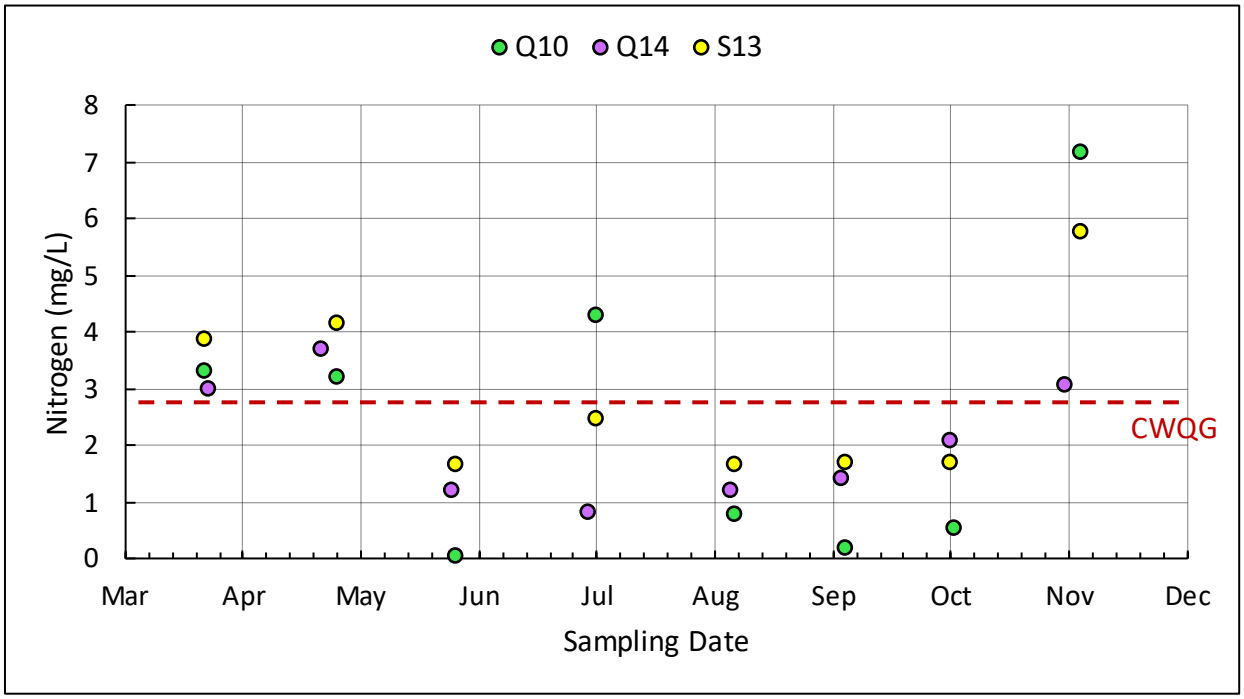

Figure B.2 2023 South Saugeen subwatershed nitrogen concentrations (mg/L) in a graph format. Graph shows Q10, Q14 and S13 sampling sites, the horizontal line indicates the CWQG of 2.93 mg/L. There are 10 exceedances of the CWQG.

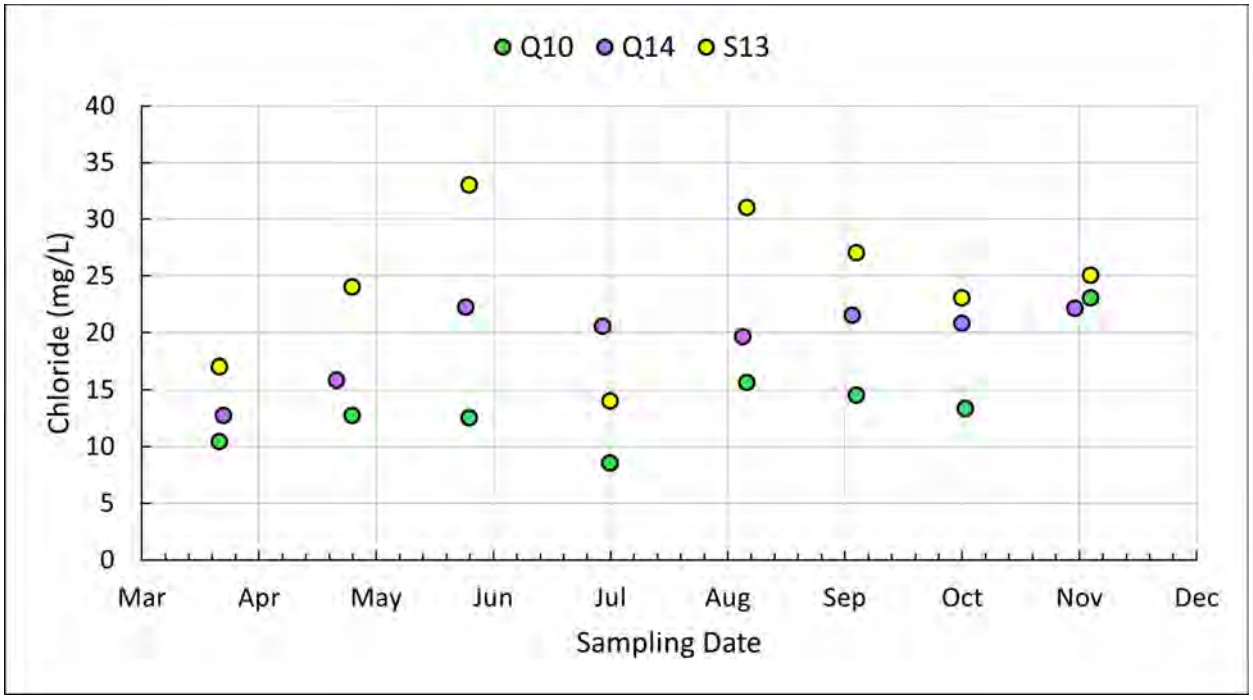

Figure B.3 2023 South Saugeen subwatershed chloride concentrations (mg/L) in a graph format. Graph shows Q10, Q14 and S13 sampling sites. The CWQG is 120 mg/L. There are no exceedances.

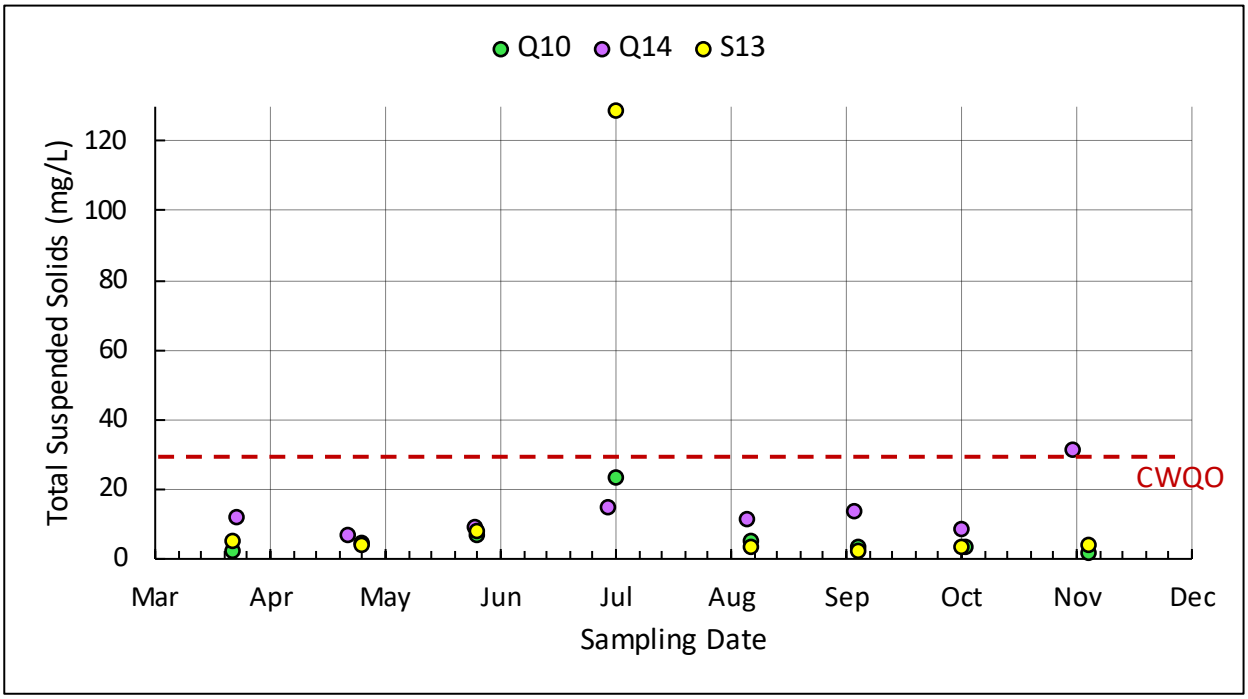

Figure B.4 2023 South Saugeen subwatershed total suspended solids concentrations (mg/L) in a graph format. Graph shows Q10, Q14 and S13 sampling sites, the horizontal line indicates the CWQG of 30 mg/L. There are 2 exceedances of the CWQG.

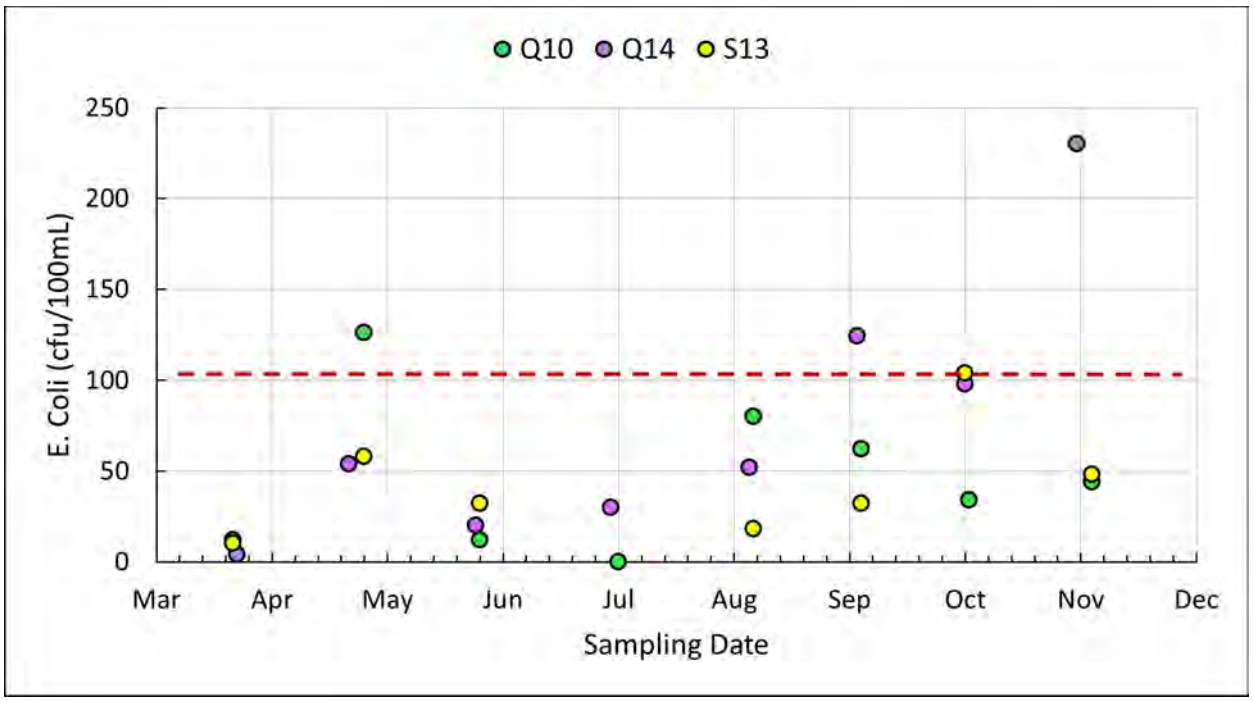

Figure B.5 2023 South Saugeen subwatershed *E. coli* concentrations (cfu/100mL) in a graph format. Graph shows Q10, Q14 and S13 sampling sites, the horizontal line indicates the PWQO of 100 cfu/100mL for swimming. There are 5 exceedances of the PWQO, one exceedance in July at S13 is not shown on this graph (3900 cfu/100mL).

Long-term Results

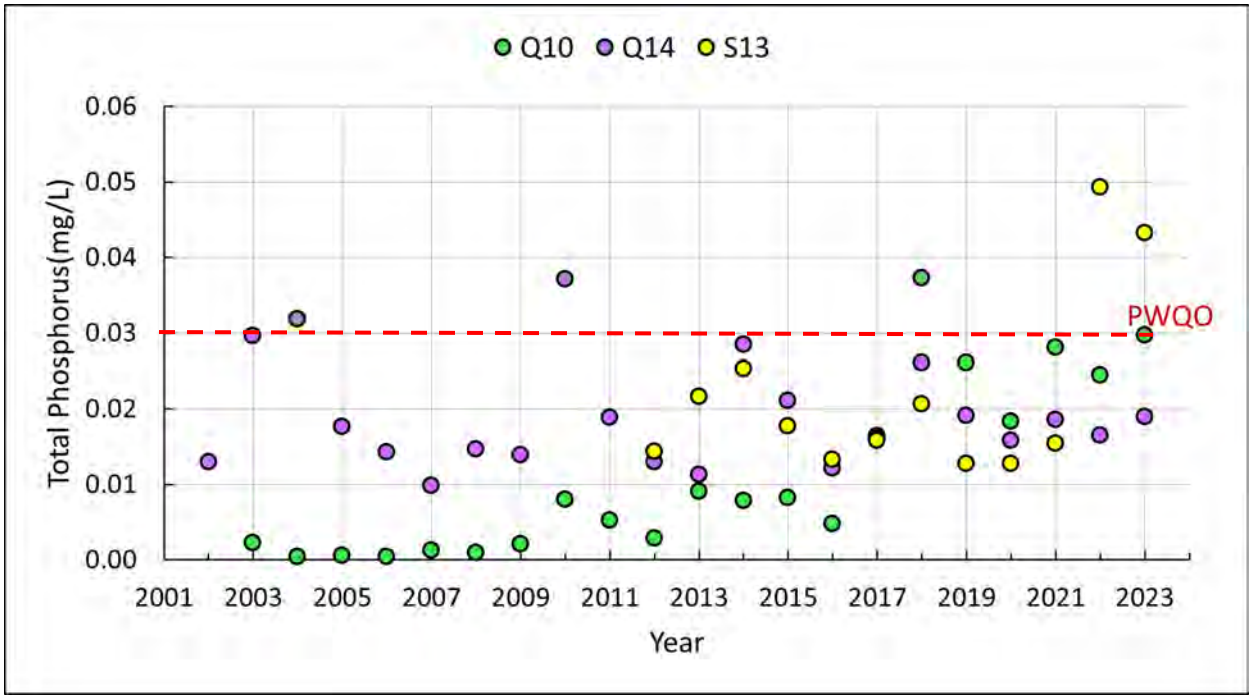

Figure B.6 2002 to 2023 South Saugeen subwatershed annual average total phosphorus concentrations (mg/L) in a graph format. Graph shows Q10, Q14 and S13 sampling sites, and a horizontal line indicating a PWQO of 0.03 mg/L. There are 5 exceedances of the PWQO.

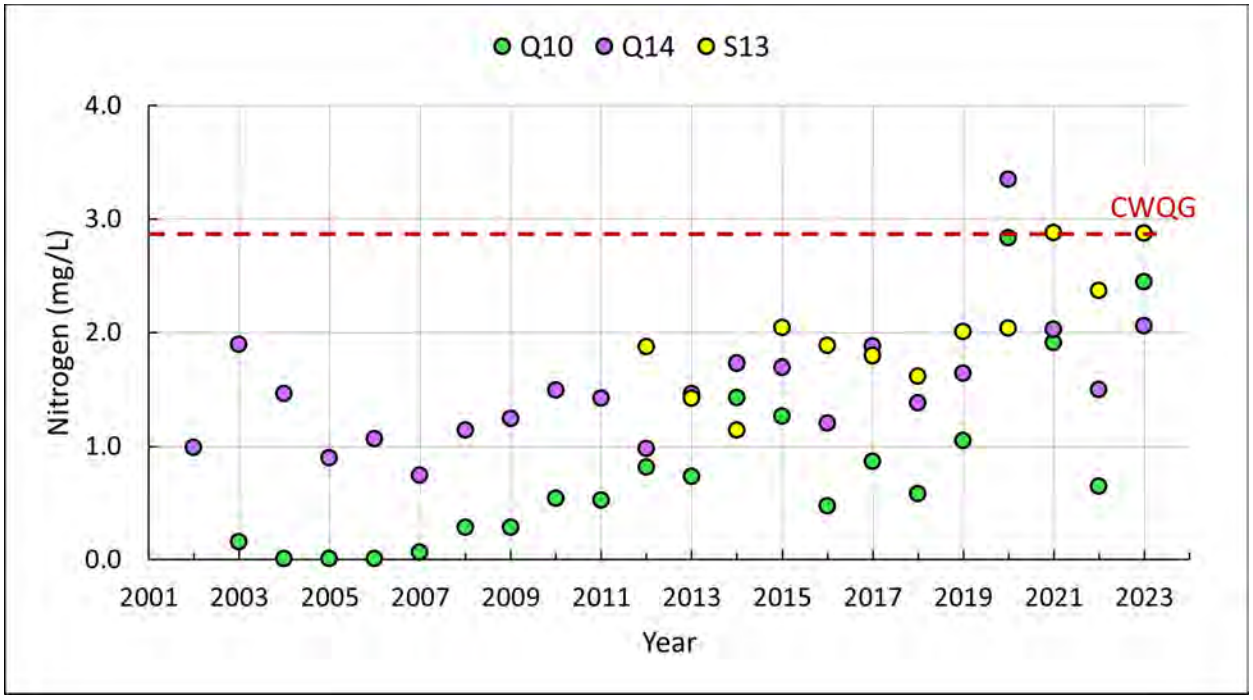

Figure B.7 2002 to 2023 South Saugeen subwatershed annual average nitrogen concentrations (mg/L) in a graph format. Graph shows Q10, Q14 and S13 sampling sites, and a horizontal line indicating a CWQG of 2.93 mg/L. There is 1 exceedance of the CWQG.

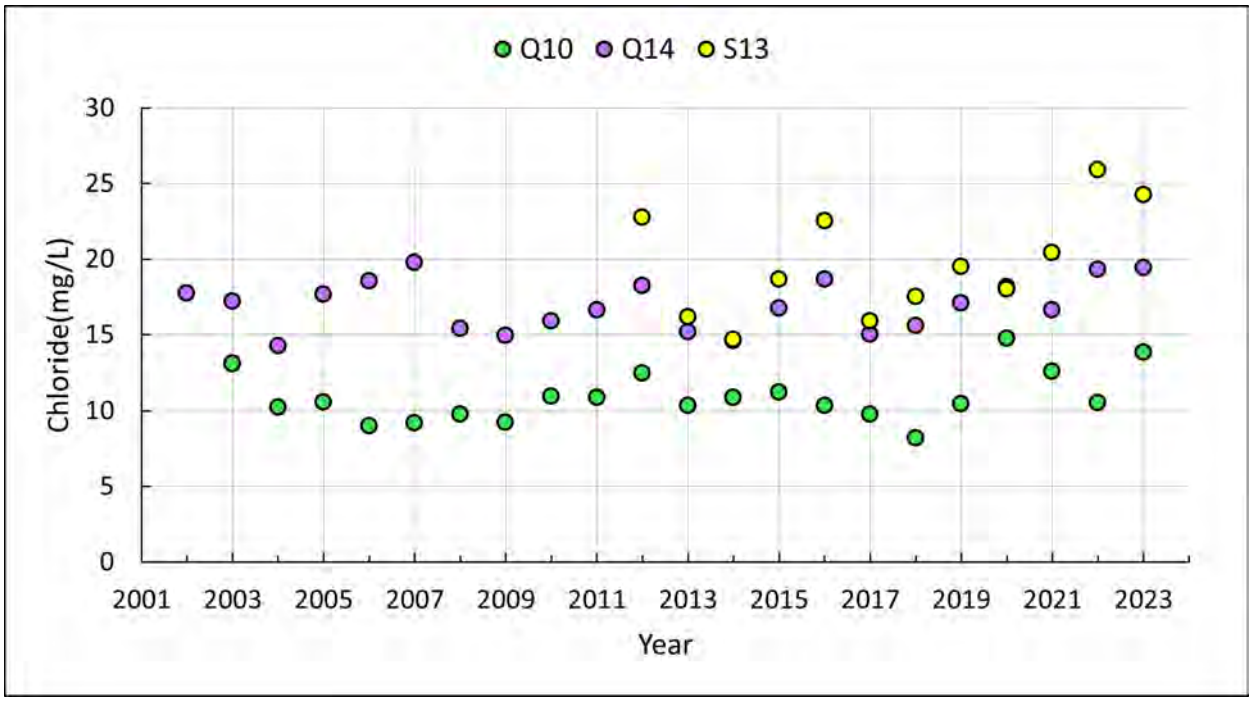

Figure B.8 2002 to 2023 South Saugeen subwatershed annual average chloride concentrations (mg/L) in a graph format. Graph shows Q10, Q14 and S13 sampling sites. The CWQG is 120 mg/L. There are no exceedances.

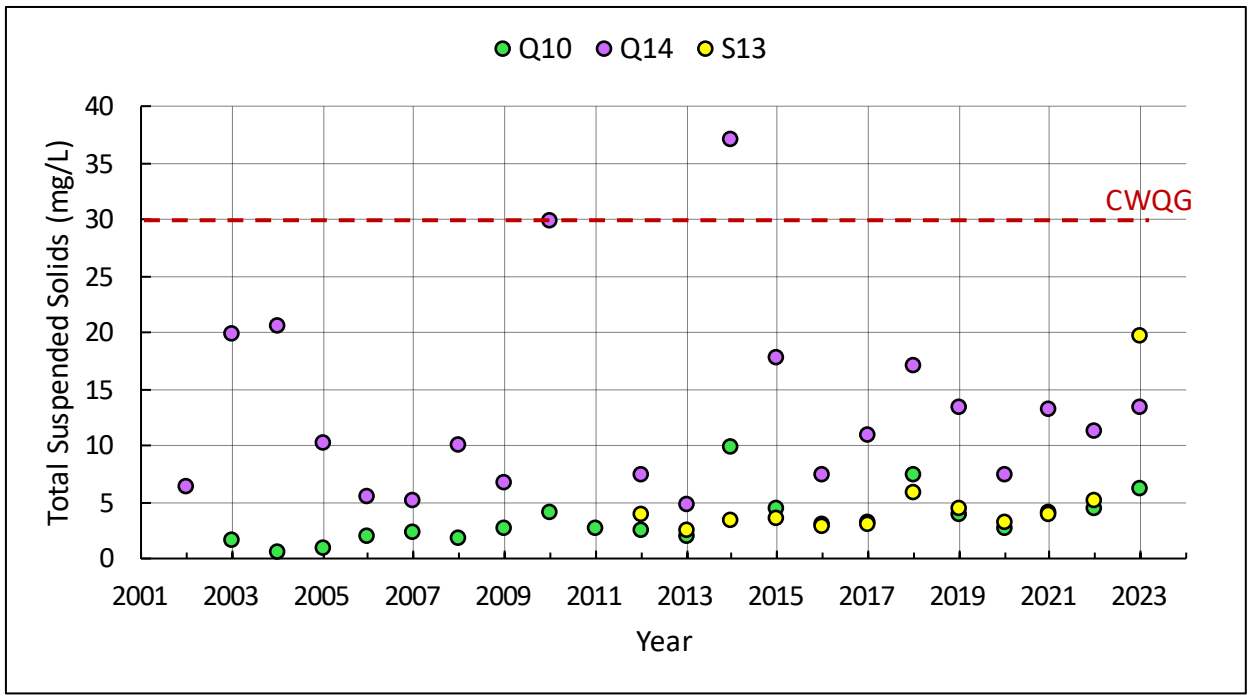

Figure B.9 2012 to 2023 South Saugeen subwatershed annual average total suspended solids concentrations (mg/L) in a graph format. Graph shows Q10, Q14 and S13 sampling sites and a horizontal line indicating a CWQG of 30 mg/L. There are 2 exceedances.

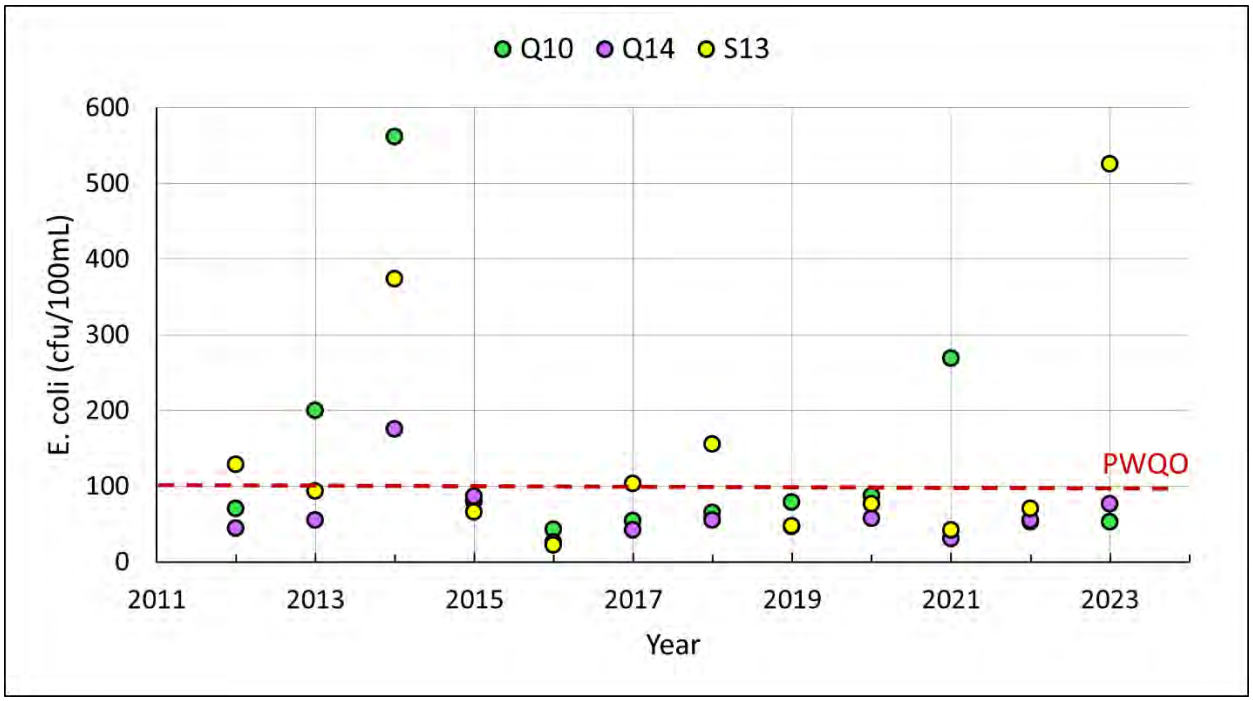

Figure B.10 2012 to 2023 South Saugeen subwatershed annual average *E. coli* concentrations (cfu/100mL) in a graph format. Graph shows Q10, Q14 and S13 sampling sites, and a horizontal line indicating a PWQO of 100 cfu/100mL for swimming. There are 9 exceedances of the PWQO.

Benthic Biomonitoring Results (2015-2020)

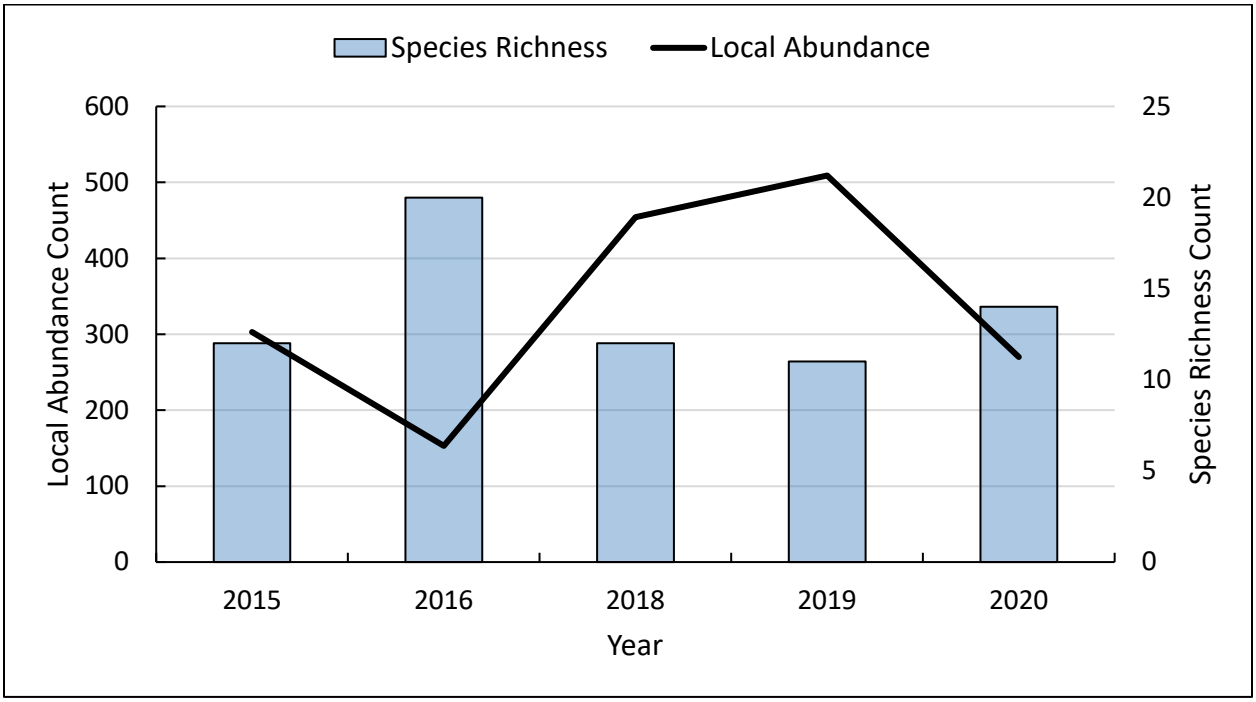

Figure B.11 Local abundance and species richness found within the South Saugeen subwatershed from 2015 to 2020.

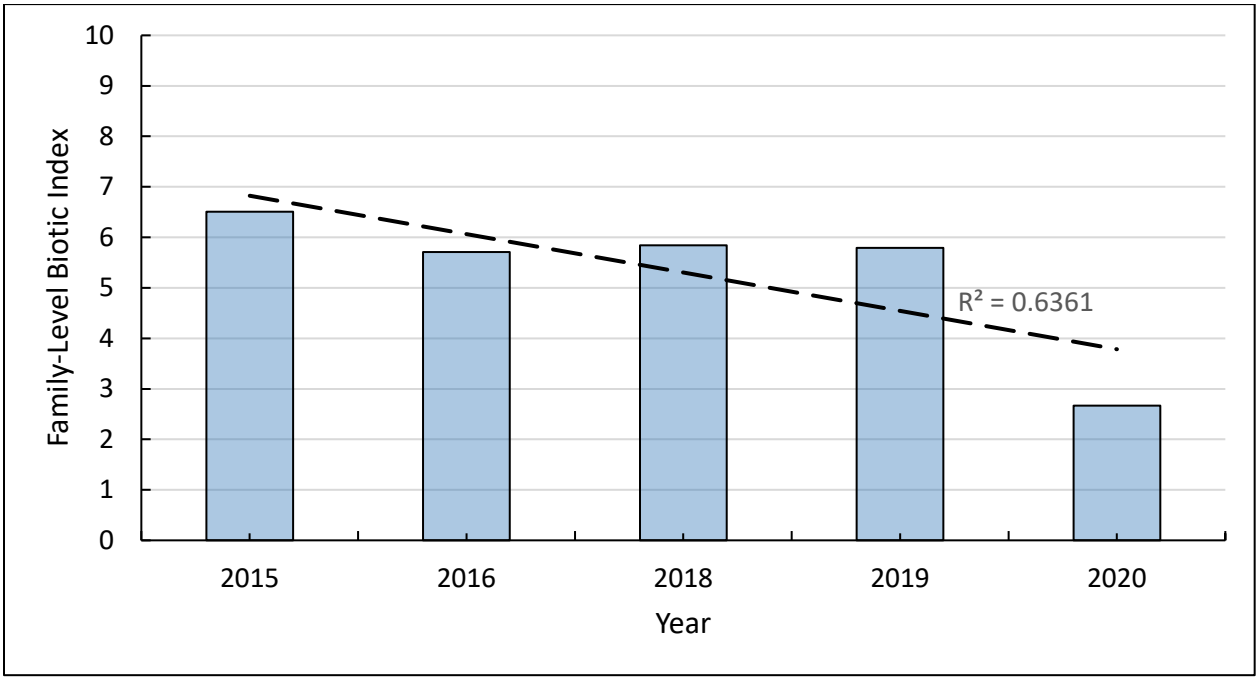

Figure B.12 Family-level biotic index scores for the South Saugeen subwatershed from 2015 to 2020.

Appendix C – Beatty Saugeen Subwatershed

2023 Results

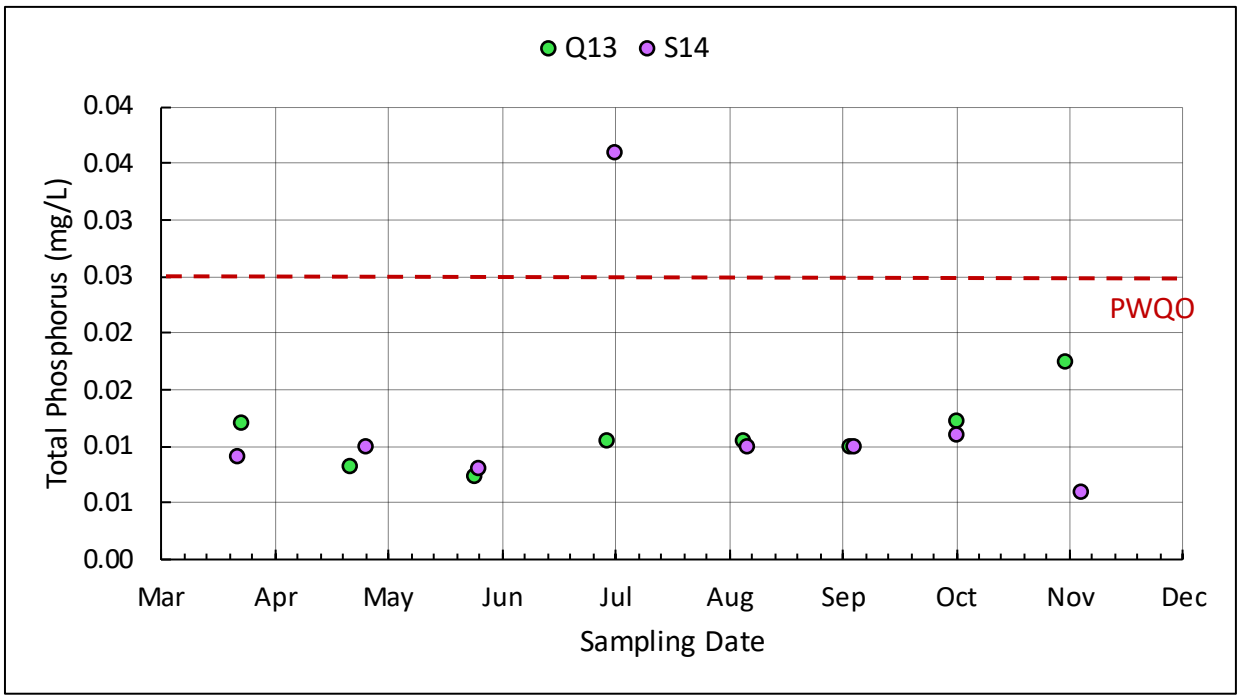

Figure C.1 2023 Beatty Saugeen subwatershed total phosphorus concentrations (mg/L) in a graph format. Graph shows Q13 and S14 sampling sites, the horizontal line indicates the PWQO of 0.03 mg/L. There is 1 exceedance of the PWQO.

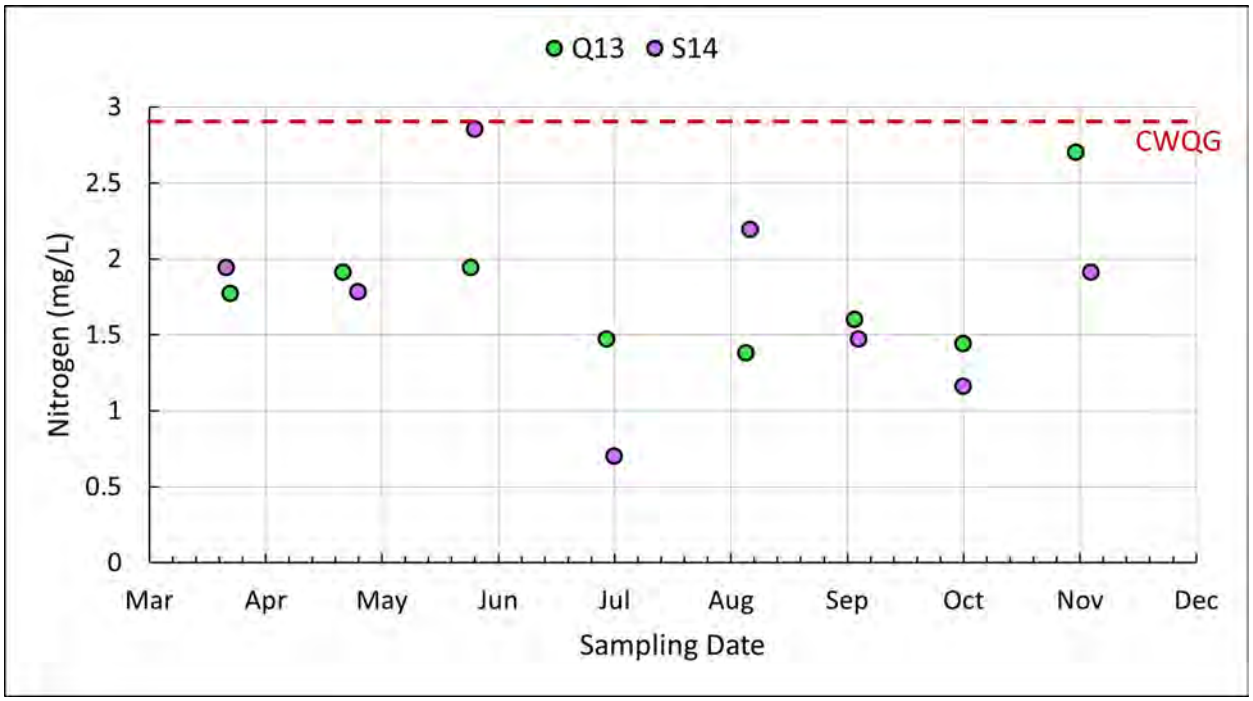

Figure C.2 2023 Beatty Saugeen subwatershed nitrogen concentrations (mg/L) in a graph format. Graph shows Q13 and Q14 sampling sites, the horizontal line indicates the CWQG of 2.93 mg/L. There are no exceedances.

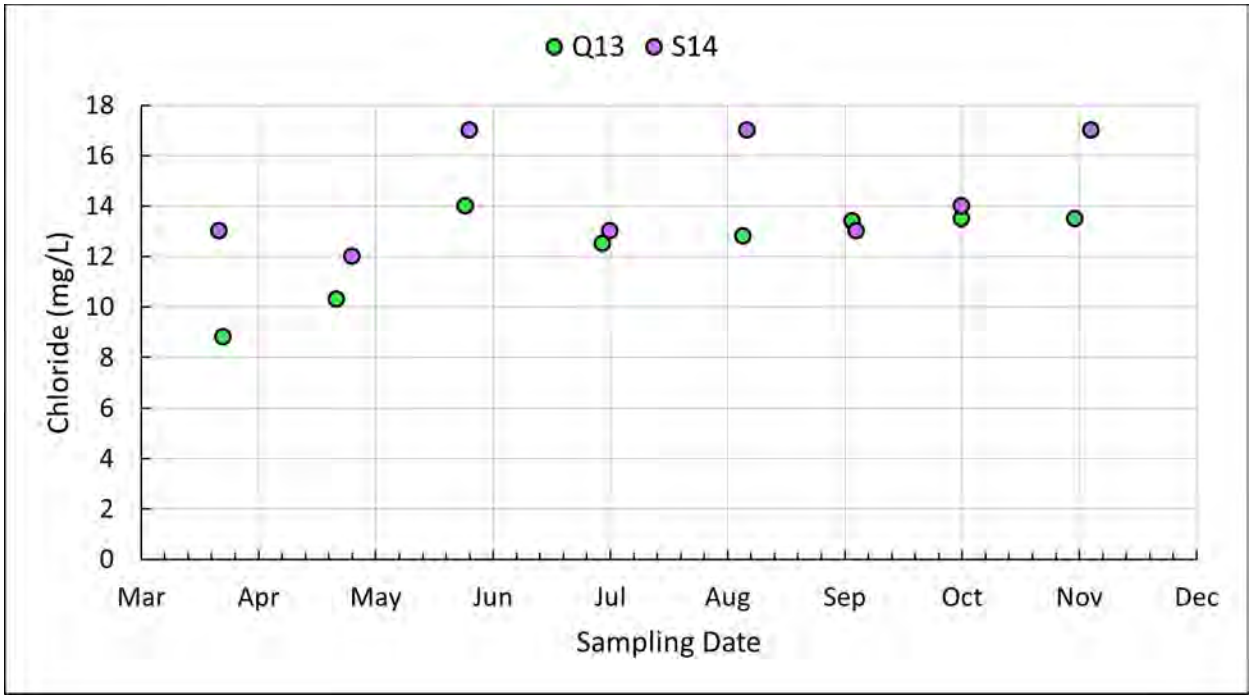

Figure C.3 2023 Beatty Saugeen subwatershed chloride concentrations (mg/L) in a graph format. Graph shows Q13 and Q14 sampling sites. The CWQG is 120 mg/L. There are no exceedances.

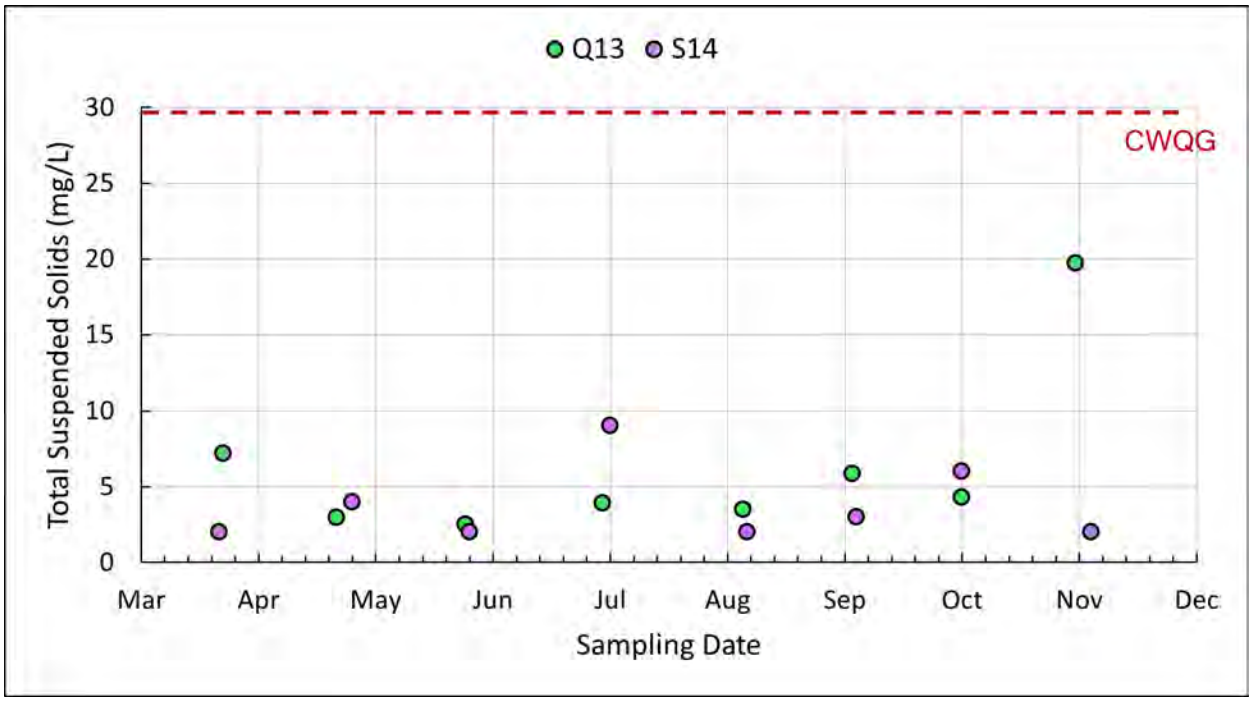

Figure C.4 2023 Beatty Saugeen subwatershed total suspended solids concentrations (mg/L) in a graph format. Graph shows Q13 and S14 sampling sites, the horizontal line indicates the CWQG of 30 mg/L. There are no exceedances.

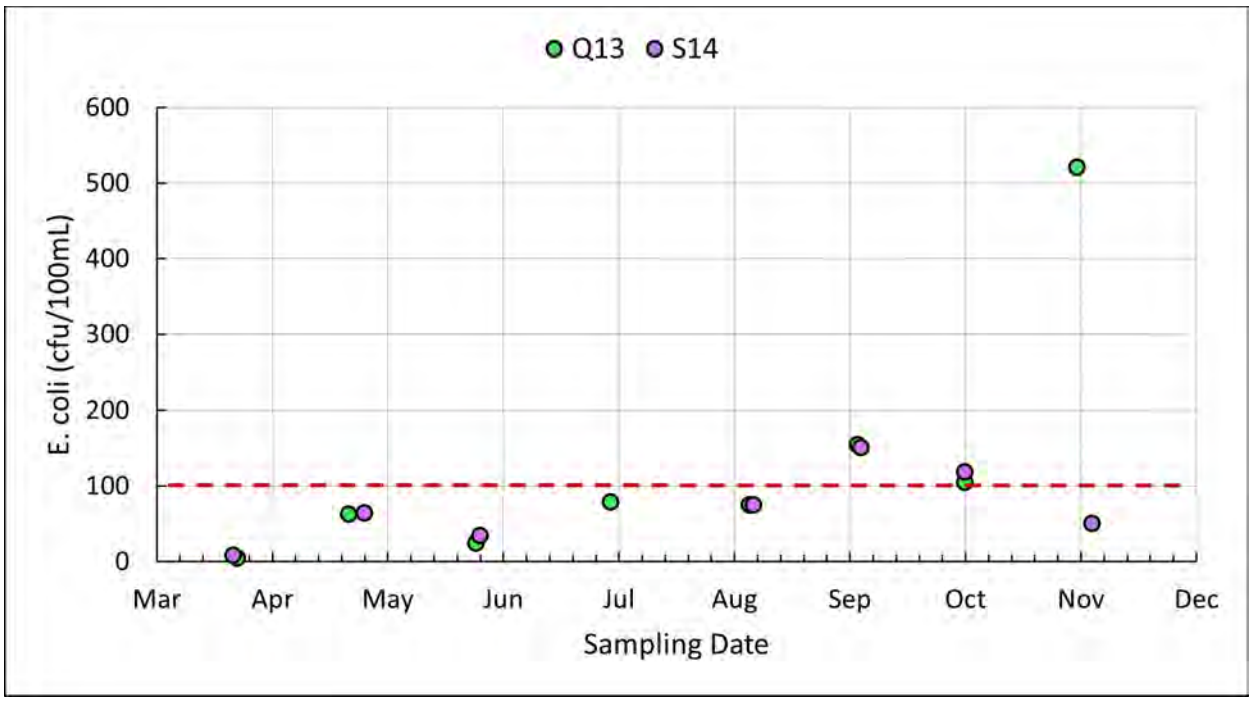

Figure C.5 2023 Beatty Saugeen subwatershed *E. coli* concentrations (cfu/100mL) in a graph format. Graph shows Q13 and Q14 sampling sites, the horizontal line indicates the PWQO of 100 cfu/100mL for swimming. There are six exceedances of the PWQO, the exceedance for July is not shown on this graph (1280 cfu/100mL).

Long-term Results

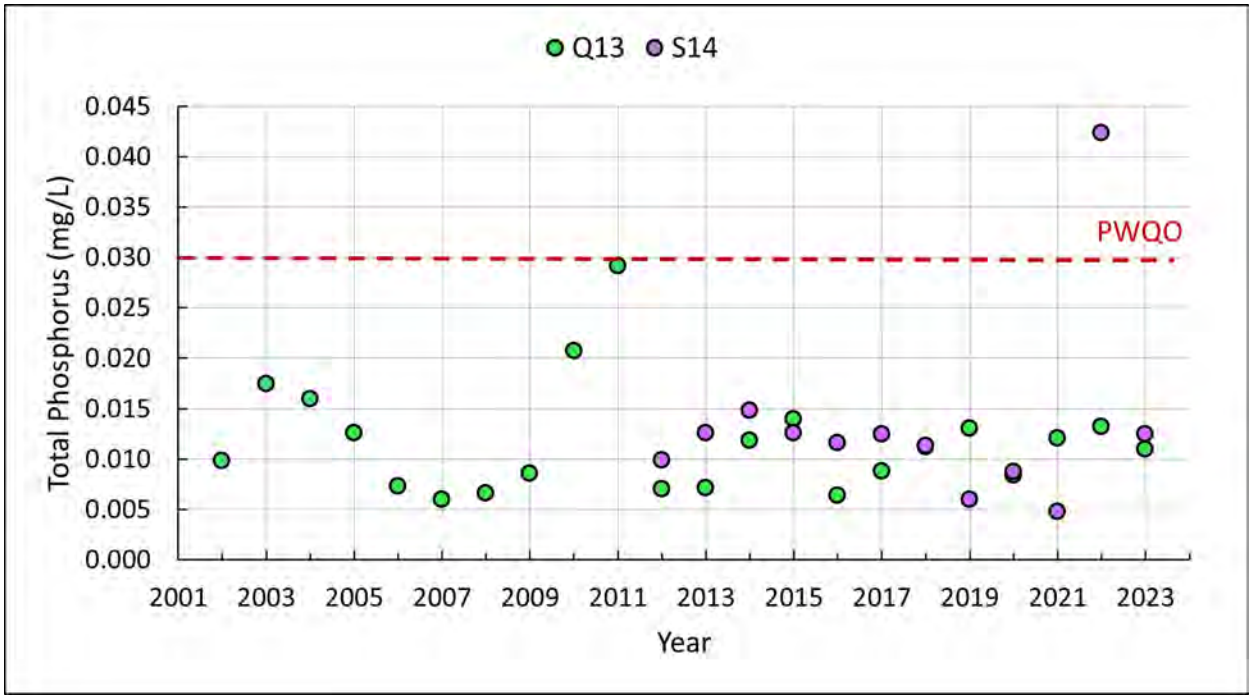

Figure C.6 2002 to 2023 Beatty Saugeen subwatershed annual average total phosphorus concentrations (mg/L) in a graph format. Graph shows Q13 and S14 sampling sites, and a horizontal line indicating a PWQO of 0.03 mg/L. There was 1 exceedance of the PWQO.

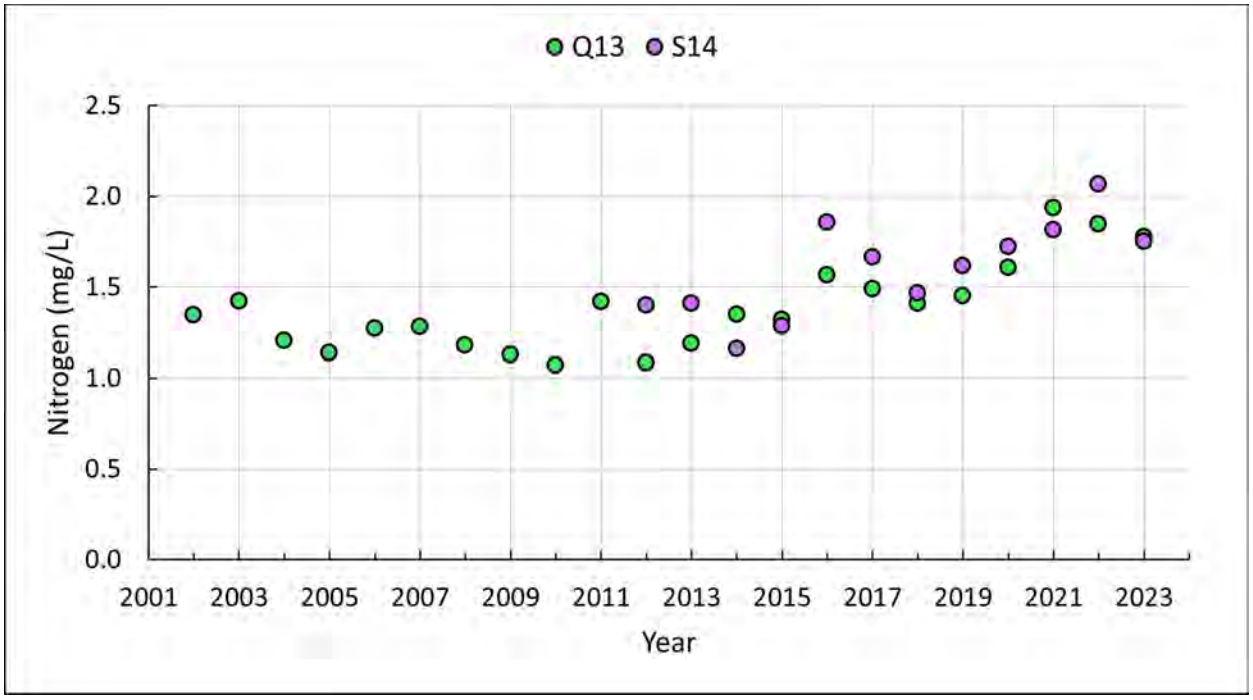

Figure C.7 2002 to 2023 Beatty Saugeen subwatershed annual average nitrogen concentrations (mg/L) in a graph format. Graph shows Q13 and S14 sampling sites. The CWQG is 2.93 mg/L. There are no exceedances.

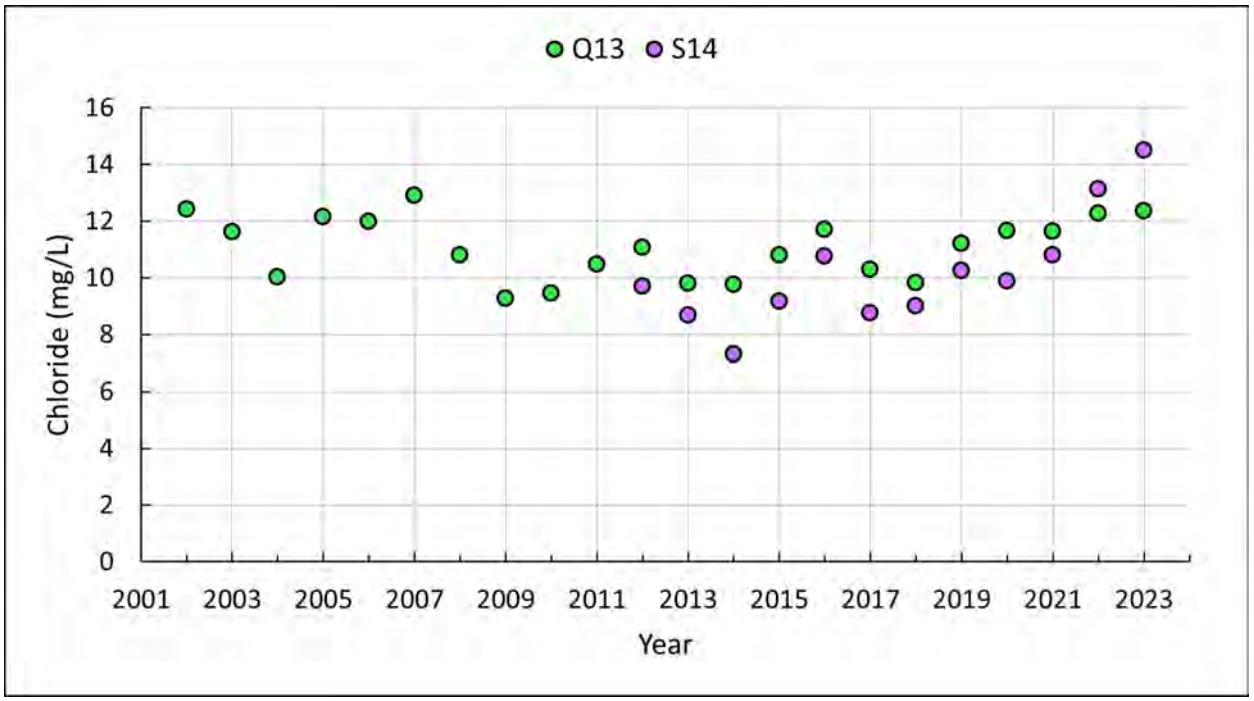

Figure C.8 2002 to 2023 Beatty Saugeen subwatershed annual average chloride concentrations (mg/L) in a graph format. Graph shows Q13 and S14 sampling sites. The CWQG is 120 mg/L. There are no exceedances.

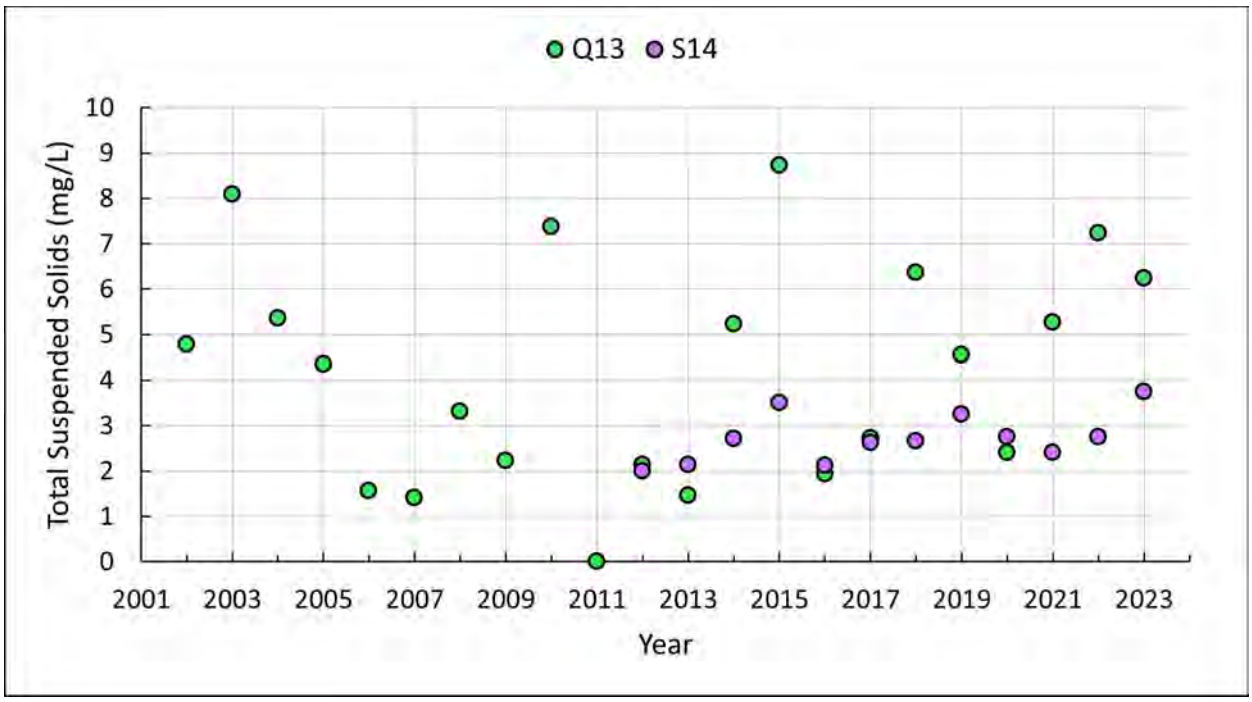

Figure C.9 2012 to 2023 Beatty Saugeen subwatershed annual average total suspended solids concentrations (mg/L) in a graph format. Graph shows Q13 and Q14 sampling. The CWQG is 30 mg/L. There are no exceedances.

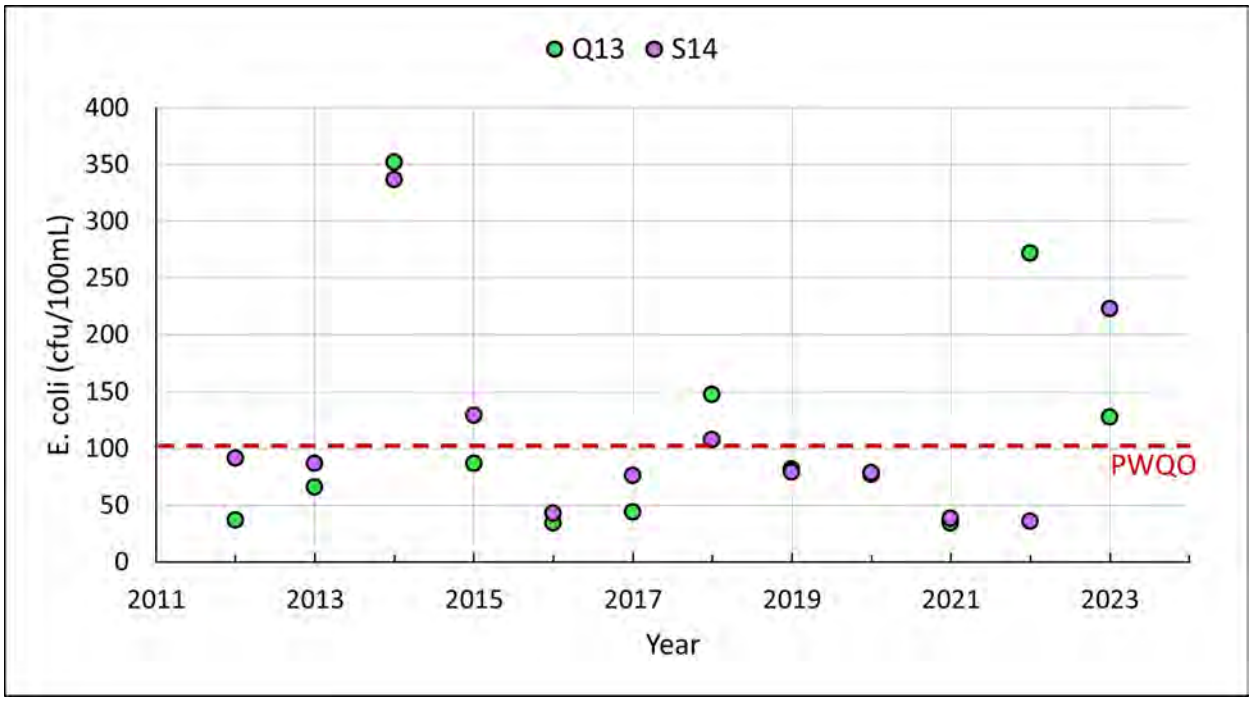

Figure C.10 2012 to 2023 Beatty Saugeen subwatershed annual average *E. coli* concentrations (cfu/100mL) in a graph format. Graph shows Q13 and S14 sampling sites, and a horizontal line indicating a PWQO of 100 cfu/100mL for swimming. There are 8 exceedances of the PWQO.

Benthic Biomonitoring Results (2019-2021)

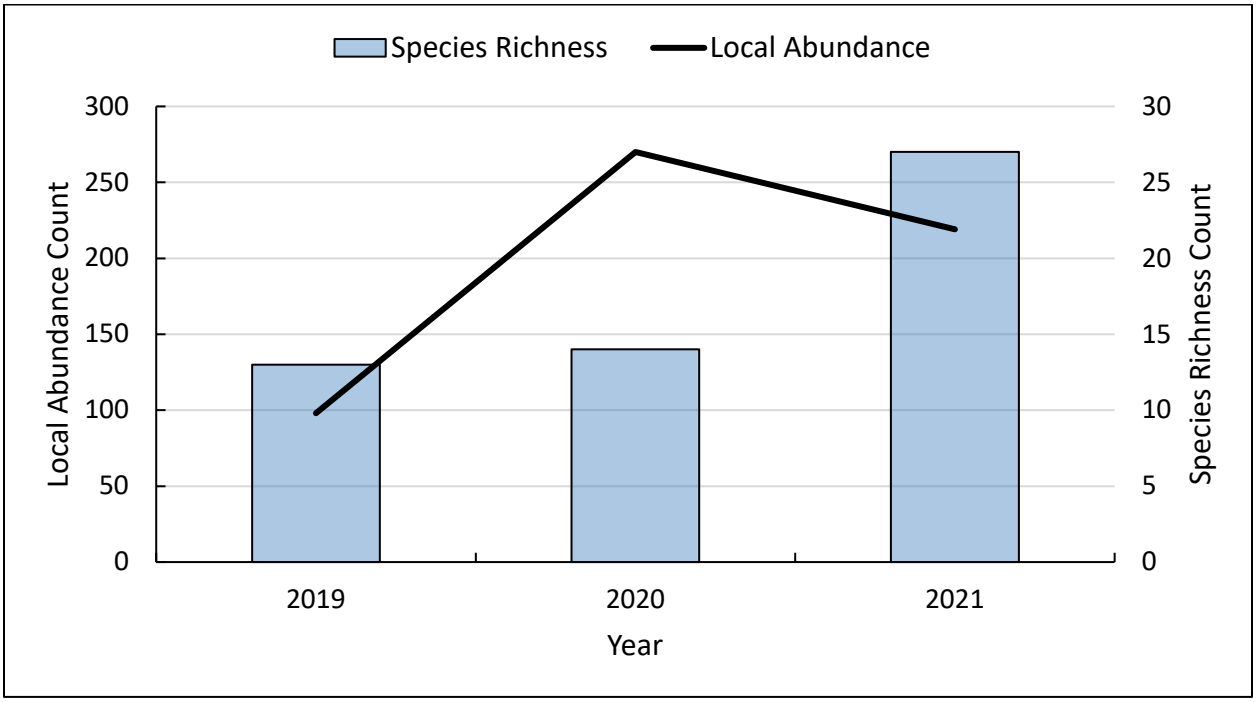

Figure C.11 Local abundance and species richness found within the Beatty Saugeen subwatershed from 2019 to 2021.

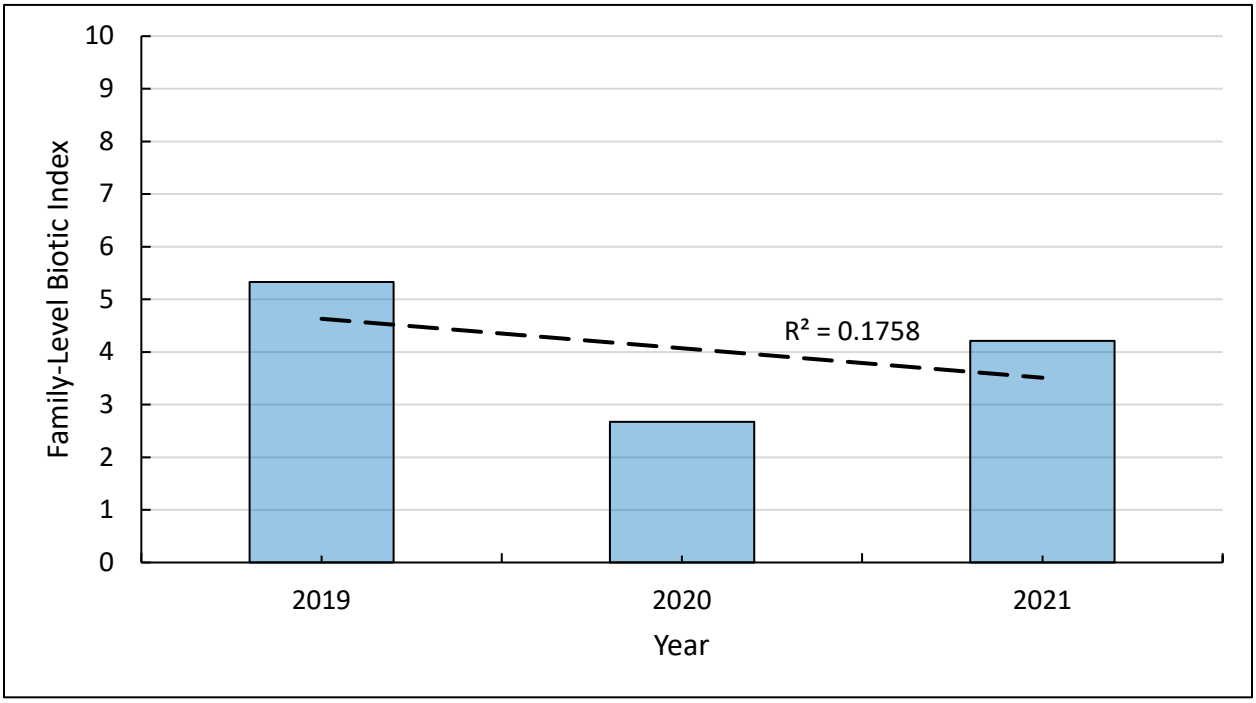

Figure C.12 Family-level biotic index for the Beatty Saugeen from 2019 to 2021.

Appendix D – Upper Main Saugeen Subwatershed

2023 Results

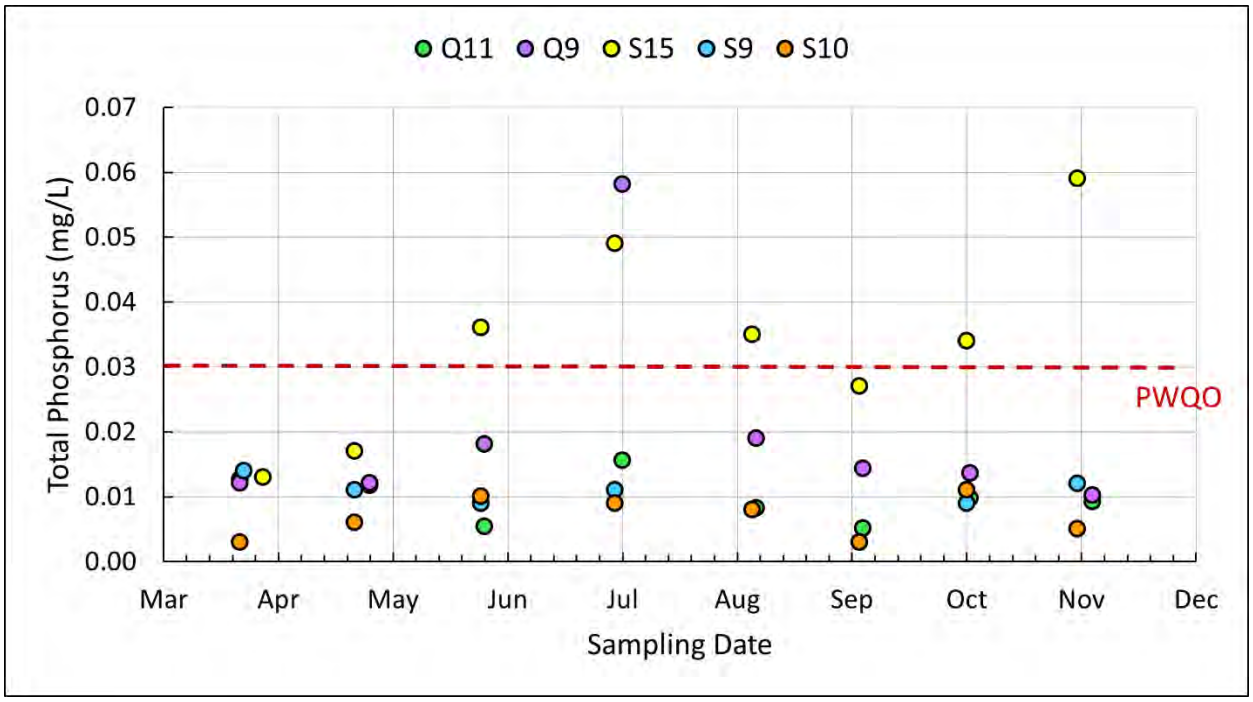

Figure D.1 2023 Upper Main Saugeen subwatershed total phosphorus concentrations (mg/L) in a graph format. Graph shows Q11, Q9, S15, S9 and S10 sampling sites and a horizontal line indicating a PWQO of 0.03 mg/L. There are 6 exceedances of the PWQO.

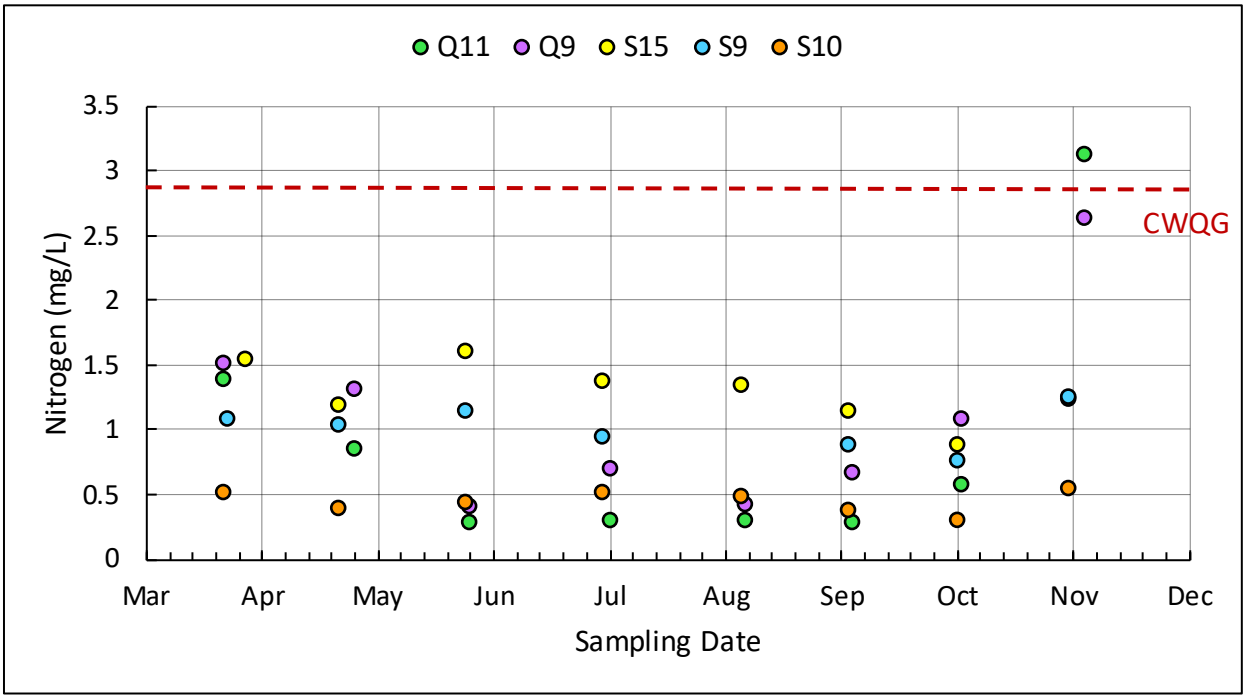

Figure D.2 2023 Upper Main Saugeen subwatershed nitrogen concentrations (mg/L) in a graph format. Graph shows Q11, Q9, S15, S9 and S10 sampling sites and a horizontal line indicating a CWQG of 2.93 mg/L. There was 1 exceedance of the CWQG.

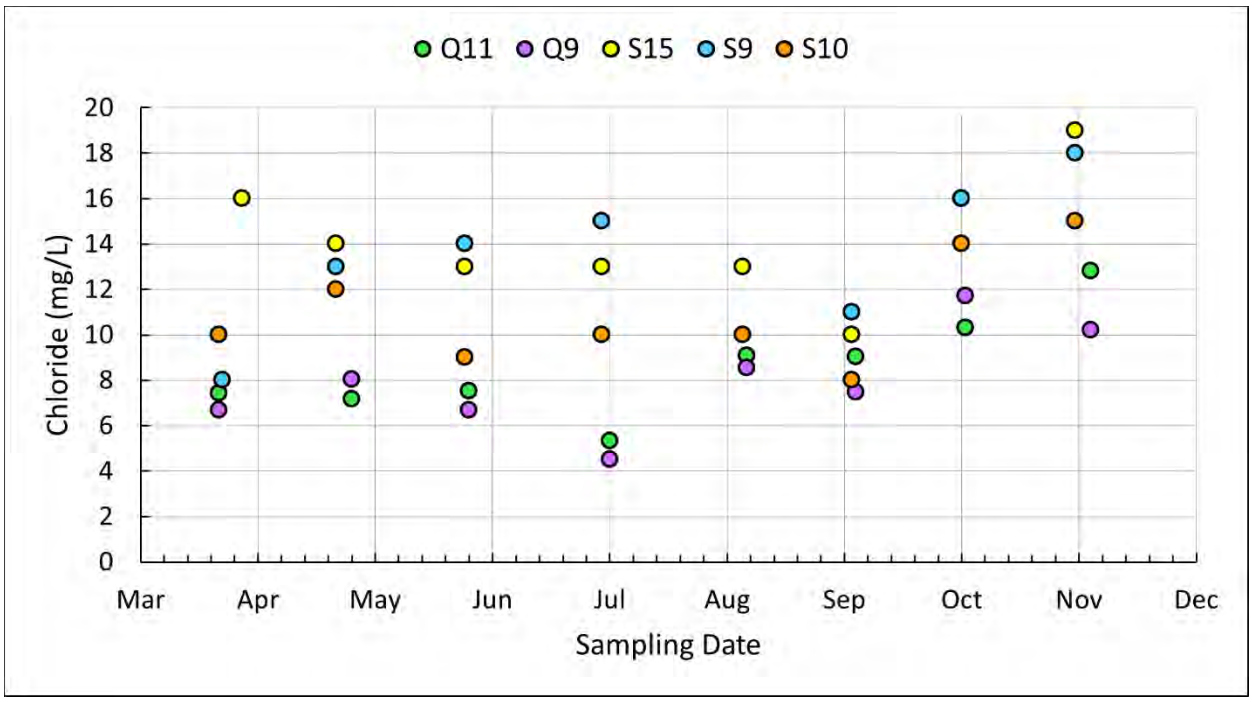

Figure D.3 2023 Upper Main Saugeen subwatershed chloride concentrations (mg/L) in a graph format. Graph shows Q11, Q9, S15, S9 and S10 sampling sites. The CWQG is 120 mg/L. There are no exceedances.

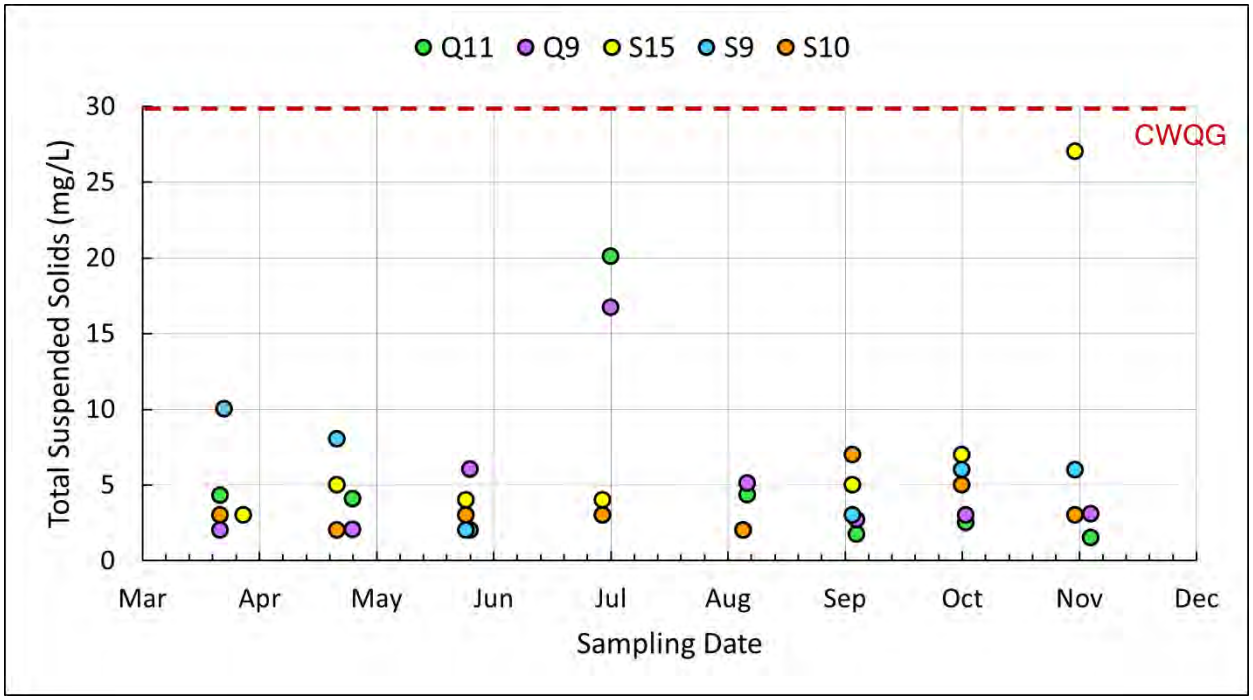

Figure D.4 2023 Upper Main Saugeen subwatershed total suspended solids concentrations (mg/L) in a graph format. Graph shows Q11, Q9, S15, S9 and S10 sampling sites, and a horizontal line indicating a CWQG of 30 mg/L. There are no exceedances of the CWQG.

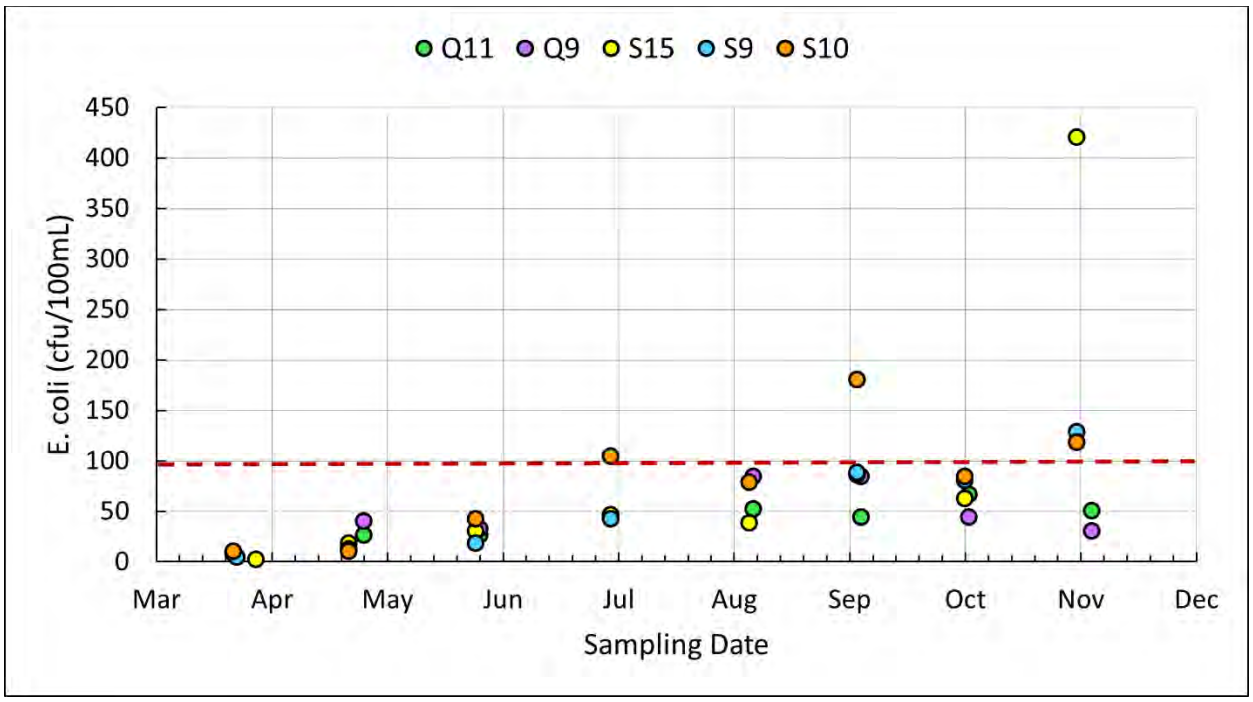

Figure D.5 2023 Upper Main Saugeen subwatershed *E. coli* concentrations (cfu/100mL) in a graph format. Graph shows Q11, Q9, S15, S9 and S10 sampling sites, and a horizontal line indicating a PWQO of 100 cfu/100mL for swimming. There are 7 exceedances of the PWQO. Two exceedances from July are not shown on this graph (Q11 at 1760 cfu/100mL, Q9 at 8000 cfu/100mL).

Long-term Results

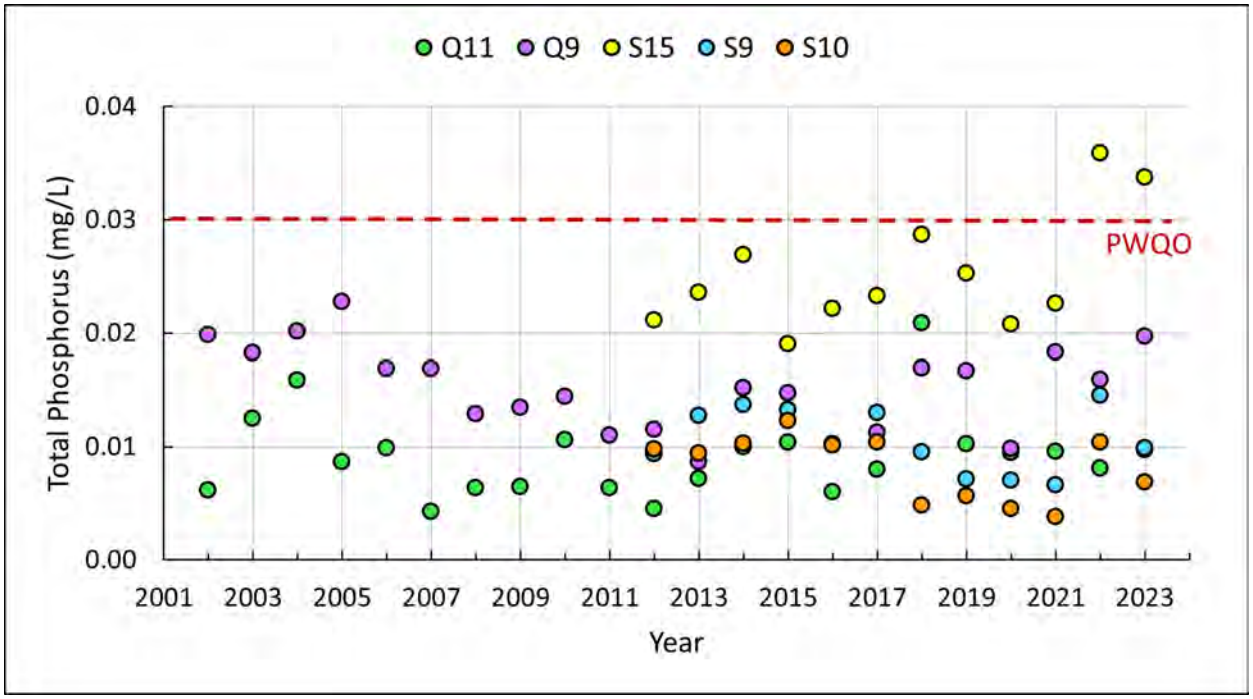

Figure D.6 2002 to 2023 Upper Main Saugeen annual average total phosphorus concentrations (mg/L) in a graph format. Graph shows Q11, Q9, S15, S9 and S10 sampling sites, and a horizontal line indicating a PWQO of 0.03 mg/L. There are 2 exceedances of the PWQO.

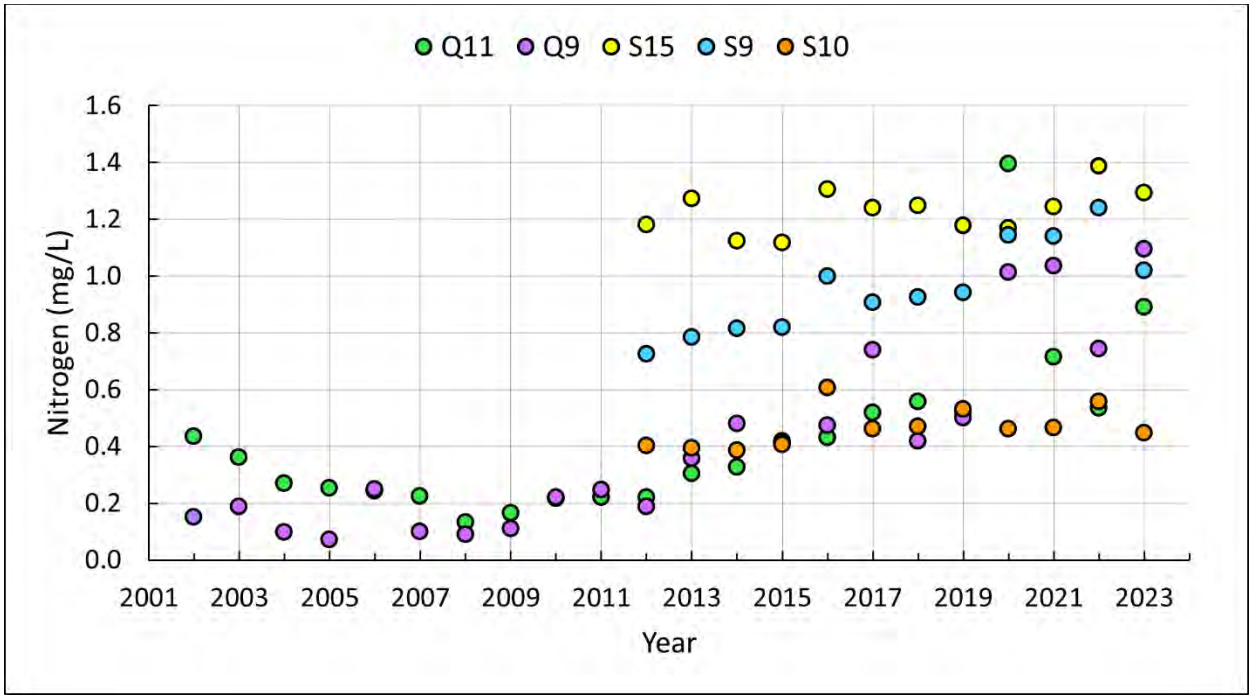

Figure D.7 2002 to 2023 Upper Main Saugeen subwatershed annual average nitrogen concentrations (mg/L) in a graph format. Graph shows Q11, Q9, S15, S9 and S10 sampling sites. The CWQG is 2.93 mg/L. There are no exceedances.

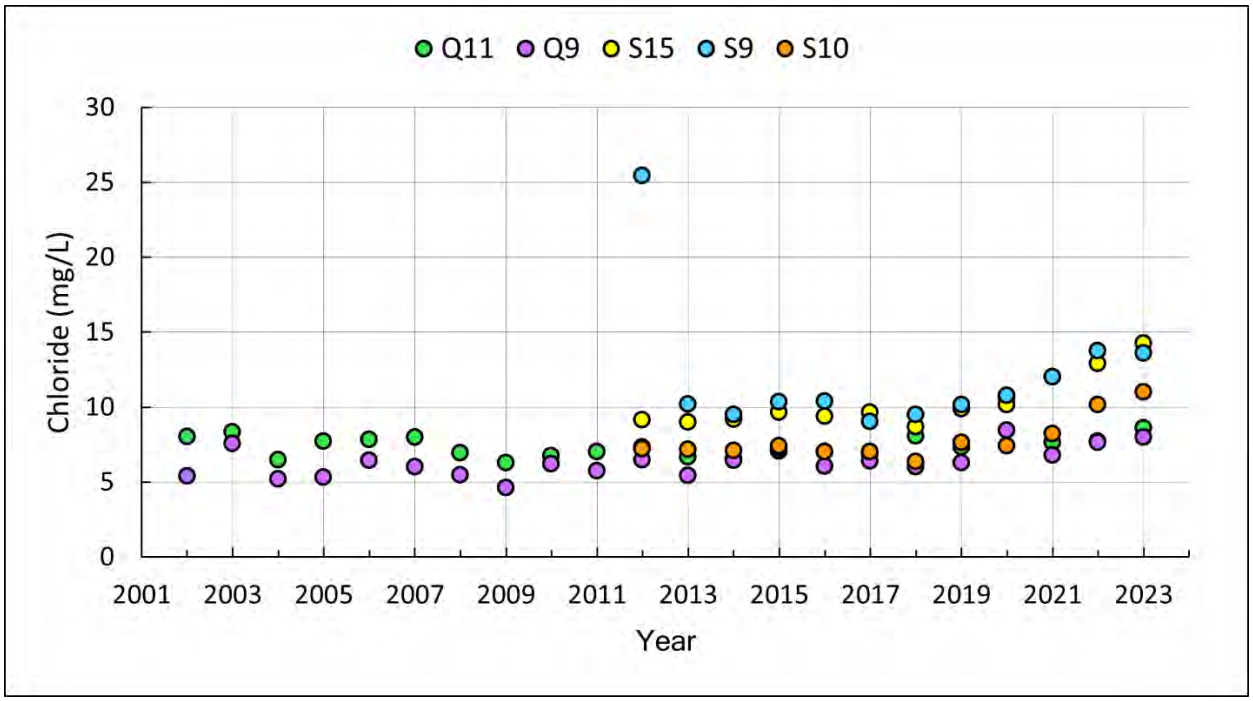

Figure D.8 2002 to 2023 Upper Main Saugeen subwatershed annual average chloride concentrations (mg/L) in graph format. Graph shows Q11, Q9, S15, S9 and S10 sampling sites. The CWQG is 120 mg/L. There are no exceedances.

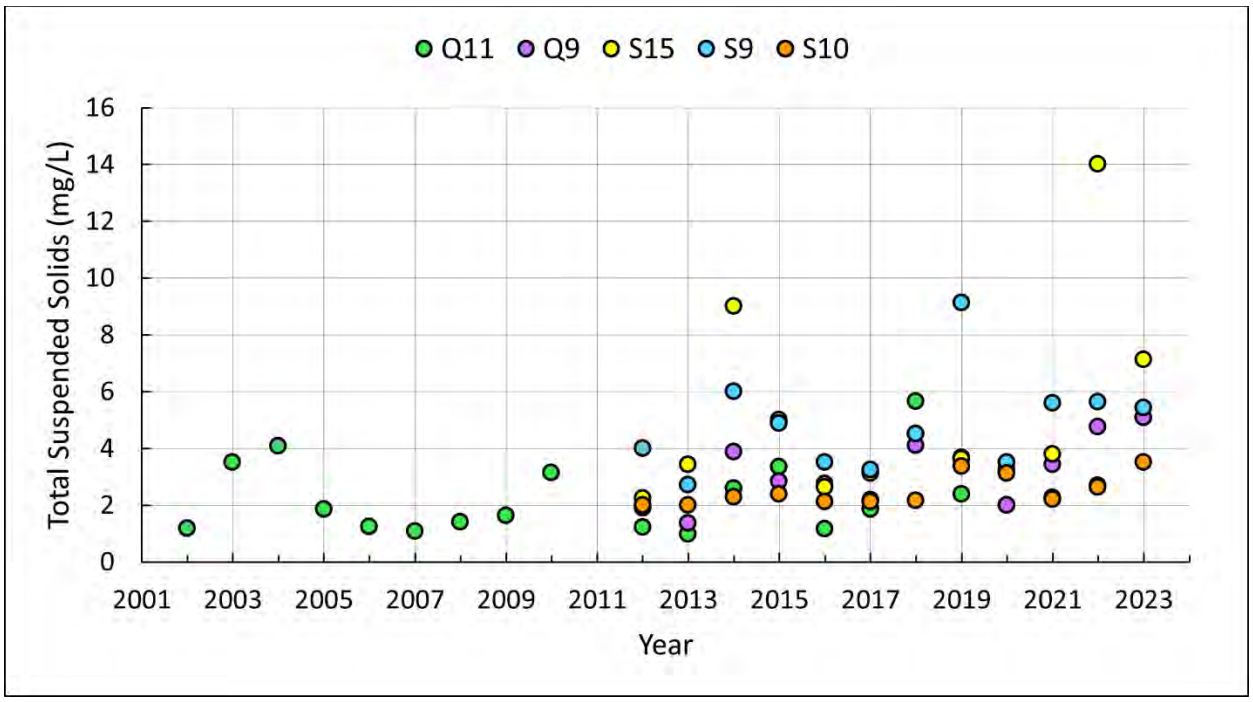

Figure D.9 2002 to 2023 Upper Main Saugeen subwatershed annual average total suspended solids concentrations (mg/L) in graph format. Graph shows Q11, Q9, S15, S9 and S10 sampling sites. The CWQG is 30 mg/L. There are no exceedances. Results for Q11 in 2011 are not available.

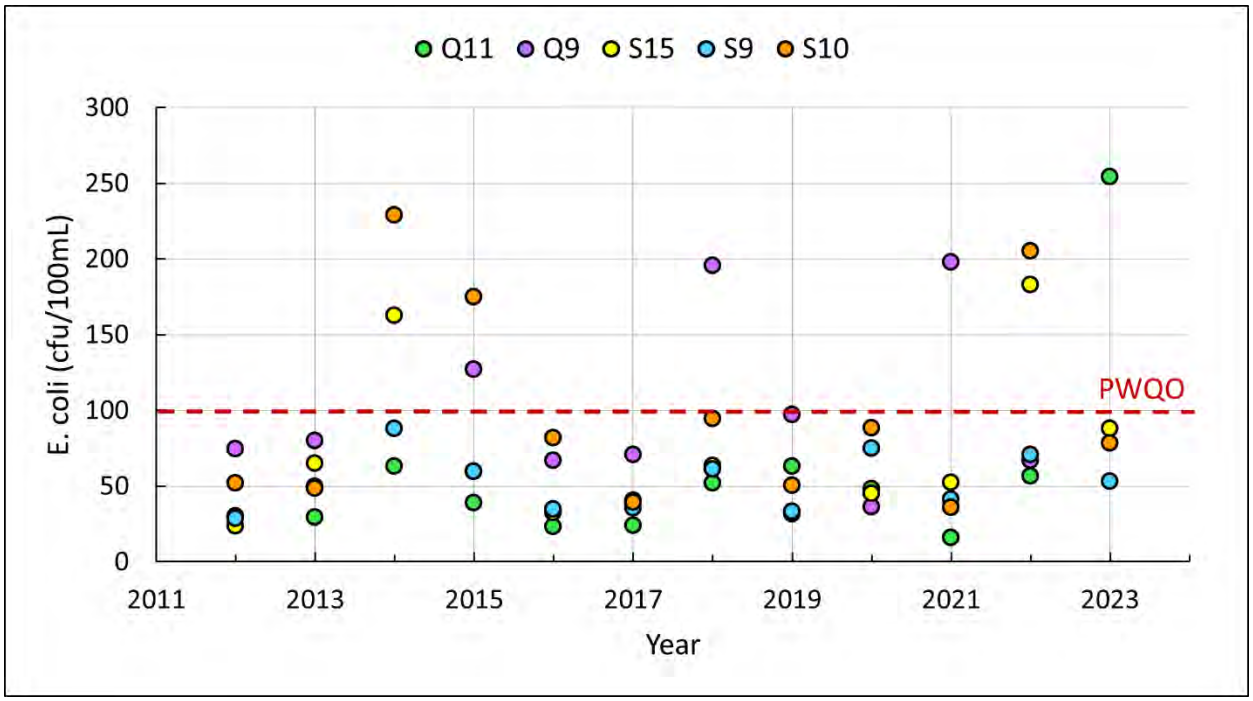

Figure D.10 2012 to 2023 Upper Main Saugeen subwatershed annual average *E. coli* concentrations (cfu/100mL) in a graph format. Graph shows Q11, Q9, S15, S9 and S10 sampling sites, and a horizontal line indicating a PWQO of 100 cfu/100mL for swimming. There are 11 exceedances of the PWQO; there are two exceedances at Q9 in 2014 and 2023 that are not shown on this graph (805 and 1040 cfu/100mL, respectively).

Benthic Biomonitoring Results (2015-2021)

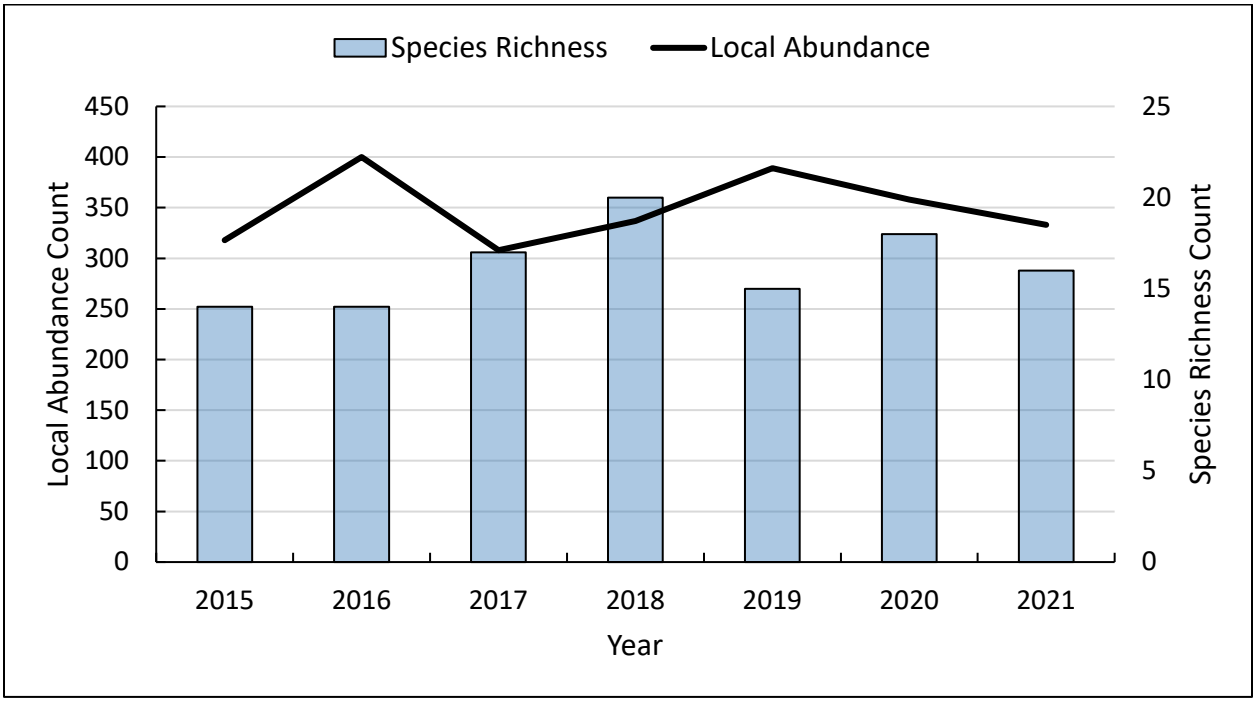

Figure D.11 Local abundance and species richness found within the Upper Main Saugeen subwatershed from 2015 to 2021.

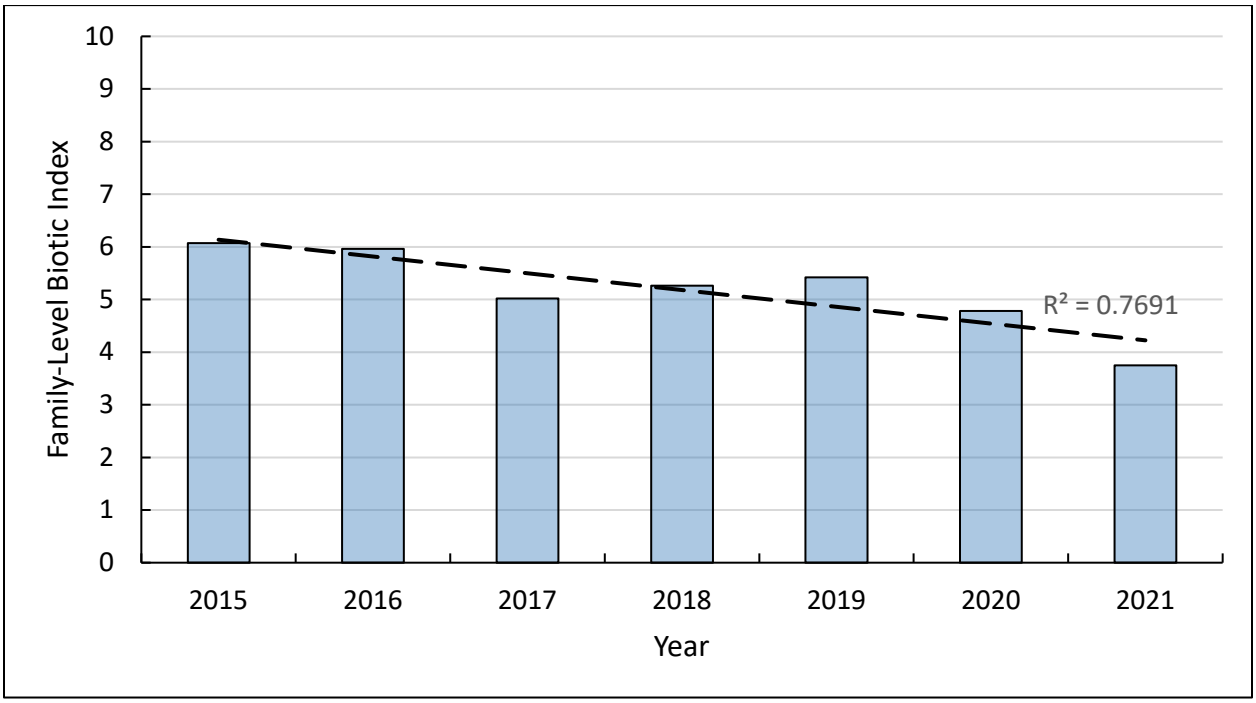

Figure D.12 Family-level biotic index for the Upper Main Saugeen from 2015 to 2021.

Appendix E – Rocky Saugeen Subwatershed

2023 Results

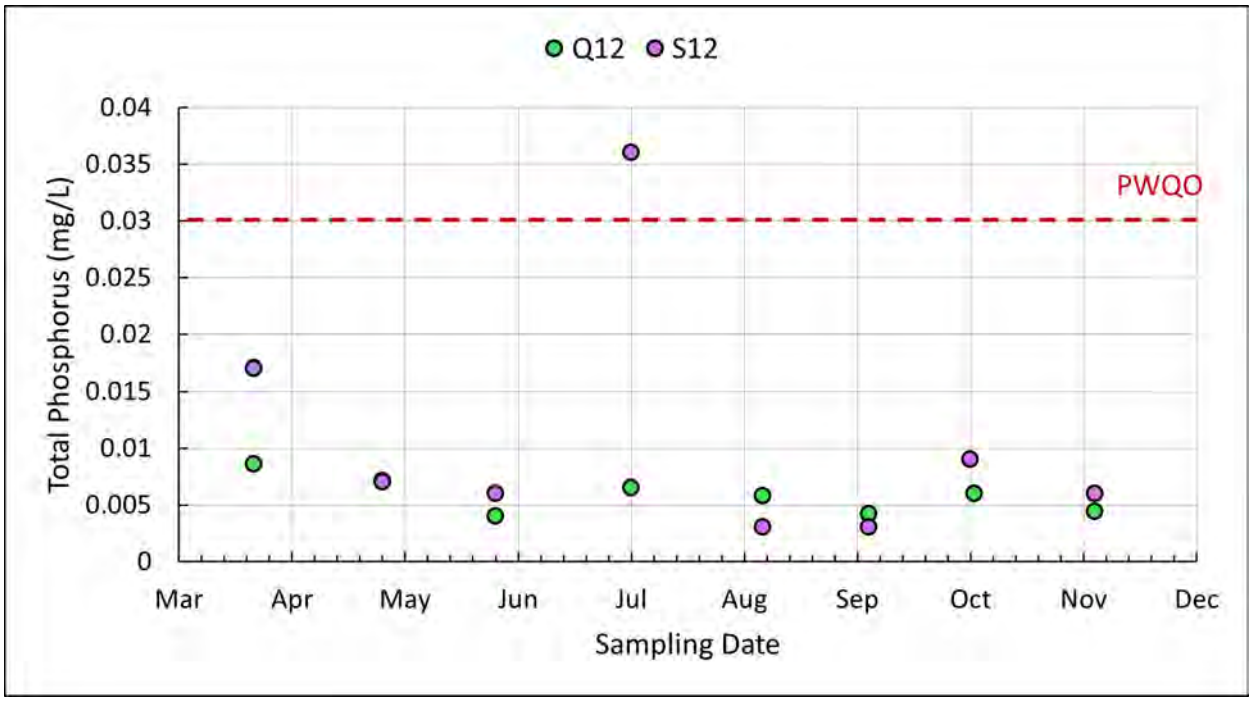

Figure E.1 2023 Rocky Saugeen subwatershed total phosphorus concentrations (mg/L) in a graph format. Graph shows Q12 and S12 sampling sites, and a horizontal line indicating a PWQO of 0.03mg/L. There is 1 exceedance of the PWQO.

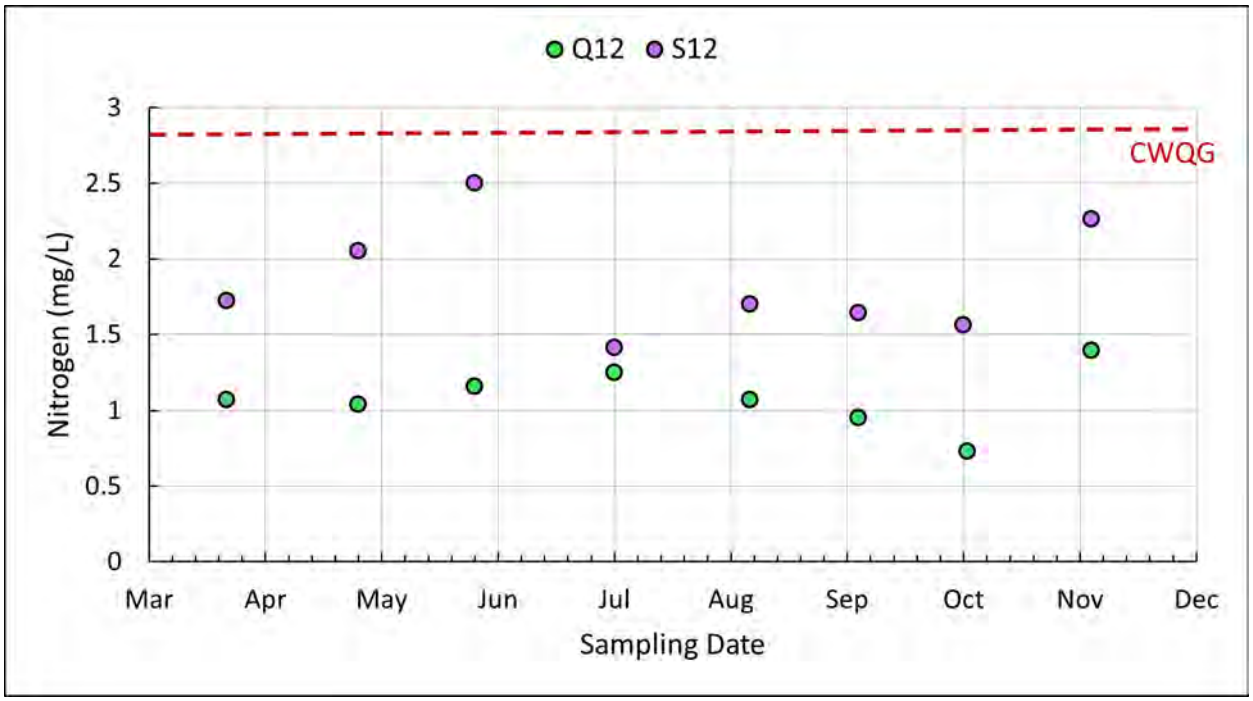

Figure E.2 2023 Rocky Saugeen subwatershed nitrogen concentrations (mg/L) in a graph format. Graph shows Q12 and S12 sampling sites, and a horizontal line indicating a CWQG of 2.93 mg/L. There are no exceedances.

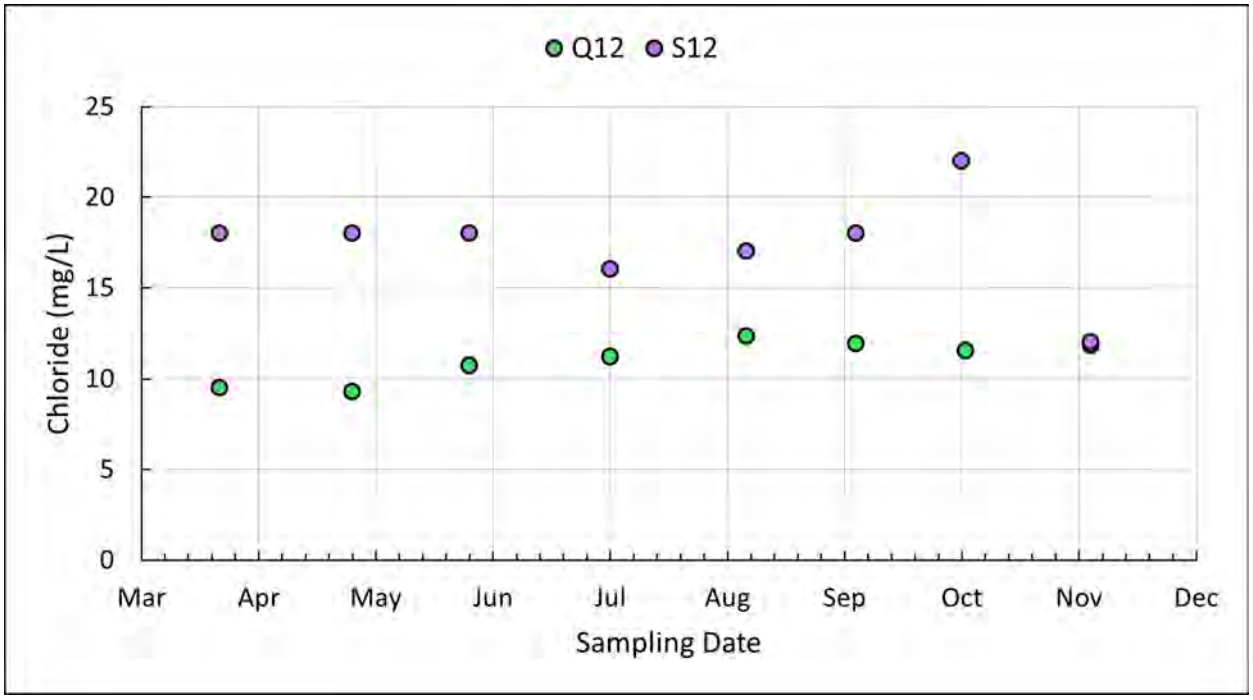

Figure E.3 2023 Rocky Saugeen subwatershed chloride concentrations (mg/L) in a graph format. Graph shows Q12 and S12 sampling sites. The CWQG is 120mg/L. There are no exceedances.

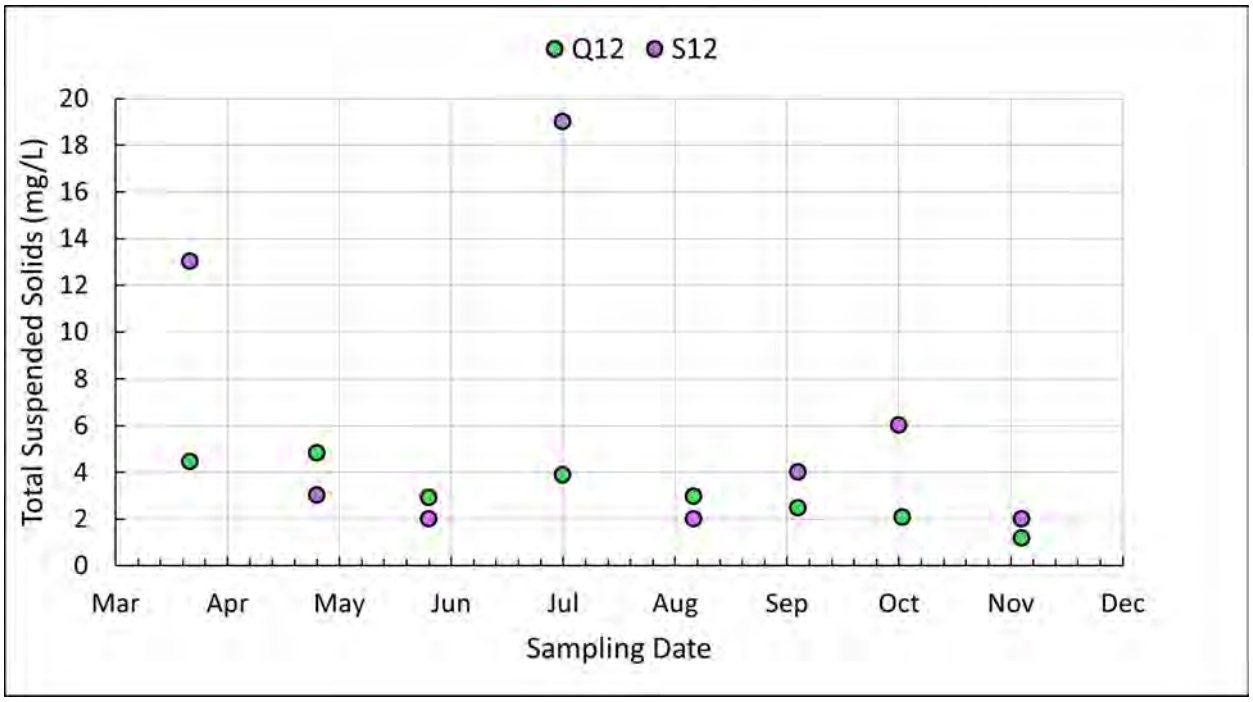

Figure E.4 2023 Rocky Saugeen subwatershed total suspended solids concentrations (mg/L) in a graph format. Graph shows Q12 and S12 sampling sites. The CWQG is 30mg/L. There are no exceedances.

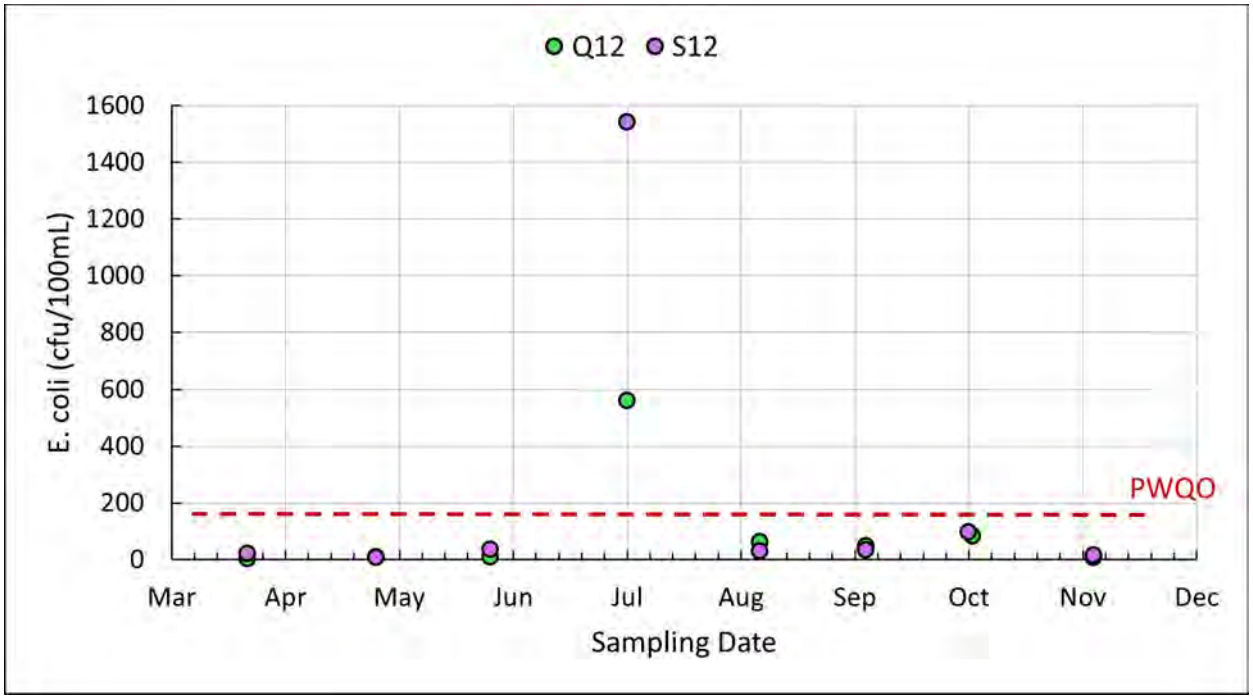

Figure E.5 2023 Rocky Saugeen subwatershed *E. coli* concentrations (cfu/100mL) in a graph format. Graph shows Q12 and S12 sampling sites, and a horizontal line indicating a PWQO of 100 cfu/100mL for swimming. There are 2 exceedances of the PWQO.

Long-term Results

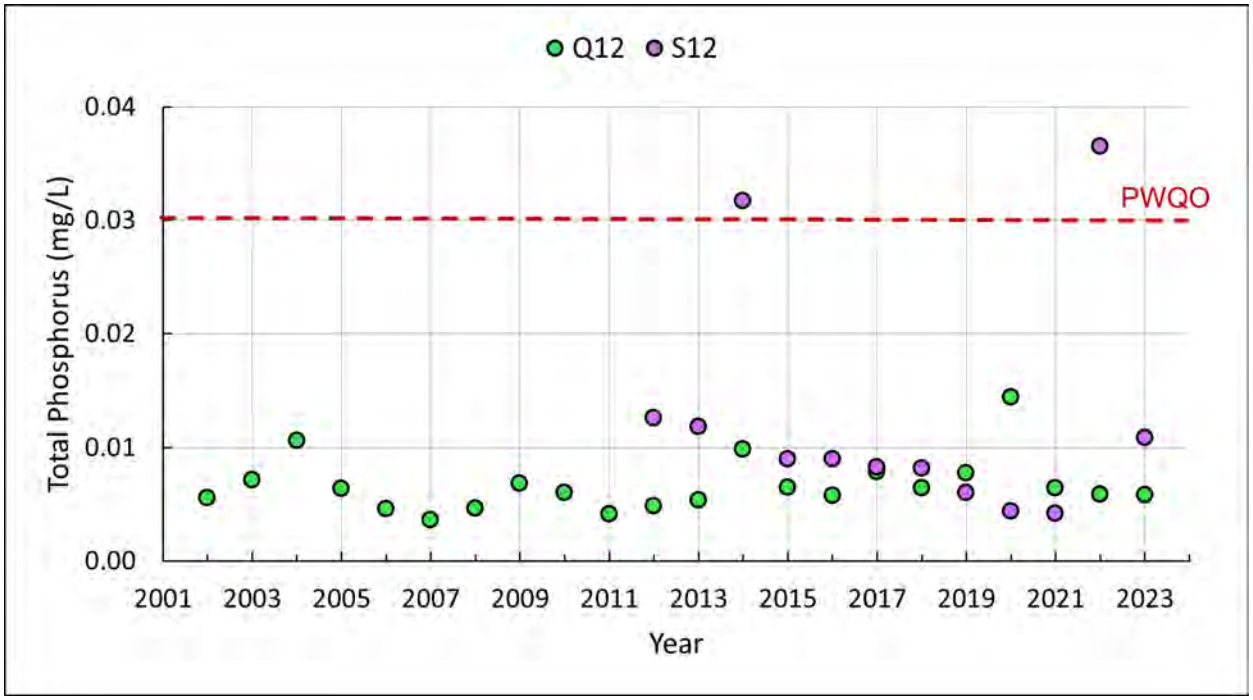

Figure E.6 2002 to 2023 Rocky Saugeen subwatershed annual average total phosphorus concentrations (mg/L) in graph format. Graph shows Q12 and S12 sampling sites, and a horizontal line indicating a PWQO of 0.03 mg/L. There are 2 exceedances of the PWQO.

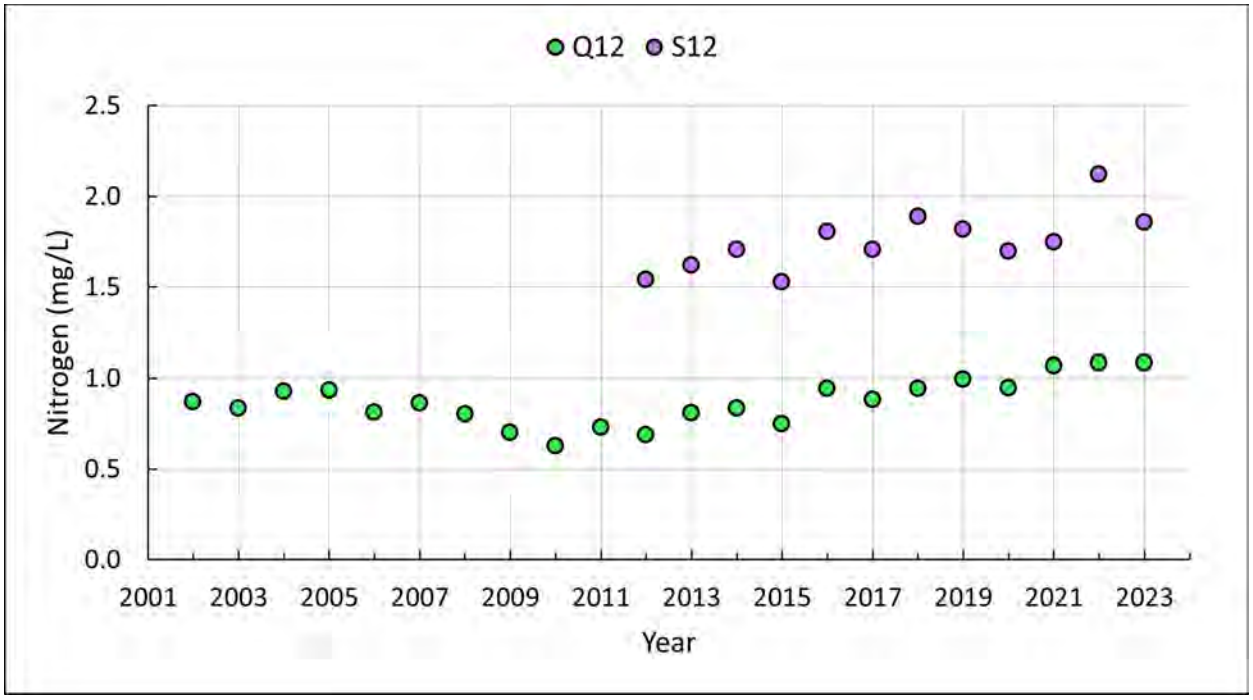

Figure E.7 2002 to 2023 Rocky Saugeen subwatershed annual average nitrogen concentrations (mg/L) in graph format. Graph shows Q12 and S12 sampling sites. The CWQG is 2.93 mg/L. There are no exceedances.

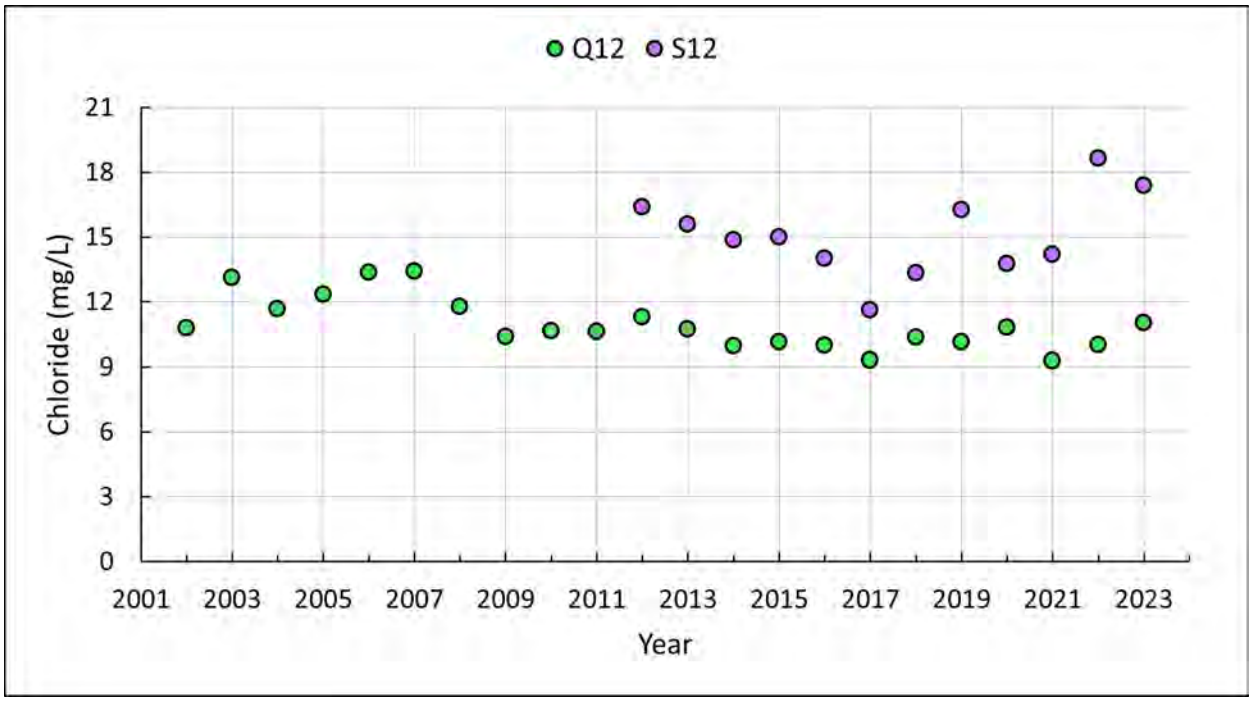

Figure E.8 2002 to 2023 Rocky Saugeen subwatershed annual average chloride concentrations (mg/L) in graph format. Graph shows Q12 and S12 sampling sites. The CWQG is 120 mg/L. There are no exceedances.

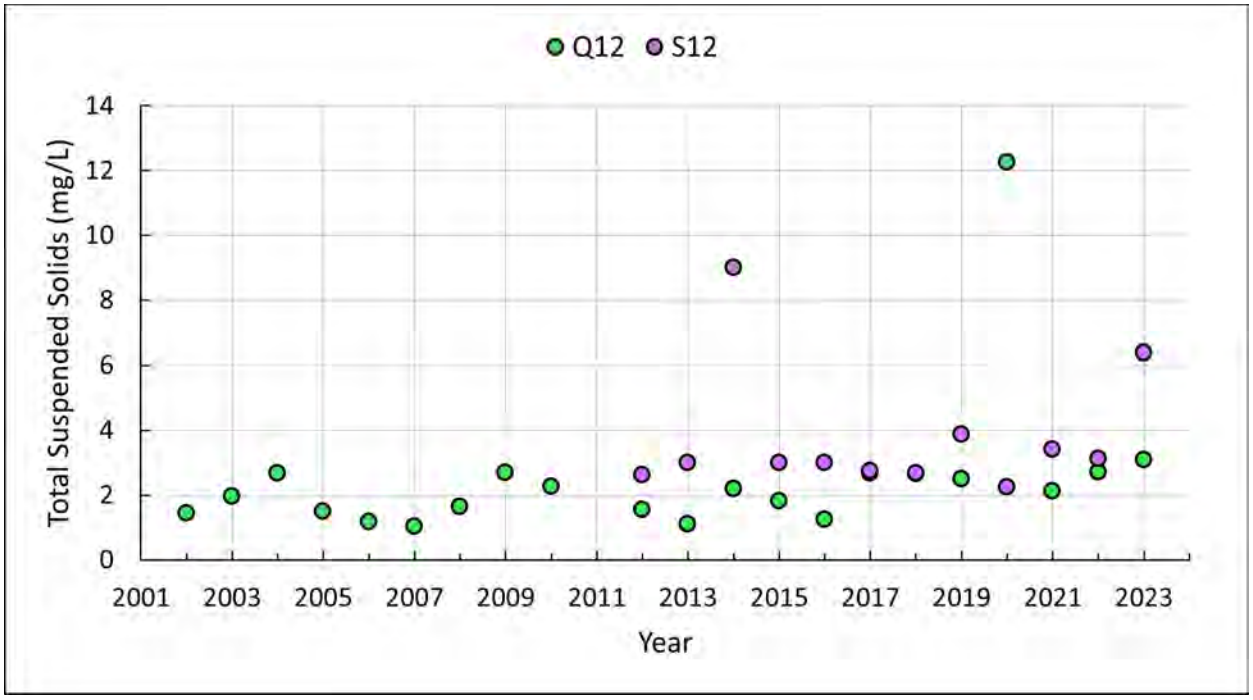

Figure E.9 2012 to 2023 Rocky Saugeen subwatershed annual average total suspended solids concentrations (mg/L) in graph format. Graph shows Q12 and S12 sampling sites. The CWQG is 30 mg/L. There are no exceedances.

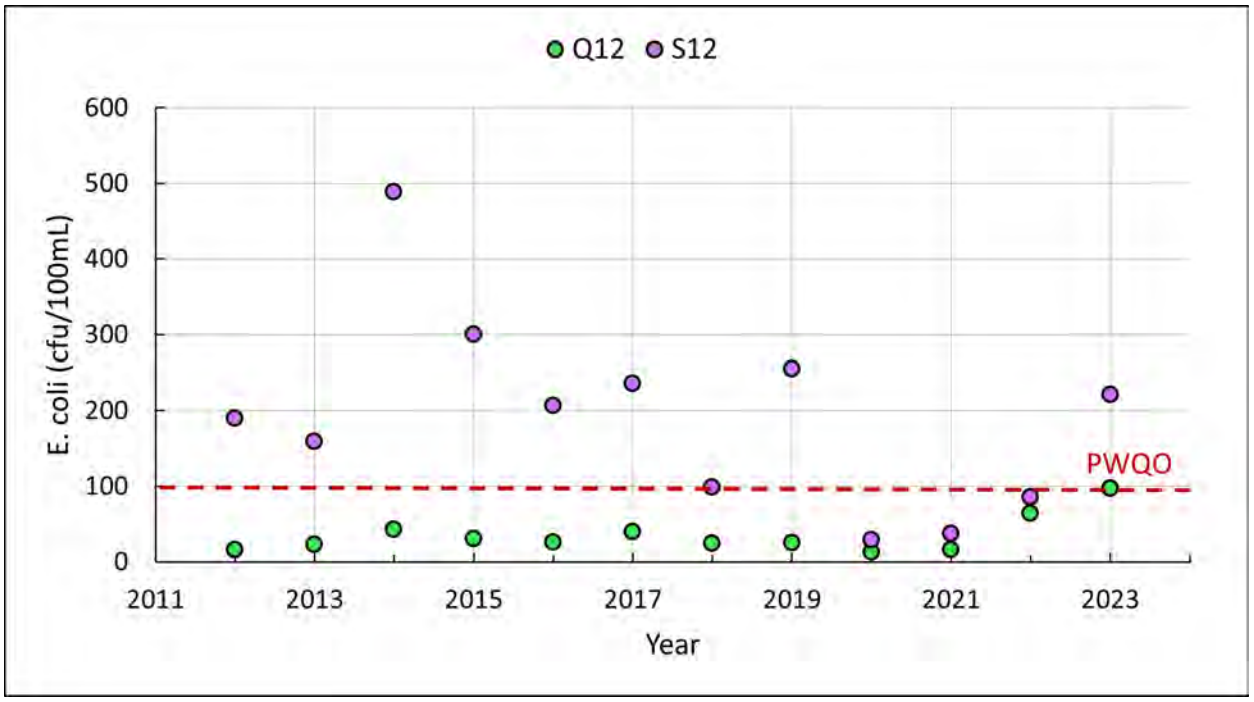

Figure E.10 2012 to 2023 Rocky Saugeen subwatershed annual average *E. coli* concentrations (cfu/100mL) in graph format. Graph shows Q12 and S12 sampling sites, and a horizontal line indicating a PWQO of 100 cfu/100mL for swimming. There are 8 exceedances of the PWQO.

Benthic Biomonitoring Results (2015-2022)

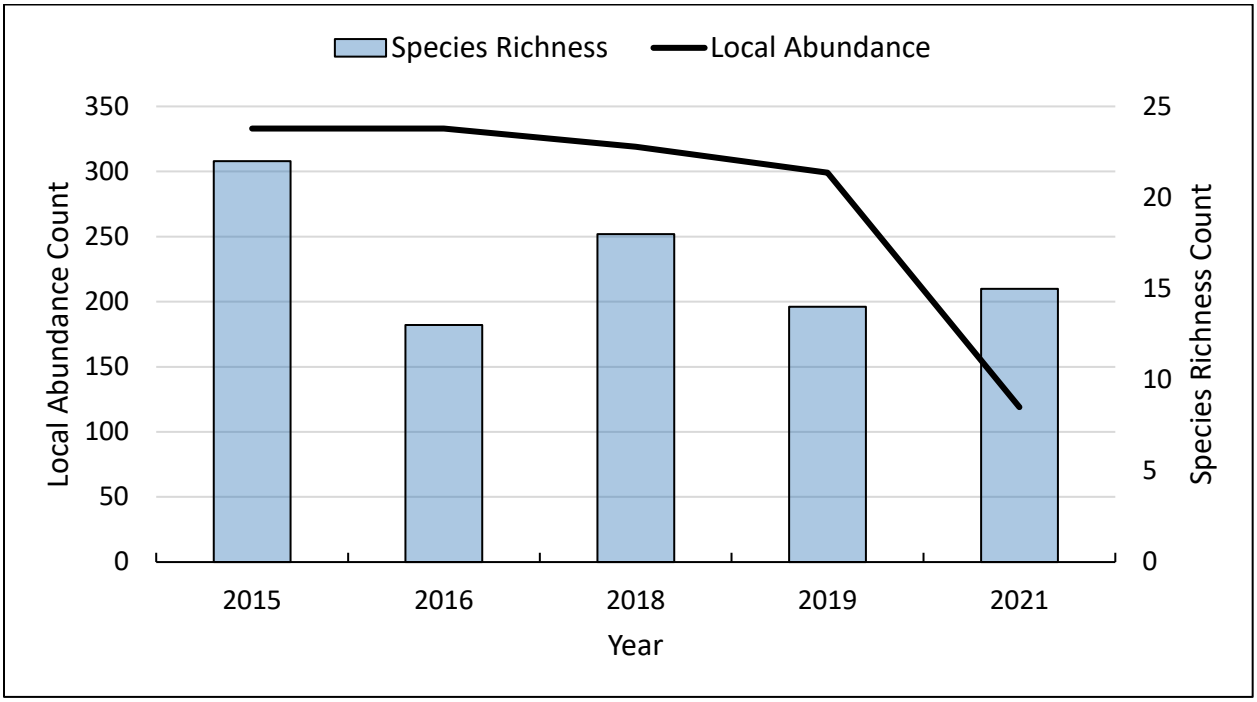

Figure E.11 Local abundance and species richness found within the Rocky Saugeen subwatershed from 2015 to 2021.

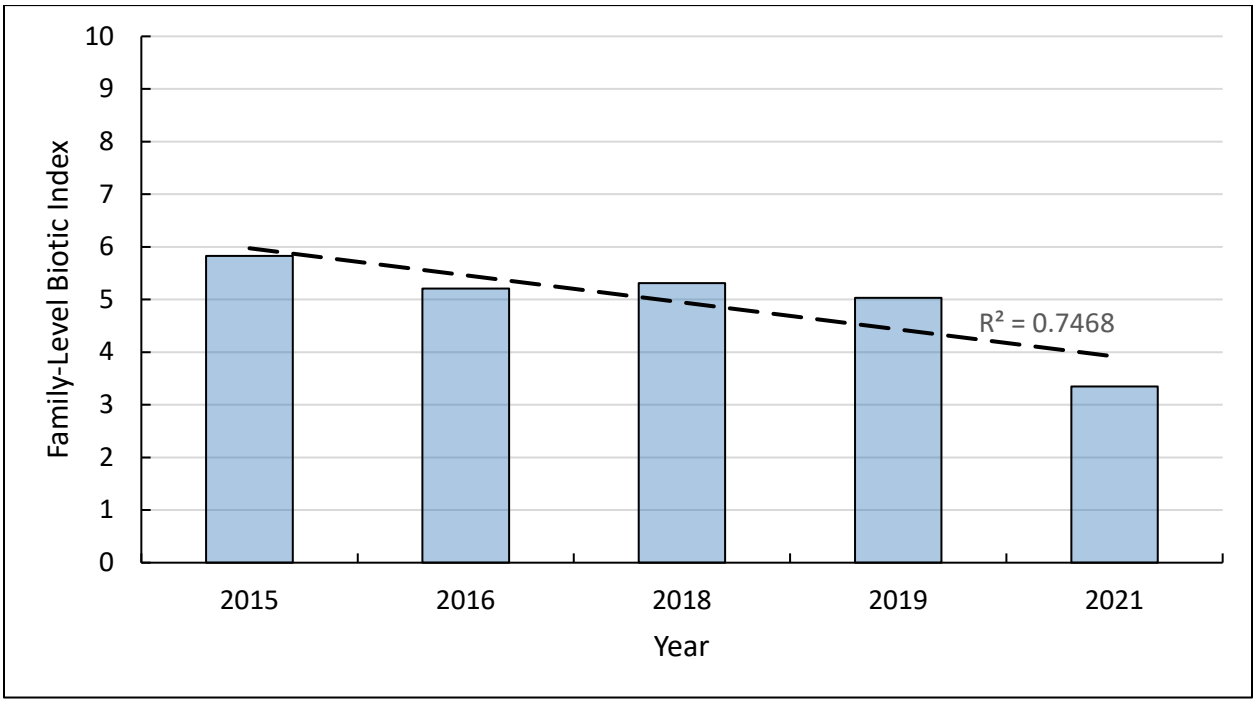

Figure E.12 Family-level biotic index for the Rocky Saugeen subwatershed from 2015 to 2021.

Appendix F – North Saugeen Subwatershed

2023 Results

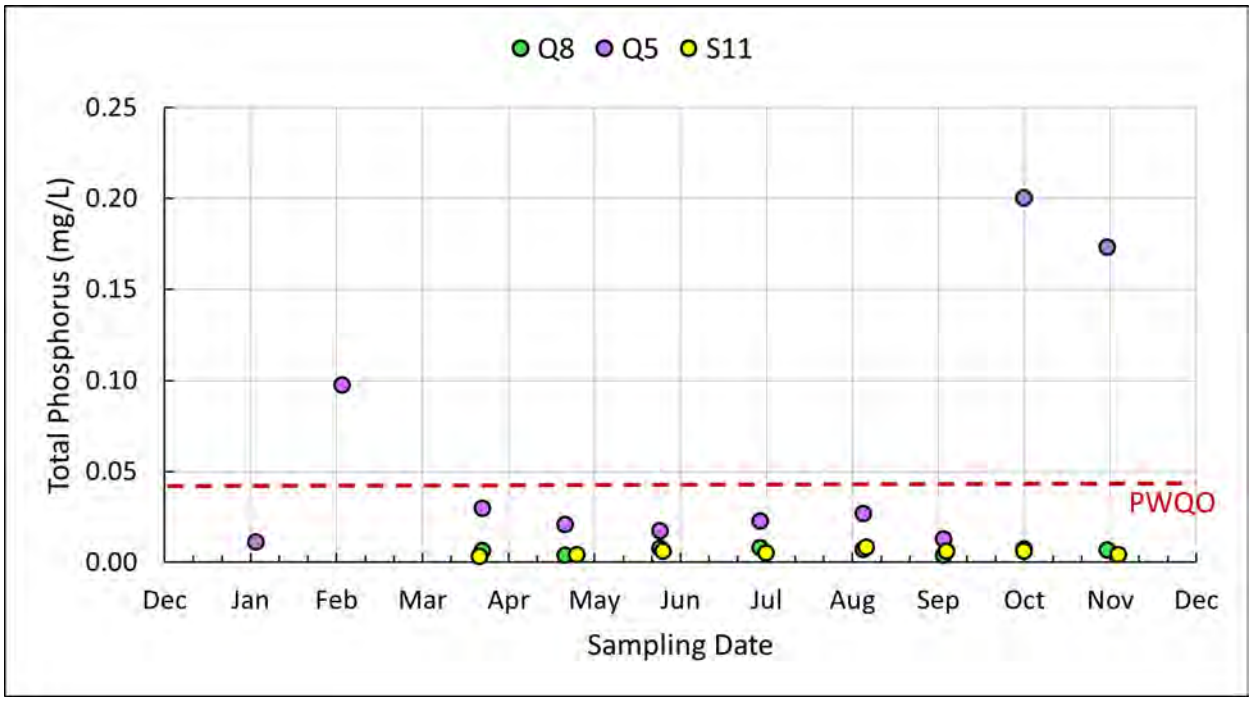

Figure F.1 2023 North Saugeen subwatershed total phosphorus concentrations (mg/L) in graph format. Graph shows Q8, Q5, and S11 sampling sites, and a horizontal line indicating a PWQO of 0.03 mg/L. There are 3 exceedances of the PWQO.

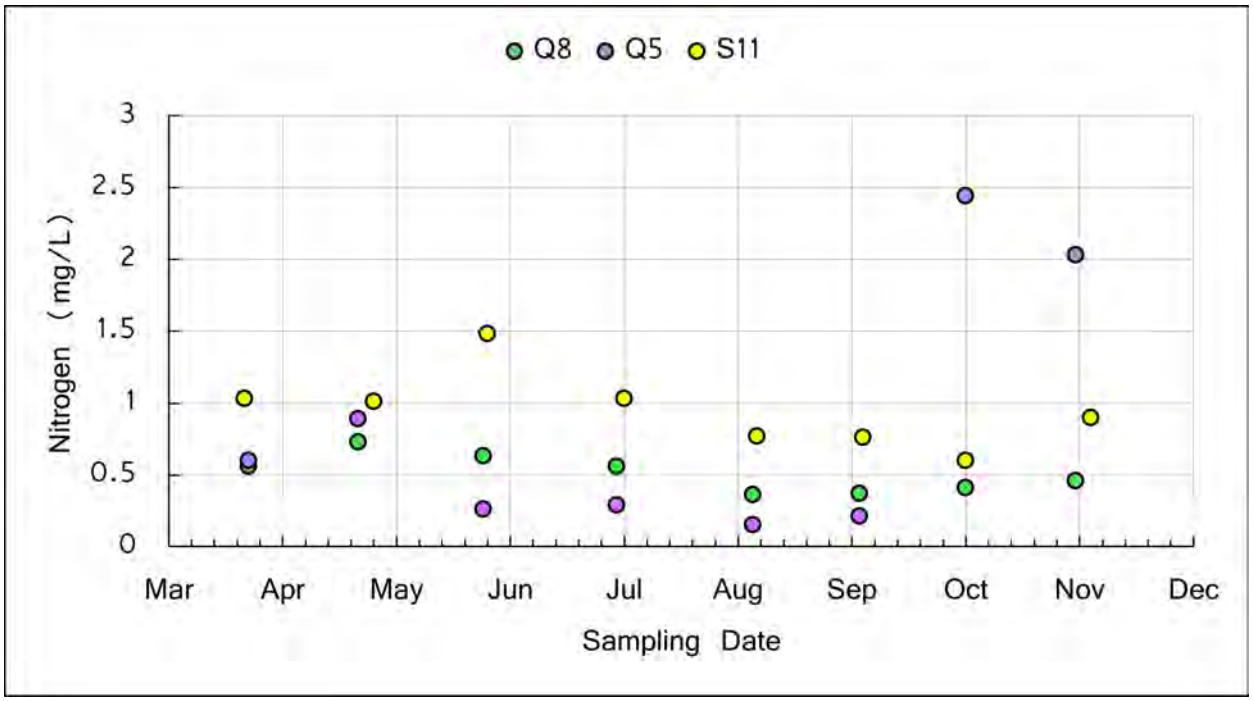

Figure F.2 2023 North Saugeen subwatershed nitrogen concentrations (mg/L) in graph format. Graph shows Q8, Q5, and S11 sampling sites. The CWQG is 2.93 mg/L. There are no exceedances.

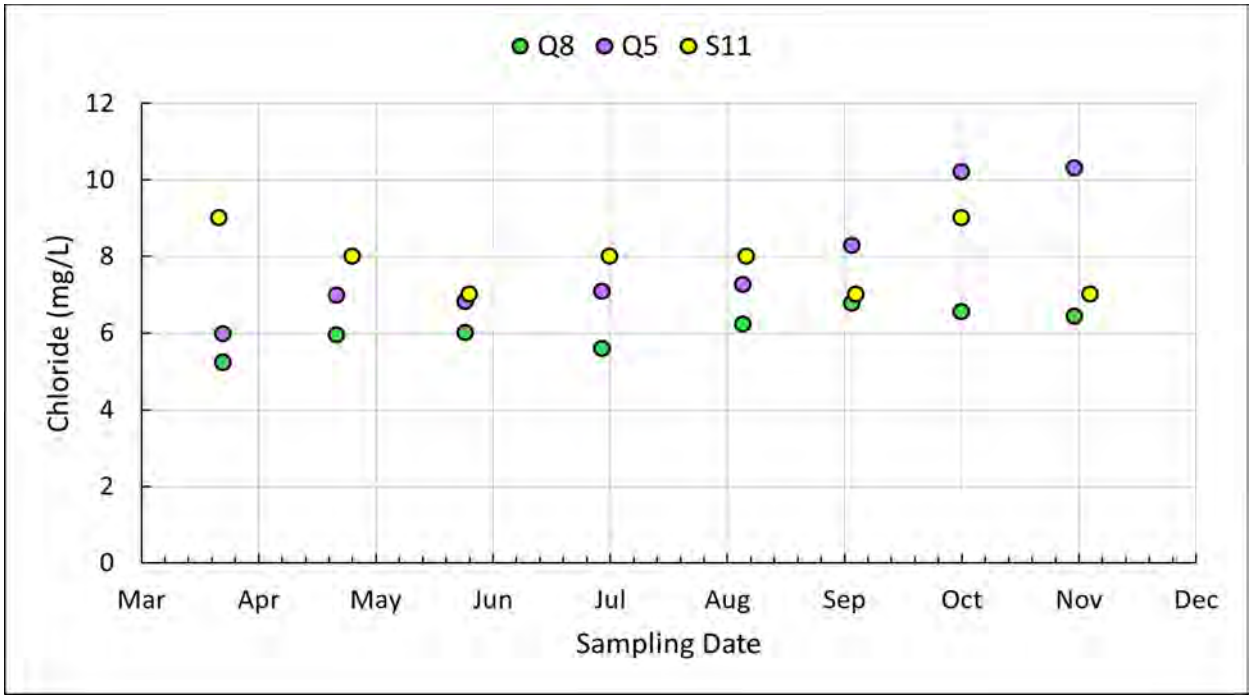

Figure F.3 2023 North Saugeen subwatershed chloride concentrations (mg/L) in graph format. Graph shows Q8, Q5, and S11 sampling sites. The CWQG is 120 mg/L. There are no exceedances.

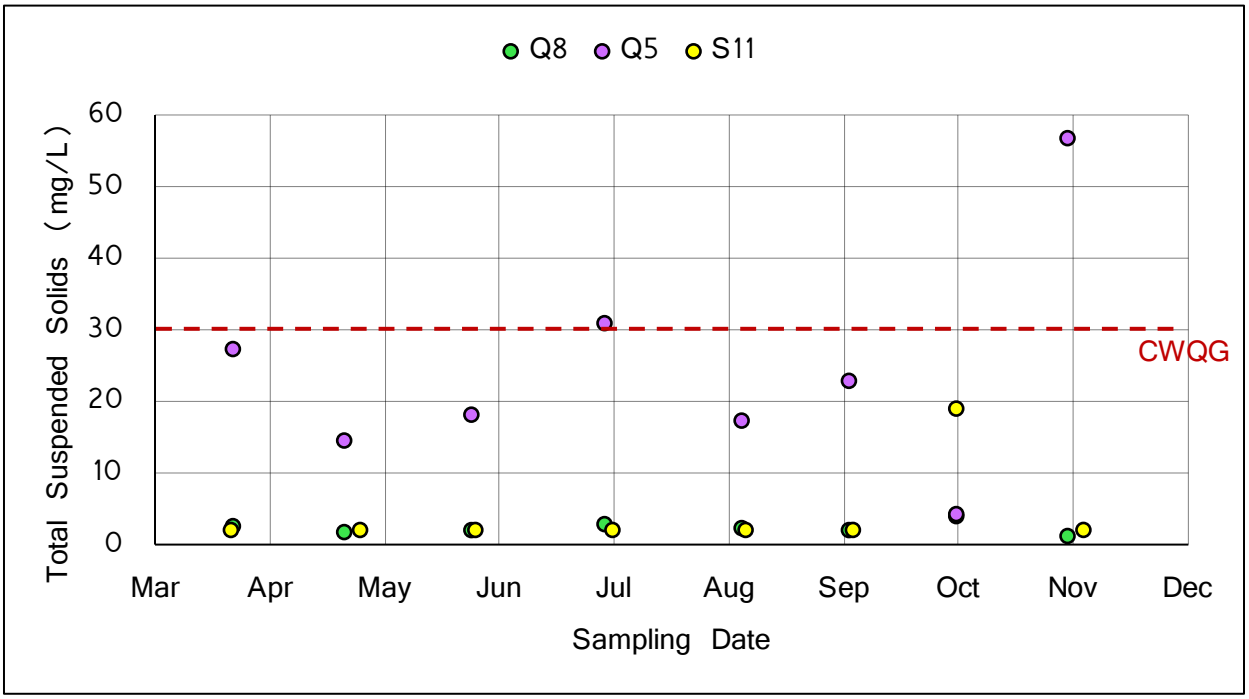

Figure F.4 2023 North Saugeen subwatershed total suspended solids concentrations (mg/L) in graph format. Graph shows Q8, Q5, and S11 sampling sites and a horizontal line indicating a CWQG of 30 mg/L. There are 2 exceedances of the CWQG.

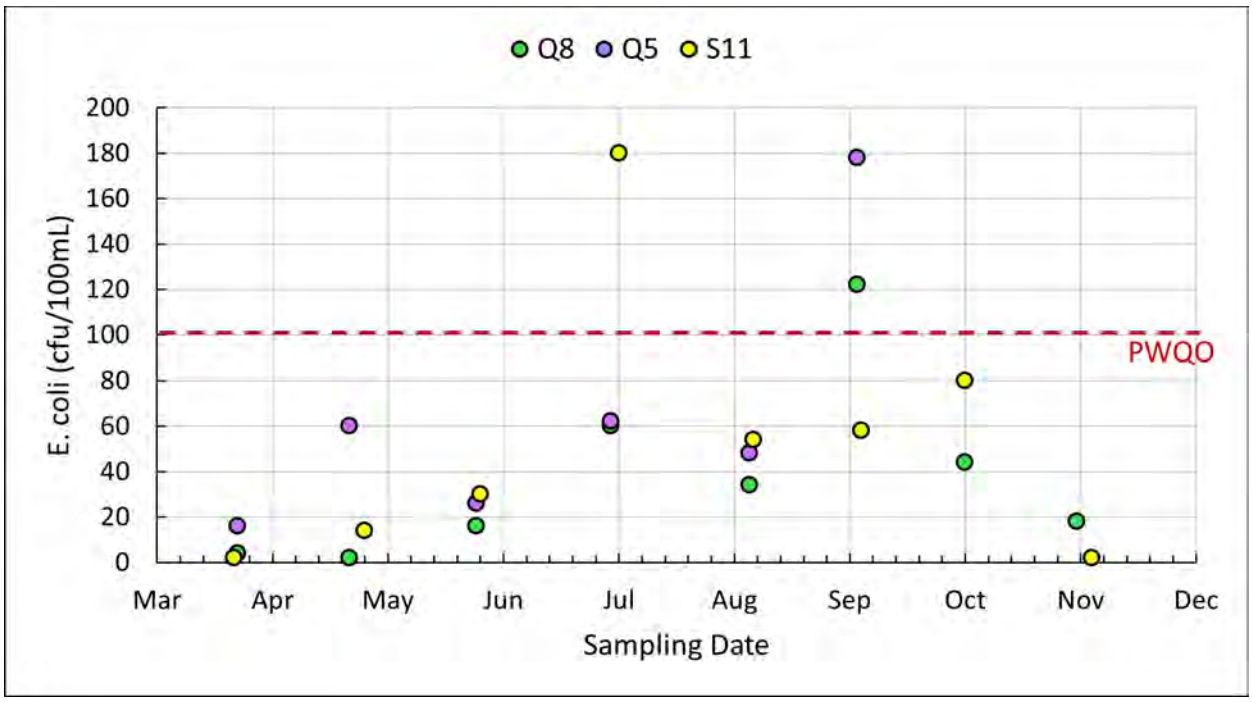

Figure F.5 2023 North Saugeen subwatershed *E. coli* concentrations (cfu/100mL) in graph format. Graph shows Q8, Q5, and S11 sampling sites, and a horizontal line indicating a PWQO of 100 cfu/100mL for swimming. There are 5 exceedances of the PWQO, two Q5 exceedances are not shown on this graph (October at 2600 cfu/100mL, November at 4500 cfu/100mL).

Long-term Results

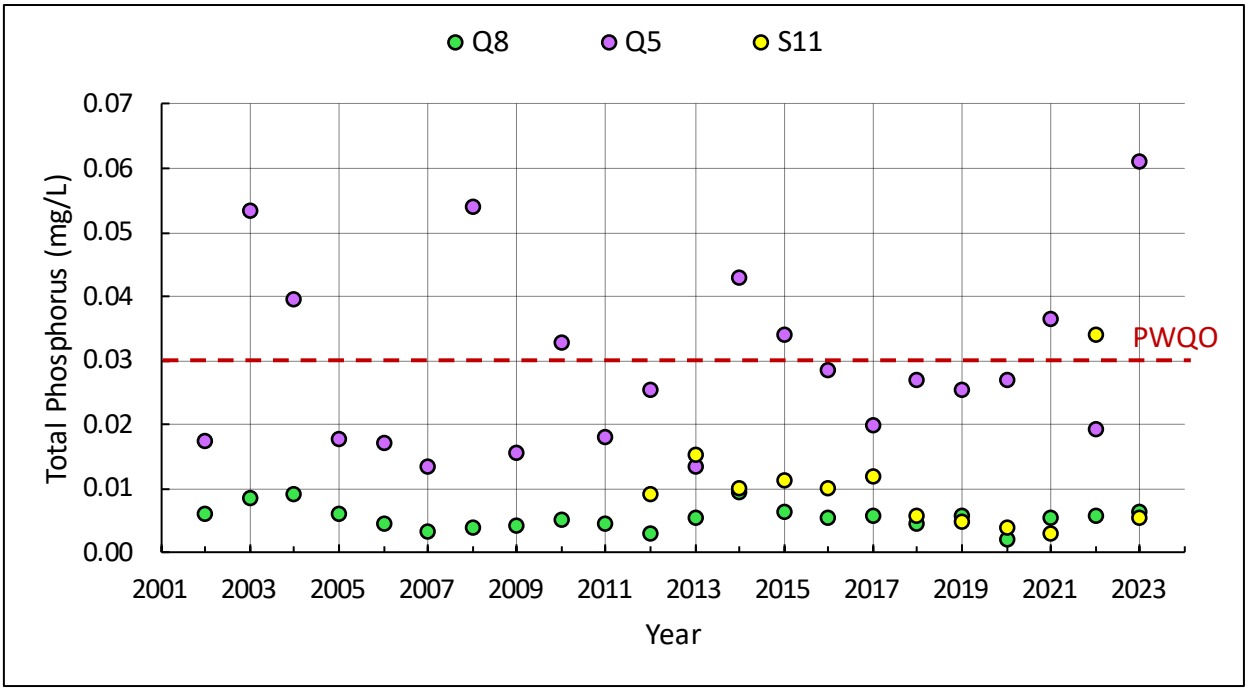

Figure F.6 2002 to 2023 North Saugeen subwatershed annual average total phosphorus concentrations (mg/L) in graph format. Graph shows Q8, Q5, and S11 sampling sites, and a horizontal line indicating a PWQO of 0.03 mg/L. There are 9 exceedances of the PWQO.

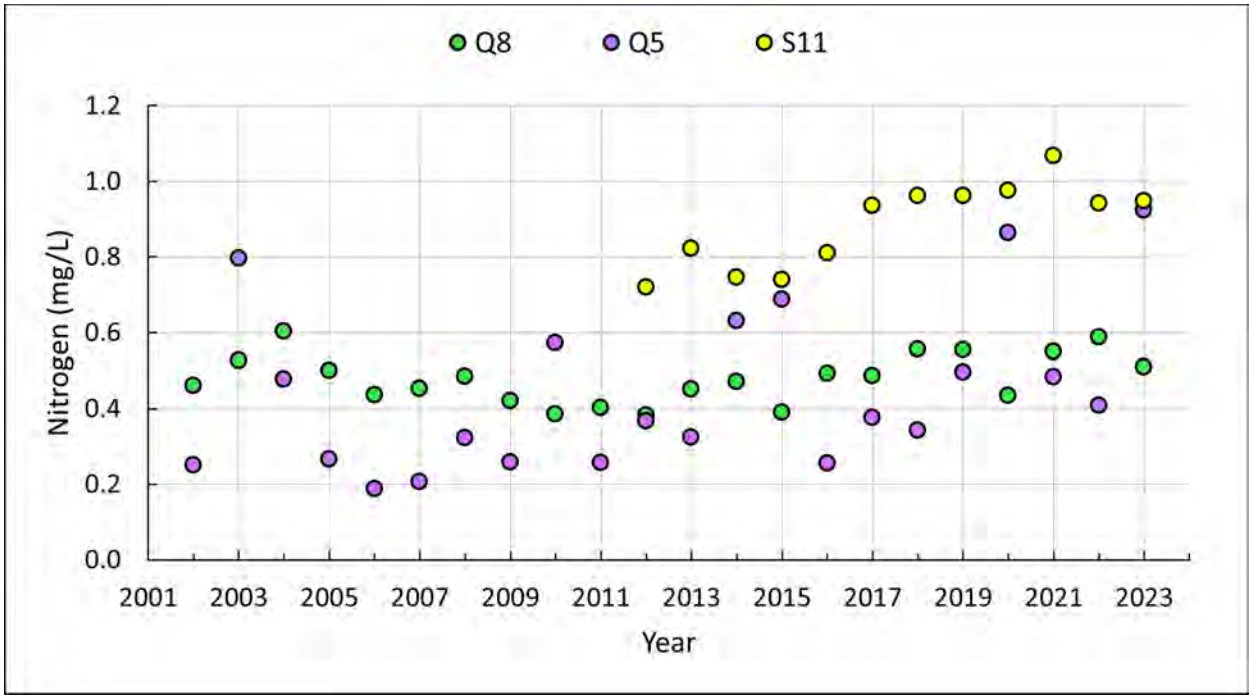

Figure F.7 2002 to 2023 North Saugeen subwatershed annual average nitrogen concentrations (mg/L) in graph format. Graph shows Q8, Q5, and S11 sampling sites. The CWQG is 2.93 mg/L. There are no exceedances.

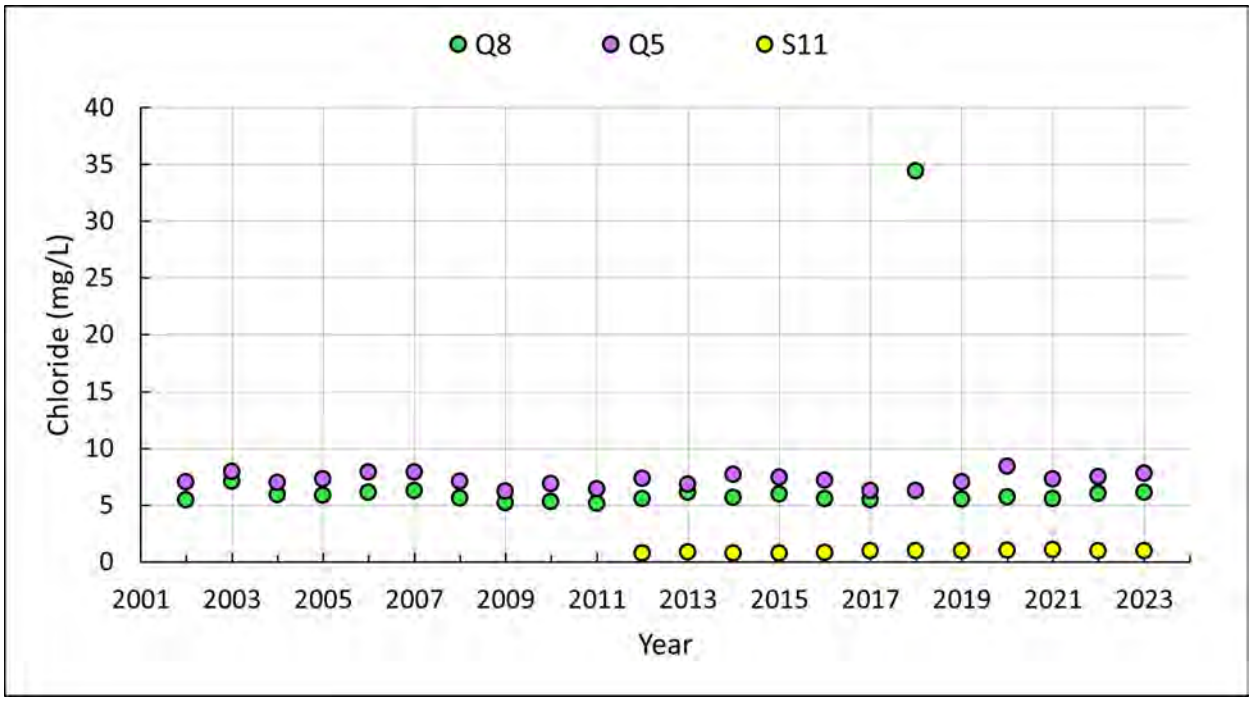

Figure F.8 2002 to 2023 North Saugeen subwatershed annual average chloride concentrations (mg/L) in graph format. Graph shows Q8, Q5, and S11 sampling sites. The CWQG is 120 mg/L. There are no exceedances.

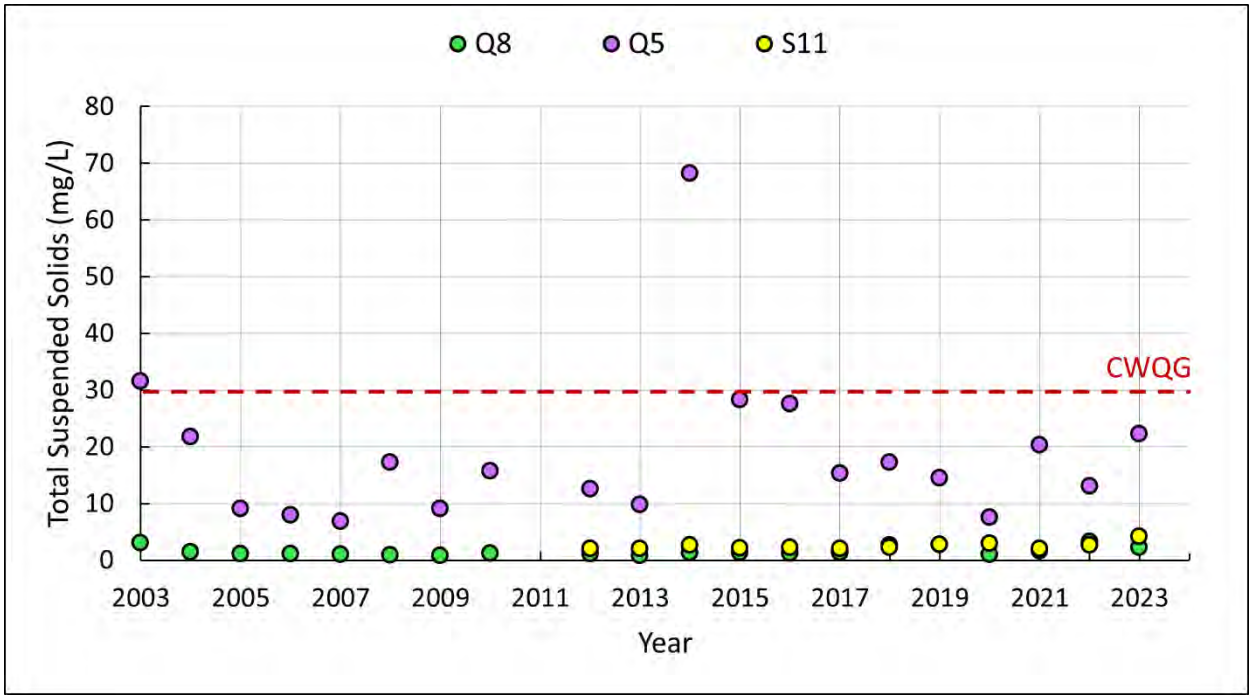

Figure F.9 2012 to 2023 North Saugeen subwatershed annual average total suspended solids concentrations (mg/L) in graph format. Graph shows Q8, Q5, and S11 sampling sites, and a horizontal line indicating a CWQG of 30 mg/L. There are 2 exceedances of the CWQG.

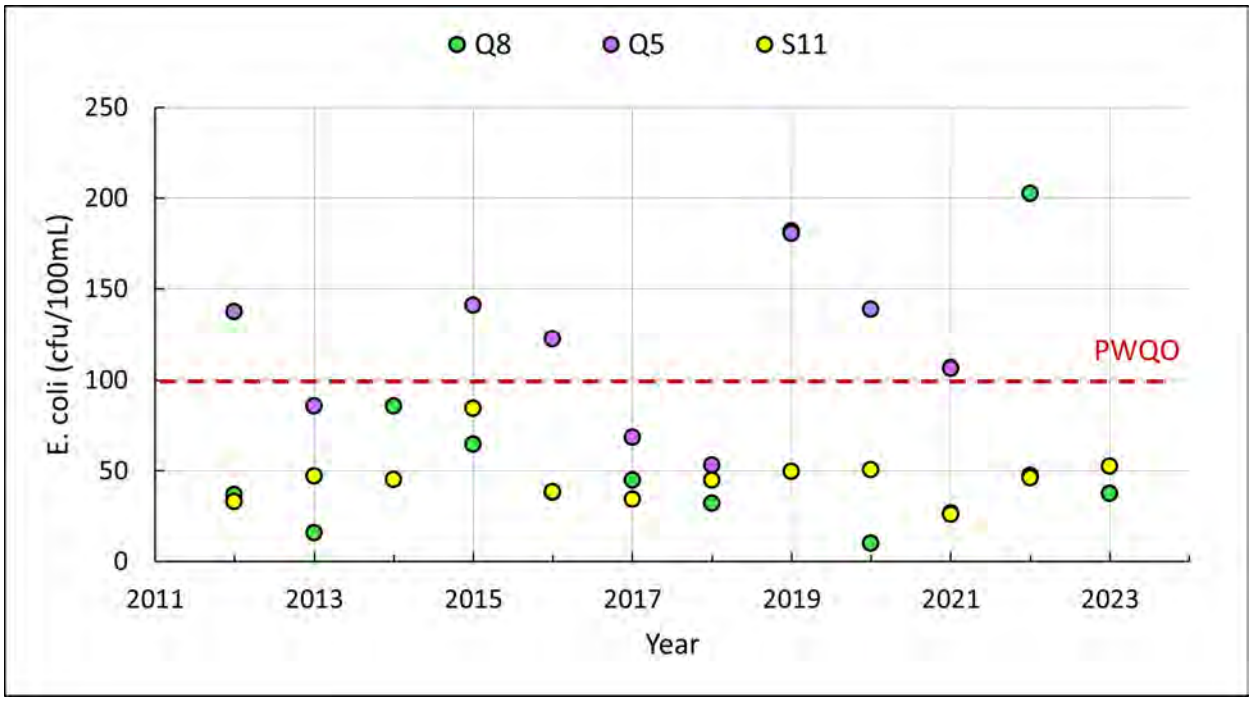

Figure F.10 2012 to 2023 North Saugeen subwatershed annual average *E. coli* concentrations (cfu/100mL) in graph format. Graph shows Q8, Q5, and S11 sampling sites, and a horizontal line indicating a PWQO of 100 cfu/100mL for swimming. There are 10 exceedances of the PWQO; there are two exceedances at Q5 in 2014 and 2023 that are not shown on this graph (1595 and 936 cfu/100mL, respectively).

Benthic Biomonitoring Results (2015-2020)

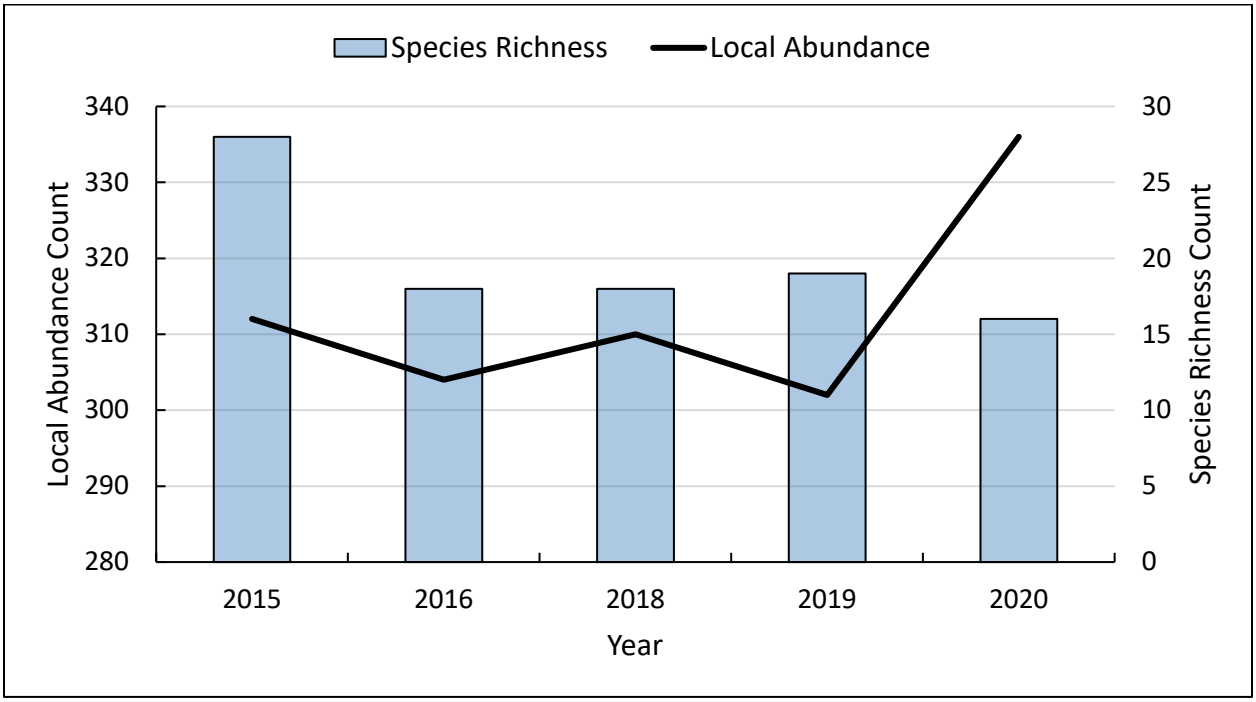

Figure F.11 Local abundance and species richness found within the North Saugeen subwatershed from 2015 to 2020.

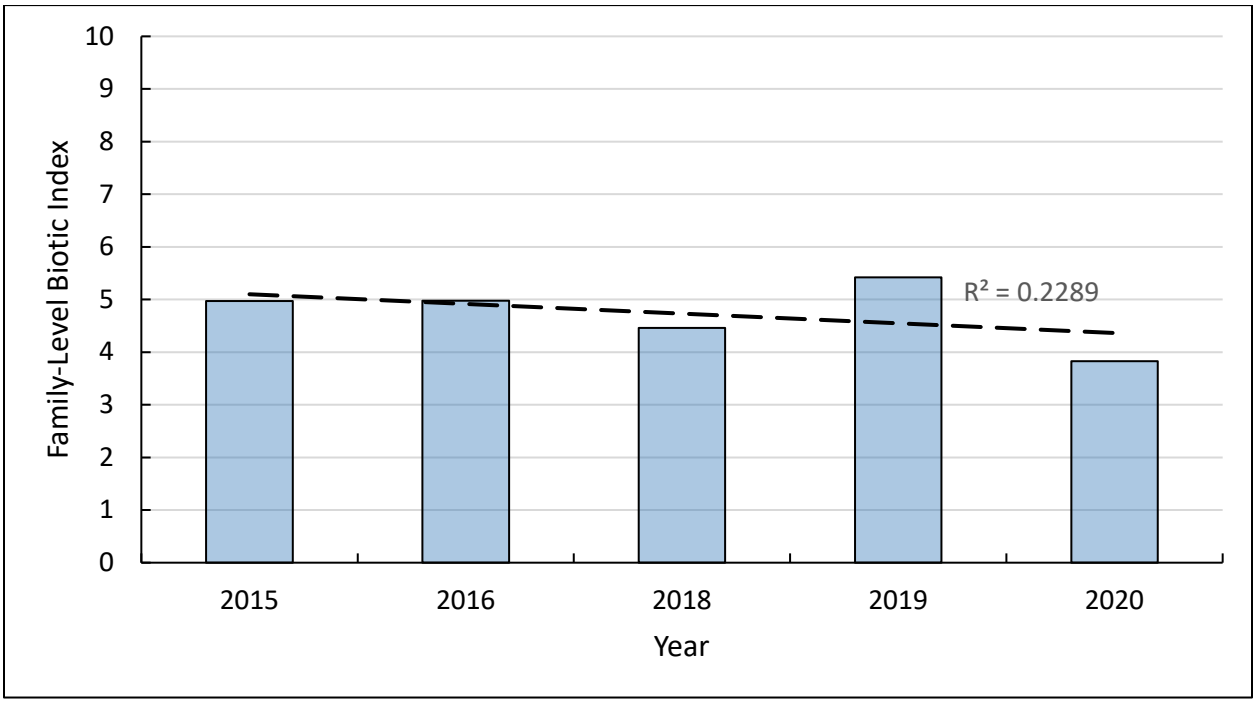

Figure F.12 Family-level biotic index scores for the North Saugeen subwatershed from 2015 to 2020.

Appendix G – Teeswater Subwatershed

2023 Results

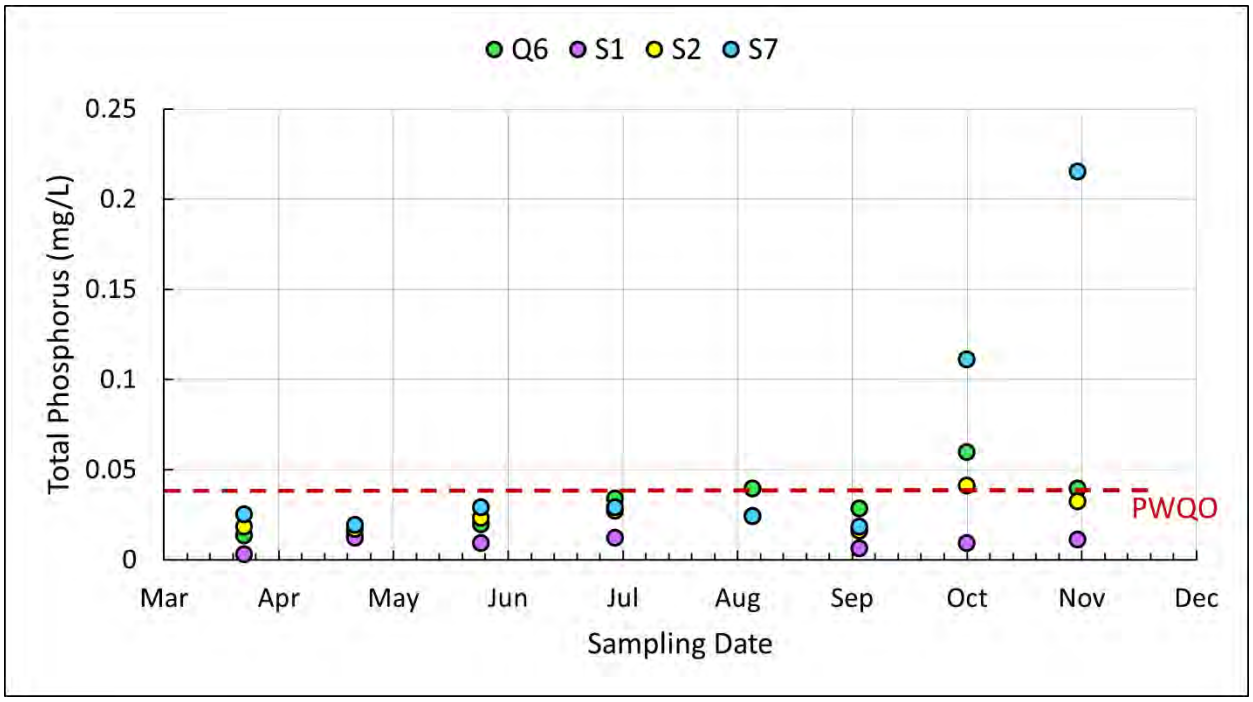

Figure G.1 2023 Teeswater subwatershed total phosphorus concentrations (mg/L) in graph format. Graph shows Q6, S1, S2, and S7 sampling sites, and a horizontal line indicating a PWQO of 0.03 mg/L. There are 4 exceedances of the PWQO.

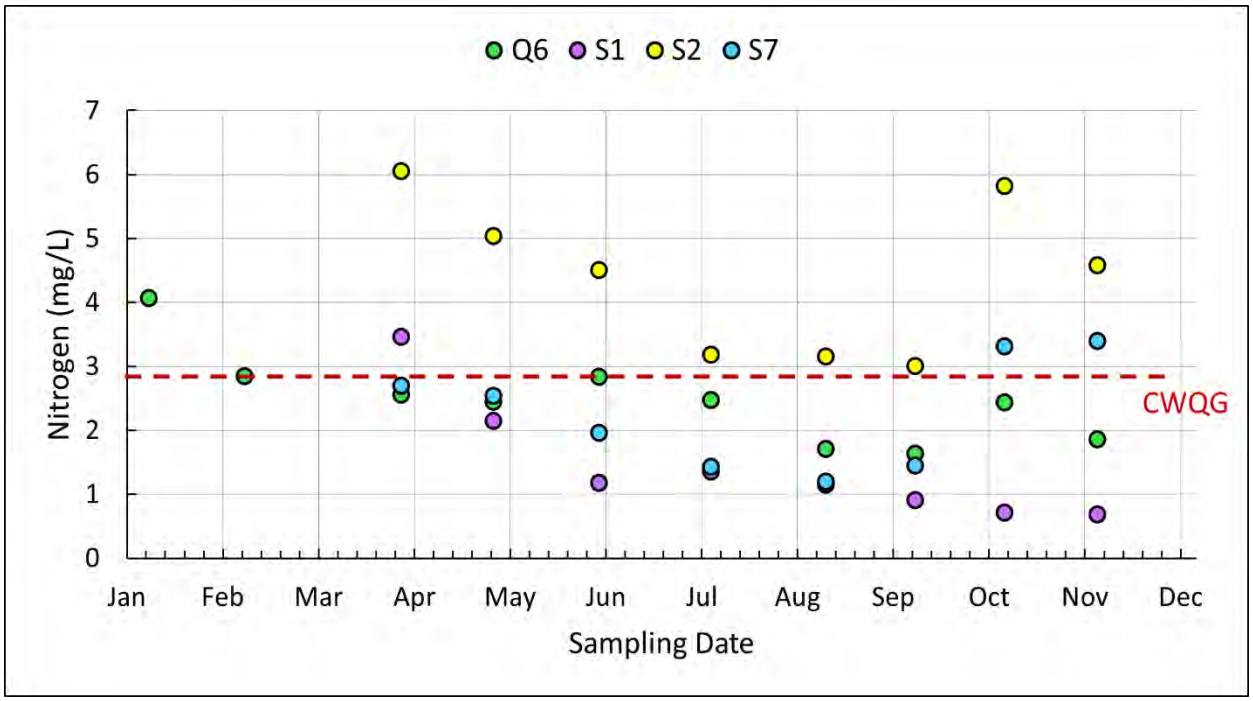

Figure G.2 2023 Teeswater subwatershed nitrogen concentrations (mg/L) in graph format. Graph shows Q6, S1, S2, and S7 sampling sites, and a horizontal line indicating a CWQG of 2.93 mg/L. There are 12 exceedances of the CWQG.

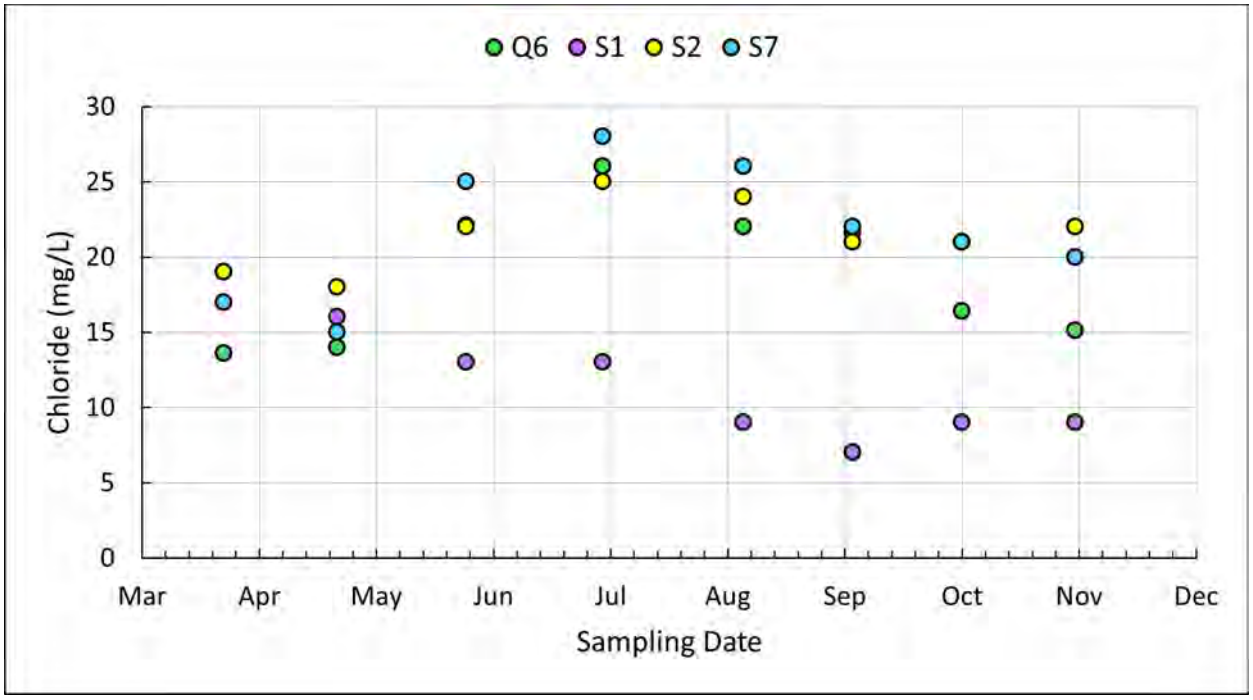

Figure G.3 2023 Teeswater subwatershed chloride concentrations (mg/L) in graph format. Graph shows Q6, S1, S2, and S7 sampling sites. The CWQG is 120 mg/L. There are no exceedances.

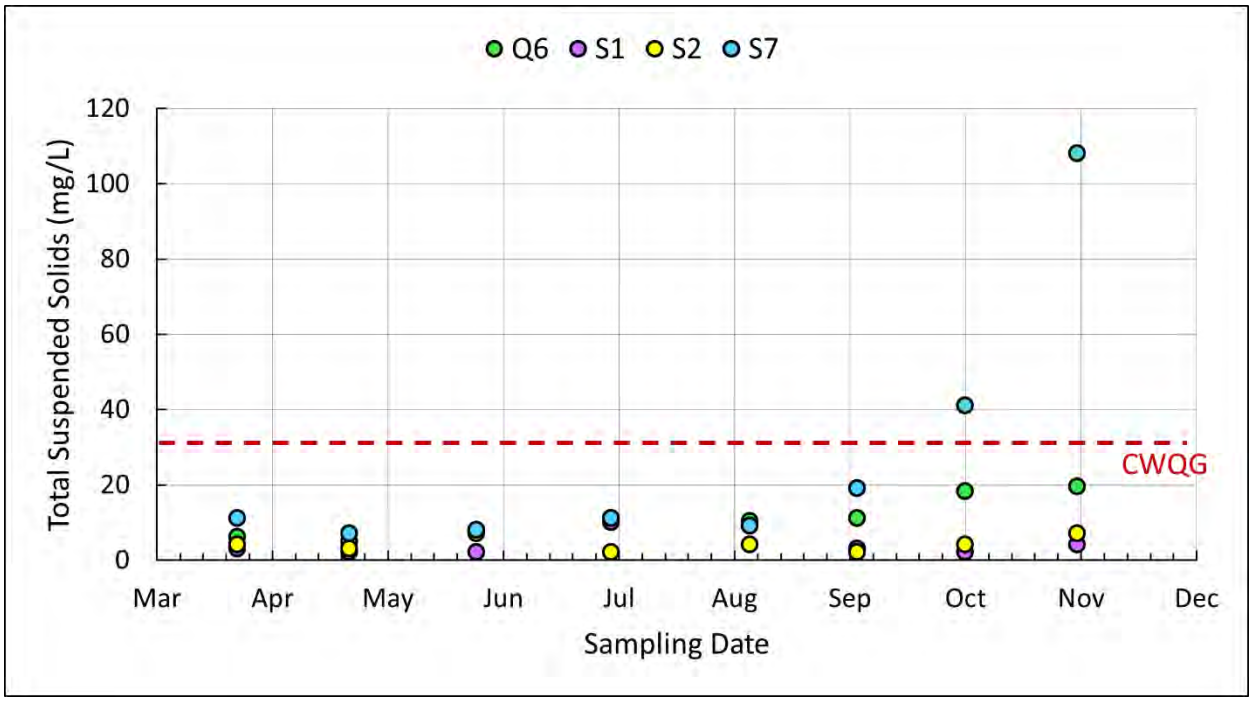

Figure G.4 2023 Teeswater subwatershed total suspended solids concentrations (mg/L) in graph format. Graph shows Q6, S1, S2, and S7 sampling sites, and a horizontal line indicating a CWQG of 30 mg/L. There are 2 exceedances of the CWQG.

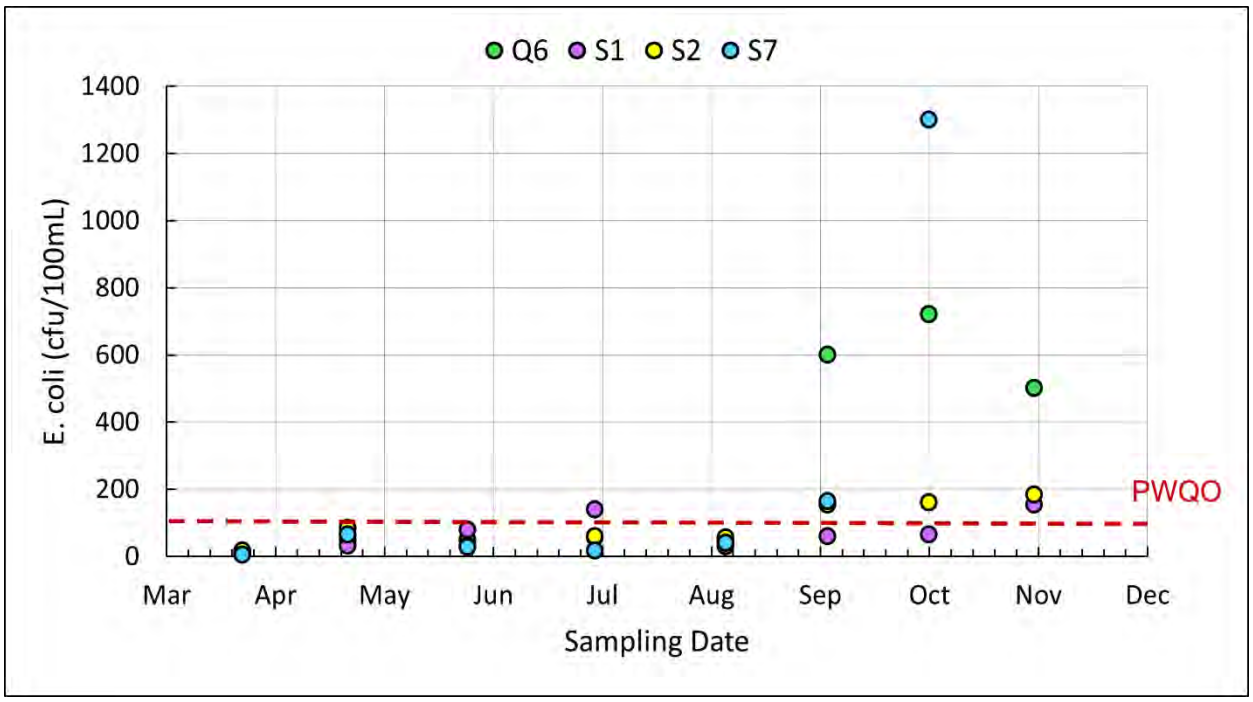

Figure G.5 2023 Teeswater subwatershed *E. coli* concentrations (cfu/100mL) in graph format. Graph shows Q6, S1, S2, and S7 sampling sites, and a horizontal line indicating a PWQO of 100 cfu/100mL for swimming. There are 11 exceedances of the PWQO, one exceedance in November is not shown on this graph (S7 at 3300 cfu/100mL).

Long-term Results

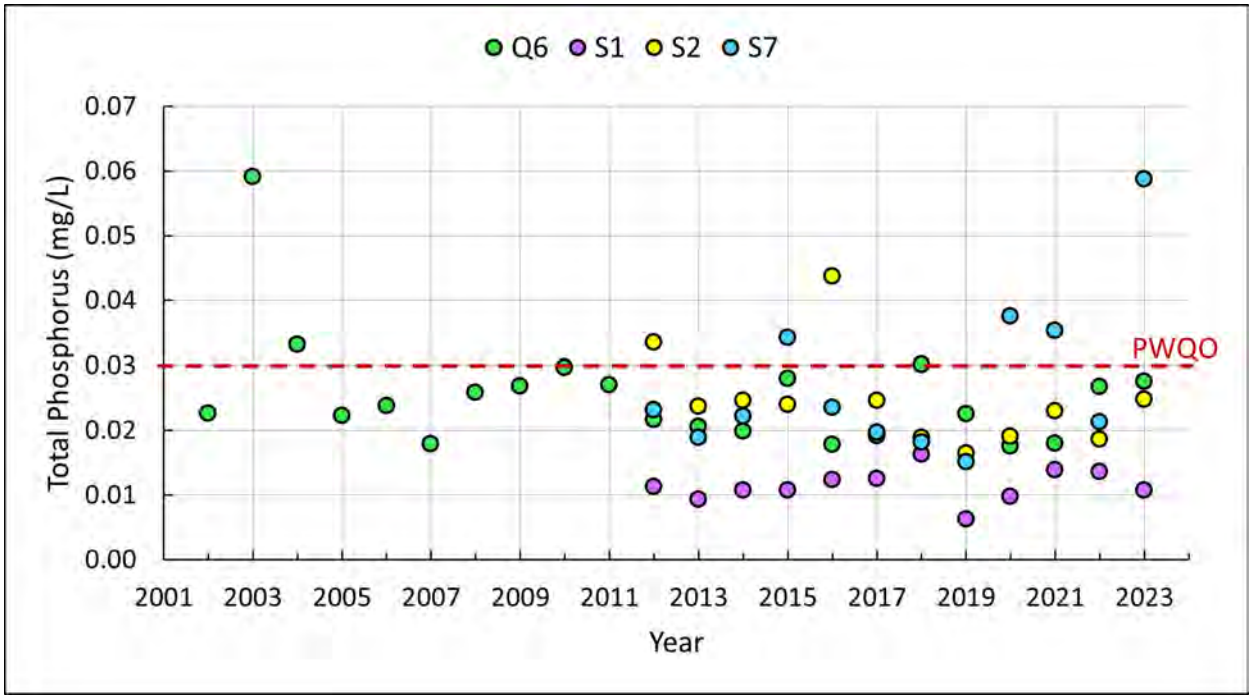

Figure G.6 2002 to 2023 Teeswater subwatershed annual average total phosphorus concentrations (mg/L) in graph format. Graph shows Q6, S1, S2, and S7 sampling sites and a horizontal line indicating a PWQO of 0.03 mg/L. There are 9 exceedances of the PWQO.

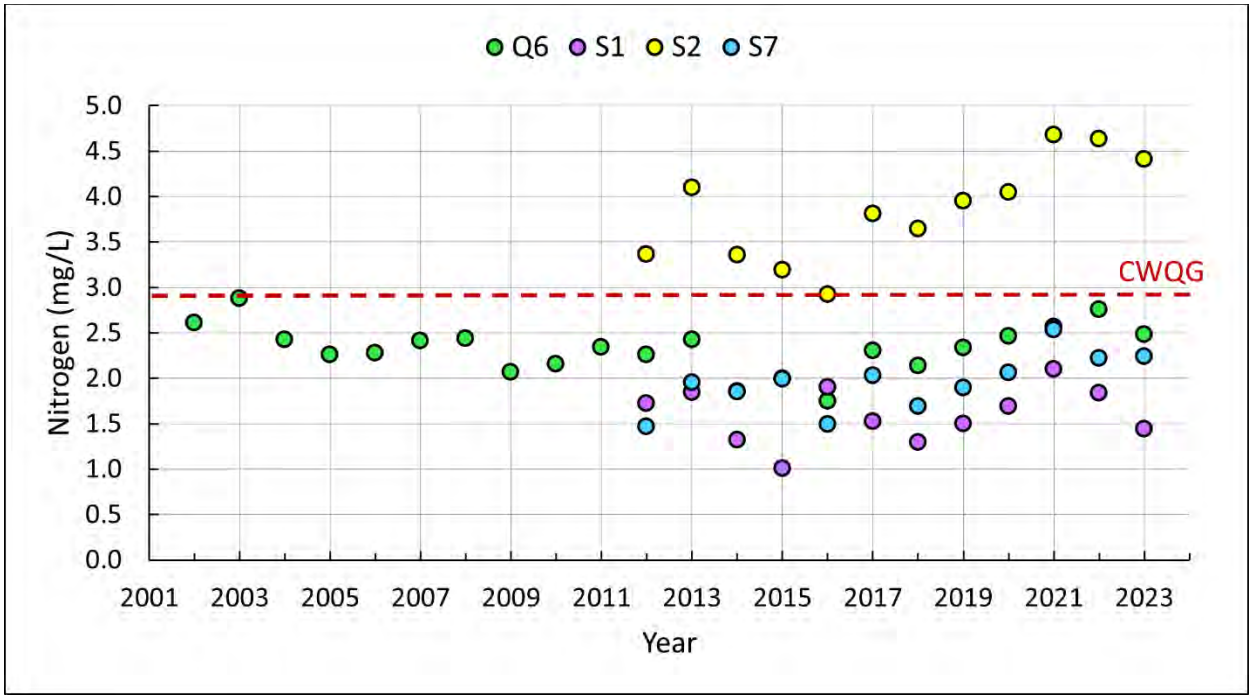

Figure G.7 2002 to 2023 Teeswater subwatershed annual average nitrogen concentrations (mg/L) in graph format. Graph shows Q6, S1, S2, and S7 sampling sites and a horizontal line indicating a CWQG of 2.93 mg/L. There are 11 exceedances of the CWQG.

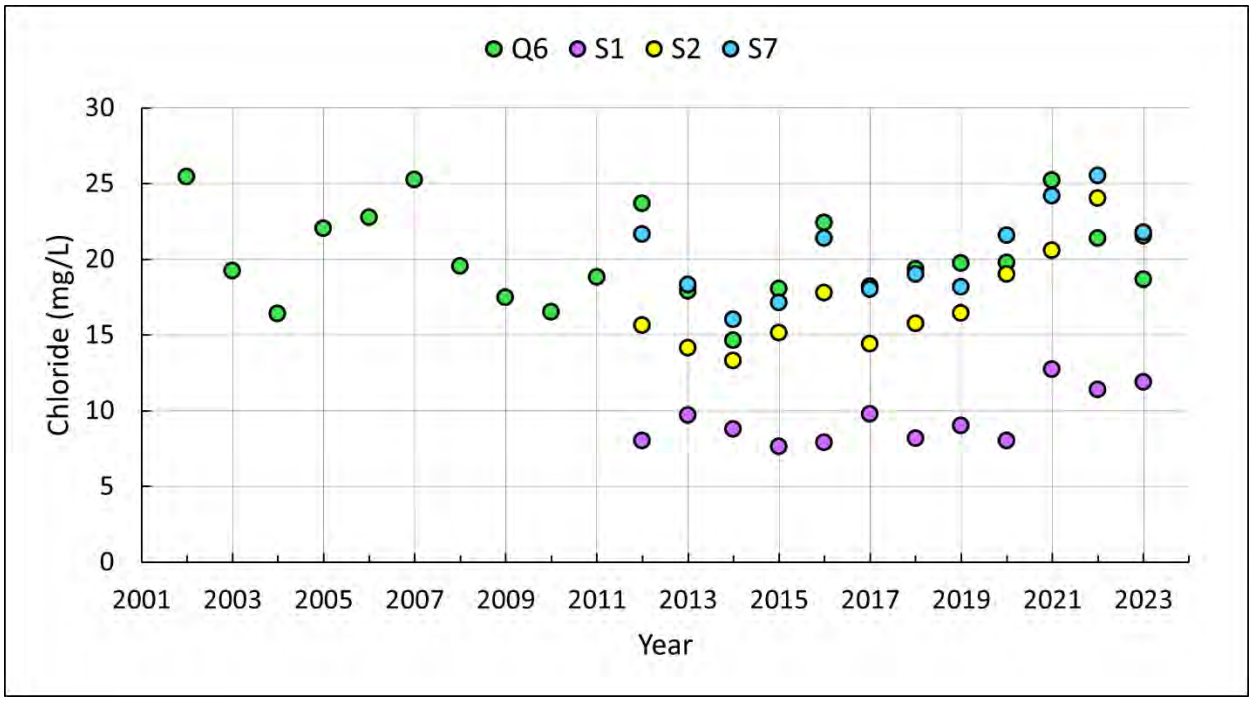

Figure G.8 2002 to 2023 Teeswater subwatershed annual average chloride concentrations (mg/L) in graph format. Graph shows Q6, S1, S2, and S7 sampling sites. The CWQG is 120 mg/L. There are no exceedances.

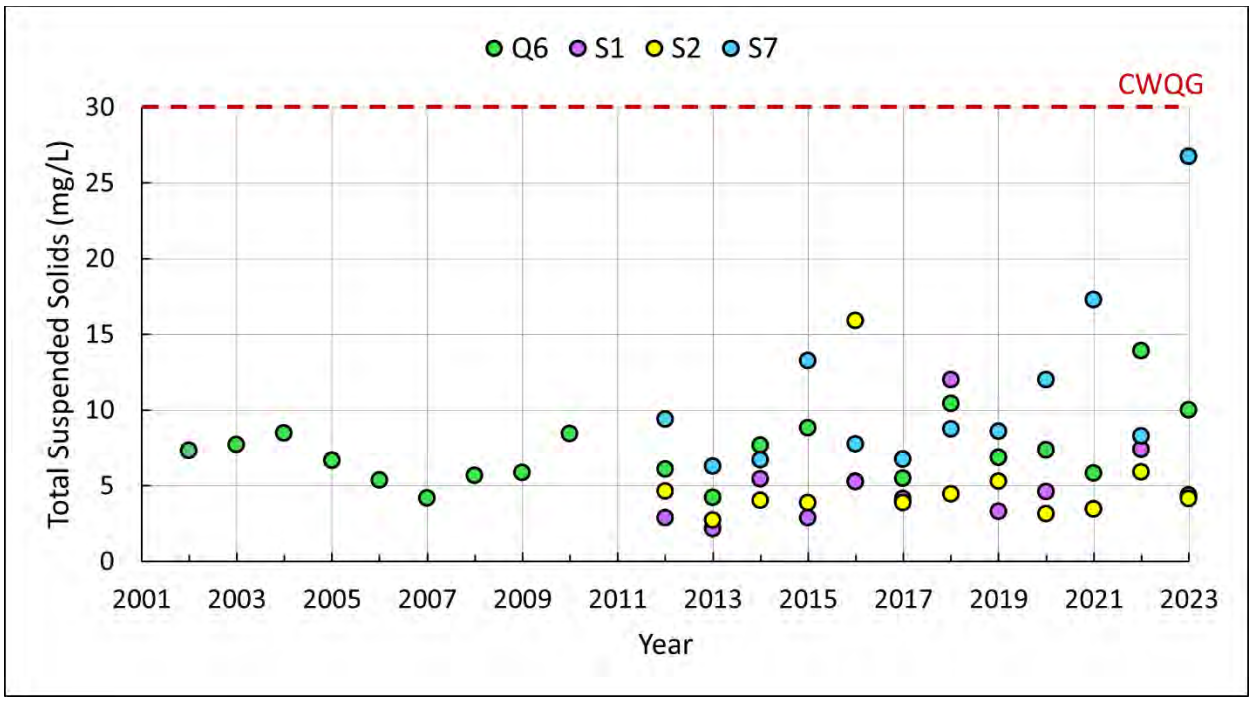

Figure G.9 2012 to 2023 Teeswater subwatershed annual average total suspended solids concentrations (mg/L) in graph format. Graph shows Q6, S1, S2, and S7 sampling sites and a horizontal line indicating a CWQG of 30 mg/L. There are no exceedances. Results for Q6 in 2011 are not available.

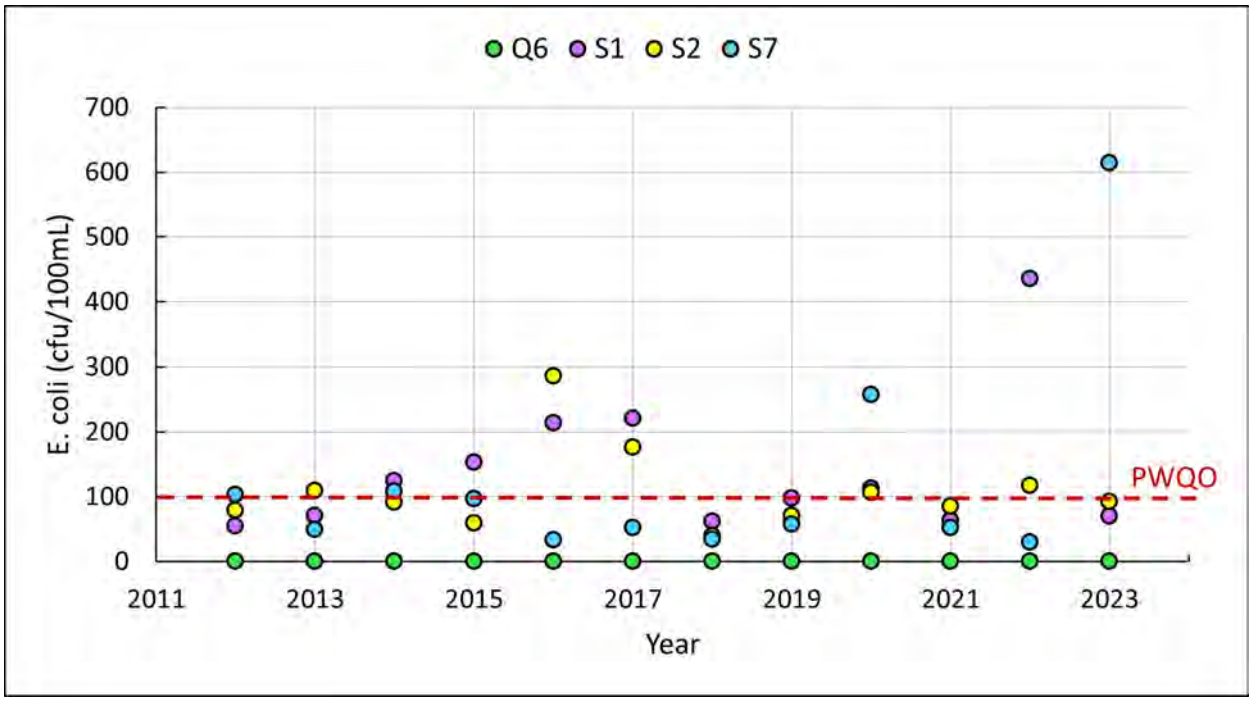

Figure G.10 2012 to 2023 Teeswater subwatershed annual average *E. coli* concentrations (cfu/100mL) in graph format. Graph shows Q6, S1, S2, and S7 sampling sites, and a horizontal line indicating a PWQO of 100cfu/100mL for swimming. There are 18 exceedances of the PWQO.

Benthic Biomonitoring Results (2015-2021)

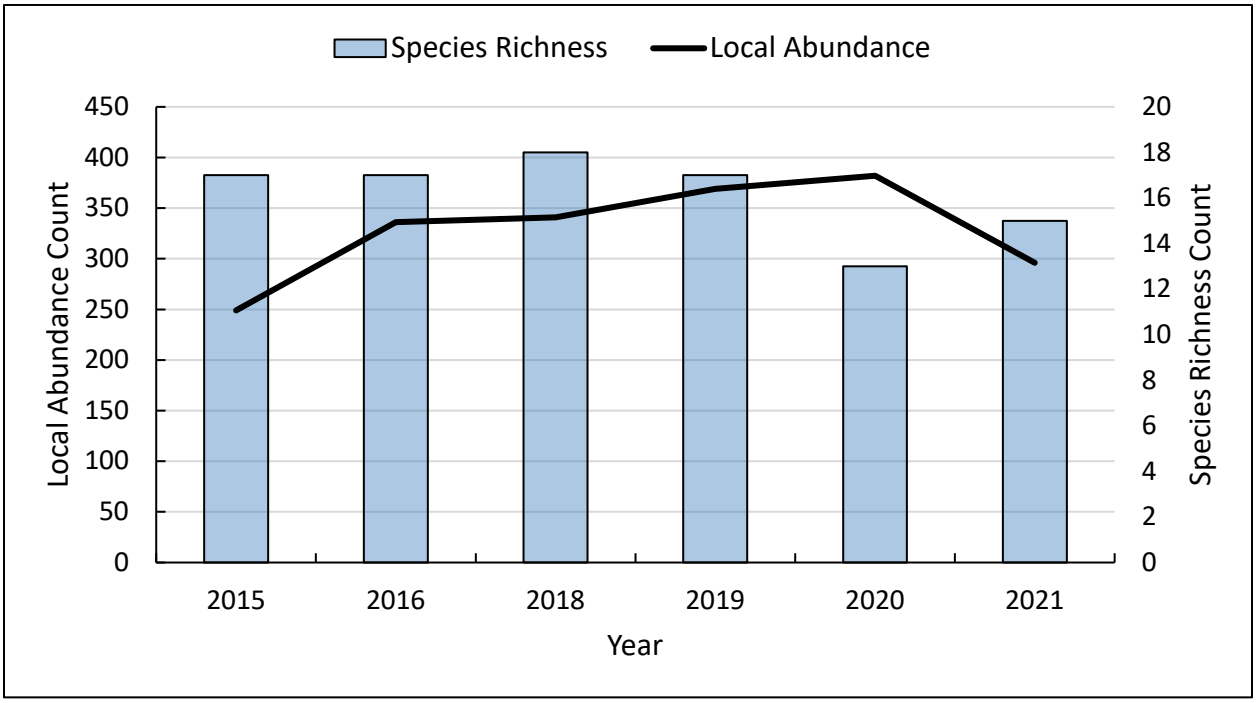

Figure G.11 Local abundance and species richness found within the Teeswater subwatershed from 2015 to 2021.

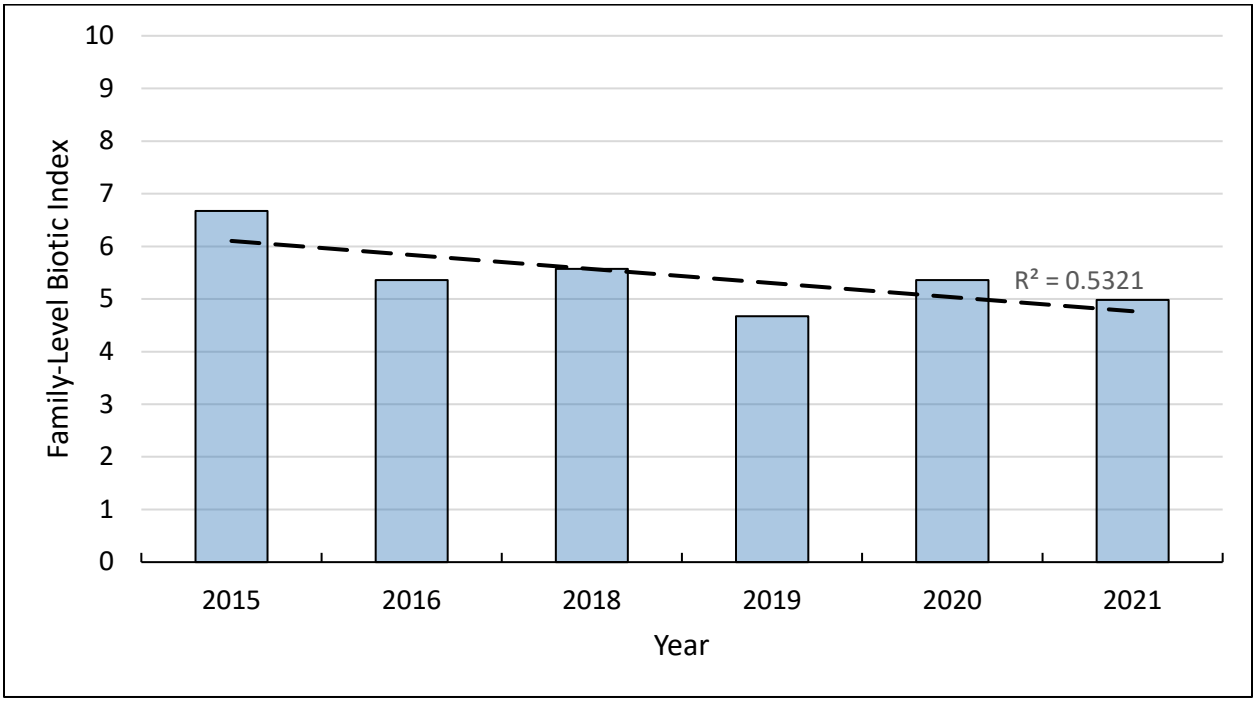

Figure G.12 Family-level biotic index for the Teeswater subwatershed from 2015 to 2021.

Appendix H – Lower Main Saugeen Subwatershed

2023 Results

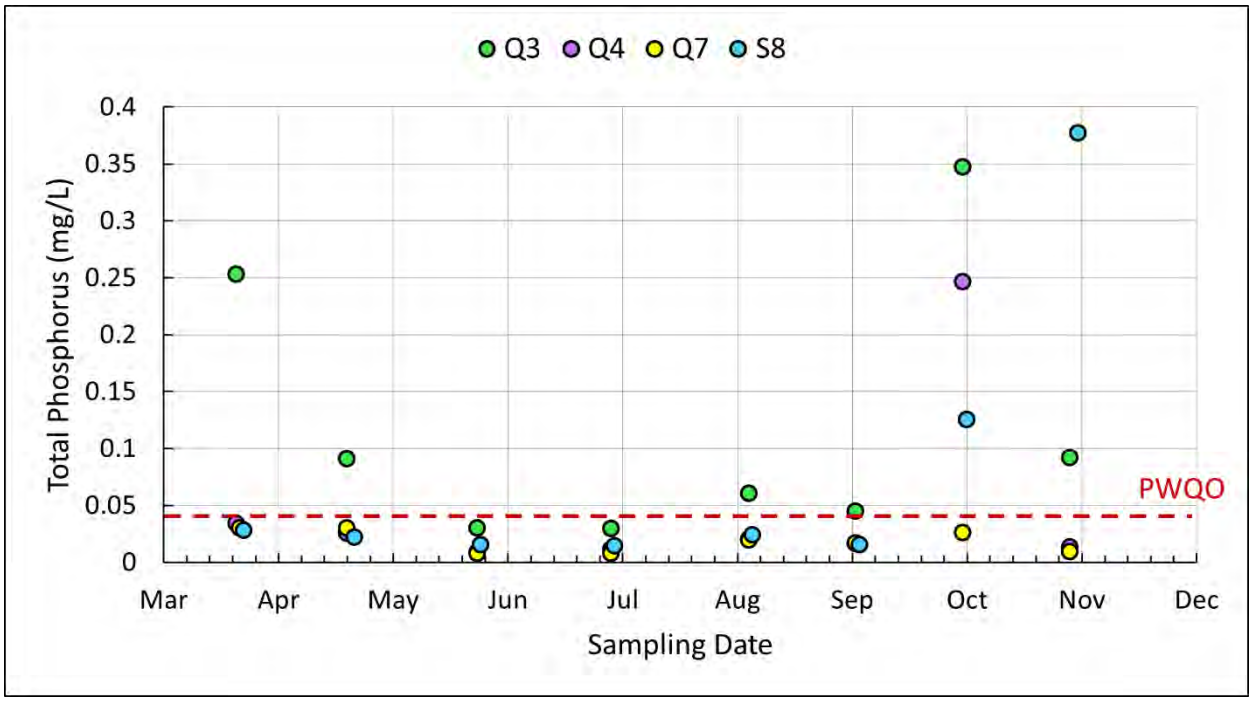

Figure H.1 2023 Lower Main Saugeen subwatershed total phosphorus concentrations (mg/L) in graph format. Graph shows Q3, Q4, Q7 and S8 sampling sites, and a horizontal line indicating a PWQO of 0.03 mg/L. There are 12 exceedances of the PWQO.

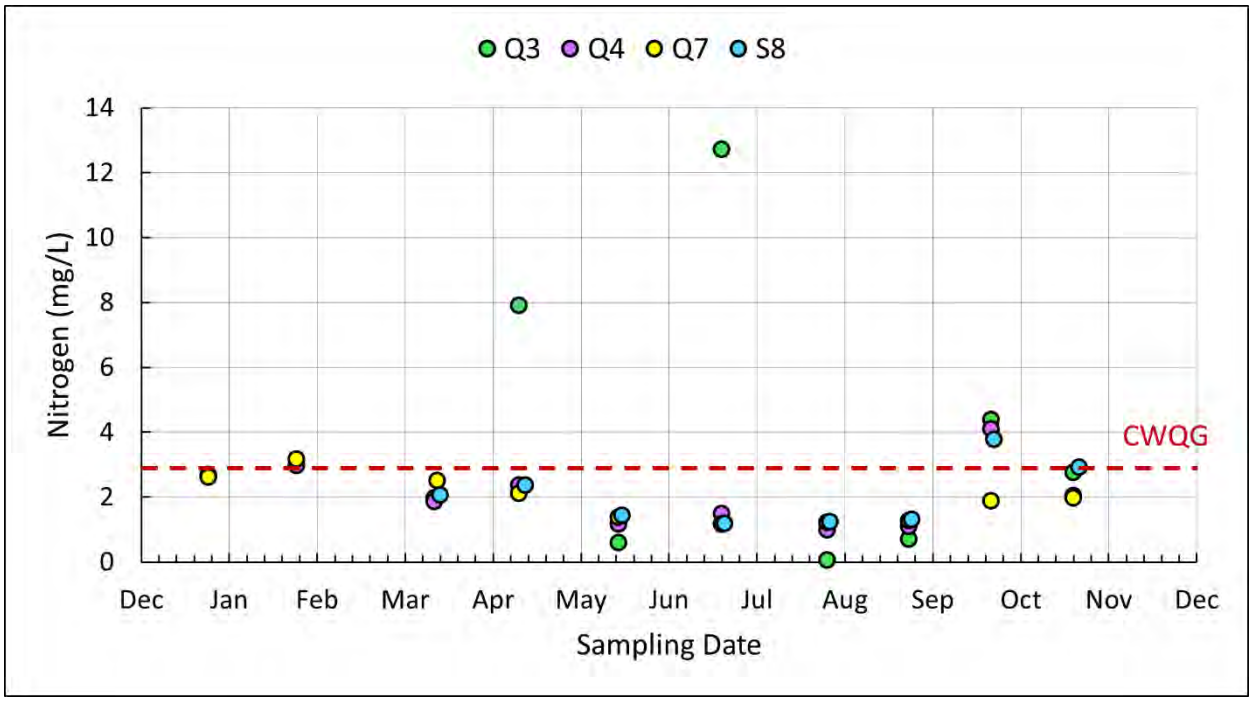

Figure H.2 2023 Lower Main Saugeen subwatershed nitrogen concentrations (mg/L) in graph format. Graph shows Q3, Q4, Q7 and S8 sampling sites, and a horizontal line indicating a CWQG of 2.93 mg/L. There are 7 exceedances of the CWQG.

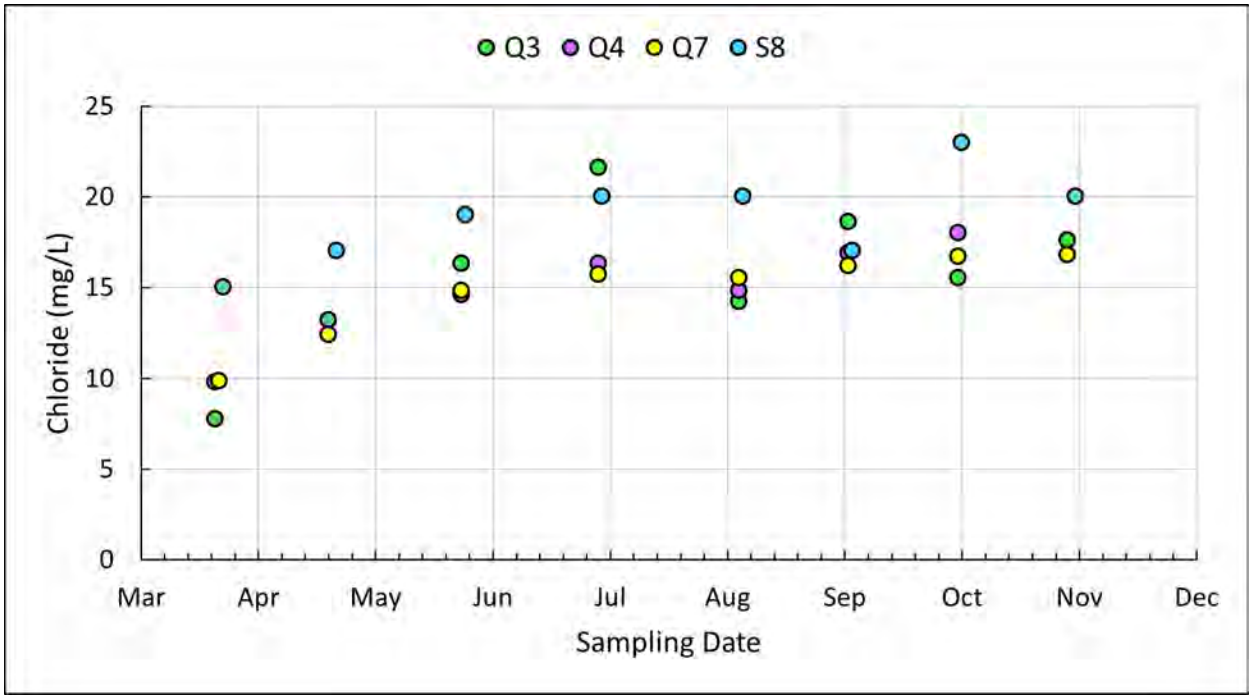

Figure H.3 2023 Lower Main Saugeen subwatershed chloride concentrations (mg/L) in graph format. Graph shows Q3, Q4, Q7 and S8 sampling sites. The CWQG is 120 mg/L. There are no exceedances.

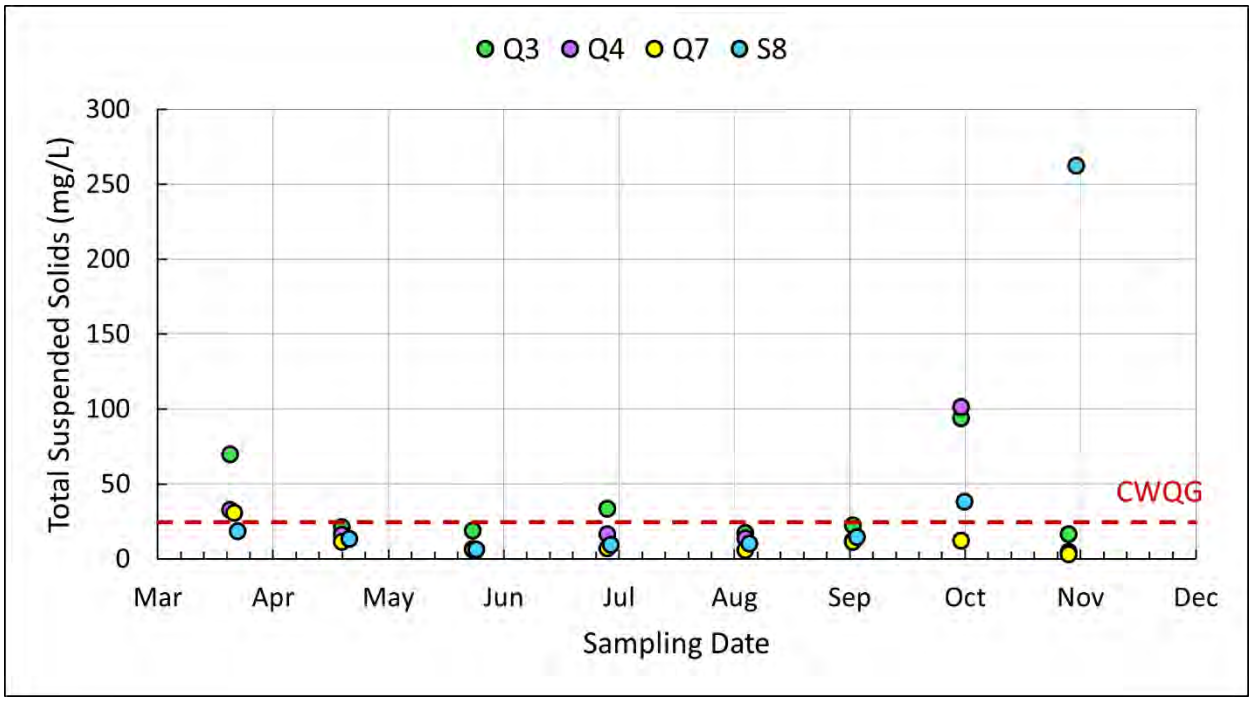

Figure H.4 2023 Lower Main Saugeen subwatershed total suspended solids concentrations (mg/L) in graph format. Graph shows Q3, Q4, Q7 and S8 sampling sites, and a horizontal line indicating a CWQG of 30 mg/L. There are 8 exceedances of the CWQG.

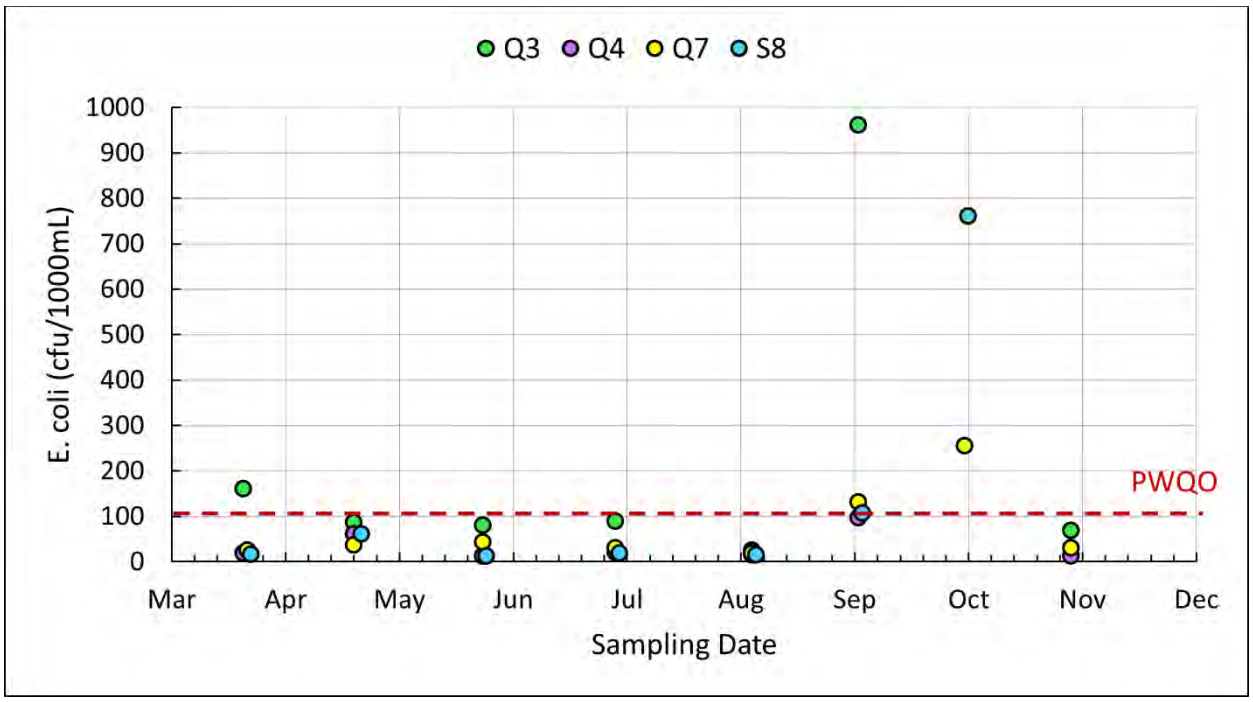

Figure H.5 2023 Lower Main Saugeen subwatershed *E. coli* concentrations (cfu/100mL) in graph format. Graph shows Q3, Q4, Q7 and S8 sampling sites, and a horizontal line indicating a PWQO of 100 cfu/100mL for swimming. There are 9 exceedances of the PWQO. Three exceedances are not shown in this graph (Q3 at October 2860 cfu/100mL; S8 at November 2700 cfu/100mL; and Q4 at October 2040 cfu/100mL).

Long-term Results

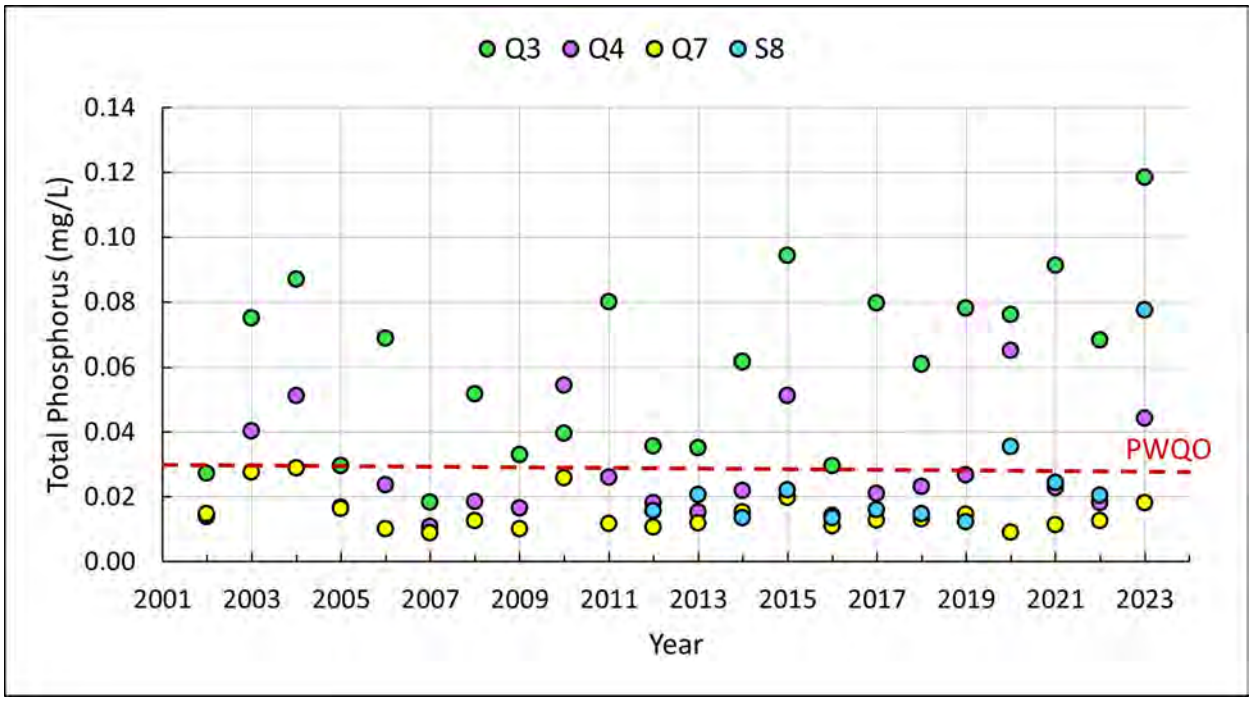

Figure H.6 2002 to 2023 Lower Main Saugeen subwatershed annual average total phosphorus concentrations (mg/L) in graph format. Graph shows Q3, Q4, Q7 and S8 sampling sites, and a horizontal line indicating PWQO of 0.03 mg/L. There are 26 exceedances of the PWQO.

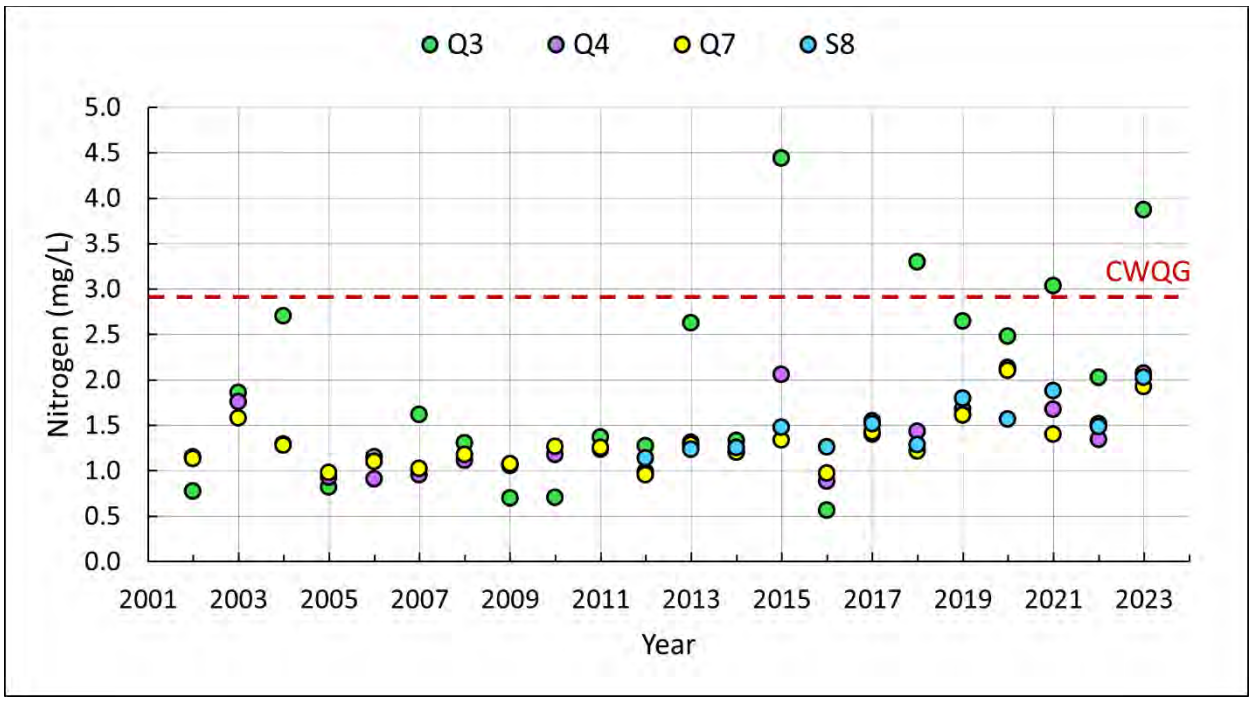

Figure H.7 2002 to 2023 Lower Main Saugeen subwatershed annual average nitrogen concentrations (mg/L) in graph format. Graph shows Q3, Q4, Q7 and S8 sampling sites, and a horizontal line indicating a CWQG of 2.93 mg/L. There are 4 exceedances of the CWQG.

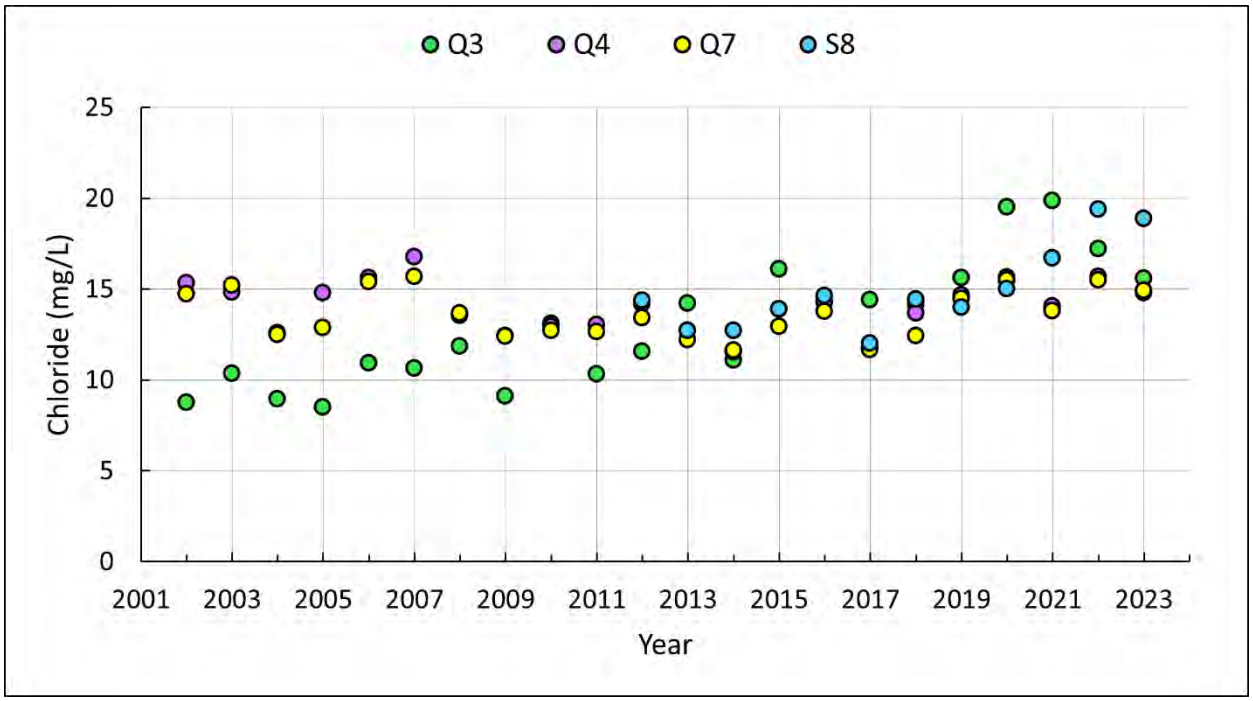

Figure H.8 2002 to 2023 Lower Main Saugeen subwatershed annual average chloride concentrations (mg/L) in graph format. Graph shows Q3, Q4, Q7 and S8 sampling sites. The CWQG is 120 mg/L. There are no exceedances.

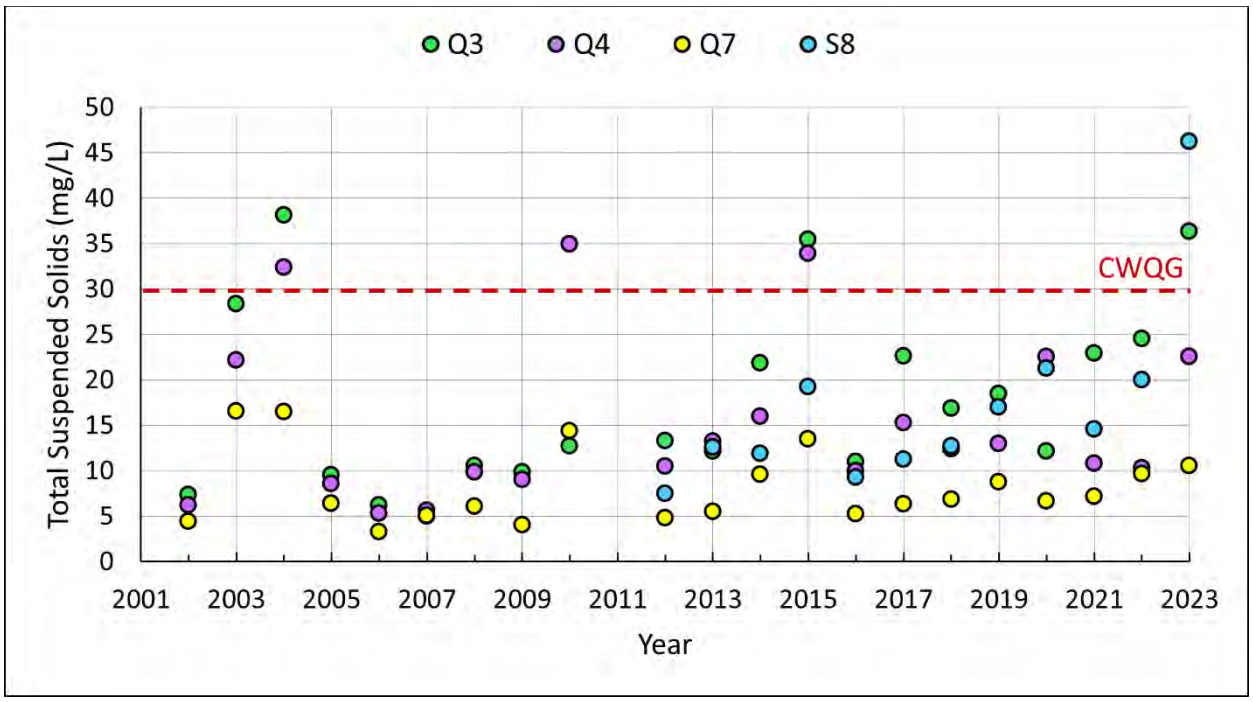

Figure H.9 2012 to 2023 Lower Main Saugeen subwatershed annual average total suspended solids concentrations (mg/L) in graph format. Graph shows Q3, Q4, Q7 and S8 sampling sites, and a horizontal line indicating a CWQG of 30 mg/L. There are 7 exceedances of the CWQG.

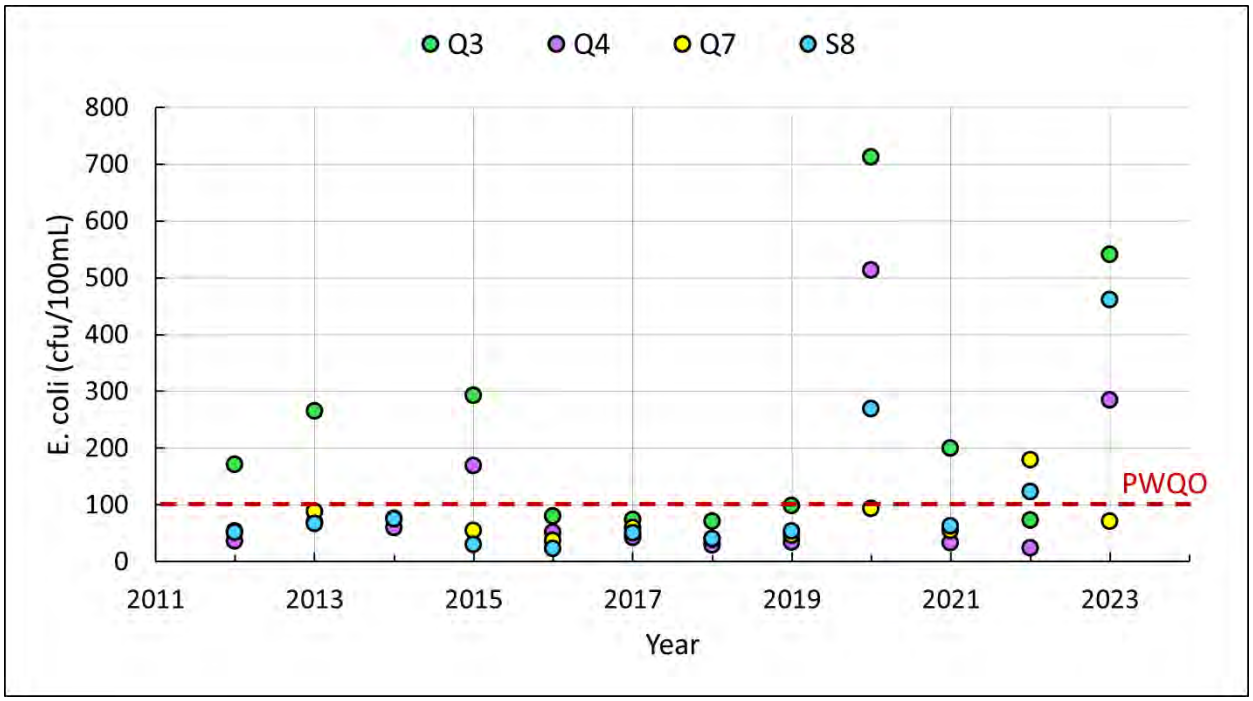

Figure H.10 2012 to 2023 Lower Main Saugeen subwatershed annual average *E. coli* concentrations (cfu/100mL) in graph format. Graph shows Q3, Q4, Q7 and S8 sampling sites, and a horizontal line indicating a PWQO of 100 cfu/100mL for swimming. There are 14 exceedances of the PWQO; there is one exceedance at Q3 in 2014 that is not shown on this graph (2367 cfu/100mL).

Benthic Biomonitoring Results (2015-2021)

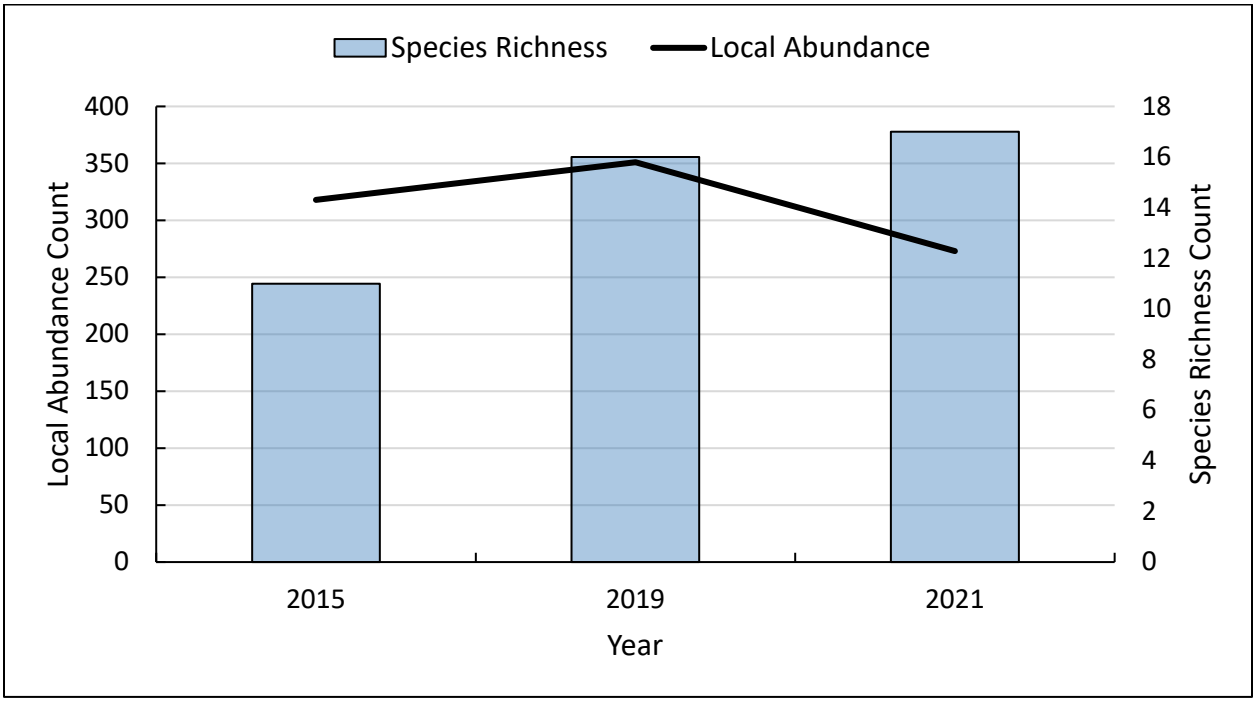

Figure H.11 Local abundance and species richness found within the Lower Main Saugeen subwatershed from 2015 to 2021.

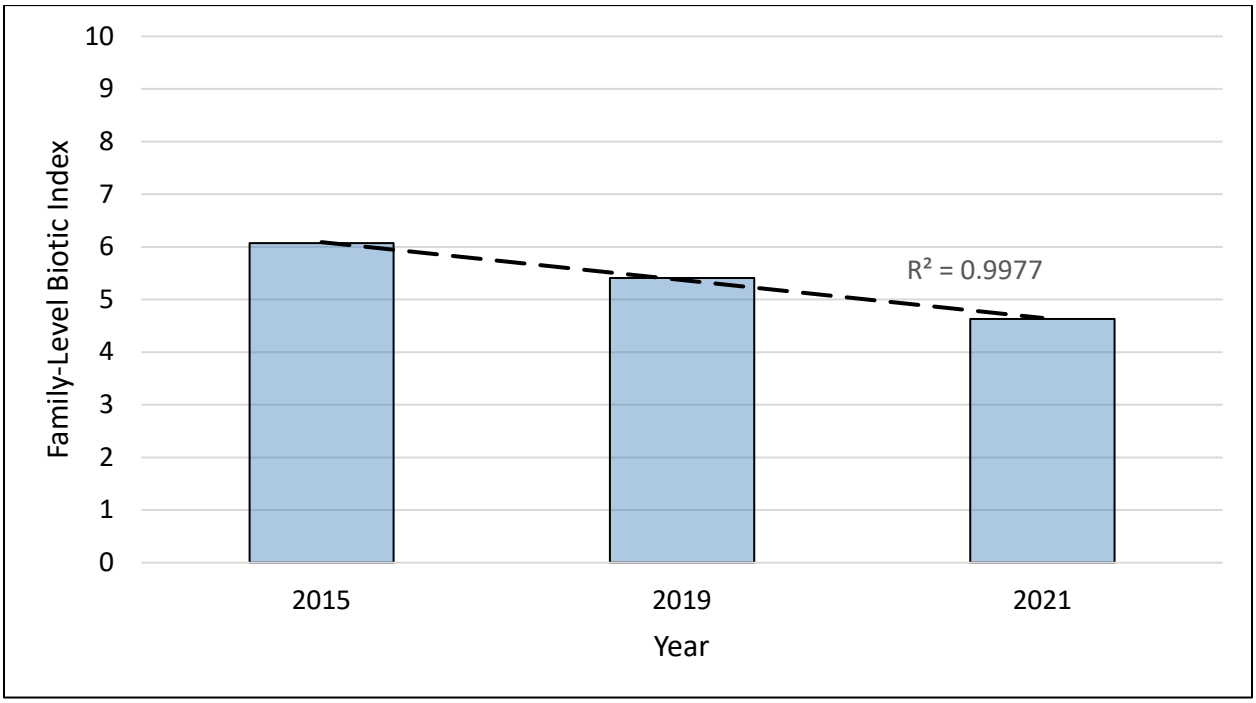

Figure H.12 Family-level biotic index for the Lower Main Saugeen subwatershed from 2015 to 2021.

Appendix I – Lake Fringe Subwatershed

2023 Results

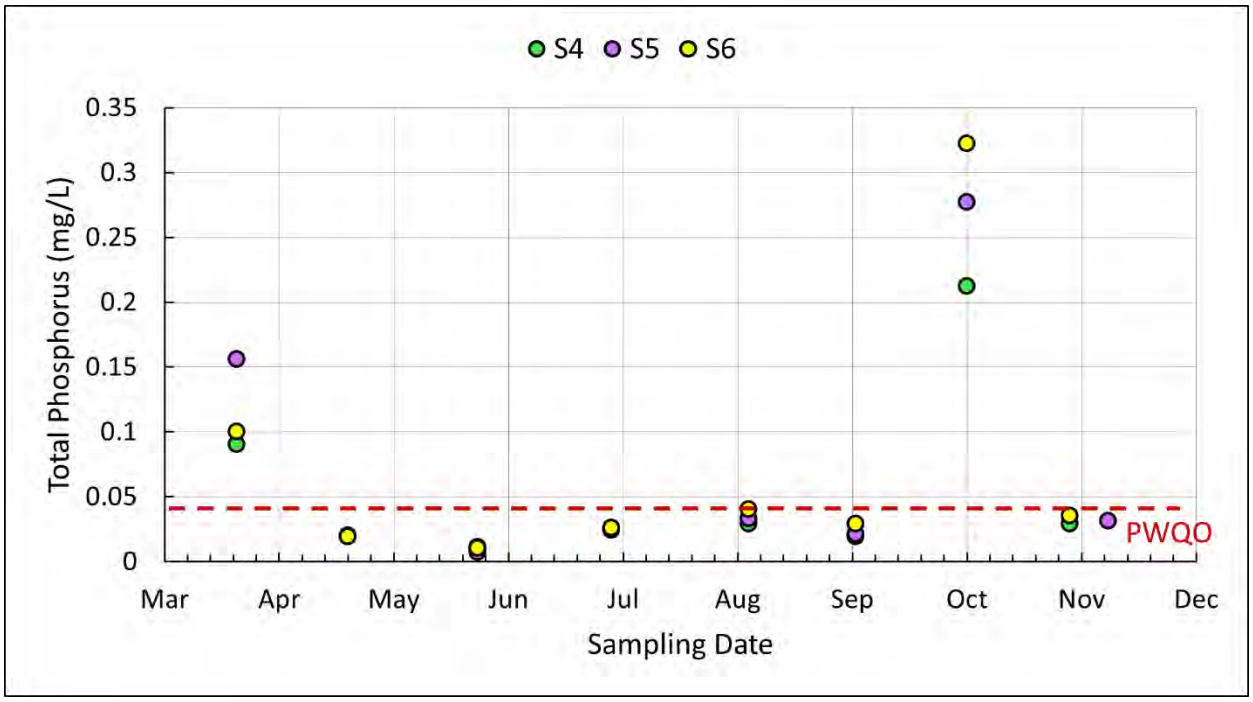

Figure I.1 2023 Lake Fringe subwatershed total phosphorus concentrations (mg/L) in graph format. Graph shows S4, S5, and S6 sampling sites and a horizontal line indicating a PWQO of 0.03 mg/L. There are 10 exceedances of the PWQO.

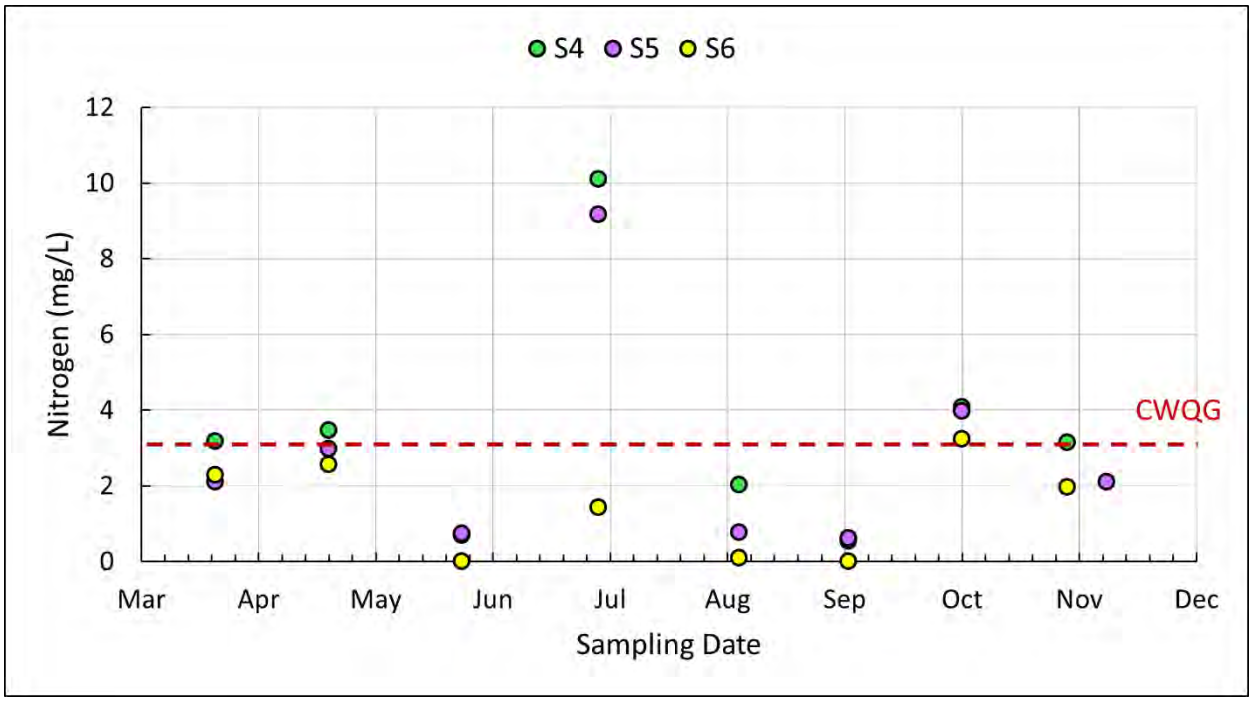

Figure I.2 2023 Lake Fringe subwatershed nitrogen concentrations (mg/L) in graph format. Graph shows S4, S5, and S6 sampling sites and a horizontal line indicating a CWQG of 2.93 mg/L. There are 9 exceedances of the CWQG.

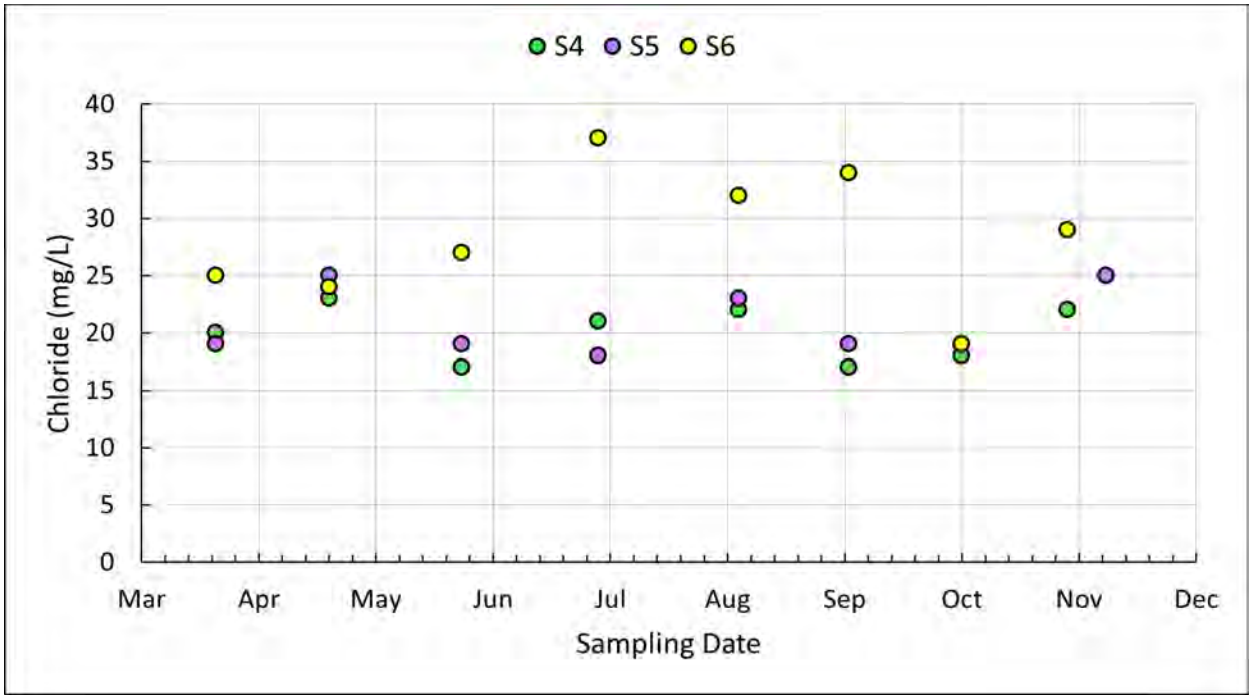

Figure I.3 2023 Lake Fringe subwatershed chloride concentrations (mg/L) in graph format. Graph shows S4, S5, and S6 sampling sites. The CWQG is 120 mg/L. There are no exceedances.

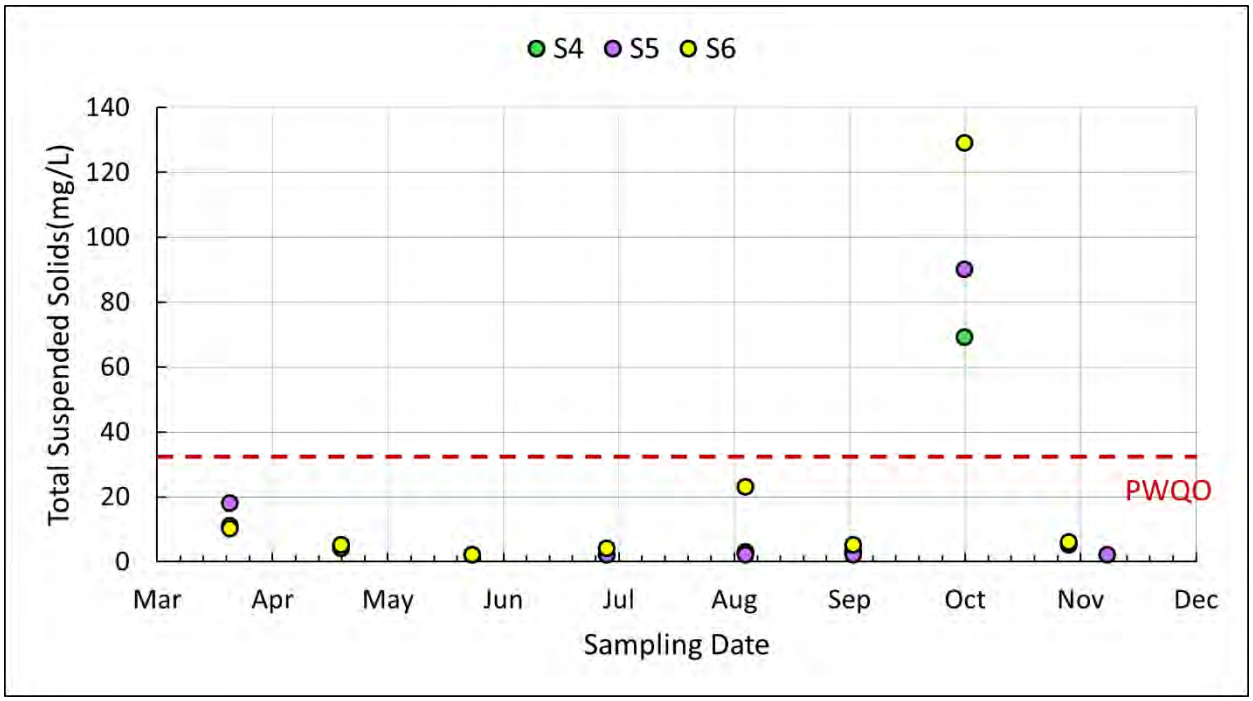

Figure I.4 2023 Lake Fringe subwatershed total suspended solids concentrations (mg/L) in graph format. Graph shows S4, S5, and S6 sampling sites and a horizontal line indicating a CWQG of 30 mg/L. There are 3 exceedances of the CWQG.

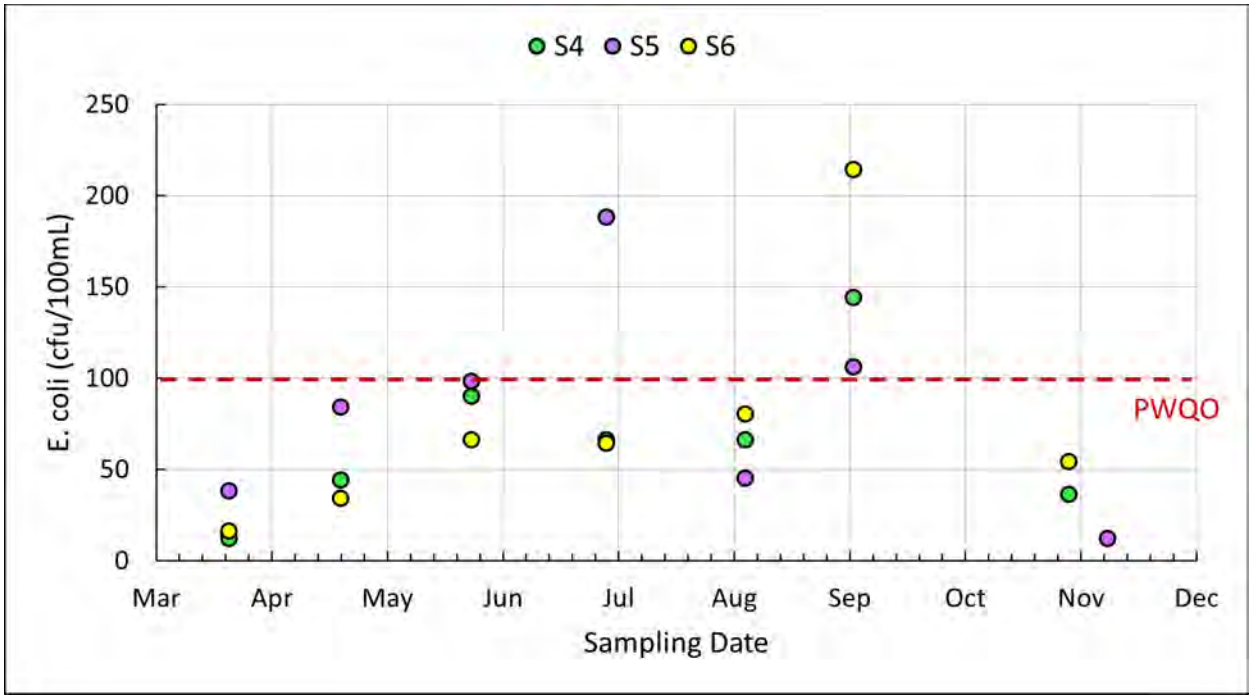

Figure I.5 2023 Lake Fringe subwatershed *E. coli* concentrations (cfu/100mL) in graph format. Graph shows S4, S5, and S6 sampling sites and a horizontal line indicating a PWQO of 100 cfu/100mL for swimming. There are 7 exceedances of the PWQO, three exceedances from October are not shown on this graph (S4 at 3100 cfu/100mL; S6 at 2300 cfu/100mL; and S5 at 1700 cfu/100mL).

Long-term Results

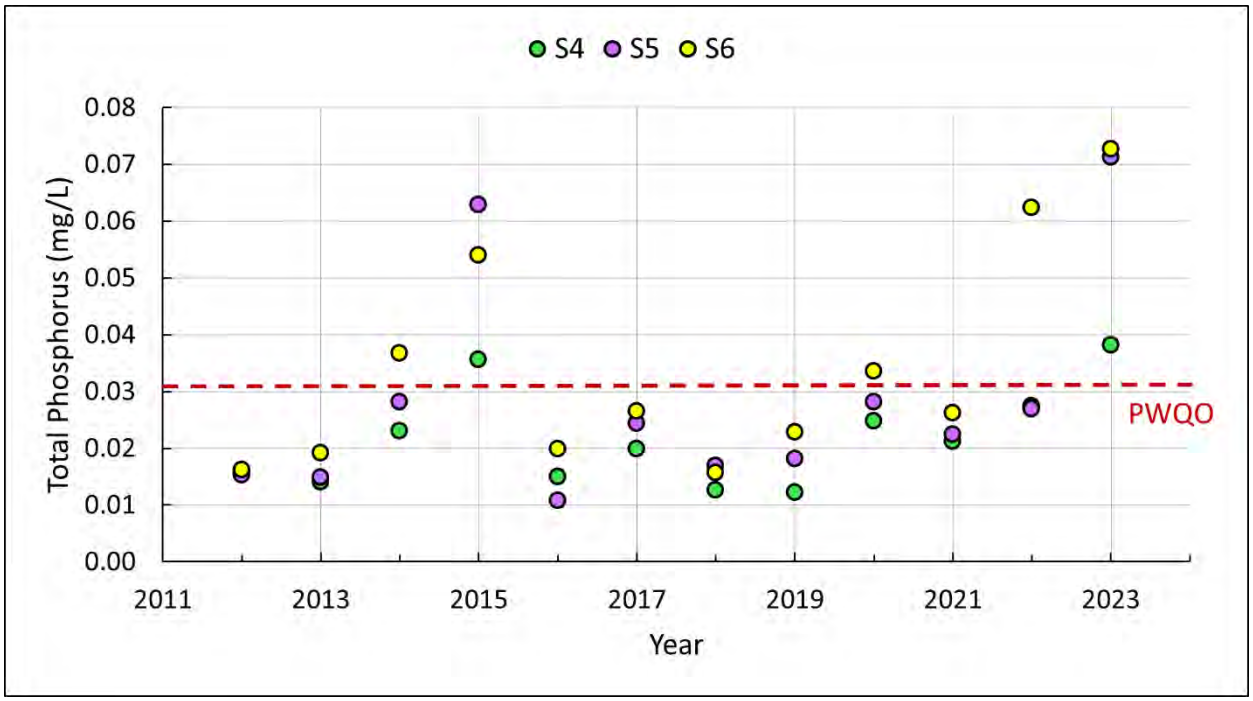

Figure I.6 2012 to 2023 Lake Fringe subwatershed annual average total phosphorus concentrations (mg/L) in graph format. Graph shows S4, S5, and S6 sampling sites and a horizontal line indicating a PWQO of 0.03 mg/L. There are 9 exceedances of the PWQO.

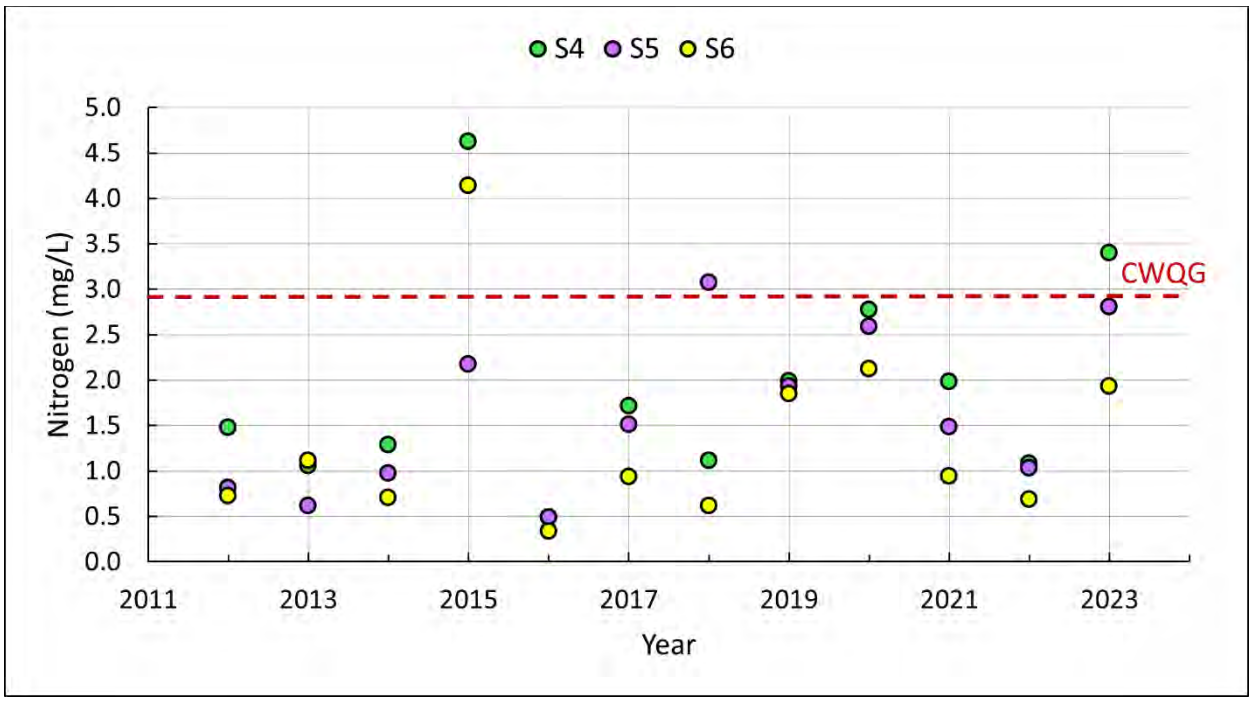

Figure I.7 2012 to 2023 Lake Fringe subwatershed annual average nitrogen concentrations (mg/L) in graph format. Graph shows S4, S5, and S6 sampling sites and a horizontal line indicating a CWQG of 2.93 mg/L. There are 4 exceedances of the CWQG.

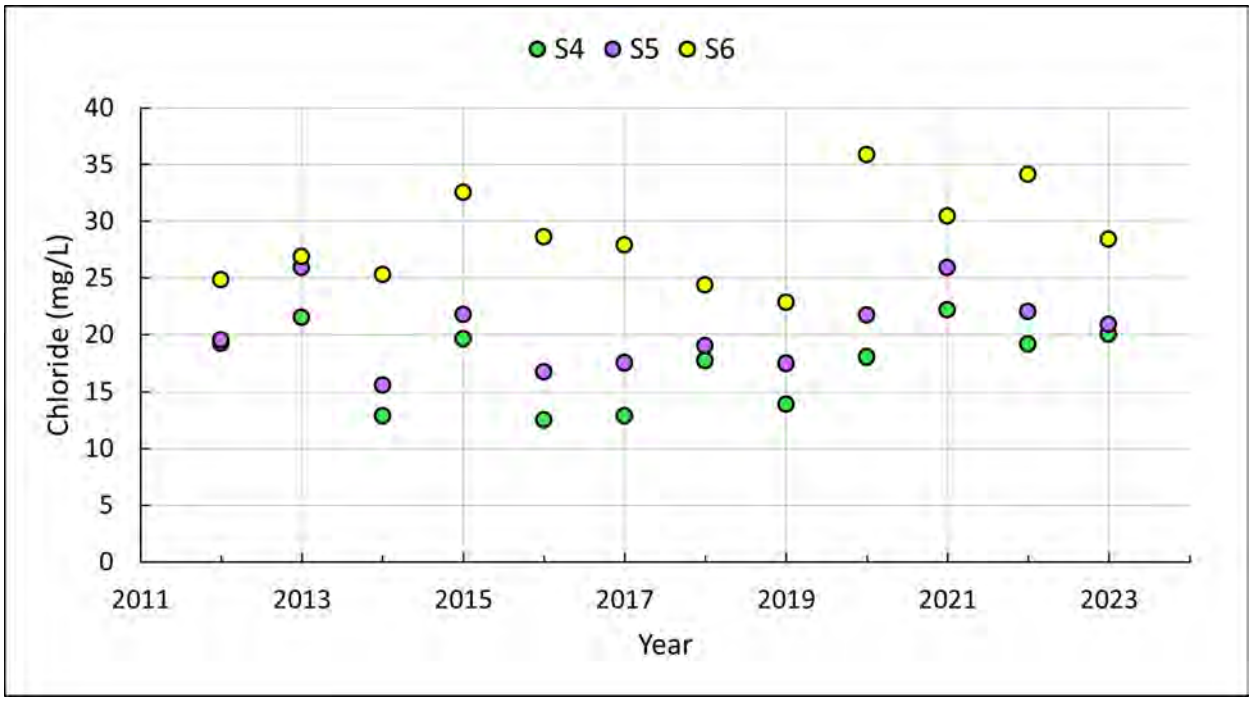

Figure I.8 2012 to 2023 Lake Fringe subwatershed annual average chloride concentrations (mg/L) in graph format. Graph shows S4, S5, and S6 sampling sites. The CWQG is 120 mg/L. There are no exceedances.

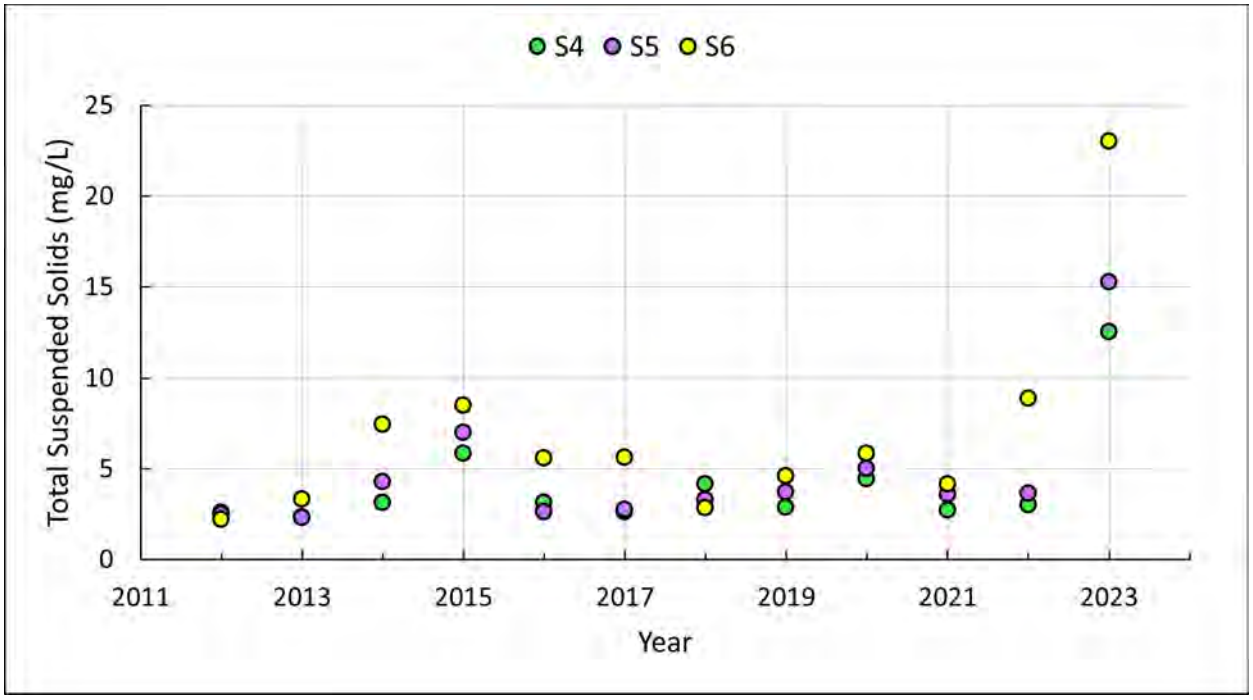

Figure I.9 2012 to 2023 Lake Fringe subwatershed annual average total suspended solids concentrations (mg/L) in graph format. Graph shows S4, S5, and S6 sampling sites. The CWQG is 30 mg/L. There are no exceedances.

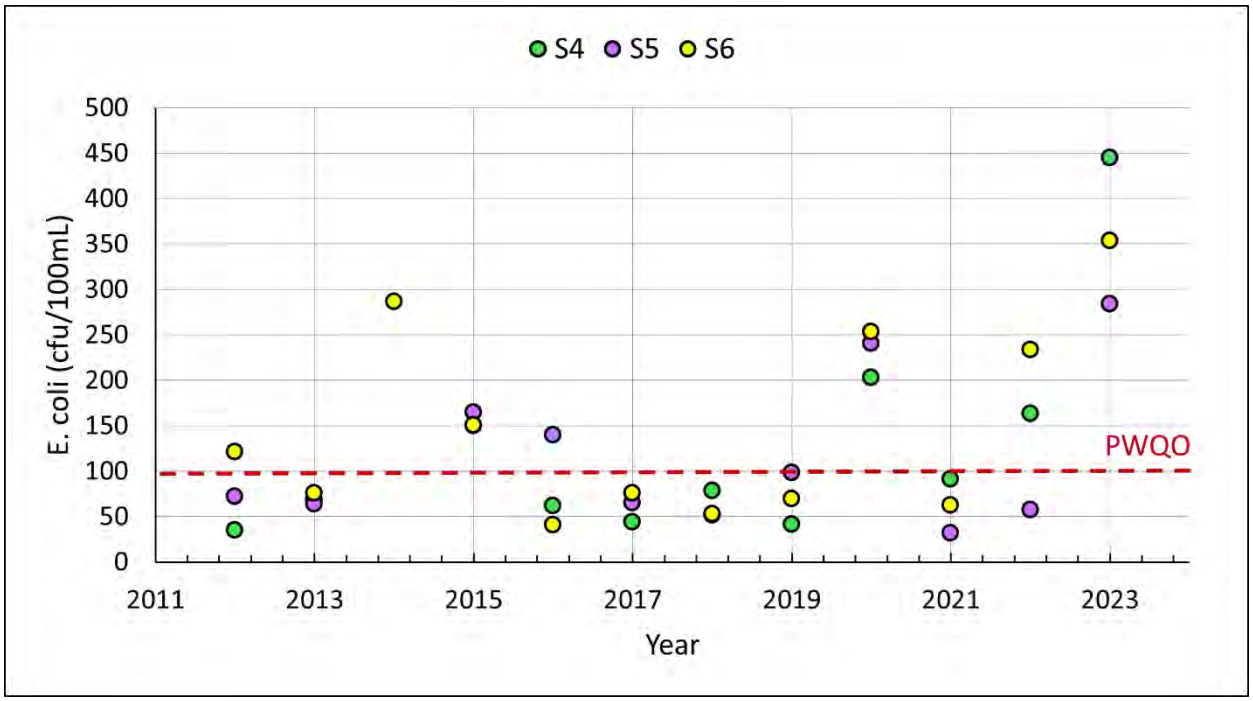

Figure I.10 2012 to 2023 Lake Fringe subwatershed annual average *E. coli* concentrations (cfu/100mL) in graph format. Graph shows S4, S5, and S6 sampling sites and a horizontal line indicating a PWQO of 100 cfu/100mL for swimming. There are 16 exceedances of the PWQO; there are two exceedances in 2014 at S4 and S5 that are not shown on this graph (668 cfu/100mL and 1386 cfu/100mL, respectively).

Benthic Biomonitoring Results (2015-2020)

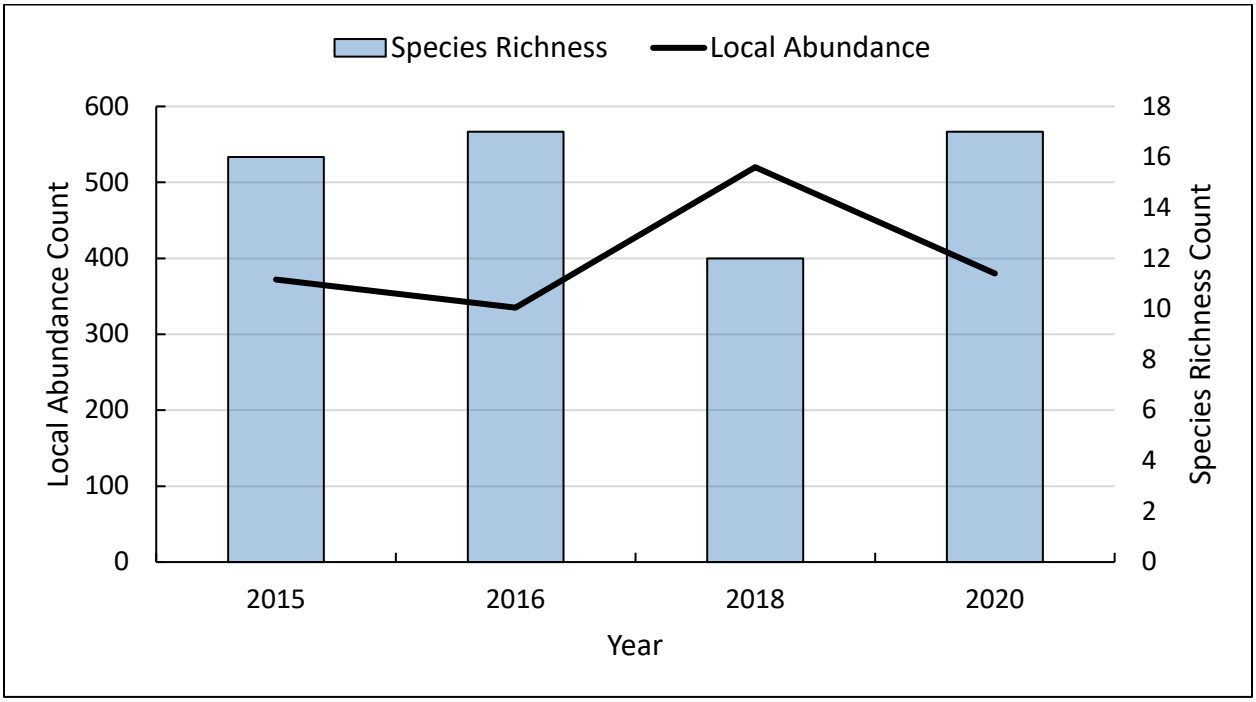

Figure I.11 Local abundance and species richness found within the Lake Fringe subwatershed from 2015 to 2020.

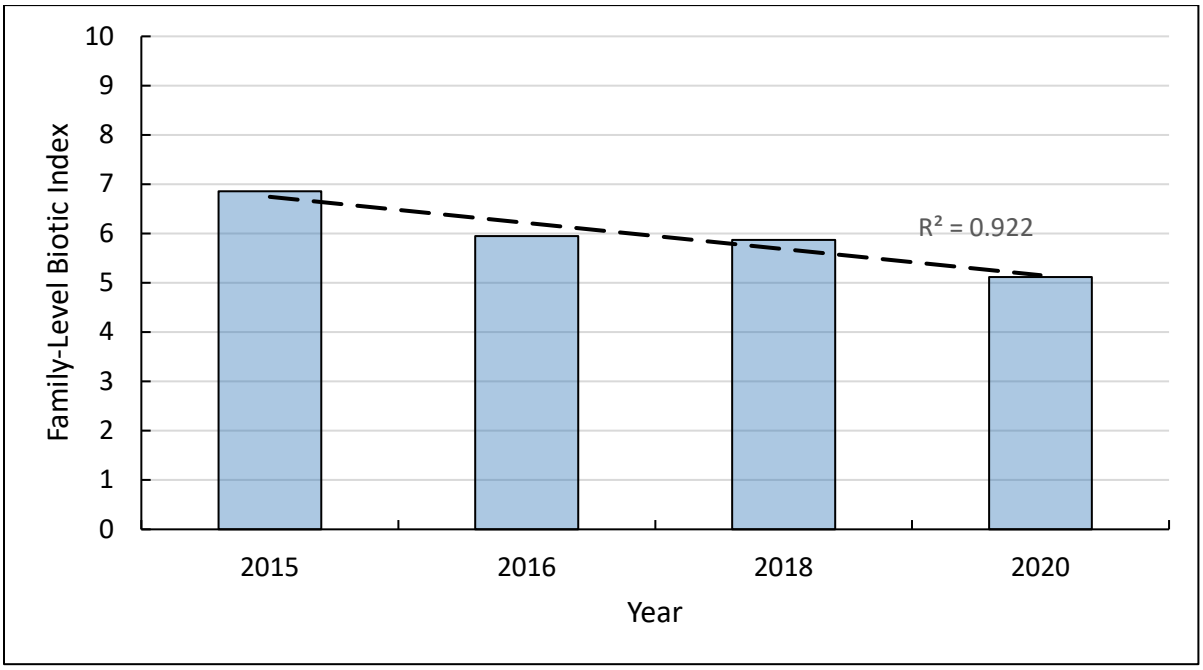

Figure I.12 Family-level biotic index for the Lake Fringe subwatershed from 2015 to 2020.

Appendix J – Pine Subwatershed

2023 Results

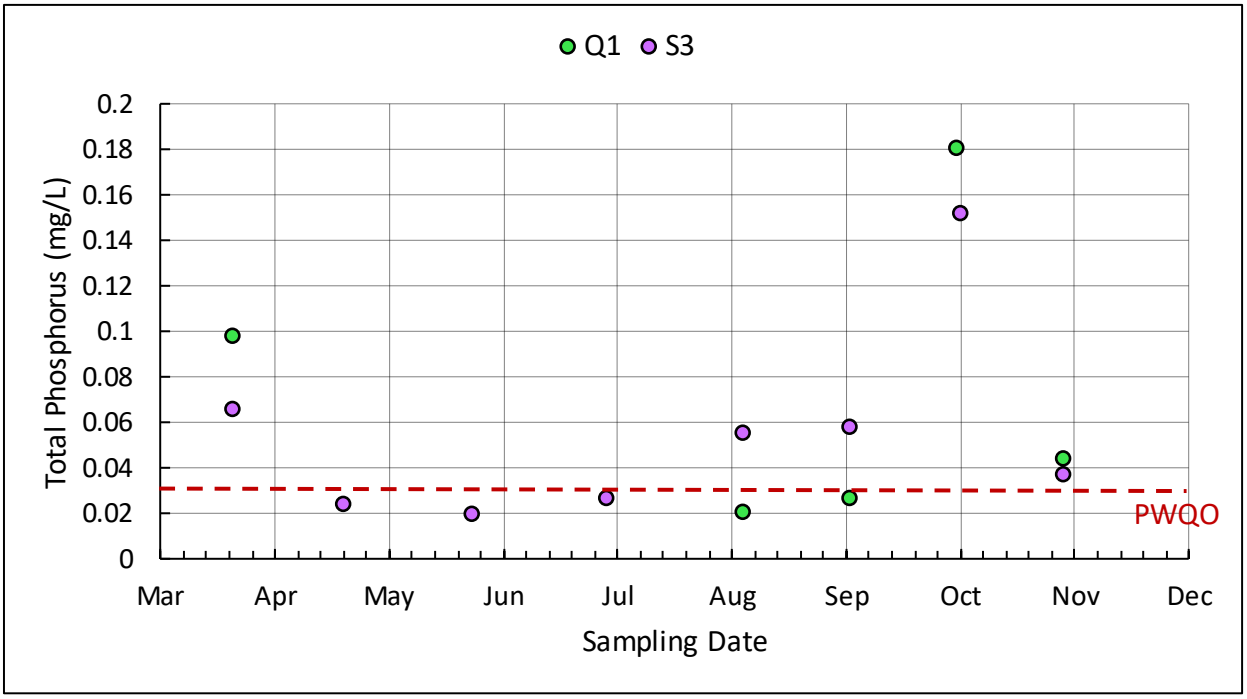

Figure J.1 2023 Pine subwatershed total phosphorus concentrations (mg/L) in graph format. Graph shows Q1 and S3 sampling sites, and a horizontal line indicating a PWQO of 0.03 mg/L. There are 8 exceedances of the PWQO.

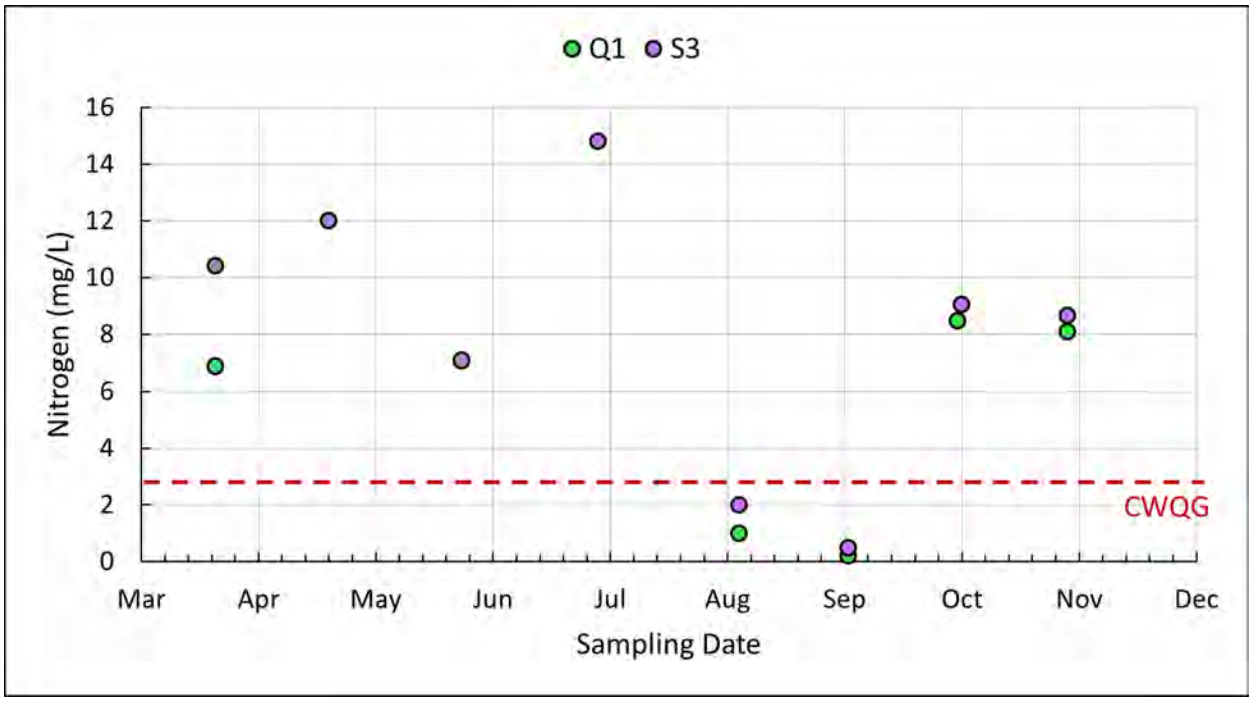

Figure J.2 2023 Pine subwatershed nitrogen concentrations (mg/L) in graph format. Graph shows Q1 and S3 sampling sites, and a horizontal line indicating a CWQG of 2.93 mg/L. There are 9 exceedances of the CWQG.

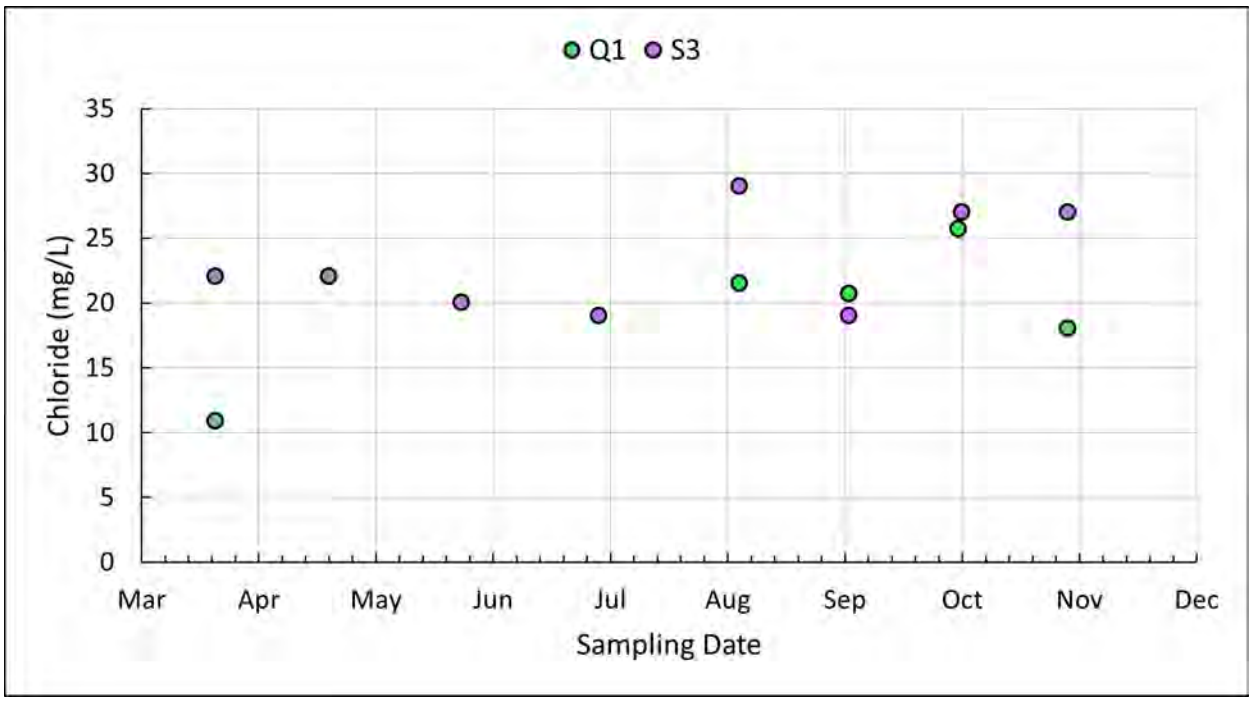

Figure J.3 2023 Pine subwatershed chloride concentrations(mg/L) in graph format. Graph shows Q1 and S3 sampling sites. The CWQG is 120 mg/L. There are no exceedances.

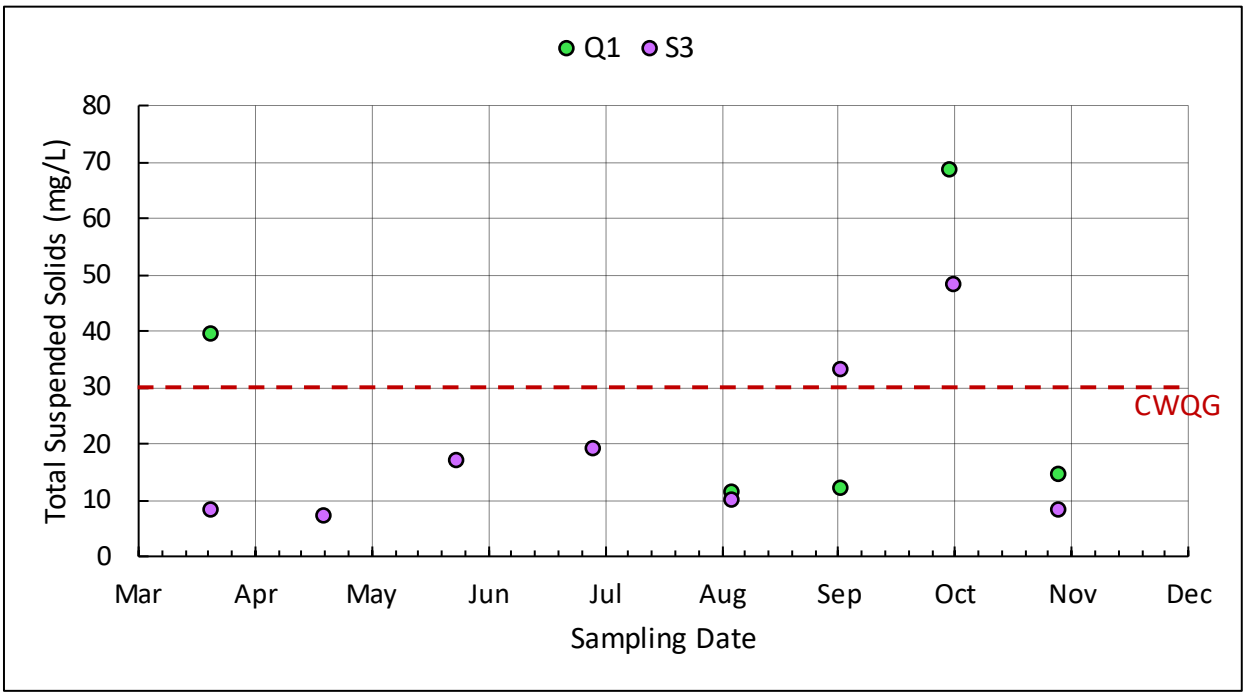

Figure J.4 2023 Pine subwatershed total suspended solids concentrations (mg/L) in graph format. Graph shows Q1 and S3 sampling sites, and a horizontal line indicating a CWQG of 30 mg/L. There are 4 exceedances.

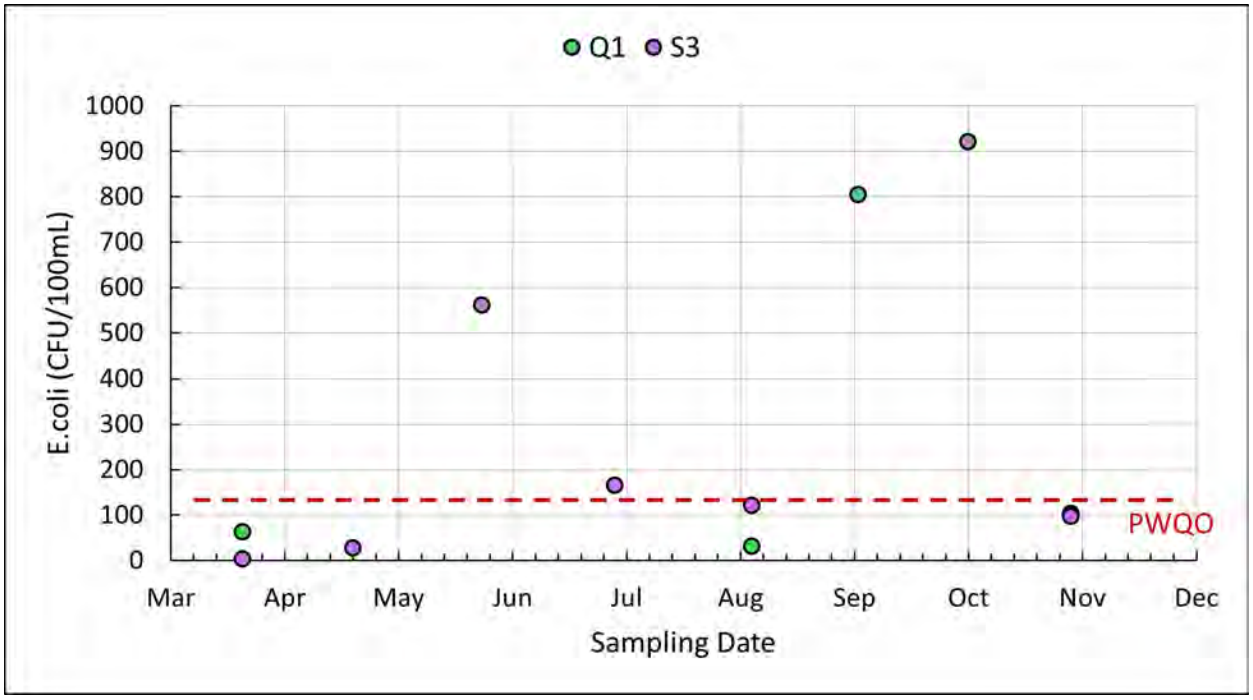

Figure J.5 2023 Pine subwatershed *E. coli* concentrations (cfu/100mL) in graph format. Graph shows Q1 and S3 sampling sites, and a horizontal line indicating a PWQO of 100 cfu/100mL for swimming. There are 19 exceedances of the PWQO. Two exceedances are not shown on this graph (Q1, October at 3260 cfu/100mL; and S3, September at 2200 cfu/100mL).

Long-term Results

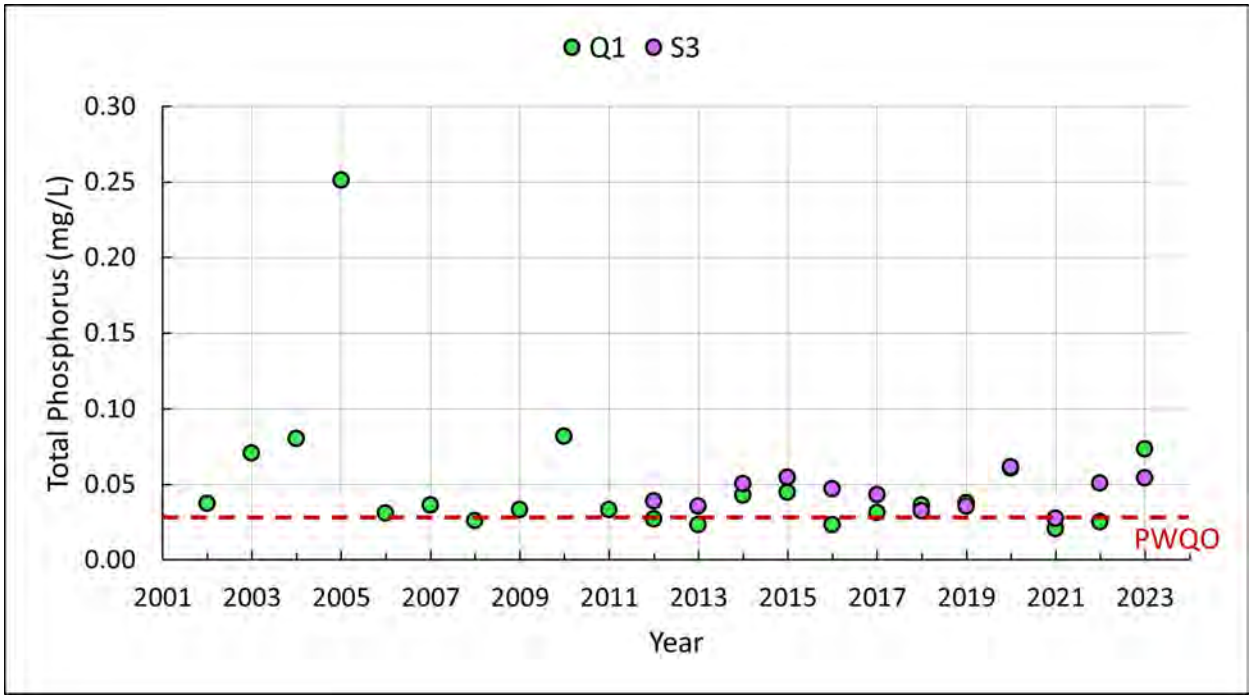

Figure J.6 2002 to 2023 Pine subwatershed annual average total phosphorus concentrations (mg/L) in graph format. Graph shows Q1 and S3 sampling sites, and a horizontal line indicating a PWQO of 0.03 mg/L. There are 17 exceedances of the PWQO.

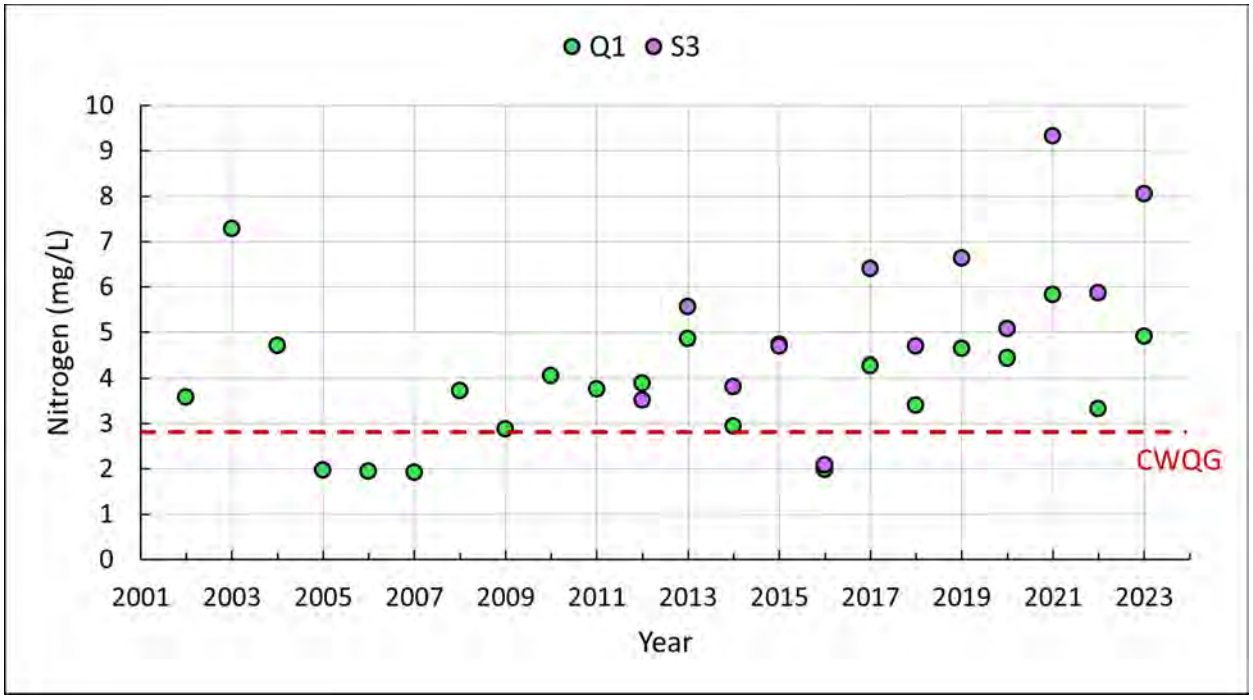

Figure J.7 2002 to 2023 Pine subwatershed annual average nitrogen concentrations (mg/L) in graph format. Graph shows Q1 and S3 sampling sites, and a horizontal line indicating CWQG of 2.93 mg/L. There are 28 exceedances of the CWQG.

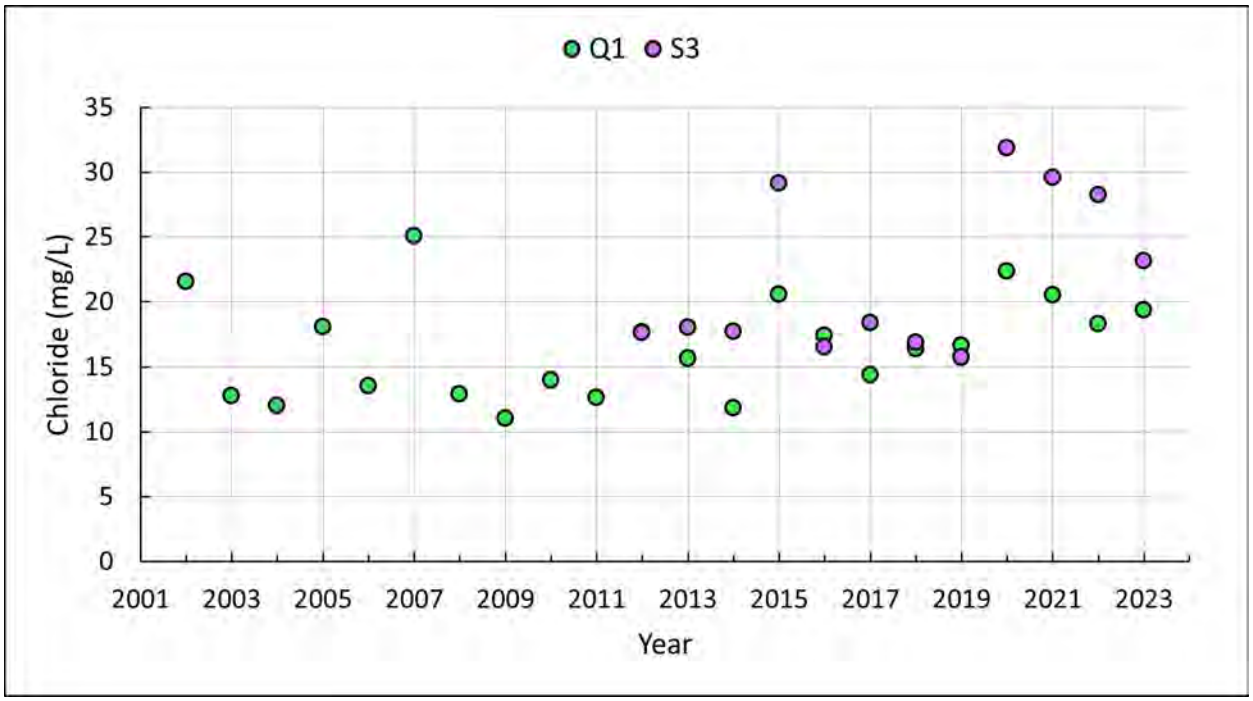

Figure J.8 2002 to 2023 Pine subwatershed annual average chloride concentrations (mg/L) in graph format. Graph shows Q1 and S3 sampling sites. The CWQG is 120 mg/L. There are no exceedances.

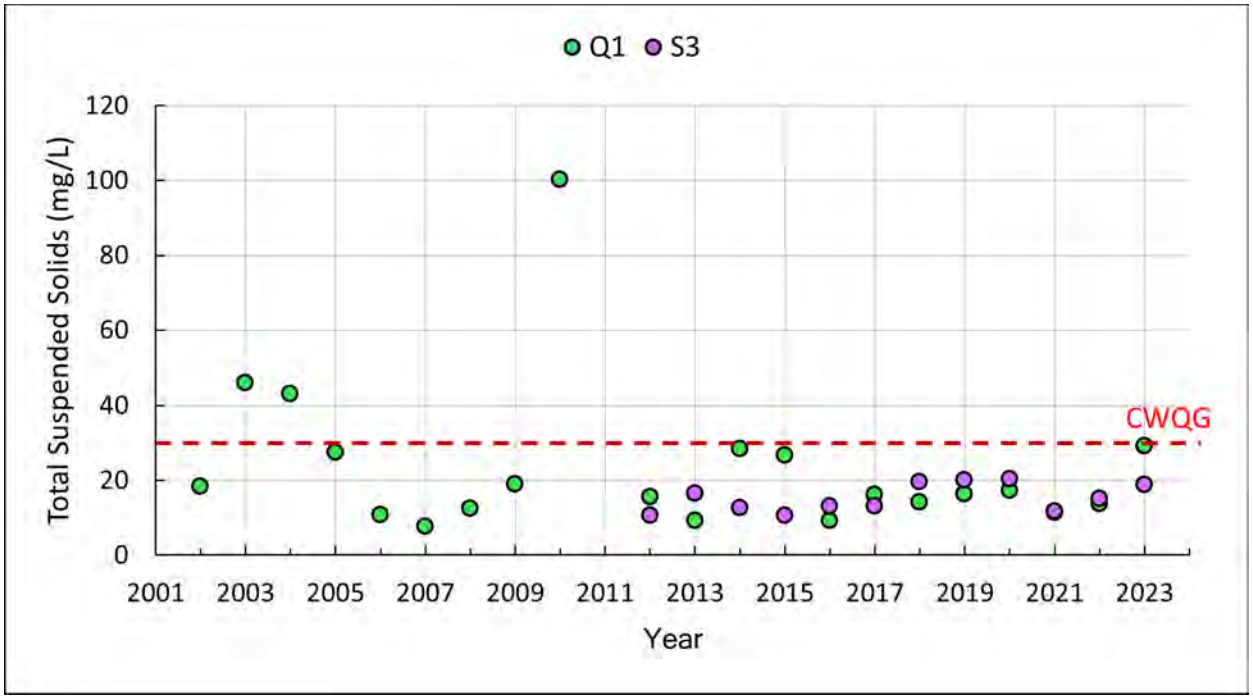

Figure J.9 2012 to 2023 Pine subwatershed annual average total suspended solids concentrations (mg/L) in graph format. Graph shows Q1 and S3 sampling sites, and a horizontal line indicating CWQG of 30 mg/L. There are 3 exceedances of the CWQG.

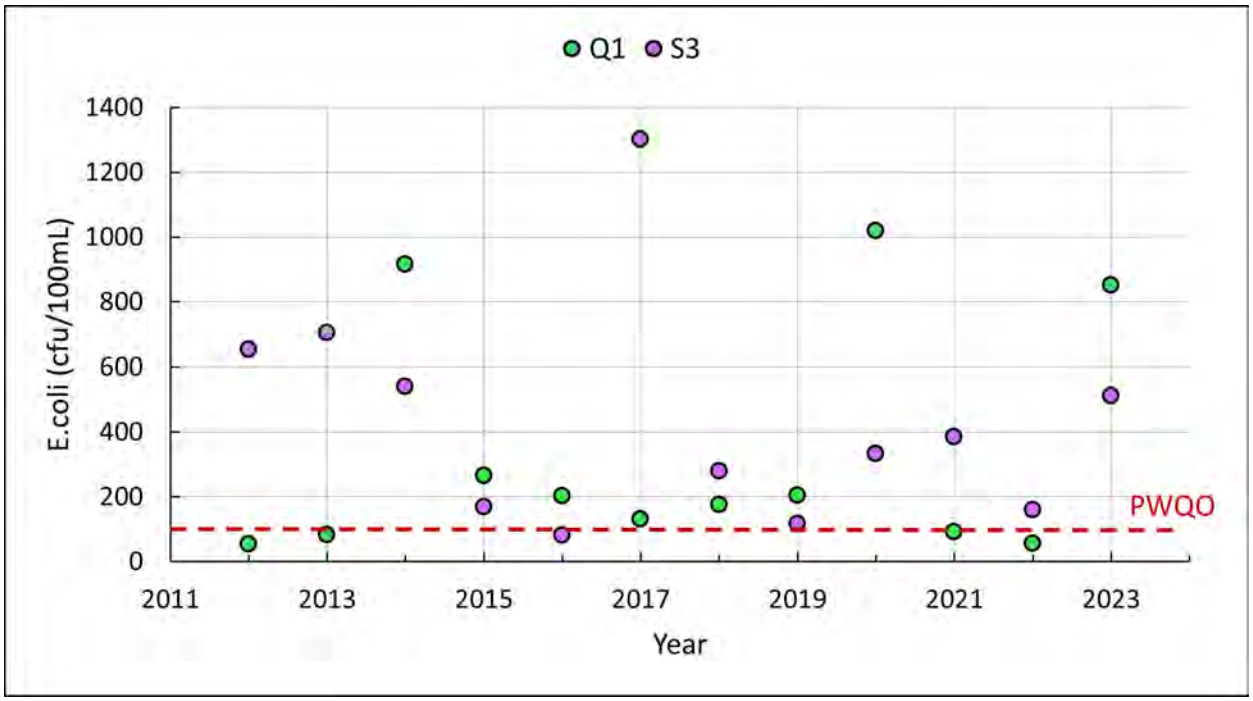

Figure J.10 2012 to 2023 Pine subwatershed annual average *E. coli* concentrations (cfu/100mL) in graph format. Graph shows Q1 and S3 sampling sites, and a horizontal line indicating a PWQO of 100 cfu/100mL for swimming. There are 19 exceedances of the PWQO.

Benthic Biomonitoring Results (2015-2021)

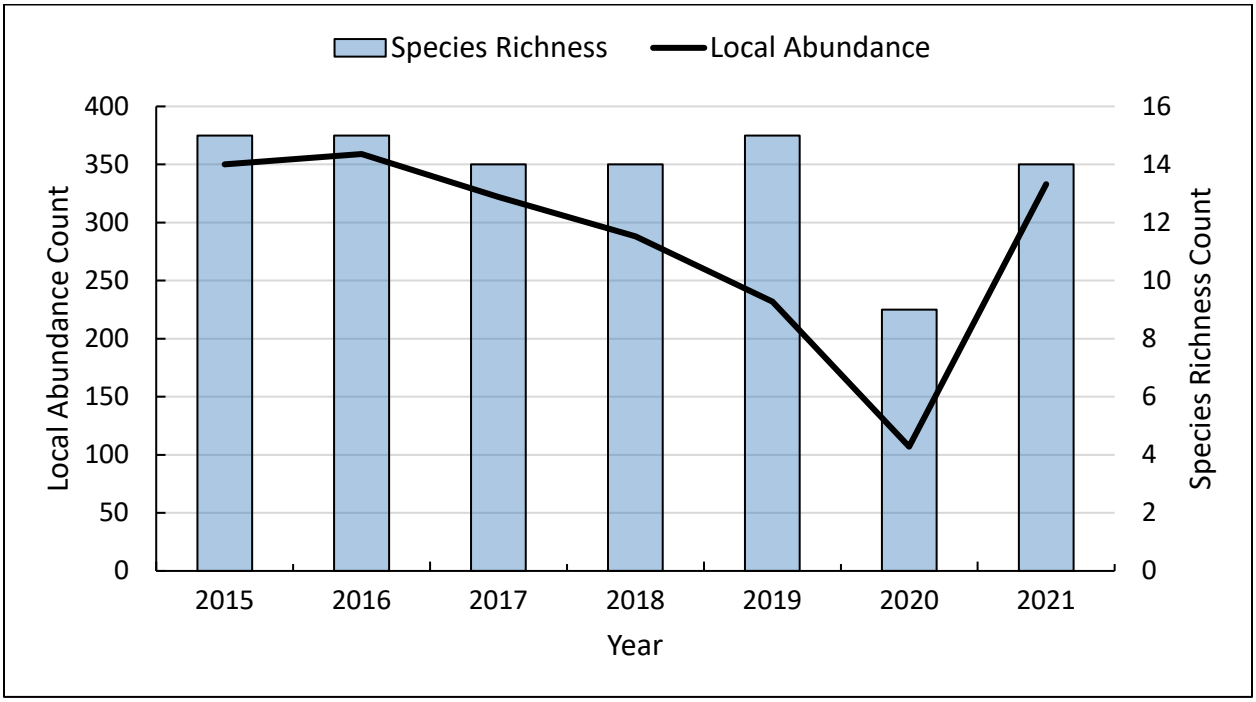

Figure J.11 Local abundance and species richness found within the Pine subwatershed from 2015 to 2021.

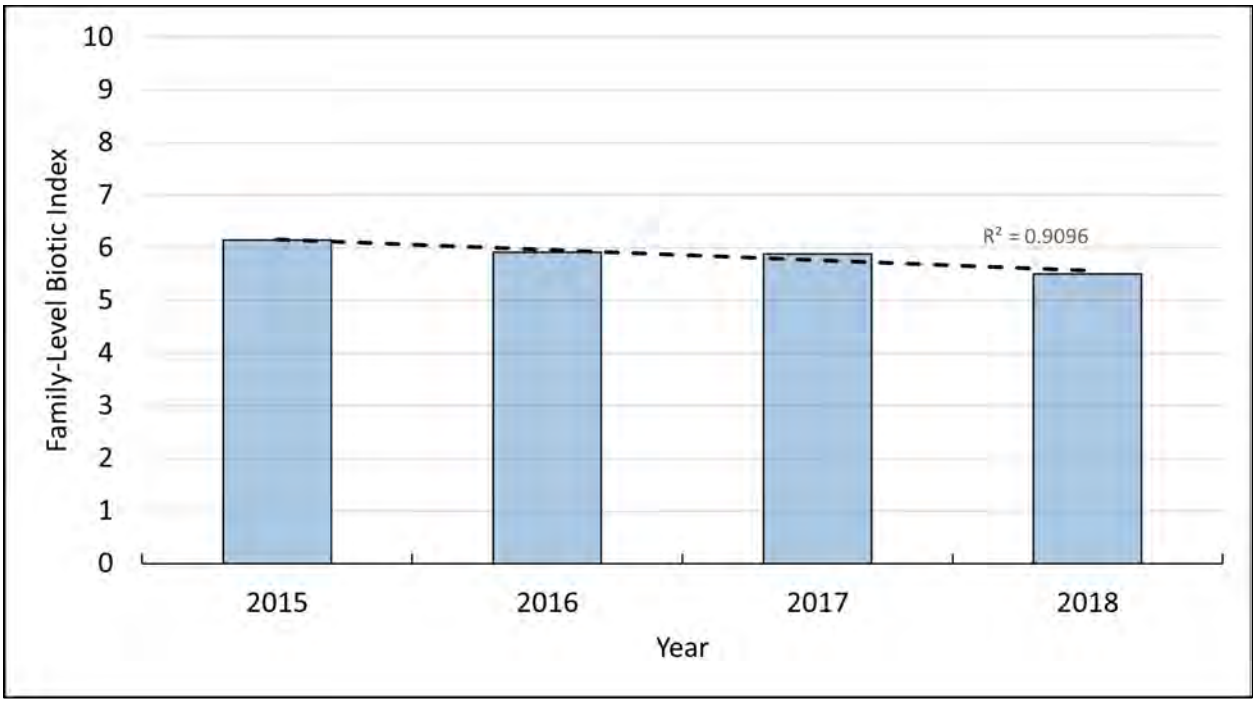

Figure J.12 Family-level biotic index for the Pine subwatershed from 2015 to 2021.

Appendix K – Penetangore Subwatershed

2023 Results

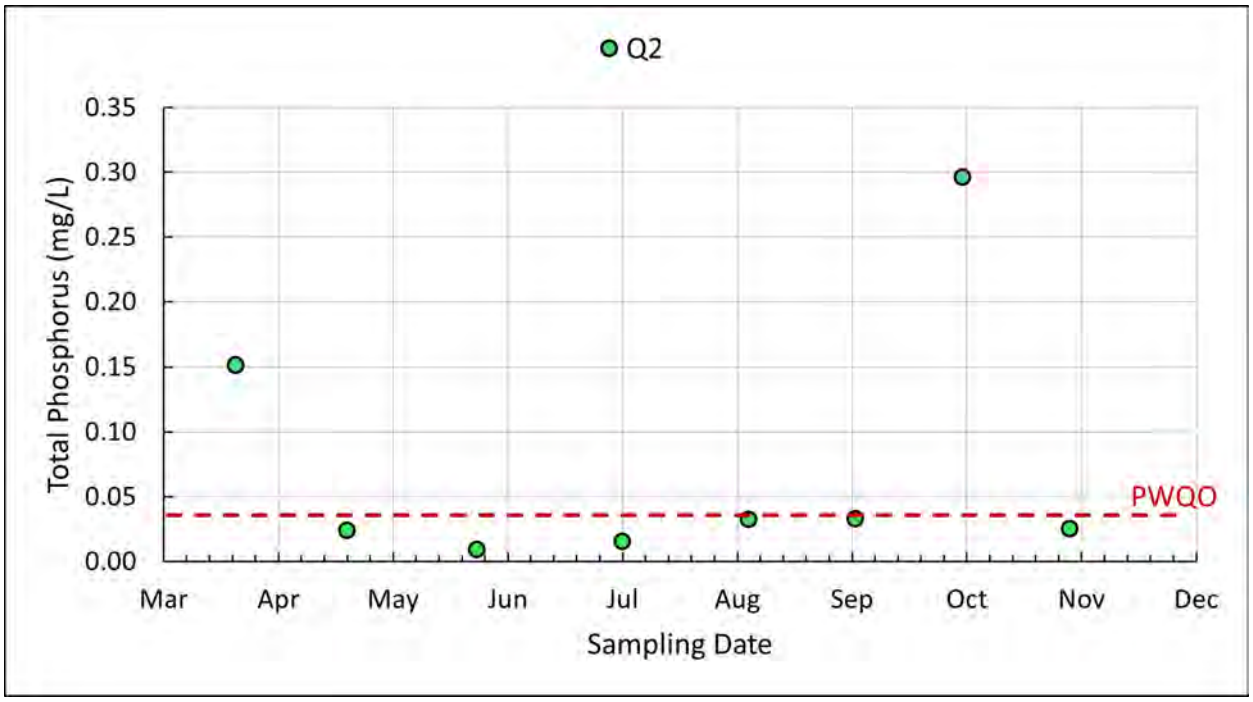

Figure K.1 2023 Penetangore subwatershed total phosphorus concentrations (mg/L) in graph format. Graph shows Q2 sampling site and a horizontal line indicating a PWQO of 0.03 mg/L. There are 4 exceedances of the PWQO.

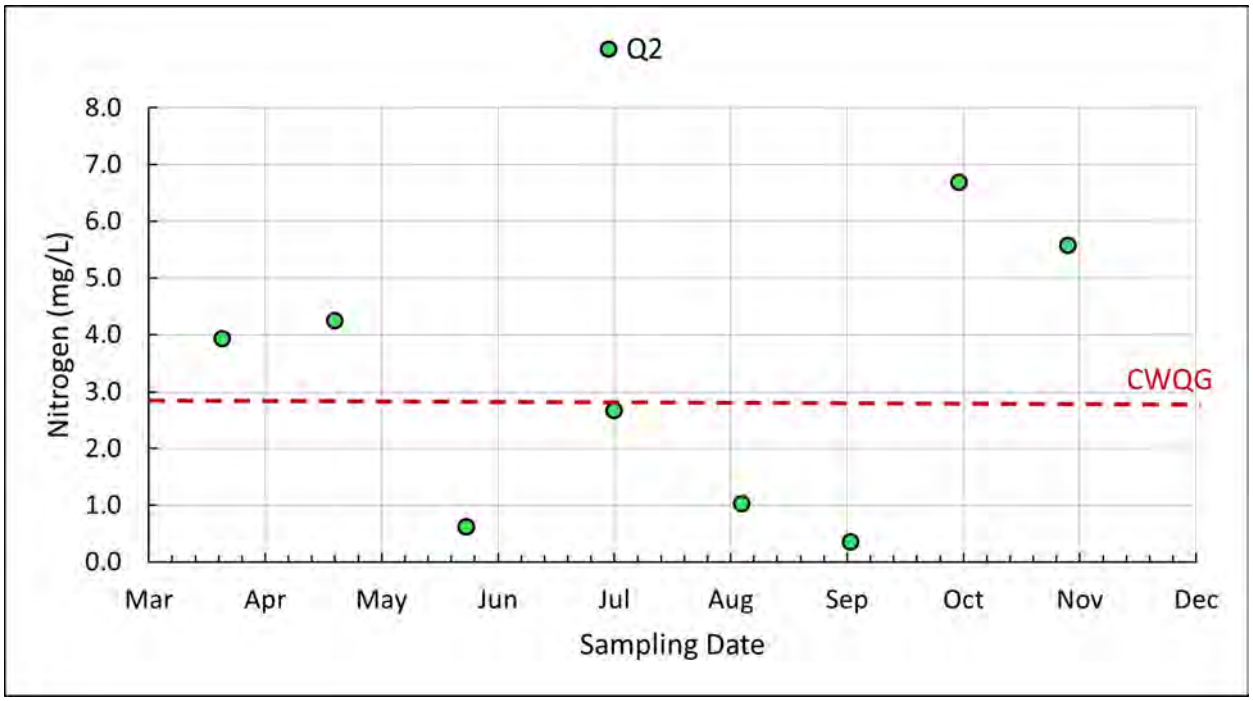

Figure K.2 2023 Penetangore subwatershed nitrogen concentrations (mg/L) in graph format. Graph shows Q2 sampling site and a horizontal line indicating a CWQG of 2.93 mg/L. There is 4 exceedances of the CWQG.

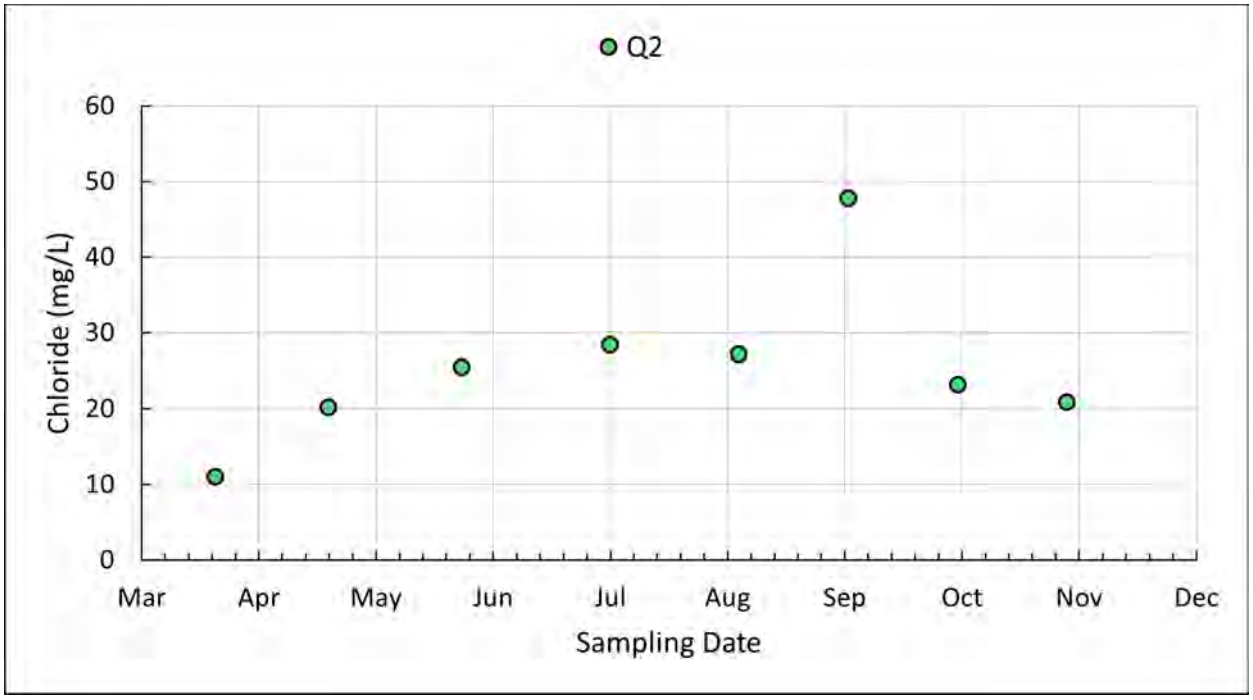

Figure K.3 2023 Penetangore subwatershed chloride concentrations (mg/L) in graph format. Graph shows Q2 sampling site. The CWQG is 120mg/L. There are no exceedances.

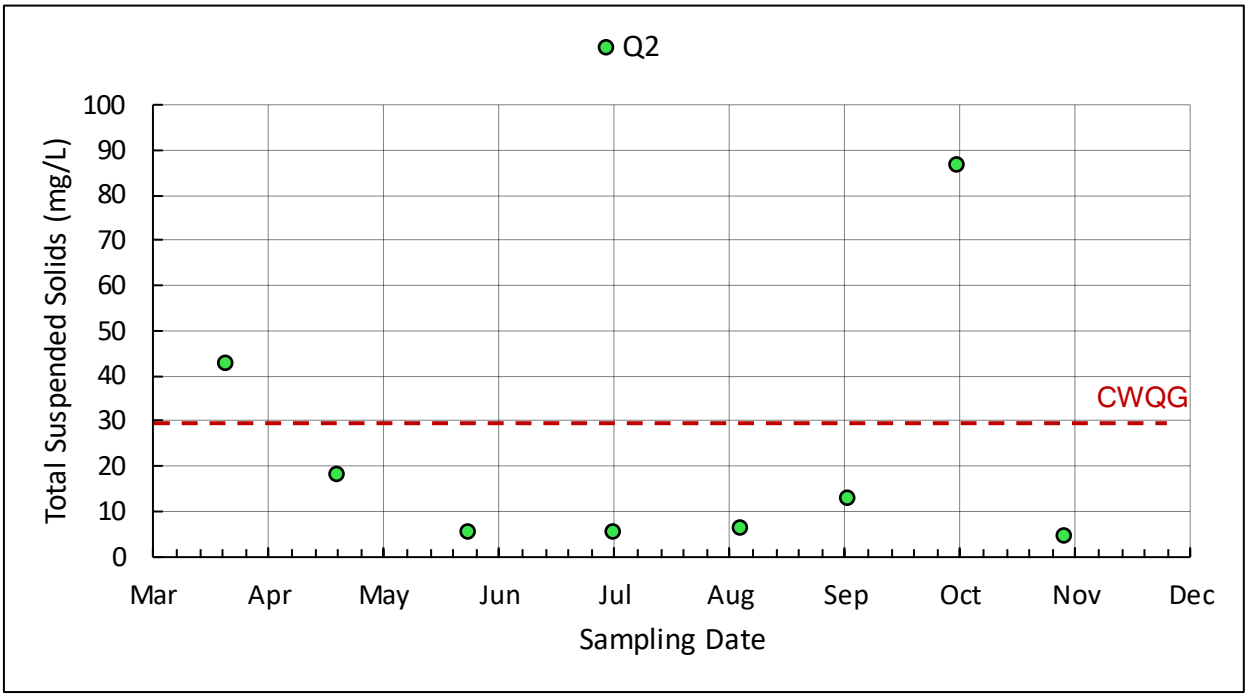

Figure K.4 2023 Penetangore subwatershed total suspended solids concentrations (mg/L) in graph format. Graph shows Q2 sampling site and a horizontal line indicating a CWQG of 30mg/L. There are 2 exceedances.

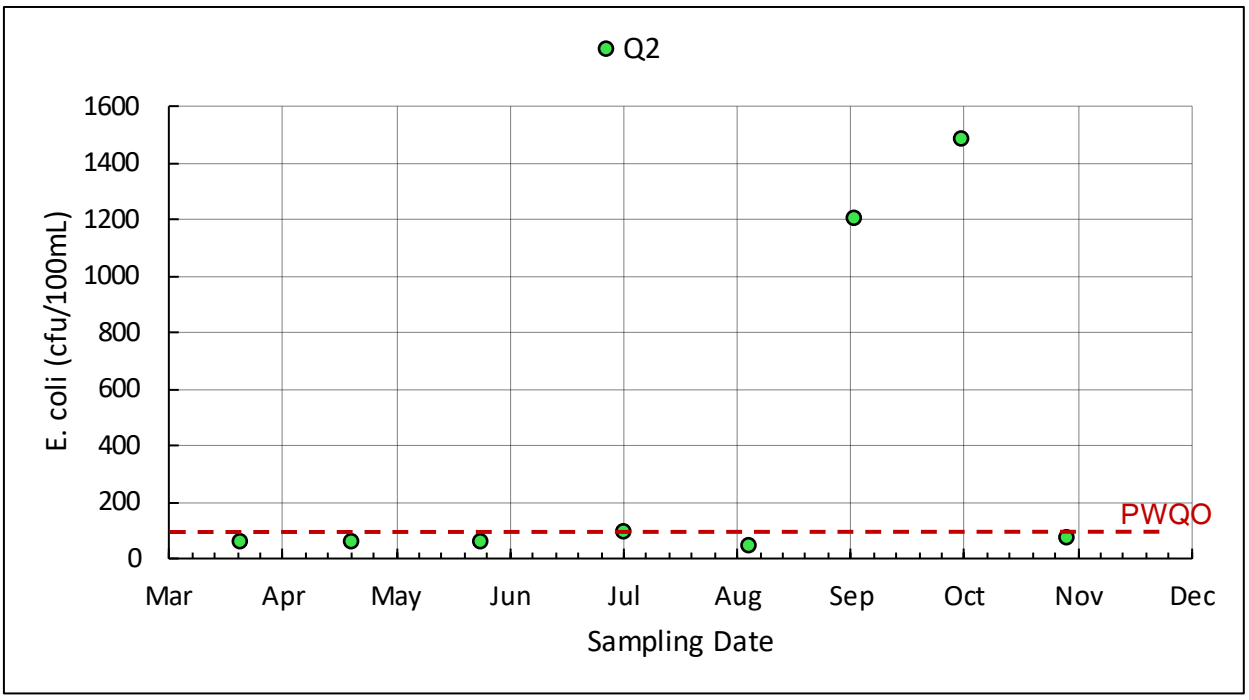

Figure K.5 2023 Penetangore subwatershed *E. coli* concentrations (cfu/100mL) in graph format. Graph shows Q2 sampling site and a horizontal line indicating a PWQO of 100 cfu/100mL for swimming. There are 2 exceedances of the PWQO.

Long-term Results

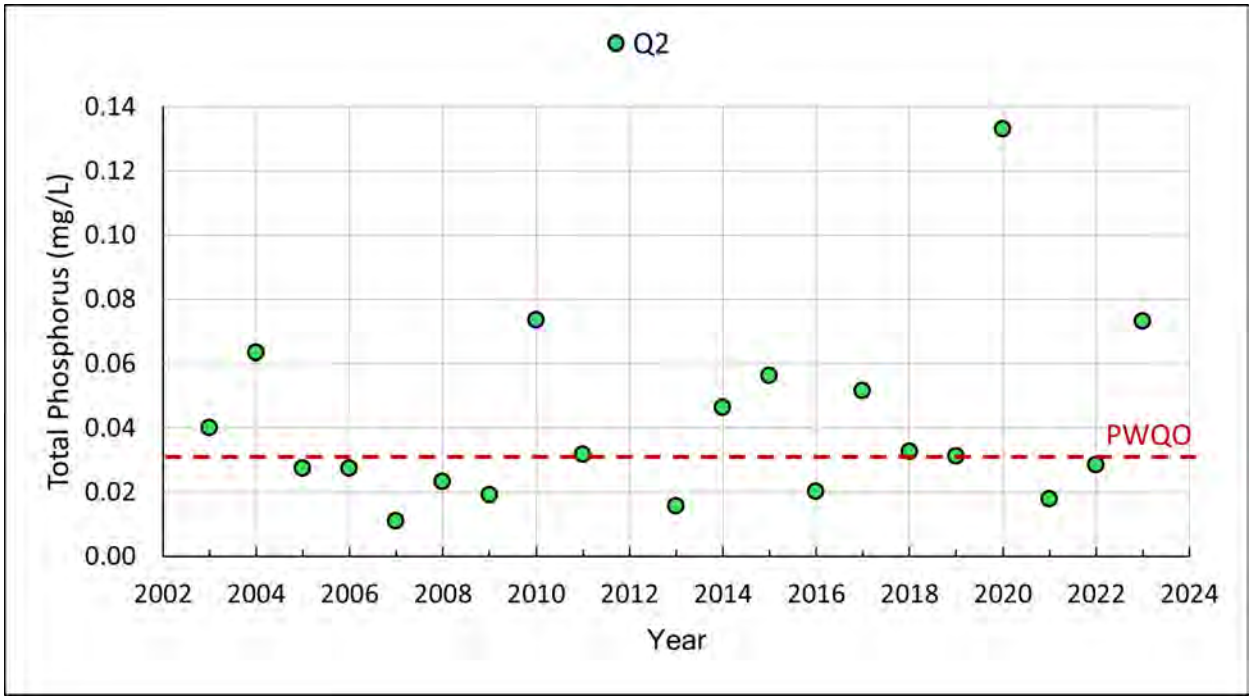

Figure K.6 2002 to 2023 Penetangore subwatershed annual average total phosphorus concentrations (mg/L) in graph format. Graph shows Q2 sampling site and a horizontal line indicating a PWQO of 0.03 mg/L. There are 11 exceedances of the PWQO.

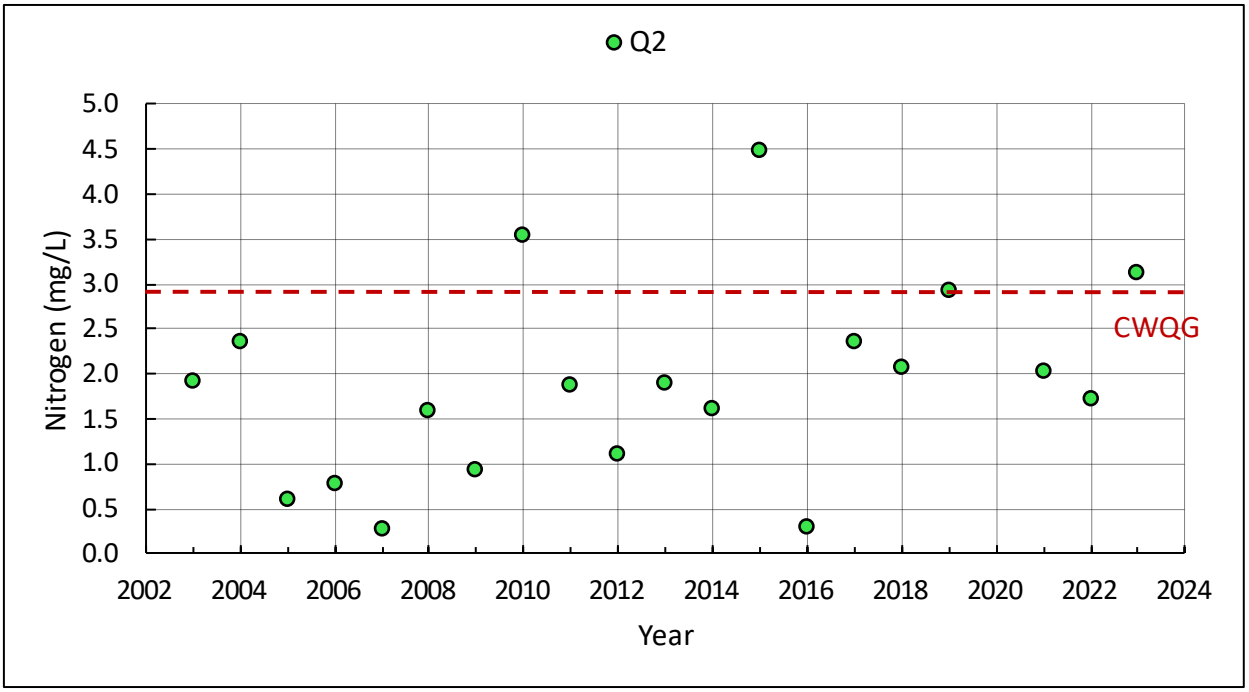

Figure K.7 2002 to 2023 Penetangore subwatershed annual average nitrogen concentrations (mg/L) in graph format. Graph shows Q2 sampling site and a horizontal line indicating a CWQG of 2.93 mg/L. There are 3 exceedances of the CWQG.

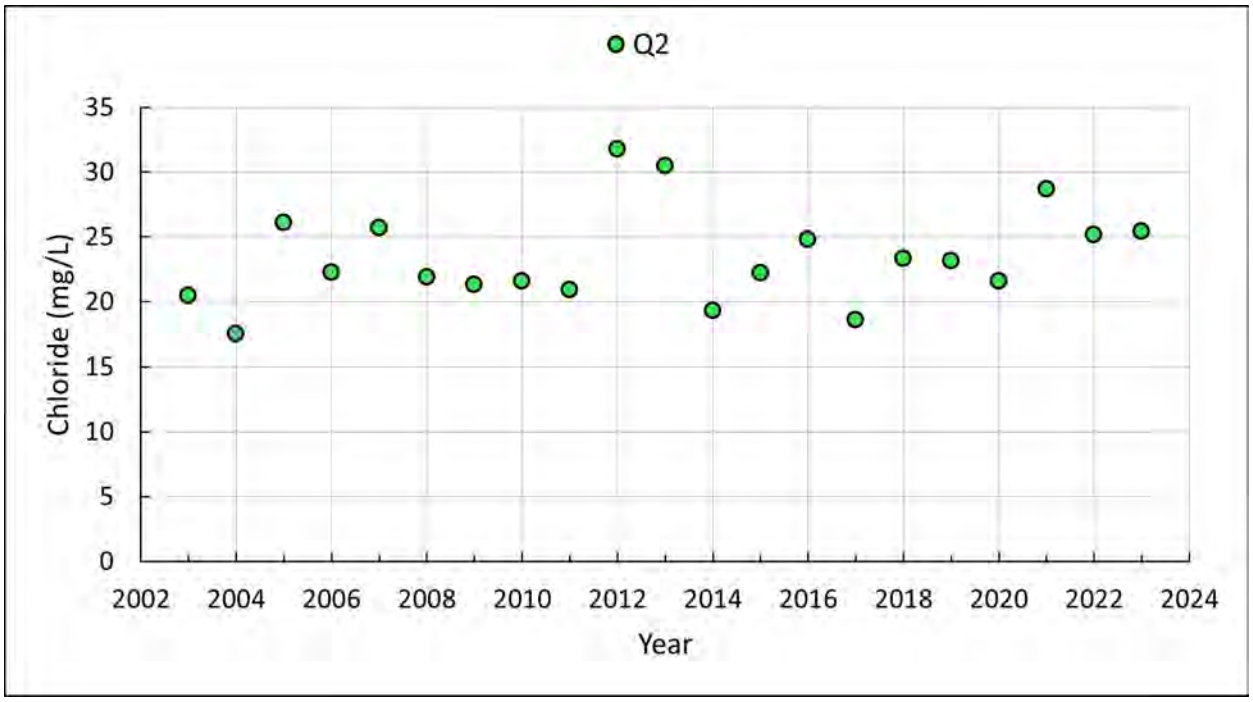

Figure K.8 2002 to 2023 Penetangore subwatershed annual average chloride concentrations (mg/L) in graph format. Graph shows Q2 sampling site. The CWQG is 120 mg/L. There are no exceedances.

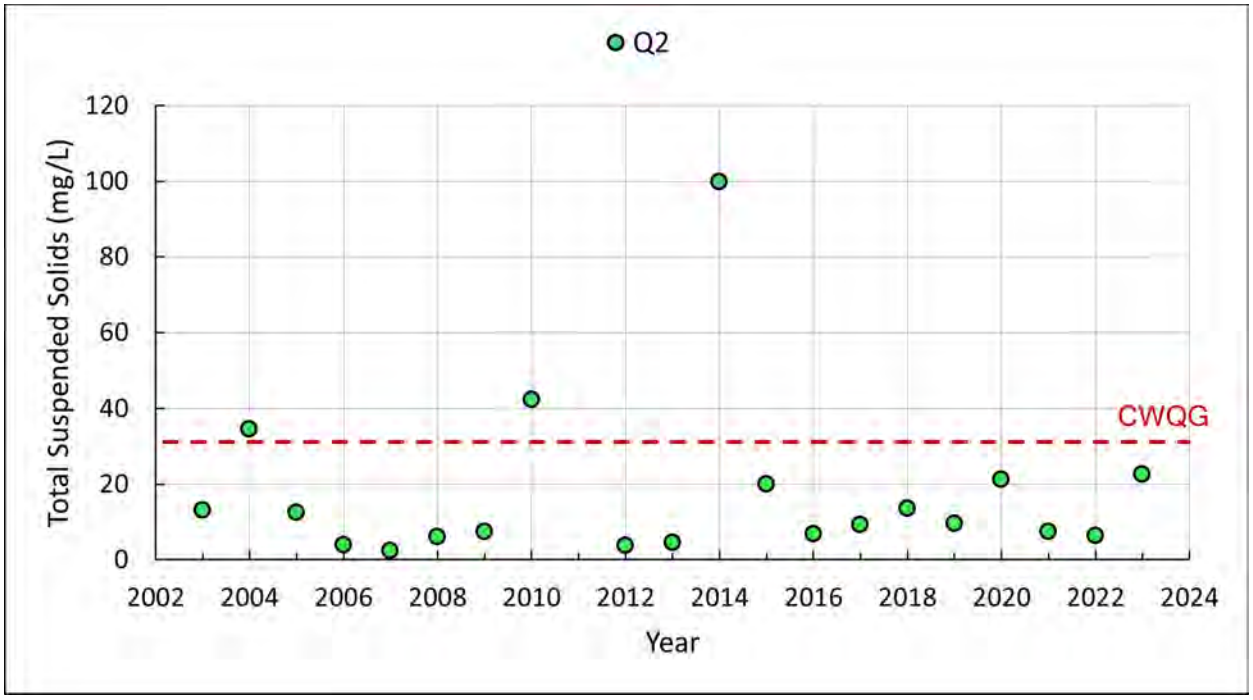

Figure K.9 2012 to 2023 Penetangore subwatershed annual average total suspended solids concentrations (mg/L) in graph format. Graph shows Q2 sampling site and a horizontal line indicating a CWQG of 30 mg/L. There are 3 exceedances of the CWQG.

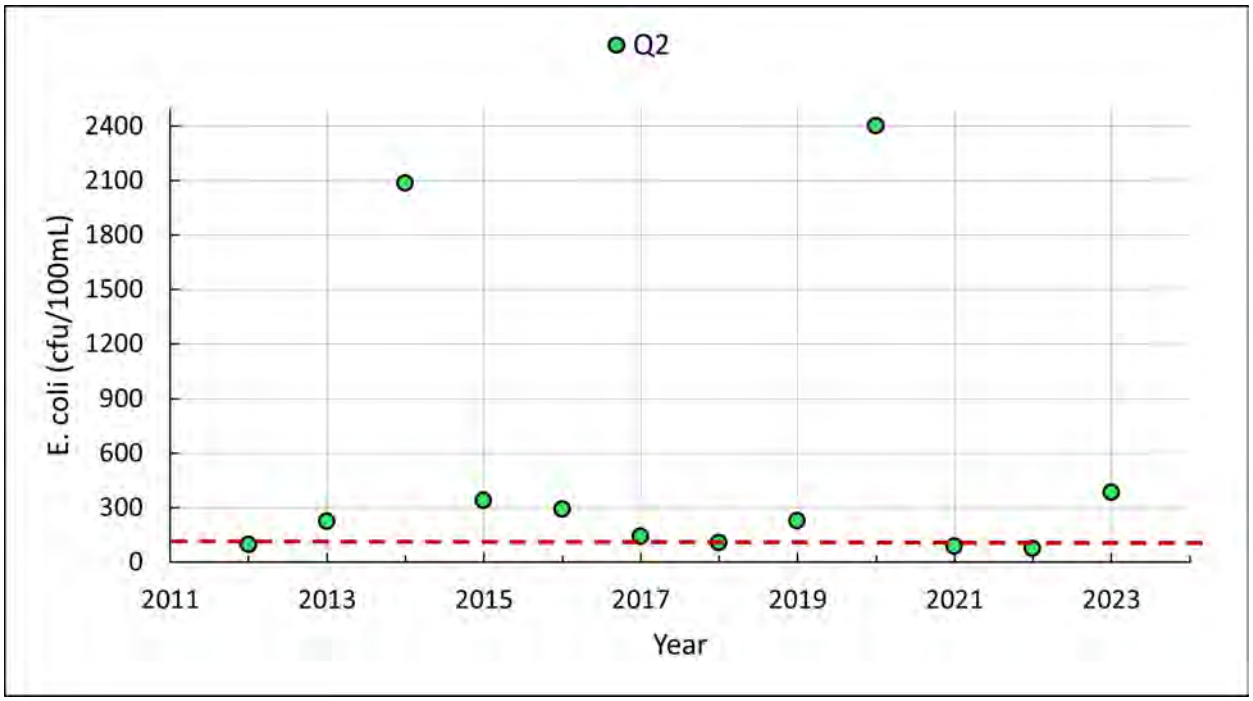

Figure K.10 2012 to 2023 Penetangore subwatershed annual average *E. coli* concentrations (cfu/100mL) in graph format. Graph shows Q2 sampling site and a horizontal line indicating a PWQO of 100cfu/100mL for swimming. There are 9 exceedances of the PWQO.

Benthic Biomonitoring Results (2015-2021)

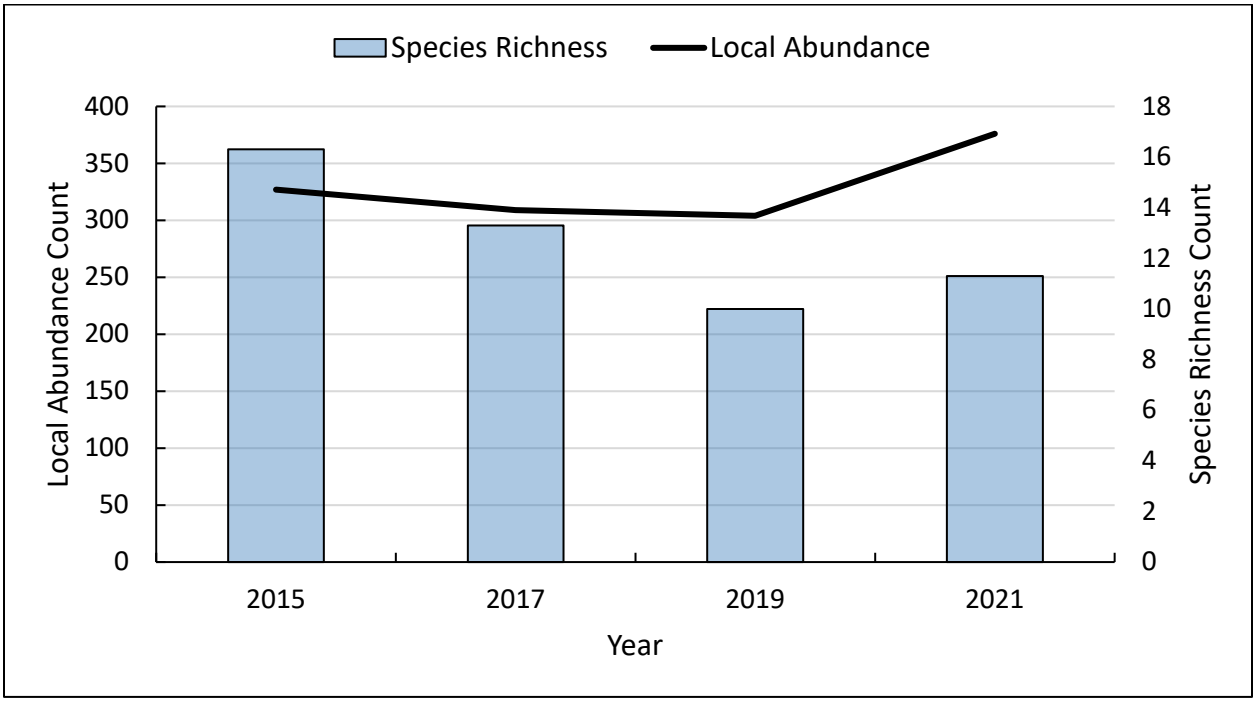

Figure K.11 Local abundance and species richness found within the Penetangore subwatershed from 2015 to 2021.

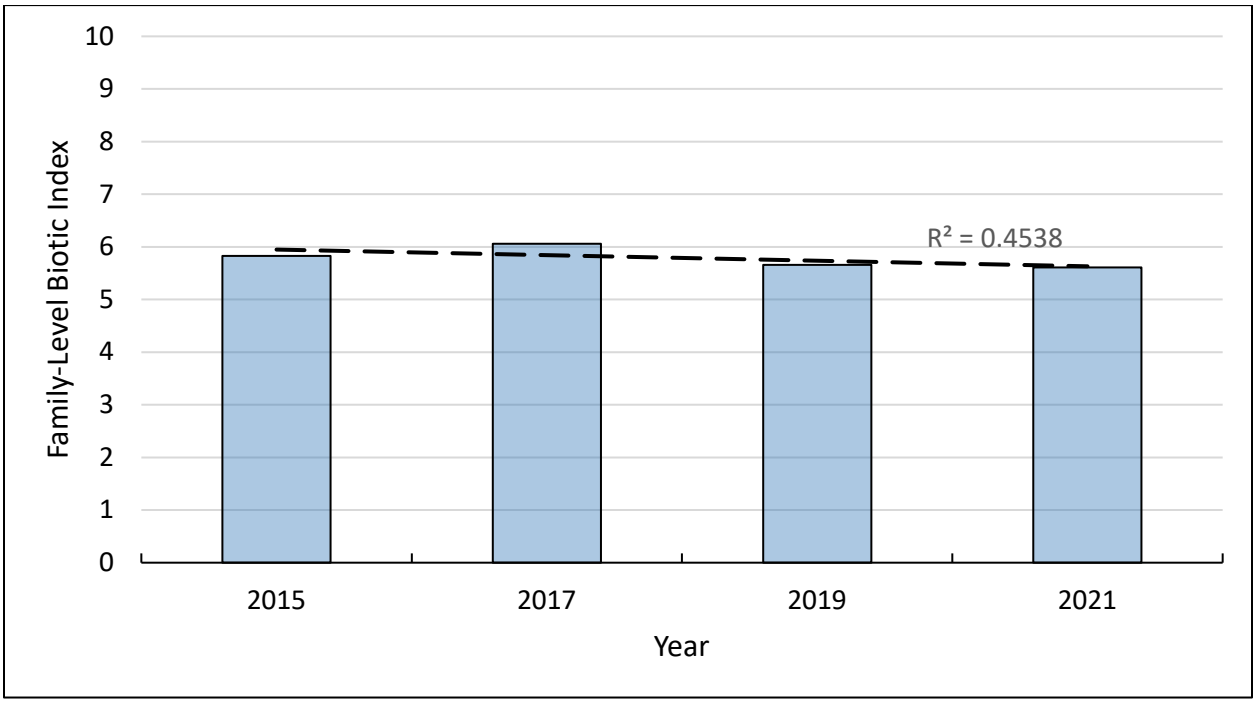

Figure K.12 Family-level biotic index scores for the Penetangore subwatershed from 2015 to 2021.

Saugeen Valley Conservation Authority

Executive Committee

Minutes

Date: Thursday June 6, 2024, 9:00 a.m.

Location: Electronic via Zoom

Chair: Barbara Dobreen

Members present: Paul Allen, Bud Halpin, Tom Hutchinson, Greg McLean

Staff present: Erik Downing, Janice Hagan, Donna Lacey

Chair Dobreen called the meeting to order at 9:08 a.m.

1. Adoption of Agenda

Motion #EC24-26
Moved by Greg McLean
Seconded by Bud Halpin
THAT the agenda for the Executive Committee meeting, June 6, 2024, be adopted as circulated.

Carried

2. Declaration of Pecuniary Interest

There were no declarations of pecuniary interest relative to any item on the agenda.

3. Adoption of Minutes – May 6, 2024

Motion #EC24-27
Moved by Tom Hutchinson
Seconded by Greg McLean
THAT the minutes of the Executive Committee meeting, May 6, 2024, be adopted as circulated.

Carried

4. Closed Session – to discuss personal matters relating to identifiable individuals, and potential litigation affecting the Authority.

Motion #EC24-28
Moved by Greg McLean
Seconded by Tom Hutchinson
THAT the Executive Committee move to Closed session, In Camera, to discuss personal matters relating to identifiable individuals; and potential litigation affecting the Authority; and further

THAT, Jennifer Moreau, Director of Human Resources, Grey County, Erik Downing, Matt Armstrong, Madeline McFadden, and Janice Hagan remain in the meeting as required.

Carried

Motion #EC24-34
Moved by Greg McLean
Seconded by Bud Halpin
THAT the Executive Committee adjourn from Closed Session, In Camera, and rise and report.

Carried

Chair Dobreen reported that only the matters for which the Committee went into Closed Session were discussed.

5. New Business

5.1. Salary Grid Review

Staff reported that an RFP has been issued for a staff Salary Review to assist with 2025 budgetary considerations.

5.2. EPR Content Management System

The Beta version of the EPR Content Management System is now available to staff for testing and training purposes. Central Lake Ontario Conservation Authority (CLOCA) staff are finalizing the system's backend development. Staff demonstrated various interface screens and search features. The Committee discussed the system's potential for digital field access upon full implementation, with staff expressing optimism about its feasibility.

6. Adjournment

There being no further business, the meeting was adjourned at 12:05 p.m. by motion from Greg McLean and Bud Halpin.

_____	_____
Barbara Dobreen	Laura Molson
Chair	Recording Secretary

Saugeen Valley Conservation Authority

Agricultural Advisory Committee

Minutes

Date:	Friday March 8, 2024, 9:00 a.m.
Location:	SVCA Administration Office, Formosa, ON
Chair:	Dave Myette
Members present:	Meg Corrigan, National Farmers Union
	Chris Cossitt, Bruce Federation of Agriculture
	Barbara Dobreen, SVCA Authority Member
	Les Nichols, Bruce Federation of Agriculture
	Mike Niesen SVCA Authority Member
	Paul Wettlaufer, Grey Federation of Agriculture
	Allan Willits, Huron Federation of Agriculture
Absent:	Kevin Eccles, SVCA Authority Member
	Karen Gorman, Grey County Federation of Agriculture
	Steve McCabe, SVCA Authority Member
Others present:	Jennifer Stephens, General Manager/Secretary Treasurer
	Erik Downing, Manager, Environmental Planning and Regulations
	Jody Duncan, Flood Forecasting and Warning Coordinator
	Nicole Gibson, Recording Secretary

Chair Dave Myette called the meeting to order at 9:00 a.m.

1. Adoption of agenda

Motion #AAC24-01
Moved by Chris Cossitt
Seconded by Mike Niesen
THAT the agenda for the Agricultural Advisory Committee, March 8, 2024, be adopted as circulated.

Carried

2. Declaration of pecuniary interest

There were no declarations of pecuniary interest relative to any item on the agenda.

3. Approval of the minutes

3.1 September 8, 2023

Motion #AAC24-02
Moved by Alan Willits
Seconded by Chris Cossett

THAT the minutes for the Agricultural Advisory Committee, September 8, 2023, be adopted as circulated.

Carried

3.2 December 8, 2024 (no quorum)

Motion #AAC24-03
Moved by Alan Willits
Seconded by Chris Cossett
THAT the minutes for the Agricultural Advisory Committee, December 8, 2023, be adopted as circulated.

Carried

4. New business

4.1 Ontario Low Water Response Program

Jody Duncan presented the Ontario Low Water Response Program noting that this is a mandated program. The water response team provides context for low water impacts on local users and can make recommendations to the province for conservation measures. The Committee discussed whether there was interest from members to be involved in Saugeen Valley Conservation Authority's (SVCA) Water Response Team. Members did convey an interest in being involved.

4.2 AAC-2024-01 - Agricultural Advisory Committee Terms of Reference Amendments

Proposed revisions to the Terms of Reference include the length of term for representatives from one year to two years. Authority directors will continue to be appointed each year. An additional amendment allowed seats not filled by representatives from the Federations of Agriculture, the Christian Farmers Federation of Ontario, and the National Farmers Union, to be taken by members-at-large from the agricultural community. It was requested by the members that meeting reminders be circulated at least one week prior. Approved minutes should be circulated to relevant stakeholders even if they have declined a spot on the committee.

Motion #AAC24-04
Moved by Barbara Dobreen
Seconded by Meg Roberts
THAT the Terms of Reference for the SVCA Agricultural Advisory Committee be approved with the revisions discussed.

Carried

4.3 AAC-2024-02 - 2024 Agricultural Advisory Committee Appointments

The committee received two applications for the Member-at-Large position and were able to accept both due to vacancies left by non-appointments from other federations/union.

Motion #AAC24-05
Moved by Alan Willits
Seconded by Paul Wettlaufer

THAT the Agricultural Advisory Committee recommends to the SVCA Board of Directors that Applicant 1 and Applicant 2 be appointed Members-at-Large.

Carried

4.4 Regulation 41/24: Prohibited Activities, Exemptions, and Permits

Erik Downing introduced Ontario Regulation 41/24 and highlighted major changes. SVCA had an external consultant review the fees charged by the Environmental Planning and Regulations (EPR) Department in 2023. It was determined that the fees charged for various services rendered are not sufficient to achieve cost recovery. Given the new requirements to conform to Ontario Regulation 41/24 including updating the EPR policies manual, a review and update to regulatory mapping, a potential increase in general inquiries coupled with the province's direction not to increase fees for services, SVCA anticipates budgetary shortcomings in the EPR department.

4.5 SVCA Water Resources

Due to the lack of time, the Water Resources presentation was deferred until the next meeting.

4.6 Next meeting agenda topics (June 7, 2024)

Items for future meetings:

- Drainage (ex. tile drainage) was recommended as a future meeting topic.
- Erosion issues such as the river erosion threatening Grey County Road 6 near Allan Park
- Energy sector (specifically the battery bank storage facilities)

5. Adjournment

There being no further business, the meeting was adjourned at 11:00 a.m. with a motion from Mike Niesen and Barbara Dobreen.

_____	_____
Dave Myette	Nicole Gibson
Chair	Recording Secretary

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www.saugeenconservation.ca
publicinfo@svca.on.ca

Report #COR-2024-13

To: Chair and Directors, Saugeen Valley Conservation Authority

From: Erik Downing, General Manager/Secretary-Treasurer (Acting)

Date: July 18, 2024

Subject: Administrative By-Laws Amendment

Purpose: To update SVCA By-Laws to address Legislative Changes

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Recommendation

THAT the Board of Directors of the Saugeen Valley Conservation Authority approves the recommended Administrative Bylaw amendments as presented in the report.

Background

Legislative Changes to Section 28 of the Conservation Authorities Act prompted a number of delegations to staff of certain authority powers to staff. Some of these delegations need to be reflected in SVCA Bylaws

Motion #G24-37 - Moved by Sue Paterson, Seconded by Bill Stewart THAT the Board of Directors endorse the delegation of powers as outlined in Ontario Regulation 41/24 as follows: - Issuance and Extension of Permits up to a period of 60 months to SVCA Staff; - All Hearings associated with permits, zoning orders, and stop work orders to the SVCA Board of Directors; and - Notice of Intent to Cancel Permit and Administrative Reviews to the General Manager/Secretary-Treasurer.

SVCA Administrative Bylaws need to be modified to reflect these delegations.

Also, the SVCA Executive in current By-laws need clarification on ability to appoint a General Manager/Secretary-Treasurer or not. This is intended to be done only by the entire Board SVCA staff suggest.

Analysis

P. 11: Added “Appointing a General Manager/Secretary Treasurer” to the list of items for which the EC does not have the power to perform.

P. 11 and 14: Deletion of Section B1 xvi – “Holding Administrative Reviews to determine the completeness of a permit application”

and addition of the same to Section B (2) Officers, General Manager/Secretary Treasurer, to reflect the change to the Act.

Added these amendments to the summary sheet on P. 55

Changed the approval date to the date of the Authority meeting.

Discussion

These Bylaw changes reflect existing Board motions of March 21, 2024, as well as clarify needs of full board participation in hiring of General Manager.

Financial Implications

None

Strategic Plan Linkage:

A1.5 Public Stakeholder Reporting

Prepared By:

[*Original signed by:]*

Erik Downing

General Manager/ Secretary-Treasurer (Acting)

Encl. Revised SVCA Bylaw

Administrative Bylaws

Saugeen Valley Conservation Authority

October 16, 2018

Last amended: ~~May 16, 2023~~July 18, 2024

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Background

Amendments to the *Conservation Authorities Act*

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The *Conservation Authorities Act* (the "Act"), as amended, provides direction for conservation authorities to make such bylaws as are required for its proper administration.

Section 19.1 of the Act, sets out the requirements for bylaws as follows:

Bylaws

19.1(1) An authority may make bylaws,

(a) respecting the meetings to be held by the authority, including providing for the calling of the meetings and the procedures to be followed at meetings, specifying which meetings, if any, may be closed to the public;

(b) prescribing the powers and duties of the Secretary-Treasurer;

(c) designating and empowering officers to sign contracts, agreements, and other documents on behalf of the authority;

(d) delegating all or any of its powers to the Executive Committee except,

(i) the termination of the services of the Secretary-Treasurer,

(ii) the power to raise money, and

(iii) the power to enter into contracts or agreements other than those contracts or agreements as are necessarily incidental to the works approved by the authority;

(e) providing for the composition of its executive committee and for the establishment of other committees that it considers advisable and respecting any other matters relating to its governance;

(f) respecting the roles and responsibilities of the Members of the authority and of its officers and senior staff;

(g) requiring accountability and transparency in the administration of the authority including,

(i) providing for the retention of records specified in the bylaws and for making the records available to the public,

(ii) establishing a code of conduct for the Members of the authority, and

(iii) adopting conflict of interest guidelines for the Members of the authority;

(h) respecting the management of the authority's financial affairs, including auditing and reporting on the authority's finances;

(i) respecting the bylaw review required under subsection (3) and providing for the frequency of the reviews; and

(j) respecting such other matters as may be prescribed by regulation.

Conflict with other laws

(2) If a bylaw made by an authority conflicts with any provision of the *Municipal Conflict of Interest Act* or the *Municipal Freedom of Information and Protection of Privacy Act* or a provision of a regulation made under one of those Acts, the provision of the Act or regulation prevails.

Periodic review of bylaws

(3) At such regular intervals as may be determined by bylaw, an authority shall undertake a review of all of its bylaws to ensure, amongst other things, that the bylaws are in compliance with any Act referred to in subsection (2) or any other relevant law.

Bylaws available to public

(4) An authority shall make its bylaws available to the public in the manner it considers appropriate.

Transition

(5) An authority shall make such bylaws under this section as are required for its proper administration,

(a) in the case of an authority that was established on or before the day section 16 of Schedule 4 to the *Building Better Communities and Conserving Watersheds Act, 2017* comes into force, within one year of that day; and

(b) in the case of an authority that is established after the day section 16 of Schedule 4 to the *Building Better Communities and Conserving Watersheds Act, 2017* comes into force, within one year of the day the authority is established.

Same

(6) Despite the repeal of section 30 by section 28 of Schedule 4 to the Building Better Communities and Conserving Watersheds Act, 2017, a regulation that was made by an authority under that section continues in force after the repeal until the earlier of,

(a) the day that is one year after the day section 16 of Schedule 4 to the *Building Better Communities and Conserving Watersheds Act, 2017* comes into force; and

(b) the day the regulation is revoked by the authority.

Direction by Minister

(7) The Minister may give an authority a written direction to make or amend a bylaw on any matter described in subsection (1), in accordance with the direction, within such period of time as may be specified in the direction.

Compliance

(8) The authority that receives a direction under subsection (7) shall comply with the direction within the time specified in the direction.

Regulation where failure to comply

(9) If an authority fails to adopt a bylaw in accordance with the direction made under subsection (7), the Minister may make regulations in relation to the matters set out in the direction that are applicable in the area of jurisdiction of the authority.

Same

(10) Any regulation made by the Minister under subsection (9) prevails over any conflicting bylaw that the authority may have adopted.

II Administrative Bylaw

Introduction

Saugeen Valley Conservation Authority is a non-share corporation, established under Section 3 of the Act, with the objects to provide, in the area over which it has jurisdiction, programs and services designed for the purpose of furthering the conservation, restoration, development and management of natural resources in watershed(s) other than gas, coal and minerals.

Under the Act, municipalities within a common watershed are enabled to petition the province to establish a conservation authority. Members of the Authority are appointed as representatives by the following Participating Municipalities:

- Municipality of Arran-Elderslie
- Municipality of Brockton
- Township of Chatsworth
- Municipality of Grey Highlands
- Town of Hanover
- Township of Howick
- Township of Huron-Kinloss
- Municipality of Kincardine
- Town of Minto
- Municipality of Morris-Turnberry
- Town of Saugeen Shores
- Municipality of South Bruce
- Township of Southgate
- Township of Wellington North
- Municipality of West Grey

An additional member may be appointed to the Authority by the Minister as a representative of the agricultural sector.

Mandate and Mission

Mandate: Supporting climate resilient communities throughout our watershed by protecting people and property from natural and human-made hazards, while fostering connections with the natural environment.

Mission: A healthy watershed that supports a strong quality of life for our community now and in the future.

Powers of Authorities

The *Conservation Authorities Act* specifies the following:

21 (1) For the purposes of accomplishing its objects, an authority has power,

(a) to research, study and investigate the watershed and to support the development and implementation of programs and services intended to further the purposes of this Act;

(b) for any purpose necessary to any project under consideration or undertaken by the authority, to enter into and upon any land, with the consent of the occupant or owner, and survey and take levels of it and make such borings or sink such trial pits as the authority considers necessary;

(c) to acquire by purchase, lease or otherwise any land that it may require, and, subject to subsections (2) and (4), to sell, lease or otherwise dispose of land so acquired;

(d) despite subsection (2), to lease for a term of five years or less land acquired by the authority;

(e) to purchase or acquire any personal property that it may require and sell or otherwise deal therewith;

(f) to enter into agreements for the purchase of materials, employment of labour and other purposes as may be necessary for the due carrying out of any project or to further the authority's objects;

(g) to enter into agreements with owners of private lands to facilitate the due carrying out of any project;

(h) to determine the proportion of the total benefit afforded to all the participating municipalities that is afforded to each of them;

(i) to erect works and structures and create reservoirs by the construction of dams or otherwise;

(j) to control the flow of surface waters in order to prevent floods or pollution or to reduce the adverse effects thereof;

(k) to alter the course of any river, canal, brook, stream or watercourse, and divert or alter, as well temporarily as permanently, the course of any river, stream, road, street or way, or raise or sink its level in order to carry it over or under, on the level of or by the side of any work built or to be built by the authority, and to divert or alter the position of any water-pipe, gas-pipe, sewer, drain or any telegraph, telephone or electric wire or pole;

(l) to use lands that are owned or controlled by the authority for purposes, not inconsistent with its objects, as it considers proper;

(m) to use lands owned or controlled by the authority for park or other recreational purposes, and to erect, or permit to be erected, buildings, booths and facilities for such purposes and to make charges for admission thereto and the use thereof;

(n) to collaborate and enter into agreements with ministries and agencies of government, municipal councils and local boards and other organizations and individuals;

(o) to plant and produce trees on Crown lands with the consent of the Minister, and on other lands with the consent of the owner, for any purpose;

(p) REPEALED

(q) generally to do all such acts as are necessary for the due carrying out of any project or as may be desirable to further the objects of the authority.

A. Definitions

"Authority" means the Saugeen Valley Conservation Authority and its assembled Members as appointed by the municipalities.

"Act" means the ~~-~~*Conservation Authorities Act*, R.S.O. 1990, c. C.27 (ontario.ca) (https://www.ontario.ca/laws/statute/90c27).

"Chair" means the Chair as referenced in the Act as elected by the Members of the Authority.

"Fiscal Year" means the period from January 1 through December 31.

"General Manager of the Authority, and which may, by resolution of the Authority, include the responsibilities of the Secretary-Treasurer if designated by resolution of the Authority.

"General Membership" means all of the Members. The General Membership is also the Board of Directors of the Corporation.

"Levy" means the amount of costs apportioned to participating municipalities in accordance with the Act and Regulations under the Act.

"Majority" means half of the votes plus one.

"Members" shall mean the members appointed to the Authority by the participating municipalities in the Authority's area of jurisdiction and effectively act as directors as such role is understood in the *Ontario Not-For-Profit Corporations Act* (ONCA).

"Minister" means the Minister as defined in the Act.

"Non-matching Levy" means that portion of an Authority's levy that meets the definition of non-matching levy as found in Ontario Regulation 139/96.

"Officer" means an officer of the Authority as empowered to sign contracts, agreements, and other documents on behalf of the Authority in accordance with section 19.1 of the Act, which shall include the Chair, Vice-Chair, the General Manager/Secretary-Treasurer, and the Manager of Corporate Services.

"Participating Municipality" means a municipality that is designated by or under the Act as a participating municipality in a conservation authority.

"Pecuniary Interest" includes the financial or material interest of a Member and the financial or material interest of a member of the Member's immediate family.

"Secretary-Treasurer" means Secretary-Treasurer of the Authority with the roles specified in the Act.

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"Source Protection Authority" means a conservation authority or other person or body, that, under Subsection 4 (2) or Section 5 of the Clean Water Act is required to exercise and perform the powers and duties of the Drinking Water Source Protection Authority. All appointed SVCA Members are members of the Source Protection Authority.

"Staff" means employees of the Authority as provided for under Section 18(1) of the Act.

"Vice-Chair" means the Vice-Chairperson as elected by the Members of the Authority. If a first and second Vice-Chair are elected, they shall be called First Vice-Chair and Second Vice-Chair.

"Weighted Majority" means the votes of 51 per cent of those represented after the votes are weighted by the percentage that applies under Ontario Regulation 139/96 for municipal levies.

B. Governance

1. Members

Appointments

Participating Municipalities within the jurisdiction of the Saugeen Valley Conservation Authority may appoint Members in accordance with Section 14 of the Act. An additional agricultural sector representative may be appointed to the Authority by the Minister.

Members must reside in a Participating Municipality within the Authority's area of jurisdiction. Participating municipalities must ensure that at least 70 percent of its appointees are selected from among the Members of the municipal council or apply to the Minister for permission to appoint less than this percent. Additional appointees may include citizens as well as an additional Member who may be appointed by the Minister as a representative of the agricultural sector.

Collectively, the appointed Members for the purposes of this bylaw are also referred to as the General Membership.

Term of Member Appointments

In accordance with Section 14 of the Act, a Member shall be appointed for a term of up to four years at the discretion of the appointing participating municipality; such term beginning at the first meeting of the Authority following his or her appointment and ending immediately before the first meeting of the Authority following the appointment of his or her replacement. The GM/S-T shall notify the appropriate municipality in advance of the expiration date of any Member's term, unless notified by the municipality of the Member's reappointment or the appointment of his or her replacement prior to such expiration. A Member is eligible for reappointment. A Member can be replaced by a Participating Municipality at their discretion prior to the end of their term. The Minister will define the term for the Member they appoint as a representative of the agricultural sector.

Powers of the General Membership

Subject to the Act and other applicable legislation, the General Membership is empowered without restriction to exercise all the powers prescribed to the Authority under the Act. In

addition to the powers of an authority under s.21 of the Act for the purposes of accomplishing its objects, as referenced in Section 1 above, the powers of the General Membership include but are not limited to:

i. Approving by resolution, the creation of Committees and/or Advisory Boards, the Members thereof and the terms of reference for these Committees and/or Advisory Boards;
ii. Appointing a General Manager /Secretary-Treasurer;
iii. Terminating the services of the General Manager /Secretary-Treasurer;
iv. Approving establishing and implementing regulations, policies and programs;
v. Awarding contracts or agreements where the approval of the Authority is required under the Authority's purchasing policy;
vi. Appointing an Executive Committee and delegate to the Committee any of its powers except:
    i. Appointing a General Manager /Secretary-Treasurer;
    ~~i.~~ii. The termination of the services of the General Manager/Secretary-Treasurer,
    ~~ii.~~iii. The power to raise money, and
    ~~iii.~~iv. The power to enter into contracts or agreements other than those contracts or agreements as are necessarily incidental to the works approved by the Authority.
vii. Approving by resolution, any new capital project of the Authority;
viii. Approving by resolution, the method of financing any new capital projects;
ix. Approving details on budget allocations on any new or existing capital projects;
x. Approving of the total budget for the ensuing year, and approving the levies to be paid by the Participating Municipalities;
xi. Receiving and approving the Financial Statements and Report of the Auditor for the preceding year;
xii. Authorizing the borrowing of funds on the promissory note of the Authority in accordance with subsection 3(5) of the Act;
xiii. Approving by resolution, any proposed acquisition of land or disposition of land, subject to the requirements under the Act;
xiv. Approving permits or refusing permission as may be required under any regulations made under Section 28 of the Act;
xv. Holding Section 28 Hearings required for the purpose of reviewing permit applications and advising every applicant of their right to appeal the decision to the Minister through the Ontario Land Tribunal.
xvi. ~~Holding Administrative Reviews to determine the completeness of a permit application~~.

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Member Accountability

Participating Municipalities appoint Members to the Authority as their representatives. While the General Manager/Secretary-Treasurer and other staff of the Authority are responsible for the day-to-day operations, the General Membership is responsible for matters of governance, ensuring compliance with applicable legislation, ensuring appropriate policies are in place, and ensuring the financial soundness of the Authority.

Every member and officer in exercising his or her powers and discharging his or her duties to the Authority shall act honestly and in good faith with a view to the best interests of the Authority and exercise the care, diligence, and skill that a reasonably prudent person would exercise in comparable circumstances.

All Members have the responsibility to be guided by and adhere to the Code of Conduct (see Appendix I hereto) and Conflict of Interest Policy (see Appendix II hereto), as adopted by the Authority. Additionally, the agricultural representative appointed by the Minister, if any, will be required to follow the provincial ethical framework set out for government public appointees in the Management Board of Cabinet's Agencies and Appointments Directive.

Members are responsible for:

i. Attending all meetings of the Authority;
ii. Understanding the purpose, function, and responsibilities of the Authority;
iii. Being familiar with the Authority's statutory and other legal obligations;
iv. Setting the strategic direction for the Authority in cooperation with the administration; and
v. Keeping the represented municipal council informed of Authority projects, programs, and activities.

Applicable Legislation

In addition to the Act, the Members are subject to other legislation including, but not limited to:

- Municipal Conflict of Interest Act;
- Municipal Freedom of Information and Protection of Privacy Act ("MFIPPA"); and,
- *Not-for-Profit Corporations Act, 2010.*

If any part of this bylaw conflicts with any provision of the *Municipal Conflict of Interest Act* or the *Municipal Freedom of Information and Protection of Privacy Act* or a provision of a regulation made under one of those acts, the provision of that act or regulation prevails. The same applies to conflicts between these bylaws and the *Not-for-Profit Corporations Act* except and unless explicitly noted in the Act, which case the Act prevails.

Relationship Between Members and Staff

The GM/S-T shall manage the operations of the organization, including all employees of the Authority. The GM/S-T is accountable to the Authority, working cooperatively to achieve the goals established by the Members.

The General Membership will ensure that a process exists for annual performance evaluation of the GM/S-T.

2. Officers

The Officers of the Authority, and their respective responsibilities, shall be:

Chair

- To act as a Member of the Authority;
- Presides at all meetings of the General Membership and Executive Committee;
- Calls special meetings if necessary;
- Acts as a public spokesperson on behalf of the General Membership;
- Serves as signing officer for the Authority, subject to Section 13 below;
- Ensures relevant information and policies are brought to the Authority's attention;
- Keeps the General Membership apprised of significant issues in a timely fashion;
- Performs other duties when directed to do so by resolution of the Authority;
- Directs the General Manager/Secretary-Treasurer in the operation and administration of the Authority and in such matters as have not been decided by regulation or by resolution of the Authority;
- To be "*ex-officio*" Member of all committees, sub-committees, and ad hoc committees with the full right, but not obligation, to participate and vote in the proceedings but does not count towards quorum.
- Represents the Authority as a voting Member of Conservation Ontario.

1st Vice-Chair

- To act as a Member of the Authority;
- Attends all meetings of the Authority and Executive Committee;
- Carries out assignments as requested by the Chair;
- Understands the responsibilities of the Chair and acts as Chair immediately upon the death, incapacity to act, absence or resignation of the Chair until such time as a new Chair is appointed or until the Chair resumes his/her duties;
- Serves as a signing officer for the Authority, subject to Section 13 below;
- Represents the Authority as the first alternate voting Member of Conservation Ontario.

2nd Vice-Chair

- To act as a Member of the Authority;
- Attends all meetings of the Authority and Executive Committee;
- Carries out assignments as requested by the Chair;
- Understands the responsibilities of the Chair and acts as Chair immediately upon the death, incapacity to act, absence or resignation of the Chair until such time as a new Chair is appointed or until the Chair resumes his/her duties;

Past Chair or Member-at-Large (whichever is applicable)

- To act as a Member of the Authority;
- Attends all meetings of the Authority and Executive Committee;
- Carries out assignments as requested by the Chair;

General Manager/Secretary-Treasurer

The duties of the General Manager and Secretary-Treasurer are combined and assigned to a single position, and the person will be called the General Manager/Secretary-Treasurer (GM/S-T).

Responsibilities of the GM/S-T as assigned by the Authority include, but are not limited to the following:

- Is an employee of the Authority;
- Attend all meetings of the General Membership, Executive Committee, and all other committees or designates an acting General Manager if not available;
- Work in close collaboration with the Chair and Vice-Chair and keeps them apprised of relevant information and significant issues in a timely fashion;
- Develops a strategic plan for approval by the General Membership and implements short and long-range goals and objectives;
- Is responsible for the management of the operations of the Authority, including all staff and programs of the Authority;
- Ensure resolutions of the Authority are implemented in a timely fashion;
- Fulfill the requirements of the Secretary-Treasurer as defined in the Act;
- Develop and maintain effective relationships and ensures good communications with stakeholders, including Participating Municipalities, federal and provincial government ministries/agencies, indigenous communities, other conservation authorities, Conservation Ontario, community groups, and associations;
- Is the custodian of the Corporate Seal;
- Serves as a signing officer for the Authority, subject to the below Section 13 below;
- Represent the Authority as an alternate delegate to Conservation Ontario;
- Holds Administrative Reviews to determine the completeness of a permit application
- Serve as an Officer for the Saugeen Valley Conservation Foundation; and
- Assist the Saugeen Valley Conservation Foundation in carrying out its programs, attend Foundation meetings as required, and provide input to the Foundation as requested.

3. Absence of Chair and Vice-Chair(s)

In the event of the absence of the Chair and Vice-Chair(s) from any meeting, the Members shall appoint an Acting Chair who, for the purposes of that meeting has all the powers and shall perform all the duties of the Chair.

4. Maximum Term for Chair and Vice-Chair

Both the Chair and Vice-Chair shall hold office for a term of one year and shall serve for no more than two consecutive terms. Notwithstanding these terms, the Minister may grant permission (upon application by an Authority or a participating municipality) for a Chair or Vice-Chair to serve for a term of more than one year or to hold office for more than two consecutive terms.

Chairs and vice-chairs will be appointed to the authority by each participating municipality on a rotating basis to ensure that a member appointed to the Authority cannot be appointed to succeed an outgoing chair or vice-chair by the same participating municipality.

5. Representatives to Conservation Ontario Council

The Authority may appoint up to three Representatives to Conservation Ontario Council ("Council"), designated as Voting Delegate and Alternate(s). Council will consist of the Voting Delegates appointed by each member Conservation Authority. The Voting Delegate and Alternates shall be registered with Conservation Ontario annually.

6. Election of Chair and Vice-Chairs

The election of the Chair and one or more Vice-Chairs shall be at the first meeting held each year [Annual Meeting] in accordance with the Authority's Procedure for Election of Officers (Appendix 3). Successors to the positions of Chair and Vice-Chair shall be a Member from a different participating municipality from the incumbent. Upon application by an Authority or a participating municipality, the Minister may grant permission for a Member who was appointed to the Authority by the same participating municipality that appointed the outgoing Chair or Vice-Chair to serve as Chair or Vice-Chair.

7. Appointment of Auditor

The General Membership shall appoint an auditor for the coming year at the Annual Meeting in accordance with Section 38 of the Act.

8. Appointment of Financial Institution

The General Membership shall appoint a financial institution to act as the Authority's banker by Resolution.

9. Appointment of Solicitor

The General Membership shall appoint a solicitor(s) for the coming year to act as the Authority's legal counsel by Resolution.

10. Financial Statements and Report of the Auditor

The Authority's accounts and transactions will be audited annually by a person licensed under the *Public Accounting Act, 2004* and shall ensure that the annual audit is prepared in accordance with generally accepted accounting principles for local governments recommended by the Public Sector Accounting Board of the Chartered Professional Accountants of Canada.

The General Membership shall receive and approve the Audited Financial Statements and Report of the Auditor annually for the previous year by May 31st of the following year.

The Authority shall forward copies of the Audited Financial Statements and Report of the Auditor to Participating Municipalities and Minister in accordance with Section 38 of the Act and will make the Audited Financial Statements available to the public on the Authority's website within sixty (60) days of receiving the Auditor's Report.

11. Borrowing Resolution

If required, the Authority shall establish a borrowing resolution by March 31 of each year and such resolution shall be in force until it is superseded by another borrowing resolution.

12. Levy Notice

The levy due to the Authority from participating municipalities shall be communicated to those municipalities in accordance with the Act and any applicable Regulations.

13. Signing Officers

All deeds, transfers, assignments, contracts, and obligations entered into by the Authority shall be signed by the signing officers of the Authority, which shall be any two of the following: Chair, Vice Chair, GM/S-T, or Manager, Corporate Services.

Signing authority that was authorized by any previous Administration Regulation or Bylaw is superseded by this bylaw.

14. Executive Committee

The Authority may appoint an Executive Committee at the first meeting of the General Membership each year in accordance with Section 19 of the Act and these bylaws.

The Executive Committee will consist of 5 members including the Chair, 1st Vice Chair, and 2nd Vice Chair, immediate Past Chair or Member-at-Large, and one other additional Member as appointed by the Chair prior to each meeting.

15. Advisory Boards and other Committees

In accordance with Section 18(2) of the Act, the Authority shall establish such advisory boards as may be required by regulation and may establish such other advisory boards or committees as it considers appropriate to study and report on specific matters.

The General Membership shall approve the terms of reference for all such advisory boards and committees, which shall include the role, the frequency of meetings, and the number of members required.

Resolutions and policies governing the operation of the Authority shall be observed in all advisory board and committee meetings.

Each advisory board or committee shall report to the General Membership, presenting any recommendations made by the advisory board or committee.

The dates of all advisory board and committee meetings shall be made available to all members of the Authority.

The Authority may establish committees or ad hoc committees as deemed necessary to deal with short term or long-term matters concerning the operations and programs of the Authority.

Examples of current committees:

- Forestry Committee;
- Property & Parks Committee;
- Water Resources Committee; and
- Agricultural Advisory Committee.

Committees make recommendations or suggestions only to the Authority and do not have the power to commit the Authority or its finances to any project or program unless specifically delegated to do so by the Authority.

16. Remuneration of Members

The Authority shall establish a per-diem rate from time to time to be paid to Members for attendance at General meetings, Source Protection Authority meetings, Advisory Board or Committee meetings, and at such other business functions as may be from time to time requested by the Chair, through the General Manager/Secretary-Treasurer. In addition, an honorarium may be approved by the Authority for the Chair as compensation for their additional responsibilities. Members will be paid the full day rate for attendance at more than one meeting if they occur consecutively on the same day. The full per diem rate will apply to attendance at Source Protection Authority meetings.

The Authority shall reimburse members' reasonable travel expenses incurred for the purpose of attending meetings and/or functions on behalf of the Authority. A per-kilometre rate to be paid for use of a personal vehicle shall be approved by Resolution of the General Membership from time-to-time. Requests for such reimbursements shall be submitted within a timely fashion and shall be consistent with Canada Revenue Agency guidelines.

If no quorum is present, the per diem rate shall be paid to those in attendance.

A Per Diem statement is provided to each Member's municipality by January 31st of the following year.

Remuneration of the Member appointed by the Minister, if any, as a representative of the agricultural sector is at the expense and discretion of the Province.

A T4 slip will be issued for the total amount Members received for per diem.

17. Records Retention

The Authority shall keep full and accurate records including, but not limited to:

a. Minutes of all meetings of the Authority, including registries of statements of interests in accordance with the *Municipal Conflict of Interest* Act;
b. Assets, liabilities, receipts, and disbursements of the Authority and Financial Statements and Reports of the Auditors;
c. Human Resources files for all employees and members as applicable;
d. Workplace Health and Safety documents including workplace inspections, workplace accidents, investigations, etc.;
e. Electronic communications including emails;
f. Contracts and agreements entered into by the Authority;
g. Strategic Plans and other documents providing organizational direction;
h. Projects of the Authority;
i. Technical studies and data gathered in support of programs of the Authority;
j. Legal proceedings involving the Authority; and

k. Incidents of personal injury or property damage involving the Authority and members of the public.

Such records shall be retained and protected in accordance with all applicable laws and the Records Retention Policy of the Authority as approved by the General Membership from time-to-time.

See the SVCA Records Retention policy and Schedule.

18. Records Available to Public

Records of the Authority shall be available to the public as required pursuant to MFIPPA and further to Ontario Regulation 400/22: Information Requirements under the Act.

The GM/S-T shall be designated as "Head", as that role is understood under MFIPPA, for the purposes of conducting affairs under MFIPPA and any associated regulations.

19. Bylaw Review

In accordance with the Act, these bylaws shall be reviewed by the Authority to ensure the bylaws are in compliance with the Act and any other relevant law. The General Membership shall review the bylaws annually to ensure best management practices in governance are being followed.

20. Bylaws Available to Public

In accordance with the Act, the Authority shall make its bylaws available to the public on the Authority's website. Bylaws shall also be available for review by any Member of the public at the Authority's administration centre or provided in alternative formats, in accordance with the *Accessibility for Ontarians with Disabilities Act,* if requested by interested parties.

21. Enforcement of Bylaws and Policies

The Members shall respect and adhere to all applicable bylaws and policies (for example, the Code of Conduct and Conflict of Interest). The Authority may take reasonable measures to enforce its bylaws and policies, including the enforcement mechanisms under the *Municipal Conflict of Interest Act*. The procedure should include:

- An investigation will be conducted regarding the alleged breach;
- An opportunity will be provided to the affected member to respond to the allegation;
- The findings of the investigation and the affected member's response will be communicated to the General Membership in a closed meeting; and
- The appointing municipality or the appointing Minister shall be notified of the outcome of the investigation.

22. Indemnification of Members, Officers, and Employees

The Authority shall maintain a liability insurance policy for Directors and Officers.

C. Meeting Procedures

The Meeting Procedures below governing the procedures of the Authority shall be observed in Executive Committee, Advisory Board, and Committee meetings, as far as they are applicable. The term Executive Committee, Advisory Board, or Committee may be substituted for the term Authority as may be applicable in this section. When the Authority, as the case may be, is sitting as a Hearing Board, hearings will meet the requirements of the *Statutory Powers and Procedures Act* (SPPA), the details of which are specified in Saugeen Valley Conservation Authority's Hearing Procedures (2021)(https://www.saugeenconservation.ca/en/about-us/resources/By-laws/DOC_20211118_Section28CAHearingGuidelinesFNL.pdf)

1. Rules of Procedure

In all matters of procedure not specifically dealt with under the Act and this Bylaw, the current edition of Robert's Rules of Order or other generally accepted rules of procedure will be followed.

2. Electronic and Hybrid Meetings

Members may participate in a hybrid meeting by video, or other electronic means. All participants must be able to communicate adequately with each other during the meeting.

All Members participating electronically shall receive a paid per diem in accordance with normal practices.

All Members participating remotely in a hybrid meeting, shall have the ability to:

i. register a vote; and
ii. be counted towards determining quorum.

3. Notice of Meeting

The General Membership shall approve a schedule for regular meetings in advance. The General Manager/Secretary-Treasurer shall send Notice of regular meetings to all Members at least seven calendar days in advance of a meeting. Notice of all regular or special meetings of the General Membership or its committees shall be made available to the public as soon as possible after its delivery to General Membership.

The chair may call a special meeting of the Authority, as necessary. Any Member, with 50% support of the other Members, may also request the Chair to call a meeting of the Authority and the Chair will not refuse.

Notice of any meeting shall indicate the time and place of that meeting and the agenda for the meeting.

All material and correspondence to be dealt with by the Authority at a meeting will be submitted to the General Manager/Secretary-Treasurer ten calendar days in advance of the meeting where it is to be dealt with.

The Chair may, at his/her pleasure or at the request of a member with a majority support of the other members, call a special meeting of the Authority on three calendar days' notice in writing

or email. That notice shall state the business of the special meeting and only that business shall be considered at that special meeting.

The Chair or the General Manager/Secretary-Treasurer may, by notice in writing or email, deliver to the members so as to be received by them at least twelve hours before the hour appointed for the meeting, postpone or cancel any meeting of an Advisory Committee or other committee until the next scheduled date for the specific Advisory Committee or committee affected. Postponement of a meeting shall not be for any longer than the next regularly scheduled meeting date.

Anyone wishing notice of meetings shall leave their name and address with the General Manager/Secretary-Treasurer. The GM/S-T or designate shall inform that person, in writing, by telephone or electronic mail, in advance of other meetings.

4. Meetings Open to Public

All meetings of the General Membership and Executive Committee shall be open to the public. Where possible, the Authority will provide for alternative means for the public to participate in meetings electronically.

A meeting or part of a meeting may be closed to the public if the subject matter being considered is identified in the closed meeting section of the agenda or arises during a meeting requiring that it be closed to the public at the time that the matter is raised at a meeting, and the subject matter meets the criteria for a closed meeting as defined in this bylaw.

5. Agenda for Meetings

Authority staff, under the supervision of the Chair and the General Manager/Secretary-Treasurer, shall prepare an agenda for all regular meetings of the Authority that shall include, but not necessarily be limited to, the following headings:

- Matters Arising from the Minutes;
- Reports;
- New Business; and
- Other Business.

The agenda for special meetings of the Authority shall be prepared as directed by the Chair.

Agendas for full Authority meetings shall be forwarded to all Members at least seven calendar days in advance of the meeting. Such agendas shall be made available to the public on the Authority's website at the same time unless the meeting is closed to the public in accordance with this bylaw. Such agendas shall also be available in alternative formats, in accordance with the *Accessibility for Ontarians with Disabilities Act,* if requested by interested parties.

Agendas for committee meetings shall be made available to committee members no later than 48 hours in advance of the meeting. Committee agendas shall be made available to the public on the Authority's website at the same time unless the meeting is closed to the public.

6. Quorum

At any meeting of the General Membership, a quorum consists of a majority of the Members appointed by the Participating Municipalities. With a 15-Member Authority, 8 Members constitutes a quorum per section 16(2) of the Act. At any Executive Committee, advisory committee or committee meeting, a quorum consists of a majority of the members of the Executive Committee, advisory board, or committee. The Authority Chair as an *ex officio* member of the advisory board or committee with the full right, but not obligation, to participate and vote in the proceedings but does not count towards quorum. Notwithstanding the foregoing, the Member appointed by the Minister to represent agricultural interests is not part of quorum.

If there is no quorum within one half hour after the time appointed for the meeting, the Chair for the meeting shall declare the meeting adjourned due to a lack of a quorum, or shall recess until quorum arrives, and the recording secretary shall record the names of the Members present and absent.

If during an Authority or Advisory Board or Committee meeting quorum is lost, then the Chair shall declare that the meeting shall stand recessed or adjourned, until the date of the next regular meeting or other meeting called in accordance with the provisions of this bylaw. Agenda items including delegations present may be covered and presented and issues discussed, but no formal decisions may be taken by the remaining members which do not constitute a quorum.

Where the number of Members who are disabled from participating in a meeting due to the declaration of a conflict of interest is such that at that meeting the remaining Members are not of sufficient number to constitute a quorum, the remaining number of Members shall be deemed to constitute a quorum, provided such number is not less than two.

7. Order of Business

The business of the Authority shall be taken up in the order in which it stands on the agenda unless otherwise decided by a two-thirds vote of those Members present.

No Member shall present any matter to the Authority for its consideration unless the matter appears on the agenda for the meeting of the Authority or leave is granted to present the matter by the affirmative vote of two-thirds of the members present.

8. Debate

The Authority shall observe the following procedures for discussion and debate on any matter coming before it:

a. A member shall be recognized by the Chair prior to speaking;
b. Where two or more Members rise to speak, the Chair shall designate the Member who has the floor, who shall be the Member who in the opinion of the Chair was first recognized;
c. All questions and points of discussion shall be directed through the Chair;
d. Where a motion is presented, it shall be moved and seconded before debate;

e. No Member shall speak more than once to the same question without leave from the Chair, except in explanation of a material part of the speech;
f. No Member shall speak more than three minutes without leave of the Chair;
g. Any Member may ask a question of the previous speaker through the Chair;
h. The Member who has presented a motion, other than a motion to amend or dispose of a motion, may speak again to the motion immediately before the Chair puts the motion to a vote;
i. When a motion is under debate, no motion shall be received other than a motion to amend, to defer action, to refer the question, to take a vote, to adjourn, or to extend the hour of closing the proceedings; and
j. When a motion is under consideration, only one amendment is permitted at a time.

9. Matters of Precedence

The following matters shall have precedence over the usual order of business:

a. a point of order;
b. matter of privilege;
c. a matter of clarification;
d. a motion to suspend a rule of procedure or to request compliance with the rules of procedure;
e. a motion that the question be put to a vote; and
f. a motion to adjourn.

10. Members' Attendance

The Authority shall provide a listing of Members' attendance at scheduled meetings of the Authority to the Participating Municipalities at least annually.

Upon a Member's vacancy due to death, incapacity, or resignation occurring in any office of the Authority, the Authority shall request the municipality that was represented by that Member appoint a Member replacement.

If a Member is unable to attend any meeting and wishes to bring any additional information or opinion pertaining to an agenda item to the General Membership, the Member shall address in writing or email to the Chair or General Manager/Secretary-Treasurer such correspondence prior to the start of the meeting. The correspondence shall be read aloud by the General Manager/Secretary-Treasurer without comment or explanations.

If a Member is absent from three consecutive Authority meetings, regardless of notification of absence, the General Manager/Secretary-Treasurer shall notify the municipality of those absences. ~~-~~If a Member is absent from three or more consecutive Authority meetings, without notification of absence to the General Manager/Secretary-Treasurer, the member will be considered to have resigned and the municipality will be requested to appoint a new member.

11. Delegations

Any person or organization who wishes to address the Authority may make a request in writing or email to the General Manager/Secretary-Treasurer that is received no less than ten (10) calendar days in advance of the scheduled meeting at which the person or organization wishes to speak.

A delegation request must include:

- the name of the individual who will be speaking; the name of the organization the individual will be speaking on behalf; a written summary of the issue; a written statement identifying the organization's position on the issue; and any presentation material the speaker wishes to rely on.

Presentation materials submitted shall be in compliance with the *Accessibility for Ontarians with Disabilities Act* (AODA).

The request will be reviewed by the General Manager/Secretary-Treasurer for completeness, relevance, and appropriateness. The General Manager/Secretary-Treasurer may refuse a delegation request or require modification of the delegation presentation and materials where:

a. The request is not submitted within the stated time limits;
b. The subject matter is unrelated to or beyond the purview of the Authority's mandate; or
c. The issue or subject matter being considered relates to or qualifies as a matter suitable for a closed meeting.

The General Manager/Secretary-Treasurer shall advise the organization or individual whether they are listed on the meeting agenda and the appropriates of their presentation and material no later than two (2) days before the scheduled meeting.

Accepted delegation submissions (including names but excluding personal contact information) form part of the public record and shall be made available to the Board of Directors and the public.

A maximum of two (2) delegations shall be permitted at any regular meeting of the Authority.

A delegation shall be limited to one (1) speaker whose presentation may not exceed ten (10) minutes except by leave of the Chair.

Speakers shall only address the Chair and shall be respectful at all times.

Speakers shall not:

a. Address Directors directly without permission;
b. Interrupt any speaker or action of the Board, or any other person addressing the Board;
c. Display or have in possession picket signs or placards in the meeting room;
d. Repeat what has been said by previous speakers at a meeting;
e. Speak disrespectfully of any person;
f. Use offensive language;
g. Disobey a direction or decision of the Chair; or
h. Enter into cross debate with the Chair, Directors, Staff, or members of the public.

The Chair has discretion to end consideration of a delegation and its request where the information offered is inconsistent with the submission materials or is inappropriate in any manner, as may be determined by the Chair acting reasonably. Recurring delegations are not permitted unless the Chair determines new, relevant information on the issue has become available. The Board shall defer any decisions or action on information received from a delegation to a subsequent meeting.

12. Annual Meeting

The Authority shall designate the first meeting of the General Membership each year as the annual meeting and shall include the election of officers (see Appendix III hereto) in addition to the normal course of business.

13. Meetings with Closed "In Camera" Sessions

Every meeting of the General Membership, Executive Committee, Advisory Boards, and Committees shall be open to the public as per Section 15(3) of the Act, subject to the exceptions set out below.

Meetings may be closed to the public if the subject matter being considered relates to:

a. The security of the property of the Authority;
b. Personal matters about an identifiable individual, including employees of the Authority;
c. A proposed or pending acquisition or disposition of land by the Authority;
d. Labour relations or employee negotiations;
e. Litigation or potential litigation, including matters before administrative tribunals (e.g., Ontario Land Tribunal), affecting the Authority;
f. Advice that is subject to solicitor-client privilege;
g. A matter in respect of which the General Membership, Executive Committee, Advisory Board or committee or other body may hold a closed meeting under another act;
h. Information explicitly supplied in confidence to the Authority by Canada, a province or territory or a Crown agency of any of them;
i. A trade secret or scientific, technical, commercial, financial, or labour relations information, supplied in confidence to the Authority, which, if disclosed, could reasonably be expected to prejudice significantly the competitive position or interfere significantly with the contractual or other negotiations of a person, group of persons, or organization;
j. A trade secret or scientific, technical, commercial, or financial information that belongs to the Authority and has monetary value or potential monetary value; or
k. 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 Authority.

The Authority shall close a meeting if the subject matter relates to the consideration of a request under MFIPPA, and the designated "Head" of the Authority for the purposes of MFIPPA is present.

Before holding a meeting or part of a meeting that is to be closed to the public, the members shall state by resolution during the open session of the meeting that there will be a meeting

closed to the public and the general nature of the matter to be considered at the closed meeting. Once matters have been dealt with in a closed meeting, the General Membership shall reconvene in an open session.

The General Membership shall not vote during a meeting that is closed to the public, unless:

a. The meeting meets the criteria outlined in this bylaw to be closed to the public; and
b. The vote is for a procedural matter or for giving directions or instructions to Officers, employees, or agents of Authority.

Any materials presented to the General Membership during a closed meeting shall be returned to the General Manager/Secretary-Treasurer prior to departing from the meeting and shall be treated in accordance with the Authority's procedures for handling confidential material.

Notwithstanding the list enumerated above, a meeting of the Authority, Executive Committee, advisory board, or other committee may also be closed to the public if:

a. The meeting is held for the purpose of educating or training the members, and
b. At the meeting, no Member discusses or otherwise deals with any matter in a way that materially advances the business or decision-making of the authority, the Executive Committee, advisory board, or other committee.

14. Voting

In accordance with Section 16 of the Act:

a. Each member, including the Chair, is entitled to one vote, and
b. A majority vote of the Members present at any meeting, including Authority, committee, and ad hoc meetings is required upon all matters coming before the meeting.

Where a Member has been appointed by the Minister as a representative of the agricultural sector, the member shall not vote on: a resolution to enlarge an authority's area of jurisdiction; a resolution to amalgamate the Authority with another conservation authority; a resolution to dissolve the Authority; or, a resolution related to any budgetary matter.

If any member abstains from voting, they shall be deemed to be a negative vote.

On a tie vote, the motion is lost.

Interrelated motions shall be voted on in the order specified in Robert's Rules of Order or other generally accepted rules of procedure.

Unless a Member requests a recorded vote, a vote shall be by a show of hands or such other means as the Chair may call. No question shall be voted upon more than once at any meeting unless a recorded vote is requested.

If a Member present at a meeting at the time of the vote requests immediately before or after the taking of the vote that the vote be recorded, each Member present beginning with the Member that requested that the vote be recorded and thereafter alphabetically by surname,

with the Chair voting last, except a member who is disqualified from voting by any Act, shall announce his or her vote openly answering "yes" or "no" to the question, and the Recording Secretary shall record each vote.

At the meeting of the Authority at which the Non-Matching Levy is to be approved, the General Manager/Secretary-Treasurer shall conduct the vote to approve of Non-Matching Levy by a weighted majority of the members present and eligible to vote, in accordance with Ontario Regulation 139/96.

Where a question under consideration contains more than one item, upon the request of any Member, a vote upon each item shall be taken separately.

Except for the election of the Chair and Vice-Chair in accordance with these bylaws, no vote shall be taken by ballot or by any other method of secret voting, and every vote so taken is of no effect.

15. Notice of Motion

Written notice of motion to be made at an Authority, Executive Committee, advisory board, or committee meeting may be given to the General Manager/Secretary-Treasurer by any Member of the Authority not less than ten (10) calendar days prior to the date and time of the meeting and shall be forthwith placed on the agenda of the next meeting. The General Manager/Secretary-Treasurer shall include such notice of motion in full in the agenda for the meeting concerned.

Recommendations included in reports of advisory boards or committees that have been included in an agenda for a meeting of the General Membership or Executive Committee, shall constitute notice of motion for that meeting.

Recommendations included in staff reports that have been included in an agenda for a meeting of the General Membership or Executive Committee, shall constitute notice of motion for that meeting.

Notwithstanding the foregoing, any motion or other business may be introduced for consideration of the Authority provided that it is made clear that to delay such motion or other business for the consideration of an appropriate advisory board or committee would not be in the best interest of the Authority and that the introduction of the motion or other business shall be upon an affirmative vote of a majority of the Members of the Authority present.

16. Motion to Reconsider

If a motion is made to reconsider a previous motion, a two-thirds majority vote shall be required for reconsideration to take place. If a motion to reconsider is passed, the original motion shall then be placed on the agenda at the next meeting to be debated and voted upon, and the result of that vote, based on a two-thirds majority, shall supersede.

17. Duties of the Meeting Chair

It shall be the duty of the Chair, with respect to any meetings over which he/she presides, to:

a. Preserve order and decide all questions of order, subject to appeal; and without argument or comment, state the rule applicable to any point of order if called upon to do so;
b. Ensure that the public in attendance does not in any way interfere or disrupt the proceedings of the Members;
c. Receive and submit to a vote all motions presented by the Members, which do not contravene the rules of order or regulations of the Authority;
d. Announce the results of the vote on any motions so presented; and
e. Adjourn the meeting when business is concluded.

18. Conduct of Members

Members shall maintain a high standard for conduct and always comply with applicable laws and the Authority's Code of Conduct (see Appendix I hereto).

No Member at any meeting of the Authority shall:

a. Speak in a manner that is discriminatory in nature based on an individual's race, ancestry, place of origin, citizenship, creed, gender, sexual orientation, age, colour, marital status, family status or disability;
b. Leave their seat or make any noise or disturbance while a vote is being taken or until the result is declared;
c. Interrupt a member while speaking, except to raise a point of order or a question of privilege;
d. Speak disrespectfully or use offensive words against the Authority, the Members, staff, or any member of the public;
e. Speak beyond the question(s) under debate; and
f. Resist the rules of order or disobey the decision of the Chair on the questions or order or practices or upon the interpretation of the Bylaws.

19. Minutes of Meetings

The General Manager/Secretary-Treasurer shall undertake to have a recording secretary in attendance at meetings of the Authority, the Executive Committee, and each advisory board or committee. The recording secretary shall make a record in the form of minutes of the meeting proceedings and shall record all motions considered at the meeting.

If a recording secretary is not present in a closed session, the General Manager/Secretary-Treasurer shall take notes of any direction provided, for endorsement by the Chair and Vice-Chair.

Minutes of all meetings shall include the time and place of the meeting and a list of those present and shall state all motions presented together with the mover and seconder and voting results.

The General Manager/Secretary-Treasurer or designate shall include draft minutes of the previous meeting available to each member of the Authority at the same time as agendas for the next meeting are distributed. Minutes shall be made available for review on the Authority's website within 30 days of the meeting.

After the minutes have been approved by resolution, original copies shall be signed by the Chair and Recording Secretary and copies of all non-confidential minutes shall be posted on the Authority's website. Minutes shall be made available in alternative formats, in accordance with the *Accessibility for Ontarians with Disabilities Act,* if requested by interested parties.

D. Appendices to the Administrative Bylaw

Appendix I - Code of Conduct

1. Background

The Saugeen Valley Conservation Authority demands a high level of integrity and ethical conduct from its General Membership. The Authority's reputation has relied upon the good judgement of individual Members. A written Code of Conduct helps to ensure that all members share a common basis for acceptable conduct. Formalized standards help to provide a reference guide and a supplement to legislative parameters within which Members must operate. Further, they enhance public confidence that Members operate from a base of integrity, justice, and courtesy.

The Code of Conduct is a general standard. It augments the laws which govern the behaviour of Members, and it is not intended to replace personal ethics.

This Code of Conduct will also assist Members in dealing with confronting situations not adequately addressed or that may be ambiguous in Authority resolutions, regulations, or policies and procedures. Additionally, the agricultural representative appointed by the Minister will be required to follow the provincial ethical framework set out for government public appointees in the Management Board of Cabinet's Agencies and Appointments Directive.

2. General

All Members, whether municipal councillors or appointed representatives of a municipality, or whether appointed by the Minister as a representative of the agricultural sector, are expected to conduct themselves in a manner that reflects positively on the Authority.

All Members shall serve in a conscientious and diligent manner. No Member shall use the influence of office for any purpose other than for the exercise of his/her official duties.

It is expected that Members adhere to a code of conduct that:

a. upholds the mandate, vision and mission of the Authority;
b. considers the Authority's jurisdiction in its entirety, including their appointing municipality;
c. respects confidentiality;
d. approaches all Authority issues with an open mind, with consideration for the organization as a whole;
e. exercises the powers of a Member when acting in a meeting of the Authority;
f. respects the democratic process and respects decisions of the General Membership, Executive Committee, advisory boards and other committees;
g. declares any direct or indirect pecuniary interest or conflict of interest when one exists or may exist; and
h. conducts oneself in a manner which reflects respect and professional courtesy and does not use offensive language in or against the Authority or against any Member or any Authority staff.

3. Gifts and Benefits

Members shall not accept fees, gifts, hospitality, or personal benefits that are connected directly or indirectly with the performance of duties.

4. Confidentiality

The members shall be governed at all times by the provisions of the *Municipal Freedom and Information and Protection of Privacy Act*.

All information, documentation or deliberations received, reviewed, or taken in a closed meeting are confidential.

Members shall not disclose or release by any means to any member of the public, either in verbal or written form, any confidential information acquired by virtue of their office, except when required by law to do so.

Members shall not permit any persons, other than those who are entitled thereto, to have access to information which is confidential.

In the instance where a Member vacates their position on the General Membership they will continue to be bound by MFIPPA requirements.

Particular care should be exercised in protecting information such as the following:

a. Human Resources matters;
b. Information about suppliers provided for evaluation that might be useful to other suppliers;
c. Matters relating to the legal affairs of the Authority;
d. Sources of complaints where the identity of the complainant is given in confidence;
e. Items under negotiation;
f. Schedules of prices in tenders or requests for proposals;
g. Appraised or estimated values with respect to the Authority's proposed property acquisitions or dispositions;
h. Information deemed to be "personal information" under MFIPPA.

The list above is provided for example and is not exhaustive.

5. Use of Authority Property

No member shall use for personal purposes any Authority property, equipment, supplies, or services of consequence other than for purposes connected with the discharge of Authority duties or associated community activities of which the Authority has been advised.

6. Work of a Political Nature

No member shall use Authority facilities, services or property for his/her election or re-election campaign to any position or office within the Authority or otherwise.

7. Conduct at Authority Meetings

During meetings of the Authority, Members shall conduct themselves with decorum. Respect for delegations and for fellow Members requires that all Members show courtesy and not distract from the business of the Authority during presentations and when others have the floor.

8. Influence on Staff

Members shall be respectful of the fact that staff work for the Authority as a whole and are charged with making recommendations that reflect their professional expertise and corporate perspective, without undue influence.

9. Business Relations

No Member shall borrow money from any person who regularly does business with the Authority unless such person is an institution or company whose shares are publicly traded and who is regularly in the business of lending money.

No Member shall act as a paid agent before the Authority, the Executive Committee or an advisory board or committee of the Authority, except in compliance with the terms of the *Municipal Conflict of Interest Act.*

10. Encouragement of Respect for the Authority and its Regulations

Members shall represent the Authority in a respectful way and encourage public respect for the Authority and its Regulations.

11. Harassment

It is the policy of the Authority that all persons be treated fairly in the workplace in an environment free of discrimination and of personal and sexual harassment. Harassment of another Member, staff or any member of the public is misconduct. Members shall follow the Authority's Harassment Policy as approved from time-to-time.

Examples of harassment that will not be tolerated include verbal or physical abuse, threats, derogatory remarks, jokes, innuendo or taunts related to an individual's race, religious beliefs, colour, gender, physical or mental disabilities, age, ancestry, place of origin, marital status, source of income, family status or sexual orientation. The Authority will also not tolerate the display of pornographic, racist, or offensive signs or images; practical jokes that result in awkwardness or embarrassment; unwelcome invitations or requests, whether indirect or explicit and any other prohibited grounds under the provisions of the Ontario Human Rights Code.

12. Breach of Code of Conduct

Should a Member breach the Code of Conduct, they shall advise the Chair and Vice-Chair, with a copy to the Secretary Treasurer, as soon as possible after the breach.

Should a Member of the Authority allege that another Member has breached the Code of Conduct, the said breach shall be communicated to the Chair, with a copy to the Secretary-Treasurer, in writing. In the absence of the Chair, or if a Member alleges that the Chair has breached the Code of Conduct, the said breach shall be communicated the Vice-Chair, with a copy to the Secretary-Treasurer, in writing.

Any breach, or alleged breach, of the Code of Conduct shall be investigated in accordance with the Enforcement of Bylaws and Policies procedure outlined or referred to in the Authority's Administrative Bylaw.

Appendix II - Conflict of Interest

1. Municipal Conflict of Interest Act

The Authority Members commit themselves and the Authority to ethical, businesslike, and lawful conduct when acting as the General Membership. The Authority is bound by the *Municipal Conflict of Interest Act*. This bylaw is intended to assist Members in understanding their obligations. Members are required to review the *Municipal Conflict of Interest Act* on a regular basis.

Additionally, the agricultural representative appointed by the Minister will be required to follow the provincial ethical framework set out for government public appointees in the Management Board of Cabinet's Agencies and Appointments Directive.

2. Disclosure of Pecuniary Interest

Where a Member, either on his or her own behalf or while acting for, by, with or through another, has any pecuniary interest, direct or indirect, in any matter and is present at a meeting of the Authority, Executive Committee, Advisory Board or committee at which the matter is the subject of consideration, the Member:

a. shall, prior to any consideration of the matter at the meeting, disclose the pecuniary interest and the general nature thereof;
b. shall not take part in the discussion of, or vote on any question in respect of the matter; and,
c. shall not attempt in any way whether before, during or after the meeting to influence the voting on any such question; and
d. shall file a written statement of the Conflict of Interest and its general nature with the General Manager/Secretary-Treasurer

3. Chair's Conflict of Interest or Pecuniary Interest

Where the Chair of a meeting discloses a conflict of interest with respect to a matter under consideration at a meeting, another Member shall be appointed to chair that portion of the meeting by Resolution.

4. Closed Meetings

Where a meeting is not open to the public, a Member who has declared a conflict of interest shall leave the meeting for the part of the meeting during which the matter is under consideration.

5. Member Absent

Where the interest of a Member has not been disclosed by reason of their absence from the particular meeting, the Member shall disclose their interest and otherwise comply at the first meeting of the Authority, Executive Committee, advisory board or committee, as the case may be, attended by them after the particular meeting.

6. Disclosure Recorded in Minutes

The recording secretary shall record in reasonable detail the particulars of any disclosure of conflict of interest or pecuniary interest made by Members and whether the member withdrew from the discussion of the matter. Such record shall appear in the minutes/notes of that particular meeting of the General Membership, Executive Committee, advisory board or committee, as the case may be.

Registry Maintained for Public Inspection

The Authority shall maintain a registry in which shall be kept:

a. a copy of each statement filed under Section 2d) of this policy; and,
b. a copy of each declaration recorded in the Minutes.

The registry shall be available for public inspection.

7. Breach of Conflict-of-Interest Policy

Should a Member breach the Conflict-of-Interest Policy, they shall advise the Chair and Vice-Chair, with a copy to the Secretary-Treasurer, as soon as possible after the breach.

Should a Member of the General Membership allege that another Member has breached the Code of Conduct, the said breach shall be communicated to the Chair, with a copy to the Secretary-Treasurer, in writing. In the absence of the Chair, or if a Member alleges that the Chair has breached the Conflict-of-Interest Policy, the said breach shall be communicated to the Vice-Chair, with a copy to the Secretary-Treasurer, in writing.

Should a member of the public or a municipality allege that a Member has breached the Conflict-of-Interest Policy, the party making the allegation will be directed to follow the notification procedure outlined above.

Any breach, or alleged breach, of the Conflict-of-Interest Policy shall be investigated in accordance with the Enforcement of Bylaws and Policies procedure outlined or referred to in the Authority's Administrative Bylaw.

Appendix III - Procedure for Election of Officers

1. Voting

Voting shall be by secret ballot and no Members may vote by proxy.

2. Acting Chair

The General Membership shall appoint a person, who is not a voting Member, as Acting Chair or Returning Officer, for the purpose of Election of Officers.

3. Scrutineer(s)

The appointment of one or more scrutineers is required for the purpose of counting ballots, should an election be required. All ballots shall be destroyed by the scrutineers afterwards. The Acting Chair shall call a motion for the appointment of one or more persons, who are not Members or employees of the Authority, to act as scrutineers. A Member, who will not stand for election, may be appointed as an additional scrutineer if requested.

4. Election Procedures

The Acting Chair shall advise the Members that the election will be conducted in accordance with the Act and the Saugeen Valley Conservation Authority Administrative By-law Section B: Governance, subsection 4 'Maximum Term for Chair and Vice Chair(s)'as follows:

a. The elections shall be conducted in the following order:
   i. Election of the Chair, who shall be a Member appointed by a participating Municipality to the Authority
   ii. Election of one or more Vice-chairs, who shall be Members of the Authority
   iii. Election of Member-at-Large who shall be Members appointed by a participating Municipality to the Authority.
b. The Acting Chair shall ask for nominations to each position;
c. Only current Members of the Authority who are present may vote;
d. Nominations shall be called three (3) times and will only require a mover;
e. The closing of nominations shall require both a mover and a seconder;
f. Each Member nominated shall be asked to accept the nomination. The Member must be present to accept the nomination unless the Member has advised the Secretary-Treasurer in writing or by email in advance of the election of their willingness to accept the nomination.

If one Nominee:

g. If only one nominee, the individual shall be declared into the position by acclamation.

If More than One Nominee:

h. In the event of an election, each nominee shall be permitted not more than three (3) minutes to speak for the office, in the order of the alphabetical listing by surnames.

i. Upon the acceptance by nominees to stand for election to the position of office, ballots shall be distributed to the Members by the scrutineers for the purpose of election and the Acting Chair shall ask the Members to write the name of one individual only on the ballot.
j. The scrutineers shall collect the ballots, leave the meeting to count the ballots, return and advise the Acting Chair who was elected with more than 50% of the vote.

A majority vote shall be required for election. If there are more than two nominees, and upon the first vote no nominee receives the majority required for election, the name of the person with the least number of votes shall be removed from further consideration for the office and new ballots shall be distributed. In the case of a vote where no nominee receives the majority required for election and where two or more nominees are tied with the least number of votes, a special vote shall be taken to decide which one of such tied nominees' names shall be dropped from the list of names to be voted on in the next vote.

Should there be a tie vote between two remaining candidates, new ballots shall be distributed, and a second vote held. Should there still be a tie after the second ballot a third vote shall be held. Should there be a tie after the third vote, the election of the office shall be decided by lot drawn by the Acting Chair or designate.

In the event that the Past Chair of the Authority is no longer an accredited Member on the Authority, an election of a Member–at-Large will be undertaken, following the same procedures as outlined above.

Immediately following the election of Chair and 1st and 2nd Vice Chair, and, if necessary, the Member-at-Large, the person presiding over the election shall install the newly elected Chair and hand over control of the meeting.

Appendix IV - Checklist for compliance with Section 19.1

Proposed Conservation Authorities Act Section 19.1(1) **An authority may make by-laws:**	**Template By-law**
a. respecting the meetings to be held by the authority, including providing for the calling of the meetings and the procedures to be followed at meetings, specifying which meetings, if any, may be closed to the public;	Part II Administrative By-law, Section C – Meeting Procedures: 1. Rules of Procedure 2. Notice of Meeting 13. Meetings with Closed "In Camera" Sessions
b. prescribing the powers and duties of the secretary-treasurer;	Part II Administrative By-law, Section B – Governance 2. Officers
c. designating and empowering officers to sign contracts, agreements and other documents on behalf of the authority;	Part II Administrative By-law, Section B – Governance 1(c) Powers of the General Membership 2. Officers 13. Signing Officers
d. delegating all or any of its powers to the executive committee except, i. the termination of the services of the secretary-treasurer, ii. the power to raise money, and iii. the power to enter into contracts or agreements other than those contracts or agreements as are necessarily incidental to the works approved by the authority;	Part II Administrative By-law, Section B – Governance 1(c) Powers of the General Membership 2. Officers
e. providing for the composition of its executive committee and for the establishment of other committees that it considers advisable and respecting any other matters relating to its governance;	Part II Administrative By-law, Section B – Governance 1(c) Powers of the General Membership 14. Executive Committee 15. Advisory Boards and Other Committees

Proposed Conservation Authorities Act Section 19.1(1) **An authority may make by-laws:**	**Template By-law**
f. respecting the roles and responsibilities of the members of the authority and of its officers and senior staff;	Part II Administrative By-law, Section B – Governance 1. Members 2. Officers
g. requiring accountability and transparency in the administration of the authority including, i. providing for the retention of records specified in the by-laws and for making the records available to the public,	Part II Administrative By-law, Section C – Meeting Procedures 3.Meetings Open to Public Part II Administrative By-law, Section B – Governance 17.Records Retention 18.Records Available to Public
ii. establishing a code of conduct for the members of the authority, and	Appendix 1 – Code of Conduct
iii. adopting conflict of interest guidelines for the members of the authority;	Appendix 2 - Conflict of Interest
h. respecting the management of the authority's financial affairs, including auditing and reporting on the authority's finances;	Part II Administrative By-law, Section B – Governance 10.Financial Statements and Report of the Auditor
i. respecting the by-law review required under subsection (3) and providing for the frequency of the reviews; and	Part II Administrative By-law, Section B – Governance 19.By-law Review
j. respecting such other matters as may be prescribed by regulation.	To be developed as required

Proposed Conservation Authorities Act Section 19.1(1) **An authority may make by-laws:**	**Template By-law**
Conflict with other laws (2) If a by-law made by an authority conflicts with any provision of the Municipal Conflict of Interest Act or the Municipal Freedom of Information and Protection of Privacy Act or a provision of a regulation made under one of those Acts, the provision of the Act or regulation prevails.	Part II Administrative By-law, Section B – Governance 1(e) Applicable Legislation
Periodic review of by-laws (3) At such regular intervals as may be determined by by-law, an authority shall undertake a review of all of its by-laws to ensure, amongst other things, that the by-laws are in compliance with any Act referred to in subsection (2) or any other relevant law.	Part II Administrative By-law, Section B – Governance 19. By-law Review
By-laws available to public (4) An authority shall make its by-laws available to the public in the manner it considers appropriate.	Part II Administrative By-law, Section B – Governance 20. By-law Available to Public

Appendix V Copies of Minister's Directions under Section 19.1(7)

Ministry of the Environment, Conservation and Parks

Office of the Minister

777 Bay Street, 5th Floor
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Tel.: 416-314-6790

Ministère de l'Environnement, de la Protection de la nature et des Parcs

Bureau du ministre

777, rue Bay, 5e étage
Toronto (Ontario) M7A 2J3
Tél. : 416.314.6790

Ontario

March 26, 2020

TO: Conservation Authorities as listed in the attached **Schedule "A"**

SUBJECT: Minister's Direction for Conservation Authorities during the COVID-19 Outbreak

As the COVID-19 outbreak continues to evolve locally and globally, I am writing to provide direction on how conservation authorities can continue operations while maintaining a safe physical distance. To ensure conservation authorities can continue to conduct meetings and hearings as necessary, we are giving conservation authorities the ability to amend their administrative by-laws to allow for virtual meetings, including by teleconference.

As such, I am issuing this Minister's Direction ("**Direction**") pursuant to subsection 19.1 (7) of the *Conservation Authorities Act*. This Direction applies to all conservation authorities in Ontario, listed in **Schedule "A"** as attached. For greater certainty, this Direction also applies to conservation authorities when meeting as a source protection authority under the *Clean Water Act, 2006*.

The *Conservation Authorities Act* requires that, "[e]very meeting held by the authority shall be open to the public, subject to such exceptions as may be specified in the by-laws of the authority." Further, at any meeting that is held, "a quorum consists of one-half of the members appointed by the participating municipalities, except where there are fewer than six such members, in which case three such members constitute a quorum". It has been brought to my attention that the administrative by-laws that conservation authorities have adopted pursuant to subsection 19.1 (1) of the Act may create barriers in meeting these provisions of the Act during this time of emergency, where in-person attendance may not be feasible.

The primary purpose of this Direction is to enable conservation authorities to convene a meeting electronically in order to make the necessary amendments to their by-laws to deal with emergencies. This Direction identifies the minimum areas where the by-laws should be amended, in the manner deemed appropriate by the authority, to make provision for emergency situations. However, each conservation authority, depending on their individual by-laws, may identify the need to make other necessary amendments to respond to emergencies.

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13.

Accordingly, I am directing that the conservation authority review and amend their by-laws, as applicable, to ensure they comply with the following Direction and take the other necessary steps as set out in this Direction.

Electronic participation, emergencies

1. During any period where an emergency has been declared to exist, in all or part of an area over which a conservation authority has jurisdiction, under section 4 or 7.0.1 of the *Emergency Management and Civil Protection Act*, that may prevent members of the authority from meeting in person, the by-laws provide:

    a. That members of the authority be permitted to participate in meetings electronically, which shall include the ability of those members participating electronically to register votes.
    b. That any member of the authority who is participating electronically in a meeting may be counted in determining whether or not a quorum of members is present at any point in time during the meeting in accordance with the requirement in subsection 16 (2) of the *Conservation Authorities Act*.
    c. That any member of the authority can participate electronically in a meeting that is closed to the public.
    d. That any hearing or appeal that is dealt with in the by-laws can be conducted electronically with provisions for applicants and their agents to participate, if the conservation authority holds any such hearing or appeal during any period where an emergency has been declared to exist.

Meetings open to the public

2. Conservation authorities must continue to implement best practices to make board meetings open to the public in accordance with subsection 15 (3) of the *Conservation Authorities Act*. Where possible, conservation authorities must provide for alternative means to allow the public to participate in any meetings electronically.

General, emergency measures

3. If there is anything that is required to be done under the by-laws during the emergency, including the holding of an annual general meeting, that the by-laws permit postponement to a later date.

Publication of information

4. The conservation authorities listed in Schedule "A" shall make this Direction publicly available on a website or other electronic means.

5. In accordance with subsection 19.1 (4) of the *Conservation Authorities Act*, an authority shall make any by-laws that are amended in accordance with this Direction available to the public in the manner it considers appropriate.

Implementation procedure

6. A conservation authority may hold a special meeting to amend a by-law for the purposes of implementing this Direction.

7. Despite any provision in a by-law made under subsection 19.1 (1) of the *Conservation Authorities Act*, members of the authority can participate electronically in any special meeting that is required to implement this Direction.

8. A member of the authority that is participating electronically in such a special meeting may be counted in determining whether or not a quorum of members is present at any time during the meeting.

Effective date

9. This Direction is effective immediately. If it is in the public interest to do so, I will provide further direction or clarification, at a later date, related to the matters set out in this Direction.

If you have any questions related to this Direction, please contact:

Chloe Stuart
Assistant Deputy Minister, Land and Water Division, MECP
Robinson Pl South Tower, 6th Floor
300 Water Street
Peterborough ON K9J 3C7
(705) 755-5341
chloe.stuart@ontario.ca

To learn more about how the province continues to protect Ontarians from COVID-19, please visit www.ontario.ca/coronavirus.

Sincerely,

Jeff Yurek
Minister of the Environment, Conservation and Parks

c: The Honourable Steve Clark, Minister of Municipal Affairs and Housing
The Honourable John Yakabuski, Minister of Natural Resources and Forestry
Ms. Kim Gavine, General Manager, Conservation Ontario

Ministry of the Environment, Conservation and Parks

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Tél. : 416.314.6790

Ontario

September 10, 2020

TO: Conservation Authorities as listed in the attached **Schedule "A"**

SUBJECT: Amendment to the Minister's Direction for Conservation Authorities during the COVID-19 Outbreak

On March 26, 2020, I issued a Minister's Direction ("**Direction**") pursuant to subsection 19.1 (7) of the *Conservation Authorities Act* that applied to all conservation authorities in Ontario, listed in **Schedule "A"** as attached. The Direction enabled conservation authorities to convene a meeting electronically in order to make the necessary amendments to their administrative by-laws to deal with both provincial and municipal emergencies. It identified the minimum areas where the by-laws should be amended, in the manner deemed appropriate by the CA, to make provision for emergency situations (e.g., electronic participation in meetings and hearings and achieving quorum while participating electronically). The Direction also identified that each conservation authority, depending on their individual by-laws, may identify the need to make other necessary amendments to respond to emergencies.

It has come to my attention that certain conservation authorities amended their by-laws to allow virtual meetings only during declared emergencies. Now that the provincially declared state of emergency has ended and municipally declared state of emergencies have or may end, conservation authorities may be prevented from continuing to be able to meet virtually. As such, I am amending the Direction that I issued on March 26, 2020 to remove this barrier. I am directing the conservation authorities listed in Schedule "A" to meet virtually for the purpose of reviewing and amending their by-laws, as applicable, to allow for members of a conservation authority to participate electronically in meetings when it is deemed appropriate by the conservation authority to do so. For greater certainty, the other provisions of the Direction continue to apply.

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Effective Date

This amendment to the March 26, 2020 Direction is effective immediately. If it is in the public interest to do so, I will provide further direction or clarification at a later date related to the matters set out in this Direction.

If you have any questions related to this Direction, please contact:

Chloe Stuart
Assistant Deputy Minister, Land and Water Division
Ministry of the Environment, Conservation and Parks
Robinson Pl South Tower, 6th Floor
300 Water Street
Peterborough, ON, K9J 3C7
(705) 755-5341
chloe.stuart@ontario.ca

To learn more about how the province continues to protect Ontarians from COVID-19, please visit www.ontario.ca/coronavirus.

Sincerely,

Jeff Yurek
Minister of the Environment, Conservation and Parks

c: Steve Clark, Minister of Municipal Affairs and Housing
John Yakabuski, Minister of Natural Resources and Forestry
Kim Gavine, General Manager, Conservation Ontario

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Appendix VI Summaries of Governance-related Amendments to the Conservation Authorities Act

Protect, Support and Recover from COVID-19 Act (Budget Measures), 2020

Amendments to the *Conservation Authorities Act*, through the Protect, Support and Recover from COVID-19 Act (Budget Measures), 2020, were proclaimed on February 2nd, 2021. Amendments were related to governance of conservation authorities, and included: changes to CA-municipal membership provisions (s.14(1.1)), requirements for CAs to make membership agreements publicly available (s.14(2.2)(2.3)), the Ministers power to appoint a member from the agricultural sector (s.14(4)(4.0.1)), limitations on terms of CA chairs and vice chairs (s.17(1.1)(1.2)(1.3)), minor amendments to the 'powers of authorities'(s.21(1)), and a requirement for CAs to follow generally accepted accounting principles (s.38(1)(4)).

Although not requiring amendments to the Administrative By-Laws (and therefore not reflected in the table below), it is noted that included in these amendments is a new ability for the Minister to appoint one or more investigators, at any time, to conduct an investigation of an authority's operations, including the programs and services it provides (s. 23.1 (4) – (10)). In the event an investigator is appointed, the CA may need to provide the investigator with documents or records as required and may be required to pay all or part of the cost of an investigation. If, after reviewing an investigator's report, the Minister believes that an authority has failed, or is likely to fail, to comply with a provision of the CA Act or the regulation, or any other Act or regulations that applies to the authority, the Minister may order the Authority to do or refrain from doing anything, or recommend to the LGIC that an administrator be appointed to take over control and operation of the authority (s. 23.2, 23.3).

Amendments to the Conservation Authorities Act (February 2nd, 2021 proclamations)	Template By-law
Section 14 (1.1) Members of council appointed (1.1) When appointing members of an authority, the council of a participating municipality shall ensure that at least 70 per cent of its appointees are selected from among the members of the municipal council, subject to subsection (1.2). Section 14 (1.2) Exception (1.2) Upon application by a participating municipality, the Minister may grant permission to the municipality to select	Part II Administrative By-law, Section B - Governance 3. Members

Amendments to the Conservation Authorities Act (February 2nd, 2021 proclamations)	Template By-law
less than 70 per cent of its appointees to an authority from among the members of the municipal council, subject to such conditions or restrictions as the Minister considers appropriate.	
Section 14 (2.2) Municipal agreement (2.2) If the participating municipalities of an authority enter into an agreement with respect to the total number of municipally appointed members of the authority and the total number of members each municipality may appoint, the authority shall, within 60 days after the agreement is executed, a. provide a copy of the agreement to the Minister; and b. make the agreement available to the public by posting it on the authority's website and by any other means the authority considers appropriate. Section 14 (2.3) Same, transition (2.3) If an agreement referred to in subsection (2.2) is in force on the day subsection 2 (4) of Schedule 6 to the *Protect, Support and Recover from COVID-19 Act (Budget Measures), 2020* comes into force, the relevant authority shall provide a copy of the agreement to the Minister within 60 days after that day.	Part II Administrative By-law, Section B - Governance 1. Members
Section 14 (4) Member from agricultural sector appointed (4) In addition to the members of an authority appointed in accordance with subsections (1) to (2.1), an additional member may be appointed to the authority by the Minister as a representative of the agricultural sector. Section 14 (4.0.1) Limitation on voting (4.0.1) The member of an authority appointed under subsection (4) shall not vote on,	Part II Administrative By-law – Introduction Part II Administrative By-law, Section B - Governance 1. Members Part II Administrative By-law, Section C – Meeting Procedures 12. Voting

Amendments to the Conservation Authorities Act (February 2nd, 2021 proclamations)	Template By-law
a. a resolution to enlarge an authority's area of jurisdiction that is presented at a meeting called under section 10; b. a resolution to amalgamate an authority with another authority that is presented at a meeting called under section 11; c. a resolution to dissolve the authority that is presented at a meeting called under section 13.1; or d. a resolution relating to any budgetary matter that is presented at a meeting held under section 16. Section 14 (4.1) Term (4.1) A member shall be appointed for a term of up to four years, as may be determined by the council that appoints the member or, in the case of a member appointed under subsection (4), by the Minister.	
Section 15 (2.1) Agenda, minutes to be made public (2.1) Subject to the Municipal Freedom of Information and Protection of Privacy Act, the authority shall, a. make the agenda for a meeting of the authority or of its executive committee available to the public before the meeting takes place; and b. make the minutes of a meeting of the authority or of its executive committee available to the public within 30 days after the meeting. Section 15 (2.2) Same (2.2) An agenda for a meeting or its minutes that are to be made available to the public under subsection (2.1) shall be made available by posting them on the authority's website and by any other means the authority considers appropriate.	Part II Administrative By-law, Section C – Meeting Procedures 19. Minutes of Meetings
Section 17 (1.1) Term of chair, vice-chair	Part II Administrative By-law, Section B - Governance

Amendments to the Conservation Authorities Act (February 2nd, 2021 proclamations)	Template By-law
(1.1) A chair or vice-chair appointed under subsection (1) shall hold office for a term of one year and shall serve for no more than two consecutive terms. Section 17 (1.2) Representation from each municipality (1.2) An authority in respect of which more than one participating municipality has been designated shall appoint chairs and vice-chairs from among the members appointed to the authority by each participating municipality on a rotating basis so as to ensure that a member appointed to the authority by a particular participating municipality cannot be appointed to succeed an outgoing chair or vice-chair appointed to the authority by the same participating municipality. Section 17 (1.3) Exception (1.3) Despite subsections (1.1) and (1.2), upon application by an authority or a participating municipality, the Minister may grant permission to the authority or participating municipality to, subject to such conditions or restrictions as the Minister considers appropriate, a. appoint a chair or vice-chair for a term of more than one year or to hold office for more than two consecutive terms; or b. appoint as chair or vice-chair of the authority a member who was appointed to the authority by the same participating municipality that appointed the outgoing chair or vice-chair.	4. Maximum Term for Chair and Vice-Chair(s) Part II Administrative By-law, Section B - Governance 6. Election of Chair and Vice-Chairs
Section 21 (1) Powers of authorities For the purposes of accomplishing its objects, an authority has power, a. to research, study and investigate the watershed and to support the development and implementation of	Part II Administrative By-law – Introduction

Amendments to the Conservation Authorities Act (February 2nd, 2021 proclamations)	Template By-law
programs and services intended to further the purposes of this Act; b. for any purpose necessary to any project under consideration or undertaken by the authority, to enter into and upon any land, with consent of the occupant or owner, and survey and take levels of it and make such borings or sink such trial pits as the authority considers necessary; c. to acquire by purchase, lease or otherwise any land that it may require, and, subject to subsection (2), to sell, lease or otherwise dispose of land so acquired; d. despite subsection (2), to lease for a term of five years or less land acquired by the authority; e. to purchase or acquire any personal property that it may require and sell or otherwise deal therewith; f. to enter into agreements for the purchase of materials, employment of labour and other purposes as may be necessary for the due carrying out of any project or to further the authority's objects; g. to enter into agreements with owners of private lands to facilitate the due carrying out of any project; h. to determine the proportion of the total benefit afforded to all the participating municipalities that is afforded to each of them; i. to erect works and structures and create reservoirs by the construction of dams or otherwise; j. to control the flow of surface waters in order to prevent floods or pollution or to reduce the adverse effects thereof; k. to alter the course of any river, canal, brook, stream or watercourse, and divert or alter, as well temporarily as permanently, the course of any river, stream, road, street or way, or raise or sink its level in order to carry it over or under, on the level of or by the side of any work built or to be built by the authority, and to divert or alter the position of any water-pipe, gas-pipe, sewer, drain or any telegraph, telephone or electric wire or pole;	

Amendments to the Conservation Authorities Act (February 2nd, 2021 proclamations)	Template By-law
l. to use lands that are owned or controlled by the authority for purposes, not inconsistent with its objects, as it considers proper; m. to use lands owned or controlled by the authority for park or other recreational purposes, and to erect, or permit to be erected, buildings, booths and facilities for such purposes and to make charges for admission thereto and the use thereof; (m.1) to charge fees for services approved by the Minister; n. to collaborate and enter into agreements with ministries and agencies of government, municipal councils and local boards and other organizations and individuals; o. to plant and produce trees on Crown lands with the consent of the Minister, and on other lands with the consent of the owner, for any purpose; p. Repealed: 2020, c. 36, Sched. 6, s. 7 (4). q. generally to do all such acts as are necessary for the due carrying out of any project or as may be desirable to further the objects of the authority.	
Section 38 (1) Annual audit (1) Every authority shall cause its accounts and transactions to be audited annually by a person licensed under the *Public Accounting Act, 2004* and shall ensure that the annual audit is prepared in accordance with generally accepted accounting principles for local governments recommended by the Public Sector Accounting Board of the Chartered Professional Accountants of Canada, as they exist from time to time. Section 38 (4) Report made publicly available (4) Within 60 days of receiving the auditor's report, an authority shall make the report available to the public on its website and by any other means that the authority considers appropriate.	Part II Administrative By-law, Section B - Governance 10. Financial Statements and Report of the Auditor

Appendix VII Amendments to the SVCA Administrative Bylaws

Date	Motion #	Amendments to the SVCA Administrative Bylaws
11-Nov-2019	G19-77	**Section II-B13 - Executive Committee** Amendment to Administrative Review proceedings to allow the Executive Committee to conduct such meetings. Since the full Authority continues to be responsible to make Administrative Review decisions, all Board members will continue to be invited to participate and will have full voting privileges. A majority of the Executive Committee must be present to constitute a quorum.
2-Apr-2020	G20-33	**Section II-C-Meeting Procedures -** Amendment to enable electronic meetings and suspends restrictions that prohibit the Board from meeting electronically until either the State of Emergency has been lifted by the Province of Ontario, and/or the Board has the opportunity to review and revise the Bylaw to address all changes, especially with regard to keeping the meetings open to the public.
6-Aug-2020	G20-78	**a. Section II-B2c, *General Manager/Secretary-Treasurer* -** The following item was added: "-Serves as an Officer for the Saugeen Valley Conservation Foundation." This addition was due to the change in the SVCF By-laws, updated July 9, 2020, adding the GM/S-T as an Officer of the Foundation. **b. Section II-B8, Appointment of Solicitor -** The following phrase was added: "…for the coming year...". Each year the Authority appoints a solicitor by resolution. This phrase adds clarity. **c. Section II-B13, Executive Committee -** Changes clarify that an additional Member is included as an Executive Committee Member with all the rights and privileges, i.e., voting. The additional Member is invited by the Chair prior to the meeting to fully participate. **d. Section II-C2, Meeting Procedures, Electronic Meetings and Conference Calls -** This section has been amended to allow remote meetings at the discretion of the Chair as well as during a State of Emergency. Section C-11, Electronic Participation was deleted since it becomes redundant with this proposed change. A section on Conference calls was added to limit telephone calls to Committee meetings only. **e. Section II-C3, Notice of Meeting -** The sentence, "The Chair may alternately request that the meeting be held remotely." was added for consistency with Section C-2. **f. Section II-C10, Members' Attendance -** In the previous SVCA Administration Resolutions, the GM/S-T was directed to advise a municipality if the representative Member had missed 3 meetings in a row, regardless of notification, and if a Member misses 3 meetings without notification, then the Member has considered to have resigned. This directive was not included in

		the new Administrative By-laws. Staff recommends that both items be re-included as amendments to the current Administrative By-laws. **g. Section II- C14, Voting -** The words, "…including Authority, Committee, and ad hoc meetings…" has been added for clarity.
17-Feb-2022	G22-25	**a. Section II A*dministrative By-Law Introduction* -** An additional member may be appointed to the Authority by the Minister as a representative from the agricultural sector. **b. Section II – A Definitions -** The word and definition for "Minister" was added. Under "Officer", Manager of Accounting was changed to Manager of Corporate Services. **c. Section II – B1a Appointments -** The CA Act requires that participating municipalities must ensure that at least 70 percent of its appointees are selected from the Members of municipal council or apply for permission to appoint less 70 percent. A paragraph was added to reflect this requirement. **d. Section II – B4 Maximum Term for Chair and Vice-Chair(s) -** The CA Act stipulates the Authority Chair and Vice-Chair may hold office for a term of one year and shall not serve for more than two consecutive terms unless permitted by the Minister. **e. Section II – B6 Election of Chair and Vice-Chairs -** A paragraph was added to note that successors in the Chair and Vice-Chair position must be from a different participating municipality than the incumbent unless permitted by the Minister. **f. Section II – B10 Financial Statements and Report of the Auditor -** According to amendments in the CA Act, an Auditor must be licensed under the Public Accounting Act, 2004 and be prepared in accordance with generally accepted accounting principles for local governments recommended by the Public Sector Accounting Board of the Chartered Professional Accountants of Canada. Audited statements must be available to the public and posted to the Authority's website within 60 days of receiving the report. **g. Section II – B20 Bylaws available to public -** This paragraph was amended to include the requirement to post the Authority Bylaws on the website and be available for review by any member of the public at the Administration office or provided in an alternative format as requested in accordance with the *Accessibility for Ontarians with Disabilities Act.* **h. Section II – C - Meeting Procedures -** When the Executive Committee sits as a Hearing Board, it will meet the requirements of the Statutory Powers and Procedures Act (SPPS). **i. Section II – C5 Agenda for Meetings -** Agendas for committee meetings shall be made available to committee members no later than 48 hours in advance of the meeting.

		j. Section II – C14 Voting - A paragraph was added to clarify that a Member appointed by the Minister as a representative of the agriculture sector cannot vote on a resolution to enlarge the Authority's area of jurisdiction or a resolution to amalgamate the Authority with another conservation authority, neither can they vote to dissolve the Authority or vote on a resolution related to any budgetary matter. The method of taking a recorded vote was amended such that the Member that requests the vote be recorded shall vote first and thereafter alphabetically by surname. **k. Section II – C19 Minutes of Meetings**The CA Act requires Minutes of the Authority meetings be made available on the Authority website within 30 days of the meeting. **l. Appendix 2-7 – Breach of Conflict of Interest Polic**y - A paragraph was added to include procedures for a member of the public or a municipality that alleges a Member has breached the Conflict of Interest Policy.
18-May-2023	G23-51	**a. Section II – Introduction** – The approved SVCA Mandate and Mission were updated. Powers of Authorities were added. **b. Section II – Definitions –** "General Membership" and "Members" updated to include directors' responsibility under the *Ontario Not-For-Profit Corporations Act.* Definition of Source Protection Authority was added. Reference to "Chief Administrative Officer" was replaced by "General Manager" **c. Section II – B1 – Members** – sentences added to note that an agricultural sector representative may be appointed by the Minister. **d. Section II – B1 – Powers of the General Membership** – Added the Administrative Review as a full Board responsibility. **e. Section II – B1 - Member Accountability** – Added a paragraph noting that members and officers are to act with a view to the best interests of the Authority; additionally, that agricultural representative is required to follow the provincial ethical framework set out for government public appointees. **f. Section II – B1 – Applicable Legislation** – added the *Not-For-Profit Corporations Act*, 2010 as an applicable legislation. **g. Section II – B2 – Officers –** The ex-officio member of a committee does not count towards the quorum of the committee proceeding. **h. Section II – B4 – Maximum Term for Chair and Vice-Chair –** Clarification added that Chairs and Vice-Chairs will be appointed on a rotating basis to ensure that a member appointed to the Authority cannot be appointed to succeed an outgoing chair or vice-chair by the same municipality. **i. Section II – B14 – Executive Committee –** Items a – g were struck out and returns responsibilities to the full Board, including the holding of Section 28 Hearings and Administrative Reviews. **j. Section II – B16 – Remuneration of Members** – clarification was added regarding the payment of per diems for multiple meetings on a single day and

		the payment of per diems for participation in the Source Water Protection Authority meetings. Per diem statements will be provided to each member municipality by January 31st of the following year. Remuneration of the Member appointed by the Minister as a representative of the agricultural sector is at the expense and discretion of the Province. **k. Section II – B19 – Bylaw Review** – the SVCA Administrative Bylaws will be reviewed annually. **l. Section II – C2 – Electronic Meetings and Conference calls –** The phrase "Closed Session meetings should not be conducted electronically during times when no emergency exists" was struck out. Allowance for Hybrid meetings was added and reference to State of Emergency was removed. **m. Section II – C3 – Notice of Meeting –** The number of days to submit materials to the GM/S-T was reduced from 12 days to 10 days. **n. Section II – C4 – Meetings open to the public** – added "Where possible, the Authority will provide for alternative means for the public to participate in meetings electronically. **o. Section II – C6 Quorum –** Clarification was added regarding the Chair as ex-officio member who has full right to participate and vote, but does not count towards quorum. p. Section II – C7 – Order of Business – "majority" was changed to "two-thirds". **q. Section II – C11 – Delegations** – This section was deleted and new information inserted. **r. Section II – C16 – Motion to Reconsider** – "simple majority" was corrected to "two-thirds majority". **s. Appendix II – Conflict of Interest** – The requirement for a registry containing any conflict-of-interest statements and each declaration recorded in the minutes, which shall be available for public inspection. **t. Appendix V –** "Summaries of Governance-related Amendments to the *Conservation Authorities Act*" was added to the Bylaws.
18-Jul-2024	G24-xx	a. Deletion of Section B1 xvi - Holding Administrative Reviews to determine the completeness of a permit application and addition of the same to Section B (2) Officers, General Manager/Secretary Treasurer, to reflect the change to the Act. b. Addition of "Appointing a General Manager /Secretary-Treasurer"; to the list of items for which the Executive Committee does not have power to perform

These Administration Bylaws were approved by the Saugeen Valley Conservation Authority at its meeting held at Formosa, Ontario, on October 16th, 2018 (Motion G18-82), last amended at its meeting, ~~May 18, 2023~~July 18, 2024 (Motion ~~G23~~G24-~~xx~~xx)

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October 16, 2018, last amended ~~May 2023~~July 18, 2024

_____

General Manager/Secretary-Treasurer

1078 Bruce Road 12 | P.O. Box 150 | Formosa ON
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www.saugeenconservation.ca
publicinfo@svca.on.ca

Report #COR-2024-14

To: Chair and Directors, Saugeen Valley Conservation Authority

From: Erik Downing, General Manager/Secretary-Treasurer (Acting)

Date: July 18, 2024

Subject: Grey County Prosecution Agreement

Purpose: To Receive Support from Grey County Legal Services

Recommendation

THAT SVCA signs Grey County Legal Services agreement, following the 2023 pilot project, to acquire legal services assistance from Grey County on Section 28 and Section 29 Conservation Authority's (CA) Act items.

Background

In May 2023 the Saugeen Valley Conservation Authority (SVCA) began a pilot project with Grey County Legal Services, as well as Grey Sauble Conservation Authority (GSCA) to receive legal support, as needed on Section 28 and Section 29 Legal prosecutions at no cost to the CA. While the SVCA did not utilize these services in the last calendar year, GSCA did and were very happy with the support offered by the County.

Analysis

With the implementation of the violation strategy regarding section 28 matters at the SVCA, and with increasing need to enforce section 29 matters across SVCA properties, need for legal support at the SVCA is increasing. Legal costs though of course can be significant and difficult to budget for as it is difficult to anticipate level of legal involvement in files yet to begin in any given year. Grey County supporting CAs with qualified legal expertise, without cost to the CA is an excellent service that SVCA staff are happy to have available. The agreement indicates that in the event of a conflict with a member municipality these services would not be available to the SVCA, and there are many matters underway at the SVCA requiring legal services, outside of this agreement, but free services for a portion of the SVCA's mandatory works is an excellent opportunity and staff are eager to continue with the agreement.

Discussion

While the SVCA did not utilize the services during the pilot period, signed by the SVCA's General Manager/ Secretary-Treasurer in May 2023, and while the SVCA's Section 28 and 29 roles have experienced changes since May 2023 (legislated), this new/updated agreement would provide economical legal services, from the initiation of a proceeding, right through to completion where necessary/qualified. Each legal proceeding will, at minimum, if proceeding through trial

come with an expense of $10000 to the SVCA, likely much higher. Therefore, typically the SVCA's legal budget for 28/29 matters would be eclipsed by a single file a year going to trial. Drawbacks of this agreement include loss of service if County staff perceive a potential conflict with County or Municipal matters, or if likelihood of success is low in Grey County Staff's opinion. In which case the SVCA would still need our own legal service resources to be available. Also, if Grey County does have a conflict with the SVCA and must represent the defendant in a matter, their involvement with the SVCA would give them unique perspective on defense options, given their detailed awareness of SVCA process in Section 28 and 29 matters.

Financial Implications

Legal budget reliance would be decreased on necessary Section 28 or 29 matters if the SVCA were to sign onto this program.

Strategic Plan Linkages:

C1.8 Violation Reduction

E1.8 Access to Technical Expertise and Professionals

Prepared By:

[Original signed by:]

Erik Downing, General Manager/ Secretary-Treasurer (Acting)

Encl. Grey County Legal Services Agreement

Office of the CAO

595 9th Avenue East, Owen Sound Ontario N4K 3E3
519-372-0219 / 1-800-567-GREY / Fax: 519-376-4082

June 26, 2024

Tim Lanthier
Chief Administrative Officer
Grey Sauble Conservation Authority
237897 Inglis Falls Road
Owen Sound, ON N4K 5N6

Erik Downing
General Manager / Secretary-Treasurer (Acting)
Saugeen Valley Conservation Authority
1078 Bruce Road 12, P. O. Box. 150
Formosa, ON NOG 1W0

Dear Tim and Erik,

Re: Prosecution by Grey County prosecutors of charges laid under sections the Conservation Authorities Act

Legal Services file reference: LS-2023-GEN-1005

I am sending you this letter further to our recent discussions regarding the prosecution arrangements for charges that may be laid by enforcement personnel from your respective Conservation Authorities (“CA” / “CAs") in respect of contraventions of sections 28 and 29 of the Conservation Authorities Act (“CAA”).

In June of 2023, the Corporation of the County of Grey (“Grey County”) and the CAs entered into pilot project whereby Grey County prosecutors would prosecute certain contraventions of the CAA. The arrangement required a review of the process during that first year, which has been completed by Grey County and the CAs. The letter outlines the intentions of Grey County and the CAs.

As previously discussed, Grey County carries out prosecution of various types of offence proceedings commenced under the Provincial Offences Act (the “POA”). Grey County is generally responsible to prosecute charges laid by police officers across both Grey and Bruce Counties under Part I of the POA (generally known as “Certificates of Offence” or more colloquially as “tickets”) pursuant to a group of agreements variously between the Ministry of the Attorney General, Grey County and the Corporation of the County of Bruce. Grey County also prosecutes charges laid by its own enforcement personnel in respect of County by-laws.

As we also discussed, Grey County is well aware of the resources required of the CAs in having prosecutions under the CAA attended to. To address this, Grey County is willing to continue to offer the services of its prosecutors to handle the prosecution of certain charges in respect of contraventions of section 28 ("Section 28 Charges") and section 29 ("Section 29 Charges") of the CAA.

For the purposes of this letter, Section 28 Charges shall mean:

- Charges laid in respect of offences under sections 28, 28.1, 28.1.1, 28.1.2, and 28.5 of the CAA and applicable regulations as it reads on the day of this letter, and
- Charges laid in respect of offences under sections 30.4, 30.5(1), 30.5(5) of the CAA.

For the purposes of this letter, Section 29 Charges shall mean:

- Charges laid in respect of offences under section 29 of the CAA as it reads on the day of this letter in respect of regulations made under that section, and
- Charges laid in respect of offences under section 30.5(4) of the CAA,

but shall not include any proceeding commenced under Part II of the POA by the issuance of a certificate of parking infraction.

Below are the specific terms of the services to be offered by Grey County in this regard, both in general as well as specific to Section 28 Charges and Section 29 Charges.

General conditions

- **Prosecutorial discretion and independence**: Grey County's prosecutors will handle all prosecutions undertaken on behalf of the CAs, including appeals and ancillary proceedings as described below, with full prosecutorial discretion and independence and in accordance with the same standards and procedures applied to Grey County's prosecution of police-laid charges, including the determination of whether charges should be withdrawn, the pre-trial resolution of charges by accepting guilty pleas coupled with a recommendation to the Court on penalty, and the determination of the appropriate penalties to be sought when a defendant is convicted after a contested trial.

- **Not exclusive**: the CAs are not required to engage the services of Grey County's prosecutors in respect of any particular charge laid by their enforcement personnel. Where a CA does engage the services of a prosecutor other than those of Grey County, they will provide reasonable notice of that engagement to

Grey County to avoid confusion in the handling of court documents and communications with defendants and other persons.

- **No fee charged – CAs to bear own expenses**: Grey County will not charge any fee for the services of its prosecutors. Each CA will be responsible for any costs incurred to have its personnel attend any required Court hearings and to disclose any required evidence, and Grey County shall not be required to pay any expense in respect of any matter prosecuted on behalf of a CA beyond Grey County's normal costs to maintain its prosecution services (e.g. staff salary and benefit costs).

- **Role in proceedings under Part I of the POA**: if a charge is laid by a CA's enforcement personnel under Part I of the POA through the issuance of Certificate of Offence then, consistent with the role of Grey County's prosecutors in the handling of police-laid charges, Grey County's prosecutors shall have no role in handling that charge by the Court unless the defendant therein is required to appear before the Court for a trial or other appearance or to meet with a prosecutor for an early resolution meeting pursuant to s. 5.1 of the POA.

- **No role in proceedings under Part II of the POA (parking tickets)**: Grey County's prosecutors shall not provide services in respect of charges commenced under Part II of the POA.

- **Young Persons**: Consistent with the role of Grey County's prosecutors in the handling of police-laid charges, Grey County's prosecutors will not assist with any prosecution against a "young person" as defined in Part VI of the POA.

- **No specific reporting**: Grey County and its prosecutors will not provide any proactive reporting on the prosecution or disposition of any charge, but will provide feedback to your respective CA's enforcement personnel if issues are identified that may assist with future prosecutions.

- **Consultation with enforcement personnel**: Grey County will make its prosecutors available to your respective CA's enforcement personnel for consultation on the laying of specific charges on the same schedule as they are available for consultation with police forces.

- **Assignment of prosecution staff**: where a CA wishes to engage the services of Grey County's prosecutors for a specific charge, the Solicitor for Grey County or

their delegate shall be responsible to determine which of Grey County's prosecutors shall be responsible for prosecution of that charge.

- **Provision of evidence**:

    - Each CA shall provide Grey County's prosecutors all evidence that they may require to consider in respect of any charge submitted to them for prosecution in order to assess the charge and satisfy the prosecution's disclosure requirements to defendants. This obligation shall continue throughout the entire duration of the prosecution.

    - Each CA shall retain all control and responsibility for its evidence and that of its enforcement personnel, and shall be responsible for primary response to all requests to produce or provide access to it, including but not limited to requests made under the Municipal Freedom of Information and Protection of Privacy Act.

    - In the event that Grey County or any of its prosecutors are the subject of a proceeding to disclose any evidence in respect of a prosecution (e.g. a "Wagg motion", an "O'Connor application") the CA shall be responsible for obtaining its own independent representation and shall bear its own costs for; it shall also fully cooperate with Grey County in response to its motion and bear Grey County's reasonable costs in respect thereof if required to do so by Grey County.

- **Conflicts of interest:**

    - Grey County will not provide prosecution services where an apparent or actual conflict of interest may exist, as determined by Grey County in accordance with its procedures and the professional standards of its prosecutors. This includes ceasing to provide services in ongoing prosecutions where a conflict of interest arises after the commencement of proceedings.

    - Grey County will work diligently to inform the CA responsible for the charge where such a conflict of interest exists. Where one arises in the course of an ongoing prosecution, Grey County will work with the CA to transfer the prosecution to a prosecutor identified by the CA or as engaged under the terms of this arrangement.

- Without limiting the scope of where Grey County may identify the existence of a conflict of interest, Grey County will not provide prosecutors' services in any matter where a charge is laid against:

    - A municipality (including Grey County) or any local board as that term is defined in section 1 of the Municipal Affairs Act, R.S.O. 1990, c. M.46 ("Local Board");
    - Any person who is a member of Grey County's municipal council (including those appointed as alternate member under section 267 of the Municipal Act, 2001, S.O. 2001, c. 25);
    - An employee of Grey County;
    - An employee of a municipality other than Grey County or of a Local Board where the charge is related to events arising in the course of the employee's duties as an employee of that municipality or Local Board; or
    - Any individual who routinely appears as a witness in other matters prosecuted by Grey County's prosecutors, such as police officers.

- In all cases where a prosecution on behalf of a CA will result in an apparent or actual conflict of interest for Grey County's prosecutors, Grey County shall not be obliged to engage any outside prosecutor which will result in a cost to Grey County.

- Further provisions regarding conflicts of interest specific to Section 28 Charges and Section 29 Charges are provided in those respective sections below.

Appeals, prerogative relief, ancillary proceedings

- **Appeals**: Specific rules respecting appeals are provided below for both Section 28 Charges and Section 29 Charges.

- **Prerogative relief**: Where circumstances involving applications for prerogative relief by a defendant or third party arise, or where an application for prerogative relief on behalf of the charging CA may be recommendable in respect of a prosecution in which Grey County's prosecutors are engaged, the prosecutors shall review those circumstances with the relevant CA. Grey County shall have no obligation to apply for prerogative relief on behalf of the CA nor to respond to any application for such relief, but may at its option assist in such an application or response. For clarity, matters of prerogative relief will include proceedings for

similar relief commenced outside of the scope of the POA, regardless of whether or not such relief may be lawfully obtained under the circumstances.

- **Role in ancillary proceedings**: with respect to proceedings under the POA other than trials, early resolution meetings, appeals and prerogative relief matters as described above, where Grey County's prosecutors are engaged with respect to a particular charge, they shall engage in such proceedings under the POA (e.g. motions, applications under Part VIII or IX) where the prosecutors determine that they are reasonably related to the prosecution. Under this arrangement Grey County's prosecutors are authorized to commence such proceedings where they determine they are necessary for the proper prosecution of the charge or other handling of the matter and to handle and dispose of them under the same conditions as apply to charges in general under this arrangement.

Conditions applicable to Section 28 Charges

- **Quantity of concurrent Section 28 Charges**: Grey County's prosecutors shall not be engaged to handle more than one group of related Section 28 Charges for a CA at any given time. For these purposes, Section 28 Charges will be considered related if they arise out of the same set of circumstances related to the substance of the charges, and may include charges against more than one defendant in respect of that set of circumstances.

- **Charge screening**: Grey County's prosecutors will not prosecute any Section 28 Charge unless they have reviewed any information intended to be laid or any certificate of offence intended to be filed in respect of the charge as well as all evidence in respect of it. Grey County's prosecutors may, after such review, decline to prosecute the Section 28 Charge if in their determination there is no reasonable prospect of conviction or if a prosecution is not in the interests of justice.

- **Conflicts of interest**: Grey County's prosecutors will not handle any prosecution of a Section 28 charge which would constitute a conflict of interest as described above under "General Conditions".

- **No assistance re: stop orders hearings**: In the event that a stop order is issued pursuant to section 30.4 of the Act, Grey County's prosecutors shall not be obliged to assist or represent the CA in any hearing required pursuant to that section.

- **Appeals**:

    - **Defendant-initiated**: In the event that an appeal is initiated by a defendant in respect of a Section 28 Charge which was handled by Grey County's prosecutors, the prosecutors shall review the substance of the appeal with the CA responsible for the Section 28 Charge and may make recommendations to the CA on the merits of the appeal. Grey County may at its option, may provide the services of its prosecutors to represent the CA in the appeal, but it is not obliged to do so.

    - **Prosecution-initiated**: In the event that Grey County's prosecutors identify that an appealable issue exists with respect to a Section 28 Charge that they prosecuted which the CA may wish to pursue, they shall review the issue with the CA and the CA shall determine whether it wishes to proceed with an appeal. If the CA determines that it wishes to proceed with an appeal, Grey County may at its option, provide the services of its prosecutors to represent the CA in the appeal, but is not obliged to do so.

Conditions applicable to Section 29 Charges

- **Quantity of concurrent Section 29 Charges:** Grey County may refuse to accept Section 29 Charges for prosecution where doing so would put an unreasonable strain on its prosecution resources.

- **Conflicts of interest:** in the event that a Section 29 Charge constitutes a conflict of interest, Grey County may, at its sole option, assist the relevant CA through obtaining the assistance of an outside prosecutor who prosecutes police-laid charges that Grey County is responsible to prosecute but which constitute a conflict of interest for Grey County's prosecutors. Grey County does not warrant that such assistance may be available; if such assistance is available at a cost, the CA shall determine if it wishes to bear such cost. If such assistance is available Grey County may, at its own option, provide administrative assistance to the outside prosecutor and the CA in respect of the proceedings.

- **Appeals**:

    - **Defendant-initiated**: In the event that an appeal is initiated by a defendant in respect of a Section 29 Charge which was handled by Grey County's prosecutors, Grey County's prosecutors shall continue to represent the CA with respect to the appeal of that charge.

- **Prosecution-initiated**: In the event that Grey County's prosecutors identify that an appealable issue exists with respect to a Section 29 Charge that they have prosecuted, Grey County's prosecutors may initiate any appeal that they determine is necessary and shall notify the CA when an appeal has been initiated and the substance of the appeal.

Insurance and Indemnity

- **Indemnity**: A CA, by engaging the services of Grey County's prosecutors, shall indemnify and hold harmless Grey County, its elected officials, employees (including but not limited to its prosecutors), volunteers, contractors, or any other person for whom Grey County is legally liable for all claims, actions and costs whatsoever arising from any intentional, negligent, or otherwise unlawful acts or omissions in respect of that prosecution and the circumstances from which it arises which acts were carried out by the CA or any person for whose actions the CA is legally liable in whole or part or were omitted to be carried out by the same.

- **Insurance**: Each CA shall provide and maintain with Grey County such certificates of insurance from insurers licensed in Ontario as are necessary to prove that the CA has a minimum of the following insurance coverage:

  - not less than Five Million Dollars ($5,000,000) coverage for general liability, including contractual liability, which shall include coverage for negligent investigation and malicious prosecution

  and each such certificate shall name Grey County as an additional insured in respect of that coverage.

Arrangement to replace June 26, 2023 arrangement

- Grey County and the CAs intend for this arrangement be the entire agreement between the parties with respect to the prosecution of Section 28 and Section 29 charges and replaces all prior written or verbal agreements, and specifically replaces the June 26, 2023 arrangement regarding the pilot project prosecution services. Any prosecutions commenced under the June 26, 2023 arrangement shall continue under this arrangement.

Termination provisions

- **Termination by any party**: Any of Grey County and the CAs may discontinue this relationship upon notice to the others, but in either event Grey County may

choose to retain the prosecution of any charge which it has already commenced prosecuting where sufficient time does not exist for a replacement prosecutor to be appointed based on the stage the proceedings and the dates of scheduled hearings or for any other reason in accordance with the professional responsibilities of Grey County's prosecutors.

- **Notices**:

    - Any notice in respect of this arrangement directed to Grey County may be sent to the attention of the Solicitor or such other person as advised by Grey County in writing to you.

    - Any notice in respect of this arrangement directed to your CA may be sent to you, or such other person as your CA may advise in writing to Grey County and the other CA.

- **Termination by one affects all**: if only one of the CAs discontinues its prosecution relationship with Grey County, the relationship with the other CA shall be terminated by Grey County, subject to the considerations on termination provided above.

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Other than as described above, Grey County is not prepared and is not engaged to provide any other legal advice or assistance to your respective Conservation Authorities except as may be provided for in other agreements.

Yours truly,

Kim Wingrove
Chief Administrative Officer

It is confirmed that:

- this letter represents the arrangement under which Grey County will prosecute Section 28 Charges and Section 29 Charges (as those terms are defined above) pursued by the conservation authority undersigned,
- that, subject to the terms of this arrangement, Grey County and its prosecutors are authorized to take all necessary steps and initiate all necessary proceedings to carry out their responsibilities under this arrangement,
- the undersigned are authorized on behalf of their respective conservation authorities to confirm this arrangement,
- that this arrangement replaces the previous arrangement dated June 26, 2023, and
- that this arrangement shall not come into effect until confirmed by both of the undersigned conservation authorities.

Grey Sauble Conservation Authority

_____ _____
Per: Tim Lanthier, Chief Administrative Officer Date

Saugeen Valley Conservation Authority

_____ _____
Per: Erik Downing, General Manager / Secretary-Treasurer (Acting) Date

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Report #EPR-2024-18

Report To: Chair and Directors, Saugeen Valley Conservation Authority

From: Matt Armstrong, Manager, Environmental Planning and Regulations (Acting)

Date: July 18, 2024

Subject: Request for Endorsement: Permits Issued

Purpose: To seek endorsement for permits issued pursuant to Ontario Regulation 169/06, as amended, and Ontario Regulation 41/24.

Recommendation

THAT Development, Interference with Wetlands and Alterations to Shorelines and Watercourse applications and Prohibited Activities, Exemptions and Permits applications #24-068, 24-078 to 24-129, and 24-131 to 24-151, as approved by staff, be endorsed.

Background

Saugeen Valley Conservation Authority (SVCA) staff issue permits in accordance with SVCA policies and then present them to the Board for endorsement at each Authority meeting.

The list below indicates the permits issued between April 22, 2024, and June 28, 2024.

Permit	Location	Address	Proposed Works
24-151	Huron	118 Gordon Street N, Lot 5 and Pt Lot 6, Plan 483	Demolition of an existing cottage and construction of a new 355.7 square metre (3829 sq. ft.) 2 story single detached residence plus rear covered and open deck and related excavation, filling, and grading.
24-150	Brant	Lake Rosalind Boat Launch, Near 405 Lake Rosalind Road 4, Pt Lot 68, 69, 70 and 71, Con 3 NDR	To dredge an approximately 25-foot long by 30-foot wide portion of the Lake Rosalind boat launch approximately 6-feet deep.
24-149	Hanover	Grey Road 28, Approx. 85 metres South of 17th Street	To install fiber optic servicing via horizontal directional drill below a watercourse, with related excavation and grading.
24-148	Hanover	Grey Road 28, Between 14th Street and 741 24th Avenue	To install fiber optic servicing via horizontal directional drill and open trench, with related excavation and grading.
24-147	Brant	Road Ditching South of Bruce Road 4, Near 1463 Bruce Road 4, Lots 39 to 43	To complete road ditching, with associated excavation, filling and grading.
24-146	Kincardine Township	27 Inverness Street North, Pt Lot 20, Con A	To pour a concrete patio, firepit area and sidewalk, with associated filling and grading.

Permit	Location	Address	Proposed Works
24-145	Egremont	83867 Southgate Road 8, Lot 9, Concession 8	Construction of a new liquid manure storage tank, with related excavation, filling, and grading
24-144	Kincardine Township	859 North Line, Pt Lot 39, Concession 2 NDR	Construction of a 1500 square foot detached garage, with related excavation, filling, and grading
24-143	Minto	19 Regency Drive, Pt Lot 21, Concession 16	Construction of a 900 square foot detached garage, with related excavation, filling, and grading.
24-142	Walkerton	Durham Street Bridge over the Saugeen River	To complete emergency repairs to the Durham Street Bridge.
24-141	Proton	185552 Grey Road 9, Part Lot 15, Concession 12	Construction of a new workshop, power room, barn and buggy shed, outside storage area, and graveled yard with related excavation, filling, and grading
24-140	Greenock	1961 Concession 14, Part Lot 7, Concession 14	Construction of a garage, mudroom, garden shed, covered porch, concrete pad and armour stone retaining wall, with related excavation, filling, and grading.
24-139	Brant	119 Lake Rosalind Road 1, Part Lot 71 Con 3NDR, Part 1 Plan 3R9337	Installation of a sewage disposal system, and with related excavation, filling and grading.
24-138	Holland	Lot 64 to 66, Con 3EGR	To construct an entrance upgrade and culvert installation, with related excavation, filling and grading.
24-137	Huron	47 Boiler Beach Road, Pt Lot 63, Con A	installation of a french/perimeter drain with related excavation, filling and grading,
24-136	Bruce	3655 Highway 21, Pt Lot 5, Con 7	To demolish an existing foundation, concrete pad, and septic tank, with associated excavation, filling and grading.
24-135	Huron	46 Boiler Beach Road, Pt Lot 63, Con A	Installation of a French /perimeter drain with related excavation, filling and grading.
24-134	Saugeen	157 Saugeen Beach Road, Lot 1 Road N, Plan 416	directional drilling under watercourse for the purpose of installing three (3) electrical grade conduit pipes
24-133	Holland	Orr St, Chatsworth Road 24, East St, Lots 18-19, Con 1 EGR	Installation of 595 metres of Telecom Wireline Services in Road Allowance
24-132	Sullivan	316078 Highway 6, Lot 1 and 17 Plan 1041	Demolition of part of an existing dwelling, construction of a like for like footprint addition to an existing dwelling, installation of sewage disposal system, and related excavation, filling, and grading.
24-131	Egremont	44260 Southgate Road 4, N Part Lot 17, Concession 5	Construction of a 540 square foot in-ground pool with surrounding armour stone, with related excavation, filling, and grading.

Permit	Location	Address	Proposed Works
24-129	Proton	Southgate Side Road 75, Con 2 and 3 SWTSR	Installation of 105 metres of NPS 4 PE IP gas pipeline by direction drill on the south side of Southgate Side Road 75.
24-128	Proton	Lot 19, Con 2 and 3	Alteration of a watercourse consisting of the bottom-only cleanout of a 450 metre length of the Arnott Drainage Works.
24-127	Durham	179 George Street West Pt Lot 15, Pt Lot 6 WGR Pt Lot C Pt Lot D Queen E/S, Plan 500	Construction of an approximate 2,799 sq ft Nirbo "splashpad" with concrete base and recreational water spray fixtures, including the installation of mechanical and electrical components, armour stone retaining wall, playground equipment (including playset, swingset, climber, cones, springs), a 24 ft by 36 ft open-sided pergola atop a 24 ft by 52 ft concrete pad
24-125	Glenelg	504063 Grey Road 12, Lot 12 Concession 11	Agricultural tile drainage within the adjacent lands to wetlands/swamp, with related excavation, filling and grading.
24-124	Egremont	No Civic Address, Cedar Lane, Lot 4, Con 1 EGR, Plan 815, Lot 4 SUB	Construct a new one story single detached dwelling with walkout basement, septic system installation, and related excavation, filling, and grading
24-123	Proton	772410 Highway 10, Part Lots 221 and 22, Concession 1 SWTSR	Construction of an approximately 2,692-foot-long cedar post and page wire fence, with related excavation, filling, and grading
24-122	Egremont	263287 Wilder Lake Road, Part Lot 7, Concession 3	Construction of a 1200 square foot addition on the south side of the existing dwelling, with related excavation, filling, and grading.
24-121	Egremont	184678 Grey Road 9, Part Lot 26 West Part Lot 27 Concession 15	restoration works including related grading, adjacent to a watercourse and wetland.
24-120	Holland	culvert on Concession 2 Lot 43-44, Con 2 and 3 EGR	Reconstruction of a section of Concession 2, south of Chatsworth Road 24 and north of 60 Sideroad, and replacement of existing 600mm CSP with 14m - 600mm HDPE culvert.
24-119	Sullivan	culvert on Concession 5B Lot 21, Con 4 and 5	replacement of existing 450mm CSP with 16.5m - 450mm HDPE culvert .
24-118	Proton	Unassigned Civic Address, Southgate Sideroad 13, Pt Lot 17, Con 4	Alteration of a watercourse consisting of the completion of a bottom-only cleanout of a 90 metre section of watercourse west of Southgate Sideroad 13.
24-117	Southampton	60 Morpeth Street, TP Pt Lot 18 W Huron	demolish an existing dwelling and reconstruct a two-storey dwelling with basement and covered deck (footprint of approximately 1,604 square feet), construct a two-storey detached double-

Permit	Location	Address	Proposed Works
			bay garage with habitable second storey (footprint of approximately 728 square feet) and driveway and landscaping.
24-116	Artemesia	133797 Wilcox Lake Road	restoration of a fill area, with related excavation, filling and grading, and vegetation planting.
24-115	Sullivan	Pt lot 22, Con 4	To construct a 97.52 square meter garage, with related excavation, filling and grading.
24-114	Holland	30 Sideroad, between East Back Line and the unmaintained section of Mill Road	Reconstruction of 30 Sideroad and the replacement of three (3) culverts: Culvert C30 700mm CSP to be replaced with 16.85m- 750mm HDPE; Culvert C31 900mm CSP to be replaced with 16.7m - 900mm HDPE, with removal of sediment buildup in the watercourse for an extent of 10m southeast of the culvert; and Culvert C32 900mm CSP to be replaced with 17.5m - 900mm HDPE, with removal of sediment buildup in the watercourse for an extent of 10m northwest of the culvert.
24-113	Sullivan	642571 McCullough Lake Drive, South Part Lot 19, Concession 3 Being Part 1 & 2, RP 16R-4537	Construction of a new 1,735 square foot, two-story single detached home, installation of a new septic system, and related excavation, filling, and grading
24-112	Bentinck; Neustadt	Multiple Locations – See Schedule 1 in Permit	To install pipeline via horizontal directional drill and open trench, with related excavation and grading.
24-111	Bentinck; Neustadt	Multiple Locations – See Schedule 1 in Permit	To install pipeline via plow, open trench and horizontal directional drill, with related excavation and grading.
24-110	Artemesia	813154 East Back Line, Lot 193, Con 2NETSR	to replace a collapsed 18-metre, 450mm CSP culvert with a new 18-metre, 450mm HDPE culvert, including related excavation, grading and filling works.
24-109	Artemesia	Road 180	culvert replacement
24-108	Bruce	931 Bruce-Saugeen Townline, Part Lot 21, Concession 14	Demolition of the existing dwelling and the construction of a 3424 square foot dwelling and sewage disposal system with related excavation, filling, and grading
24-107	Walkerton	10 James Street, Lot 12 Pt Lot 17, Plan 176	To construct a 265.78 square foot washroom building.
24-106	Bruce	156 Sunset Drive, Pt Lot 50, Con A	To construct a 13-foot by 12-foot attached sunroom with crawl space, with related excavation, filling, and grading.
24-105	Bentinck	Pt Lot 40, Con 1 SDR, 133302 Allan Park Road	To construct a 507 square-foot attached garage addition with a 196 square-foot

Permit	Location	Address	Proposed Works
			covered porch, with related excavation, filling and grading.
24-104	Bentinck	Grey Road 4, approximately 93 metres east of Grey Road 3	the replacement of a box culvert over an intermittent watercourse with related channel excavating, and filling activities
24-103	Glenelg	344617 North Line Lot 49 to 50, Con 3 NDR	Installation of: a 24 inch plastic catch basin and construct a small berm; 450 feet of nonperforated tile; 1,655 feet of 12 inch perforated tile; and outlet with riprap protection into watercourse, with related excavation, filling and grading
24-102	Walkerton	290 Durham Street, PARK LOT T PART; PARK LOT 4, Plan 162	To construct a 20-foot by 30-foot pavilion and 198 cubic foot concrete pad, with related excavation, filling and grading.
24-101	Bruce	Bruce Road 20 – See Schedule 1 in Permit	To replace a 750 millimeter diameter CSP culvert with a HDPE culvert of the same size, with related excavation, filling and grading.
24-100	Minto	6143-16th Line, Pt Lt 19 Con 16	Construction of a barn, manure storage, re-routing of part of an enclosed municipal drain (drain 104), and related excavation, filling, and grading.
24-099	Huron	25 Boiler Beach Road, Lot 25, Plan 503	Demolition of an existing single detached dwelling and construction of a new 2581 square foot, two-story house with attached garage and related excavation, filling, and grading
24-098	Greenock	4575 Bruce Road 1,Pt Lt 33 Pl 107	Modifications to existing front porch and new accessibility ramp.
24-097	Walkerton	77 Griffith Street, Lot H Lot I Pt Lot G and K, Plan 88	To construct a 27-foot by 39-foot attached garage with covered concrete porch, with related excavation, filling and grading.
24-096	Sullivan	254 McCullough Lake Dr; Plan 393 Lot 4	to pour approximately 24 cubic metres of concrete for a residential driveway, including related excavation, grading and filling works
24-095	Southampton	61 Victoria Street North, TP Pt Little Lake Reserve, Plan 3R-3616	For the completion of school renovations, installation of stormwater management infrastructure, grading, and retaining wall construction
24-094	Artemesia	325325 Durham Road B, Part Lot 14, Concession 1 NDR	Construction of a 576 square foot barn, with related excavation, filling, and grading
24-093	Glenelg	554652 Bell's Lake Road, Part Lot 15, Concession 11	Construction of a 1024 square foot detached garage and driveway, with related excavation, filling, and grading

Permit	Location	Address	Proposed Works
24-092	Artemesia	813472 and 813442 East Back Line	To install systematic tile drainage with multiple outlets.
24-091	Proton	126282 Southgate Road 12, Lot 28 and 29 Concession 8 Proton	Demolition of an existing dwelling; construction of a new dwelling, barn and workshop (on Lot 28); grubbing and brush removal in the area beyond 30 metres from the riverbank of the South Saugeen River; installation of agricultural tile drainage; and related excavation, filling, and grading.
24-090	Proton	126282 Southgate Road 12, Lot 28 and 29 Concession 8 Proton	Removal of beaver dam; removal of existing culvert; installation of culvert; construction of bridge; with related excavation, filling and grading
24-089	Huron	Bruce Road 7, Con 5, Pt Lot 15 Pt Lot 16 Lot 17 N Pt Lot 18	Alteration of a watercourse consisting of the replacement of an existing road culvert (Culvert 10087), with related excavation, filling, and grading
24-088	Carrick; Howick	Multiple locations	Alteration of 10 watercourses and works within/adjacent to wetland consisting of the installation of fibre-optic cable by directional bore and plow (Projects 367-1-SA07-W-A1 and 327-1-SA05-W-A2-A3)
24-087	Proton	Grey Road 14 (north of 112260 Grey Road 14), Pt Lot 12 and 13, Con 11	Alteration of a watercourse consisting of the replacement of an existing road culvert (Culvert 275) on the Love Drainage Works with related excavation, filling, and grading.
24-086	Southampton	395 High Street, TP PT Lot 24	Adding 107 cubic metres of fill to create suitable development envelopes to support future severances and future dwellings.
24-085	Kincardine Township	North Line – See Schedule 1 in Permit	To replace a 2450mm by 1800mm diameter, 20.5 metre long CSPA culvert, with a 2800mm by 1950mm diameter, 20.5 long CSPA culvert, with related excavation, filling and grading.
24-084	Mildmay	near 8 Jane Street S. Mildmay	Installation of approximately 38 metres of NPS 1.25in PE main and 47 metres of NPS 1.25-inch natural gas service pipeline.
24-083	Brant	Between 803 Marl Lake Road 8 and 11 Marl Lakes Road	To install fiber optic servicing via horizontal directional drill and open trench, with related excavation and grading.
24-082	Durham	Near 419 Park Street W, North of Park Lot 5, Registered Plan 505	installation of approximately 166 metres of a new NPS 2 Inch natural gas pipeline
24-081	Egremont	144392 Southgate Road 14, Lot 20, Con 13	Widen an existing laneway entrance with new culvert installation and install a new raised bed septic system with related excavation, filling, and grading

Permit	Location	Address	Proposed Works
24-080	Brant; Hanover	Multiple Locations – See Schedule 1 in Permit	To install fiber optic servicing via horizontal directional drill below watercourses, with related excavation and grading.
24-079	Brant; Hanover	Multiple Locations – See Schedule 1 in Permit	To install fiber optic servicing via horizontal directional drill, with related excavation and grading.
24-078	Kinloss	56 Silver Lake Road, Pt Lot 19 and 20, Range 1 SDR	Construction of a 1664 sq. ft. garage and living space addition to an existing single-family residence including rear covered deck and patio and related excavation, filling, and grading,
24-068	Sullivan	Plan 823 T;BLK A RP 16R7566 PARTS 1 & 5	The removal of an existing dwelling and the construction of a new cottage. Permit expired and will have to re-submit application.

Strategic Plan Linkages

A1.5 – Reporting

Prepared by:
[*Original Signed by:]*
Matt Armstrong
Manager, Environmental Planning and Regulations (Acting)

Approved by:
[*Original Signed by*:]
Erik Downing
General Manager / Secretary-Treasurer (Acting)

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Report #EPR-2024-19

Report to: Chair and Directors, Saugeen Valley Conservation Authority

From: Matt Armstrong, Manager, Environmental Planning and Regulations (Acting)

Date: July 18, 2024

Subject: Exploring the Two-Zone Floodplain Concept for Southampton

Purpose: To inform the Board of the Town of Saugeen Shores' interest to explore implementation of the Two-Zone floodplain concept in part of Southampton.

Background

The floodplain in Southampton is managed according to the standard One-Zone floodplain concept, whereby new development is generally not permitted within any portion of the floodplain, regardless of the depth or velocity of flooding. Until this year, SVCA relied on floodplain modelling and mapping for Southampton that was completed in the early-1990s.

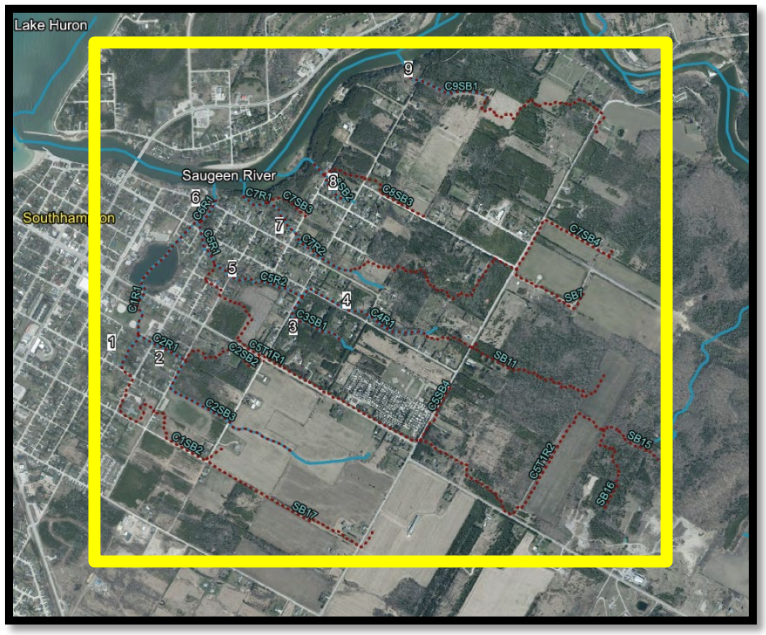

Figure 1: FHIMP Study Area in Southampton

The floodplains for nine (9) small watercourses in Southampton were recently re-modelled and mapped as part of the Flood Hazard Identification and Mapping Program (FHIMP) (Figure 1).

The peer-reviewed modelling and mapping found that the Regulatory floodplain in the study area covers 64.43 hectares, which is nearly twice as large as what was determined for the same general area by the 1991 study (33.54 hectares). The depth of flooding in the 'new' areas is relatively shallow and rarely exceeds 0.30 metres.

Figure 2 shows the extent of the mapped regulatory floodplain before (blue shade) and after (black outline) the FHIMP modelling. The orange shaded areas and the blue outlined areas are floodplain areas of Southampton near the FHIMP study area that were not considered in the FHIMP modelling and remain part of the floodplain.

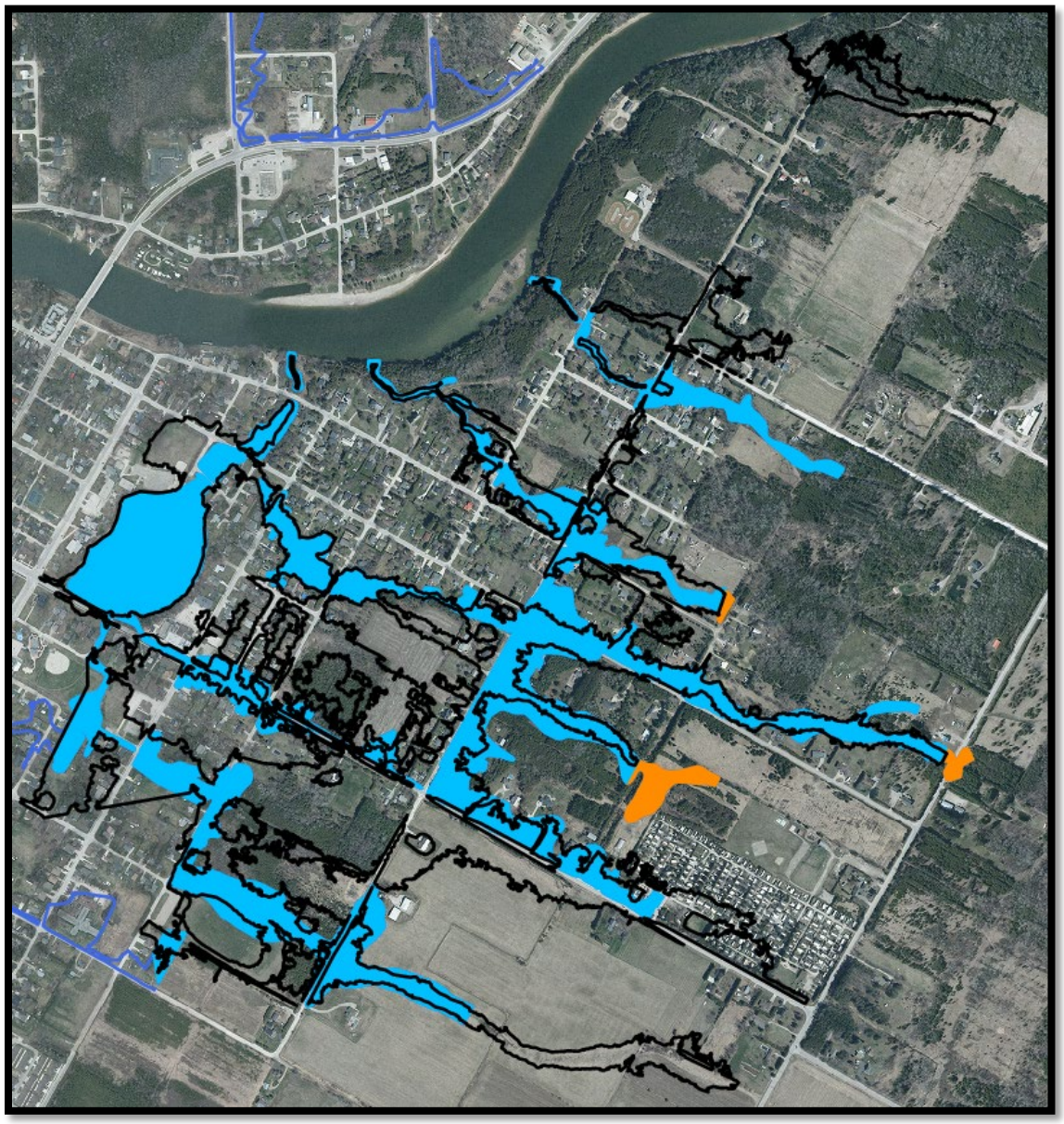

Figure 2: Floodplain before (blue shade) and after (black outline) the 2024 FHIMP modelling. The orange shaded areas and the blue outlined areas are parts of the floodplain that were not considered in the FHIMP modelling and will remain part of the floodplain.

Several residential developments in various stages of approval are located within areas of Southampton that were not previously mapped and regulated as floodplain but now are, based on the best available information. To address the new restrictions on these and future developments, Town of Saugeen Shores staff approached SVCA to explore implementing a Two-Zone floodplain concept in the recently re-mapped areas of Southampton.

Discussion

The Two-Zone concept recognizes that the floodplain can often be divided into two zones: the Floodway and the Flood Fringe (Figure 3).

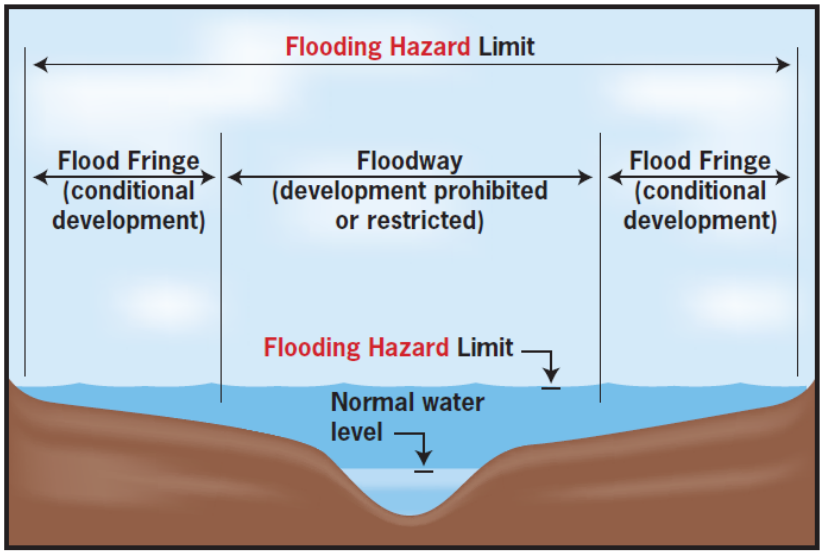

Figure 3: Cross Section of the Two-Zone Floodplain Concept.

In the Floodway, flood depth and/or velocities are likely to pose a potential threat to life and/or property damage. Development or site alteration in the Floodway is prohibited as it may cause adverse impacts to flood elevations and cause danger to life and/or property. The Flood Fringe lies between the Floodway and the edge of the floodplain. Depths and velocities of flooding in the Flood Fringe are much less than those in the Floodway and as such development is permitted provided that appropriate floodproofing measures are incorporated into designs.

Two-Zone may be considered where the SVCA in cooperation with the municipality, after due consideration of local circumstances, agrees that application of the concept is suitable. The feasibility of a Two-Zone approach requires the examination of a number of factors and implementation requires the assurance that various conditions will be complied with. Where the SVCA and the municipality agree to the use of Two-Zone, appropriate official plan designations and zoning must be put into place.

The implementation of Two-Zone is meant to be on a sub-watershed or major reach basis, rather than across an entire watershed or on a lot-by-lot basis. A number of community related and technical criteria outlined by the Province are taken into consideration when determining whether or not to implement Two-Zone. This includes local need, changes in land use, administrative capability, constraints to the provision of services, frequency of flooding, physical characteristics of

the valley, impacts of proposed development (flood levels at the site, upstream, and downstream), feasibility of floodproofing, and ingress and egress. Additional floodplain modelling and mapping must be completed as part of this process, which will help parties determine whether these considerations can be addressed. Communities within the SVCA watershed where Two-Zone policies are in effect include Durham, Neustadt, Paisley, Teeswater, and Walkerton.

Financial Implications

Town of Saugeen Shores staff will or have retained a consultant to complete the modelling and mapping and will be responsible for all costs associated with this work.

SVCA staff resources from the Water Resources, Environmental Planning and Regulations, and Corporate Services departments would be required to work with the consultant, review the modelling and mapping, and meet with impacted parties as needed.

Next Steps

At the time of this writing, Town of Saugeen Shores staff plan to present a report to Town Council on July 15, 2024, recommending they explore the Two-Zone concept in the re-mapped areas of Southampton. A version of this Board report will be included for their information, and SVCA staff will attend that Council meeting to provide technical support to Town staff.

If supported by Town Council, work would generally proceed as follows:

- SVCA staff would work with Town staff and the engineering consultant retained by the Town to ensure the modelling and mapping work is completed in accordance with Provincial standards.
- After reviewing the draft Two-Zone mapping, SVCA staff and Town staff would bring reports to their respective Board and Council, explaining the implications of Two-Zone for the affected areas of Southampton and recommend whether to support its implementation.
- If the SVCA Board and Town Council approve the implementation of Two-Zone, it would come into effect after the appropriate Official Plan designations and Zoning are put in place.

Strategic Plan Linkages

C1.0 Cultivating Strong Relationships, Increased Collaboration

R1.10 Climate Change and Environmental Resiliency Planning and Action

Prepared By:

Matt Armstrong, Manager, Environmental Planning and Regulations (Acting)

Approved By:

[*Original signed by:]*

Erik Downing, General Manager/Secretary-Treasurer (Acting)

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Staff Report #LAN2024-05

Report To: SVCA Board of Directors

From: Donna Lacey, Manager of Forestry and Lands

Date: July 9, 2024

Subject: Conservation Areas Strategy

Purpose: To provide the Board of Directors with the opportunity to review the Conservation Areas Strategy prior to public consultation

Recommendation

THAT the Board of Directors approve the Conservation Areas Strategy draft to support the next step of public consultation, as required by Section 21.1 (1) of the Conservation Authorities Act and Ontario Regulation 686/21 (9) (10).

Background

Section 21.1 of the *CA Act* mandates the delivery of essential programs and services by all conservation authorities (Category 1). Section 21.1.1 allows for the provision of Municipal Programs and Services in agreement with member municipalities (Category 2), while Section 21.1.2 authorizes the delivery of Other Programs and Services (Category 3). These are further detailed in Ontario Regulation 686/21.

Under Subsection 9 (1) of the Regulation, conservation authorities are required to develop a conservation areas strategy, following guidelines outlined in subsections 10 (1) to (3). This strategy, including a public consultation period, must be completed by December 31, 2024.

Analysis

The strategy sets out the guiding principles and objectives of SVCA, its mandatory Category 1 Programs and Services, and its non-mandatory Category 2 and 3 Programs and Services on SVCA lands. The strategy will assist SVCA with delivering its mandatory programs and services and in identifying issues and risks that may impact the effective delivery of other programs and services. It also identifies future desirable programs, services, and actions that will help SVCA meet its objectives and long-term goals.

Next Steps

Pending approval from the SVCA Board of Directors, public consultation will commence on July 31, 2024. The consultation process is scheduled to conclude in time for a report to be prepared for presentation at the Board of Directors meeting on October 17, 2024. This timeline is critical

as the September meeting is dedicated to budget discussions, and there is no scheduled meeting in December, coinciding with the *CA Act* deliverable deadline.

Financial Implications

No financial implications are associated with endorsing the Draft Conservation Areas Strategy and initiating public consultation. The strategy identifies several goals and objectives for each type of Conservation Area.

Strategic Plan Linkages

R1.0 – Development of a resilient organization

R1.8 – CA Act Deliverables; Conservation Areas Strategy

Prepared by:

< [Original signed by:]>

Donna Lacey, Manager of Forestry and Lands

Approved by:

< [Original signed by:]>

Erik Downing, General Manager / Secretary-Treasurer (Acting)

Conservation Areas Strategy (Draft)

This strategy has been developed to meet the requirements of the *Conservation Authorities Act* deliverables. This document has been written in draft for public comment and will be finalized for Board acceptance following the commenting period and prior to December 31, 2024.

Saugeen Valley Conservation Authority (SVCA)

Approval Date:

Acknowledgments

This document was developed following Conservation Ontario's Guidance on the Conservation Authority Mandatory Conservation Areas Strategy.

Saugeen Valley Conservation Authority (SVCA) sincerely appreciates the feedback and input received from the watershed partners, residents, and visitors during the development of the SVCA Conservation Areas Strategy.

Legislative Background

Proclaimed provisions within the *Conservation Authorities Act* and accompanying regulations establish requirements for Mandatory Programs and Services (see Section 21.1 of the Act and O. Reg. 686/21). Ontario Regulation 686/21 sets out the Mandatory Programs and Services that must be delivered by all Conservation Authorities (CAs) in Ontario. Section 10 of the regulation requires all CAs to prepare a "Conservation Area Strategy" ("the Strategy") as a required component of the "Conservation and Management of Lands" mandatory CA program and service area. As defined under Ontario Regulation 688/21 of the *Conservation Authorities Act*, "conservation area" means land owned by an authority. Saugeen Valley Conservation Authority was established on March 16, 1950, under the *Conservation Authorities Act* of Ontario. SVCA is one of 36 Conservation Authorities (CA's) in Ontario. SVCA is a member of Conservation Ontario. SVCA is governed by a Board of Directors comprised of its fifteen member municipalities.

Jurisdiction

The Saugeen watershed encompasses 4,675 square km in the counties of Bruce, Dufferin, Grey, Huron, and Wellington. This area is also referred to as SVCA's area of jurisdiction. The main watersheds of the Saugeen, Penetangore and Pine Rivers as well as the adjoining Lake Huron Fringe along with all the associated sub-watershed areas form the Saugeen Valley Watershed.

Purpose of this Strategy

This Conservation Areas Strategy has been developed to align with the recent changes to Section 10(1) of Ontario Regulation 686/21 of the *Conservation Authorities Act*. This strategy will provide a clear set of objectives which will inform decision-making related to the land owned by Saugeen Valley Conservation Authority. This strategy will supersede any previous land management strategies. This Conservation Areas Strategy will inform the Conservation Land Inventory, through establishing land use categories for the lands owned by SVCA.

Overview of SVCA Conservation Areas

In the last 70 years of existence, SVCA has acquired many lands. The SVCA lands have served to promote environmental awareness and recreation for the public, erosion control/ flood safety, maintain natural spaces, and provide financial benefits of campgrounds, leases, and logging. These lands were given many different titles, often to reflect funding sources, natural features, current use, donor wishes, or potential developmental possibilities. Names varied from Conservation Areas, Management Units, Nature Preserves, Project Areas, Agreement Forests, Managed Forest Tracts, Day Use Areas, Parks, Complexes, Campgrounds, Wetlands, Farms,

Floodplains, and likely other colloquial terms. This strategy will be all-inclusive regardless of previous titles and will use the term 'conservation area' to describe all land owned by SVCA. Conservation Areas will be broken down into subcategories listed below along with the associated number of properties.

Conservation Areas with Active Recreation, Accessible to the Public Active Recreation includes camping, disc golf, maintained recreational trails, basketball, volleyball, horseshoes, and ladder ball.

- ❖ Conservation Areas with Passive Recreation, Accessible to the Public
  - Passive Recreation includes hiking, snowshoeing, skiing, wildlife watching, cycling, picnicking, trails groomed for skiing, and educational opportunities
- ❖ Management Areas, Public Accessibility Varies
  - Management Areas include managed forests, agricultural lands, wildlands, flood

control structures, wildlife preserves, nature preserves, wetlands, flood plains, meadows, water management areas, and leased areas

- ❖ Conservation Authority Administration Areas
  - Administration Areas within SVCA are limited to the administrative building and

associated infrastructure, the Resource Centre at Sulphur Spring CA, and the Saugeen Valley Children's Safety Village also at Sulphur Spring CA

The *Conservation Authorities Act*, Ontario Regulation 686/21 S.10 provides the principles and objectives that inform Conservation Authority decision-making related to the lands it owns or manages, including decisions related to the acquisition and disposition of CA properties.

Objectives

The objectives of this Conservation Areas Strategy are to:

- Inform decision-making related to the land owned or controlled by SVCA
- Provide direction on the lands owned or managed by SVCA, including the management

of natural resources, conservation, restoration, and development

- Ensure the creation or updating of master plans for Conservation Areas
- Provide an opportunity to improve educational and outreach opportunities
- Recognize the need to improve accessibility where possible
- Direct the creation of a Conservation Lands Inventory
- Ensure that the SVCA land acquisition and disposition policy is kept up-to-date and

adequate to meet the Authority's needs

Meeting the Objectives

Under this strategy, programs and services to secure the authority's interests in its lands that include measures for fencing, signage, patrolling and any other measures to prevent unlawful entry on the authority's land and to protect the authority from exposure to liability under the

Occupiers' Liability Act, will be enacted as deemed necessary through staff, partner, or public input.

SVCA will endeavour to provide programs and services to maintain any facilities, trails or other amenities that support public access and recreational activities in conservation areas and that can be provided without the direct support or supervision of staff employed by the authority or by another person or body.

The Authority will carry out programs and services to enable the authority, in its capacity as an owner of land, to make applications or comment on matters under the *Planning Act.* Programs and services to conserve, protect, rehabilitate, establish, and manage natural heritage located within the lands owned or controlled by the authority will be encouraged.

SVCA will complete programs and services to plant trees on lands owned or controlled by the authority, excluding commercial logging, along with hosting educational and community events where feasible to promote environmental education.

The land acquisitions and land dispositions policy will be realized and updated as necessary.

As required by legislation a Land Inventory will be prepared on or before December 31, 2024.

SVCA will establish programs and services to ensure that the authority carries out its duties, functions and responsibilities to administer regulations made under section 29 of the Act on lands that are not otherwise leased to another manager.

Financing Conservation Areas

Conservation Areas Active Recreation Accessible to the Public

These CA's are lands in which the conservation of natural space and flood or erosion protection is encouraged while continuing to offer opportunities for the public. These lands typically receive heavy use, more promotion and may contain campsites, maintained recreational trails, parking areas, restrooms, picnic shelters, outdoor sports and games, groomed ski trails, and other infrastructure. Active Recreation CA's are identified as Category 3 Programs or Services.

Conservation Areas Passive Recreation Accessible to the Public

These CA's are lands in which the conservation of natural space and flood or erosion protection is encouraged while continuing to offer opportunities for the public. These lands typically receive moderate use, less promotion, and may contain, unstaffed campsites, maintained recreational trails, parking areas, restrooms, picnic shelters, and other infrastructure. Passive Recreation CA's are identified as Category 1 Programs or Services.

Management Areas Public Accessibility Varies

These CA's are lands in which the conservation of natural space and flood or erosion protection is encouraged were may require restricting public access. These lands typically receive low to moderate use, less promotion, and are less likely to contain, maintained recreational trails, parking areas, signage, and other infrastructure. Passive Recreation CA's are identified as either Category 1 or Category 2 Programs or Services. These lands are managed using levy dollars, self-generated revenue, donations, and membership fees.

Conservation Authority Administrative Areas

Two properties contain Administration areas, these are Formosa and Sulphur Spring CA. Administrative Areas are Category 1 Programs and Services.

Chart of Categories, Descriptions, and Category Specific Objectives

Category	Description	Specific Objectives
Active Recreation CA's	Lands focused on conservation and flood/erosion protection while offering public recreational opportunities. These areas typically have heavy use and more promotion. Examples include Brucedale CA, Durham CA, and Saugeen Bluffs CA.	- Maintain ecological integrity and biological diversity - Develop and review management/master plans for new properties - Involve public, agencies, and interested groups in management plan revisions - Pursue research and monitoring to identify gaps and enhance knowledge - Ensure new infrastructure meets current accessibility and safety standards, and renovate existing infrastructure - Ensure AODA compliance for website information - Identify permitted and prohibited uses - Expand/enhance recreation opportunities and revenue for sustainability - Balance revenue generation with protection of natural heritage features and public access - Prioritize land acquisitions for connected natural heritage systems

Category	Description	Specific Objectives
Passive Recreation CA's	Lands focused on conservation and flood/erosion protection while offering public recreational opportunities. These areas typically have moderate use and less promotion. Examples include Allan Park CA, Denny's Dam CA, Durham Day Use CA, New CA, McBeath CA, Stoney Island CA, Sulphur Spring CA, and Varney CA.	- Maintain ecological integrity and biological diversity - Develop and review management/master plans for new properties - Involve public, agencies, and interested groups in management plan revisions - Pursue research and monitoring to identify gaps and enhance knowledge - Ensure new infrastructure meets current accessibility and safety standards, and renovate existing infrastructure - Ensure AODA compliance for website information - Identify permitted and prohibited uses - Expand/enhance recreation opportunities and revenue for sustainability - Balance revenue generation with protection of natural heritage features and public access- Prioritize land acquisitions for connected natural heritage systems

Category	Description	Specific Objectives
Management Areas	Lands focused on conservation and flood/erosion protection that may require restricted public access. These areas typically have low to moderate use and less promotion. Examples include all Managed Forest properties, Wetland Complexes, Bell's Lake, Brucedale Managed Forest, Denny's Dam Managed Forest, Formosa, Kinghurst, Mildmay/Carrick, Moss Lake, Woods, McBeath managed forest and agricultural land, Saugeen Bluffs Managed Forest, Schmidt Lake, Sulphur Spring Managed Forest, and water control infrastructure.	- Maintain ecological integrity and biological diversity - Develop and review management/master plans for new properties - Involve public, agencies, and interested groups in management plan revisions - Pursue research and monitoring to identify gaps and enhance knowledge - Ensure new infrastructure meets current accessibility and safety standards, and renovate existing infrastructure - Ensure AODA compliance for website information - Identify permitted and prohibited uses - Expand/enhance recreation opportunities and revenue for sustainability - Balance revenue generation with protection of natural heritage features and public access - Prioritize land acquisitions for connected natural heritage systems

Category	Description	Specific Objectives
Administration Areas	Properties containing administrative buildings and associated infrastructure. Examples include Formosa and Sulphur Spring CA, including the Resource Centre and the Saugeen Valley Children's Safety Village.	- Develop and review management/master plans for new properties - Involve public, agencies, and interested groups in management plan revisions - Ensure new infrastructure meets current accessibility and safety standards, and renovate existing infrastructure - Ensure AODA compliance for website information - Balance revenue generation with protection of natural heritage features and public access - Prioritize land acquisitions for connected natural heritage systems

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Staff Report #LAN2024-06

Report To: Chair and Directors, Saugeen Valley Conservation Authority

From: Donna Lacey, Manager, Forestry and Lands

Date: July 18, 2024

Subject: Camping Rates 2025

Purpose: To seek endorsement from the Board of Directors to increase the camping and associated fees for the 2025 season.

Recommendation

THAT camping and associated rates be increased as proposed for the 2025 camping season.

Background

Saugeen Valley Conservation Authority operates three campgrounds for seasonal and transient campers: Brucedale, Durham, and Saugeen Bluffs. The fee structure for camping has been increased as was necessary in certain business areas for the 2023 and 2024 camping seasons. As expenses have increased within the 2024 season and are expected to continue to climb it is prudent that some camping rates for the 2025 season be evaluated. The practice at SVCA has been that seasonal camping contracts be distributed to campers over the Labour Day weekend to receive signed contracts prior to the closing of the campgrounds following Thanksgiving weekend. For this reason, approval of these fees is being requested prior to budget discussions so as not to delay the delivery of contracts to our clients.

Analysis

Staff have compared the fee structures at similar campgrounds for the 2024 camping season, and 2025 if posted, as well as considered expenses incurred and anticipated within all SVCA campgrounds. The proposed fee changes are meant to reflect the needs of the campgrounds while striving to remain competitive with similar campgrounds. To that end, staff applied variable increases to the camping and associated rates to obtain the 2025 camping rates.

Financial Implications

Across the three campgrounds, SVCA has over 200 seasonal campers. With seasonal camper fees being increased, it is anticipated that there would be a projected revenue increase that would largely be absorbed by projected increased supply expenses.

Strategic Plan Linkages:
R1.1 Revenue Generation Planning and Action

Prepared by:

Donna Lacey, Manager, Forestry and Lands

Approved by:

Erik Downing, General Manager / Secretary-Treasurer, Acting

2024 Camping Fees Including HST		Proposed 2025
Serviced Campsite		
Daily	$ 55.00	60
Weekly	$ 330.00	353
Monthly	$ 1230.00	1316
Full Season	$ 2,942.00	3128
Prime Full Season	$ 3315.00	3527
Prime Transient	60.00	65
Non Serviced Campsite		
Daily	$ 46.00	50
Weekly	$ 276.00	295
Monthly	$ 1045.00	1118
Full Season	$ 2030.00	2172
Other		
Additional Overnight Guest	$ 7	same
Additional Overnight Vehicle	$ 14	same
Cancellation/Change Fee	$15 daily, longer bkngs frthr chrg	same
Control Card	$ 25.00	same
Dumping Fee	$ 20.00	same
Firewood	$ 10.00	same
Group Camping + $6.50/person	$125 plus $8 per person	same
Ice	$ 4.00	4.50
Late Payment/Clean Up	$75/150.00	same
Off Season	$ 46.00	50
Reservation Charge	$ 16.00	same
Seasonal Vehicle/Visitor Pass	$ 95.00	same
Trailer Storage	$ 275.00	300
Youth Group Camping	$ 8.00	same
Day Use Fees		
Adult	$ 5.00	same
Child (5 to 12)	$ 3.00	same
Max. Per Vehicle	$ 13.50	same
Non Equestrian Membership - All Pr	$ 55.00	same
Canoe		
Daily Rental	$ 42.00	same
Deposit	$ 50.00	same
Shelter		
Picnic Rental includes Hydro	$ 150.00	160
and Guest (Durham & Bluffs)		
Sutherland Centre - Full Day	$ 170.00	180
(Sulphur Springs)	$ 150.00	160
Cancellation Fee	$ 30.00	same
Horse		
Daily - No Corrals	$ 52.00	$ 55
Daily - 2 Corrals	$ 69.00	$ 74
Daily - Bunkie, 2 Corrals	$ 98.00	$ 105
Weekly - No Corrals	$ 311.00	$ 332
Weekly - 2 Corrals	$ 415.00	$ 444
Weekly - Bunkie, 2 Corrals	$ 590.00	$ 631
Seasonal, No Corrals	$ 2,544.00	$ 2,722
Day Use Horse Trail Pass	$ 12.00	$ 13
	$	
	$	
Seasonal Equestrian Membership Pass (Allan Park, Kinghurst, & Saugeen Bluffs) includes non-equestrian use of all other SVCA properties	$ 95.00	$ same
	$	
Damage/Cleaning Fee	$ 150.00	$ same
Extra Horse	$ 35.00	$ 357
Event Ring - Full Day	$ 120.00	$ 130

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Staff Report #WR-2024-05

Report To: Chair and Directors, Saugeen Valley Conservation Authority

From: Jody Duncan, Flood Forecasting and Warning Coordinator

Date: July 18, 2024

Subject: Flood Forecasting and Warning – Hydrometric Network Update

Purpose: To provide an update on the status of SVCA's hydrometric network and request support to decommission the Greenock stream gauge station.

Recommendation

THAT the Board of Directors endorse the proposed plan for improvements to SVCA's hydrometric network; and

FURTHER THAT the Board of Directors support decommissioning the Teeswater River at Bruce Road 20 (Greenock) stream gauge station.

Background

SVCA's hydrometric network currently consists of 20 stream gauge stations (10 SVCA-owned, 10 Water Survey Canada owned), 12 rain gauges and 4 weather stations (2 inactive). Several of the stream gauge stations are equipped with water and air temperature sensors that enhance SVCA's understanding of frazil ice development and ice jam potential.

Due to aging equipment and associated operational challenges, SVCA staff have initiated a series of upgrades across the hydrometric network, working within approved budgets.

At the May 28, 2024, Water Resources Committee meeting, Motion WR24-05 was carried:

> THAT the Water Resources Committee endorse the proposed plan for improvements to SVCA's hydrometric network; and
>
> FURTHER THAT the Water Resources Committee support decommissioning the Teeswater River at Bruce Road 20 (Greenock) stream gauge station.

Analysis

Recent Updates to Hydrometric Equipment

Since 2019, SVCA staff have upgraded 6 stream gauge stations, including replacement of rain gauges, and air/water temperature sensors. Additional work is needed at 3 stream gauge stations to develop new rating curves, establishing a relationship between water level and flow.

Routine inspections and regular maintenance of all stream gauge stations remain critical to ensure the accuracy and functionality of the hydrometric network.

Inactive and/or Poorly Functioning Hydrometric Equipment

The Greenock stream gauge station is completely inactive and would require the replacement of all equipment and significant structural repairs to become functional. Following discussion at the July 2023 Water Resources Committee meeting, SVCA staff have determined the station is not essential to flood forecasting. Low water monitoring in the Greenock Swamp can be performed using an existing groundwater well. SVCA staff proposed decommissioning the Teeswater River at Bruce Road 20 (Greenock) station, as other stations provide adequate coverage for flood forecasting and warning purposes.

There are 2 inactive weather stations located at the Sulphur Spring Conservation Area and Bells Lake. SVCA staff will evaluate whether these stations can be reactivated using the existing equipment or if upgrades will be necessary. These stations would provide additional coverage within the network, which is valuable in assessing potential risk of flooding downstream.

Improvements

SVCA staff have prepared a plan, see attached, to upgrade the Aberdeen, Ripley and Chesley stations. Upgrades will be prioritized based on the urgency of repairs, with high-priority stations addressed first. Staff are seeking endorsement of the proposed plan.

Improvements are needed to replace outdated equipment, limit reliance and costs associated with LAN lines, and ensure the continuity and reliability of data communication. To further improve SVCA's monitoring capabilities, efforts are being made to identify and address data gaps within the watershed.

Financial Implications

Upgrading the Aberdeen, Ripley and Chesley stream gauge stations is anticipated to cost approximately $28,000. Should the Greenock station not be decommissioned, the estimated cost of repair is $40,000. Upgrades and repairs will be completed using approved budget funds or grants.

These estimates do not include the staff time required for equipment installation and structural repairs/replacements. External support might be necessary for tasks such as rating curve development for deep watercourses.

Already in 2024, staff have applied for funding to help offset costs related to hydrometric network upgrades and will continue to pursue future funding opportunities.

Strategic Plan Linkages

A1.6 Watershed management planning
C1.3 Communication, planning, campaigns and actions

Prepared by:

< [Original signed by:]>

Jody Duncan, Flood Forecasting and Warning Coordinator

Approved by:

< [Original signed by:]>

Erik Downing, General Manager/Secretary-Treasurer (Acting)

Saugeen Valley Conservation Authority Owned Stations

Description						Condition		Recommendations		Cost Estimate	
Station Name	Location	Watercourse	Sensors	Record Length (Years)	Status	Equipment Condition	Structure Condition	Recommendations	Upgrade Priority[1]	Equipment	Structure
Saugeen River above Priceville	Southgate	Saugeen River	- Water Level - Precipitation - Air Temperature - Water Temperature	30	Active	Upgraded 2024	Good	None	Low	None	None
Saugeen River at Hanover	Hanover	Saugeen River	- Water Level - Precipitation - Water Temperature	39	Active	Upgraded 2019	Good	None	Low	None	None
Saugeen River above Paisley	Arran-Elderslie	Saugeen River	- Water Level - Precipitation - Air Temperature - Water Temperature	38	Active	Upgraded 2023	Repairs in 2023	Additional repairs to structure	Immediate	None	$3,000.00
Teeswater River at Bruce Road 20 (Greenock)	South Bruce	Teeswater River	- Water Level - Precipitation - Air Temperature	36	Inactive	Very Poor	Poor	Decommission station. If repaired, would require new equipment and structure repairs (estimate $40,000)	Immediate	None	None
South Saugeen River at Cedarville	Southgate	South Saugeen River	- Water Level - Precipitation - Air Temperature - Water Temperature	28	Active	Upgraded 2022	Good	None	Low	None	None
South Saugeen River below Mt. Forest	West Grey	South Saugeen River	- Water Level - Precipitation - Water Temperature	38	Active	Upgraded 2020	New 2019	None	Low	None	None
Beatty Saugeen River near Hanover	West Grey	Beatty Saugeen River	- Water level - Air Temperature - Water Temperature	39	Active	Upgraded 2023	Good	None	Low	None	None
Rocky Saugeen River at Aberdeen	West Grey	Rocky Saugeen	- Water Level - Water Temperature	35	Active	Poor	Good	Upgrade all equipment; poor quality of data despite being operational. Only station located on Rocky Saugeen River.	Immediate	$8,000.00	None
North Saugeen River above Chesley	Chatsworth	North Saugeen	- Water Level - Precipitation - Air Temperature - Water Temperature	34	Active	Fair	Good	Upgrade all equipment; equipment is operational but well beyond operational lifespan. Critical for flood forecasting.	High	$10,000.00	None
Pine River above Ripley	Huron-Kinloss	Pine River	- Water Level - Precipitation - Air Temperature	31	Active	Fair	Good	Upgrade all equipment; equipment is operational but well beyond operational lifespan	High	$10,000.00	None
Formosa Meteorological Station	South Bruce	N/A	- Precipitation - Air Temperature - Solar Radiation - Evapotranspiration	2	Active	New 2021	None	None	Low	None	None
Point Clark Meteorological Station	Huron-Kinloss	N/A	- Precipitation - Air Temperature - Solar Radiation - Wind Speed and Direction	0	Active	New 2023	None	None	Low	None	None
Bells Lake Meteorological Station	West Grey	N/A	- Precipitation - Air Temperature - Solar Radiation - Wind Speed and Direction	Unknown	Inactive	Poor	Good	Evaluate condition of equipment and station	Medium	Unknown	Unknown
Hanover Geonor Meteorological Station	Hanover	N/A	- Precipitation - Air temperature	Unknown	Inactive	Poor	Good	Evaluate condition of equipment and station	Medium	Unknown	Unknown
									TOTAL	**$28,000.00**	**$3,000.00**

Water Survey of Canada Stations with SVCA Equipment

Description						Condition		Recommendations		Cost Estimate	
Station Name	Location	Watercourse	Sensors	Record Length (Years)	Status	Equipment Condition	Structure Condition	Equipment Upgrades	Priority[1]	Equipment	Structure
Teeswater River at Teeswater	South Bruce	Teeswater River	- Water Level - Precipitation - Air Temperature - Water Temperature	18	Active	Good	None	Replace rain gauge; beyond operational lifespan	Medium	$2,000.00	None
Beatty Saugeen River near Holstein	Southgate	Beatty Saugeen River	- Water Level - Precipitation	17	Active	Good	None	Replace rain gauge; beyond operational lifespan	Medium	$2,000.00	None
Saugeen River above Durham	West Grey	Saugeen River	- Water Level - Precipitation - Air Temperature - Water Temperature	38	Active	Good	None	Replace rain gauge; beyond operational lifespan	Medium	$2,000.00	None
Saugeen River near Walkerton	Brockton	Saugeen River	- Water Level - Precipitation - Air Temperature - Water Temperature	15	Active	Good	None	Replace rain gauge; beyond operational lifespan	Medium	$2,000.00	None
									TOTAL	**$8,000.00**	**$0.00**

Water Survey of Canada Stations - No SVCA Responsiblities

Description					
Station Name	Location	Watercourse	Sensors	Record Length (Years)	Status
Saugeen River at Port Elgin	Saugeen Shores	Saugeen River	- Water Level	109	Active
South Saugeen River near Neustadt	West Grey	South Saugeen River	- Water Level	51	Active
Camp Creek at Allan Park	West Grey	Camp Creek	- Water Level	17	Active
Carrick Creek at Carlsruhe	West Grey	Carrick Creek	- Water Level	70	Active
N. Penetangore at Kincardine	Kincardine	N. Penetangore	- Water Level	21	Active
Teeswater River near Paisley	Arran-Elderslie	Teeswater River	- Water Level	51	Active

NOTE: Cost estimates do not account for staff time required to complete repairs and upgrades.

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Report #WR-2024-06

Report To: Chair and Directors, Saugeen Valley Conservation Authority

From: Erik Downing, General Manager/Secretary-Treasurer

Date: July 18, 2024

Subject: Information Sharing with Municipal Partners

Purpose: To seek endorsement from the Board of Directors to share all documentation related to special benefitting infrastructure with respective municipalities.

Recommendation

THAT the Board of Directors support transparency with the applicable municipal partners through the sharing of all available documents, drawings, and reports, both historic and current, related to water and erosion control infrastructure that is deemed special benefitting.

Background

Under the *Conservation Authorities Act*, the authority has the power to "determine the proportion of the total benefit afforded to all the participating municipalities that is afforded to each of them" (21.1 h). Conservation authorities carry out programs and services that serve provincial and municipal interests, with the common goal of local resource management.

The following table represents all SVCA water and erosion control projects, and their respective municipalities, that have been deemed special benefitting:

Municipality	Special Benefitting Project
Municipality of Arran-Elderslie	Paisley Flood Control Works
Municipality of Brockton	Walkerton Flood Control Works Pinkerton Dyke Silver Creek property
Town of Hanover	Hanover Dam
Municipality of Kincardine	Penetangore Slope Stability and Erosion Control Project Kincardine Gabion Wall Campbell Erosion Control Inverhuron Flood Control
Town of Saugeen Shores	Rayner Erosion Control Project
Township of Wellington North	Mount Forest Dam

Municipality	Special Benefitting Project
Municipality of West Grey	Durham Upper Dam Durham Middle Dam Durham Lower Dam Neustadt Dam and Floodwall Meux Creek Flood Control Works Neustadt Flood Control Works

Table 1: SVCA infrastructure projects deemed special benefitting.

Special benefitting maintenance costs are expensed through a 60/40 split between the benefitting municipality and general levy through cost apportionment. Special benefitting capital projects are primarily funded by the benefitting municipality, with deduction for any grants received to offset total costs.

Analysis

Historically, information sharing between agencies has varied. SVCA staff recommend that the Board of Directors endorse sharing all available documents, drawing and reports that were funded through special benefit billing, with their respective municipalities.

Transparency through information sharing is key to enhance relationships, build trust, and garner support for future maintenance and capital projects through improved understanding of infrastructure conditions.

On May 28, 2024, the Water Resources Committee approved Motion WR24-06:

> THAT the Water Resources Committee support transparency with the applicable municipal partners through the sharing of all available documents, drawings, and reports, both historic and current, related to water and erosion control infrastructure that is deemed special benefitting.

Financial Implications

There are no direct financial implications associated with the proposed enhancement of information sharing. However, by making this information readily available to the respective municipalities, SVCA staff believe that there could be potential cost savings for all parties involved. Improved access to information can streamline decision-making processes and reduce the need for duplicate efforts or redundant data collection.

Strategic Plan Linkages:

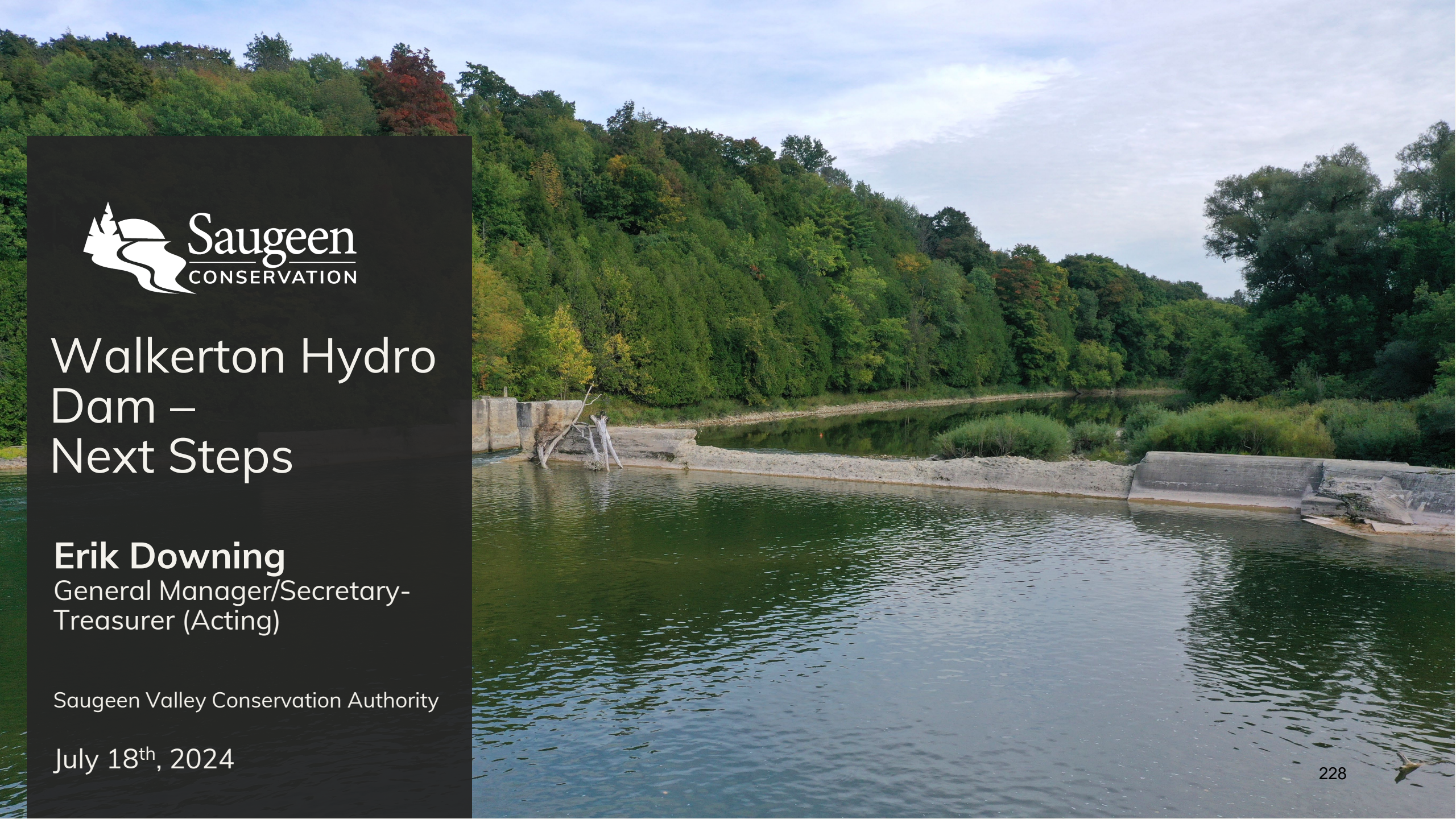
C1.3 Communication Planning, Campagns, and Action

C1.0 Cultivating strong relationships, increased collaborations

Prepared by:

< [Original signed by:]>

Erik Downing, General Manager/Secretary/Treasurer (Acting)



Walkerton Hydro Dam – Next Steps

Erik Downing
General Manager/Secretary-Treasurer (Acting)

Saugeen Valley Conservation Authority

July 18th, 2024

Walkerton Hydro Dam

- Considered a general levy project; no benefit to a specific municipality
- 77-acre parcel with dam was acquired by SVCA in July 1963 from Ontario Hydro
- In 1969, the hydroelectric portion of the dam was decommissioned

2022 D.M. Wills Assessment

- Dam was observed to be in very poor condition with areas of severe concrete disintegration, spalling, wide cracking, and efflorescence
- The dam poses a significant public safety hazard
- Prior to the use of this site as a Conservation Area, the dam should be fully decommissioned, and the site restored in order to ensure public safety
- The following public safety issues were identified:
  - Vegetation blocking upstream portage sign
  - No public safety measures in place to block access to the dam structure and no additional public safety signs at the dam

2022 Condition Assessment

Component	Condition Rating	Risk Rating
Concrete weir wall	Fair to poor	Moderate
Concrete control structure	Very poor	High
Concrete apron	Good	Low
Wooden apron	Poor	Moderate
Erosion at weir	Fair	Moderate
Erosion downstream of riverbank	Fair	Low

Engineering Recommendations

1) Block public access to the dam structure with fencing/gates and place public safety signage on the gates - **Estimate: $15,000**

2) Remove the vegetation from around the upstream portage sign and provide signage for a portage trail around the dam
   – **Estimate: $7,500** initial investment;
   $1,500 annual maintenance

3) Completely remove the dam and restore the creek channel - **Estimate: $750,000**
   a) A Class Environmental Assessment and a permit under the *Lakes and Rivers Improvement Act* may be required before the dam can be removed

WECI Funding & Next Steps

New to WECI

- Multi-year agreement:
  - Year 1 – April 1, 2024 to March 31, 2025
  - Year 2 – April 1, 2025 to March 31, 2026
- Only one application period for next 2 years
- Funding cannot be carried over from Year 1 to Year 2, but phasing is encouraged

Next Steps

- Initiate EA for removal of the Walkerton Hydro Dam, divided into three phases
- Await results of 2024 & 2025 WECI application to support EA
- Explore opportunities for public and private funding support for removal and restoration

2024 Budget

Financial Implications

- Anticipated cost of EA is $100,000, over three years
- EA Phase 1 to come from approved 2024 budget, pending WECI funding
- Total minimum estimate of $750,000 for dam removal and restoration; additional expenses anticipated

WRC Motion & Recommendation

Committee Motion – WR24-07

THAT the Water Resources Committee support SVCA staff in pursuit of removal of the Walkerton Hydro Dam; and

THAT the Water Resources Committee endorse initiation of the Walkerton Hydro Dam Environmental Assessment, Phase 1 in 2024, pending a successful WECI application.

CARRIED

Recommendation

THAT the SVCA Board of Directors support staff in pursuit of removal of the Walkerton Hydro Dam; and

THAT the SVCA Board of Directors endorse initiation of the Walkerton Hydro Dam Environmental Assessment, Phase 1 in 2024, pending a successful WECI application.


Saugeen
CONSERVATION
Thank you.

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Staff Report #WR-2024-08

Report To: SVCA Board of Directors

From: Erik Downing, General Manager/Secretary-Treasurer (Acting)

Date: July 18, 2024

Subject: Watershed Based Resource Management Strategy

Purpose: To provide the Board of Directors with opportunity to review the Watershed Based Resource Management Strategy prior to public consultation

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Recommendation

THAT the Board of Directors approve the Watershed Based Resource Management Strategy draft to support the next step of public consultation, as required by Section 21.1 of the Conservation Authorities Act and Ontario Regulation 686/21 (Appendix A).

Background

Section 21.1 of the *CA Act* mandates the delivery of essential programs and services by all conservation authorities (Category 1). Section 21.1.1 allows for the provision of Municipal Programs and Services in agreement with member municipalities (Category 2), while Section 21.1.2 authorizes the delivery of Other Programs and Services (Category 3). These are further detailed in Ontario Regulation 686/21.

Under Subsection 12(1) paragraph 3 of the Regulation, conservation authorities are required to develop a watershed-based resource management strategy, following guidelines outlined in subsections 12(4) to 12(9). This strategy, including a public consultation period, must be completed by December 31, 2024.

Analysis

The strategy sets out the guiding principles and objectives of SVCA, its mandatory Category 1 Programs and Services, and its non-mandatory Category 2 and 3 Programs and Services. The strategy will assist SVCA with the delivery of its mandatory programs and services and in identifying issues and risks which may impact effective delivery of other programs and services. It also identifies future desirable programs, services and actions that will help SVCA meet its objectives and long-term goals.

Next Steps

Pending approval from the SVCA Board of Directors, public consultation will commence on July 31, 2024. The consultation process is scheduled to conclude in time for a report to be prepared for presentation at the Board of Directors meeting on October 17, 2024. This timeline is critical

as the September meeting is dedicated to budget discussions, and there is no scheduled meeting in December, coinciding with the *CA Act* deliverable deadline.

Financial Implications

There are no financial implications associated with endorsing the Draft Watershed Resource Based Management Strategy and initiating public consultation.

The strategy identifies a number of goals for each department, with associated costs, but approval of the strategy is in no way a commitment of those funds.

Strategic Plan Linkages

R1.0 – Development of a resilient organization
R1.8 – CA Act Deliverables; Watershed Based Resource Management Strategy

Prepared by:

< [Original signed by:]>

Elise MacLeod, Manager, Water Resources

Approved by:
< [Original signed by:]>

Erik Downing, General Manager / Secretary-Treasurer (Acting)

Watershed Resource-Based Management Strategy

Month 2024

Saugeen Valley Conservation Authority

Watershed Resource-Based Management Strategy

Table of Contents

1. Introduction

1.1 Purpose

Saugeen Valley Conservation Authority (SVCA) has prepared this Watershed Resource-Based Management Strategy to meet the provisions set out under Section 21.1 of the *Conservation Authorities Act* and Ontario Regulation 686/21 (Appendix A).

The strategy sets out the guiding principles and objectives of SVCA, its mandatory Category 1 Programs and Services, and its non-mandatory Category 2 and 3 Programs and Services. The strategy will assist SVCA with the delivery of its mandatory programs and services and in identifying issues and risks which may impact effective delivery of other programs and services. It also identifies future desirable programs, services and actions that will help SVCA meet its objectives and long-term goals.

1.2 Regulatory Framework

The *Conservation Authorities Act* (CA Act) of Ontario is designed to facilitate the organization and implementation of programs that promote the conservation, restoration, development, and management of natural resources across watersheds.

Section 21.1 of the *CA Act* mandates the delivery of essential programs and services by all conservation authorities (Category 1). Section 21.1.1 allows for the provision of Municipal Programs and Services in agreement with member municipalities (Category 2), while Section 21.1.2 authorizes the delivery of Other Programs and Services (Category 3). These are further detailed in Ontario Regulation 686/21.

Under Subsection 12(1) paragraph 3 of the Regulation, conservation authorities are required to develop a watershed-based resource management strategy, following guidelines outlined in subsections 12(4) to 12(9).

1.3 About SVCA

Saugeen Valley Conservation Authority, established in 1950, is one of 36 conservation authorities in Ontario and a member of Conservation Ontario. The SVCA watershed spans 4,675 km² across the counties of Bruce, Dufferin, Grey, Huron, and Wellington, including the Saugeen, Penetangore, and Pine Rivers, as well as the Lake Huron shoreline.

SVCA is a non-profit, community-based organization dedicated to the protection, restoration, and management of the SVCA watersheds' natural resources. SVCA manages 15 conservation areas and four campgrounds, and undertakes a variety of environmental programs encompassing planning, implementation, monitoring, and reporting. SVCA also manages over 8,000 hectares of primarily forested land, and offers services to the public such as harvest contract work, support for the Managed Forest Tax Incentive Program, tree marking, and tree planting.

SVCA operates a comprehensive Flood Forecasting and Warning System, utilizing its hydrometric monitoring network to collect and analyze data on water levels, flow, precipitation, and weather conditions to assess flood risks. It also actively monitors surface water quality, groundwater quality and recharge capacity, and benthic macroinvertebrate populations across all ten sub-watersheds to gauge the impacts of land-use activities.

SVCA oversees the operation and maintenance of over 20 water and erosion control infrastructure projects within the watershed, including dams, dykes, and slope stability projects, some of which it owns, while others are maintained through agreements. These structures are essential for flood control, erosion prevention, ice management and recreation.

Additionally, SVCA regulates development and activities around natural hazards and provides input on applications made under the *Planning Act*.

1.3.1 Mission and Vision

Saugeen Valley Conservation Authority was established under the *Conservation Authorities Act*, which directs the Authority to balance human, environmental, and economic needs while focusing on the development, conservation, and restoration of nature. SVCA utilizes permits and enforcement actions as key tools to manage areas affected by natural hazards, ensuring that any alterations to these areas consider public safety and environmental sustainability.

The mission of SVCA is to build climate-resilient communities throughout the watershed by protecting people and property from both natural and human-made flooding hazards and fostering connections with the natural environment.

The vision of SVCA is for a thriving watershed that enhances the quality of life for the community both now and in the future.

1.3.2 Governance

SVCA is governed by a 15-member Board of Directors as appointed by SVCA's municipal partners. Representation on the board is based on population of the municipality within the watershed.

There are 15 member municipalities within the Saugeen watershed: the Municipality of Arran-Elderslie, the Municipality of Brockton, the Township of Chatsworth, the Municipality of Grey Highlands, the Town of Hanover, the Township of Howick, the Township of Huron-Kinloss, the Municipality of Kincardine, the Town of Minto, the Municipality of Morris-Turnberry, the Town of Saugeen Shores, the Municipality of South Bruce, the Township of Southgate, the Township of Wellington North, and the Municipality of West Grey.

2. SVCA Strategic Direction

2.1 2023-2033 Strategic Plan & Organizational Objectives

Saugeen Valley Conservation Authority has consistently advanced effective watershed management and environmental conservation. As an essential regional entity, SVCA strives to

safeguard the natural environment, protect against natural and man-made hazards, and strengthen the connection between the community and local ecosystems. Recognizing the evolving demands of environmental management, SVCA periodically reviews and updates its strategic direction through comprehensive planning and consultation.

The 2023-2033 Strategic Plan embodies SVCA's commitment to its mission and vision, developed through consultations with internal and external stakeholders, including staff, the public, developers, municipalities, and community partners. This inclusive approach has enabled a detailed assessment of organizational strengths and growth areas, forming a robust strategy for the upcoming decade focused on four strategic priorities: access, expertise, connection, and resiliency. These priorities aim to align SVCA's operations with its overarching goals, laying a foundation for a resilient and impactful future.

The Strategic Plan aims to enhance organizational excellence, adapt to changing regulations, and tackle emerging challenges. Key objectives include improving access to programs and services, boosting staff expertise, enhancing stakeholder relationships, and increasing organizational resilience. The anticipated benefits include enhanced public perception, more efficient management, better-informed staff, and stronger community ties, ultimately leading to improved conservation efforts and support for climate-resilient communities.

Implementation of the Strategic Plan will enhance service accessibility, raise public awareness of SVCA's role, and deepen the understanding of environmental conservation. It promotes cross-departmental collaboration, innovation, and professional development, fostering an environment where employees can advance their skills, share knowledge, and contribute to SVCA's success. The plan also emphasizes efficient management practices and data-driven decision-making to achieve organizational goals effectively.

2.2 Guiding Principles

Organizational aspirations establish the fundamental approach that drives SVCA's decision-making. These established goals provide the context for the objectives outlined in the 2023-2033 Strategic Plan:

Goal	Description
Organizational Excellence	Strive to continuously improve the quality of programs and services offered, ensuring a consistent and exceptional experience for the public, stakeholders, and partners.
Employee Empowerment	Invest in the professional development of staff by providing training, educational opportunities, and a supportive work environment to enable employees to excel in their roles and contribute to the organization's success.

Collaboration	Cultivate strong relationships with stakeholders, community groups, and other organizations to leverage resources, and maximize the impact of initiatives.
Accessibility and Inclusivity	Work towards ensuring that programs, services, and facilities are accessible and inclusive to all members of the community.
Financial Sustainability	Pursue responsible financial management, diverse funding sources, and strategic investments to ensure the long-term stability and sustainability of the organization.
Environmental Engagement	Promote responsible resource management to protect the natural environment, foster climate-resilient communities, and ensure a healthy watershed for future generations.

Table 1: SVCA's Guiding principles for decision-making

3. SVCA Inventory of Programs and Services

Section 21.1 of the *CA Act* establishes the concept of mandatory and non-mandatory programs and services, known as Category 1, 2, and 3:

- Category 1 - Programs and services that are required under the *CA Act* and must conform to provincial guidelines. Municipal agreements are not required.
- Category 2 - Non-mandated programs delivered to municipalities through specific agreements, such as a memorandum of understanding.
- Category 3 - 'Other programs and services' that conservation authority members deem necessary to align with the overall objectives of the *CA Act*, subject to funding agreements if municipal resources are utilized.

Beyond these specified programs and services, conservation authorities are empowered to offer any other programs and services that their Board considers beneficial and in line with the purposes of Section 21.1(2) of the *CA Act*, also categorized as Category 3.

The 2024 Saugeen Valley Conservation Authority Inventory of Programs and Services can be found in Appendix B.

3.1 Corporate Services

Corporate Services encompasses administration, finance, communications, and GIS, providing essential support across various operational areas.

The challenges facing Corporate Services are multifaceted. Legal expenses fluctuate significantly each year, making budgeting complex. Staff turnover and the subsequent knowledge transfer issues further complicate operations. Advances in technology require ongoing updates and training, which are difficult to manage due to staffing constraints and the constant need to meet evolving provincial standards in areas such as accessibility and health and safety.

Additionally, cybersecurity risks demand robust defenses, while unpredictable self-generated funding complicates financial planning.

The primary goal of Corporate Services is to enhance support across the Authority by expanding the staff compliment, which is challenging due to difficulty in securing necessary budgetary increases. Key positions aimed to be filled include a Human Resources Coordinator to manage staff needs and turnover, an IT Coordinator to bring IT services in-house, an Accounting Clerk to handle financial transactions more efficiently, and a part-time Scanning Clerk to digitize and manage archival information. The total annual salary for these roles is estimated at $235,000, a strategic investment intended to improve efficiency and regulatory compliance.

Goal / Recommendations	Cost per year
Accounting clerk	$50,000
Scanning clerk, part time	$25,000
Information technology coordinator	$80,000
Human resources and health and safety coordinator	$80,000
Total	**$235,000**

Table 2: Goals and financial considerations for Corporate Services

3.1.1 Administration, Finance, and Human Resources

This departmental area covers essential support functions such as administrative tasks, human resources, and employee health and safety. It also includes overhead costs like accounting, payroll, legal expenses, and asset management, which support the overall operations of the conservation authority, not tied directly to any specific program. Currently, human resources management is a task tied to the position of General Manager/Secretary-Treasurer.

3.1.2 Communications

Communications at SVCA is focused on raising public awareness of Authority priorities and interests. This includes natural hazards like flooding, drought, and erosion, and involves public relations, social media, and assisting all departments with internal and external communications related to SVCA programs and services.

3.1.3 Information Management and Geographic Information Systems (GIS)

This function is essential for data management and information sharing within the Authority as well as the public and stakeholders. It encompasses hardware and software management, data collection, storage, processing, and analysis. GIS is solely responsible for the mapping available to planning and regulations, and as required for certain portions of the SVCA's jurisdiction with Regulation mapping. This role will expand as mapping requirement of the Section 28 regulations, and additional technical studies, expand and update existing regulated areas mapping. Continuous updates and technological advancements are necessary to maintain functionality and efficiency. As SVCA continues its transition to digital files, data management will be required by all departments. GIS acts as the foundation of an accessible, transparent, organized operation.

3.2 Water Resources

Water Resources encompasses initiatives and infrastructure focused on water and erosion control, water quality monitoring, and a comprehensive flood forecasting and warning program. It also includes measures for low water response and drinking water source protection, as well as extensive monitoring of both surface and groundwater. These programs collectively aim to manage and safeguard water resources within the watershed.

The challenges facing Water Resources are complex and continually change based on emerging technologies and aging infrastructure. Outdated and unreliable monitoring equipment cause heavy reliance on staff to maintain, while providing, at times, inaccurate results. Inconsistent record keeping and data collection has resulted in data gaps and incomplete historical records. Aging infrastructure has increased need for maintenance and capital projects which are further complicated by available staff resources and funding. Additionally, awareness of liability and safety improvements have increased staff workload and affect budget planning. A primary challenge for all Water Resources programming is securing adequate funds to execute much-needed projects.

The main goal of Water Resources is to understand the complex dynamics of watershed watercourses and implement measures to inform and protect the public from natural hazards and flooding. This can be achieved through replacement of outdated technology, securing a watershed forecasting model to provide advanced notice of potential flood hazards, improvements to data collection and management, execution of maintenance and capital projects on aging water and erosion control infrastructure, with additional field services support. The total annual cost to achieve these goals is estimated to be $265,000 minimally, as capital infrastructure expenses vary annually and will inevitably increase as infrastructure continues to deteriorate.

Goal / Recommendations	Cost per year
Replacement of outdated flood forecasting and warning equipment	$15,000
Prepare and maintain an operational forecasting model for the watershed; initial capital cost of $150,000 is anticipated	$30,000
Improvements to data collection and data management, including quality control, quality assurance, operational plans, maintenance plans, and asset management	$30,000
Continuation of Category 3 programming for SVCA's Water Quality program (surface water sampling and benthic macroinvertebrate sampling)	$95,000
Complete major capital projects on water and erosion control infrastructure	Varies annually
Additional field services support, full time	$75,000
Total	**$245,000**

Table 3: Goals and financial considerations for Water Resources

3.2.1 Water and Erosion Control Infrastructure

SVCA works in cooperation with municipal partners and regulatory agencies to maintain several water and erosion control projects within the SVCA watershed. SVCA is currently responsible

for coordinating the inspection, maintenance, and repair of 23 structures, including 12 dams, 3 dikes, 4 slope stability and erosion control projects and 4 flood control channelization projects. Several of these structures or maintained partially, or in whole, through Category 2 agreements.

The purpose of SVCA's water and erosion control infrastructure varies from slope stability to flood control, erosion protection, recreation, ice management, etc. Although uses have changed with time, these major infrastructure projects were created to prevent loss of life, property damage and social disruption from flood and erosion processes.

SVCA has developed a Natural Hazard Infrastructure Asset Management and Operational Plan to guide the maintenance and future capital requirements of these systems. This plan details the condition of the infrastructure, lifecycle costs, and operational strategies, ensuring that each aspect is appropriately managed to meet current and future needs.

3.2.2 Flood Forecasting and Warning

SVCA's Flood Forecasting and Warning program, supported by a comprehensive hydrometric network, plays a crucial role in monitoring and managing flood risks within the watershed. This network, which includes 20 stream gauge stations, 12 rain gauges, and 2 weather stations, collects and analyzes various data such as stream flow, precipitation, and snow surveys, along with reviewing local weather conditions. Several stations are equipped with water and air temperature sensors to assess the potential for frazil ice development and ice jams.

When there is a potential for flooding or safety hazards, SVCA promptly issues flood messages to municipalities, media, first responders, neighboring conservation authorities, ministries, and the public. These alerts ensure that specific agencies can relay the information internally and activate necessary emergency response procedures promptly.

Furthermore, an Ice Management Plan has been developed to guide the Flood Forecasting and Warning program by discussing issues related to ice jams and frazil ice and recommending appropriate non-combative, mitigation measures. This proactive approach enhances the ability of SVCA to manage water-related hazards effectively.

3.2.3 Low Water Response

In partnership with the Ministry of Natural Resources and Forestry, SVCA helps to coordinate and support local response in the event of a drought as part of the Ontario Low Water Response Program. Below normal rainfall and warm weather can result in low stream flows and groundwater levels which affect the water available for consumption, agriculture and industry, as well as the health of the ecosystem.

SVCA's role in the program is to establish, coordinate and support a Water Response Team for the SVCA watershed region should low water become an issue. The Water Response Team recommends drought levels and response actions based on information and advice provided by staff. The response could range from issuing communications to municipalities, the media, local

water users, and the public advocating voluntary water conservation practices, advising on water use reductions, to making recommendations to the province concerning water allocations.

3.2.4 Drinking Water Source Protection

The Drinking Water Source Protection program is a mandated program under the *Clean Water Act, 2006.* Its primary objective is to safeguard the quality and quantity of current and future sources of municipal drinking water, thus ensuring the long-term availability of clean, safe drinking water for our communities.

In the Saugeen – Grey Sauble – North Bruce Peninsula Source Protection Region, SVCA collaborates with Grey Sauble Conservation Authority and the Municipality of Northern Bruce Peninsula to protect 38 municipal residential drinking water systems. The Source Protection Plan determines the areas that are vulnerable or at risk of contamination and outlines a set of policies to address identified threats.

3.2.5 Surface Water Quality

Under the Provincial Water Quality Monitoring Network (PWQMN), SVCA staff collect surface water samples at 14 sites monthly during ice-free periods (April to November). Samples are analyzed in a laboratory by the Ministry of Environment, Conservation and Parks (MECP), for parameters such as nitrates, metals, phosphorus, and chloride, among others.

SVCA staff complete monthly surface water sampling at 16 additional sites within SVCA's jurisdiction, during ice free periods. These sites were selected to fill important data gaps within the provincial monitoring program. These samples undergo analysis by trusted private laboratories and are tested for parameters consistent with the provincial program. Testing for *E. coli* at all provincial and SVCA sites is only completed under this program.

SVCA's Water Quality program serves to monitor, protect, and enhance water quality in the SVCA watershed. This program is managed through Category 3 agreements with all 15 member municipalities.

Reporting of surface water quality data is completed annually through a summary report as well as SVCA's online data portal. On the data portal, water quality is expressed using the Water Quality Index, which assigns a score based on an exceedance calculation: www.saugeenconservation.ca/data

3.2.6 Groundwater Quality

Under the Provincial Groundwater Monitoring Network (PGMN), SVCA monitors 23 aquifers situated in 13 different locations within the watershed. Water levels and water temperature in these wells are recorded on an hourly basis, and annual water quality samples are generally collected each Fall. Any results which surpass Ontario Drinking Water Quality Standards (ODWQS) are promptly reported to respective municipalities and the local Health Unit.

Consistent monitoring of groundwater levels and quality assists SVCA in making informed decisions related to resource management. Groundwater quality is generally reported every five years through Watershed Report Cards.

3.2.7 Benthic Macroinvertebrate Monitoring

Each year, SVCA staff collect benthic macroinvertebrates—organisms such as bottom-dwelling insects, crustaceans, worms, and mollusks—from rivers and streams across the watershed. These creatures serve as excellent indicators of water quality. The presence, absence, or relative abundance of various species provides invaluable insights into water quality and the extent and sources of habitat degradation based on their tolerance to pollution.

Benthic macroinvertebrate collection occurs at 20 sites within the SVCA watershed, 10 sites being sampled every year.

3.2.8 Watershed Report Cards

Every five years, Saugeen Valley Conservation Authority develops Watershed Report Cards following guidelines set by Conservation Ontario. These report cards offer a high-level summary of the state of SVCA's watershed, focusing on key environmental indicators such as groundwater quality, surface water quality, forest conditions, and wetland coverage.

The most recent Watershed Report Card, released in 2023, encompasses data collected from 2018 to 2022. This periodic assessment provides valuable insights into the health of the watershed, informing both the public and decision-makers about current environmental status and trends within the SVCA watershed.

3.3 Environmental Planning and Regulations

At Saugeen Conservation, the Environmental Planning and Regulations department fulfills a dual role. It administers permitting and regulatory functions under the *Conservation Authorities Act*, ensuring compliance with environmental standards and guidelines. Concurrently, the department provides comments to watershed municipalities under the *Planning Act*.

The challenges facing Environmental Planning and Regulations stem primarily from changes to provincial legislative changes, timelines, and availability of expert resources. Recent legislative changes have altered the extent of the regulated area, enacting an extensive review and public consultation process to update regulatory mapping. Restrictions have been implemented for comments on natural heritage, thereby losing a component of watershed-based review. Review of plans and technical studies require considerable staff resources and/or external expertise. Government funds and municipal agreements are often required to support completion of these technical studies and mapping projects. Also, an increase in natural hazard enforcement and compliance presents the need for additional staffing support and funding.

The objectives of Environmental Planning and Regulations are to prevent loss of life, minimize property damage and social disruption, minimize public and private expenditure, prevent hazardous development, ensure that development does not increase risks, prevent filling

and/or draining of natural storage areas, and prevent interference with the hydrologic function of wetlands. To effectively achieve these objectives, Environmental Planning and Regulations require support from an engineering staff member to aid in technical reviews, updated equipment for site inspections, and development of a more robust enforcement program including on-call staff and a dedicated enforcement vehicle.

Goal / Recommendations	Cost per year
Engineering staff, full time	$120,000
Updated site inspection equipment	$15,000
Enforcement vehicle	$80,000
On-call staff	$45,000
Total	**$260,000**

Table 4: Goals and financial considerations for Environmental Planning and Regulations

3.3.1 Permit Administration and Compliance Activities

SVCA has a legislative mandate to protect people and property from natural hazards under the *Conservation Authorities Act*. SVCA reviews permit applications, technical reports, natural hazard studies, mapping, and other relevant information to make informed decisions whether proposed development or alteration is in conformance with applicable policy.

In 2024, the Province of Ontario legislated conservation authorities throughout Ontario to adopt a more consistent approach to regulating development under Ontario Regulation 41/24 – Prohibited Activities, Exemptions and Permits. By reviewing proposals for activities in or adjacent to wetlands, steep slopes, valleys, watercourses, or shorelines, SVCA can ensure that development will not be impacted by these natural hazards, and that these natural hazards will not be worsened by development.

SVCA enforces legislation on lands regulated under the *Conservation Authorities Act*. Contravention of the *Act* may occur when development, interference, or alteration activities take place without a permit.

The permitting and compliance process offers a preventative consultation approach which promotes a balance between maintenance of healthy ecosystems and sustainable, safe development.

SVCA designates Provincial Offences Officers under Section 28 of the CA Act to oversee and enforce the Conservation Authorities Act relative to the development regulation. These officers are vital to SVCA as they help protect the integrity of the natural environment; this ensures that development activities, watercourse alterations and wetland interference do not impact public safety. Their duties include regular surveillance to monitor compliance with policy and regulation within the watershed.

The responsibilities of Provincial Offences Officers extend to responding to violations, such as unauthorized activities or developments within regulated areas. They play a crucial role in educating the public, helping to foster a culture of respect and care for natural resources.

Enforcement actions by Provincial Offences Officers can range from issuing warnings, to public and client education and corrective direction, to legal action.

3.3.2 Municipal Plan Input and Review

Municipal plan input and review furthers SVCA's mandate of natural resource conservation and management by providing comments on natural hazard policies, as they relate to planning and development applications. These advisory services support watershed municipalities in meeting their obligations and planning responsibilities under the *Planning Act*. These relationships are often formalized in Memorandum of Understanding (MOUs) or Service Level Agreements with municipal or county partners. These agreements are not required, as the CA Act indicates natural hazard comments are to be considered a mandatory Category 1 service.

Planning related applications circulated to SVCA for review typically include Official Plans and Official Plan amendments, zoning by-laws and amendments, subdivision plans, condominium plans, consents (severances and lot-line adjustments), minor variances, and site plans.

SVCA may also provide comments based on additional roles and responsibilities including as a watershed-based management agency, landowner, or regulatory body.

3.4 Forestry and Lands

Forestry and Lands at SVCA is dedicated to managing a comprehensive land inventory and strategic management plan for all properties under its control. This includes developing and implementing the Conservation Lands and Area Strategy, which dictates land use based on detailed site specifics and acquisition data.

Forestry and Lands enhances community engagement by maintaining recreational facilities and managing several campgrounds. It provides sustainable forestry management services on SVCA-owned and private lands, encouraging biodiversity and ecological health through initiatives like the Managed Forest Tax Incentive Program.

The Forestry and Lands department also enforces conservation area regulations through the appointment of Provincial Offences Officers, ensuring compliance with the property rules to ensure public safety and protect against property damage.

SVCA's Forestry and Lands department faces significant challenges, including aged infrastructure and limited accessibility on properties, compounded by funding shortages and an aging vehicle fleet. To address these issues, the department's goals include acquiring a skid steer for efficient trail maintenance, adding another truck to enhance operational capacity, and securing initial funding to improve trail accessibility. These strategic additions are essential for enhancing the department's ability to manage and conserve land effectively while ensuring safe and accessible public use.

Goal / Recommendations	Cost
Skid steer	$85,000
Vehicle	$70,000
Accessibility upgrades to properties	$100,000
Total	**$255,000**

Table 5: Goals and financial considerations for Forestry and Lands

3.4.1 Land Inventory and Management Plan

Ontario Regulation 686/21 requires the development of a land inventory for every property that the Authority owns or has responsibility over. The land inventory details property location, surveys, site plans, maps, acquisition date, and method of acquisition (i.e. purchase or donation).

Additionally, a Conservation Lands and Area Strategy has been developed for all lands owned or controlled by the Conservation Authority, including any interests in land registered on title. This strategy builds on the land inventory and guides the management and use of SVCA properties by setting objectives, reviewing programs and services, and reviewing land use, among others.

3.4.2 Conservation Area Enforcement

SVCA designates Provincial Offences Officers under Section 29 of the *CA Act* to oversee and enforce the rules governing conservation authority properties. These officers are vital for maintaining the integrity of natural landscapes and built structures while ensuring public safety within these spaces. Their duties include regular surveillance to monitor compliance of policy and regulations.

The responsibilities of Provincial Offences Officers extend to responding to violations, such as unauthorized activities or developments within protected areas. They play a crucial role in educating the public on the importance of adhering to regulations, helping to foster a culture of respect and care for natural resources.

Enforcement actions by Provincial Offences Officers can range from issuing warnings and fines, to public and client education and corrective direction.

3.4.3 Management and Maintenance of SVCA-Owned Lands

Expanding beyond forestry management, SVCA commits to enhancing SVCA owned land stewardship by implementing sustainable land use practices, restoration, and ecological monitoring. This holistic approach to land management not only aligns with the SVCA's strategic environmental goals but also upholds its obligations under Category 1 program and service requirements of the *CA Act*. The integrated efforts in stewardship, restoration, and monitoring underscore SVCA's dedication to enhancing watershed resilience and ecological sustainability.

3.4.4 Infrastructure and Management Planning

The management and maintenance of SVCA-owned recreational assets form a crucial part of its commitment to enhancing community engagement and promoting outdoor activities within the watershed. This commitment is evident in the ongoing development and upkeep of a variety of

recreational facilities, including trails, parking areas, washroom facilities, pavilions, and other essential infrastructure.

SVCA works to develop safe, and enjoyable outdoor experiences for nature enthusiasts. Trails are designed to minimize environmental impact while maximizing the enjoyment of the natural surroundings. The construction of any new parking facilities accompanies new trails, ensuring easy access for visitors.

In addition to trails and parking, SVCA prioritizes the installation and maintenance of washroom facilities and pavilions. These amenities are vital for enhancing visitor comfort and extending the time that families and groups can spend enjoying the natural beauty of SVCA's conservation areas. Pavilions offer sheltered spaces that can be used for educational programs, community events, or leisure activities, regardless of weather conditions.

Through these efforts, SVCA not only provides valuable recreational opportunities but also promotes conservation awareness among watershed residents and visitors. The continuous improvement and expansion of these recreational assets are integral to SVCA's broader mission of fostering a deeper connection between the community and the natural environment, ultimately contributing to the overall quality of life in the region.

3.4.5 Land Acquisition, Land Lease and Land Disposition

SVCA administers an extensive program for land acquisition, leasing, and disposition that aligns with its vision, mandate, and strategic objectives. Land acquisition involves obtaining property either through donation or purchase. The land lease program manages existing and potential leases to generate revenue, helping offset the costs of maintaining SVCA's land assets. Land disposition occurs when properties owned by SVCA are deemed surplus and no longer align with its strategic goals.

The categorization of these activities as Category 1, 2, or 3 depends on the method of acquisition—whether the land is donated or purchased.

3.4.6 Hazard Tree and Biodiversity Management

Hazard tree management occurs on SVCA-owned properties through regular inspection, risk assessment, and mitigation of hazardous trees. A hazardous tree is one that is showing signs of failure and/or damage to a particular resource. Consideration is given to failure potential, damage potential, and target value.

Hazard Tree Management is done to maintain healthy forestry and land resources, provide safe recreational opportunities, and minimize property damage. Mitigation measures could include tree removal, closure of facilities to the public, or documentation, depending on severity.

Similarly, biodiversity management involves restoring, protecting, and enhancing natural resources on SVCA-owned lands. This primarily involves inventory and management of invasive (or non-native) species and maintenance of detailed forest resource inventories. Invasive species can be detrimental to local biodiversity as they displace or outcompete native species,

disrupt food chains, and damage infrastructure, including water intakes or conveyance structures.

3.4.7 Campground Management

SVCA owns and operates four distinct campgrounds, each tailored to different camping preferences. Brucedale Conservation Area provides 52 campsites mainly for seasonal use, with additional options for transient campers. Durham Conservation Area is larger, with over 193 campsites available for both seasonal and transient visitors. Saugeen Bluffs Conservation Area caters to a variety of camping styles, featuring 181 sites that accommodate transient, seasonal, and horse camping. Meanwhile, McBeath Conservation Area offers a more secluded experience with 15 transient sites designed for backcountry camping.

The management of these campgrounds includes overseeing daily operations, maintaining facilities, managing reservations, and ensuring that each campground operates smoothly to provide a quality outdoor experience for all visitors.

3.4.8 Forestry Management – SVCA-Owned Lands

SVCA manages over 8,000 hectares of land, predominantly classified as managed forest, governed by a Forest Management Plan. This plan establishes a strategic vision to maintain diverse, vigorous, and healthy forest ecosystems within the SVCA watershed. It details various management activities including harvesting, regeneration, and conservation efforts aimed at meeting set objectives.

Additionally, specific operating plans for each property detail the ecosystems present and recommend actions to sustain them. Common forestry management tasks include monitoring for pests and diseases, trail maintenance, invasive species removal, enhancing wildlife habitats, and timber extraction. Forest management, encompassing both the development and implementation of the Forest Management Plan, is a Category 1 program and service.

3.4.9 Forestry Management – Private Lands

SVCA offers comprehensive forestry management services for private landowners. As an authorized Planting Delivery Agent (PDA), the organization provides tree planting services to enhance local biodiversity and forest coverage. Additionally, SVCA manages harvest contracts, supervising private woodlot harvests to mitigate issues such as excessive rutting, felling damage, and soil compaction, ensuring sustainable forestry practices. Landowners can also participate in the Managed Forest Tax Incentive Program (MFTIP), which educates them on basic forest stewardship and offers a significant reduction—75%—in municipal property taxes on eligible forested acreage.

SVCA's forestry staff work closely with private landowners to establish clear woodlot objectives, prepare management plans, and provide education tailored to the unique characteristics of each property. The funding for forestry management on private lands is sourced from self-generated revenue, supporting the continuation of these services.

3.4.10 Authority Fleet

SVCA owns and operates a fleet of vehicles essential for staff to efficiently deliver all programs and services. The fleet management encompasses acquisition and leasing of vehicles, as well as overseeing fuel provisioning, licensing, and the ongoing maintenance and fleet repairs.

4. Watershed Characterization

Watershed characterization is a high-level tool used to assess the health and sustainability of critical resources within a watershed. Watersheds include areas of land where all precipitation and surface flows convene to a common body of water; these include forests, agricultural lands, wetlands, watercourses, communities, etc.

Understanding the health and condition of a watershed is critical to ensure that land resources and human needs are balanced. Effective watershed management is critical to ensure that potentially negative impacts are identified and remediated, where possible.

4.1 SVCA Watershed Overview

The SVCA watershed is one of the largest drainage basins in southwestern Ontario. Spanning 4,675 km^2, it comprises three primary river systems that stretch from the Osprey Wetlands to the Lake Huron shoreline: Pine River, Penetangore River, and the Saugeen River. These watercourses are influenced by underlying soil types, and land use such as agriculture and development.

The SVCA watershed can be divided into ten distinct subwatersheds, each with unique natural and human-made features (Figure 1).

For more detailed information on SVCA's watershed characteristics, see the following documents:

- 1983, Saugeen Valley Conservation Authority – The Watershed Plan
- 2015, Drinking Water Source Protection – Watershed Characterization, Approved Assessment Report for the Saugeen Valley Source Protection Area

Figure 1. Map of the Saugeen watershed boundary, also known as the Saugeen Valley Conservation Authority. Featured are each of the 10 subwatersheds, major watercourses and neighbouring authorities.

4.2 Physical Description

4.2.1 Geology

Bedrock within the SVCA watershed is primarily composed of sedimentary rock from the Paleozoic Era (400 to 430 million years ago). There are five bedrock formations within the watershed, namely the Detroit River Group, the Bois Blanc Formation, the Bass Islands Formation, the Salina Formation, and the Guelph Formation. These formations generally consist of limestone, dolostone and shale. Exposed bedrock is uncommon within the watershed but has been noted in the headwaters around Markdale.

Glacial deposits composed of silt and sand till, gravel, and clay deposits comprise majority of the surface geology within the watershed. Sand and gravel deposits represent the middle and upper portions of the SVCA watershed, contributing to numerous, small, shallow aquifers. These aquifers are the source for a significant portion of the baseflow in the Saugeen River.

4.2.2 Topography

The SVCA watershed exhibits diverse topography ranging from flat ground to heavy rolling lands. Surface elevations generally are high in the east and lower in the west, towards the Lake Huron outlet. The highest elevation in the watershed is present east of Flesherton and denotes the boundary of the SVCA watershed.

4.2.3 Physiography

Physiography refers to the physical features on the ground surface. Within the SVCA watershed, there are four primary systems:

- The Port Huron Moraine is comprised of glacial deposits such as kames and drumlins, extending from Markdale to the central portion of the watershed.
- The southeast area of the watershed (Priceville and Mount Forest) consists primarily of sandy silt drumlin till plains.
- The Saugeen Clay Plain contains deep stratified clay (up to 38m deep) and extends from Glammis and Elmwood to the north limit of the watershed.
- The Huron Slope consists of silty and clay till, up to 3m thick, and extends west of the Saugeen Clay Plain to the Lake Huron shoreline.

4.2.4 Soil Characteristics

The soils within the SVCA watershed have formed under a temperate climate, exhibiting diverse characteristics across different regions. In the western part of the watershed, the terrain is predominantly composed of rolling hills with clay soils, which vary from well-drained to imperfectly drained clay loams. There are exceptions such as sand and gravel ridges found in municipalities along the Lake Huron shoreline.

Moving to the central and eastern boundaries of the watershed, the soils are primarily loams situated on rolling terrain. In central Grey County, the landscape features hilly and stony topography, with loam soils prevalent. This area is marked by irregular and steep slopes that often lead to the formation of numerous depressions, where poorer draining, organic soils accumulate.

Organic soils, indicative of very poor drainage, are scattered throughout the watershed, underscoring the varied soil and drainage conditions across the region.

4.3 Hydrology

4.3.1 Surface Water Hydrology

The SVCA watershed is comprised of ten subwatersheds, each exhibiting unique environmental characteristics. SVCA's subwatersheds are summarized below in Table 6.

Water flow in the SVCA watershed is typically robust during the spring and fall seasons, driven by rainfall and snowmelt. Throughout the rest of the year, the watercourses primarily rely on groundwater sources to maintain their flow, reflecting the watershed's reliance on seasonal weather patterns and groundwater replenishment.ost watercourses in the SVCA watershed flow well during the spring and fall due to rain and snowfall. Watercourses are fed by groundwater for the remainder of the year.

Subwatershed	Description	Drainage Area (km^2)
South Saugeen River	Primarily consists of agricultural land and outlets into the Main Saugeen River by Hanover.	798
Beatty Saugeen River	Originates in wetlands within the Township of Southgate. Drainage occurs slowly creating swamps, and poorly drained depressions.	274
Upper Main Saugeen River	Primarily composed of agricultural land.	782
Rocky Saugeen River	River's source can be traced to significant wetlands (Bells Lake and the Beaverdale Bog).	282
North Saugeen River	Primarily composed of agricultural and forested land	269
Teeswater River	Contains the Greenock Swamp, the largest forested wetland in Southern Ontario	683
Lower Main Saugeen River	The Saugeen River, within this subwatershed, spans 76km in length.	908
Lake Fringe	Predominantly agricultural with intense development along the lakeshore.	254
Pine River	Agricultural and densely developed lakeshore areas, before outletting into Lake Huron.	195
Penetangore River	Primarily used for agriculture.	192

Table 6: Description and drainage areas of SVCA's ten subwatersheds

4.3.2 Hydrogeology

There are two major groundwater sources within the watershed: bedrock aquifers and overburden aquifers. There are eleven regional bedrock aquifers in the watershed; these aquifers are generally flow from southeast to northwest based on the bedrock surface elevation.

Comprehensive groundwater studies have been completed at the County level for the region. These studies focus on characterization of groundwater resources and well head protection monitoring.

4.3.3 Climate

Warm summers and cool winters reflect the climate regime of the SVCA watershed. Influence of Lake Huron and Georgian Bay moderate temperature extremes, and to some extent, precipitation. The prevailing winds within the watershed are westerly with average annual precipitation of 1115mm.

Historical average monthly precipitation amounts (in mm) from 1981 to 2010 are detailed below:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
129	86	78	71	84	74	70	79	106	98	110	130

Table 7: Historical monthly precipitation for the SVCA watershed (1981-2010)

4.3.4 Forests, Riparian Zones, and Wetland Coverage

The SVCA watershed has an extensive network of forests, riparian areas, and wetlands as summarized in Table 8.

Subwatershed	Total Area (ha)	Forest Cover (ha)	Riparian Cover (ha)	Wetland Cover (ha)	Percent of Total Area
South Saugeen River	79,534	17,748	7,167	13,992	48.9%
Beatty Saugeen River	27,375	8,644	2,681	6,307	64.4%
Upper Main Saugeen River	78,225	28,066	7,853	18,543	69.6%
Rocky Saugeen River	28,285	12,611	1,987	6,302	73.9%
North Saugeen River	26,815	11,945	2,045	5,857	74.0%
Teeswater River	68,209	20,002	5,197	16,627	61.3%
Lower Main Saugeen River	90,837	17,601	9,312	8,412	38.9%
Lake Fringe	25,423	7,188	1,874	3,630	49.9%
Pine River	19,368	1,501	1,336	650	18.0%
Penetangore River	19,223	2,071	1,591	777	23.1%
Total	463,294	127,377	41,043	81,097	NA

Table 8: Forest, riparian and wetland coverage within the SVCA watershed (2023)

4.3.5 Forests

The SVCA watershed is home to hardwood forests typical of the Great Lakes - St. Lawrence Lowlands Forest type. However, these natural landscapes have faced gradual reduction due to development pressures and agricultural expansion. In the eastern part of the watershed, while the forests are fragmented, they tend to have more extensive coverage compared to the western and lakeshore regions. On average, forest cover constitutes 27.5% of the watershed, reflecting the ongoing impact of human activity on these critical ecosystems.

Forests provide essential benefits that are crucial for the health and well-being of all living organisms. Beyond their critical role in carbon storage, forests buffer the effects of extreme weather conditions, such as storms and floods. Forests support biodiversity, ecosystem health, and offer invaluable resources and protection of livelihood.

4.3.6 Riparian Zones

Riparian zones refer to the transitionary land between watercourses and dry, upland regions. Generally, most watercourses in the SVCA watershed have a natural vegetation riparian zone along their length. The eastern portion of the watershed has more extensive riparian coverage than the west. However, the promotion of best management practices, targeting agriculture, has increased the extent of buffer zones and reduced the number of farms where cattle have direct access to the watercourse and riparian zone.

Robust riparian zones offer important functions and benefits to the ecosystem, including filtering and preventing sediment, nutrients, and pollutants from entering the watercourse. These zones also help stabilize watercourse banks and reduce soil erosion, in addition to providing important fish and wildlife habitat.

4.3.7 Wetlands

Wetlands make up approximately 17.5% of the SVCA watershed. There are four types of wetlands: bogs, fens, marshes and swamps. Swamps are the most abundant type of wetland in the watershed and are characterized by wooded wetlands with 25% tree or shrub cover. Standing to gently flowing water occurs at least seasonally in swamps. The SVCA watershed is home to Ontario's largest forest wetland, the 8,094ha Greenock Swamp Wetland Complex.

There are few bogs and fens within the SVCA watershed, most found around the Greenock Swamp, Osprey wetlands, Harrison Lake, North Lakelet Complex, and Portlaw fen. Generally, bogs and fens are found in conjunctions with swamp or marsh dominated sites. Bogs are peat-covered depressions with a high-water table and mosses, while fens are peat lands with layers of decomposed peat. The water and peat in a fen are less acidic than a bog. The North Lakelet Complex, between Clifford and Mildmay, is the largest fen in the watershed at 252ha.

There are very few coastal and rivers marshes in the SVCA watershed. Marshes are wet areas periodically or permanently inundated with water and characterized by rooted plants along the shoreline (i.e. cattails, bulrush, waterlilies, reeds, willows, etc.). The largest marsh in the SVCA watershed is the Clifford-Harriston Complex, west of Mount Forest, at 47ha.

4.4 Land Uses

Agriculture is the predominant land use within the SVCA watershed. The area also features a variety of other land uses including rural living, cottage and camp development, industrial and commercial activities, aggregate extraction, and recreational areas. For a more detailed description of land uses related to the watershed, refer to the 2015 Drinking Water Source Protection – Watershed Characterization for the Saugeen Valley Source Protection Area, which provides comprehensive insights into how these areas are utilized.

4.4.1 Rural Areas

The SVCA watershed is predominately rural, which is reflected in low population densities. Increased severances in rural areas have resulted in a wider distribution of residents within previously dominated agricultural lands.

There are dozens of small settlement areas within the watershed with only a few hundred people residing. The typical configuration of these areas includes a church, few commercial establishments, and several homes focused on a crossroad. Nearly all rural residential properties are serviced by private wells and septic systems.

4.4.1 Cottage and Camp Development

The SVCA watershed is a popular destination for tourists and seasonal residents, offering a range of recreational opportunities that significantly increase its population during the warmer months. Cottage communities along the Lake Huron shoreline and surrounding numerous inland lakes like Lake Rosalind, Pearl Lake, Pike Lake, and Marl Lake, coupled with several commercial campgrounds, draw large numbers of visitors.

This seasonal influx can effectively double the population in these areas, introducing various challenges related to water usage and protection. The increase in inhabitants, many of whom rely on groundwater sources and septic systems, necessitates careful management to ensure resource sustainability.

4.4.2 Industrial/Commercial Sectors Distribution

The industrial and commercial sectors within the SVCA watershed are robust and diverse, supporting a variety of operations including power generation, manufacturing, consumables, and wood production. Notably, the watershed is home to Bruce Power, one of the largest employers in the region, playing a crucial role in the local economy. Alongside Bruce Power, Ontario Power Generation, Gay Lea Foods, and the Nuclear Waste Management Organization also significantly contribute to the area's industrial landscape. Subsequently, the watershed hosts numerous companies within the nuclear supply chain, reinforcing its status as a key hub for nuclear industry. These major industrial sites are integral to the economic vitality of the watershed, providing significant employment opportunities and supporting the local and regional economies.

4.4.3 Aggregate Extraction

Active aggregate extraction in the Saugeen Conservation watershed plays a significant role due to the largely rural nature of these areas. Quarries and aggregate extraction sites are crucial to monitor, as their operations can significantly impact the natural and physical environment. Understanding the locations and operations of these sites is essential for source protection, as they can adversely affect local wetlands and disrupt the water table.

In addition to potential impacts on groundwater sources, aggregate operations often require substantial water withdrawals for daily activities, such as aggregate washing. Typically, the water used in these operations is discharged back into the groundwater and surface water systems after use. Active quarry operations are distributed throughout the watershed, with notable concentrations near Port Elgin, Durham, and Teeswater.

4.4.4 Agriculture

Agriculture is a vital economic activity within the watershed, with approximately 57.4% of the land classified as Canada Land Inventory class 1-3, denoting it as prime agricultural land. In this area, cropland dominates over pasture, reflecting a strong emphasis on crop production.

While agriculture contributes significantly to the local economy and provides essential food resources, it also has a dual impact on the environment. Positively, well-managed agricultural practices can help preserve soil health and support biodiversity. However, agriculture can also lead to negative environmental impacts such as water pollution from runoff, soil erosion, and habitat loss due to land conversion and intensive farming practices. These challenges highlight the need for sustainable agricultural practices that balance economic benefits with environmental stewardship.

4.4.5 Protected Areas

Within the SVCA watershed, numerous areas are safeguarded for their natural values through ownership and conservation easements held by various levels of government (Provincial, Municipal), the Conservation Authority, and non-governmental organizations. Protected areas include lands owned by the SVCA, two Provincial Parks, and extensive forest areas managed by Bruce, Grey, and Wellington Counties. These conservation efforts are crucial for preserving the region's ecological integrity and natural heritage.

4.5 Water Uses

The waters of the SVCA watershed are utilized for a variety of purposes including residential, municipal, industrial, agricultural, and recreational.

The most common source of domestic and municipal water supply is from groundwater. However, the lakeshore communities of Port Elgin, Southampton, and Kincardine use water from Lake Huron and the community of Paisley sources its water from the Teeswater River. All surface water and groundwater sources meet domestic year-round needs for water quality treatment while maintaining appropriate levels of disinfection.

The industrial water supply for most industries within the watershed is from municipal sources. Most industrial uses are for equipment cooling and processing.

Agricultural water use is more dominant in the warmer, summer months where the water supply is often from surface water sources such as rivers, streams, and creeks. During the winter, confinement of animals in barns typically shift water usage to groundwater sources via wells. There is minimal agricultural irrigation within the watershed.

Finally, surface water sources are frequently used in the SVCA watershed to support swimming, fishing, and other recreational activities. The Saugeen River is the primary recreational watercourse as the Penetangore and Pine Rivers often do not have sufficient water levels or flow year-round to support these activities.

4.6 Existing Technical Studies

The SVCA watershed region conducts various studies and projects aimed at enhancing natural hazards management programs. These initiatives include floodplain management, watershed hydrology studies, updating regulation area maps, assessing flood forecasting systems, revising floodplain policies, and managing the Lake Huron shoreline. These projects typically span several years and are heavily reliant on the availability of human resources and funding. They are essential for effectively managing and mitigating natural hazards in the region, ensuring both environmental protection and public safety.

Please refer to Appendix C for a summary of watershed-related technical studies. Please note that specific water and erosion infrastructure reports have not been included in this summary.

5. Strategic Summary

Saugeen Valley Conservation Authority has outlined strategic goals for 2023-2033 that aim to enhance organizational excellence, promote environmental stewardship, and ensure financial sustainability. These goals focus on improving service quality, empowering employees through professional development, and fostering collaboration with community partners to enhance resource management and accessibility. The strategy emphasizes responsible financial practices and proactive engagement in environmental conservation to support climate-resilient communities.

Specific departmental objectives include expanding the Corporate Services team to improve internal support, modernizing Water Resources technology to enhance risk management, and strengthening Environmental Planning and Regulations with better technical and enforcement capabilities. Additionally, the Forestry and Lands Department plans to upgrade equipment and improve infrastructure to address accessibility and effectively maintain the health of managed lands.

Overall, these strategic initiatives are designed to ensure SVCA effectively manages natural resources, mitigates environmental risks, and serves the community more efficiently, while adapting to challenges such as budget constraints and aging infrastructure.

6. Public Engagement

During the periodic reviews of the Watershed Based Resource Management Plan, stakeholders and the public will be consulted. This consultation process will be tailored to match the extent of the revisions being considered and will comply with all relevant regulatory requirements. This approach ensures that community input is integral to the planning process, fostering transparency and collaboration for watershed management.

7. Document Review

This document will undergo a review every four years to allow Saugeen Valley Conservation Authority to adjust its programs and priorities in response to changing political, socio-economic, and environmental conditions. Such a schedule ensures that each newly appointed Board of Directors, which turns over every four years, has the opportunity to review, update, and approve the Watershed-Based Resource Management Strategy. Additionally, ongoing or annual reviews by staff will support and streamline the comprehensive four-year review process, maintaining the strategy's relevance and effectiveness.

8. Conclusion

Saugeen Valley Conservation Authority's Watershed-Based Resource Management Strategy represents a comprehensive and adaptive approach to managing and preserving the watershed's natural resources. By carefully delineating the watershed into manageable sections

and sub-watersheds, SVCA has tailored its efforts to address needs and challenges from each department and enable stakeholders to focus their efforts. This strategy not only addresses current environmental concerns but also anticipates future challenges, ensuring sustainable use and protection of water resources, land, and biodiversity.

The significance of watershed management lies in its ability to ensure a sustainable supply of water, prevent soil erosion, maintain biodiversity, contribute to climate change mitigation, and support social and economic well-being. Through ongoing monitoring, community engagement, and proactive management, SVCA is committed to maintaining the health and vitality of the watershed, securing a resilient and thriving ecosystem for future generations. This strategic effort underscores SVCA's dedication to environmental conservation and its pivotal role in enhancing the quality of life within the community it serves.

(4) The watershed-based resource management strategy referred to in paragraph 3 of subsection (1) shall include the following components:

1. Guiding principles and objectives that inform the design and delivery of the programs and services that the authority is required to provide under section 21.1 of the *Act*.

2. A summary of existing technical studies, monitoring programs and other information on the natural resources the authority relies on within its area of jurisdiction or in specific watersheds that directly informs and supports the delivery of programs and services under section 21.1 of the *Act*.

3. A review of the authority's programs and services provided under section 21.1 of the *Act* for the purposes of,

    i) determining if the programs and services comply with the regulations made under clause 40 (1) (b) of the Act,
    ii) identifying and analysing issues and risks that limit the effectiveness of the delivery of these programs and services, and
    iii) identifying actions to address the issues and mitigate the risks identified by the review and providing a cost estimate for the implementation of those actions.

4. A process for the periodic review and updating of the watershed-based resource management strategy by the authority that includes procedures to ensure stakeholders and the public are consulted during the review and update process.

(5) Subject to subsections (6) and (7), a watershed-based resource management strategy may include programs and services provided by the authority under sections 21.1.1 and 21.1.2 of the *Act*.

(6) If, in respect of programs and services the authority provides under subsection 21.1.1 (1) of the *Act*, a memorandum of understanding or other agreement is required, a watershed-based resource management strategy may not include those programs and services unless the memorandum of understanding or other agreement includes provisions that those programs and services be included in the strategy.

(7) If, in respect of programs and services the authority provides under subsection 21.1.2 (1) of the *Act*, an agreement is required under subsection 21.1.2 (2), a watershed-based resource management strategy may not include those programs and services unless the agreement includes provisions that those programs and services be included in the strategy.

(8) The authority shall ensure stakeholders and the public are consulted during the preparation of the watershed-based resource management strategy in a manner that the authority considers advisable.

(9) The authority shall ensure that the watershed-based resource management strategy is made public on the authority's website, or by such other means as the authority considers advisable.

Appendix B: Inventory of Programs and Services

Appendix C: Technical Studies

Name of Study	Municipality	Year of Completion
Chesley Floodplain Mapping	Arran-Elderslie	1986
Village of Paisley Flood Control Study	Arran-Elderslie	1990
Erosion Control Study of the Saugeen River in the Township of Brant	Brockton	1980
Walkerton Floodplain Mapping	Brockton	2009
Flood Control Study, Town of Durham	West Grey	1977
Flood Control Study in the Village of Neustadt	West Grey	1977
Town of Durham Floodplain Mapping Study	West Grey	1983
Holstein Flood Control Study	West Grey	2000
Former Town of Durham Frazil Ice Study	West Grey	2005
Durham Creek Flood Hazard Mapping Project	West Grey	2024
Hanover-Knappville Floodplain Mapping	Hanover	1977
Knappville (Hanover) Flood Control Study	Hanover	1983
Hanover Stormwater Management Study	Hanover	1993
Pine River Watershed Study	Huron-Kinloss	1991
Huron-Kinloss Dynamic Beach Study – Phase 2	Huron-Kinloss	2008
Huron-Kinloss Dynamic Beach Study – Phase 3	Huron-Kinloss	2010
Flood Hazard Mapping in the Township of Huron-Kinloss – Lakeshore Watercourses	Huron-Kinloss	2024
Flood Hazard Mapping in the Township of Huron-Kinloss – Pine River	Huron-Kinloss	2024
Study of the Penetangore River in the Town of Kincardine	Kincardine	1978
Tiverton Flood Relief Study	Kincardine	1985
Slope Stability and Erosion Control Study – Town of Kincardine, Ontario	Kincardine	1987
Geotechnical Investigation Penetangore River Valley Study	Kincardine	1991
Inverhuron Flood Control Study	Kincardine	1993
Kincardine Floodplain Mapping – Penetangore River	Kincardine	2005
Town of Southampton Floodline Mapping Study	Saugeen Shores	1988
Town of Southampton Flood Control Study	Saugeen Shores	1992

Assessment of Flood and Dynamic Breach Hazards, Pilot Study – Town of Southampton	Saugeen Shores	1996
Flood Hazard Mapping in the Town of Saugeen Shores	Saugeen Shores	2024
Stormwater Drainage Study, Village of Mildmay	South Bruce	1972
Floodline Mapping report for Otter Creek (Village of Mildmay)	South Bruce	1983
Teeswater Floodplain Mapping Study	South Bruce	2017
Proton Township Water Use Study	Southgate	1970
Mount Forest Floodplain Mapping	Wellington North	1993
Mount Forest Reservoir Rehabilitation Study	Wellington North	1996
Greenock Swamp Study	Watershed	1979
The Watershed Plan, Saugeen Valley Conservation Authority	Watershed	1983
Lake Huron Shoreline Processes Study	Watershed	1990
A Management Strategy for Wetland Systems in the Upper South Saugeen Watershed	Watershed	1990
MacGregor Point Wetland Complex, Wetland Evaluation (Prepared for: Ontario Ministry of Natural Resources)	Watershed	1993
Lake Huron Shoreline Management Plan	Watershed	1997
Watershed Characterization, Approved Assessment Report for the Saugeen Valley Source Protection Area	Watershed	2015

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Staff Report #WR-2024-09

Report To: SVCA Board of Directors

From: Erik Downing, General Manager/Secretary-Treasurer (Acting)

Date: July 18, 2024

Subject: Ice Management Plan

Purpose: To seek endorsement of the Ice Management Plan

Recommendation

THAT the Board of Directors endorses the Ice Management Plan, as required by Section 21.1 of the Conservation Authorities Act and Ontario Regulation 686/21 (Appendix A).

Background

Ontario Regulation 686/21 mandates that:

4. (1) An authority shall provide programs and services for ice management within its area of jurisdiction, if the authority determines that ice management is necessary to reduce the risks associated with natural hazards referred to in subsection 1 (1).

(2) Programs or services provided under subsection (1) shall include the development and implementation of an ice management plan on or before December 31, 2024 that identifies,

(a) how ice within the authority's area of jurisdiction may increase the risk of natural hazards; and

(b) the steps that are necessary to mitigate these risks, including identifying equipment and resources needed to carry out these steps.

Analysis

An Ice Management Plan was developed to meet the provisions set out under Section 4 of O.Reg. 686/21. This plan outlines the fundamentals of river ice processes, details existing ice-related issues and monitoring within SVCA's jurisdiction and explores potential preventive measures to mitigate risks. The Ice Management Plan has been appended to this report.

Strategic Plan Linkages

R1.0 – Development of a resilient organization

R1.8 – CA Act Deliverables; Ice Management Plan

Approved by:

< [Original signed by:]>

Erik Downing, General Manager / Secretary-Treasurer (Acting)

Ice Management Plan

Date: July 2024

Record of Revisions

Revision #	Date	Description
V.1.0	July 2024	Issued for SVCA Board endorsement

Record of Plan Holders

Organization	Individual or Department	Date	Number of Copies
Town of			X
Municipality of			X
Ontario Provincial Police			X
			X
SVCA Staff Members			X
SVCA Board of Directors			X

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1. Introduction

Saugeen Valley Conservation Authority (SVCA) is one of the 36 conservation authorities in Ontario dedicated to protecting, restoring, and managing our natural resources.

The Saugeen watershed encompasses 4,675 km^2 in the counties of Bruce, Dufferin, Grey, Huron, and Wellington. SVCA's jurisdiction includes the Saugeen, Penetangore, and Pine Rivers, as well as the adjoining Lake Huron shoreline. For further information please visit our website: www.saugeenconservation.ca

1.1 Overview

SVCA has prepared this Ice Management Plan to meet the provisions set out under Section 4 of Ontario Regulation 686/21:

1) An authority shall provide programs and services for ice management within its area of jurisdiction, if the authority determines that ice management is necessary to reduce the risks associated with natural hazards referred to in subsection 1 (1).
2) Programs or services provided under subsection (1) shall include the development and implementation of an ice management plan on or before December 31, 2024, that identifies,
    a) how ice within the authority's area of jurisdiction may increase the risk of natural hazards; and
    b) the steps that are necessary to mitigate these risks, including identifying equipment and resources needed to carry out these steps.

1.2 Purpose

The primary purpose of this Ice Management Plan is to present the basics of river ice processes, identify known ice problems within SVCA's jurisdiction, establish an ice monitoring program, and discuss possible preventative measures to reduce risk.

This is considered a living document and may be updated as additional information becomes available.

2. Ice Processes

During the winter, various factors such as weather conditions, topography, stream morphology, and hydrology contribute to the production of ice.

This Ice Management Plan focuses on the processes associated with the development of river ice. These ice processes have been categorized as those that occur during freeze-up, typically early in the winter, and those that occur at break-up, typically in the spring. In many areas of Ontario, weather fluctuations can bring mid-winter cold and warm spells and significant precipitation events; this means that freeze-up and break-up can occur multiple times throughout the winter.

Repeated freeze-up and break-up processes complicate river ice management and are often a contributing factor to the development of ice jams and flooding. Flooding and ice production pose substantial challenges to communities, affecting infrastructure, displacing residents, and disrupting economic activities, in addition to influencing the physical and ecological processes of a watercourse. Ice formation can have positive ecological effects by replenishing wetlands and maintaining hydrologic processes.

2.1 Freeze-up

Air temperature and water velocity are the two main factors that control ice-forming processes during winter freeze-up. As temperatures get cooler in the fall, the interaction between air and water causes surface water temperatures to drop, allowing the formation of ice. Other factors influencing freeze-up processes include sun exposure, wind, rain, channel slope, and water depth.

The first type of ice that usually appears on a watercourse is called border ice. As winter progresses, border ice grows downward toward the channel bottom, and across the width of the watercourse. The formation of an ice cover affects water levels, as well as other hydraulic and hydrologic conditions of the river, through ice jamming or water storage.

The following sections describe the typical types of ice formation that occur in a river during the freeze-up period.

2.1.1 Border Ice

Border ice typically forms in areas with low flow and low velocity, particularly along the shores of lakes and streams. Border ice forms first along the watercourse edge and expands inward toward the center of the channel. Ice expansion across the channel is reduced when velocities are greater than 1.2 m/s and therefore, border ice rarely covers the entirety of the watercourse.

2.1.2 Frazil Ice

Frazil ice starts as small ice particles, often accumulating into what looks slush at the water's surface. It forms throughout the water column, in more turbulent water, where water is well mixed with air. Air temperature must be approximately -10°C or colder for frazil ice to form, allowing the supercooling of water to a temperature slightly below freezing.

Frazil ice is "sticky" and will adhere to surface ice, other frazil ice, and objects below or above the surface, if the supercooling of water continues. Due to its "sticky" nature, frazil ice can attach to the riverbed and form anchor ice (Section 2.1.3) or become more buoyant and form ice pans (Section 2.1.4). Frazil ice can adhere to structures and cause blockages, resulting in significant challenges for water supply intakes or power stations, for example. Frazil ice often provides a supply of ice for other types of processes.

2.1.3 Anchor Ice

Anchor ice is formed when frazil ice attaches to rocks, boulders, submerged roots, or infrastructure in the riverbed. Anchor ice is often visible underwater in turbulent or rocky sections. It can grow large and contribute to flooding by reducing the cross-sectional area of a watercourse.

As the riverbed warms through the day, anchor ice may release and float to the surface. Released anchor ice often carries bits of substrate encased in it, such as sand, wood detritus, and cobbles.

2.1.4 Ice Pans

Frazil ice tends to accumulate and cluster together into pan-shaped formations that rise to the water surface. As freeze-up progresses, the size of the ice pans increases (sometimes forming large ice rafts) and so does their concentration on the surface. Eventually they can bridge, at channel constrictions or river bends, or reach a pre-existing ice cover, at which point they can come to a rest and become part of the ice cover.

2.1.5 Ice Cover Progression

As ice pans reach the leading edge of existing ice cover, they can either: be swept under the ice cover and deposit on the underside of it; or stop at the ice front and build onto the ice cover, depending on the approach velocity. Ice pans swept beneath the ice would contribute to the thickness of the ice cover. Ice plans stopping at the ice front promotes advancement upstream. Thermal and mechanical processes can further solidify the ice cover formed by this process.

Due to the lower density, the ice cover typically floats. Its presence raises the water level, due to its displaced area and added frictional resistance to flow[1].

2.1.6 Hanging Dams

Hanging dams are formed when the accumulation of frazil ice against an ice cover progresses upstream. This occurs when the velocity at the upstream edge of the ice cover is low. Hanging dams raise the water level at the dam site and further upstream. Hanging dams can become very large, and even attach to the riverbed, restricting the cross-sectional area. Increased riverbed or bank scouring can also occur as the river tries to force its way through the narrowing opening under a hanging dam.

2.1.7 Freeze-up Ice Jams

A stationary ice cover is subject to several acting forces, including its own weight and drag underneath, as well as resistance from friction and the internal strength of the ice[2]. As ice cover expands, so to do the forcing acting upon it. This often causes an increase in the thickness and roughness of the ice. Water levels are also impacted by this shift, also known as a *freeze-up (or*

[1] The ice cover increases the wetted perimeter and the surface roughness that impacts the head losses associated with the water flow.
[2] The influence of riverbanks on ice is dependent on the channel width.

formation) ice jam. Due to their size and increased roughness, freeze-up jams can cause flooding.

2.1.8 Aufeis

Water that finds its way on top of an ice cover and is readily exposed to cold temperatures can freeze resulting in ice formations that are called *aufeis*, *icing* or *naled*. These can progressively grow in layers and can become extensive as the supply of water continues.

Aufeis are typical in small rivers when ice cover attaches to the riverbed; these are a common source of culvert obstructions in northern Canada.

2.2Ice Breakup

As temperatures warm, ice cover weakens and starts to breakup; this process is generally accompanied by increased flows in the spring. There are generally two mechanisms that contribute to ice breakup: thermal and mechanic processes. River ice breakup is usually a combination of both, with the prevalence of either process defining the type of breakup.

2.2.1 Thermal Breakup

Thermal breakup is the melting, decay and deterioration of ice cover through warming and the absorption of solar radiation. As the hours of daylight increase, areas of open water can absorb energy from the sun. This results in warmer water passing beneath the ice cover and transferring energy to the ice sheet. Thermal breakup is generally gradual as the ice melts in place, with little or no movement, while flows remain relatively low.

2.2.2 Mechanical Breakup

Mechanical breakup results from rapidly increasing flows that break apart a well-formed ice cover, releasing it from the watercourse banks. Fragments of ice are transported downriver in an *ice run*. This process can result in breakup ice jams (Section 2.3) if the *ice run* is stopped at a location downstream and the ice fragments collect until the ice jam is released. Breakup ice jams are known to cause flooding due to their large size and increased roughness. Ice runs can also cause erosion and impact infrastructure along the river.

Mechanical breakup initiation, progression, and ice jam severity depends on several factors such as existing ice conditions, stream morphology, weather and hydrology. Mechanical breakup conditions will be unique each year, but overall breakup sequences may have specific patterns for each river system. Although the mechanical breakup depends on many factors, a common rule of thumb is to expect that the ice would start to break when the water level, as a result from increased flows, lifts the ice cover by an amount in the range of 1.5 to 3 times the ice cover thickness.

In parts of Ontario, mechanical breakup can occur in the middle of the winter, as well as several times during the same winter-spring season. This can exacerbate flooding, when a subsequent breakup run is blocked by the remains of a previous ice jam that has not yet been released.

2.3 (Breakup) Ice Jams

The term ice jam refers to those that form when an *ice run* is stopped downstream and ice fragments begin to collect; or by other mechanisms (formation or freeze-up jams). Generally, the term is more often related to ice runs, as the releases cause more significant flooding. Historically, breakup ice jams are the main cause of ice-related flooding within the SVCA watershed.

Engineering and science related to predicting ice jams is still in early development. However, it is known that ice jams often occur at the same locations, where the following conditions are present:

- Narrow river sections or river bends;
- Obstructions caused by structures, sand bars, or by the presence of an ice cover (for instance at the confluence of rivers or at a river mouth); or
- Changes from steep to gentler riverbed slope.

The cycle of releasing and jamming can reoccur until the ice thaws or breaks up enough to move through the river system. Ice jams can release gradually with little to no impact, or suddenly, creating a surge of water and ice downstream causing flooding. The latter condition has been called *Jave*, as it resembles the flood wave caused by a dam break. Ice jams can also scour the river's channel, bed, and banks.

3. Primary Flood Damage Centres and Ice Prone Areas

Although ice-related flooding can occur throughout the watershed, four (4) primary flood damage centres have been identified: Durham, Neustadt, Paisley and Walkerton (Figure 1). Flood damage centres refer to communities that are most vulnerable to property damage and loss of life during flood events. Of the flood damage centres, Durham and Paisley are most susceptible to ice jam-induced flooding.

While Southampton is not considered a flood damage centre, based on historical events, it has been included in this Ice Management Plan due to the potentially severe consequences of an ice jam at this location.

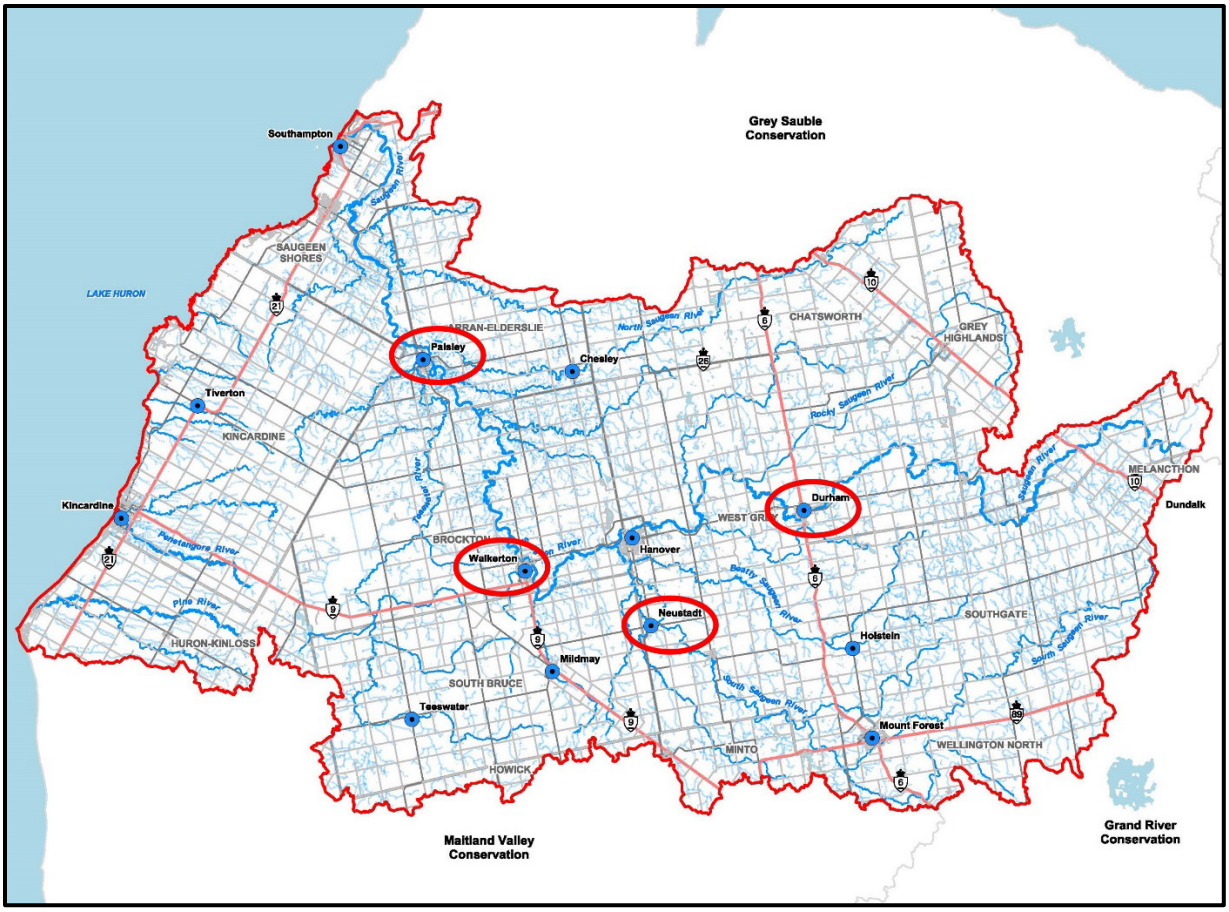

Figure 1. Primary flood damage centres in the SVCA watershed (circled in red).

3.1 Durham

Frazil ice production along the Saugeen River, upstream of Durham is an annual occurrence (Figure 2). Historically, frazil ice in this area has caused significant flooding and even evacuations.

Although frazil ice often passes through Durham without issue, there have been numerous reports of flooding due to changes in stream morphology throughout the Town. At Town limits, the Saugeen River changes gradient from steeper to gentler, causing a reduction in water velocity. The change in velocity leads to the accumulation of ice floes and frazil ice, which if left unaddressed, result in channel blockages and rising water levels upstream.

In 1986, channel modifications were completed at the Town limits (i.e. Ice Management Channel) to improve ice conveyance to an area further downstream. Roads were also constructed to allow access for heavy equipment should ice need to be excavated before or during an event.

3.1.1 January 1997 Flood Event

In January 1997, a unique combination of weather conditions and streamflow produced large quantities of frazil and slush ice in the Town of Durham. Due to high flows, a solid ice cover was

not present upstream of the Town and therefore the reaches remained fully open longer than usual. An extended period of cold and high winds caused the continuous production of frazil and slush ice in the open, upstream areas of the Saugeen River. Frazil ice rapidly accumulated on a partially formed ice cover, raising water levels, and flooding parts of the Town of Durham (Figure 3).

On January 9th, 1997, a state of emergency was declared, and 220 residents were evacuated from their homes. Local schools and businesses were closed in response to the flooding. Heavy equipment worked continuously removing ice from the channel, with little success reducing water levels. Eventually, a relief channel was dug through the adjacent parkland, successfully reducing water levels in flooded areas. Most evacuated residents were able to return by January 24th, 1997.

An SVCA staff report following the event, suggested that the volume of ice arriving from upstream of the Town of Durham exceeded the natural capacity of the valley to store it (SVCA, 1997). Similar events to that January 1997 also occurred in 1976 and 1981.

3.1.2 January 2005

Similar weather and streamflow conditions to those in January 1997 were experienced again in the Town of Durham in January 2005. The early use of heavy equipment to remove frazil ice from the Ice Management Channel, before it accumulated, is thought to have prevented blockage of the channel and subsequent flooding.

3.1.3 February 2018

From February 19th to February 21st, 2018, heavy rainfall in combination with snowmelt caused widespread flooding throughout the SVCA watershed. Large amounts of floating ice and debris in the Saugeen River caused a blockage at Durham Upper Dam, at the upstream limit of the Town of Durham. This blockage was so significant that it resulted in water overtopping both the north and south embankments of the dam causing localized flooding and damage to the adjacent flood control dyke.

Figure 2. Frazil ice production in the Saugeen River, upstream of Durham. Anchor ice can also be observed in the foreground of the photo.

Figure 3. In January 1997, a unique combination of weather conditions and streamflow produced large quantities of frazil and slush ice that resulted in severe flooding in the Town of Durham.

3.2 Paisley

The Village of Paisley is located at the confluence of the Teeswater and Saugeen Rivers and is susceptible to both open water and ice-induced flooding. Due to significant flood concerns, an extensive network of dykes, flapgates, catchbasins, and weirs were constructed within the Village between 1981 and 1986. The realignment of Willow Creek and an additional dyking system was included in this project.

Under normal winter conditions, the Teeswater and Saugeen Rivers develop an extensive ice cover. During ice breakup events, large volumes of ice migrate downstream towards the Village of Paisley. Ice jamming is common in this area due to sharp bends in both watercourses upstream and at the confluence of the two rivers. An additional concern at the confluence, is the clearance under the County Bridge, which, when combined with high water levels, can restrict ice movement and cause ice jamming. These issues put municipal and county infrastructure at risk of ice-induced flooding.

3.2.1 February 2018 Ice Jam

The most recent ice jam event in the Village of Paisley occurred between February 19th and 24th, 2018. Below average air temperatures in December 2017 and January 2018 created an extensive ice cover on the Teeswater and Saugeen Rivers. From January 12th to 14th, a warm spell, accompanied by rain, caused ice to breakup and jam downstream. A cold spell followed and froze many of the ice jams in place for the February 19th event[3].

The February 19th event was in response to heavy rainfall over a three-day period, averaging 62.5 mm throughout the watershed. For Paisley, an ice jam on the Teeswater River, upstream of the County Bridge, was the primary concern. As water levels continued to rise, clearance beneath the bridge was reduced to virtually zero. Had the ice jam released at this time, serious flooding would have occurred in the northern areas of Paisley. Fortunately, when the ice jam released, water levels had receded enough that ice passed freely under the bridge. However, some roads along the Teeswater River were closed to due to flooding.

During this event, there was also an ice jam located on the Saugeen River, east of Dundas Street. This ice jam was less significant as the adjacent bridge had clearance to pass the jam, even at peak flows.

[3] The 2017-2018 winter conditions, including the occurrence of multiple ice breakups through the winter, caused similar ice jam flooding along the Grand River, in Southern Ontario, on February 21st, 2018 (KGS Group, 2019)

Figure 4. Ice jam on the Teeswater River, upstream of the County Bridge in Paisley, February 23rd, 2018.

3.3 Southampton

Annually, during spring breakup, large volumes of ice move through the Saugeen River in Southampton. Typically, ice is able to reach Lake Huron without issue, however extensive ice cover on the lake can affect this movement. When ice back-ups at the lake outlet, water levels increase in Southampton and areas further upstream. Depending on the severity, this situation could cause flooding in numerous locations along the Saugeen River.

Historical records indicate that in 1945 an ice jam occurred mouth of the Saugeen River, causing water levels to rise 12 feet (3.66 metres) further upstream. Increased water levels caused ice floes to spread out over the Southampton docks, resulting in property and building damage.

3.4 Other Locations

Several ice jams have occurred in other areas throughout the SVCA watershed, although less frequently than those noted above. Maintaining awareness of all ice jams and ice jam potential is an integral component of an effective ice management strategy.

4. Natural Hazard Risks

4.1 Impact on Natural Hazard Infrastructure

River ice can damage infrastructure or reduce its functionality or serviceability. The effects of ice on infrastructure depends on the type and magnitude of ice formation and the timing and duration. The impacts of ice on natural hazard infrastructure may include:

- Changing the conditions where the infrastructure is located (i.e. diverting flow, scouring or eroding the channel around the structure; undermined the substructure, etc.);
- Scouring or removing material from the infrastructure itself (i.e. undermining the supporting embankment; or
- Overtopping dams, blocking culverts, or displacing bridges or structural components.

4.2 Erosion

Riverbank and slope erosion is a common occurrence in the SVCA watershed, especially along bluffs of the Saugeen River (Figure 5). River ice can impact erosion during the freeze-up, growth, and breakup stages:

- Anchor ice that releases from the riverbed can carry materials with it, causing erosion of the riverbed.
- Erosion can occur under an ice sheet depending on how it forms and conveys flows.
- After break-up, during an ice run, ice moving downstream may scour riverbanks and remove bank vegetation, thus making them more susceptible to erosion.

The conditions associated with ice breakup also, generally, contribute to erosion due to high flows (Beltaos & Burrell, 2021).

Figure 5. Bank erosion on the Saugeen River, east of Hanover.

4.3 Dynamic Beach Hazard

Flood hazard zones are unpredictable within dynamic beach areas, as water levels and topography change dramatically from season to season and year to year. These changes are caused by natural processes, leading to the buildup and removal of sand, rocks and other sediment. When topography changes, so does the location of the flooding hazard.

Ice ridges are produced from strong winds and currents pushing ice onto shore; this can result in property damage and increased erosion as ice melts and shifts. Conversely, ice can also prevent shoreline erosion by blocking waves, and freezing beach areas, reducing wave-driven loss of sediment (BaMasoud & Byrne, 2012).

5. Ice Management Strategy

SVCA's current ice management strategy is a proactive monitoring-based approach that involves remote, routine monitoring of watershed conditions and visual documentation of river ice and flow conditions. This approach ensures that the best possible information regarding ice breakup potential and jamming risk is available.

5.1 Routine Monitoring

SVCA routinely monitors watershed conditions as part of the flood forecasting and warning program, using data collected by an extensive hydrometric network. SVCA's hydrometric network consists of snow survey stations, stream gauge stations, and rain gauge stations located throughout the watershed, as further described below.

5.1.1 Snow Surveys

Snow measurements help quantify the amount of water held in the snowpack; this assists SVCA in understanding the potential impacts if all snow were to melt, at once, during a winter or spring thaw. Using this information, runoff can be predicted as well as increasing water levels, further informing ice breakup monitoring.

Currently, the SVCA has 14 snow survey locations across the watershed that are monitored bi-weekly from November to May. The frequency of surveys is increased prior to anticipated thaw events.

5.1.2 Stream Gauge Stations

SVCA's stream gauge network consists of 10 SVCA-owned stations and 10 Water Survey of Canada stations. Several stream gauge stations are equipped with water and air temperature sensors which improve the understanding of ice development, growth, decay and breakup potential. Data from these temperature sensors are also used for the predictive methods described in Section 5.3.

5.1.3 Rain Gauge Stations

SVCA's rain gauge network consists of 11 non-heated tipping bucket rain gauges and 2 meteorological stations; this equipment allows SVCA to monitor weather systems as they move through the watershed. Data collected from this component of the hydrometric network is used to inform potential runoff and water level increases.

5.2 Field Monitoring

The field monitoring component of SVCA's ice management strategy involves the visual assessment and documentation of ice conditions throughout the watershed.

5.2.1 Monitoring Sites

Monitoring sites have been established throughout the watershed to document ice formation, growth, decay and break-up (Table 1). Monitoring locations have been focused near flood damage centres that are prone to ice-induced flooding. The Ice Monitoring Program commences annually on December 1st and ends once the threat of ice-induced flooding has passed, typically around March 31st.

Monitoring locations have been designated as either primary or secondary locations. Primary locations are monitored routinely, whereas secondary locations are only be monitored as conditions warrant, such as:

- Extended periods of cold temperatures.
- The onset of rain on snow events.
- During an active Flood Outlook, Flood Watch, or Flood Warning related to ice break-up and jamming potential.
- When ice-induced flooding is imminent or already occurring.

Additional locations may be added to the Ice Monitoring Program, as needed, or as more information becomes available noting other ice-prone areas.

Monitoring Location	Latitude	Longitude	Watercourse	Designation	Frequency
Concession 2 WGR	44.185776	-80.787480	Saugeen River	Primary	Daily
Durham Upper Dam	44.179034	-80.808723	Saugeen River	Primary	Daily
Durham Middle Dam	44.178474	-80.817222	Saugeen River	Primary	Daily
Durham Lower Dam	44.174581	-80.820940	Saugeen River	Primary	Daily
Moffat's Hole	44.171292	-80.826203	Saugeen River	Primary	Daily
Brant-Elderslie Townline	44.267509	-81.215659	Saugeen River	Primary	Weekly
Saugeen River above Paisley	44.280580	-81.234588	Saugeen River	Secondary	As required
James Street	44.298862	-81.266015	Saugeen River	Primary	Weekly
Bruce Road 1	44.300539	-81.281454	Teeswater River	Primary	Weekly
Bruce Road 40	44.366339	-81.314232	Saugeen River	Secondary	As required
Bruce Road 3	44.456148	-81.326100	Saugeen River	Primary	Weekly
Southampton Harbour	44.500621	-81.373800	Saugeen River	Primary	Weekly

Table 1. Monitoring locations.

5.2.2 Record of Observations

Information collected at each monitoring location includes both qualitative and quantitative data, gathered either on or over the watercourse (i.e. bridge). Manual measurements of ice are not included in this program due to the potential safety risks. Monitoring generally includes

documenting conditions on open water, moving ice, stationary ice, and ice jams. All information is collected using the data management tool Fulcrum. Fulcrum allows for the creation of custom forms, georeferenced records, and attached photos. Records are synced to Fulcrum's online portal where they can be retrieved. A hard copy field form, including the same information collected using Fulcrum, is provided as Appendix A.

5.3 Predictive Methods

The following predictive methods are used by SVCA to determine ice thickness during the growth and decay stages; this information is key when predicting breakup.

Ice breakup is predicted based on the understanding that an increase of water level that is 1.5 to 3 times that of the current ice thickness will initiate mechanical breakup of ice. Once breakup has started, ice jams can form in any location downstream of the breakup. Currently, no methods exist for predicting the location of ice jams due to the many contributing factors. In this regard, experience and historical records are often the most effective tool for predicting ice jam locations.

5.3.1 Thermal Ice Cover

SVCA calculates ice thickness using methods described in the New Brunswick River Ice Manual (New Brunswick Subcommittee on River Ice, 1989). This method uses accumulated freezing degree days (AFDD), calculated using data from SVCA's air temperature sensors, and an empirical coefficient (Table 2) to estimate ice thickness, as follows:

$$hi = ai(AFDD)^{0.5} (1)$$

Where,

hi = solid ice thickness in centimetres

ai = empirical coefficient

AFDD = accumulated freezing degree days (°C)

Ice thickness is estimated throughout the winter. It should be noted that this method is only applicable up until the date of peak annual AFDD (USACE, 2004).

Empirical Coefficient	Conditions
2.7	Windy lake without snow
1.7 - 2.4	Average lake with snow
1.4 - 1.7	Average river with snow
0.7 - 1.4	Sheltered small river with rapid flow

Table 2. Empirical coefficients used to predict ice thickness.

5.3.2 Ice Decay

When temperature trends begin to warm above 0°C, ice thickness and strength is reduced by solar radiation (New Brunswick Subcommittee on River Ice, 1989). A simple formula proposed by (Bilello, 1980) is used by SVCA to estimate reductions in ice thickness due to mild weather, as follows:

$$\Delta hi = a_2 D_T(3)$$

Where,

Δhi = change in ice thickness in centimetres

A_2 = empirical coefficient between 0.4 and 1.0 cm/°C

D_T = accumulated degree-days of thaw (above a base of -5°C)

Estimates of ice decay are made weekly, after maximum AFDD has been reached.

6. Preventative Measures

While SVCA is not responsible for flood combat, the MNR Ice Management Manual (Ministry of Natural Resources, 1984) and New Brunswick River Ice Manual (New Brunswick Subcommittee on River Ice, 1989) provides a number of preventative measures that could be considered by municipalities. Prior to undertaking any preventative measures, it is important to understand overall conditions and where ice may travel to, if displaced. An area of safe storage is needed to prevent moving the issue further downstream. Preventative measures must consider public and operator safety. If actions are taken upstream of a bridge or barrier, consideration must be given for clearance for ice to pass freely beneath.

The success of preventative measures often depends on specific site conditions, such as weather, ice characteristics, time of year, channel morphology, among other factors. Long-term solutions to control or prevent ice often require engineering studies and applicable permitting.

6.1 Dusting

Dusting is a form of surface ice treatment to promote thermal decay; it involves spreading of a thin layer of a dark coloured material over the ice to increase heat absorption. The dusting material could be sand, fly ash, or another dark coloured substance that is suitable to enter a watercourse. Dusting can be done to prevent an ice jam at ice prone sites or near flood damage centres. Dusting is not effective directly on ice jams due to the surface roughness which inhibits heat absorption.

The timing of dusting is very important:

- If done too early, it dusting material could be covered by a late snowfall which would reduce its effectiveness.
- If done too late, the ice could become too weak and unsafe to spread the dusting material, or the ice could breakup and jam before the dusting material takes effect.

6.2 Ice cutting

In some rivers (i.e. Red River in Manitoba and Athabasca River in Alberta), the ice cover has been scored, with specialized equipment, to weaken it and facilitate swift passage of the ice run during breakup.

6.3 Ice Breaking by Blasting

Blasting can be effective to:

- Break an ice cover into floes which can be transported downstream;
- Weaken a solid ice cover prior to the arrival of upstream ice; or
- If properly placed, remove ice jams by blasting the ice sheet which might be holding the jam in place. Blasting an ice jam itself is rarely effective and often dangerous.

When blasting, the explosive charge is usually placed in the water underneath the ice. A much greater charge would be required if placed on or within the ice. The placement of an explosive charge is dangerous work that must be performed by trained personnel. Adequate safety, rescue and first aid measures should be in place before the commencement of any blasting work.

6.4 Ice Breaking by Boat

Ice breaking by boat can be effective, if the cover is floating and there is sufficient depth for operation of the vessel (Ministry of Natural Resources, 1984). This activity would typically be undertaken by boats that have been specifically designed for ice breaking (i.e. an ice breaking vessel or the Amphibex). The only practical locations where ice breaking by boat could be undertaken in the SVCA watershed would be at the river outlets: Saugeen River (Southampton), Penetangore River (Kincardine) and Pine River (Lurgan Beach).

For ice breaking assistance from the Canadian Coast Guard, a protocol has been established that allows Conservation Authorities to notify the Coast Guard directly, on behalf of a municipality, of the intent to request services (Appendix B).

6.5 Construction Equipment

Ice can be removed physically from a watercourse channel using back-hoes, excavators, and draglines, working from riverbanks. This can be carried out both to prevent an ice jam or to remove a jam that has already occurred. While this measure is relatively cost effective, it is limited to use in areas where equipment operation will not be affected and where ice can be reached.

6.6 Channel Modifications

Watercourse channels can be modified by streamlining them, or removing obstacles, to facilitate the passage of an ice run, or avoid potential grounding of the ice. The long-term success of these type of measures is difficult to guarantee and frequent maintenance may be required. These measures should consider environmental effects and often require permits and approvals.

6.7 Natural Measures

Abandoned channels, such as oxbow branches on meandering rivers, can act as natural settling locations for ice floes moving downstream. With ice tending to flow in straight lines rather than following riverbends, these channels provide areas for ice to settle outside of the main channel helping to prevent buildup and jamming. Adjacent wetlands can also provide benefit. Maintaining these areas throughout the watershed would provide much-needed storage for ice.

7. Protective Measures

Protecting areas is a method that has been extensively used prevent damage associated with flooding, both for open water and ice-induced conditions. Measures typically include construction of floodwalls or dykes and often require detailed engineering studies and environmental approvals.

8. Climate Change

Changes in temperature and precipitation can greatly affect flow patterns and ice formation in river systems. Literature has noted that increases in surface and air temperature observed globally have shortened the duration of river ice coverage in recent years, particularly within the northern hemisphere. This has resulted in delayed freezing and earlier ice breakup dates (Burrell, Beltaos, & Turcotte, 2023). In temperate regions like southern Ontario, climate change could result in reduced ice coverage or ice-free conditions throughout the year.

The overall effect of climate change on river ice processes requires more investigation and documentation. In some circumstances, climate change could cause more frequent/severe ice jams while in other cases it could have the opposite effect (Turcotte, Burrell, & Beltaos, 2019). More frequent mid-winter ice breakups bring greater risk of downstream ice jams and subsequent flooding. Should these breakups be followed by periods of refreezing, frazil ice may be produced (Burrell, Beltaos, & Turcotte, 2023) or ice jams could freeze in place, increasing water levels (Das & Lindenschmidt, 2021). There is a great deal of uncertainty of how climate change will ultimately effect watersheds in Ontario as it relates to ice processes.

9. Future Monitoring and Improvements

SVCA has researched emerging technologies and monitoring improvements that, in the future, could be explored to enhance the current ice management strategy.

9.1 Ground Penetrating Sonar

Ice thickness is one of the most important defining factors of an ice jam, and a variety of methods exists to determine it. Manual measurements have been used most extensively, but emerging technologies such as ground penetrating sonar are providing more options for greater spatial characterization. Potential safety risks exist with manual ice measurements. Ground

penetrating radar could be used to provide a continuous measurement of ice thickness, while ensuring operator safety.

9.2 High Resolution Satellite Imagery

The use of satellites for remote sensing of river ice behavior is an emerging technology; there are decreased access costs, as well as advancements in the observational technology available for satellite payloads. Satellite remote sensing can also classify ice covers, determine breakup time, characterize breakup progression, and determine breakup initiation points.

9.3 Drones

Drones can provide real-time aerial imagery of river ice behavior otherwise unavailable from satellites or aircraft. Many areas can be easily accessed by drone, however operational ranges can prevent the use along the full river extent or in remote areas. Drones are also not operational in areas within the vicinity of an airport or hospital which could inhibit their use in some areas of cities.

9.1 Ice jam modelling

Ice jam modelling can provide information about the anticipated magnitude and impact of ice jam at locations where ice jams have historically occurred; this can inform the preparation of flood maps for ice-induced flooding.

9.2 Flood Mapping

As the frequency and intensity of severe weather events continue to grow, establishing and maintaining accurate floodplain mapping is critical for public safety and to prevent property damage and business disruptions.

Flood mapping allows municipalities and conservation authorities to guide development away from flood-prone areas to support better emergency management and planning.

There are several types of maps, including:

- Flood delineation used to define the flooding area for a historical or recurrent event
- Floodplain maps define the regulatory floodplain for the Regulatory Flood, as indicated in Provincial guidelines
- Flood hazard maps define the hazard associated with flooding, generally showing different levels of hazard
- Flood risk maps which highlight critical areas under different risk scenarios

Conservation Authorities can use flood mapping to inform risk assessments, real-time flood forecasting, floodplain land-use regulation, flood remediation, watershed planning, and emergency preparedness.

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Appendix A – River Ice Monitoring Form

Monitoring Location: _____ Observer: _____

Date: _____ Time: _____

Open Water Conditions

Upstream

Present:	Yes / No										
Location in Cross-section (facing downstream)	Left-bank				Middle					Right-bank	
% Width Open	0	10	20	30	40	50	60	70	80	90	100
Length of Channel											

Downstream

Present:	Yes / No										
Location in Cross-section (facing downstream)	Left-bank				Middle					Right-bank	
% Width Open	0	10	20	30	40	50	60	70	80	90	100
Length of Channel											

Moving Ice Conditions

Upstream

Present:	Yes / No										
Location in Cross-section (facing downstream)	Left-bank				Middle					Right-bank	
% of Cross-section	0	10	20	30	40	50	60	70	80	90	100
Ice Type	Frazil/Slush Ice pans Ice Floes Small Blocks Large Blocks Other_____										

Downstream

Present:	Yes / No										
Location in Cross-section (facing downstream)	Left-bank				Middle					Right-bank	
% of Cross-section	0	10	20	30	40	50	60	70	80	90	100
Ice Type	Frazil/Slush Ice pans Ice Floes Small Blocks Large Blocks Other_____										

Stationary Ice Conditions

Upstream

Present:	Yes / No
Location in Cross-section (facing downstream)	Left-bank Middle Right-bank
% of Cross-section	0 10 20 30 40 50 60 70 80 90 100
Ice Type	Border Ice Sheet Ice Anchor Ice Other _____
Ice Condition	Good Deteriorating Candled
Water Present on Top of Ice	Yes / No

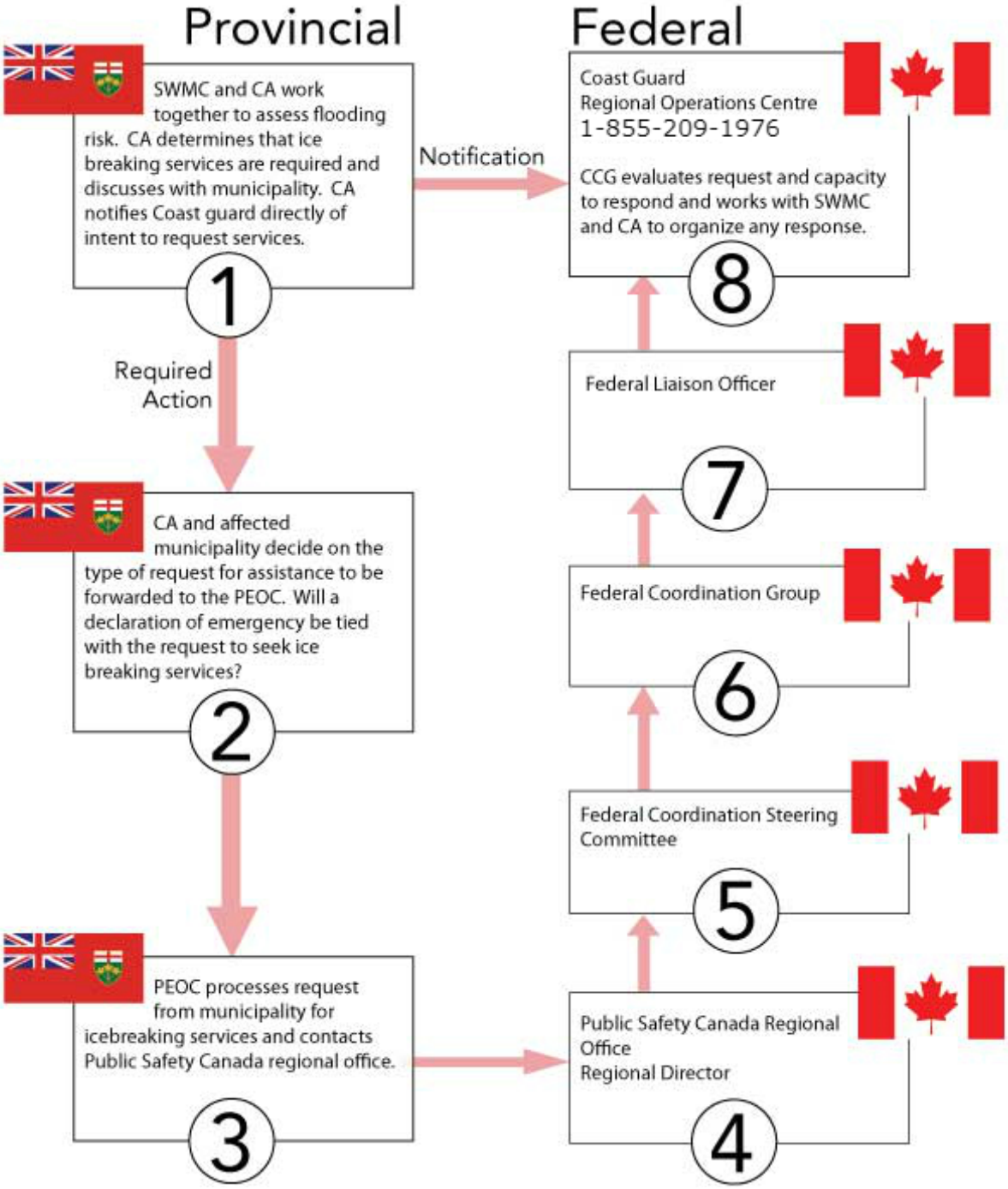
Downstream

Present:	Yes / No
Location in Cross-section (facing downstream)	Left-bank Middle Right-bank
% of Cross-section	0 10 20 30 40 50 60 70 80 90 100
Ice Type	Border Ice Sheet Anchor Ice Other _____
Ice Condition	Good Deteriorating Candled
Water Present on Top of Ice	Yes / No

Ice Jams

Present:	Yes / No	
Jam Type		Freezeup Jam Breakup Jam
Amount of Blockage		Full Blockage Partial Blockage
Cause of Jam		Freezeup Intact Ice Cover Man-made Structure Shoal River Bend Channel Constriction Lodging Other_____
Overbank Flow		Yes / No
Conditions at Head of Jam	Ice Accumulating Ice Flowing Under Jam	Unknown
Approximate Extent (sketch)		

Appendix B – Communication Protocol Requesting Ice Breaking Assistance from the Canadian Coast Guard

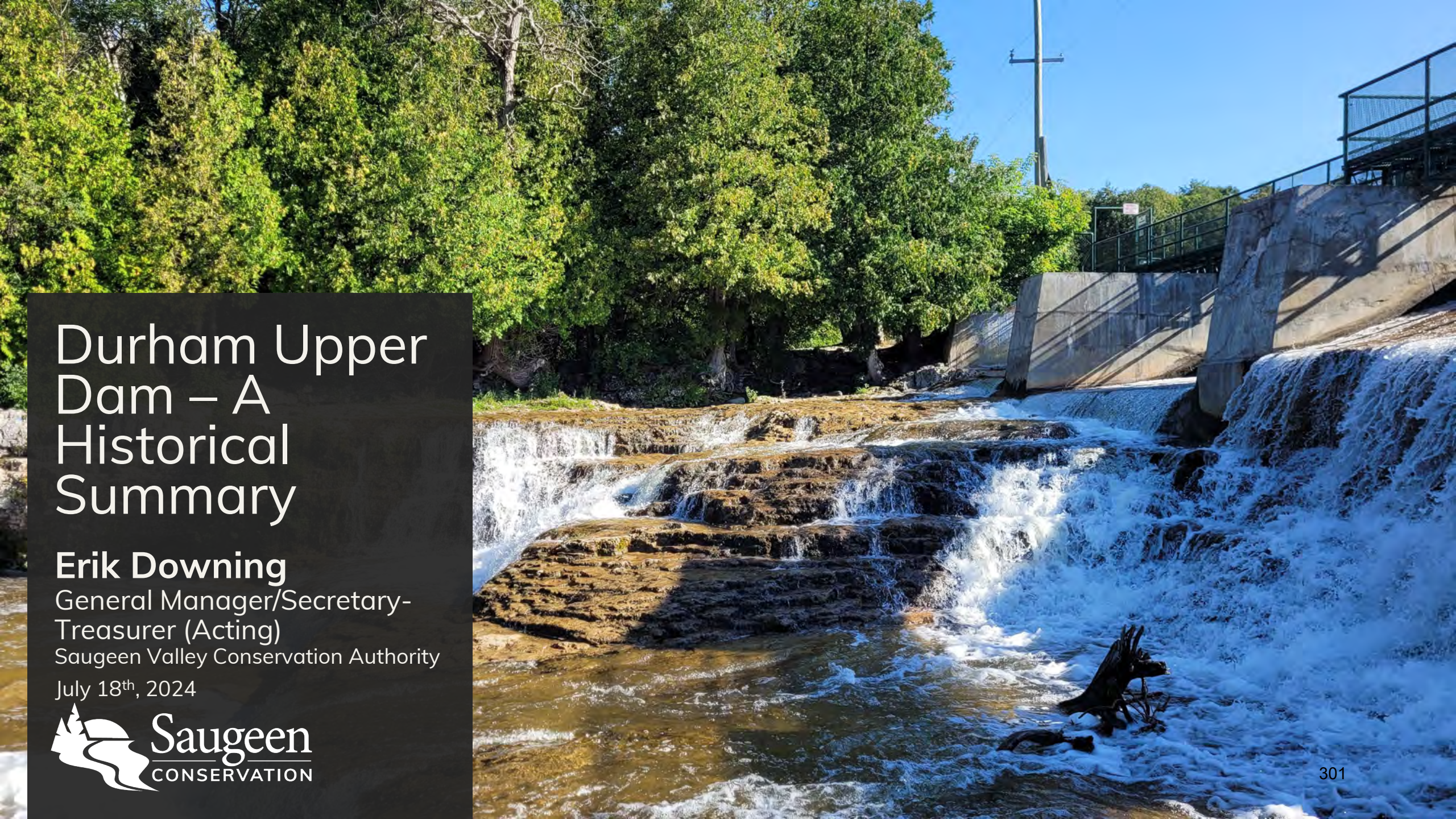


Durham Upper Dam – A Historical Summary

Erik Downing
General Manager/Secretary-Treasurer (Acting)
Saugeen Valley Conservation Authority

July 18th, 2024

Saugeen CONSERVATION



1977 – 2007 Ice Operations

Date	Description
1977	Stoplogs and flashboards removed in fall and remain out until spring
October 2005	West Grey and SVCA Board support hiring Hatch Acres to complete the frazil ice study
October 2006	West Grey in favour of operating Durham dams to store frazil ice
December 2006	MNR letter says no analysis was undertaken to determine if the dam can withstand ice loading; recommend safer, more reliable options
December 2006	SVCA Board approved the change in operations as a test to store frazil ice
March 2007	Landowners expressed concerns about flooding on upstream properties due to change in operations
July 2007	West Grey expressed an interest in evaluating effectiveness of operational changes prior to exploring options to address frazil ice

2008 Ice Operations

Date	Description
• March 2008	• Damage to the south embankment and the park on north side due to decreased capacity of the dam
• July 2008	• Repairs needed as change in operations caused damage to the structure; erosion could threaten the dyke and overflow will be more frequent
• November 2008	• Meeting with MNR, BM Ross and West Grey – MNR will not approve the change in operation as the dam was not designed for ice control and studies have not been done to confirm it is capable; SVCA stated boards would remain in unless ordered by Ministry to remove
• 2008 OEL Study	• Existing clearance between the walkway and the boards insufficient to allow for the passage of debris

2009-2013 Ice Operations

Date	Description
• February 2009	• Letter from MNR - “SVCA are **directed** to follow the historic operating plan until Hatches recommendations are acted upon and a revised operating plan is approved”. Not enough supporting documentation on hazard classification, IDF, high water levels and operating plan.
• February 2012	• Terms of Reference prepared for assessment of structural stability under ice loading
• July 2013	• Despite MNR not directing otherwise, SVCA and WG consider the winter operation of the dam necessary and continued operation
• October 2013	• West Grey Council motion to abandon the structural assessment and emergency spillway and continue to operate the dam for frazil ice

2014-2024 Ice Operations

Date	Description
• May 2015 • May/June 2021	• Staff noted that change in operations affected concrete • BM Ross – "the metal walkway was not designed to withstand the configuration of the dam uprights and flash boards that transfer the lateral pressure and stress during high flows, ice build-up, and extreme runoff events directly to the steel joist of the walkway“
• June 2021	• Staff directed to complete a cost-benefit analysis for continued use of the dam for frazil ice and seek quotation for feasibility study of upstream weirs

Spring program reports have reported the “optimistic success” of ice operations since 2007.

2008 – 2015 Structural Condition

Date	Description
• March 2008	• Damage to the south embankment and the park on the north side of the dam due to decreased capacity of the dam; damage temporarily repaired
• December 2008	• SVCA Motion to complete engineering study related to Upper Dam repairs based on MNR requirements; noted that H beams have reduced discharge capacity and clearance is insufficient
• April 2010	• Emergency spillway project approved by WG Council
• October 2013	• Spillway project and structural stability assessment abandoned
• July 2015	• Review of deteriorated concrete, with recommendation to repair and note that structure is not as strong as when it was first constructed

2021 – 2024 Structural Condition

Date	Description
• May 2021	• Inspection report noted condition is worse than when it was last inspected in 2015, walkway has deflected sideways under the pressure of the brace posts, structure of the walkway was not designed for such lateral loads and system is not recommended
• June 2021	• Reported noted excessive and continued deterioration of the concrete that need repair with the wingwalls and piers in biggest need, recommendation to install H-beam by fall
• September 2022	• Poor condition, seepage and erosion noted in inspection report, full rehabilitation recommended
• June 2024	• Continued concrete deterioration, additional delamination, severe spalling noted in inspection report; significant increase to rehabilitation estimate

2007 – 2022 Operator Safety

Date	Description
• December 2007	• Program report identified major difficulties removing flashboards and recommends formal procedure (if long-term) to address risks
• March 2015	• Program report noted that the removal operation was particularly difficult due to build-up of over 3 feet of ice
• June 2021	• BM Ross structural assessment noted that the metal walkway was not designed to withstand the lateral pressure and stress during high flows, ice build-up, and extreme runoff events
• September 2022	• DM Wills inspection identified the following operator safety items: working around water may require the use of a life jacket or PFD; installation/removal of stoplogs /flashboards during higher flows; clearing of ice in the winter/spring; grass cutting on the steep slopes

2024 Operator Safety Report

Date	Description

• June 2024	• Report identified numerous operator safety recommendations including:
	  • Wearing Transport Canada approved PFDs
	  • Use an engineered anchor point when using fall arrest
	  • Development of a rescue plan
	  • Do not complete work on unsupported ice (confirm thickness) and only enter water when depths and velocities are safe
	  • Establish procedures to determine when it is safe to work if ice is present (due to deformation of the bridge)
	  • Complete structural evaluation of the walkway
	  • Develop OMS manual to expand on Ice Operating Plan
	  • Consider modifying dam operating procedures

Public Safety & Swimming

Date	Description
• October 2005	• Board endorses proposed safety assessment at DUD
• December 2005	• Board asked staff to remove safety assessment from draft budget
• December 2005	• Trail system across the dam was approved by Board (pending formal plan)
• March 2012	• SVCA delegation to West Grey regarding public safety upgrades (railing, buoy system, signage)
• February 2013	• Program report noted that materials for buoy and signage were purchased
• September 2020	• Parks Committee recommended closing the walkway from dusk to dawn to reduce vandalism

2021- 2022 Public Safety & Swimming

Date	Description
• January 2021	• Parks Committee recommends walkway remain closed until Board or Water Resources Committee decide to reopen
• February 2021	• WR Committee recommends public safety plan and that gates continue to be closed pending plan recommendations
• April 2021	• Consultant engaged to complete public safety plan
• May 2021	• WR Committee – keep the walkway closed as it does not meet the standard of a pedestrian walkway, install signage, fencing, safety boom, education
• June 2021	• WR Committee agreed for SVCA staff to make walkway improvements for public access; this was to be considered a temporary fix
• January 2022	• Walkway improvements performed

2022-2024 Public Safety & Swimming

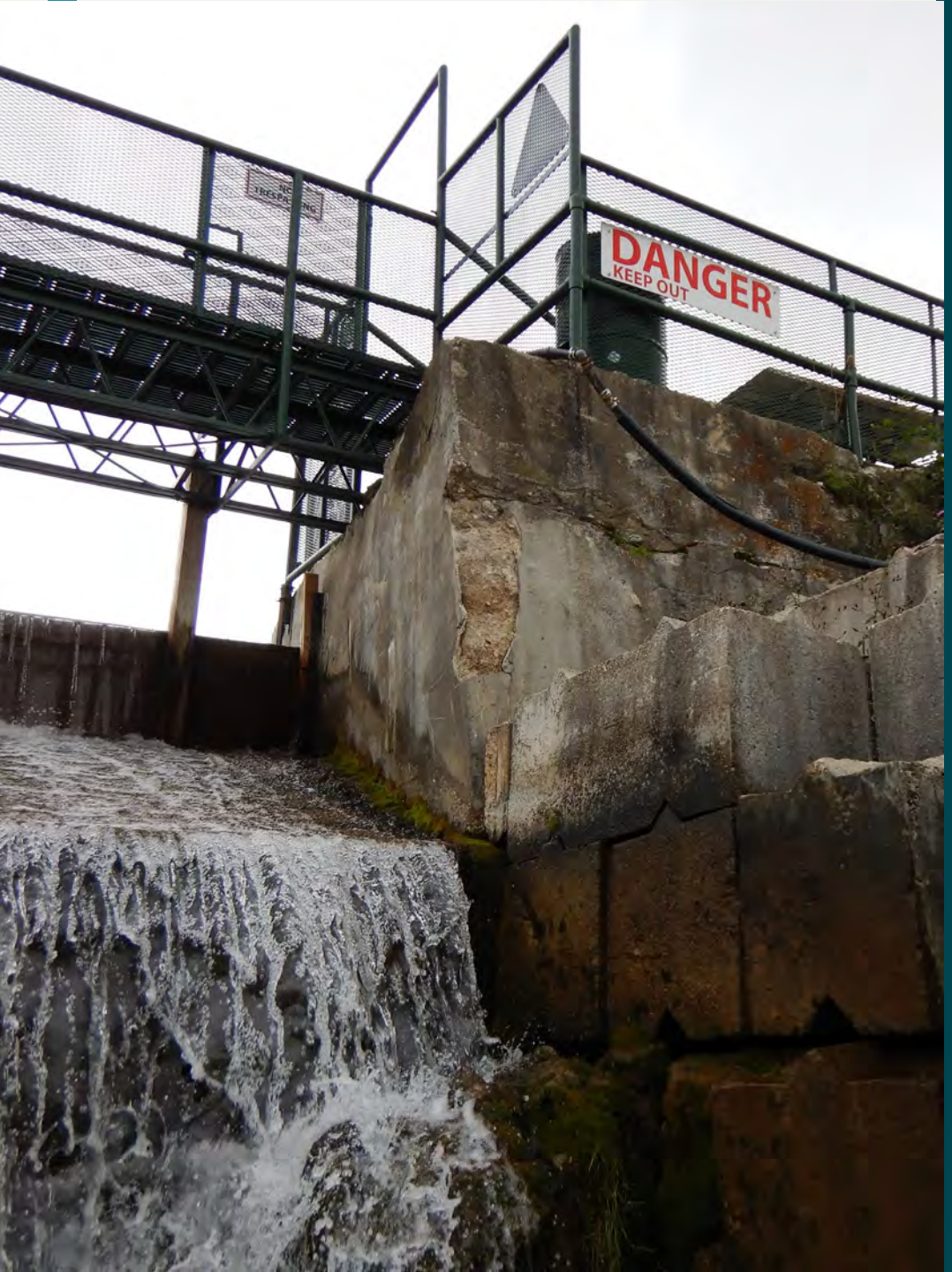
Date	Description

• September 2022
• June 2024
	• DM Wills inspection concluded public safety issues: no safety boom, swimming immediately upstream, inadequate safety signage
	• Public safety review related to swimming concluded:
	  • Move the swimming area at least 25m away from dam
	  • No swimming outside of delineated area
	  • SVCA staff to check velocities at the beach
	  • Install a public safety boom
	  • Close the steel walkway to the public when there is ice pressure

Summary

- Continued operation of dam for frazil ice control despite clear direction from MNR not to
- Concrete deterioration significant and continuing to rapidly decline
- Operator safety issues, worsened by ice operations
- Significant public safety concerns related to swimming and dam walkway
- Funding for EA unsupported by WG for 2024

Recommendation for discussion: cease ice operations and leave dam open. Continue EA for options for removal and/or rehabilitation.



Water Resources Committee

SVCA's Water Resources Committee passed Motion WR24-10 on July 4, 2024:

- THAT the Water Resources Committee recommends the staff report be brought to the full Authority for consideration regarding the Durham Upper Dam; and
- THAT the Water Resources Committee recommend the decision to move forward with fulsome public consultation.

Recommendation

- THAT the Board of Directors directs staff to address all operator and public safety recommendations, as detailed in the June 7, 2024 D.M. Wills letter, titled Durham Upper Dam, Operator and Public Safety Review; and
- THAT the Board of Directors support fulsome public consultation as it relates to past and current history of ice operations at the Durham Upper Dam


Saugeen
CONSERVATION
Thank you.

Durham Upper Dam - History (since 2000)				
Date	**Board Awareness**	**Category**	**Type**	**Description**
October 7, 2004	Y	Public Safety	Correspondence in Board package (no motion)	An email and letter were provided as correspondence regarding the SVCA dam beach in Durham as a child became violently ill after swimming at the Middle Dam and waterfall (Durham Upper Dam); the authors of the email thought that the heavy geese presence might be the problem. There was no separate report to accompany this correspondence, but it was noted that "Authority staff are investigating with municipal staff"
October 7, 2004	Y	Ice Operations	SVCA Board Motion (#G04-80)	The Board of directors endorse the Upper Dam frazil ice study and direct staff be to seek approval and funding from benefitting municipalities.
December 16, 2004	Y	Ice Operations	Correspondence in Board package (no motion) and referenced in Program Report	Letter from Municipality of West Grey to SVCA "Please be advised that West Grey Council considered the request in your letter dated October 26, 2004, to participate in an Upper Durham Dam Frazil Ice Study, and has decided they are not interested in participating in said study."
March 24, 2005	Y	Ice Operations	SVCA Board Motion (#G05-35)	An internal technical report on the January 2005 Durham Frazil Ice Event was included in the Board package. This report provided background information on frazil ice and compared the January 2005 events to the 1997 flood in Durham. The motion was to receive the report and forward a copy to the Municipality of West Grey.
May 12, 2005	Y	Public Safety	Correspondence in Board package (no motion)	Letter from Municipality of West Grey to SVCA A solution to the geese problem at the SVCA dams is to discourage the geese from landing. West Grey Council is proposing to use a laser technology to discourage the geese from landing, but does not hurt them. This practice has been successfully implemented in Flesherton. "Staff to forward letter to Mun. of West Grey noting the objection to use of laser technology to control geese problem".
October 6, 2005	Y	Ice Operations	Correspondence in Board package (no motion)	Letter from Municipality of West Grey to SVCA "Please be advised that West Grey Council passed resolution no. 306-05 on September 19, 2005, supporting the decision of the SVCA to accept the lowest tender submitted by Hatch Acres Incorporated in the amount of $44,914 (GST included) for completion of a frazil ice study in the former Town of Durham."
October 6, 2005	Y	Public Safety	SVCA Board Motion (#G05-76)	SVCA Board endorses proposed safety assessments of a number of dams, including the Durham Upper and Lower Dam, and that staff seek provincial funding and funding from benefitting municipalities.
October 6, 2005	Y	Ice Operations	SVCA Board Motion (#G05-79)	SVCA Board approves the selection of Hatch Acres Incorporated to complete the Town of Durham Frazil Ice Study 2005
December 1, 2005	Y	Public Safety	SVCA Meeting minutes (no motion)	"It was agreed by the Directors that the Dam Safety Assessments, at a proposed budget of $18,000 for 2005, be removed from the draft 2006 budget. It was staff's recommendations that this item is of significant importance to be considered for funding in 2006. However, a show of hands indicated only three of the 15 directors felt this item should be left in the budget"
December 15, 2005	Y	Public Safety	SVCA Board Motion (#G05-85)	A trail system was proposed in the Town of Durham and SVCA approval was requested since the trail would extend through the Durham Conservation Area, across dams, and across other lands owned by SVCA. It is understood "that the Authority would retain the right to prohibit public access to dam or flood control projects areas at any time" and "new trail development within Authority easement areas must not hinder Authority access to flood control project areas", among other things. The proposal was approved in principle but a detailed plan and permits were needed.
October 5, 2006	Y	Ice Operations	Correspondence in Board package (no motion)	Letter from Municipality of West Grey (Public Works Manager) to SVCA (General Manager) "Upon review of the frazil ice study prepared by Hatch Acres, the Municipality of West Grey is very much in favour of operating the dams through Durham in such a manner as to provide more ice storage for the winter months. Also implementation of the predictive methodology, which may help determine when to mobilize ice excavation equipment, may be a benefit." This letter was noted and filed.

Date	Board Awareness	Category	Type	Description
December 14, 2006	Y	Ice Operations	Correspondence in Board package (no motion)	From MNR Owen Sound District (Area Manager) to SVCA The Hatch Acres Study recommends ice storage in the middle dam, in addition to the Upper Dam. Ministry staff do not agree with the conclusions and recommendations as no analysis "was undertaken to determine if the dam is capable of withstanding the associated increase in ice loading". "In summary, we can not support the proposed automated gate and operational change at the Mid Durham Dam because of the potential dam safety implications and the associated high costs. We recommend that the Conservation Authority focus it's efforts on safer, more reliable and more cost-effective alternatives such as the installation of weirs in the upper reach to control frazil ice production and improvements to the channel capacity through the Town of Durham". This letter was noted and filed.
December 14, 2006	Y	Ice Operations	SVCA Board Motion (#G06-93)	The Board of Directors received the 2005 Hatch Acres Frazil Ice study and directed staff to present the report to the Municipality of West Grey for implementation and direction. The Board approved the change in operations for the Durham Upper Dam for testing frazil ice storage.
February 15, 2007	Y	Ice Operations	SVCA Board meeting as a Program Report	"As a test case for the control of frazil ice, in conjunction with the Municipality of West Grey, the boards were left in the Upper Dam to act as a means of storing the ice in the reservoir and upstream channel, in an attempt to prevent any ice from potentially accumulating downstream in the known problem area below Town." Under certain conditions the experiment was "optimistically successful. Virtually all the ice generated was stored in-situ and eventually filled the reservoir and upstream channel for a distance approaching four miles. Some backwater effects were evident along the upstream floodplain, but of no consequence to development".
February 15, 2007	Y	Ice Operations	Correspondence in Board package (no motion)	Letter from West Grey (Deputy Clerk) to SVCA (General Manager/Secretary-Treasurer) "The West Grey representatives have been directed to request the SVCA to delay any further remedial works relating to frazil ice in Durham until appropriate time has been provided to determine the sufficiency of remedial works implemented recently to minimize frazil ice risks."
March 12, 2007	Y	Ice Operations and Public Safety	Executive Committee	Topic of discussion was letter from Mr. Fallis regarding "landowner concerns about potential flooding on their lands following the Authority's decision to leave the boards in the Upper Durham Dam over the winter in an effort to control frazil ice flooding downstream in the Town of Durham....The Authority's policy for the operation of the dams in Durham has always been that the boards are taken out of the dams in the fall to enable free flow." One of the recommendations in the 2005 Hatch Acres report was to consider leaving the boards in over winter. "The change in operation is considered a pilot project. One year's data is not sufficient to verify if this change will be totally successful. No less than five year's data is necessary to evaluate the success of this project." "Mr. Coffey noted that is makes sense to stop the ice at the upper reaches. However, more studies and further floodplain mapping are required to determine how possible flooding in the upper reaches would affect upstream lands and landowners."
May 10, 2007	Y	Ice Operations	SVCA Board Motion (#G07-30)	MNR re-opening discussions regarding the ownership transfer of the Middle Dam to the Authority. "The Town, at the time, approved in principle, the takeover of the dam by the Authority and the Authority also agreed under certain conditions". "The initial response of the MNR to [the frazil ice operation] suggestion is negative without much further research and, as such operations remain as per the License." The Board motion directed staff to meet with MNR and West Grey to determine other alternatives or opportunities regarding the Durham Middle Dam.

Date	Board Awareness	Category	Type	Description
May 10, 2007	Y	Ice Operations and Public Safety	Correspondence in Board package (no motion)	From Fallis, Fallis and McMillan to SVCA regarding decision to leave the boards in place for the 2006-07 winter season "Mr. Pybus indicated that political pressure from West Grey Council to leave the boards in the Upper Dam precipitated the decision of SVCA to do just that. The alleged reason for such political request of the Municipality was anchored in an attempt to stop 'frazzle ice' from flowing into the traditional southern areas of the Saugeen River as it flows through the southern built up area of Durham. The letter requested that SVCA immediately remove the boards; create a channel around the dam to alleviate flooding; notify residents that they will be compensated for property damage; provide adequate notice and information to adjacent landowners requesting that SVCA remove boards from the DUD immediately as it was putting upstream properties at risk. A copy of this letter was circulated by the author to the Municipality of West Grey, Local MPP, and MNR. A follow-up letter was sent by Fallis, Fallis and McMillan thankful for the promise of remediation, visible by the presence of equipment working at the Upper Dam.
May 10, 2007	Y	Ice Operations	SVCA Board meeting as a Program Report	"The apparent success of using the reservoir for ice storage, under the pre-freeze temperature and flow conditions that occurred this year, does offer some degree of optimism for a resolution to the annual ice concerns. The experience gained this year would support and justify the continuation of this trial approach for ice management next year."
July 12, 2007	Y	Ice Operations	Correspondence in Board package (no motion)	Letter from Municipality of West Grey to Minister of Natural Resources "Saugeen Valley Conservation Authority and the Municipality of West Grey have changed operations of the upper dam in relation to containing frazil ice. The Municipality of West Grey wishes not to proceed with any major construction to the lower Saugeen River system at this time until further investigation of the upper dam operation has been completed". West Grey requested a delay in funding in search of more economical solutions to control frazil ice.
July 12, 2007	Y	Ice Operations	SVCA Board meeting as a Program Report	West Grey Council "expressed an interest in evaluating the effectiveness of the operational changes at the Upper Dam prior to committing more resources to other options".
October 4, 2007	Y	Organization	Correspondence in Board package (no motion)	From MNR to Municipality of West Grey noting that the deferral of funds is not possible, but reallocation within already approved projects is possible.
December 13, 2007	Y	Ice Operations and Operator Safety	SVCA Board meeting as a Program Report	SVCA and West Grey staff have been working together to design an action plan for winter operations for 2007-08. The same procedure as the previous year is favoured as a large volume of frazil ice was trapped in the reservoir. "The major difficulty with this operational procedure is that the removal of the flash board is difficult. If this will be a long term change in dam operation it would be advisable to formalize a procedure for the removal that addresses any potential threats.
March 20, 2008	Y	Structure and Ice Operations	SVCA Board meeting as a Program Report	"This change in operation was successful at trapping large quantities of frazil and sheet ice in the upper dam reservoir and upstream channel… There was some damage to the south embankment and the park on the north side of the dam due to decreased capacity of the dam. This damage has been temporarily repaired but more work will be necessary in the spring".
March 20, 2008	Y	Ice Operations	Correspondence in Board package (no motion)	Letter from West Grey to SVCA West Grey Council, by way of motion, does not support the engineering study for Moffat's Hole in the lower area of Durham, as control for frazil ice at the upper dam has eliminated the accumulation of frazil ice in the area.
March 20, 2008	Y	Ice Operations	Correspondence in Board package (no motion)	Letter from West Grey to SVCA West Grey Council would like that thank SVCA staff for the proactive approach to remove the boards at the Upper Dam in early January and replacing them in mid January to relieve the threat of frazil ice and flooding in Durham.
May 8, 2008	Y	Organization	Correspondence in Board package (no motion)	Letter from West Grey to SVCA West Grey requests that SVCA submit funding applications for repairs to the Upper and Lower dams in Durham. Additionally, it is requested that an MOU be created to develop long term goals and solutions for the maintenance of the dams as well as long-term solutions for the dams in relation to frazil ice.
July 10, 2008	Y	Ice Operations	SVCA Board meeting as a Program Report	"The repairs are required to correct damages that occurred in January 2008 and to protect the dam in the event of a repeat of these conditions. The dam is being used to trap frazil ice upstream of Durham and as a result it is subject to much more severe conditions than it had been prior to this change in operations."

Date	Board Awareness	Category	Type	Description
July 10, 2008	Y	Structure and Ice Operations	Correspondence in Board package (no motion)	Letter from BM Ross to SVCA - BM Ross was hired to report on Upper Dam conditions and make recommendations for erosion protection "In the winter of 06/07 and 07/08 the Municipality and SVCA left the stoplogs in place in an attempt to reduce the effects of ice damming downstream. Although the results of this two-year trial were encouraging, there was a significant overflow behind the abutments on both sides of the dam in January....Erosion on the south side is not to be tolerated as it could threaten the dyke located there to protect the town. The report noted that "if the stoplogs are to remain in for future winters, it is assumed that overflows will become more frequent." Recommendations were made for an emergency spillway on the south side of the dam.
October 16, 2008	N	Ice Operations	SVCA letter to MNR District Manager (internal)	Re-iterated that since 2005/06 and 2006/07 SVCA began a pilot project to assess the potential to use the Upper Dam for storage of frazil ice. “The pilot project has been successful in protecting the town from damages but to be sustainable the south end of the dam must be repaired and upgraded.” The letter explained there was damage to the south end of the dam in 2008 due to high flows and SVCA considers this as emergency work noting “it is not an option for the Conservation Authority to lower the level in the reservoir for winter”. The letter further explained past damage and expense to the municipality. ”If this repair is not permitted to take place this fall there is a risk of a breach of the earthen dyke on the south side of the structure”
November 5, 2008	N	Ice Operations	SVCA internal memo, minutes from meeting with MNR, West Grey, BM Ross and SVCA	The meeting was held to discuss the proposed repairs at the Durham Upper Dam. An overview of the situation and the proposed repair was provided. MNR asked a variety of questions related to the operational changes at the dam and indicated the there were issues: 1) dam capacity, 2) risk in managing ice vs risk to the town, and 3) "the dam was not designed for ice control". SVCA acknowledged that "MNR approval should have been sought for the change in operation but action was urgent as the frazil ice issue does effect the residents of Durham". It was further noted that MNR will not approve the repair without approving the change in operation. Jim Coffey indicated the boards would be left in the dam this year "unless there is a Minister order or the province agrees to cover 100% of the costs for any damages associated with the dam being out".
December 11, 2008	Y	Structure	SVCA Board Motion (#G08-90)	Motion to engage OEL-HydroSys to provide additional engineering related to Upper Dam repairs based on MNR requirements
December 11, 2008	Y	Ice Operations	Correspondence in Board package (no motion)	An email series included in Correspondence from SVCA staff documenting the first time that staff pulled boards mid-year to "increase the discharge capacity of the dam and alleviate possible use of the emergency overflow area to the north of the dam and the subsequent rehabilitation costs associated from the potential scour"
2008	N	Structure and Ice Operations	OEL Hydrosys - Dam Hydraulic Assessment Study	Conclusions of the study are: - the inflow design flood is the 100year event and hazard potential classification is low - IDF can be discharged through the control structure with both configurations in summer and winter. "Debris collection and jams upstream of the control structure are a significant problem during high flow periods. This problem is further exacerbated by the presence of numerous H-beams used to support the flashboards in the sluiceways. The H-beams have greatly reduced the effective width/discharge capacity of the control structure....additionally, the existing clearance between the walkway and the top of the flashboards and/or stoplogs is insufficient to allow for the passage of debris."
February 12, 2009	Y	Ice Operations	Correspondence in Board package (no motion)	Letter from MNR to SVCA (General Manager) - dated January 5, 2009 The letter notes that there was a meeting with SVCA and Durham staff on November 3, 2008 to discuss operational changes at the Upper Dam and the LRIA application for the bypass channel. MNR noted that "Hatch's recommendations have not been acted upon prior to the Authority increasing the winter holding level of the Upper Durham Dam." MNR notes that the bypass channel application will not be processed due to lack of supporting documentation, including the Hazard Classification, IDF, design high water levels, and operating plan. "The SVCA are directed to follow the historic operating plan until Hatch's recommendations are acted upon and a revised operating plan is approved." The letter was noted and filed.
March 18, 2010	Y	Structure	SVCA Board Motion (#G10-37)	The Board of Directors received the Dam Hydraulic Assessment Report, completed by WESA OEL Hydrosys. Staff were directed to present the report to the Municipality of West Grey, and upon approval by West Grey, staff would request proposals for the structural assessment and spillway design.
April 5, 2010	N	Structure	West Grey Council Motion (#92-10)	Municipality of West Grey Council supports the emergency spillway project at an estimated $116,000, 50% paid by the municipality

Date	Board Awareness	Category	Type	Description
February 22, 2012	N	Structure and Ice Operations, Operator Safety	Letter from SVCA to MNR	RE: Emergency Spillway Repairs at the Upper Durham Dam “As directed by the MNR and due to the winter change in operations at the Upper Durham Dam, the SVCA was requested to determine through an appropriate engineer the stability of the structure under winter loading conditions. As the Authority wanted to ensure that all aspects of the requirements of the MNR would be addressed, we forwarded our draft Terms of Reference....unless the Authority receives adequate notice and/or additional direction from the MNR, we will proceed to tender for this project.” The Terms of Reference provide a summary of operations history and noted “in cooperation with the Municipality of West Grey, Saugeen Conservation tested increasing the pond head at the Upper Dam in recent winters. This change in operation was employed on a trial basis without any modifications to the dam or spillway to test for effectiveness prior to investing in upgrades to the dam...There is considerable difficulty in operating the dam during periods when the reservoir is full of ice. There is also potential for damage to the dam, its associated dykes and emergency spillway when difficulties in operation, combined with a full head pond reduce Saugeen Conservations abilities to draw down the reservoir...” SVCA was seeking a consultant to identify the probable cause(s) of surface deterioration (freeze thaw, ice damage, seepage, alkali-silica reaction, settlement), and complete 1) a concrete dam and foundation assessment, 2) earth fill part of the dam and foundation assessment; 3) dam structural stability assessment; and 4) detailed site inspection.
March 5, 2012	N	Public Safety	SVCA delegation to Municipality of West Grey (letter with speaking notes)	RE: Safety Upgrades at Durham Upper and Lower Dams, Municipality of West Grey "Addressing public safety around dams requires addressing both the physical structure and the dam's operations....The Authority recommends the Municipality give consideration to supporting the following upgrades:" 1) replacing the temporary wooden railing with a steel railing at the north side of the dam; 2) upgrading the wooden buoy system; and 3) upgrade and replace signage
February 14, 2013	Y	Public Safety	SVCA Board meeting as a Program Report	"Majority of the materials have been purchased for the upgrades to the Durham Dams that include upgraded safety signage and floats for the Upper Durham Dam. The Authority has received the floats, rope and signage that were purchased through the Grey County Sign Shop."
July 25, 2013	Y	Ice Operations	SVCA Board (no motion) - staff report	"In the winters of 2005/06 and 2006/07, Saugeen Conservation, in cooperation with the Municipality of West Grey, began a five year pilot project to assess the potential to use the Upper Durham Dam to mitigate frazil ice damage by trapping and storing frazil ice upstream of the Town. ...The Authority and the municipality considers this pilot project to be successful in helping to control frazil ice in Durham. Despite MNR not approving the emergency spillway "the Authority and municipality considers the winter operation of the dam to control ice to be necessary and they will continue operating the dam in this way. The Authority also considers the proposed spillway to be emergency work necessary to control flooding in Durham." "It is the Ministry’s position that the dam was not designed for ice management purposes and that there is a risk associated with the winter operation being conducted. Studies need to assess the dam’s structural capacity to withstand and pass flows. The risk of failure also needs to be assessed. MNR feels the damage in 2008 could have been caused by the winter operations. The Ministry cannot approve the repairs without approving the change in operation."
July 25, 2013	Y	Structure	SVCA Board meeting as a Program Report	The Terms of Reference for a Structural Dam Stability Study, as required by MNR, have been completed by Authority staff and approved by the MNR.

Date	Board Awareness	Category	Type	Description
October 24, 2013	Y	Structure and Ice Operations	SVCA Board meeting as Correspondence	The Municipality of West Grey made a Council resolution not to undertake the structural stability assessment and abandon the proposed construction of the emergency spillway, and continue to operate the dam in winter to control frazil ice as has been the practice since 2005. This motion was noted and filed. "RESOLVED THAT, the Council of the Municipality of West Grey hereby approves option #4 in Saugeen Valley Conservation Authority Report #7b dated July 25, 2013 regarding the Upper Durham Dam Emergency Spillway Project, being, not to undertake the Structural Stability Assessment and abandon the proposed construction of the emergency spillway, and continue to operate the dam in winter to control frazil ice as we have been doing since 2005, as recommended by the Committee of the Whole."
March 26, 2015	Y	Ice Operations and Operator Safety	SVCA Board meeting as a Program Report	"The stop logs have been removed from the Upper Durham Dam in preparation for the spring runoff. The logs are left in over the winter season as part of frazil ice control thereby reducing the flood risk in the Town of Durham. The removal operation was particularly difficult this time, which necessitated chopping away ice approaching 3 feet (0.9 m) in thickness that was binding the logs in place."
May 28, 2015	Y	Structure and Ice Operations	SVCA Board meeting as a Program Report	"With the change to the operations and configurations to the dams for winter to control frazil ice, staff have noticed that the concrete has been affected. We are waiting for the report back from B.M.Ross on the dams."
July 2, 2015	N	Structure	BM Ross Structural Assessment (full report not presented to Board)	BM Ross was retained to complete a structural review of the concrete components of the dam; the walkway, stoplogs and embankments were not reviewed. According to the report, "[BM Ross] have no reason to suspect that the structure is unable at this time. However with the deteriorated concrete present, the structure is not as strong as when it was first constructed." Recommendations of the report include concrete repairs estimated at $110,000.
March 31, 2016	Y	Ice Operations	SVCA Board meeting as a Program Report	"The Municipality of West Grey did not have to call upon hy-hoes at any time to remove accumulated ice. The configuration of the Upper and Lower Durham Dams for frazil ice control (a number of stop logs and flashboards are left in place to maintain some water in the reservoir) appears to have been of benefit again this year."
May 7, 2020	Y	Public Safety	SVCA Board meeting as a Program Report	"Given the extended State of Emergency for the Province of Ontario that has closed public beaches and nonessential business operations, SVCA in consultation with the Municipality of West Grey, made the decision to not put the board, stop logs, or electric gate in place that would increase the water level in the upstream reservoirs for the Durham Dams until further notice."
September 23, 2020	Y	Public Safety	Parks Committee Motion PKC20-04	"THAT the Durham Upper Dam walkway gates be locked from dusk to dawn during the camping season."
December 3, 2020	Y	Organization	SVCA Board meeting as a Program Report	"A re-organization of responsibilities internally at SVCA now has Water Resources staff overseeing dam operations for the Town of Durham. Staff installed a gauge on one of the piers at the middle dam to better visualize fluctuations in reservoir levels. While levels in the reservoir are down for winter configuration, staff are hoping to install a datalogger and water level sensors to allow them to track these fluctuations remotely."
January 22, 2021	Y	Public Safety	SVCA Board meeting as Correspondence	A number of emails were included in Board Correspondence from residents of West Grey regarding closure of the Durham Upper Dam walkway.
January 21, 2021	Y	Public Safety	SVCA Parks Committee Motion (PCK20-12)	Requesting the formation of a Water Resources Committee to address concerns related to the infrastructure, water quality, and flood programs. The Parks Committee recommend that the Upper Dam pedestrian walkway remain closed until the Board or Water Resources Committee decide otherwise.
January 22, 2021	Y	Organization	SVCA Board Motion (#G21-20)	"THAT a SVCA Water Resources Committee be formed: AND FURTHER THAT the SVCA Chair and four (4) Directors be appointed to this Committee: Dan Gieruszak, Cheryl Grace, Tom Hutchinson, and Christine Robinson."
January 22, 2021	Y	Public Safety	SVCA Board Motion (#G21-21)	Closing the walkway at the Durham Upper Dam may limit visitors to the campground in the evening and vandalism. "From a liability perspective no Public Safety Plan has been developed for the DUD. Therefore, an assessment of the risks and mitigating actions that could take place to address those risks, has not been completed." "If a person or person(s) were harmed while accessing the DUD, an investigation would be carried out to confirm the cause of the accident. If it were determined that SVCA had not made every effort to prevent such an accident, the conservation authority would be held liable."

Date	Board Awareness	Category	Type	Description
February 3, 2021	Y	Public Safety	SVCA Water Resources Committee Motion (WRC21-07)	The Committee recommends to the Board that a public safety assessment be completed at the Durham Upper Dam and that the walkway gates be closed pending public safety assessment recommendations.
February 18, 2021	Y	Public Safety	SVCA Board Motion (#G21-27)	Concerns have been raised regarding the gate closure. The Water Resources Committee recommended that a public safety assessment be conducted and that the gates continue to be closed pending the assessment recommendations.
April 15, 2021	Y	Public Safety	SVCA Board meeting as a General Managers Report	With support from the Water Resources Department, arrangements have been made for B.M. Ross to complete a Public Safety Assessment at the Durham Upper Dam in early April.
May 17, 2021	Y	Structure	Water Resources Committee Motion (WRC20-14)	In keeping with a 5-year timeline for inspection of the dam, BM Ross has been retained to review concrete portions of the dam and an analysis of the metal railway. It was noted that dam uprights are braced along the bottom of the walkway girders. The report recommendation is to proceed with the structural analysis and bring recommendations back to the Water Resources Committee.
May 17, 2021	Y	Public Safety	Water Resources Committee Motion (WRC20-15)	The walkway gates have been closed permanently since the end of the last camping season, originally to prevent theft and vandalism at the Durham Conservation Area but also for health and safety reasons. There is no public safety assessment for the Upper Dam and therefore the extent of the safety issues are unknown. BM Ross completed the public safety plan and a summary of the recommendations and risk rating were prepared; the full report was attached. The recommendation was to keep the walkway closed as it does not meet the standard of a pedestrian walkway, install signage, fencing, etc., investigate the need for a safety boom, establish an educational program and prepare a communication program.
May 19, 2021	N	Structure and Ice Operations	BM Ross Structural Assessment (full report not presented to Board)	BM Ross was retained to complete a structural review of the concrete components and metal walkway of the dam. According to the report, "[BM Ross] have no reason to suspect that the structure is unable at this time. However, with the deteriorated concrete present, the structure is not as strong as when it was first constructed, and the condition is worse than when it was last inspected in 2015....Staff have reported that the walkway has deflected sideways under the pressure of the brace posts. The structure of the walkway was not designed for such lateral loads and this system is not recommended." Recommendations included concrete repairs and installation of a horizontal beam between piers to support the tops of stoplog brace posts and replace this function of the existing walkway".
May 20, 2021	Y	Public Safety	SVCA Board Motion (#G21-55)	BM Ross completed a public safety plan and identified a number of hazards at the dam, including swimming upstream (moderate/high), swimming downstream (moderate/high), boating/canoeing (moderate/high), walking/standing on walkway (moderate/high). Upon motion, the walkway is to remain closed, signage, inspection protocol, fencing to be installed, investigate public safety boom, educational program, and structural changes to improve the walkway are to be completed. The Public Safety Plan was included, in its entirety, in the Board package. Recommendations of the report include: - Safety boom - "the seasonal floatation swim rope does not meet the criteria of a safety boom" - Barriers and gates - "Maintain barriers or fencing above vertical walls. Maintain locked gates at each end of the walkway over the bridge to exclude the public. If it is preferred to allow the public to use the walkway, then the guards (railings) must be upgraded to meet standards (Bridge Code or Building Code)." - Existing signage - "the existing signage should be reviewed for standard format" - New signage - Establish an inspection and maintenance program - "Education can be achieved by placing informative signs at the site, newspaper and/or radio and television advertisements or through public education sessions."
May 20, 2021	Y	Structure	SVCA Board Motion (#G21-56)	In keeping with a 5-year timeline, SVCA staff felt it prudent to complete another structural assessment of the dam and walkway. A recommendation was made to complete this assessment.

Date	Board Awareness	Category	Type	Description
June 15, 2021	Y	Structure, Operator and Public Safety	Water Resources Committee (Motion WRC21-19)	Information was provided to the Committee regarding the BM Ross structural assessment. The report indicated that the dam is stable but there has been excessive and continued deterioration of the concrete that need repair. The wingwalls and piers are in biggest need of repair. "The steel joists under the Durham Upper Dam pedestrian walkway enough holding capacity for SVCA staff to work on safely, but the lateral forces of water and ice moving towards the dam are not appropriate for the steel joists". The report made recommendations to install an H beam. The 2005 Hatch Acres report was provided for background information. The Committee was advised that immediate action does not need to be taken for anything other than the H-beam which is needed for structural support. The Committee motion was to install the H-beam by Fall 2021, seek quotations for a cost benefit analysis regarding the continued use of the dam in frazil ice control, seeks quotations for a feasibility study to complete the upstream work using low overflow weirs, and that WECI funding be requested for concrete work in 2022, 2023, 2024, and 2025.
June 15, 2021	Y	Public Safety	Water Resources Committee (Motion WRC21-20)	A number of corrections need to be made to a previous motion to correct costs for walkway improvements ($15,000), new walkway ($30-50,000) and new bridge design ($323,000). The Committee agreed that the first option for walkway improvements by SVCA staff is the best option to get the walkway operational and safe for public access. The Committee was advised that new signs were being purchased to make people aware of the dam hazards. The Committee motion was to repair the walkway and "this would be considered a temporary fix until such time as a more permanent solution can be decided upon". Staff were directed to recommendation a longer term solution for a pedestrian walkway for implementation by 2026.
June 17, 2021	Y	Operator and Public Safety, Ice Operations	SVCA Board Motion (#G21-68)	SVCA staff provided additional information for review to address some of the recommendations in the approved PSP. Requests for quotes were sent to three sign companies to address deficiencies noted in the approved PSP. SVCA staff are also investigating the upgrade costs associated with the recommendations that include the fencing on the north and south sides of the dam as well as a cost estimate on upgrades to the walkway that would meet usage for the public. The report summarized the findings of the BM Ross 2021 assessment, specifically how the dam uprights are connected to the walkway joists and therefore support the load of ice/water. BM Ross noted in the report that "the metal walkway was not designed to withstand the configuration of the dam uprights and flash boards that transfer the lateral pressure and stress during high flows, ice build-up, and extreme runoff events directly to the steel joist of the walkway". BM Ross suggested that an H beam could be installed to help transfer the loads onto the piers. The walkway gates will remain closed to the public.
June 17, 2021	Y	Structure and Ice Operations	SVCA Board Motion (#G21-69)	The 2021 BM Ross structural report was generally summarized to the Board. Staff were directed to install an H-beam by Fall 2021 to help stabilize the walkway. Staff were also directed to complete a cost benefit analysis for the continued use of the dam in frazil ice and flood control and to seek quotations for a feasibility study to complete the upstream work using overflow weirs.
July 15, 2021	Y	Public Safety	SVCA Board meeting as a Program Report	Staff continue to implement the Public Safety Plan for the Upper Durham Dam. Additional signage has been ordered and will be installed at the dam. Staff have been building new fencing and railings for both the north and south sides of the dam along the reservoir. Staff are also investigating the upstream buoy system for swimmers in the reservoir and the dam structure. Staff have begun the process of rebuilding the walkway to meet the approved geometry for public safety, as well as reinforcing the steel joist under the walkway.
September 24, 2021	Y	Public Safety	SVCA Board meeting as a Program Report	"The GM/S-T informed the directors that the water levels in the main Saugeen River have begun to recede, however a second rain event has caused levels to increase slightly in the Priceville and Durham area. The boards had to be removed from the upper dam in Durham and the walkway over the dam has been closed for safety precautions"
January 20, 2022	Y	Public Safety	SVCA Board meeting as a Program Report	Repairs to the Durham Upper Dam pedestrian walkway were completed by SVCA staff
July 6, 2022	Y	Structure	Water Resources Committee Motion (WR22-08)	The staff report summarized a meeting between SVCA staff and West Grey staff regarding the poor condition of the Durham Upper Dam. West Grey noted that funding is not available for the rehabilitation of these structures. It was expressed to SVCA staff that West Grey would like to limit the repairs at the Durham Upper Dam and the process of starting an Environmental Assessment for the dam's replacement. Staff recommended evaluating the financial implications of completed the Environmental Assessment.

Date	Board Awareness	Category	Type	Description
September 19, 2022	N	Structure, Operator and Public Safety	DM Wills External Inspection	General findings of the report: -"Dam was observed to be in fair to poor condition with areas of concrete deterioration (cracking, efflorescence and scaling) throughout the abutments and piers. Seepage was noted downstream of the right abutment and there was minor erosion identified on the downstream left and right banks." - Potential public safety issues: there is no public safety boom present at the site and it has been reported that people (i.e. swimmers, kayakers) frequently go through the dam; there is a public swimming area immediately upstream of the dam; there is public safety signage present, however, some of it is obstructed and some of it does not meet Best Management Practices for Public Safety Around Dams - Potential operator safety issues include: Working around water may require the use of a life jacket or PFD; installation/removal of stoplogs /flashboards during higher flows; clearing of ice in the winter/spring; grass cutting on the steep slopes of the flood dyke
May 4, 2023	Y	Structure	Water Resources Committee Motion (WR23-05)	The Durham Upper Dam assessment was completed in 2022 by DM Wills which recommended full rehabilitation and upgrades within the next 5 years. Staff reported that the cost of an Environmental Assessment would be approximately $100,000. The Committee recommended that Phase 1 of an EA be completed.
May 18, 2023	Y	Structure	SVCA Board Motion (#G23-45)	An engineering assessment of the Durham upper dam resulted in recommendations to complete a full rehabilitation of the dam structure and a Class Environmental Assessment (Class EA) prior to undertaking any work. The Board supported initiating a Class EA for the Upper Dam, pending WECI funding
May 1, 2024	Y/N	Structure	DM Wills Report	DM Wills completed Phase 1 of the Durham Upper Dam EA, which included an update of the dam safety information. The findings of this report are summarized below.
May 16, 2024	Y	Structure	SVCA Board Motion (#G24-68)	A report was brought to the board as an update on the Environmental Assessment for the Upper Dam. Phase 1 of the EA focused on updating the existing dam safety information, including the Hazard Potential Classification. This dam safety assessment updated the plan completed in 2009 by OEL Hydrosys/WESA. The Upper Dam is now classified as High (sunny day) / Very High (flood failure) based on failure of the flood control dyke, and subsequent flooding of Durham Creek. The dam does not have sufficient hydraulic capacity to convey the Inflow Design Flood and does not have sufficient freeboard under this condition. A recommendation of the report is to develop and Emergency Preparedness and Response Plan. "Approval is unlikely to be granted under the *Lakes and Rivers Improvement Act* for major rehabilitation with the existing Durham Upper Dam configuration given these findings". The report was received for information.
June 1, 2024	N	Operator and Public Safety	DM Wills Report	DM Wills completed a review of operator and public safety at the Durham Upper Dam, with primary focus on winter operations and public swimming. Operator interviews were completed to gain a thorough understanding of dam operations. One operator expressed concerns about the strength of the flashboards, support posts, and walkway under ice loading. Numerous recommendations are summarized in the report, including: wearing PFDs, engineered anchor point, development of a rescue plan, suggestions on when work can be completed safely, complete detailed structure evaluation of walkway, develop OMS manual, modify the dam and operational procedures, move the swimming area, check velocities at the beach area, install a public safety boom, close the walkway when excessive ice is present.
June 26, 2024	N	Structure	DM Wills External Inspection	"In general, the dam was observed to be in fair to poor condition with areas of concrete deterioration (cracking, efflorescence and scaling) throughout the abutments and piers. Seepage was noted downstream of the right abutment and there was minor erosion identified on the downstream left and right banks. In comparison to the previous inspection report, water levels in Sluiceways 3, 4, and 5 were lower during the 2024 inspection. As such, large areas of delamination and severe spalling on the pier noising and aprons were documented. Pier 2 degraded from fair to poor condition with additional cracking and delamination noted. The remaining dam components were generally in a similar condition to the 2022 inspection." The cost associated with the dam rehabilitation was increased from $750,000 (2022) to $1,000,000 (2024).

Complete Motions

October 10, 2004 – SVCA Motion #G04-80

THAT the Board of Directors endorse the proposed maintenance work for existing capital projects and that staff be directed to seek approval and funding commitments from the benefiting municipalities.

March 24, 2005 – SVCA Motion #G05-35

THAT the Saugeen Conservation Board of Directors receive the 2005 Durham Frazil Ice Event Technical Report, dated February 2005, and further

THAT the report be forwarded to the Municipality of West Grey for their information.

October 6, 2005 – SVCA Motion #G05-76

THAT Saugeen Conservation endorses the proposed safety assessments of Authority dams and dams on which the Authority has undertaken capital works, and further

THAT staff be directed to seek provincial funding for these assessments and further

THAT staff seek approval and funding commitments from benefitting municipalities

October 6, 2005 – SVCA Motion #G05-79

THAT Saugeen Conservation approves the selection of the firm of Hatch Acres Incorporated of Niagara Falls to complete the Former Town of Durham Frazil Ice Study 2005, at a total estimated cost of $44,914 (GST included).

December 15, 2005 – SVCA Motion #G05-85

THAT Saugeen Conservation approve in principle the Durham Trail Proposal including new trail development on Authority owned property, provided a detailed trail plan is submitted to the Authority for review and the necessary permits and approvals are obtained by the trail proponent.

December 14, 2006 – SVCA Motion #G06-93

THAT the report prepared by Hatch Acres, dated November 2006 and titled Former Town of Durham Frazil Ice Study 2005, be received and further

THAT staff be directed to present the report to the Municipality of West Grey for its information and direction regarding implementation, and further

THAT the Board of Directors approve the use of the Upper Dam as a test case for the storage of frazil ice as well as the associated change in dam operations, and further

THAT the Municipality of West Grey be designated the benefiting municipality for this pilot project and, as such, are responsible for the Authority share of the project costs.

May 10, 2007 – SVCA Motion #G07-30

THAT staff be directed to meet with the Ministry of Natural Resources and the Municipality of West Grey to determine what other alternatives or opportunities might be available regarding the Durham Middle Dam and report back to the Board of Directors with the results of those meetings.

April, 2008 – West Grey Motion 167-08

MOLLISON-LAWRENCE, BE IT RESOLVED THAT, the Council of the Municipality of West Grey request the Saugeen Valley Conservation Authority to submit funding requests for the following projects under the Water and Erosion Control Infrastructure Program:

1) Upper Dam Repairs $60,000
2) Lower Dam Repairs $10,000

AND FURTHER THAT as the designated benefiting municipality the Municipality of West Grey agrees to pay the Authority share of the project costs, up to a maximum of $35,000 for the associated essential work only;

FURTHER THAT, municipal staff work with the SVCA to develop a Memorandum of Understanding, and work plan complete with budget.

March 18, 2010 – SVCA Motion G10-37

THAT the report entitled Dam Hydraulic Assessment Study – Upper Durham Dam, completed by WESA OEL Hydrosys of Carp, Ontario, be received, and further

THAT staff be directed to present the report to the Municipality of West Grey, and further

THAT upon approval of the Municipality of West Grey, staff request proposals for the structural assessment and spillway design modifications (if required).

April 5, 2010 – West Grey Motion 92-10

BE IT RESOLVED THAT, the Council of the Municipality of West Grey hereby supports the proposed Upper Durham Dam Emergency Spillway project estimate of $116,000, of which 50% or $58,000 is the responsibility of the Municipality, of which $13,321 has been expended to date;

AND FURTHER THAT, $37,000 be allocated in the 2010 draft budget and $7,679 be considered in future years

December 11, 2008 – SVCA Motion #G08-90

THAT the firm of OEL-HydroSys of Montreal, Quebec, be engaged to provide calculations relative to the Upper Durham Dam Repair Project.

January 22, 2021 – SVCA Motion #G21-20

THAT a SVCA Water Resources Committee be formed;

AND FURTHER THAT the SVCA Chair and four (4) Directors be appointed to this Committee: Dan Gieruszak, Cheryl Grace, Tom Hutchinson, and Christine Robinson.

January 22, 2021 – SVCA Motion #G21-21

THAT the Water Resources Committee be directed to make a recommendation pertaining to access to the pedestrian walkway at the Durham Upper Dam;

AND THAT the gates to the pedestrian walkway remain closed until such time as the SVCA Board of Directors decides otherwise;

AND FURTHER THAT the Municipality of West Grey and the public be kept informed of relevant developments.

February 18, 2921 – SVCA Motion #G21-21

THAT a Public Safety Assessment be completed at the Durham Upper Dam (McGowan Falls Dam), and

THAT walkway gates allowing pedestrian access over the Durham Upper Dam continue to be closed pending Public Safety Assessment recommendations; and

THAT the communications plan be implemented immediately; and

FURTHER THAT staff place appropriate signage at the dam.

February 2, 2021 – Water Resources Committee WRC21-07

THAT the Water Resources Committee recommends to the Full Authority that until a public safety assessment is conducted at the Durham Upper Dam (McGowan Falls Dam) walkway gates continue to be closed pending public safety assessment recommendations;

AND FURTHER, THAT a communications plan be prepared; AND FURTHER, THAT Authority staff place appropriate signage at the dam.

February 18, 2021 – SVCA Board Motion #G21-27

THAT a Public Safety Assessment be completed at the Durham Upper Dam (McGowan Falls Dam), and

THAT walkway gates allowing pedestrian access over the Durham Upper Dam continue to be closed pending Public Safety assessment recommendations; and

THAT the communications plan be implemented immediately; and

FURTHER THAT staff place appropriate signage at the dam.

May 17, 2021 – Water Resources Committee WRC20-14

THAT staff be directed to proceed having B.M. Ross and Associates complete the structural review of the concrete components of both the Upper and Lower Durham Dams, as well as the structural analysis of the metal walkway at the Upper Durham Dam.

AND FURTHER THAT staff be directed to advise the Water Resources Committee of any recommendations from this review.

May 17, 2021 – Water Resources Committee WRC20-15

THAT the Water Resources Committee recommends to the Full Authority that the Durham Upper Dam (McGowan Falls Dam) walkway gates continue to be closed, as it does not meet the standard of a pedestrian walkway;

AND FURTHER, THAT SVCA pursues installation of signage, inspection protocols, and chain link fencing as outlined in the PSP;

AND FURTHER, THAT Authority staff pursue investigation of the need for a safety boom;

AND FURTHER, THAT SVCA established an educational program to inform the public about the hazards at the Upper Durham Dam; AND FURTHER, THAT a communications plan be prepared;

AND FURTHER, THAT funds for this work is withdrawn from the Water Projects reserve;

AND FURTHER, THAT SVCA investigates options with respect to technical, structural changes, to enhance the walkway bridge in order to allow public access, including financial costs and timelines, and to report back.

May 20, 2021 – SVCA Board Motion #G21-55

THAT the Upper Durham Dam walkway remain closed to the public as it does not meet the standards of a pedestrian walkway until the concerns are addressed;

AND THAT appropriate signage, inspection protocols, chain link fencing, be installed as outlined in the Public Safety Plan;

AND THAT staff be directed to investigate the need for a safety boom and have it installed if necessary;

AND THAT staff be directed to establish an educational program to inform the public about the hazards at the Upper Durham Dam;

AND THAT a Communication Plan be implemented to convey the decision made;

AND THAT staff be directed to investigate options with respect to technical and structural changes to enhance the pedestrian walkway in order to allow public access, including financial costs and timelines, and to report back to the Board as soon as possible;

AND FURTHER THAT an estimated $15,000 for these activities be drawn from the Water Projects Reserve.

May 20, 2021 – SVCA Motion #G21-56

THAT staff be directed to proceed having B.M. Ross and Associates complete the structural review of the concrete components of both the Upper and Lower Durham Dams, as well as the structural analysis of the pedestrian walkway at the Upper Durham Dam.

AND FURTHER THAT staff be directed to advise the Board of any recommendations from this review.

June 15, 2021 – Water Resources Committee WRC21-19

THAT staff be directed to recommend to the Full Authority that the H-beam be installed into the Upper Durham Dam at a cost of $40,000 by Fall 2021;

AND THAT $20,000 will be drawn from SVCA's capital assets reserve to cover this cost;

AND THAT staff be directed to seek quotations for a cost benefit analysis regarding the continued use of the dam in frazil ice and flood control, and present this back to the Board of Directors and the Water Resources Committee;

AND THAT staff be directed to seek quotations for a feasibility study to complete the upstream structural work using low overflow level control weirs to control frazil ice and report back to the Water Resources Committee and Board of Directors;

AND THAT staff be directed to apply for WECI funding for both the Durham Upper and Lower Dams, concrete work in 2022, 2023, 2024, and 2025;

AND FURTHER THAT if unsuccessful at acquiring WECI funding, SVCA and the Municipality of West Grey shall proceed with the concrete repairs to the Durham Upper and Lower Dams in summer of 2026, with both parties contributing 50% of the required cost for the concrete repairs.

June 15, 2021 – Water Resources Committee WRC21-20

THAT staff be directed to recommend to the Full Authority the investment in the following short-term repair solution to the DUD pedestrian walkway in the amount of $15,000: SVCA staff would raise the railings on both sides of the pedestrian walkway, bent joists would be fixed and / or reinforced, as necessary, paint would be applied to the walkway as a refresh. This would be considered a temporary fix until such time as a more permanent solution can be decided upon. (Estimated Cost: $15,000 including labour, welding rods, steel, and equipment);

AND THAT SVCA's contribution of these funds ($7,500) be taken from the $15,000 already allocated to implement the safety measures in the Public Safety Plan at the Durham Upper Dam;

AND THAT staff be directed to recommend to the Full Authority that a longer-term option for a pedestrian walkway be pursued for implementation by 2026;

AND FURTHER THAT SVCA staff communicate all decisions made at the Full Authority pertaining to the Durham Dams.

June 17, 2021 – SVCA Motion #G21-68

WHEREAS the Durham Upper Dam is integral to the mitigation of flooding due to frazil ice;

AND WHEREAS the Durham Upper Dam increases the quality of life and is a recognized asset to members of the local and broader community;

AND WHEREAS the Municipality of West Grey is the benefitting municipality, and all costs are to be shared with Saugeen Valley Conservation Authority at a ratio of 50:50;

THEREFORE BE IT RESOLVED THAT Saugeen Valley Conservation Authority invest in the following short-term repair solution to the DUD pedestrian walkway in the amount of $15,000: SVCA staff would raise the railings on both sides of the pedestrian walkway, bent joists would be fixed and / or reinforced, as necessary, paint would be applied to the walkway as a refresh. This would be considered a temporary fix until such time as a more permanent solution can be decided upon. (Estimated Cost: $15,000 including labour, welding rods, steel, and equipment);

AND THAT SVCA's contribution of these funds ($7,500) be taken from the $15,000 already allocated to implement the safety measures outlined in the Public Safety Plan for the Durham Upper Dam;

AND THAT staff be directed to investigate a longer-term option for a pedestrian walkway to be implemented by 2026;

AND FURTHER THAT SVCA staff communicate all decisions made at the Full Authority pertaining to the Durham Dams to the Municipality of West Grey to make them known by the public.

June 17, 2021 – SVCA Motion #G21-69

WHEREAS the Durham Upper Dam is integral to the mitigation of flooding due to frazil ice;

AND WHEREAS the Durham Upper Dam increases the quality of life and is a recognized asset to members of the local and broader community;

AND WHEREAS the Municipality of West Grey is the benefitting municipality, and all costs are to be shared with Saugeen Valley Conservation Authority at a ratio of 50:50;

THEREFORE BE IT RESOLVED THAT staff be directed to recommend to the Full Authority that an H-beam be installed into the Upper Durham Dam at a cost of $40,000 by Fall 2021;

AND THAT $20,000 be drawn from SVCA's Working Capital Reserve to cover this cost;

AND THAT staff be directed to seek quotations for a cost benefit analysis regarding the continued use of the dam in frazil ice and flood control, and present this back to the Water Resources Committee and the Board of Directors;

AND THAT staff be directed to seek quotations for a feasibility study to complete the upstream structural work using low overflow level control weirs to control frazil ice and report back to the Water Resources Committee and Board of Directors;

AND THAT staff be directed to apply for WECI funding for both the Durham Upper ($178,300) and Lower ($37,600) Dams concrete work in February 2022, 2023, 2024, and 2025;

AND FURTHER THAT if unsuccessful at acquiring WECI funding, SVCA and the Municipality of West Grey shall proceed with the concrete repairs to the Upper and Lower Durham Dam in summer of 2026, with both parties contributing 50% of the required cost for the concrete repairs.

July 6, 2022 – Water Resources Committee WR22-08

THAT staff evaluate the financial implications of commencing an EA for the Durham Upper Dam and a feasibility study for Neustadt Creek; and

THAT staff continue to work with GSS Engineering and the Municipality of West Grey directly to undertake emergency work on Meux Creek in 2022; and further

THAT staff apply for WECI funding in 2023 when the Repair of Gabion Baskets – Meux Creek project is re-tendered.

May 4, 2023 – Water Resources Committee Motion WR23-05

THAT the Water Resources Committee recommend to the Board of Directors that staff be authorized to proceed with Phase 1 of an Environmental Assessment for the Durham Upper Dam, pending WECI funding; and

FURTHER THAT it be recommended that the Municipality of West Grey be the benefiting municipality, contributing 100% of the project costs not covered by grant funding.

May 18, 2023 – SVCA Motion #G23-45

THAT staff proceed with Phase 1 of an Environmental Assessment for the Durham Upper Dam, pending Water and Erosion Control Infrastructure (WECI) funding;

AND FURTHER THAT the Municipality of West Grey be deemed the benefiting municipality, contributing 100% of the project costs not covered by grant funding.

May 16, 2024 – SVCA Motion #G24-68

THAT the Board of Directors receive Staff Report #WR-2024-03, dated May 16, 2024, regarding the Durham Upper Dam Hazard Potential Classification for information.

Presented as Correspondence at the October 5, 2006 Board meeting

Corporation of the Municipality of West Grey

402813 Grey Road #4, RR#2, Durham, Ontario N0G 1R0

Mark Turner, Deputy Clerk
Ken Gould, Public Works Manager
Ray Holliday, CBO & By-Law Enforcement

Sharon Hinds, Treasurer/Deputy Tax Collector
Kerri Mighton, Tax Collector/Deputy Treasurer
Philip Schwartz, Fire Chief/EMO/ Health &Safety

Ph: 519 369-2200
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Email: info@westgrey.com

July 12, 2006

JUL 14 2006

Saugeen Valley Conservation Authority
Attention: Jim Coffey, General Manager
RR #1
Hanover ON N4N 3B8

Dear Mr. Coffey:

RE: Draft Fazil Ice Study, 2005

Upon review of the frazil ice study prepared by Hatch Acres, the Municipality of West Grey is very much in favour of operating the dams through Durham in such a manner as to provide more ice storage for the winter months.

Also the implementation of the prediction methodology, which may help determine when to mobilize ice excavation equipment, may be a benefit.

Trusting this is satisfactory, I remain,

Yours truly

Ken Gould

Ken Gould, Public Works Manager

KG/jm

Gen. Mgr	✓		Mgr. Planning		
Sr. Mgr. Water Res.	✓		Env. Tech		
Sr. Mgr. Flood Warn. [illegible] Mgr.	✓	✓	Mgr. Finance		
Mgr. Forestry			Mgr. Comm.		
Forest Tech			[illegible]		
PA Coord			Graphics		
Exec. Sec			Acct. Clerk		
Bd. of Dir			Chairman		
Exec			Note:		
File:					

Presented as Correspondence at the December 14, 2006 Board meeting

Ministry of Natural Resources | **Ministère des Richesses naturelles**

Midhurst District
Owen Sound Area Office
1450 7th Ave East
Owen Sound, ON N4K 2Z1

Telephone: (519) 376-3860
Facsimile: (519) 372-3305

Ontario

	✓		Planning
			Tech
			Mgr., Acct.
Mgr., Forestry			Mgr., Land Mgt.
Forest Tech.			Mgr., Comm.
Ed. Coord.			Water Quality Spec.
Exec. Sec.			Graphics
Bd. of Dir.	✓		Acct. Clerk
Exec.			Chairman
File:			Notes

November 21, 2006

Saugeen Valley Conservation Authority
Rural Route #1
Hanover, ON N4N 3B8

Attention: Jim Coffey, General Manager

Dear Mr. Coffey:

SUBJECT: **Mid Durham Dam Frazil Ice Study, 2005**

Ministry staff has reviewed the above noted report and do not agree with the conclusions and recommendations regarding the Mid Durham dam.

The study recommends maintaining the reservoir level at Full Supply Level (FSL) throughout the winter months. It would not appear that an analysis was undertaken to determine if the dam is capable of withstanding the associated increase in ice loading.

It should be noted that the dam does not have an emergency spillway. Maintaining the reservoir at the FSL, would significantly reduce available live storage and increase the potential of dam overtopping and an uncontrolled release of the reservoir. It is recognized that the proposal includes an automatic gate to facilitate flood flow passage. However, winter operation of the gate would be costly due to required gate and/or gain heating. Even with heating, damage to gate seals is a real possibility. More importantly, heating systems may not be effective when weather and flow conditions result in a build up of ice on the downstream piers and against the upstream face of the gate. Therefore, from a dam safety perspective, it is not prudent to rely upon gate operation during winter months.

The study reports an estimated cost for the proposed automated gate of $300,000. We do not believe this estimate includes adequate allowance for required approvals (Environmental Assessment Act, Navigable Waters Protection Act, Fisheries Act, etc.) or the costs of: detailed design; construction supervision; associated dam safety modifications; water level recorder(s); gate position sensor(s); programmed logic controller; automated recording of real time data; uninterruptible power supply; gate and gain heating systems; standby power; alarms; warning systems; Bell and Hydro services; housing for the above; housing climate control; Operations, Maintenance and Surveillance Manual, dam operator training, etc. Based on our experience with automated gates, we believe the proposal at Mid Durham Dam would exceed $1 million up to the point of commissioning and would have significant ongoing annual costs thereafter.

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In summary, we can not support the proposed automated gate and operational change at Mid Durham Dam because of the potential dam safety implications and the associated high costs. We recommend that the Conservation Authority focus it's efforts on safer, more reliable and more cost-effective alternatives such as the installation of weirs in the upper reach to control frazil ice production and improvements to the channel capacity through the Town of Durham.

Please be advised that the Ministry is planning to retain a consulting engineering firm in the near future to undertake a Dam Safety Review of the Mid Durham Dam. As a part of this study, we will obtain an independent assessment of the cost and feasibility of installing an automated gate at this site.

In addition, I understand you are working with John Cottrill at the Conservation Authorities Section to obtain funding this fall to start implementing some of the report's recommendations that do not affect the Mid Durham Dam.

Please contact me if you have any questions concerning these comments.

Yours sincerely,

Kevin M. Hawthorne
Area Supervisor
Owen Sound Area Office

c.c. John Cottrill
Les Pataky

Durham Frazil Ice Study & Operational Changes for 2006/07

The General Manager presented this report to the Board of Directors.

This Report attempts to address the key issues to help prevent development of frazil ice buildup in the former Town of Durham. Eight alternatives for ice management were presented in the report.

MOTION # G06-93

Moved by Ron Hewitt
Seconded by Anne Eadie
THAT the report prepared by Hatch Acres, dated November 2006 and titled Former Town of Durham Frazil Ice Study 2005, be received and further
THAT staff be directed to present the report to the Municipality of West Grey for its information and direction regarding implementation, and further
THAT the Board of Directors approve the use of the Upper Dam as a test case for the storage of frazil ice as well as the associated change in dam operations, and further
THAT the Municipality of West Grey be designated the benefiting municipality for this pilot project and, as such, are responsible for the Authority share of the project costs.

Carried

Property Boundary Marking Project

A copy of Report # 7b, entitled Property Boundary Marking, is appended to the office copy of these minutes.

MOTION # G06-94

Moved by Tom Kuglin
Seconded by Gord Campbell
THAT Saugeen Conservation enter into a partnership with Service Canada in carrying out the Property Boundary Marking Project as stated above, and further
THAT Saugeen Conservation properties be marked and signed as per the sample sign.

Carried

2007 Meeting Schedule

A copy of Report # 7c, entitled 2007 Meeting Schedule, is appended to the office copy of these minutes.

MOTION # G06-95

Moved by Roland Anstett
Seconded by Manley Risk
THAT the 2007 Board of Directors meeting schedule, as outlined in Report # 7c, be approved as presented.

Carried

FALLIS
FALLIS &
McMILLAN

BARRISTERS, SOLICITORS & NOTARIES

TELEPHONE (519) 369-2515
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CLAUDE E. FALLIS, LL.B., Q.C. (1910 - 1996)
PETER T. FALLIS, B.A., LL.B.,
ERNEST J. McMILLAN, B.A., LL.B

195 LAMBTON STREET EAST
DURHAM, ONTARIO
CANADA, N0G 1R0

March 2nd, 2007

VIA FAX: 519-364-6990

Saugeen Valley Conservation Authority
R.R. # 1,
Hanover, ON
N4N 3B8

Attention: Board Chairman & Authority Manager

Dear Sirs;

RE: McGOWAN FALLS DAM - DURHAM

This confirms my telephone discussion with David Pybus of the SVCA last week in which we had a full and frank discussion about the pending potential disaster situation that your Authority may have caused by its decision to leave in place the boards in the Upper Dam in Durham for this winter season 2006-2007.

Mr Pybus indicated that political pressure from West Grey Council to leave the boards in the Upper Dam precipitated the decision of the SVCA to do just that. The alleged reason for such political request of the Municipality was anchored in an attempt to stop 'frazzle ice' from flowing into the traditional southern areas of the Saugeen River as it flows through the southern built up area of Durham. However the boards and damming devices at the lower two dams were removed.

What has now happened and WILL soon happen above the Upper Dam is just this:

- The Saugeen River, as it runs easterly from the Upper Dam to the bridge at the 2nd Concession, is predominantly now frozen over to such an extent that the formation of frazzle ice is all but an impossibility at this point of time.

- Almost all of the moving river-waters now flow under the present ice cover located over the majority of the moving Saugeen River, and which now flows under the thick ice surface on the Mill Pond area immediately above and to the east of the Upper Dam

- However the entire River level immediately behind the Upper Dam has been artificially allowed to rise by approximately 5 feet by the SVCA's decision to tamper with mother nature and to leave the Dam boards in place. That means that the east limit of the ice filled, flat Mill Pond area now reaches behind the Porter and Bell properties up to the west limit of our

properties, (the "Fallis properties").

- The usual and soon anticipated Spring Run-Off of the Saugeen River has been known, for almost 40 years until this year, (and since the Bells have occupied their property), to flow freely within the existing limestone river channel, and through the Mill Pond area and to and over the present concrete spillways at the Upper Dam, unimpeded by any Dam boards whatsoever.

- Since the boards were left in place in the Upper Dam in the Fall of 2006 all of the open, low, middle campground area of the SVCA Park, and the usual river-water overflow area therein, has been fully filled and compacted with ice since late December and January, (being that area across the Saugeen River from the Eckhardt, Ferrier, Hunt and Auckland and other easterly properties, situate east of the Fallis properties).

- The effect of that ice blockage in the normal overflow area of the SVCA Park has already forced the flowing Saugeen River water to form an ice dyke wall along the north side of the River south of that normal overflow area, which has yet been made harder and more compact by the flowing river-waters. The open moving water then was forced southerly over the northerly part of the west limit of the Fallis properties and much more intrusively over the Bell and Porter properties, but with river flow rates that have not yet even approached the normal Spring Run-Off peak water levels and flow rates. The Saugeen River has long since frozen over.

- The fullness of the soon anticipated Spring Run-Off will be forced by the 5 foot high Dam boards to rise to at least a minimum 3 feet above the top of the existing boards in the Upper Dam to allow a sufficient flow rate across the full width of the Upper Dam to permit the Spring Run-Off River flow rate to be dealt with successfully.

- With the Dam boards in place as they are now, there will then, during Spring Run-off, be a headwall of up to 8 feet of water immediately behind and above the Upper Dam, which means that the additional 5 feet of clearance will be required to allow the Spring Run-Off clear the Dam and the Mill Pond, and which will create a gradually decreasing 3 foot wall of water on top of the up to 5 foot height increase of the flat water area lying to the east limit of the Bell property running eastward for approximately a quarter mile or more. Effectively the Saugeen River now has the very real and frightening potential to rise an additional 5 feet above the normal high water levels of the Spring Run-Off of the Saugeen River lying opposite the Porter, Bell Fallis, Eckhardt, Ferrier, Hunt, Auckland and other easterly properties, in a much reduced floodway area presently already filled with ice. The only area available for relief from such flooding lies to the south of the Saugeen River which is owned by those same parties and occupied by 4 and more of them.

- The flow rate of the Spring Run-Off WILL washout tree cover and habitat along the Fallis, Bell and Porter properties and many of the easterly properties and will erode and ruin their lands, and may, penetrate the southern extremities of their properties and potentially threaten the continued occupation of some of the houses therein. Tree cover, gravel and soil that will be stripped and eroded by such conditions will flow down and be pushed into the main river bed which will thereby be unnaturally altered, and the tree cover taken into the River risks

being caught in the Dam boards and behind the Upper Dam which can only cause more blockage and more flooding by impeding the flow of the River waters.

- There is every risk that the potential high water levels precipitated by such a SVCA induced catastrophic event may exceed the flood elevation levels anticipated by a 150 Year Storm, (Hurricane Hazel levels), causing major horrific damage to those easterly properties, *but without any rainfall whatsoever*.

I am very concerned that the steps of non-action, have knowingly not been taken by the SVCA, but without any study or measurement by the SVCA of the impact of the such non-action which has artificially now allowed the water level behind the Upper Dam to remain at least 5 feet higher than mother nature would have created. The boards in the Upper Dam are only annually installed to provide a summer swimming area for the Community, and which could easily be removed in non-winter conditions if circumstances otherwise so required. To this writer's knowledge they have never before been utilized for frazzle ice interventions.

The SVCA has unfortunately reacted to political persuasion generated from community folklore about leaving the boards in the Dam to avoid frazzle ice problems elsewhere in the Municipality, a condition which had no recorded problematic precedent within Durham before 1997. The SVCA has been lobbied politically to leave the boards in the Upper Dam, but without making any effort or attempts to first discuss such potential consequences of impact with and upon any of the landowners to the east who logically might suffer from such a SVCA decision.

Such a decision by the SVCA to leave the boards in the Upper Dam, without any notice of intention to do so being first given to any of those landowners who would reasonably and logically expect to be potentially effected by such decision of non-action constitutes, in this writer's opinion, a dereliction of an implied duty of the SVCA to notify those potentially effected landowners of its intentions to do so, and as such, constituted an abdication of the most basic obligation of responsibility owed by any conservation authority in Ontario, namely the obligation to give "*Notice of Intention*" to those potentially effected landowners in order to allow those landowners an opportunity to make free and open comment to the SVCA well before any final decision was made by the SVCA to leave the Dam boards in place. Such failure constitutes a denial by the SVCA of the most basic right to natural justice owed by the SVCA to those landowners.

I therefore make the following demands of the SVCA to be immediately implemented before the Spring Run-Off of the Saugeen commences.

1. That boards in the Upper Dam be immediately removed by the SVCA. (I realize that the boards are severely impacted with built-up ice, and that the task will be exceedingly difficult, but nevertheless it must be undertaken). Those boards have now served their early winter purpose of reducing frazzle ice conditions, a condition that cannot now be reasonably contemplated to still happen as the River is for the most part fully frozen over. Boards at the Upper Dam need to be removed NOW.

2. That the SVCA nevertheless, and additionally, create by excavation, a clear channel around the North end of the Upper Dam through a sufficient part of the existing berming, lowered to an excavation level below the level of the existing spill ways within the Upper Dam in order to relieve against Spring Run-Off flooding. This step has been observed by me to have been undertaken previously by the SVCA , and since 1975 when my wife and I took up residence some 32 years ago in our present home. After the Run-Off the berming could be restored.

3. That the SVCA now will indicate to me in writing, and to any other potentially effected easterly land owners that it will be financially responsible for any property and resulting damages suffered by to any of the easterly located properties effected by the failure of the SVCA to remove the Upper Dam boards.

4. That the SVCA now provide, in writing, statements as to what pre-planned steps it can now take to relieve against any risk of potential damage to those potentially effected easterly lands, and to advise all potentially effected landowners east of the Upper Dam that it will now host a meeting with those landowners and West Grey Municipal Officials, to be organized on an urgent basis, to establish immediate constructive dialogue.

5. It is most important that the flow of river-waters runs directly over the lower concrete spill way, rather than over the top of the Upper Dam boards 5 feet above the spillway, and that this must be NOW achieved to prevent a catastrophe. Cutting out the bottom boards by chainsaw to achieve lower level water flow might be an immediate option, so that upper boards could remain to hold back the Upper Mill Pond solid ice field.

Because of the imminent threat and immediate urgency a full detailed reply is requested by March 9th at the outside. A copy of this letter is being delivered to the Municipality of West Grey and is being provided to the Local MPP, Mr. William Murdoch, as well as the Ministry of Natural Resources and to media.

We await your reply and we remain,

Yours truly,

FALLIS FALLIS & McMILLAN

PTF: Peter T. Fallis

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FALLIS
FALLIS &
McMILLAN

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195 LAMBTON STREET EAST
DURHAM, ONTARIO
CANADA, N0G 1R0

March 8TH, 2007

VIA FAX: 519-364-6990

Saugeen Valley Conservation Authority
R.R. # 1,
Hanover, ON
N4N 3B8

MAR - 8 2007

Attention: David Pybus

Dear Sir;

RE: McGOWAN FALLS DAM - DURHAM

Thank you for your letter of March 7th, which contained very welcome news and which promise of remediation was manifested today by the presence of working equipment at the Upper Dam.

I was called yesterday and again to day to attend a meeting at the West Grey Council Chambers between the SVCA and West Grey Representatives scheduled for 2:00PM Monday March 12th. I advised the person who called that the reason we had requested a meeting was to be able to have an opportunity to persuade West Grey and the SVCA of the need for action. That action is now promised and has been acted upon today, steps which demonstrated to this writer that the concerns were validly raised. As the action requested has now been initiated I indicated to the SVCA representative that I thought that the need for a meeting had now passed as the remediation steps were underway. This would save both the Municipality and SVCA from incurring additional expenses.

The SVCA representative indicated that the SVCA wanted the meeting with the Municipality in any event, and that the meeting was scheduled for 2:00PM Monday, and that any concerned land owners were welcome to attend. I plan to attend and anticipate other land owners will attend as well.

A copy of this letter is being sent to the Municipality. I also received a letter today from Mr. Mark Turner on behalf of West Grey advising that a Report by its Public Works Manager would be presented to Council on March 19th. The meeting scheduled for March 12th will no doubt be central to that Report

Again I thank the Authority and Mr. Pybus for those very prompt, responsible and hopefully effective interventions. I hope that such actions will head-off the very real risk of a flood damage threat that might otherwise occur but for such interventions.

I remain,

Yours truly,
FALLIS FALLIS & McMILLAN

PTF: Peter T. Fallis

cc: Municipality of West Grey
Via fax: 519-369-5962

\\Peter1\storage (d)\C.PETER\07 PETER\SVCA Letter, March 8, 2007.wpd

Correspondence in Board package on July 12, 2007

Corporation of the Municipality of West Grey

402813 Grey Road #4, R.R.#2, Durham, Ontario N0G 1R0

Christine Robinson, CAO/Clerk
Mark Turner, Deputy Clerk
Ken Gould, Public Works Manager

Kerri Mighton, Treasurer/Deputy Tax Collector
Sharon Hinds, Tax Collector/Deputy Treasurer
Ray Holliday, CBO/By-Law Enforcement/Property Standards

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	✓	✓	Mgr. Planning	
			Tech	
	✓		Mgr., Acct.	
Mgr., Forestry			Mgr., Land Mgt.	
Forest Tech.			Mgr., Comm.	
Ed. Coord.			Water Quality Spec.	
Exec. Sec.			Graphics	
	✓			
File:			Note:	

COPY

July 6, 2007

Honourable David Ramsay
Minister of Natural Resources
Whitney Block
6th Floor
Room 6630
99 Wellesley Street West
Toronto, On
M7A 1W3

Dear Minister Ramsay,

Re: Ministry of Natural Resources Funding – Water and Erosion Control Infrastructure Program

The Municipality of West Grey Council has received notification through the Saugeen Valley Conservation Authority that $30,000 matched funding from the Water and Erosion Control Infrastructure Program has been approved for remedial work to the Saugeen River regarding frazil ice.

The Saugeen Valley Conservation Authority and the Municipality of West Grey have changed the operations of the upper dam in relation to containing frazil ice. The Municipality of West Grey wishes not to proceed with any major construction to the lower Saugeen River system at this time until further investigation of the upper dam operation has been completed. The Municipality of West Grey is trying to find economical solutions to control frazil ice and is therefore requesting a delay in the funding.

The Municipality of West Grey is concerned whether future funding to the municipality will be jeopardized should Council determine not to proceed with matching this current funding. We would appreciate receiving clarification on this matter.

Yours truly,

Kevin Eccles.

Kevin Eccles
Mayor
The Municipality of West Grey

cc. Jim Coffey, General Manager/Secretary-Treasurer, Saugeen Valley Conservation Authority

Correspondence in Board package on July 10, 2008.

BMROSS
engineering better communities

Gen. Mgr.	✓	✓	Sr. Mgr. Planning		
Sr. Mgr., Flood Warn & Land Mgt.			Eng. Tech		
Mgr., Water Qual/ Stewardship Serv.	✓		Mgr., Acct.		
Mgr., Forestry			Mgr., Land Mgt.		
~~Forest Tech.~~			~~Mgr., Comm.~~		
Ed. Coord.			Water Quality Spec.		
Exec. Sec.			Graphics		
Bd. of Dir.	✓		Acct. File No. 08113		
Exec.			Chairman		
File:			Note:		

B. M. ROSS AND ASSOCIATES LIMITED
Consulting Engineers
62 North Street, Goderich, ON N7A 2T4
p. (519) 524-2641 • f. (519) 524-4403
www.bmross.net

July 3, 2008

David MacPherson
Saugeen Valley Conservation Authority
R. R. 1
261123 Grey County Rd 28
Hanover, ON N4N 3B8

JUL – 8 2008

Dear Sir:

RE: Upper Durham Dam

Further to our meetings on May 22nd and June 25th, we wish to report on our observations at the Upper Durham Dam and make recommendations for erosion protection.

Background

We understand that the normal practice at this site is to pull the stoplogs at the beginning of winter and re-install them each summer. However, in the winter of 06/07 and 07/08 the Municipality and SVCA left the stoplogs in place in an attempt to reduce the effects of ice damming downstream. Although the results of this two-year trial were encouraging, there was a significant overflow behind the abutments on both sides of the dam in January.

You indicated that the overflow on the north side was acceptable since it only affected the park and most of the substrate there is the bedrock so that erosion potentials are limited. However, on the south side of the dam, the overflow eroded a deep channel downstream of the abutment that was then filled with large-piece riprap of natural stone.

Erosion on the south side is not to be tolerated as it could threaten the dyke located there to protect the town. The dyke was constructed about 1976. Plans indicate that a concrete cutoff wall (un-reinforced, two feet thick) was to be constructed from the core of the dyke northwards to the south abutment of the dam. This wall was to extend down to bedrock.

An un-dated photograph in SVCA files shows an overflow event many years ago, probably before 1976. The photograph clearly shows a corrugated steel pipe, estimated to be about 1.5 m diameter, coming out of the south abutment. There is also shown, an auxiliary spillway south of the south abutment, complete with footbridge and gains for stoplogs.

Observations

At the June 25th site visit, excavations were made with SVCA staff and equipment. The excavations were made at, and south of the south abutment to determine the continuity of the cut-off wall in that area.

One excavation was done about 3 m south of the face of the south abutment. It revealed a 2.7 m wide chamber that may have been the entrance to a millrace or the corrugated steel pipe observed in the photograph. The chamber was filled with coarse granular material and there was a round opening on the west side which would match the photographed pipe. The opening through the concrete wall appears to have been blocked by wood planks that have rotted. The obvert of this opening measures about 1.4 m below the deck of the abutment.

Excavating further to the south revealed another opening; probably the auxiliary spillway seen in the old photograph. This is a rectangular opening measuring 4 m wide. The south side of this opening is a concrete wall that is 0.3 m wide at the top and 1.3 m wide lower down. From this wall, extending southwards is a north-south cutoff wall of cast concrete measuring 0.3 m at the top and wider at the base. The excavation was extended to about 1.8 m depth where it was stopped by broken bedrock. Although the bottom of this excavation was below the level of the upstream pond, it remained dry, suggesting that the cutoff wall makes an effective barrier.

A former SVCA staff member, Jack MacPherson recalls that a concrete cutoff wall was constructed as part of the 1976 dyke project and did extend down to bedrock.

The crest and slopes of the south side of the dam are protected with concrete gobi-mat erosion protection. This protection was disturbed as part of the investigation. In some areas the gobi-mat was double thickness.

Conclusions

The 1976 cutoff wall was constructed to bedrock and provides an effective barrier wall to water flow through the soil. However, it only reached the first of 3 walls that run parallel to the stream. There still exists a 4 m wide rectangular opening and a 1.5 m diameter opening filled only with granular material. Both of these represent areas of weakness that could lead to piping and erosion.

The overflow that occurred this past March resulted in gully erosion on the downstream side of the south abutment before re-entering the main stream below the dam. This was in an area that appears to have no cut-off wall. Had the erosion not been stopped by the placement of the heavy riprap, the gully would likely have opened up the former auxiliary spillway and effectively breached the dam down to the floor of that spillway. The resulting flow could have endangered the dyke south of this area.

Recommendation

It is important to seal up the two gaps in the cutoff wall of the south abutment. This is recommended to reduce the potential for piping and also to provide an erosion barrier in the event of an overflow. The gaps can be sealed with reinforced concrete, anchored to the existing concrete structures.

If the stoplogs are to remain in for future winters, it is assumed that overflows will become more frequent. It will then be important to prevent the type of erosion which started to develop last January. It is proposed that the overflow water be collected in a wide, shallow swale that is heavily armoured with cable-concrete or other flexible mat. The swale will direct the water northwards, back to the river channel below the dam. This cable-concrete will replace the gobi-mat in some areas. The gobi-mat is only interconnected by the filter cloth on the base and appears to have no defined anchorage. The filter cloth has aged and seemed to tear easily during the test excavations. There is some question as to how it will perform under heavier flows.

The area of the south overflow is required as a pathway for pedestrians and maintenance equipment. The cable concrete products provide a flush surface, similar to gobi-mat and the spaces between can be filled with topsoil and seeded. Grass cutting, if desired, can still be done with conventional equipment. The cables of the mats would be anchored mechanically into the face of the cutoff wall to provide a continuous protection.

Probable Costs

In order to repair the identified weaknesses and carry out the above recommendations, the following work program could be followed:

1.	Mobilization and demobilization	$ 6,000
2.	Excavation and restoration at abutment	$ 3,000
3.	Reinforced concrete cutoff walls 4.8 m^3 @ $2,000	$ 9,600
4.	Excavation, restoration, topsoil & seed at spillway	$ 7,000
5.	Cable concrete 260 m^2 @ $130	$33,800
6.	Contingency allowance	$ 6,000
	Sub-total by contract	$65,400

Engineering:

• Site survey & report	$ 2,700
• Design drawing and specifications	$ 5,300
• Contract administration & construction review	$ 4,900
Sub-total of engineering	$12,900

Total probable cost of project $78,300

The probable costs given above represent a typical project involving contractor prices and contract administration. It does not consider any in-house construction costs or administration by the Authority or the Municipality.

Limitations

B. M. Ross and Associates Limited have been asked only to consider ways to prevent erosion due to potential overflow at the south side of this dam. Hydrology, hydraulics and structural stability are not included in the scope of work assigned to BMROSS.

Operation and maintenance of the dam and dyke are also beyond the scope of the work assigned to BMROSS for this project.

Next Steps

If SVCA wishes to proceed with the work program as outlined or as modified, the next step would be to gather topographic survey information from the site and prepare an AutoCAD model for use in the design and the contract drawings.

From there, specifications, contract package and tender documents could be prepared.

Please contact us if you have any questions.

Yours very truly

B. M. ROSS AND ASSOCIATES LIMITED

Per _____
A. I. Ross, P. Eng.

AIR:es

Internal memo summarizing meeting with SVCA, MNR, West Grey, and BM Ross about Durham Upper Dam operations

Memo

Date: November 5, 2008

To: Meeting Attendants

Cc: File

From: David Macpherson

RE: **Upper Dam Meeting November 3, 2008**

On November 3, 2008 a meeting was held at the Upper Durham Dam to discuss the proposed repairs at the structure. The meeting was attended by representatives of The Municipality of West Grey, Saugeen Conservation, BMROSS and the Ministry of Natural Resources. The following list includes the names and titles of the individuals in attendance:

Jim Coffey	Saugeen Conservation, General Manager / Secretary Treasurer
Dave Pybus	Saugeen Conservation, Senior Manager, Flood Forecasting
David Macpherson	Saugeen Conservation, Manager, Water Resources / Stewardship Services
Andrew Ross	BMROSS & Associates, Engineer
John Bell	Director, Saugeen Conservation / West Grey Councillor
Dan Sullivan	Director, Saugeen Conservation / West Grey Deputy Mayor
Mark Shoreman	MNR, Midhurst District Manager
Kevin Hawthorne	MNR, Owen Sound Area Supervisor
Quazi Alam	MNR, Senior Project Engineer
Mark Stephen	MNR, Senior Project Engineer

Jim Coffey provided an overview of the situation;

- 2007 un-forecasted rain on a significant snowpack combined with unseasonably warm temperatures resulted in high flows and some erosion of the south side of the dam embankment.
- The dam had been left in to manage frazil ice that is generated in the ~30km reach upstream of the dam. The change in operation is a pilot project and is following a recommendation made by Hatch Acres in a 2005 Frazil Ice Study that was prepared for the Town of Durham & Saugeen Conservation
- The operational change mimics natural events that have occurred in the past when frazil ice snags on the dam sluices and creates a blockage at the Upper Dam
- The result of the change in operation is the frazil ice is trapped in the reservoir and ice cover is encouraged in the upstream reach. During the 2006/07 & 2007/08 trial very little frazil ice has been observed in downstream reaches.
- If the dam is left out frazil ice jamming is a routine occurrence and costs $100 000 - $200 000 annually to manage. In bad years, i.e. 1997, there have been significant flooding, damages to the town and a state of emergency declared.

Andy Ross Provided an overview of the proposed repair;

- The dyke was constructed in the 1970's and during its construction a cutoff wall was called for to tie the dyke into the dam. Unfortunately the contractor stopped the wall at the edge of an old spillway that had been filled in leaving a 4m wide area that is not protected by a wall.
- There is also a hole in one of the walls that was where the flume for mill power connected.
- These deficiencies were noted during an exploratory dig that was undertaken to help in the design process.
- These issues would be corrected by installing reinforced concrete in the unprotected areas. The concrete would be tied into the structure and the underlying bedrock
- The project would also include the installation of erosion control material that would be shaped to train the overflow back into the channel. The erosion protection is designed to maximize the amount of usable area.

Quazi asked some questions regarding the operational changes;

- What is the capacity of the new spillway? (Andy Ross 2.0cms)
- Quazi asked about the dam capacity with and without the logs in and whether the damages would have occurred had the logs not been installed in the dam
- Quazi indicated he feels the damages resulted from an operational issues and stated the dam should have passed the flows if the logs were out.
- Dan Sullivan indicated the log jamming also reduced capacity and it was not strictly an issue with the operation of the structure.

Mark Shoreman indicated there are two issues here;

- Dam capacity for ice management and spillway design
- Indicated risk when dam is managing ice vrs risk to town with dam out should be assessed.
- Quazi indicated the dam was not designed for ice control and the owners need to be ready for the worst case scenario and a study needs to be done to assess the dams structural capacity to withstand loading, pass flows and the risk of failure.

Jim Coffey indicated there has not been a formal study of these details however;

- Historically all three dams were left in during the winter and very little frazil ice problems were observed in the town.
- The dams trapped ice and operators kept the spillways clear and managed levels
- Something must be done to manage ice for the Town of Durham. The Town and Conservation Authority are not willing to have a repeat of the 1997 event
- Acknowledged MNR approval should have been sought for the change in operation but action was urgent as the frazil ice issue does effect the residents of Durham
- Mark Shoreman asked if the two year trial is enough to demonstrate the change in operation is a success?
- Jim indicated the trial is planned to go on for 5 years before being permanently adopted
- Ice generation is increasingly becoming a problem, historically with very cold winters there was some relief when the channels froze but with increasing climate variability the channel tends to stay open and prime for frazil ice production when cold weather hits.
- There is political pressure to do something, Saugeen Conservation has agreed to the pilot project in response to Hatch Acres recommendations.

Dan Sullivan discussed his observations of the pilot project;

- Feels the project has been successful at reducing ice in downstream reached. Stated he is sure there would have been ice accumulation the last two winters without the pilot project.
- Indicated the costs of ice management would have been signifigant without the pilot project.

Mark Stephen discussed the MNR requirements for an operational change & the repair

- Indicated there has not been an assessment of the potential impacts and risks of the operational change and as a result it could not be approved.
- Indicated the Hazard Potential Classification(HPC) and Inflow Design Flood (IDF) for the structure must be identified.
- The effects on the structures ability to pass the IDF would also have to be examined.
- Indicated he expects the event that damaged the structure was less than the IDF and the logs being in place is the root cause of the damages.
- Quazi concurred that the IDF needs to be identified for the structure
- Mark indicated the additional 2cms capacity provided by the spillway would not be enough to make up for the loss of capacity leaving the logs in represents.
- Quazi indicated there may also be access issues associated with installing the spillway.

Dave M asked if changing the project to simply an erosion protection project would help with approvals;

- Quazi indicated the HPC and IDF were required to allow the repair to proceed and the MNR is not willing to approve the repair without approving the change in operation.
- Quazi indicated a pilot project is not acceptable as you still need to assess the potential for damages to the downstream reach and the dam itself and a dam safety study would be required

Jim Coffey indicated the boards will be left in the dam this year;

- Indicated unless there is a Minister order or the province agrees to cover 100% of the costs for any damages associated with the dam being out it will stay in.
- Mark Stephen questioned the effectiveness of the solution and indicated the province would not accept responsibility as it is not a 100% solution and there are other issues that may arise.
- Jim indicated the Town and Saugeen Conservation have an emergency plan in place in case something goes wrong.
- In addition the dam is monitored by the Conservation Authority, Municipal Staff and the police on a regular basis
- We cannot say it is 100% effective as it is a pilot but every year it works saves the municipality $100-200K.

Mark Stephen & Quazi discussed requirements under Lakes & Rivers Improvement Act (LRIA)

- Indicated approvals are required for the operational change and for the repair
- The IDF must be identified as it will dictate how much water the structure must be able to pass. The repair can then be designed to accommodate this discharge.
- The operational change must also be addressed as it is reducing the dams capacity to pass the IDF
- Presently the change has been made without regard for potential impacts and the MNR cannot approve.
- The study should also identify weather the spillway should be designed as an auxiliary or emergency spillway.

Jim Coffey asked about options to move forward;

- Can we commit to the study and do the repair now?
- What if we abandon plans for the spillway and only repair the concrete?
- Quazi indicated the operational change is fundamental and the risk to the town and structure is too high to approve anything without the required data.

Mark Stephen asked Andrew Ross about the design;

- MS - How was the spillway sized
- AR – Based on site limitations, as big as reasonably possible
- MS – how is the concrete that is in place
- AR – appears to be in good condition where examined
- MS – depth of excavation and purpose of concrete repair
- AR – excavated to bedrock in proposed wall location and ½ way down old flume location. The repair is to help prevent a piping failure
- Andrew indicated the repair represents an improvement in the dam
- Quazi agreed but indicated the repair must follow the proper procedure.
- Quazi reiterated the requirement for an IDF and that the damages are the result of a change in operation that was not approved.

Jim Coffey asked Mark Stephen to provide a written indication of the MNR requirements;

- Mark indicated this cannot be done as the data provided will dictate how to move forward but stated what we have discussed is a good start
- Jim asked what the minimum requirements to move the project would be
- Quazi indicated we need to provide details of dam capacity with and without logs in and the IDF to give direction on how to proceede
- Jim asked if the MR would be willing to work directly with out contractor to help streamline the process
- Mark Stephen agreed to do this and felt it would help speed things up.

Jim Coffey asked what the province is willing to do to help with our ice concerns;

- Mark Stephen indicated this is not the role of a regulatory agency and they cannot provide any assistance but will review submissions.
- Jim Coffey indicated the repair works will not proceed in 2008
- Jim Coffey stated that we have a six week window to resolve the issue of the IDF and requested that Mark Stephen & SVCA staff both give this issue the highest priority.
- Jim Coffey stated that cooperation is paramount to getting the Authority and Town through to hopefully mid February 2009 when the threat of frazil ice should be over
- When the threat is over the Authority & the Town will follow up with a formal request for an operational change
- Jim Coffey will contact John Cottril, MNR, regarding an allocation of the approved WECI funds to accommodate the consultant's calculations that are required by the MNR.

Meeting adjourned at 11:45

DM

Correspondence in February 12, 2009 Board package

RECEIVED

JAN 13 2009

Ontario

Engineering Services
Southern Region
4th Floor, South Tower
300 Water Street
Peterborough, ON
K9J 3C7

Ministry of Natural Resources

Ministère des Richesses naturelles

Gen. Mgr.	✓	✓	Sr. Mgr. Planning		
Sr. Mgr., Flood Warn & Land Mgt.			Eng. Tech		
Mgr., Water Res./ Stewardship Serv.			Mgr., Acct.		
Mgr., Forestry			Mgr., Land Mgt.		
Forest Tech.			Mgr., Comm.		
Lnl. Coord.			Water Quality Spec.		
Exec. Sec.			Graphics		
Mbr. of Dir.	✓		Acct. Clerk		
Exec.			Chairman		
File:			Notes:		

January 5, 2009

Jim Coffey
General Manager / Secretary - Treasurer
Saugeen Valley Conservation Authority
261123 Grey Road 28
R.R. 1 Hanover, Ont.
N4N 3B8

Re: Upper Durham Dam
Operational Changes and Proposed Modifications to the Dam

On November 3, 2008, MNR staff met with representatives of the Saugeen Valley Conservation Authority (SVCA) and the Town of Durham to discuss the Authority's changes to the operation of the Upper Durham Dam and the application under the LRIA for a proposed bypass channel. The purpose of this letter is to confirm comments and direction provided at this site meeting.

Reference is also made to the letter from Mark Shoreman, Midhurst District Manager, dated September 26, 2008 and your response dated October 16, 2008.

SVCA noted at the meeting that Hatch Acres had proposed the use of the Upper Durham Dam as a method of storing frazil ice and thereby reducing the impacts of the frazil ice on the Town of Durham. Upon review of Hatch's Frazil Ice Study, dated November 2006, it is also noted that Hatch recommended further investigation of the discharge capacity prior to any change in the operation of the dam. In particular, the following recommendations were made:

1. In-depth study would be required before implementation to confirm the efficacy of the scheme.
2. The requirement for emergency spill capacity would have to be addressed through emergency stop log release mechanisms.
3. Any changes to the dam would have to be done with LRIA approvals from MNR. (this would also include changes to the operation of the dam).

We understand that Hatch's recommendations have not been acted upon prior to the Authority increasing the winter holding level of the Upper Durham Dam. This operational change reduced the ability of the dam to safely pass flood flows and contributed to the over topping of the earth section in January 2008. This was a serious incident that could have resulted in an uncontrolled release of the reservoir. It is understood that emergency repairs were undertaken immediately, which include placement of rip-rap in the eroded section of the earth dam.

SVCA's letter of October 16, 2008, stated that proposed additional repairs are considered an emergency. We do not agree that the proposed repairs qualify as emergency repairs under section 14 of the LRIA because they are not temporary in nature and there is no imminent risk to loss of life or loss of property.

MNR is unable to process your application for a bypass channel due to a lack of supporting documentation such as:

1. Hazard Classification of the dam
2. Inflow Design Flood (IDF)
3. Design High Water levels under historical operating conditions (ie. Logs removed during the winter) and under the proposed operating conditions (ie. Logs remaining in place during the winter)
4. Operating Plan

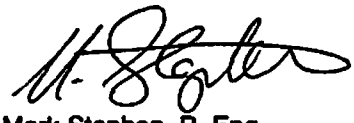
The above is the initial information we require. Once this basic information is reviewed, we will be able to review the application and assess the need for any further investigations.

The SVCA are directed to follow the historic operating plan until Hatch's recommendations are acted upon and a revised operating plan is approved. Failure to do so could result in an uncontrolled release of the reservoir with resultant public safety implications.

If an alteration to the operating plan is proposed, the Authority must demonstrate that the dam can safely pass the IDF and is stable under ice loading. Any proposed improvements to the dam either in the form of a bypass channel or armouring of the earth embankments and related structures must also ensure the inflow design flood can be accommodated. Proposed works must be considered in conjunction with any changes to the operating plan.

An acknowledgement of this letter is hereby requested along with an indication of when the SVCA will comply with the direction issued above. Your early response in these regards would be greatly appreciated. If you have any questions regarding the foregoing, or require any further information, please give me a call.

Yours truly



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Senior Project Engineer
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E-mail: mark.stephen@ontario.ca:

c.c. District Manager, Midhurst District
Operations Manager, Southern Region
Regional Engineer, Southern Region

Terms of reference 2011/2012, in response to MNR letters

Saugeen Conservation
Upper Durham Dam (McGowan Falls)
Terms of Reference
Structural Stability Assessment for Upper Durham Dam
Dated June 2011

Background

The geographic Town of Durham, located in the Municipality of West Grey, has suffered from chronic flooding due to frazil ice jamming. Upstream of the Town of Durham the Saugeen River has a relatively steep gradient with many fast flowing areas that remain open for most of the winter. This river type, combined with extreme cold and wind in the winter, generates large volumes of frazil ice. At the downstream end of the town the gradient becomes much flatter and the frazil ice generated upstream, regularly jams in this area resulting in equipment costs to keep the channel open and in extreme circumstances flooding within the Town of Durham.

Through the Town of Durham there is a series of three dams that were historically used for mill power. Historic observations indicated the frazil ice was trapped in the reservoirs upstream of the trouble area when the dams were in operation and the head ponds remained full during the winter. In 2005 Saugeen Conservation obtained the services of Hatch Acres Consulting to investigate options that could be implemented to reduce the potential for flood damages due to ice jamming in the Town of Durham. Among other options the report suggested leaving the head pond at the Upper Durham dam full for the winter months.

In cooperation with the Municipality of West Grey, Saugeen Conservation tested increasing the pond head at the Upper Dam in recent winters. This change in operation was employed on a trial basis without any modifications to the dam or spillway to test for effectiveness prior to investing in upgrades to the dam. The change in operation has been successful in trapping large volumes of frazil and anchor ice in the Upper Durham Dam reservoir and the channel upstream of the dam. There is considerable difficulty in operating the dam during periods when the reservoir is full of ice. There is also potential for damage to the dam, its associated dykes and emergency spillway when difficulties in operation, combined with a full head pond reduce Saugeen Conservations abilities to draw down the reservoir in order to use the full capacity of the spillways to pass higher flows.

In 2008 during a mid-winter thaw, high flows in combination with a debris jam and frazil ice accumulation, the Saugeen River flowed around the south side of the Upper Durham Dam causing a washout of material. As a temporary measure, staff placed armour stone to prevent further erosion.

In order to finish the repair a permit is required pursuant to the Lakes and Rivers Improvement Act from the Ministry of Natural Resources. The MNR requested that the SVCA commission a Dam Hydraulic Assessment Report. In addition, the SVCA is to complete a new operations manual for frazil ice management.

In 2008, OEL Hydrosys was contracted to prepare a Dam Hydraulic Assessment Study for the Upper Durham Dam. Their final report was received by the SVCA February 17, 2010. A copy is attached.
The report concluded that the Incremental Hazard Potential Classification of the Upper Durham Dam is rated as Low and the Inflow Design Flood (IDF) is the 100 year flood event (143 cubic metres per second). In addition, the report concluded that the IDF can be safely discharged through the control structure with the present stoplogs and flashboards configurations for both summer and winter periods. However, there is discussion in the report on the reduction of capacity due to numerous H-beams. The report provided two recommendations for the Upper Durham Dam:

a) Two options proposed to improve the discharge capacity of the dam:

- Each sluiceway of the dam control structure should have a minimum width of 4 m to property pass debris. Further, each sluiceway should be fitted with flap gates or flashboards including a tripping device.
- An additional discharge structure, such as an emergency spillway should be added to the dam.

Either one or a combination of these measures would ensure and maintain an adequate discharge capacity of the Upper Durham Dam.

b) The walkway should be lift in order to allow a minimum clearance of 1 m between the walkway and the top of the flashboards/stoplogs.

Further to the recommendation of the Dam Hydraulic study and a SVCA's new Operations/Maintenance manual for the structure, MNR has requested an additional engineering report be completed regarding dam structural stability and the change in operation. The assessment will include a review of the dam, earthen embankment and dyke structures to withstand the additional ice loads during the winter months.

The Dam Safety Assessment of the Upper Durham Dam will focus on the structural stability of the Upper Durham Dam and dyke structure with the change in Operation for the winter months.

Objectives

The objective is to complete a Structural Stability Assessment (SSA) for the Upper Durham Dam (McGowan Falls) that will be completed in accordance with the most recent draft of the Ontario Dam Safety Guidelines (ODSG). The SSA is to determine the stability of the structure in relation to the change in operation including an increase in winter ice loading conditions.

The foundation of the dam should be assessed with attention paid to its ability to withstand the loading that will be placed on it while holding back quantities of frazil and anchor ice in the head pond and the upstream reach of river.

Modifications to the emergency spillway and dyke should be considered with the goal of mitigating damages to the structures and minimizing the risk of failure in the event that a large runoff event occurs at a time when the flash boards of the dam cannot be removed.

Scope of Work

Notwithstanding the specific approach the consultant may note in the proposal, the work and services described in the following sections of this Terms of Reference must be preformed and provided as a minimum.

1.0 Site Inspection

Prior to completing the Site Inspection the consultant will review, in detail, the OEL Hydrosys Dam Hydraulic Assessment Study, Upper Durham Dam, Final Report, dated February, 2010. The consultant will arrange a field trip, with the SVCA office, to visit the dam site and become familiar with the hydrologic and hydraulic aspects of the site.

The consultant shall inspect and document the condition of lifting equipment (permanent & portable), stoplogs, stoplog gains, gain covers, railings, fencing, signs, etc. and recommend appropriate measures to correct unsafe conditions, and provide associated cost estimates. The consultant shall review the operation and surveillance plans and determine their adequacy. Deficiencies related to the Occupational Health & Safety Act (OHSA) or public safety are to be identified and remedial measures recommended. The consultant will be able to discuss operational or maintenance concerns with the SVCA's Dam Operation.

The consultant shall use the information previously gathered for the Upper Durham Dam Hydraulic Assessment Study for the measurements of all dam dimensions and create border-titles-scaled drawings showing the plan view. If necessary to complete the scope of the work, an upstream profile, a downstream profile, appropriate section details and any text notes for clarification. The consultant should not assume that any of the dimensions shown on existing drawings are correct or accurate. Measurements should be taken of all dam dimensions to confirm accuracy, and to be used in preparing metric as-built drawings.

A detailed structural inspection of the dam and the associated site will be undertaken to assess existing conditions, confirm concrete strength and integrity, confirm concrete contact with other materials (e.g. steel & bedrock) and to collect other pertinent information deemed relevant to the dam safety review. Detailed plans & drawings shall be prepared to document the location, type, and extent of surface deterioration. The consultant shall identify the probable cause or causes of such deterioration (e.g. freeze thaw action, ice damage, seepage, alkali-silica reaction, settlement, etc.).

Digital photographs will be taken to document the important features found at the site. The points of interest are to be electronically annotated using circles or arrows with appropriate captions outside the body of the photograph in the white page margins. See sample in Appendix C. A site plan illustration the points from which the photographs were taken is to be provided as a lead sheet to the appendix of photographs.

Geological mapping (non-intrusive) should be carried out to identify geological features that could affect the stability of the structure and to estimate the concrete/bedrock contact strength for the Phase 1 analysis. The condition of the concrete/bedrock contact should be inspected if possible. Seepage along the concrete/bedrock contact is significant in estimating the contact strength parameters. Seepage areas downstream of the dam should be mapped and flow rates estimated. For earth fill portions of dam, the consultant shall assess and document any evidence of piping or seepage (including an estimate of the rate), and any evidence of heaving, settlement or slope movement.

The site inspection shall include a survey both upstream and downstream, to photograph and document existing development & infrastructure that could be adversely affected (including flooding, erosion or ice damage) by the operation of the dam or by an uncontrolled release. A spreadsheet should be used to summarize the data.

The horizontal location and vertical elevation of the centre of the dam will be established in Universal Transverse Mercator (UTM) co-ordinates and NAD83 datum. As a minimum, horizontal and GSC vertical control will establish using single-frequency GPS receivers and associated software having an accuracy of 5mm and 10mm respectively. Use total station survey for local dam topography.

1.1 Concrete Dam & Foundation Assessment

The concrete portion of the dam and its foundation assessment includes individual as well as concrete portions of composite sections. The consultant shall review all available information including the site inspection and carry out stability analysis using the “Gravity Method” of analysis. Other methods of analysis may be used if approved by the Authority.

The structural analysis is intended to determine the integrity of the dam under standard loading conditions. Combinations of loading are categorized by their likelihood of occurrence. Unusual loads due to flood, ice, frazil ice and earthquake events should also be considered. The assessment shall include an evaluation of concrete conditions.

The scope of the concrete dam design review shall include:

1. Carry out the Phase 1 assessment of the dam using standard load and load combinations. IDF water levels and estimates of the uplift pressure and strength parameters for the concrete/bedrock contact are required for the analysis.
2. If the dam does not meet Phase 1 standards, then carry out sensitivity analyses to determine the required shear strength and/or the magnitude of loads to meet standards.
3. Assess the need for a Phase 2 assessment. Develop a Phase 2 field investigation program, as required, destructive & non-destructive testing, and laboratory analysis. This shall include details on sub-consultants to be used (if any), costs involved, test locations, etc. for approval of the Authority. An allowance shall be included in the proposal for Phase 2 field investigations.
4. Implement Phase 2 field work program (upon written approval of the Authority) and input the strength parameters into the stability analysis. Determine if the dam meets standards.
5. Recommend structural and/or non-structural remedial measures to address deficiencies identified in the site inspection and the stability analysis. Provide preliminary engineering plans on repairs and estimated costs. Recommend appropriate timelines for implementation based on operator & public safety considerations.

Although the details of the Phase 2 intrusive investigation and testing are unknown at this point in time, the consultant should provide the approach to be taken in investigating various types of dams in the proposal (i.e., concrete dam, earth embankment dam, masonry dam and rock-filled timber crib dam). Any sub-consultants used to do the Phase 2 work should be clearly identified in the proposal.

All aspects of the project should be completed with the intent of satisfying the requirements of the most current Draft Ontario Dam Safety Guidelines and the Occupational Health and Safety Act.

1.2 Earth Fill Part of the Dam and Foundation Assessment

The earth fill portion of the dam and its foundation assessment includes individual as well as earth fill portions of composite structure. Applicable procedures identified in Section 1.1 above shall be followed. In addition, the consultant will assess:

1. the effects of headwater & tailwater fluctuations on the stability of the slopes and foundation of the dam under normal operating conditions
2. the dam stability relative to overtopping under normal & IDF conditions
3. the stability of the upstream & downstream slopes of the dam under steady state seepage and seismic load conditions
4. the stability of the upstream slope under rapid drawdown
5. the liquefaction potential of the foundation soils and embankment
6. seepage, piping and heaving potential
7. the condition of the foundation relative to deformation and settlement
8. the interconnection of the impervious barrier with the abutments for possible deterioration
9. the condition of the wraparound and surface protection

2.3 Dam Structural Stability Assessment Report

The consultant shall prepare a detailed Dam Structural Stability Assessment Report for the dam upon completion of the study. Draft reports are to be forwarded to the Authority for review prior to finalization. The consultant may be required to give a presentation to the SVCA Board of Directors and SVCA staff and answer questions. The final reports will be prepared after written comments from the SVCA are satisfactorily addressed.

The content of the report must include information contained in the interim report identified above and must also include, where applicable:

1. executive summary;
2. site location plan(s);
3. site layout plan(s);
4. as-built drawings;
5. summary of findings of operator and other interviews;
6. review of operating procedures, records, and test equipment required to operate discharge facilities;
7. recommendations on operational aspects of the dam;
8. historical flood flows and water levels
9. review of design, construction, and maintenance records;
10. site inspections of dam & appurtenant structures;
11. design loading conditions, including uplift, ice pressure, including a review of frazil ice etc. and stability analysis;
12. assessment of structural condition and stability of the dam and embankment, including foundation conditions;
13. recommendations for follow up actions, priorities, and costs.

The consultant must submit a separate 2-3 page project summary, repair/replacement, cost estimate and recommended timing for remedial work.

Summary of Deliverables

- Review of current dam condition and discussion regarding required upgrades to satisfy the Draft Ontario Dam Safety Guidelines and The Occupational Health and Safety Act.
- Assessment of dam foundation and its ability to withstand loading associated with the revised operations of the dam
- Discussion of options for improved winter operations of the dam
- Draft designs and preliminary costing for alternatives that could be employed to improve the ease of winter operation and protect the structures in the event of elevated flows during the revised operation.

3.0 MEETINGS

Meetings shall be held with the SVCA staff and/or MNR staff at key points throughout the study. The consultant should allow for 3 meetings with SVCA staff. A start-up meeting will be required to confirm the study methodology, schedule, etc. A meeting will be required at the end of the study to present the draft Dam Structural Stability Assessment Report and answer questions.

The consultant will prepare minutes of all meetings and will submit the minutes for review and acceptance to all parties present within one week of the date of the meeting.

4.0 REPORTS

The final report shall be signed, sealed and dated by a professional engineer registered to practice in Ontario. Three (3) hard copies of the final report are to be submitted and include an electronic copy in Adobe Acrobat format, appended on CD-ROM or DVD-ROM in each report. Reports, charts, tables and other documents are to be provided in the current version of Microsoft Office format.

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Conservation Through Cooperation

A Member of Conservation Ontario

REPORT #7b

MEMO TO: SVCA Board of Directors

DATE: July 25, 2013

FROM: Don Smith, Senior Manager, Water Resources

SUBJECT: Upper Durham Dam Emergency Spillway Project

Background

In the winters of 2005/06 and 2006/07, Saugeen Conservation, in cooperation with the Municipality of West Grey, began a five year pilot project to assess the potential to use the Upper Durham Dam to mitigate frazil ice damage by trapping and storing frazil ice upstream of the Town. These actions were following a recommendation from a study completed by the firm Hatch Acres Consulting Engineers in 2005 for Saugeen Conservation and the Municipality of West Grey. The Authority and municipality considers this pilot project to be successful in helping to control frazil ice in Durham.

In January of 2008 excessive amounts of unpredicted rainfall, combined with snowmelt in upper parts of the watershed, caused flood waters to flow around both the north and south ends of the dam. Water flowing around the north end of the dam is a common occurrence and does not tend to cause extensive damage as the water is primarily flowing over bedrock and a buried concrete cut off wall. Flows overtopping the south end of the dam are a different matter. These occurrences are rare and on this occasion caused a deep channel to erode. This channel was filled with rock as a temporary measure to prevent further erosion. Additional erosion at the south end of the dam could threaten the integrity of the dyke which exists at that location which in turn could cause flood waters to enter the former Town of Durham.

Funding was secured from both the provincial Water and Erosion Control Infrastructure (WECI) program and the municipality to undertake the design and construction of an emergency overflow spillway at the south of the dam. The firm of B. M. Ross of Goderich conducted an investigation of the site and prepared preliminary plans for an emergency spillway designed to accommodate flood waters going around the south end of the dam and directing them back into the channel below the dam in a controlled manner.

The Ministry of Natural Resources states that improvements that result in the temporary or permanent changes in the hydraulic capacity, operation, or structural integrity of a dam require a permit under the Lakes and Rivers Improvement Act. In September of 2008 the MNR informed the Authority that they would not approve the proposed work as presented and that additional

studies would be required before approval would be granted. A request was made by the Authority that approval be granted for the work as emergency repairs to the dam. The Ministry advised that they did not consider the work to be an emergency and the request for emergency repairs was denied.

The Issue

The Authority and municipality considers the winter operation of the dam to control ice to be necessary and they will continue operating the dam in this way. The Authority also considers the proposed spillway to be emergency work necessary to control flooding in Durham. The spillway represents an improvement to the structure that will only improve the situation by reducing the potential for floodwater to erode and/or breach the dyke at the south end of the dam.

It is the Ministry's position that the dam was not designed for ice management purposes and that there is a risk associated with the winter operation being conducted. Studies need to assess the dam's structural capacity to withstand and pass flows. The risk of failure also needs to be assessed. MNR feels the damage in 2008 could have been caused by the winter operations. The Ministry cannot approve the repairs without approving the change in operation.

Work Required by the Ministry Prior to Approving Revised Operations and Repairs

The Ministry required that the following supporting documentation in order to consider the approval of the revised operations and construction of the emergency spillway:

1) Hazard Classification of Dam
2) Inflow Design Flood (IDF)
3) Dam Operating Plan
4) Structural Stability Assessment of the Dam

Items 1) and 2) were addressed by the completion of Dam Hydraulic Assessment Study completed by the firm O. E. L. Hydrosys Consulting Engineers in 2009. Item 3, the Dam Operating Plan, was completed in-house by Saugeen Conservation staff in 2010.

In March of 2010 the Board discussed how best to undertake item 4, the Structural Stability Assessment of the dam. At this meeting the merits of awarding this contract to the firm of B. M. Ross Consulting Engineer, the same firm that undertook the Hydraulic Assessment, were discussed. In consultation with the MNR, the final Terms of Reference for the Structural Stability Assessment were completed. These Terms of Reference were recently forwarded to B. M. Ross Consulting Engineers for their review. They have advised the Authority that their firm does not have the expertise or resources to complete this study and that the cost for completing all the items in the Terms of Reference for the study would be considerable. They suggested that we approach larger consulting firms.

The Authority currently has access to $89,376 for this project. Half of this amount would be funded through the WECI program and the other half would come from the Municipality of West Grey. B. M. Ross Consulting Engineers feel that the cost of completing this study would be well in excess of $100,000. Please note that once the study is completed and all aspects of the project are approved by the MNR, the Authority will have to seek additional funding from the WECI fund and the municipality in order to construct the emergency spillway. In 2008 the costs for engineering and construction of the spillway were estimated t at $78,300.

It should also be noted that the completion of the Structural Stability Assessment does not guarantee that the Ministry will approve the winter operations or the construction of the spillway. They may require still more information.

Options for the completion of the Structural Stability Assessment

1) Revise the Terms of Reference to make it a smaller, more affordable study. The Ministry should review the revised Terms of Reference to determine if they would still address the outstanding issue that would allow them to approve the project. The Authority would approach 2 or 3 larger consulting firms capable of undertaking the work for proposals.

   Once the study has been completed, the Authority can seek MNR approval for the operating plan and proposed spillway construction. Once approved, the spillway could be constructed in subsequent years pending adequate funding.

2) Approach firms that are capable of completing the study and ask for proposals to complete that portion of the study that would be possible with the funding that is currently available. The best proposal would be reviewed in consultation with MNR to determine if the reduced study would meet the requirements of the MNR.

   Once the study has been completed, the Authority can seek MNR approval for the operating plan and proposed spillway construction. Once approved, the spillway could be constructed in subsequent years pending adequate funding.

3) Seek additional funding from the WECI program and the municipality to undertake a study addressing the complete Terms of Reference as they currently exist. Additional WECI funding would not be available in 2013.

4) Do not undertake the Structural Stability Assessment and abandon the proposed construction of the emergency spillway. Continue to operate the dam in winter to control frazil ice as we have been doing since 2005.

Recommendation:

Option 1

THAT staff to directed to revise the Terms of Reference for the Structural Stability Assessment for the Upper Durham Dam to reduce the costs of completing the study and further
THAT staff consult with MNR to ensure that the revised Terms of Reference still address the concerns of the MNR and further
THAT staff approach consulting firms capable of undertaking such a study and request proposals.

B. M. ROSS AND ASSOCIATES LIMITED
Engineers and Planners
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www.bmross.net

File No. 14212

July 2, 2015

Jo-Anne Harbinson
Manager, Water Resources and Stewardship Services
Saugeen Valley Conservation Authority
1078 Bruce Rd 12, Box 150
Formosa, ON NOG 1W0

Dear Jo-Anne

Re: Upper Durham Dam – Structural Review

At your request, we have conducted a structural review of the concrete components of the Upper Durham Dam. It had been noted that some of the concrete elements of the structure were deteriorating and SVCA is interested in determining a budget for repairs.

The structure was reviewed by BMROSS on April 30, 2015. The review focussed on exposed concrete elements. The two most northerly spillways were covered in water and could not be sounded for delaminations. We did not review metal walkways, stop logs or embankments. A condition report is appended which follows the methods of the Ontario Structure Inspection Manual, OSIM. The report quantifies deteriorations for various elements of the structure.

While numerous areas of concrete deterioration were observed, the extent was not so great as to raise concerns about the stability of the structure. We have no reason to suspect that the structure is unstable at this time. However, with the deteriorated concrete present, the structure is not as strong as when it was first constructed.

Recommendations

It is recommended that repairs be made to the concrete structures to restore overall strength to the dam. This could be completed under contract that would include the cost of site access and control of water under a mobilization item.

Based on similar work on area bridge repair projects, the cost to remove deteriorated concrete by saw and jackhammer is about $3,500 per cubic metre. To restore with new concrete formed and cured in place with steel dowels and reinforcement is about $2,500 per cubic metre. These values have been applied to the quantities estimated for each element.

Sometimes concrete re-facings can be done to cover the old concrete. This was done to the north abutment in 1966. However, re-facings reduce the effective width of the spillway and cannot be done without a hydraulic analysis to prove that the reduction will not have a negative consequence. For this reason, we have assumed that all of the repairs will be made flush with the existing surfaces.

The cost of repairs can be summarized as follows:

• Mobilization, site access	$28,000
• Repairs to concrete	$50,800
• Approvals (time and effort)	$2,000
• Design and contract administration	$11,800
• Insurance and bonding	$ 3,000
• Contingency Allowance	$ 9,000
Total	$104,600 + HST

If the Authority's budget will only allow for part of the work, the amount could be broken down by components. For example, the concrete repair work on the south abutment and wings totals about $11,700 plus a proportion of mobilization, access and engineering costs. However, by breaking the project into components, the total of mobilization costs and contract administration costs will increase for the total.

Our understanding of the OMNRF requirements for permits under the Lakes and Rivers Improvement Act is that concrete repairs over 15 square meters require approval. An allowance has been made for the time and effort by SVCA staff, with engineer support, for the application. It does not cover the cost of additional studies, if required by OMNRF.

Please contact us if you have any questions.

Yours very truly

B. M. ROSS AND ASSOCIATES LIMITED

Per _____
A. I. Ross, P. Eng.

AIR:es
Encl.

B. M. ROSS AND ASSOCIATES LIMITED
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File No. 14212

VIA EMAIL ONLY

May 19, 2021

Jo-Anne Harbinson
Manager, Water Resources and Stewardship Services
Saugeen Valley Conservation Authority
1078 Bruce Rd 12, Box 150
Formosa, ON NOG 1W0

Dear Jo-Anne

Re: Upper Durham Dam – Structural Review

At your request, we have conducted a structural review of the components of the Upper Durham Dam. It had been noted that some of the concrete elements of the structure were deteriorating and SVCA is interested in determining a budget for repairs.

The structure was reviewed by BMROSS on May 11, 2021. The review focussed on exposed concrete elements and the metal walkway. The two most northerly spillways were covered in flowing water and could not be sounded for delaminations. We did not review stop logs or brace posts. A condition report is appended which follows the methods of the Ontario Structure Inspection Manual, OSIM. The report quantifies deteriorations for various elements of the structure.

While numerous areas of concrete deterioration were observed, the extent was not so great as to raise concerns about the stability of the structure. We have no reason to suspect that the structure is unstable at this time. However, with the deteriorated concrete present, the structure is not as strong as when it was first constructed, and the condition is worse than when it was last inspected in 2015.

Metal Walkway and Railings

The walkway above the spillways is constructed of three open-web steel joists with metal decking and metal railings. In the past, the walkway was accessible to the public. At the time of the inspection the walkway was gated and locked but opened for access of the inspector.

The metal railing is in fair condition but does not meet the dimensional requirements of the Bridge Code, (CAN/CSA S6). The top rail is lower than standard, and the size of openings is larger than standard. The railing does meet the requirements of clauses 13 and 14 of Ontario

Regulation 851 for Industrial Establishments, which would be appropriate for staff who are placing or removing stoplogs.

The walkway spans each bay of the spillway with three open web steel joists. Components of the joists were measured, and the structural capacity was calculated to be more than sufficient to carry a live load of 3.6 kPa on the deck. Just two out of the three joists would be sufficient to support this live load. The most easterly joist in some spans has been damaged by impact of logs, ice or by pressure from brace posts of the stoplog system. The damage is mostly shown as deformation of the bottom flange of the joists. As the bottom flange is a tension member, the deformed shape is unlikely to affect the structural capacity of the joist.

Staff have reported that the walkway has deflected sideways under the pressure of the brace posts. The structure of the walkway was not designed for such lateral loads and this system is not recommended. Consideration should be given to installing a horizontal beam east of the walkway upon which the tops of the brace posts could rest.

The steel of the open web joists is showing corrosion in some places. This steel is thin and will be badly affected by surface corrosion. It is recommended that the joists be cleaned and coated, either in isolated areas or overall. Also, to prevent corrosion, it is recommended that the tops of the abutments be cleaned of moss and debris. These materials hold moisture against the steel and accelerate corrosion.

Recommendations

It is recommended that repairs be made to the concrete structures to restore overall strength to the dam. This could be completed under contract that would include the cost of site access and control of water under a mobilization item.

Based on similar work on area bridge repair projects, the cost to remove deteriorated concrete by saw and jackhammer is about $4,800 per cubic metre. To restore with new concrete formed and cured in place with steel dowels and reinforcement is about $5,500 per cubic metre. These values have been applied to the quantities estimated for each element.

Sometimes concrete re-facings can be done to cover the old concrete. This was done to the north abutment in 1966. However, re-facings reduce the effective width of the spillway and cannot be done without a hydraulic analysis to prove that the reduction will not have a negative consequence. For this reason, we have assumed that all of the repairs will be made flush with the existing surfaces.

It is recommended that a horizontal steel beam be installed between piers in order to support the tops of stoplog brace posts and replace this function of the existing walkway. Using the current arrangement of stoplogs up to 840 mm above the spillway crest, an appropriate beam would be W200x27 in grade 350W steel, placed sideways or in the H-configuration. Each end of the new beam could be fastened to the vertical faces of concrete with four wedge anchor bolts of ½ inch diameter stainless steel that hold shelf angles in place. An appropriate fastener would be ½ inch Hilti stainless steel KB-TZ2, embedded 76 mm into the concrete. The beams and connection angles should be protected with hot-dipped galvanizing or a painting system.

The proposed steel beam supports would only serve to relieve pressure on the walkway. The forces would be the same and would be carried to the abutments and piers in almost the same location. There would be no change in the forces that would affect the stability of the dam or any of its components. It can be concluded that the addition of the steel beams to support stoplog braces does not require a review of the stability of the dam.

The cost of repairs can be summarized as follows:

• Mobilization, site access	$37,000
• Repairs to concrete	$90,100
• Reinstall railings at wings	$3,000
• Re-coat open web steel joists	$5,000
• Approvals (time and effort)	$2,500
• Design and contract administration	$20,500
• Insurance and bonding	$ 4,000
• Contingency allowance	$ 16,200
Total	$178,300 + HST

The cost to supply and install steel beams to support the stoplog braces would be about $32,000 + HST including engineering design drawings and specifications. This would be in addition to the above budget and could be installed as a separate work project or in combination with repairs.

If the Authority's budget will only allow for part of the work, the amount could be broken down by components. However, by breaking the project into components, the total of mobilization costs and contract administration costs will increase for the total.

The allowance for permits and approvals is for application to DFO or other agencies. It does not include the cost of additional studies, if required.

Please contact us if you have any questions.

Yours very truly

B. M. ROSS AND ASSOCIATES LIMITED

Per _____
A. I. Ross, P. Eng.

AIR:es
Encl

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Staff Report #WR-2024-03

Report To: Chair and Directors, Saugeen Valley Conservation Authority

From: Elise MacLeod, Manager, Water Resources

Date: May 16, 2024

Subject: Durham Upper Dam Hazard Potential Classification

Purpose: To inform the SVCA Board of Directors of the change in Hazard Potential Classification at the Durham Upper Dam.

Recommendation

THAT the Board of Directors receive Staff Report #WR-2024-03, dated May 16, 2024, regarding the Durham Upper Dam Hazard Potential Classification for information.

Background

In June 2023, SVCA retained D.M. Wills Associates to undertake Phase 1 of a Class Environmental Assessment (EA) for the Durham Upper Dam, alongside the Durham Creek flood hazard mapping project. Phase 1 of the EA focused on updating the existing dam safety information for the Durham Upper Dam, including the dam Hazard Potential Classification (HPC).

In Ontario, dams are classified using the HPC system which categorizes dams according to the potential hazards presented by the dam. The HPC is an assessment of the consequences of dam failure based on life safety, property losses, environmental losses, and heritage losses. Table 1 identifies the four types of dam classification in accordance with the Technical Bulletin for Classification and Inflow Design Flood Criteria (MNR, 2011).

Hazard Potential	Life Safety	Property Losses	Environmental Losses	Cultural / Built Heritage Losses
Low	No expected loss of life	Very low damage to property	Minimal loss of habitat with high capacity of restoration	Reversible damage to municipally designated cultural heritage sites
Moderate	No expected loss of life	Moderate damage <$3 million	Moderate loss of habitat with moderate capability of restoration	Irreversible damage to municipally designated cultural heritage sites

Hazard Potential	Life Safety	Property Losses	Environmental Losses	Cultural / Built Heritage Losses
High	Expected loss of life 1-10 persons	Appreciable damage <$30 million	Appreciable loss of habitat – reversible damage to habitat	Irreversible damage to provincially or nationally designated cultural heritage sites
Very High	Expected loss of life 11 or more persons	Extensive damage >$30 million	Extensive loss of habitat with no feasibility of recovery	NA

Table 1: Hazard Potential Classification

Please note that the HPC does not consider the risk of dam failure or present-day conditions of the dam.

Analysis

Dams require two HPCs: one based on dam failure during normal (sunny day) conditions and a second based on dam failure under flood conditions.

Prior to the D.M. Wills report, a similar study was completed in 2009 by OEL Hydrosys / WESA. A comparison of the study results can be found in Table 2 below. The most recent D.M. Wills Associates HPC will govern at the Durham Upper Dam, meaning a change from Low Hazard Classification to High/Very High Classification.

Description	OEL Hydrosys / WESA	D.M. Wills
Year of Study	2009	2024
Applicable Standard	1999 (Draft) Ontario Dam Safety Guidelines	2011 Dam Safety Technical Bulletins (Sections 14 and 16 of the *Lakes and Rivers Improvement Act*)
Sunny Day HPC	Low	High Due to potential for incremental property damages exceeding $3 million
Flood Failure HPC	Low	Very High Due to potential incremental loss of life exceeding people
Inflow Design Flood (IDF)[1]	143 m^3/s (100-year event)	742.1 m^3/s (Probable Maximum Flood)

Table 2: Comparison of 2009 and 2024 Hazard Potential Classification

[1] The IDF is the most severe inflow flood for which a dam and its associated facilities are designed. The IDF is chosen using the Technical Bulletin for Classification and Inflow Design Flood Criteria (MNR, 2011).

Differences between the two reports are primarily related to failure of the flood dyke. The OEL Hydrosys report only considered the consequences of failure on the Saugeen River (i.e., all overtopping was re-directed back into the Saugeen River). The D.M. Wills Associates report investigated the incremental effects of flooding through the Saugeen River and Durham Creek.

The 2024 D.M. Wills report concluded the following:

- The dam does not have sufficient hydraulic capacity to convey the Inflow Design Flood and the dam and dyke will overtop;
- The dam does not have sufficient freeboard under the Inflow Design Flood condition; and
- The dam has sufficient freeboard under normal operating conditions.

The new Hazard Potential Classification is critical for the next two phases of the Durham Upper Dam EA. Additional consideration will be needed to address insufficient capacity of the dam to convey the Inflow Design Flood; this could result in EA options that include raising the dyke, increasing dam capacity, alterations to channel geometry, or a combination. Approval is unlikely to be granted under the *Lakes and Rivers Improvement Act* for major rehabilitation with the existing Durham Upper Dam configuration given these findings. Additional details regarding future approval requirements will be considered under the remaining EA phases.

A recommendation of the 2024 D.M. Wills Associates report was to develop and implement an Emergency Preparedness and Response Plan for the Durham Upper Dam. This plan would need to be developed in coordination with the Municipality of West Grey and local emergency services.

As part of the Phase 1 EA, D.M. Wills Associates also reviewed the condition of the Durham Upper Dam. In general, the dam was observed to be in fair to poor condition with areas of concrete deterioration (cracking, efflorescence, and scaling) throughout the abutments and piers. Seepage was noted downstream of the right abutment and there was minor erosion identified on the downstream left and right banks. This is consistent with the findings of the 2022 engineering inspection.

Financial Implications

Financial implications are currently unknown. Additional information regarding repair, rehabilitation, or removal will become clearer following completion of Phases 2 and 3 of the EA.

Remaining costs to complete Phase 2 and 3 of the EA are estimated between $80,000 and $100,000. This would be considered a capital expense, with the Municipality of West Grey designated as special benefiting.

Strategic Plan Linkages

E1.3 - External Communications; Public, Stakeholders

E1.5 - Liability Assessment and Action

C1.3 - Communications Planning, Campaigns, and Action

R1.8 - CA Act Deliverables

Prepared by:

< [Original signed by:]>

Elise MacLeod, Manager, Water Resources

Approved by:

< [Original signed by:]>

Jennifer Stephens, General Manager / Secretary-Treasurer

Final Dam Inspection Report

2024 SVCA Dam Inspections

Durham Upper Dam and Dyke

Municipality of West Grey,
County of Grey, Ontario

D.M. Wills Project Number 24-5661

D.M. Wills Associates Limited
Partners in Engineering, Planning and Environmental Services
Peterborough

June 2024

Prepared for:
Saugeen Valley
Conservation Authority

Summary of Revisions

Rev. No.	Revision Title	Date	Summary of Revisions
1	Draft Report	June 14, 2024	Issued for Client Review
2	Final Report	June 26, 2024	Issued as Final

This report has been formatted considering the requirements of the Accessibility for Ontarians with Disabilities Act.

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1.0 Introduction

1.1 Purpose and Objectives

The Saugeen Valley Conservation Authority's (SVCA's) jurisdiction, the Saugeen watershed, covers an area of approximately 4,675 km^2 and encompasses the counties of Bruce, Dufferin, Grey, Huron and Wellington as well as the Saugeen River, Penetangore River, Teeswater River, Pine River and the shoreline of Lake Huron. Within this jurisdiction, the SVCA's mandate is to undertake watershed-based programs to protect people and property from floods and other natural hazards and to conserve natural resources for economic, social and environmental benefits.

In cooperation with their municipal partners and regulatory agencies, the SVCA maintains a number of flood and erosion control projects within their jurisdiction, including nine dams. D.M. Wills Associates Limited has been retained by the SVCA to undertake annual inspections of these nine dams for a five-year period extending to, and including, 2028.

The purpose of these inspections is to thoroughly document the existing condition of the dams through a visual inspection, including the completion of an underwater inspection where possible, identify operator and public safety deficiencies, and provide a prioritized list of recommendations for the remediation of the identified deficiencies, including the development of budget-level cost estimates and a recommended timeline for the completion of each measure.

The subject of this report is the Durham Upper Dam and Dyke. The inspection of the Durham Upper Dam and Dyke was completed on May 15, 2024, in the presence of SVCA staff.

1.2 Site Location and Access

The Durham Upper Dam and Dyke are located within the limits of the Town of Durham, Ontario, upstream of Highway 6 (Garafraxa Street North) on the Saugeen River. The dam can be accessed via the public road system and is generally publicly accessible. There is a parking area downstream of the dam and the dam and dyke can be accessed on foot from this point. The dam deck / pedestrian walkway gates are generally locked in the open position; however, keys from the SVCA may be required to access the deck and cross the river if the gates are locked in the closed position. The location of the dam is shown in Figure 1.

1.3 Dam Description

The first dam at this site was constructed in 1847 to help power a grist mill. It is unclear when, or if, the dam was replaced; however, recent records indicate that there was a major rehabilitation to the north abutment and wingwall in 1966 and a reconstruction of the catwalk in 1978.

The existing dam is approximately 90 m long and is comprised of a concrete control structure between two earth embankment sections. The concrete control structure is approximately 44 m wide and includes five sluices made up of two abutments and four piers. The north (left) earth embankment includes a concrete gravity wingwall and the south (right) earth embankment is connected to the main structure with an abutment structure with a concrete wingwall.

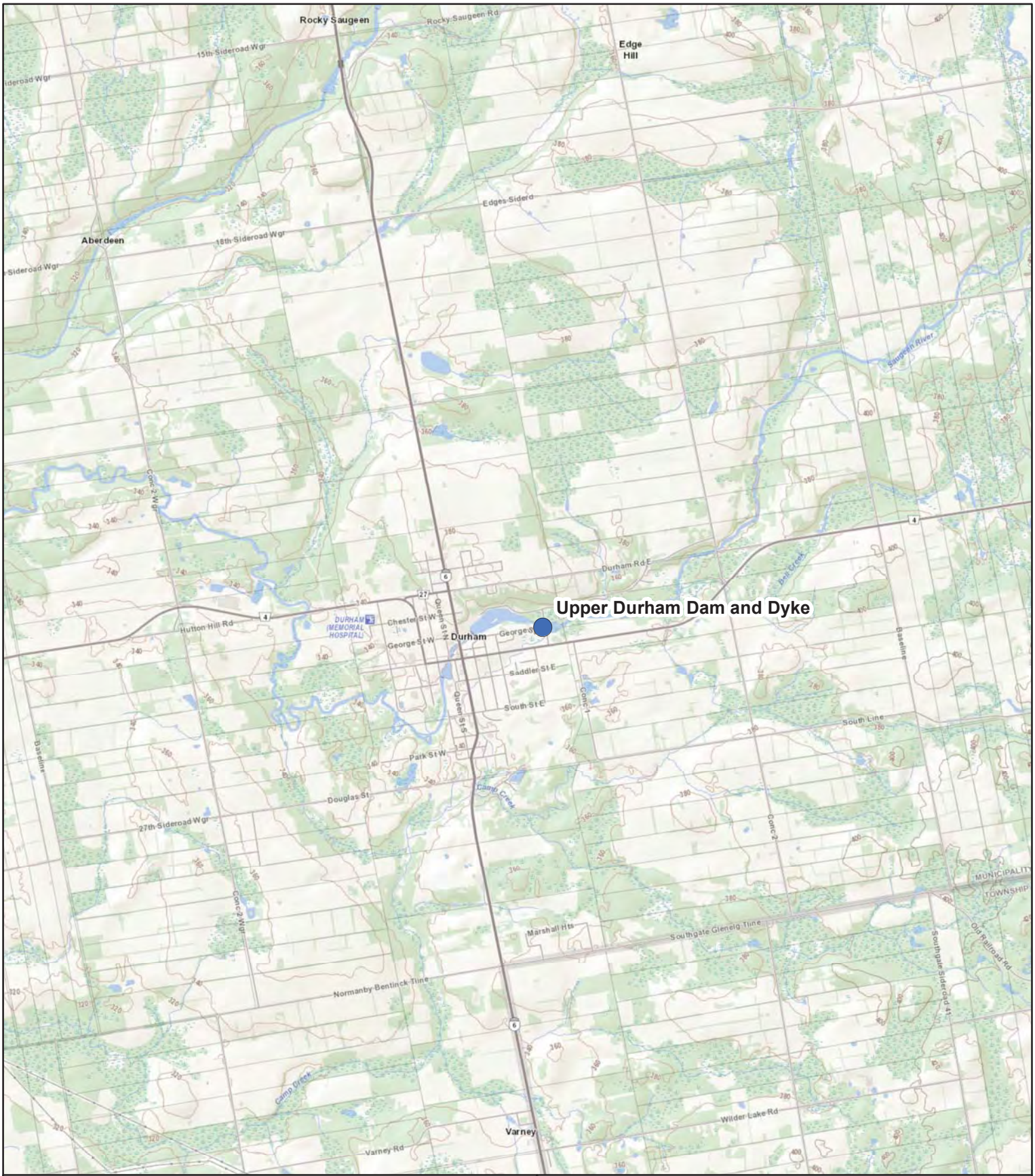
Repairs to the right (south) wingwall, including the installation of additional fencing, have been conducted by the SVCA in the past five (5) years to improve safety and to try to reduce the amount of leakage through the south abutment. Additionally extensive parging of concrete piers and the concrete apron have been conducted by SVCA staff in recent years.

In 1976, an earthen dyke was re-constructed along the right (south) bank of the Saugeen River to prevent floodwater from leaving the reservoir during high flow conditions. According to construction drawings, the dyke includes an impervious core. The dyke is tied into the concrete dam with a concrete key, measuring 9 m by 0.6 m wide. A toe drain is located on the south edge of the dyke and the north side of the dyke is covered with rip rap and/or concrete apron to minimize erosion.

The site plan is shown in Figure 2. The location of site features is referenced left to right facing upstream.

1.4 Description of Operations

The Durham Upper Dam is primarily used to reduce flooding associated with frazil ice formation. Dam operations are carried out manually by SVCA staff by removing and replacing stoplogs and flashboards in the sluices. Stoplogs and flashboards are typically installed in mid-May to create a swimming area upstream of the dam and are partially removed in the winter in a configuration best suited for ice management.



Legend

- Dam Location

Meters
0 650 1,300 2,600

Data Sources
Land Information Ontario 2022
Created In: ArcMap 10.7

NAD 1983 UTM Zone 17N

1:50,000

Figure 1 - Location Plan

Drawn By:	GB
Checked By:	DG
Map Date:	6/04/24
Project Number:	24-5661
Map File Number	Figure 1

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150 Jameson Drive
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P. 705.742.2297
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E. wills@dmwills.com

Legend

- Dam
- Intermittent Watercourse
- Parcel Fabric
- Dyke

Data Sources
Saugeen Valley Conservation Authority
Created In: ArcMap 10.7
Scale: N.T.S

Figure 2 - Site Plan

Drawn By:	GB
Checked By:	DG
Map Date:	6/04/24
Project Number:	24-5661
Map File Number	Figure 2

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2.0 Inspection Methodology

2.1 Background Review and Fieldwork Preparation

A review of the background information provided by the SVCA was completed prior to Wills' field inspection. This information included available drawings, site access plans, photographs, inspection records and reports. The background review and fieldwork preparation consisted of the following tasks:

- Coordination of access to the dam site with SVCA staff.
- Review of the available background information.
- Set-up of MNRF Form B-2 (Dam Inspection Form).
- Preparation of a Site-Specific Health and Safety Plan.
- Printing inspection forms and available drawings.

2.2 Dam Condition Assessment

Wills performed a visual and non-destructive structural inspection of the dam. The methodology for this inspection is summarized as follows:

- Visual inspection, along with recording and classification, of all observable deficiencies according to the Ontario Structure Inspection Manual (OSIM).
- Georeferenced photographs of all aspects of the dam.
- Where possible, aerial imagery of the dam and up and downstream areas collected using a Remotely Piloted Aircraft System.
- Where possible, underwater video of the underwater faces of the dam collected using a pole mounted GoPro camera.
- Review of previously identified deficiencies and their digression over time.
- Completion of MNRF Form B-2 (Dam Inspection Form).

Wills classified the structural deficiencies, including those in concrete, steel and wood, based on the 2008 OSIM. The OSIM reference checklist used for the inspection is provided in Appendix C.

2.3 Assessment of Public and Operator Safety Measures

Wills' inspection of the site included a thorough visual inspection of all public and operator safety measures at the dam. The methodology for the inspection and review of the public and operator safety measures is summarized below:

- Visual inventory and inspection of all signage.
- Visual inspection of dam access route(s).
- Visual inspection of existing public safety measures (railings, booms, buoys, etc.).

- Visual inspection of existing operator safety measures (railings, fall arrest).

The inspection of the public safety measures was carried out in accordance with the methodologies and requirements described in the Best Management Practices for Public Safety Around Dams (MNR, 2011), the Guidelines for Public Safety Around Dams (CDA, 2011) and the Ontario Building Code (OBC). The inspection of the operator safety measures was carried out in accordance with the Occupational Health and Safety Act (OSHA) and the Industrial Establishments Regulation.

3.0 Inspection Findings

3.1 Dam Condition Assessment

Wills performed the inspection of the Durham Upper Dam and Dyke on May 16, 2024. At the time of the inspection, the weather was sunny and 20°C. The week prior to the inspection had periods of rain.

The dam inspection results are documented in the photographic record in Appendix A and the Dam Inspection Form B2 in Appendix B. Digital copies of all photographs and videos from the inspection will be provided to the SVCA by digital file transfer.

In general, the dam was observed to be in fair to poor condition with areas of concrete deterioration (cracking, efflorescence and scaling) throughout the abutments and piers. Seepage was noted downstream of the right abutment and there was minor erosion identified on the downstream left and right banks.

Wills developed the following rating scale in order to provide the SVCA with a high-level assessment of the condition of the various components at the site:

- 1 – Very Poor – Major deficiencies throughout the component. The structural integrity of the component is likely compromised and/or the component does not function as intended.
- 2 – Poor – Significant deficiencies throughout component and the component may not function as intended under certain conditions.
- 3 – Fair – Some deficiencies throughout component that may affect the ability of the component to function as intended if not corrected.
- 4 – Good – Some localized deficiencies that do not affect the ability of the component to function as intended.
- 5 – Very Good – No significant deficiencies throughout the component. Only slight imperfections may exist.

Similar to the condition rating system described above, Wills developed the following rating scale in order to provide the SVCA with a high-level understanding of the risk of failure of the various components at the site:

- 1 – Low – Failure of the component could occur but only in rare/unforeseen events or circumstances.
- 2 – Moderate – Failure of the component may occur in extreme events or circumstances but is unlikely to occur during normal operations.
- 3 – High – Failure of the component may occur during normal operations.

A detailed list of the site's components along with the identification of deficiencies, condition ratings and risk ratings is provided in Table 1. In an effort to identify changes to the dam's condition, condition and risk ratings from the previous inspection have also been included in Table 1.

3.2 Assessment of Public Safety Measures

Dams, and their associated structures and operational practices, present a number of potential hazards to the public. Protecting the public from these potential hazards is an important element of a dam owner's due diligence. Public safety should be considered throughout all stages of a dam's life cycle, from design to decommissioning; however, this is most important during the operational phase of the project. In Ontario, public safety around dams is managed in accordance with the Best Management Practices for Public Safety Around Dams (MNR, 2011).

The public safety measures that have been installed at the site include:

- Buoy line noted during previous inspection (inadequate as a public safety boom).
- Newly installed public safety signage.
- Railings around both wingwalls and retaining walls and along either side of the dam deck / pedestrian bridge.

Based on our site investigation, Wills identified the following potential public safety issues:

- There is no public safety boom present at the site and it has been reported the people (i.e. swimmers, kayakers) frequently go through the dam.
- There is a public swimming area immediately upstream of the dam.
- The public safety warning sign upstream of the dam is partially obstructed by vegetation.

3.3 Assessment of Operator Safety Measures

Operator safety measures are regulated under the Occupational Health and Safety Act (OHSA). The OHSA and its associated regulations are used to assess the adequacy

of operator safety measures. For the majority of dam sites, there are two (2) primary operator safety measures, railings and fall protection, the requirements for which depend on specific site conditions.

The Industrial Establishments Regulation of the OHSA (O.Reg. 851) requires a guard rail at the open side of any raised surface. The guard rail must have a top rail located not less than 910 mm and not more than 1070 mm above the surface to be guarded, have a mid rail, have a toe-board that extents at least 125 mm from the surface if tools or other objects may fall on other workers below, be free of splinters and protruding nails and be constructed to meet the structural requirements for guards as set out in the Ontario Building Code. The existing railing generally meets the requirements for a guard rail under O.Reg. 851.

O.Reg. 851 requires a fall arrest system where a worker is exposed to the hazard of falling and the surface to which they might fall is more than 3 m below the position where they are situated. Based on the drawings provided, the potential fall height is approximately less than 3 m; therefore, a fall arrest system for dam operators is not required.

Potential operator safety issues include:

- Working around the water may require the use of a life jacket or PFD.
- Installation/ removal of stoplogs/ flashboards during higher flows.
- Clearing of ice in the winter/spring.
- Grass cutting on the steep slopes of the flood dyke.

Table 1 – Summary of Inspection Results

Structure	Location	Deficiency / Description	Condition Rating		Risk Rating	
			2022	2024	2022	2024
Earth Embankment						
Earth Embankments	Flood Dyke	Steep slopes on the left side of the embankment, grass cut short exposing bare soil, Concrete culverts through dyke partially filled with sediment (Photos: 98, 101, 105, 110)	4	4	1	1
	Right Embankment	None (Photo: 2, 75)	4	4	1	1
	Left Embankment	None (Photo: 92)	4	4	1	1
Concrete Structures						
Abutment	Left Abutment	Light erosion and cracking. Localized spalling (Photos: 25-27)	4	4	1	1
	Right Abutment	Repaired area has delaminated. Moss growth, light erosion, large spall. Seepage through abutment, exiting through concrete block retaining wall. (Photos :3-6, 66, 68)	2	2	1	1
Piers	Pier 1	Medium erosion. Delamination at the base near the sill. Pier nose is largely delaminated. (Photos: 22-24, 40-42)	3	3	1	1
	Pier 2	Medium erosion, medium to wide cracking. The south face is ±90% delaminated and the downstream face has a large delamination and spall. (Photos: 17-20, 45-48)	3	2	1	1
	Pier 3	Medium erosion, localized spalling. Pier nose is largely delaminated. (Photos: 12-14, 53-56)	3	3	1	1

Structure	Location	Deficiency / Description	Condition Rating		Risk Rating	
			2022	2024	2022	2024
	Pier 4	Light erosion and spalling. Cracking with efflorescence (Photos: 8-10, 60-63)	3	3	1	1
Wingwalls	Upstream Right	None (Photos: 68-69)	4	4	1	1
	Upstream Left	None (Photo: 36)	4	4	1	1
Spillways	Two Northernmost Spillways	Erosion that is consistent with the presence of constantly flowing water (Photos: 22-23)	-	4	-	1
	South Three Spillways	Largely delaminated and spalling in several locations (Photo: 51, 59, 65)	-	2	-	1
Wooden and Metal Structures						
Pedestrian Bridge	Above	Some degree of corrosion, recently recoated. Needs to be constantly repaired due to ice loading (Photos: 82, 84, 86)	3	3	2	2
Railings	Throughout	None (Photos: 82, 85-86)	4	4	1	1
Flow Control Equipment						
Stoplogs	Sluiceway 1	4-ply 2x10s bending severely (noted in previous inspection)	1	1	3	3
	Sluiceway 2	None (noted in previous inspection)	4	4	1	1
Flashboards	Sluiceways 3, 4, 5	None (noted in previous inspection)	4	4	1	1
Water Level Gauge	Upstream Left Wingwall	None (Photo: 37)	-	4	-	1

4.0 Recommendations

The inspection recommendations along with prioritization and cost estimates for each recommendation are provided in Table 2. The degree of accuracy for the cost estimates is approximately +/-50% and are based the best information available at the time of report production. The priorities are classified as "Immediate", "High", "Medium", "Low" and "Ongoing" and are defined as follows:

- Immediate – Remedial action that needs to be carried out as soon as possible because the deficiency is an immediate high-risk dam safety hazard with a high likelihood of occurrence of loss of life and /or serious environment and/or serious economic consequences.
- High – Remedial action is required within the next two years to meet current regulations and/or dam safety requirements and is a high-risk dam safety hazard.
- Medium – These items may include additional work that could improve the performance or issues that may become serious dam deficiencies. These items typically should be addressed within five years.
- Low – These are opportunities to improve safety or deficiencies that may only become a serious dam safety deficiency in the long term. The recommendation can be carried out at the SVCA's convenience, or the recommended remedial action is expected to be required six years from now or later.
- Ongoing – These items may need to be reviewed and completed on a regular basis to ensure that the function of the dam and public safety measures is maintained.

The recommendations are prioritized based on the risk of occurrence, the significance of potential negative impacts and the resources (cost, time, effort) required to implement. The recommendations have been categorized as Dam Safety Management, Public Safety, Operator Safety, Minor Maintenance (repairs < $100,000) and Major Maintenance (repairs > $100,000).

Table 2 – Dam Inspection Recommendations

Recommendation	Description of Deficiency	Priority	Estimated Cost	Additional Comments
Public Safety				
1. Clear the vegetation from around the upstream warning sign.	The upstream warning sign is partially obscured by vegetation and may not be visible from some locations upstream.	High	$0	It is assumed that this would be completed by SVCA staff as part of their regular duties.
2. Install a public safety boom upstream of the dam. The public safety boom should be installed in accordance with the Guidelines for Public Safety Around Dams (CDA, 2011).	There is no public safety boom at the site. A Public Safety Plan, including a Public Safety Risk Assessment, was completed by B.M. Ross and Associates Limited in 2021. B.M. Ross and Associates Limited identified swimming (upstream and downstream), boating/canoeing, and walking/standing on the walkway above the dam as High-risk activities. SVCA staff have indicated that there have been a number of instances of members of the public jumping off the dam and swimming immediately upstream of the dam. There were also reports of swimmers being passed through the dam and kayakers going through the dam during high flow conditions. These High-risk activities have the potential to lead to a fatality.	High	$300,000	The cost estimate assumed an inverted "v" boom layout with an upstream in-water anchor. This layout would require 2 shore anchors and 1 in-water anchor. Estimated cost includes design by the supplier or supplier's engineer.
3. Implement a public education plan to describe the hazards and risks associated with recreating at or near the dam to the general public as well as visitors to the Durham Conservation Area. Monitor and record public activities at the site using the CDA Public Safety Incidents Form that can be found in the Guidelines for Public Safety Around Dams (CDA, 2011).	There is a significant amount of public interaction at the site and the public routinely undertakes activities that have the potential to lead to fatalities.	Immediate	$0	It is assumed that this would be completed by SVCA staff as part of their regular duties. Ongoing monitoring and recording of public safety incidents and activities at the site will be very important for the future update of the Public Safety Risk Assessment and Public Safety Plan.
4. Review/update the Public Safety Plan and Public Safety Risk Assessment within five years and use the data collected on the CDA Public Safety Incident Forms to determine if the public safety measures have been effective. If the public safety measures have not been effective, implement additional public safety measures.	The current Public Safety Plan that was completed by B.M. Ross and Associates recommended a number of new public safety measures be implemented. Ongoing monitoring and recording of public safety incidents and activities at the site over the next five years will help support the updated Public Safety Risk Assessment and the determination of the implemented public safety measures were effective.	Low	$15,000	The cost estimate assumes that the SVCA would retain the services of a qualified consulting engineering firm to complete this work; however, this could be completed by SVCA staff if they have the appropriate knowledge and experience. The appropriate public safety measures and their costs would be identified as part of the Public Safety Risk Assessment.

Recommendation	Description of Deficiency	Priority	Estimated Cost	Additional Comments
Operator Safety				
5. Develop an Operation, Maintenance, Surveillance and Safety (OMSS) Manual for the dam. This should include a detailed review of the operation and maintenance practices used by SVCA staff with a particular focus on operator health and safety.	An Operation, Maintenance, Surveillance and Safety (OMSS) Manual was not provided for review as part of the background material and operator safety issues associated with the installation and removal of stoplogs, ice and debris management, and grass cutting on the flood dyke were identified during the dam inspection.	High	$20,000	It is assumed that the SVCA would retain a qualified consultant to complete this work.
Minor Maintenance				
6. Maintain the grass on the flood dyke at a longer length to reduce the risk of it drying out and exposing the underlying soil which could lead to an increased risk of soil erosion. Restore grass cover on any bare spots.	The grass on the embankment slopes and crest is quite short resulting in bare spots and increasing the potential for soil erosion	Ongoing	$0	It is assumed that this would be completed by SVCA staff as part of their regular duties. Grass should be cut shorter just before the engineering and routine inspections so that any deficiencies can be more easily identified.
Major Maintenance				
7. Complete a full rehabilitation of the dam structure, including the rehabilitation of the concrete piers/abutments, the addition of bracing for the stoplogs/flashboards that utilizes the piers for support rather than the steel truss for the dam deck/pedestrian walkway, replacing the dam deck/pedestrian walkway, and the remediation of the seepage through the right embankment/abutment.	Overall, the dam is in fair to poor condition with a significant number of concrete deficiencies, seepage through the right abutment, ice damage to the steel truss for the dam deck/pedestrian walkway and improper bracing of the stoplogs against the dam deck/pedestrian walkway.	Medium	$1,000,000	The SVCA may want to consider completing a Class Environmental Assessment (Conservation Ontario) prior to moving forward with the rehabilitation. This is because the Class Environmental Assessment would allow for a full study of all options available to address the deficiencies at the Durham Upper Dam. This may lead to a longer-term solution that would have a lower life-cycle cost than the dam rehabilitation and may better suit the SVCA's operational needs. The cost of a Class Environmental Assessment study, including public consultation, is estimated as $100,000. A permit under the Lakes and Rivers Improvement Act from the Ministry of Natural Resources and Forestry may be required prior to the implementation of the preferred alternative.

5.0 Conclusion

Wills completed this Dam Inspection Report as part of a five-year inspection program (2024-2028) to provide the SVCA with an understanding of the overall existing condition of the structure, identify any potential public or operator safety concerns, and provide recommendations to better direct the SVCA with respect to long term management of the structure.

In general, the dam was observed to be in fair to poor condition with areas of concrete deterioration (cracking, efflorescence and scaling) throughout the abutments and piers. Seepage was noted downstream of the right abutment and there was minor erosion identified on the downstream left and right banks.

In comparison to the previous inspection report, water levels in Sluiceways 3, 4, and 5 were lower during the 2024 inspection. As such, large areas of delamination and severe spalling on the pier noising and aprons were documented. Pier 2 degraded from fair to poor condition with additional cracking and delamination noted. The reaming dam components were generally in a similar condition to the 2022 inspection.

The dam should continue to be monitored for future deterioration and remedial action should be completed on an as needed basis.

The detailed inspection findings are presented in Section 3.0 and the recommendations are presented in Section 4.0. The following highlights the Urgent, Important and Future priority items for the dam:

Urgent Priority Items

- None.

Important Priority Items

- Develop an Operation, Maintenance, Surveillance and Safety (OMSS) Manual for the dam. This should include a detailed review of the operation and maintenance practices used by SVCA staff with a particular focus on operator health and safety.
- Clear the vegetation from around the upstream warning sign.
- Install a public safety boom upstream of the dam. The public safety boom should be installed in accordance with the Guidelines for Public Safety Around Dams (CDA, 2011).
- Implement a public education plan to describe the hazards and risks associated with recreating at or near the dam to the general public as well as visitors to the Durham Conservation Area. Monitor and record public activities at the site using the CDA Public Safety Incidents Form that can be found in the Guidelines for Public Safety Around Dams (CDA, 2011).

- Maintain the grass on the flood dyke at a longer length to reduce the risk of it drying out and exposing the underlying soil which could lead to an increased risk of soil erosion. Restore grass cover on any bare spots.

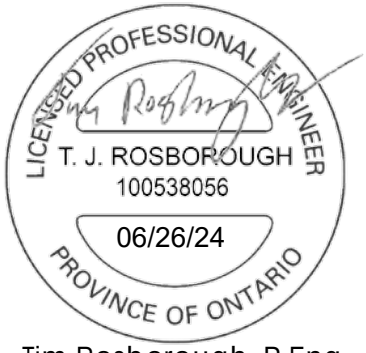
Future Priority Items

- Complete a full rehabilitation of the dam structure, including the rehabilitation of the concrete piers/abutments, the addition of bracing for the stoplogs/flashboards that utilizes the piers for support rather than the steel truss for the dam deck/pedestrian walkway, replacing the dam deck/pedestrian walkway, and the remediation of the seepage through the right embankment/abutment.
- Review/update the Public Safety Plan and Public Safety Risk Assessment within five years and use the data collected on the CDA Public Safety Incident Forms to determine if the public safety measures have been effective. If the public safety measures have not been effective, implement additional public safety measures.

If you have any questions with regards to the information contained herein, please do not hesitate to contact the undersigned.

Respectfully Submitted,

David Green, P.Eng.
Group Leader, Dam Engineering



Tim Rosborough, P.Eng.
Project Engineer

Gavin Bergsma, C.E.T.
Project Designer

DG/GB/

Appendix A

Photographic Record

Filename: DJI_0700.JPG

Photo 1 - May 15, 2024
Durham Upper Dam and Dyke
Aerial View of Downstream Side of Dam

Filename: DSCN7986.JPG

Photo 2 - May 15, 2024
Durham Upper Dam and Dyke
Downstream Right Bank

Filename: DSCN7936.JPG

Photo 3 - May 15, 2024
Durham Upper Dam and Dyke
Left Side of Right Abutment

Filename: DSCN7929.JPG

Photo 4 - May 15, 2024
Durham Upper Dam and Dyke
Seepage on Right Side of Dam

Filename: DSCN7931.JPG

Photo 5 - May 15, 2024
Durham Upper Dam and Dyke
Retaining Wall on Downstream Right Bank

Filename: DSCN7985.JPG

Photo 6 - May 15, 2024
Durham Upper Dam and Dyke
Downstream Side of Right Abutment

Filename: DJI_0629.JPG

Photo 7 - May 15, 2024
Durham Upper Dam and Dyke
Downstream Side of Sluiceway 5

Filename: DJI_0630.JPG

Photo 8 - May 15, 2024
Durham Upper Dam and Dyke
Right Side of Pier 4

Filename: DJI_0631.JPG

Photo 9 - May 15, 2024
Durham Upper Dam and Dyke
Downstream Side of Pier 4

Filename: DJI_0632.JPG

Photo 10 - May 15, 2024
Durham Upper Dam and Dyke
Left Side of Pier 4

Filename: DJI_0633.JPG

Photo 11 - May 15, 2024
Durham Upper Dam and Dyke
Downstream Side of Sluiceway 4

Filename: DJI_0634.JPG

Photo 12 - May 15, 2024
Durham Upper Dam and Dyke
Right Side of Pier 3

Filename: DJI_0635.JPG

Photo 13 - May 15, 2024
Durham Upper Dam and Dyke
Downstream Side of Pier 3

Filename: DJI_0636.JPG

Photo 14 - May 15, 2024
Durham Upper Dam and Dyke
Left Side of Pier 3

Filename: DJI_0637.JPG

Photo 15 - May 15, 2024
Durham Upper Dam and Dyke
Downstream Facing Public Safety Sign

Filename: DJI_0639.JPG

Photo 16 - May 15, 2024
Durham Upper Dam and Dyke
Downstream Side of Sluiceway 3

Filename: DJI_0640.JPG

Photo 17 - May 15, 2024
Durham Upper Dam and Dyke
Right Side of Pier 2

Filename: DJI_0641.JPG

Photo 18 - May 15, 2024
Durham Upper Dam and Dyke
Downstream Side of Pier 2

Filename: DSCN7979.JPG

Photo 19 - May 15, 2024

Durham Upper Dam and Dyke

Delamination and Spall on Downstream Side of Pier 2

Filename: DJI_0642.JPG

Photo 20 - May 15, 2024

Durham Upper Dam and Dyke

Left Side of Pier 2

Filename: DJI_0643.JPG

Photo 21 - May 15, 2024

Durham Upper Dam and Dyke

Downstream Side of Sluiceway 2

Filename: DJI_0644.JPG

Photo 22 - May 15, 2024

Durham Upper Dam and Dyke

Right Side of Pier 1

Filename: DJI_0645.JPG

Photo 23 - May 15, 2024

Durham Upper Dam and Dyke

Downstream Side of Pier 1

Filename: DSCN8100.JPG

Photo 24 - May 15, 2024

Durham Upper Dam and Dyke

Left Side of Pier 1

Filename: DSCN8101.JPG

Photo 25 - May 15, 2024
Durham Upper Dam and Dyke
Right Side of Left Abutment

Filename: DSCN8097.JPG

Photo 26 - May 15, 2024
Durham Upper Dam and Dyke
Downstream Side of Left Abutment

Filename: DSCN8099.JPG

Photo 27 - May 15, 2024
Durham Upper Dam and Dyke
Spall on Downstream Side of Left Abutment

Filename: DSCN8094.JPG

Photo 28 - May 15, 2024
Durham Upper Dam and Dyke
Left Facing Public Safety Signs on Downstream Side

Filename: DSCN8095.JPG

Photo 29 - May 15, 2024
Durham Upper Dam and Dyke
Left Facing Public Safety Sign

Filename: DSCN8096.JPG

Photo 30 - May 15, 2024
Durham Upper Dam and Dyke
Left Facing Public Safety Sign

Filename: DSCN7940.JPG

Photo 31 - May 15, 2024
Durham Upper Dam and Dyke
Downstream Side of Dam from Right Bank

Filename: DSCN7981.JPG

Photo 32 - May 15, 2024
Durham Upper Dam and Dyke
Downstream Watercourse

Filename: DJI_0691.JPG

Photo 33 - May 15, 2024
Durham Upper Dam and Dyke
Aerial View of Upstream Side of Dam

Filename: DSCN8033.JPG

Photo 34 - May 15, 2024
Durham Upper Dam and Dyke
Upstream Left Bank

Filename: DJI_0647.JPG

Photo 35 - May 15, 2024
Durham Upper Dam and Dyke
Upstream Left Bank

Filename: DJI_0649.JPG

Photo 36 - May 15, 2024
Durham Upper Dam and Dyke
Upstream Left Wingwall

Filename: DSCN8029.JPG

Photo 37 - May 15, 2024
Durham Upper Dam and Dyke
Staff Gauge on Upstream Left Wingwall

Filename: DJI_0650.JPG

Photo 38 - May 15, 2024
Durham Upper Dam and Dyke
Right Side of Left Abutment

Filename: DJI_0680.JPG

Photo 39 - May 15, 2024
Durham Upper Dam and Dyke
Upstream Side of Sluiceway 1

Filename: DJI_0652.JPG

Photo 40 - May 15, 2024
Durham Upper Dam and Dyke
Left Side of Pier 1

Filename: DJI_0653.JPG

Photo 41 - May 15, 2024
Durham Upper Dam and Dyke
Upstream Side of Pier 1

Filename: DJI_0654.JPG

Photo 42 - May 15, 2024
Durham Upper Dam and Dyke
Right Side of Pier 1

Filename: DJI_0679.JPG

Photo 43 - May 15, 2024
Durham Upper Dam and Dyke
Upstream Side of Sluiceway 2

Filename: DJI_0656.JPG

Photo 44 - May 15, 2024
Durham Upper Dam and Dyke
Stoplog Gain in Centre of Sluiceway 2

Filename: DJI_0658.JPG

Photo 45 - May 15, 2024
Durham Upper Dam and Dyke
Left Side of Pier 2

Filename: DJI_0659.JPG

Photo 46 - May 15, 2024
Durham Upper Dam and Dyke
Upstream Side of Pier 2

Filename: DJI_0660.JPG

Photo 47 - May 15, 2024
Durham Upper Dam and Dyke
Right Side of Pier 2

Filename: DSCN7972.JPG

Photo 48 - May 15, 2024
Durham Upper Dam and Dyke
Right Side of Pier 2

Filename: DSCN7982.JPG

Photo 49 - May 15, 2024
Durham Upper Dam and Dyke
Stoplog Gain in Right Side of Pier 2

Filename: DJI_0678.JPG

Photo 50 - May 15, 2024
Durham Upper Dam and Dyke
Upstream Side of Sluiceway 3

Filename: DSCN7969.JPG

Photo 51 - May 15, 2024
Durham Upper Dam and Dyke
Delamination and Spalling on Upstream Apron, Sluiceway 3

Filename: DJI_0661.JPG

Photo 52 - May 15, 2024
Durham Upper Dam and Dyke
Upstream Facing Public Safety Sign

Filename: DSCN7971.JPG

Photo 53 - May 15, 2024
Durham Upper Dam and Dyke
Left Side of Pier 3

Filename: DSCN7967.JPG

Photo 54 - May 15, 2024
Durham Upper Dam and Dyke
Delamination and Spalling on Upstream Side of Pier 3

Filename: DJI_0663.JPG

Photo 55 - May 15, 2024
Durham Upper Dam and Dyke
Upstream Side of Pier 3

Filename: DJI_0664.JPG

Photo 56 - May 15, 2024
Durham Upper Dam and Dyke
Right Side of Pier 3

Filename: DSCN7963.JPG

Photo 57 - May 15, 2024
Durham Upper Dam and Dyke
Stoplog Gain in Right Side of Pier 3

Filename: DJI_0677.JPG

Photo 58 - May 15, 2024
Durham Upper Dam and Dyke
Upstream Side of Sluiceway 4

Filename: DSCN7958.JPG

Photo 59 - May 15, 2024
Durham Upper Dam and Dyke
Upstream Apron, Sluiceway 4

Filename: DJI_0665.JPG

Photo 60 - May 15, 2024
Durham Upper Dam and Dyke
Left Side of Pier 4

Filename: DJI_0666.JPG

Photo 61 - May 15, 2024
Durham Upper Dam and Dyke
Upstream Side of Pier 4

Filename: DSCN7956.JPG

Photo 62 - May 15, 2024
Durham Upper Dam and Dyke
Delamination and Spalling on Upstream Side of Pier 4

Filename: DJI_0667.JPG

Photo 63 - May 15, 2024
Durham Upper Dam and Dyke
Right Side of Pier 4

Filename: DJI_0676.JPG

Photo 64 - May 15, 2024
Durham Upper Dam and Dyke
Upstream Side of Sluiceway 5

Filename: DSCN7949.JPG

Photo 65 - May 15, 2024
Durham Upper Dam and Dyke
Delamination on Upstream Apron, Sluiceway 5

Filename: DJI_0668.JPG

Photo 66 - May 15, 2024
Durham Upper Dam and Dyke
Left Side of Right Abutment

Filename: DSCN7948.JPG

Photo 67 - May 15, 2024
Durham Upper Dam and Dyke
Railing Anchor on Right Abutment

Filename: DJI_0669.JPG

Photo 68 - May 15, 2024
Durham Upper Dam and Dyke
Upstream Side of Right Abutment

Filename: DJI_0671.JPG

Photo 69 - May 15, 2024
Durham Upper Dam and Dyke
Upstream Right Wingwall

Filename: DSCN8037.JPG

Photo 70 - May 15, 2024
Durham Upper Dam and Dyke
Erosion Protection on Left Side of Dyke

Filename: DSCN7914.JPG

Photo 71 - May 15, 2024
Durham Upper Dam and Dyke
Downstream Right Bank

Filename: DSCN7915.JPG

Photo 72 - May 15, 2024
Durham Upper Dam and Dyke
Public Safety Sign on Downstream Right Side

Filename: DSCN7917.JPG

Photo 73 - May 15, 2024
Durham Upper Dam and Dyke
Right Facing Public Safety Sign

Filename: DSCN7989.JPG

Photo 74 - May 15, 2024
Durham Upper Dam and Dyke
Right Facing Public Safety Sign

Filename: DSCN7992.JPG

Photo 75 - May 15, 2024
Durham Upper Dam and Dyke
Right Embankment between Dam and Dyke

Filename: DSCN8038.JPG

Photo 76 - May 15, 2024
Durham Upper Dam and Dyke
Right Side of Dam

Filename: DSCN7994.JPG

Photo 77 - May 15, 2024
Durham Upper Dam and Dyke
Right Facing Public Safety Sign

Filename: DSCN7999.JPG

Photo 78 - May 15, 2024
Durham Upper Dam and Dyke
Right Side of Pedestrian Walkway

Filename: DSCN8000.JPG

Photo 79 - May 15, 2024
Durham Upper Dam and Dyke
Right Facing Public Information Sign

Filename: DSCN8002.JPG

Photo 80 - May 15, 2024
Durham Upper Dam and Dyke
Right Facing Public Safety Sign

Filename: DSCN8004.JPG

Photo 81 - May 15, 2024
Durham Upper Dam and Dyke
Lock on Right Pedestrian Walkway Gate

Filename: DSCN8005.JPG

Photo 82 - May 15, 2024
Durham Upper Dam and Dyke
Pedestrian Walkway

Filename: DJI_0692.JPG

Photo 83 - May 15, 2024
Durham Upper Dam and Dyke
Overhead View of Dam

Filename: DSCN7945.JPG

Photo 84 - May 15, 2024
Durham Upper Dam and Dyke
Underside of Pedestrian Walkway

Filename: DSCN7947.JPG

Photo 85 - May 15, 2024
Durham Upper Dam and Dyke
Walkway Anchor in Right Abutment

Filename: DSCN8020.JPG

Photo 86 - May 15, 2024
Durham Upper Dam and Dyke
Left Side of Pedestrian Walkway

Filename: DSCN8015.JPG

Photo 87 - May 15, 2024
Durham Upper Dam and Dyke
Left Pedestrian Walkway Gate

Filename: DSCN8016.JPG

Photo 88 - May 15, 2024
Durham Upper Dam and Dyke
Left Facing Public Safety Sign

Filename: DSCN8018.JPG

Photo 89 - May 15, 2024
Durham Upper Dam and Dyke
Left Facing Public Safety Sign

Filename: DSCN8021.JPG

Photo 90 - May 15, 2024
Durham Upper Dam and Dyke
Railing on Upstream Left Wingwall

Filename: DSCN8022.JPG

Photo 91 - May 15, 2024
Durham Upper Dam and Dyke
Left Facing Public Safety Sign

Filename: DSCN8023.JPG

Photo 92 - May 15, 2024
Durham Upper Dam and Dyke
Left Embankment and Overflow Spillway

Filename: DSCN8027.JPG

Photo 93 - May 15, 2024
Durham Upper Dam and Dyke
Left Facing Public Safety Sign

Filename: DSCN8032.JPG

Photo 94 - May 15, 2024
Durham Upper Dam and Dyke
Left Facing Public Safety Sign

Filename: DJI_0684.JPG

Photo 95 - May 15, 2024
Durham Upper Dam and Dyke
Aerial View of Upstream Side of Dam

Filename: DJI_0690.JPG

Photo 96 - May 15, 2024
Durham Upper Dam and Dyke
Aerial View of Dyke

Filename: DJI_0688.JPG

Photo 97 - May 15, 2024
Durham Upper Dam and Dyke
Aerial View of Dyke

Filename: DSCN8046.JPG

Photo 98 - May 15, 2024
Durham Upper Dam and Dyke
Left Side of Dyke

Filename: DSCN8039.JPG

Photo 99 - May 15, 2024
Durham Upper Dam and Dyke
Crest of Dyke

Filename: DSCN8040.JPG

Photo 100 - May 15, 2024
Durham Upper Dam and Dyke
Right Side of Dyke

Filename: DSCN8047.JPG

Photo 101 - May 15, 2024
Durham Upper Dam and Dyke
Exposed Soil on Crest of Dyke

Filename: DSCN8054.JPG

Photo 102 - May 15, 2024
Durham Upper Dam and Dyke
Left Side of Dyke

Filename: DSCN8056.JPG

Photo 103 - May 15, 2024
Durham Upper Dam and Dyke
Manhole Structure in Dyke

Filename: DSCN8057.JPG

Photo 104 - May 15, 2024
Durham Upper Dam and Dyke
Outlet Pipe

Filename: DSCN8061.JPG

Photo 105 - May 15, 2024
Durham Upper Dam and Dyke
Inside Outlet Pipe

Filename: DSCN8064.JPG

Photo 106 - May 15, 2024
Durham Upper Dam and Dyke
Manhole Structure in Dyke

Filename: DSCN8062.JPG

Photo 107 - May 15, 2024
Durham Upper Dam and Dyke
Outlet Pipe

Filename: DSCN8063.JPG

Photo 108 - May 15, 2024
Durham Upper Dam and Dyke
Left Side of Dyke

Filename: DSCN8065.JPG

Photo 109 - May 15, 2024
Durham Upper Dam and Dyke
Crest of Dyke

Filename: DSCN8066.JPG

Photo 110 - May 15, 2024
Durham Upper Dam and Dyke
Exposed Soil on Right Side of Dyke

Filename: DSCN8067.JPG

Photo 111 - May 15, 2024
Durham Upper Dam and Dyke
Right Side of Dyke

Filename: DSCN8073.JPG

Photo 112 - May 15, 2024
Durham Upper Dam and Dyke
Crest of Dyke Looking Towards Dam

Filename: DSCN8091.JPG

Photo 113 - May 15, 2024
Durham Upper Dam and Dyke
Portage Sign Upstream of Dam

Filename: DSCN8093.JPG

Photo 114 - May 15, 2024
Durham Upper Dam and Dyke
Warning Sign Upstream of Dam

Filename: DSCN8092.JPG

Photo 115 - May 15, 2024
Durham Upper Dam and Dyke
Warning Sign Upstream of Dam

Appendix B

Dam Inspection Form B2

Form B2

Dam Inspection Form

Date:	May 15, 2024
Name of Dam:	Durham Upper Dam and Dyke
Municipality:	Municipality of West Grey, County of Grey
Location:	Lot 25, Concession 1, East of Owen Sound Road, Geographic Township of Glenelg
GPS Coordinates:	515289.00 m E, 4891775.00 m N, UTM Zone 17T
Inspected By:	David Green, P.Eng., Tim Rosborough, P.Eng. Mitchell Vermeiren, EIT, Kyle Hope (SVCA)
Weather:	Sunny 20°C. Rain within past couple of days.

1 – Earth Embankment

Flood Dyke – There is a flood dyke that extends from downstream of the dam, near the parking area, following the watercourse for approximately 200 m and then angling south to Lambton Street East.

There is cable concrete matting along approximately half of the left side of the dyke and rip-rap toe protection along the remainder of the left side of the dyke. Vegetation has been left longer at the water's edge but the grass on the embankment slopes and crest is quite short resulting in bare spots and increasing the potential for soil erosion. The left side slopes of the dyke are quite steep, and it is understood that this makes grass cutting operations difficult. There appears to be some vehicle tracks/rutting along the embankment, likely from the grass cutting operations.

There is a manhole structure in the crest of the embankment with a steel grate that is locked shut. There are concrete culverts that lead into the manhole structure from both sides of the flood dyke. It's understood that this was installed to allow for drainage of a local development. There is a valve on the inside of the manhole structure that can be closed to prevent floodwaters from flowing through the flood dyke. The valve requires manual operation during a flood event. The concrete culverts are filled with sediment and debris but otherwise appear to be in good condition.

Right Embankment – The right embankment extends from the right abutment to the flood dyke and is retained partially by the right abutment wingwalls. Based on historical information provided by the SVCA, it is understood that the earth section was at one point lowered as an emergency spillway and cable concrete was added to provide the required erosion protection. Some of this cable concrete is visible at the surface, particularly on the upstream slope. There is a gravel access trail that follows the downstream side of the embankment. Adjacent to the right abutment and wingwalls, the embankment is retained by large precast concrete blocks. The blocks appear to have shifted over time and there is active seepage in this area.

Left Embankment – The left embankment is similar to the right embankment where there is a concrete wingwall section that transitions to an earth embankment. There are round field stones that are armouring the gently sloping grass embankment at the end of the concrete wingwall and there is a public swimming area with a sandy beach upstream of the embankment. There is a buried concrete wall that runs perpendicular to the watercourse starting at the left abutment. Only the top face of this wall is visible. SVCA staff explained that during flood conditions, the watercourse overtops the embankment and concrete wall and travels down a walking path running parallel with the river, ultimately discharging back into the river a few hundred meters downstream.

2 – Concrete Structures (wingwalls, piers, deck, spillways, apron, etc.)

Left Abutment – The left abutment has light erosion at the base, cracking with efflorescence concentrated to the top half of the wall with some localized spalling on the corner of the top and inside face, and small pop-outs and spalls throughout the wall face.

Right Abutment – The right abutment is in poor condition. The entire inside face has been repaired with cementitious parging and the repaired area has delaminated. On the downstream face of the abutment, the previously repaired area has spalled on the corner of the face. The concrete in this spalled area is severely weathered and is beginning to disintegrate. A wide horizontal crack starting in this spalled area has spalling along the length of the crack. There is moss growth and light erosion along the base of the abutment. Adjacent to the underside of the deck/pedestrian bridge structure, the concrete acting as the bearing seat is spalled and disintegrating.

Pier 1 – There is medium scaling at the base of the pier and there is delamination at the base near the sill. Pier nose is largely delaminated.

Pier 2 – There is medium erosion at the base of the pier on both sides and a large area of spalling in the center of the downstream face. From this area of spalling propagates a wide crack that extends along the length of the right inside face of the pier. There is also medium to wide cracking on the left inside face of the pier. Pier nose is largely delaminated.

Pier 3 – There is medium erosion at the base of the pier on both sides and a wide crack on the downstream face of the pier with a localized spall along the crack. The south face is ±90% delaminated and the downstream face has a large delamination and spall.

Pier 4 – Pier 4 (first from the right abutment) has cracking with efflorescence on the inside, outside and downstream faces. There are also two areas of spalling on the corners towards the tops of the piers. There is light erosion at the base of the pier on both sides.

Wingwalls – The upstream right wingwall is described in the earth embankment section of this report as loose poured concrete over rock and is in good condition. The wingwall appears to have been recently capped with newer concrete and a metal railing has been installed. The upstream left wingwall is cast-in-place concrete

and is in good condition. There is one localized spall at the edge of the wingwall and abutment. Apparent repairs are present along the top of the wall where the metal railing has been installed.

Spillways/Aprons – Inspection on the 2 northernmost spillways/aprons was limited due to the fast-flowing water. Based on a visual inspection from above, the concrete appeared to be in good condition with erosion that is consistent with the presence of constantly flowing water.

The south 3 spillways/aprons were dry and physically inspected. Upstream of the sill in each inspected spillway, the apron is largely delaminated and spalling in several locations.

3 – Wooden and Metal Structures (decks, gains, railings, conduits, etc.)

Dam Deck / Pedestrian Bridge – A steel deck/pedestrian bridge sits atop the abutments and piers to provide operator access to the various parts of the dam and allow members of the public to cross the dam. The structure is constructed with open web steel joists as the main girders with various steel angles acting as sway bracing and lateral bracing. The wearing surface consists of individual steel sections welded to the girders. The structure is in good to fair condition although SVCA staff explained as part of a previous inspection that the structure was recently recoated and may be hiding some deficiencies that were visible before recoating. Upon inspection, the majority of the steel appears to be experiencing some degree of corrosion, assumed to be light. It is difficult to determine the extent of corrosion due to the recent coating. The bridge is anchored into each pier and abutment with steel base plates and anchors. The plates are in good condition and the number of anchors seem adequate for the current use of the bridge. The grating on the structure generally appears to be in good condition.

It was noted by SVCA staff that ice sometimes comes into contact with the girders on the underside of the structure, causing the girders to deform, needing repairs. This deformation may also be due to the fact that the supports for the flashboards and stoplogs rely on the dam deck/pedestrian bridge structure to provide lateral support and when the ice is pushed downstream it causes excessive lateral stresses that cannot be absorbed by the dam deck/pedestrian bridge structure without deforming.

Railings – Steel pipe railing runs on either side of the dam deck/pedestrian bridge and on the retaining walls. Steel grating is attached to the inside of the railing. The railing and grating appears to be in good condition. The height of the railing is approximately 1.18 m. There are gates on both sides of the dam deck/pedestrian bridge that can be closed and locked by SVCA staff to prevent access by the pubic. The gates were locked in the open position during the inspection and appeared to be in good condition.

4 – Gates and/or Stop Logs

Flashboards – Sluiceways 3, 4 and 5, on the right side of the dam, have single-ply 2x6's that act as the flashboards. The flashboards are supported by vertical 6x6's that sit

behind the flashboards and rest on the upstream side of the dam deck/pedestrian bridge structure. The posts are attached to the dam deck/pedestrian bridge structure with a single piece of wire. The flashboards were not installed at the time of this inspection but were generally in good condition at the time of the 2022 inspection.

Sluiceways 1 and 2, on the left side of the dam, have more standard square stoplogs that were not on site but were generally in good condition at the time of the 2022 inspection. Similar to Sluiceways 3, 4 and 5, the support for the stoplogs in Sluiceway 2 are attached to the upstream side of the dam deck/pedestrian bridge structure with a vertical H-beam. Sluiceway 1 has 4-ply 2x10's on top of the stoplogs.

5 – Water Level Gauge (reading and condition)

There is a new metric staff gauge mounted to the upstream left wingwall. The bottom of the staff gauge is just below what appears to be the normal water level. The staff gauge is in good condition.

There is an old staff gauge is mounted to the upstream side of the right abutment. This staff gauge is in very poor condition. The staff gauge is almost illegible and does not reach below the water surface (broken). It also appears as though the staff gauge is in imperial units (ft) rather than metric units (m).

6 – Winches (type and number)

There are no winches associated with the Durham Upper Dam.

7 – Valves (type and number)

There are no valves associated with the Durham Upper Dam.

8 – Boom (driftwood, chains, anchors)

There is no public safety boom installed at this site; however, there is a buoy line that has been installed across the front of the dam and around the designated swimming area at the beach. The buoy line is inadequate for public safety as it is too close to the dam and will not stop a swimmer from passing under/over it. The buoy line also does not meet the current guidance for public safety booms listed in the Guidelines for Public Safety Around Dams (CDA, 2011).

9 – Erosion (upstream and downstream)

Minor erosion was identified on the downstream left and right banks.

10 – Seepage or Leaks

Seepage through the right abutment was noted. At a previous inspection SVCA staff reported that they are consistently having to place additional gravel material on top of the structure to fill in depressions. SVCA provided a historical photograph that was interpreted to show a penstock through what is now the right abutment as well as another spillway on the right side of what is now the right abutment. It is possible that a proper sealing of the structure was not completed when the penstock and additional spillway were removed. The underwater inspection did not reveal any major openings on the upstream side of the right abutment; however, it appears as though additional stone/concrete has been added to the upstream face at some point.

Loose sediment was tracked to determine if there is any point in the upstream embankment that is exhibiting a negative (suction) pressure in an effort to determine a source of the seepage. One small depression / hole was noted to be sucking sediment into the embankment and may be one of several possible seepage sources in the upstream embankment.

11 – Access Route (location of gate keys, winch handles and keys)

The dam is accessed via the public road system and is generally publicly accessible. There is a parking area downstream of the dam and the dam and dyke can be accessed on foot from this point. The dam deck/pedestrian walkway gates are generally locked in the open position; however, keys from the SVCA may be required to access the deck and cross the river if the gates are locked in the closed position.

12 – Safety Issues (public and operator)

Public Safety – A Public Safety Plan, including a Public Safety Risk Assessment, was completed by B.M. Ross and Associates Limited in 2021. B.M. Ross and Associates Limited identified swimming (upstream and downstream), boating/canoeing, and walking/standing on the walkway above the dam as High-risk activities. SVCA staff have indicated that there have been a number of instances of members of the public jumping off the dam and swimming immediately upstream of the dam. There were also reports of swimmers being passed through the dam and kayakers going through the dam during high flow conditions. These High-risk activities have the potential to lead to a fatality. During the inspection several individuals were noted using remote controlled cars on the rocks on the downstream right side of the dam.

Operator Safety – Operator safety issues that were identified by Wills through conversation with SVCA staff were the installation/removal of stoplogs/flashboards and the clearing of ice in the winter/spring. In addition, grass cutting on the steep slopes of the flood dyke are also a hazard for maintenance staff.

13 – Signage

There are large (4 ft by 6 ft) public safety signs mounted to the upstream and downstream sides of the metal railing. The upstream facing sign reads "DANGER, Dam Ahead, Keep Away" and includes the SVCA logo as well as the name of the dam and instructions to call 911 in an emergency. This sign is in new condition. The

downstream facing sign reads "DANGER, Dam Outflow, Keep Away" and includes the SVCA logo as well as the name of the dam and instructions to call 911 in an emergency. This sign is in new condition.

There is a large public safety sign mounted to a tree upstream of the dam. The sign reads "WARNING, Dam Downstream" and includes the old SVCA logo as well as the name and address of the dam and instructions to call 911 in an emergency. The sign is generally visible from the watercourse although it is somewhat obstructed by trees. The sign is showing some signs of weathering but is generally in good condition.

There are small (24 inch by 24 inch) red "DANGER, No Trespassing, Access Beyond This Point May Result In Drowning" signs mounted to metal posts or fencing at various locations throughout the site, including on the gates that can be closed to prevent access to the dam deck, at the ends of the fencing on all four quadrants, and along the river bank on the downstream right side. The signs include the SVCA logo, the name of the dam, and direction to call 911 in an emergency. The signs are in new condition.

There are small (24 inch by 24 inch) yellow "WARNING, Dam Area Use At Own Risk" signs mounted to metal posts at the approaches to the dam, from the downstream parking area and from the conservation area. The signs include the SVCA logo, the name of the dam, and direction to call 911 in an emergency. The signs are in new condition.

There are three small (12 inch by 18 inch) "No Swimming" signs mounted to metal posts and a tree around the downstream area. The signs are in new condition.

There are small (16 inch by 20 inch) public information signs mounted to the railings on the left and right abutments. The signs indicate that the dam is owned and operated by the SVCA and include the old SVCA logo as well as a contact phone number and email address. These signs are in good condition.

There is a small "WARNING, THESE PREMISES PROTECTED BY VIDEO SURVEILLANCE" sign facing the right side of the dam mounted to a steel post above the gate on the left side of the dam. The sign appears to be in good condition.

There is a yellow fall hazard (or slippery surface) sign mounted to a utility pole on the downstream left side of the dam. The sign is in good condition but does not meet the requirements of the of the Best Management Practices for Public Safety Around Dams (MNR, 2011).

There is a "NO BEACH PATROL, Swim at own risk" sign mounted to a utility pole on the downstream left side of the dam. The sign includes the old SVCA logo and the SVCA web address. The sign appears to be in good condition with some fading of the paint.

14 – Divestment and/or Decommissioning Opportunities

The Durham Upper Dam is the site of the Durham Conservation Area which is owned and operated by the SVCA. The beach on the upstream left side of the dam is a popular place for swimming. The dyke on the upstream right side of the dam provides flood protection for parts of the Town of Durham. Based on these factors, it is anticipated that there would be limited divestment or decommissioning opportunities for the Durham Upper Dam.

15 – General Remarks

B.M. Ross and Associates Limited completed a structural review of the dam in 2021 and made a number of recommendations regarding repairs to the concrete and the installation of new steel beams to brace the flashboards.

The latest engineering inspection was completed by Wills in 2022. The SVCA has instituted a routine dam inspection process.

A Dam Safety Review Update was completed by Wills in 2024.

16 – Recommendations

- Complete a full rehabilitation of the dam structure, including the rehabilitation of the concrete piers/abutments/sills/aprons, the addition of bracing for the stoplogs/flashboards that utilizes the piers for support rather than the steel truss for the dam deck/pedestrian walkway, replacing the dam deck/pedestrian walkway, and the remediation of the seepage through the right embankment/abutment. The recommended time horizon for the rehabilitation is 2-5 years.
- Develop an Operation, Maintenance, Surveillance and Safety (OMSS) Manual for the dam. This should include a detailed review of the operation and maintenance practices used by SVCA staff with a particular focus on operator health and safety.
- Clear the vegetation from around the upstream warning sign.
- Install a public safety boom upstream of the dam. The public safety boom should be installed in accordance with the Guidelines for Public Safety Around Dams (CDA, 2011).
- Implement a public education plan to describe the hazards and risks associated with recreating at or near the dam to the general public as well as visitors to the Durham Conservation Area. Monitor and record public activities at the site using the CDA Public Safety Incidents Form that can be found in the Guidelines for Public Safety Around Dams (CDA, 2011).
- Review/update the Public Safety Plan and Public Safety Risk Assessment within five years and use the data collected on the CDA Public Safety Incident Forms to determine if the public safety measures have been effective. If the public safety measures have not been effective, implement additional public safety measures.

- Maintain the grass on the flood dyke at a longer length to reduce the risk of it drying out and exposing the underlying soil which could lead to an increased risk of soil erosion. Restore grass cover on any bare spots.

Appendix C

OSIM Inspection Deficiency Classifications

OSIM Checklist		
Concrete		
Scaling - loss of portion of concrete surface or mortar due to freeze thaw. Common with non-air entrained concrete or poorly finished concrete.	Light	Loss of mortar up to 5 mm
	Medium	6 to 10 mm, some coarse aggregate visible
	Severe	11 to 20 mm aggregate pocking
	Very Severe	More than 20 mm
Disintegration - breakdown of concrete. Starts as scaling and its disintegration when it's beyond the level of very severe scaling.	Light	Loss of depth up to 25 mm
	Medium	25 to 50 mm
	Severe	50 to 100 mm
	Very Severe	More than 100 mm
Erosion - deterioration of concrete by water, sand or gravel scrubbing against the surface.	Light	Loss of depth up to 25 mm
	Medium	25 to 50 mm
	Severe	50 to 100 mm
	Very Severe	More than 100 mm
Corrosion of Reinforcement	Light	Rust stains on concrete surface
	Medium	Exposed reinforcement, loss of section 10%
	Severe	Loss of reinforcing steel section 10% to 20%
	Very Severe	Loss of section more than 20%
Delamination - discontinuity of the surface concrete, which becomes substantially separated but not completely detached. Hollow sounding when tapped.	Light	Measured area less than 150 mm in any direction
	Medium	150 mm to 300 mm
	Severe	300 mm to 600 mm
	Very Severe	More than 600 mm
Spalling - fragments of concrete become detached.	Light	Measured area less than 150 mm in any direction, or less than 25 mm deep
	Medium	150 mm to 300 mm, or 25 mm to 50 mm deep
	Severe	300 mm to 600 mm, or 50 mm to 100 mm deep
	Very Severe	More than 600 mm, or greater than 100 mm in depth
Crack - linear fracture.	Hairline	Less than 0.1 mm
	Narrow	0.1 mm to 0.3 mm
	Medium	0.3 mm to 1.0 mm
	Wide	More than 1.0 mm
AAR - aggregate reaction with the alkalis in cement, product is highly expansive substance called alkali-silica gel. The expansion of the gel and aggregate under damp conditions causes cracking.	Light	Hairline cracks, widely spaced, no visible expansion of concrete mass
	Medium	Narrow pattern cracks, closely spaced, with visible expansion of concrete mass
	Severe	Medium to wide pattern cracks, closely spaced, with visible expansion and deterioration of concrete
	Very Severe	Wide pattern cracks, closely spaced, with extensive expansion and deterioration of concrete

OSIM Checklist		
Concrete Surface Defects		
Stratification - separation of concrete into horizontal layers in over wetted or over vibrated concrete.		
Segregation - differential concentration of the components of mixed concrete resulting in non-uniform properties in mass. Caused by concrete falling from height, with the coarse aggregate setting to the bottom and fine aggregate to the top.		
Cold Joints - caused from delay between placements of successive pours of concrete and incomplete bond develops.		
Deposits - water percolates through the concrete and dissolves or leaches chemicals from it and deposits them on the surface.	Efflorescence	A deposit of salts, usually white and powdery
	Exudation	A liquid or gel-like discharge through pores or cracks in the surface
	Incrustation	A hard crust or coating formed on the concrete surface
	Stalactite	A downward pointing formation hanging from the concrete surface, usually shaped like an icicle
Honeycombing - improper or incomplete vibration, which leaves voids in the concrete where mortar failed to completely fill the space between aggregate.	Light	Measured area less than 150 mm in any direction
	Medium	150 mm to 300 mm
	Severe	300 mm to 600 mm
	Very Severe	more than 600 mm
Pop-outs - shallow, conical depressions caused by small portions of concrete surface breaking away due to frost or expansion of aggregate.	Light	Holes up to 25 mm diameter
	Medium	25 mm to 50 mm
	Severe	50 mm to 100 mm
	Very Severe	More than 100 mm
Abrasion - vehicles or snow plow blades scraping against concrete.		
Wear- dynamic and/or friction forces from vehicles, dirt, debris, sand, water & ice. Surface appears polished.		
Slippery- as a result of polishing of concrete deck by vehicular traffic.		
Steel		
Corrosion - deterioration of steel by chemical or electro-chemical reaction.	Light	Loose rust formation, no noticeable section loss
	Medium	Loose rust with scales or flakes. Up to 10% sectional loss
	Severe	Stratified rust with pitting of metal. 10% to 20% section loss
	Very Severe	Localized perforation or rusting through. More than 20% section loss
Permanent Deformation - bending, buckling, twisting or elongation, or any combination thereof.	Note location of deformation	
Crack - a linear fracture in the surface of steel or weld.	Cracks perpendicular to direction of stress are critical	
Loose Connections - caused by corrosion of connector plates or fasteners, excessive vibration, overstressing, cracking or the failure of the individual fasteners.	Light	up to 5% of fasteners loose or missing
	Medium	5% to 10
	Severe	10% to 20%
	Very Severe	more than 20%

OSIM Checklist		
Wood		
Weathering, Checks, Splits and Shakes - deterioration of wood due to sun, rain, wind, frost and atmospheric pollutants.	Light	tissue separation short and extends less than 5% into member
	Medium	separation long and 5% to 10% into member
	Severe	10% to 20%
	Very Severe	more than 20%
Rot and Decay - breakdown of wood by microorganisms.	Light	slight change in colour, wood cannot be penetrated by sharp object
	Medium	surface discolored with black and brown streak. Hollow sounding when tapped
	Severe	surface fibrous, checked or crumbly with fungal fruiting growing on it
	Very Severe	wood can be crumbled and disintegrated with ease
Insect Damage - tunneling and boring by larvae or mature insects.	Light	occasional exit or entrance hole
	Medium	several entrances and exit holes
	Severe	extensive tunneling and holes
	Very Severe	extensive tunneling, holes and larvae insects present
Abrasion and Wear - deterioration caused by vehicles or snowplow blades scarping against wood.	Light	5% section loss
	Medium	5% to 10% section loss
	Severe	10% to 20%
	Very Severe	more than 20%
Cracking, Splintering, Crushing and Shattering - physical damage from vehicular collision or overloading of member.	Light	5% section loss
	Medium	5% to 10% section loss
	Severe	10% to 20%
	Very Severe	more than 20%
Fire and Chemical Damage – charring.	Light	slight charring and 5% section loss
	Medium	5% to 10% section loss
	Severe	10% to 20%
	Very Severe	more than 20%
Loose Connections - loosened due to repetitive or dynamic loading, wear or decay.	Light	up to 5% of fasteners loose or missing
	Medium	5% to 10
	Severe	10% to 20%
	Very Severe	more than 20%
Masonry		
Crack - incomplete separation into one or more parts with or without space between.	Hairline	less than 0.1 mm
	Narrow	0.1 mm to 0.3 mm
	Medium	0.3 mm to 1.0 mm
	Wide	more than 1.0 mm
Splitting, spalling and disintegration - opening of seams, chipping away of pieces of stones or gradual breakdown of stone.	Light	hairline cracks and minor loss of stone surface up to 50 mm section loss
	Medium	narrow cracks and 50 mm to 100 mm section loss
	Severe	spalling and disintegration of stone with 100 mm to 150 mm section loss
	Very Severe	extensive spalling and disintegration of stone with 100 mm to 150 mm section loss
Loss of mortar and stone - loss of mortar due to frost, erosion, plant	Light	loss of mortar from joints of depth up to 20 mm
	Medium	20 to 50 mm

OSIM Checklist		
growth or softening by water containing dissolved sulfate or chlorides.	Severe	extensive loss of mortar resulting in loss of stone
	Very Severe	extensive loss of stones jeopardizing the stability of structure
Aluminum		
Corrosion - gradual oxidation of the surface in the presence of moisture.	Light	loose rust formation, no noticeable section loss
	Medium	loose rust with scales or flakes. Up to 10% sectional loss
	Severe	stratified rust with pitting of metal. 10% to 20% section loss
	Very Severe	localized perforation or rusting through. More than 20% section loss
Crack - a linear fracture which may extend partially or completely through the material		
Loose Connections - may occur in bolted or riveted connection.	Light	up to 5% of fasteners loose or missing
	Medium	5% to 10
	Severe	10% to 20%
	Very Severe	more than 20%
Coatings		
Coating Related Defects	*Adhesion Related Defects*	
Checking or crazing	Undercutting	
Cracking	Blisters	
Alligatoring	Intercoat delamination	
Chemical attack	Peeling	
Chalking	Underfilm corrosion	
Coating Related Defects		
Bridging	Pinholing	
Edge effects	Runs	
Shadows	Sags	
Overspray	Pinpoint rusting	

WILLS

PARTNERS IN ENGINEERING, PLANNING & ENVIRONMENTAL SERVICES

June 7, 2024

Saugeen Valley Conservation Authority
1078 Bruce Road 12, Box 150
Formosa, ON
N0G 1W0

Attention: Elise MacLeod, P.Eng., Manager Water Resources

Re: Durham Upper Dam
Operator and Public Safety Review
Municipality of West Grey, Ontario
D.M. Wills Associates Project No. 22-5540

1.0 Introduction

D.M. Wills Associates Limited has been retained by the Saugeen Valley Conservation Authority (SVCA) to undertake a review of operator and public safety at the Durham Upper Dam, which is located in the Town of Durham, Municipality of West Grey, Ontario. Of particular interest to the SVCA, and the primary focus of this review, is the safety of dam operators during winter operations, and the safety of members of the public while swimming at the adjacent Durham Conservation Area.

As part of this project, Wills reviewed the relevant background information provided by the SVCA, interviewed SVCA dam operations staff, and reviewed the velocities in the river for the sunny day flow condition (the conditions in which swimming would typically occur). The results of our review are provided in the sections below.

2.0 Operator Safety Review

2.1 Background Review and Operator Interviews

In order to gain a better understanding of the operations at the Durham Upper Dam, Wills reviewed the available information provided by the SVCA and completed operator interviews.

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The background information reviewed included the Durham Frazil Ice Operation Plan (SVCA, 2010, Updated 2019), memos from staff members, and photographs of operations activities on site.

The operator interviews consisted of asking the following questions:

- Could you please describe the annual operating plan? In your response, please include a description of the operator safety measures that are used.

- Are there any particular work procedures and health and safety measures used when working on or around ice?
- Do you have any particular health and safety concerns related to the operation of the Durham Upper Dam?
- What is your experience relating to witnessing swimming at the dam?

Information gained from the background information review and operator interviews has been incorporated into this letter report.

2.2 Understanding of Dam Operations

Operations at the Durham Upper Dam are undertaken in accordance with the Durham Frazil Ice Operating Plan (SVCA, 2010, Updated 2019). The operations at the Durham Upper Dam can be generally categorized as Summer Operations or Winter Operations, which are generally described below. It is noted that these descriptions are based on input provided by SVCA staff and that the procedures may be modified from time to time depending on field conditions and operational considerations.

Summer Operations

- The stoplogs and flashboards are typically installed the week before the Victoria Day long weekend, as appropriate based on the flows in the river.
- The stoplog installation starts with the two north bays. A tractor is used to place the stoplogs in the water at the beach and then they are floated/manipulated into place by staff wearing chest waders and life jackets. This is a challenging task that requires coordination and strength while working against the current which is trying to pull the stoplogs through the sluiceway. The water level is allowed to rise and more logs are floated into place as the water level comes up. It is noted that the stoplogs in the three north bays are held in place by the hydrostatic pressure of the upstream water.
- Once the logs in the two north bays are installed, the flashboards are installed in the three south bays. The work is completed while standing on the upstream concrete apron. The 4x4 posts and flashboards (2x8s and 2x6s) are lowered down by staff above and put in place by the staff member working from the apron. SVCA staff will wear a fall arrest harness and tie off to the steel bridge if there is water present; however, the work is generally completed while standing on the dry concrete apron. Staff are also required to wear hard hats and CSA approved work boots. Gloves will also be worn, as required.
- After the stoplogs and flashboards are set in place, they are left for the summer. Debris is routinely cleared from upstream of the dam. If a flood event occurs in the summer and additional hydraulic capacity is

required, the flashboards are removed using pike poles from the steel bridge and reinstalled following the event using the above noted procedure. If the flashboards are not removed in time following a significant rainfall event, water will overtop the north embankment of the dam and, in extreme cases, there is also the potential for water to overtop the south embankment. The timing of the flashboard reinstallation is challenging as the depths and velocities need to be low enough that they can be installed safely but the flows need to be high enough that downstream flows will not be completely cut off.

Winter Operations

- The winter stoplog and flashboard settings are typically set after the Thanksgiving long weekend. To complete this work, two stoplogs are removed from each of the two north bays. There are no changes to the flashboards. This work is completed using a tractor or excavator. The dam is left with these settings to allow for the creation of a stable ice sheet upstream with the purpose of reducing frazil ice generation and lowering the risk of frazil ice jams further downstream in Durham. It is noted that evaluating the effectiveness of the Frazil Ice Operating Plan (SVCA, 2010, Updated 2019) was not included in Wills' scope of work for this assignment.
- If there is a mid-winter thaw, the flashboards may need to be removed to increase the discharge capacity of the dam. This sometimes requires operators to work in inclement weather conditions. After the flashboards have been removed, there is a risk that they cannot be reinstalled prior to the reservoir freezing up again and frazil ice production occurring further upstream.
- As temperatures start to warm in the late winter months, SVCA staff closely monitor watershed and climate conditions so that the dam configuration can be adjusted if high runoff is anticipated. If the stoplogs and flashboards are not removed and there are high flows, the embankments adjacent to the dam will overtop.
- Once the threat of frazil ice production has passed, the stoplogs and flashboards are removed from the dam in preparation for the spring freshet.
- During stoplog and flashboard removal operations in winter, it is understood that dam operators wear survival suits, gloves, hard hats, and CSA approved work boots. Chainsaw protective equipment is used when operating the chain saws. When working on the ice upstream of the dam, staff also wear a fall arrest harness/lanyard which is tied off to a rope that is temporarily installed along the steel bridge. The rope is attached to the dam railing by tying a knot on either side.

Images provided by the SVCA suggest that the rope rests along the ice and is not tight.

- The stoplogs in the two north bays are removed first. To accomplish this, ice is either chipped from the steel bridge with pike poles or ice chippers (when the ice is relatively thin) or cut into 2 foot by 2 foot sections with a pole saw. Ice is also sometimes removed using an excavator. Operators will leave an "bridge" of ice that extends from the piers to the ice sheet on the reservoir to prevent the ice sheet from pushing into the dam. To remove the stoplogs, one end of a chain is attached to an excavator bucket and the other is attached to the lifting hooks on the stoplogs using a pike pole. The stoplogs are lifted out of the sluiceways with the excavator and placed on the shore.
- Once the stoplogs are removed, the water level is allowed to drop for a couple of days and then the flashboards are removed. The flashboards are removed by staff members working from the ice upstream of the dam. The ice is generally, although not always, resting on the concrete apron while this task is undertaken and there is no water beneath the ice.
- On rare occasions when the ice is really thick, staff members need to cut ice upstream of the dam with a chainsaw. Staff will only go out on the ice when it is over 10 inches thick, as determined by the length of the pole saw blade.
- Once all of the stoplogs and flashboards are removed, they are left out until the start of summer operations (after the Victoria Day long weekend).

2.3 Operator Safety Considerations

Based on the general understanding of the dam operations described in Section 2.2, Wills has identified the primary activities and hazards related to the operation of the Durham Upper Dam. The primary activities and hazards, along with the mitigation measures and Personal Protective Equipment (PPE) used by SVCA staff are included in Table 1.

Table 1– Primary Activities, Hazards, and Mitigation Measures

Activity	Hazard(s)	Mitigation Measures and PPE used by SVCA Staff	Wills' Comment
Working around water	Deep water. Strong currents (high water velocities).	Work in the water is only completed during low flow conditions.	SVCA staff have noted that work is not always completed during low flow conditions

Activity	Hazard(s)	Mitigation Measures and PPE used by SVCA Staff	Wills' Comment
	Drowning.	Staff wear chest waders and inflatable life jackets when working in the water. Staff do not work alone when working in the water.	and that water levels are close to the maximum wadable depth when the last of the stoplogs are installed in the two north bays.
Working on ice	Falling through thin ice and drowning. Slippery surfaces and slip/fall injuries. Being crushed or trapped by moving ice.	Work on the ice is generally completed when the ice is supported by the concrete apron, rather than just being supported by water. Work on ice supported by water is only completed if the ice is greater than 10 inches thick, as determined by the length of the pole saw blade. PPE including survival suits, gloves, boots, fall protection, and hard hats are used.	SVCA staff have noted that work on the ice upstream of the three south bays is not always completed when the ice is supported on the concrete apron.
Working in cold weather	Cold stress and hypothermia. Frostbite	Staff wear appropriate cold weather closing,	

Activity	Hazard(s)	Mitigation Measures and PPE used by SVCA Staff	Wills' Comment
	Slippery surfaces and slip/fall injuries.	including survival suits.	
Working at heights	Falling from heights.	Railings on the dam. Staff wear a fall arrest harness and tie off to the dam when working outside of the railings.	The railings are not engineered as anchor points for fall arrest and the rope that is used by SVCA staff to tie off to is typically loose enough to reach the ground. There is no fall arrest rescue plan in place.
Working with chainsaws	Cuts and lacerations. Kickback. Repetitive strain injuries. Noice and vibrations. Dust and debris.	Staff follow standard procedures and use required PPE during chainsaw use.	
Working with excavators	Moving excavator and swinging boom and bucket. Overhead wires (electric shock). Noise and vibration.	Communication with excavator operator. PPE including hard hats.	

During the operator interviews, all operators indicated that they did not have any particular health and safety concerns related to the current operation of the dam given the precautions that are taken, the process that is followed, and the PPE that is used.

One operator expressed a concern with the strength of the flashboards, flashboard support posts, and steel bridge to hold back the ice given that the 6x6 flashboard support posts are wired to the steel bridge. Pictures provided by the SVCA show damage that has been caused to the steel bridge girders by ice. Wills has also identified some of this damage during our recent and past dam inspections. It is unclear if the steel bridge has been designed to withstand ice loading, and there is a risk that excessive ice loading could cause it to collapse. Repeated ice loading has the potential to weaken the structure over time, increasing the risk of failure.

It is understood that fall arrest harnesses are used when working on the ice upstream of the dam. Pictures provided by the SVCA show that dam operators tie off to a rope that is tied to the steel bridge. Wills asked operators if there was a fall arrest rescue plan in place and it was determined that there isn't a formal rescue plan to recover a worker that may become injured or unconscious while working below the steel bridge. Additionally, tying off to a rope tied to the steel bridge, does not appear to be an adequate anchor point. Fall arrest of fall restriction systems, should be used in accordance with the Occupational Health and Safety Act, the Construction Projects Regulation, and the Industrial Establishments Regulation.

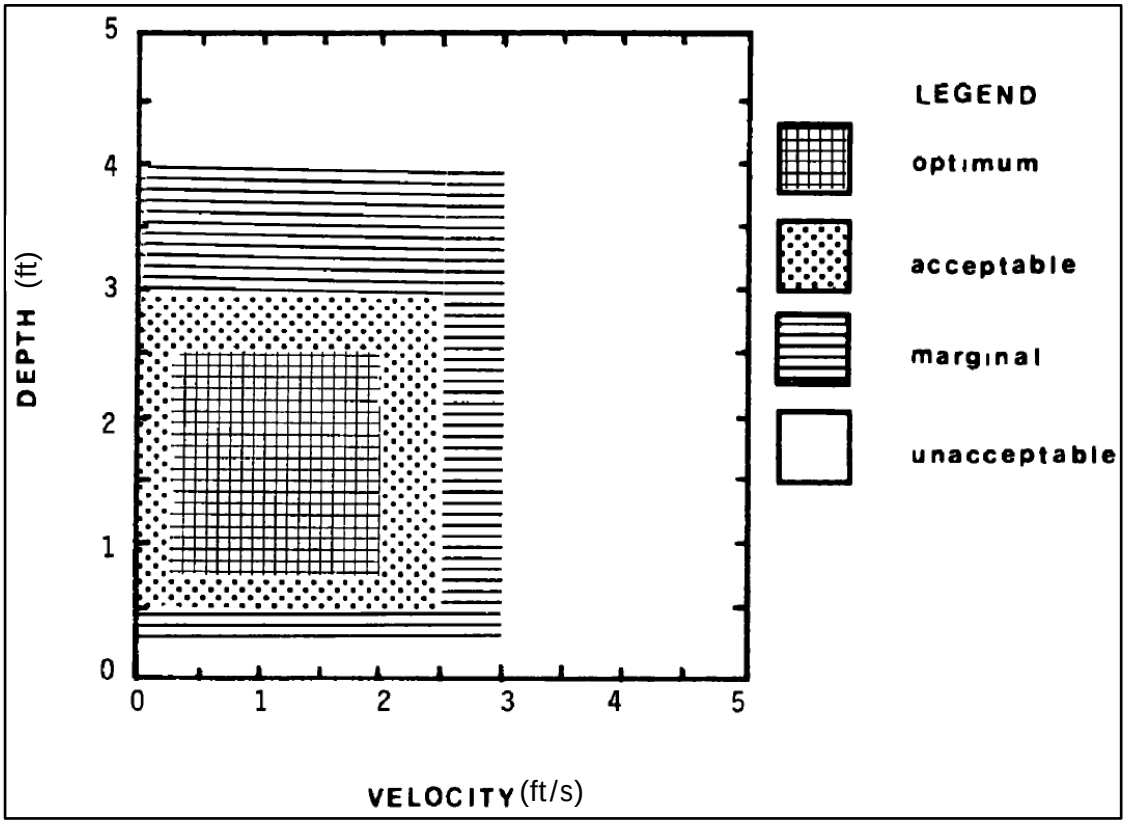
There is limited information available on what is considered to be a safe wading velocity in lakes and rivers. Wills was able to locate one document that outlined the depth and velocity values for safe wading, which would apply to the installation of the stoplogs and flashboards from within the water. The document was developed by the Fish and Wildlife Service of the U.S. Department of the Interior in 1978 and is titled Methods for Assessing Instream Flows for Recreation. Figure 1 shows the Criteria for Water Contact Wading as described in the document.

This figure indicates that optimum depths are below 3.00 ft (0.91 m) and that optimum velocities are below 2.5 ft/s (~0.76 m/s). Depths between 3.00 ft (0.91 m) and 4.00 ft (~1.22 m) are considered marginally safe for wading and depths over 4.00 ft (~1.22 m) are considered unacceptable for wading. Velocities between 2.50 ft/s (0.76 m/s) and 3.00 ft/s (~0.91 m/s) are considered marginally safe for wading and velocities over 3.00 ft/s (~0.91 m) are considered unacceptable for wading. The document also states that the depth in feet multiplied by the velocity if feet per second should equal 10 ft^2/s (~0.93 m^2/s) or less and that safety depends on the height and weight of the individual as well as the substrate type.

In contrast to the U.S. Department of the Interior document, the Technical Guide – River and Stream Systems: Flooding Hazard Limit (MNR, 2002) provides documentation of the 2 x 2 rule which evaluates flooding as a threat to life safety. The 2 x 2 rule would indicate that the product of the depth and velocity should not exceed 4 ft^2/s (~0.37 m^3/s) to be considered safe for most

individuals. Additionally the Technical Guide – River and Stream Systems: Flooding Hazard Limit (MNR, 2002) also indicates that depth shouldn't exceed 0.80 m (2.60 ft) and that velocity shouldn't exceed 1.7 m/s (5.58 ft/s) to be considered safe.

Figure 1 – Criteria for Water Contact Wading (U.S. Department of the Interior)



2.4 Operator Safety Recommendations

Given the operator safety considerations described in Section 2.3, Wills provides the following recommendations related to operator safety at the Durham Upper Dam:

- When working in the water, SVCA staff should be wearing Transport Canada approved life jackets or Personal Floatation Devices (PDFs).
- When a fall arrest or fall restriction system is being used, operators should be tied off to an adequate anchor point (as defined by the Occupational Health and Safety Act, the Construction Projects Regulation, and the Industrial Establishments Regulation) and a rescue plan should be developed so that injured or unconscious workers can be recovered and brought to safety.

- Work on the ice upstream side of the dam should only be undertaken when the ice is directly supported by the concrete apron and when flows are low. On rare occasions where work is required on ice supported by water, SVCA staff shall ensure, through measurements, that the ice is thick enough to support the required weight of people and equipment, and appropriate health and safety measures, PPE, and rescue plans must be in place. Work should not be completed on unsupported ice.
- Work in the water should only be completed when depths and velocities are considered safe. See the Methods for Assessing Instream Flows for Recreation (Fish and Wildlife Service, U.S. Department of the Interior, 1978) and the Technical Guide – River and Stream Systems: Flooding Hazard Limit (MNR, 2002) for more information on safe depths and velocities.
- The SVCA should monitor the build-up of ice upstream of the dam and for signs of structural stress on, or deformation of, the steel bridge. When ice is coming into contact with the steel bridge, SVCA staff should establish procedures to determine whether it is safe to work in these conditions or if the ice needs to be removed prior to completing the necessary operations.
- The SVCA should complete a detailed structural evaluation of the steel bridge to confirm that it has the structural capacity to withstand ice loading, is suitable for use as an anchor point for fall arrest, and is generally safe to work from.
- The SVCA should consider developing a detailed Operation, Maintenance, Surveillance, and Safety (OMSS) Manual for the Durham Upper Dam to expand upon the information contained within the Durham Frazil Ice Operating Plan (SVCA, 2010, Updated 2019). The OMSS Manual would provide the detailed procedures and protocols for the operation and maintenance of the dam, including identifying the appropriate health and safety measures, and personal protective equipment.
- As a longer-term goal, the SVCA should consider modifying the dam or the operating procedures to reduce the exposure of workers to the identified health and safety hazards. It is understood that the SVCA is planning a Class EA that will consider a range of alternatives to address these issues.

3.0 Public Safety Review

3.1 Background Review and Operator Interviews

The focus of the public safety review is swimming at the Durham Conservation Area which is adjacent to the Durham Upper Dam. In order to gain a better

understanding of the swimming activities, Wills reviewed the available information provided by the SVCA and completed operator interviews.

The primary source of background information available was the Public Safety Plan, including a Public Safety Risk Assessment, that was completed by B.M. Ross and Associates Limited (B.M. Ross) in 2021. B.M. Ross identified swimming upstream of the dam as a High hazard activity. They concluded that the seasonal flotation swim rope does not meet the criteria of a public safety boom and recommended that the SVCA consider installing an engineered public safety boom at the site.

During the interviews, the dam operators were asked about swimming at the site. Dam operators provided the following information regarding swimming during the interviews:

- The swimming area is busy during the summer months. Some people also use the beach at the Durham Middle Dam.
- Swimming typically occurs when flows, and velocities, are low.
- There is a buoy line installed along the beach to delineate the swimming area.
- This spot was the main swimming hole in Durham. Over the years, there have been numerous stories of people being drawn over the dam while swimming.

Also during the interviews, and as described in Section 2.3, one operator expressed concerns with the ability of the steel bridge to withstand ice forces. In addition to the dam and operator safety issues that have already been described, members of the public could also be exposed to this hazard while walking across the steel bridge in the winter months.

3.2 Public Safety Considerations

There are three primary considerations related to swimming near the Durham Upper Dam:

- Strong Currents – Water flow can create strong currents, especially near the spillways. These currents can be unpredictable and powerful, making it difficult for swimmers to stay in control.
- Suction Forces – Even small leakages through gates or stoplogs can create strong suction forces that can pull swimmers toward the source of the leakage. These forces can be powerful enough to trap individuals against the structure or pull them underwater.
- Entrapment Hazards – Leaking gates or stoplogs can create gaps and spaces where people, particularly children, can get trapped. The force

of the water flowing through these gaps can make it very difficult to escape.

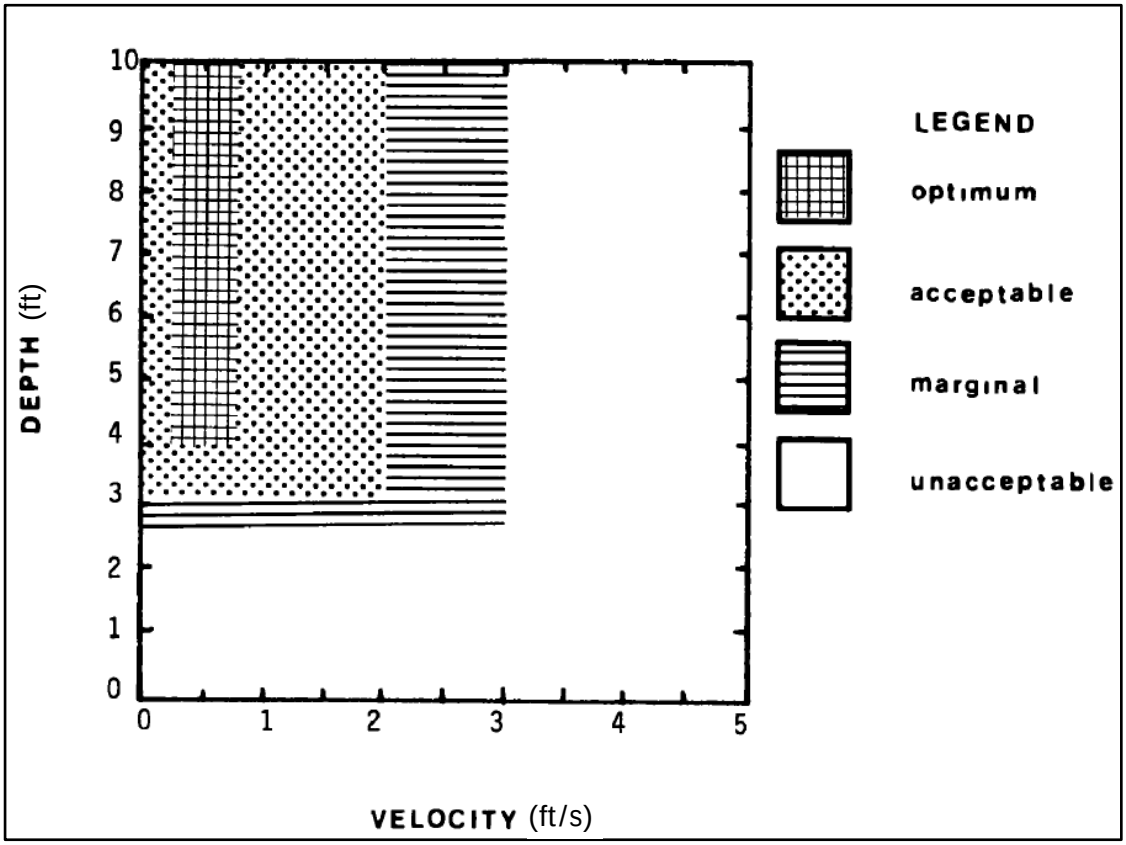
The strong currents are generally visible from the surface and people can make decisions on what they think swimming is safe in that respect; however, suction forces and entrapment hazards are not necessarily obvious to the casual swimmer.

There is limited information available on what is considered to be a safe swimming velocity in lakes and rivers. Wills was able to locate one document that outlined the depth and velocity values for safe swimming. The document was developed by the Fish and Wildlife Service of the U.S. Department of the Interior in 1978 and is titled Methods for Assessing Instream Flows for Recreation. Figure 2 shows the Criteria for Water Contact Swimming as described in the document. This figure indicates that optimum water velocities for swimming are 0.25 ft/s to 0.75 ft/s (~0.08 m/s to ~0.23 m/s), and acceptable water velocities for swimming are up 2.00 ft/s (~0.61 m/s). Velocities between 2.00 ft/s (~0.61 m/s) and 3.00 ft/s (~0.91 m/s) are considered marginal for safe swimming, and velocities over 3.00 ft/s (~0.91 m/s) are considered unacceptable for safe swimming.

Wills used the 2-Dimensional (2D) hydraulic model that was developed as part of the Durham Creek Flood Hazard Mapping and Durham Upper Dam – Dam Safety Review Update projects to estimate velocities along the beach during normal summer conditions. Based on available flow data from the upstream flow gauge, a "sunny day" flow of 4 m^3/s was estimated. Based on the model results, velocities in the beach area (i.e., the area within the swimming buoy line) are not expected to exceed 0.1 m/s. It is noted that the suction forces and entrapment hazards described above would still apply even though the surface velocities are relatively low.

With regards to the ice loading on the steel bridge, it is unclear if the bridge has been designed to withstand ice loading, and there is a risk that excessive ice loading could cause it to collapse. Repeated ice loading has the potential to weaken the structure over time, increasing the risk of failure. When there is significant ice loading on the dam/bridge, it may be prudent to restrict public access to the bridge until the ice load is removed.

Figure 2 – Criteria for Water Contact Swimming (U.S. Department of the Interior)



3.3 Public Safety Recommendations

Given the public safety considerations described in Section 3.2, Wills provides the following recommendations related to public safety at the Durham Upper Dam:

- Wills would suggest moving the swimming area at least 25 m away from the dam. The final safe distance should be determined by SVCA staff in consultation with the Grey Bruce Public Health Unit, following the collection of flow data at numerous locations along the beach.
- Swimming should not be allowed outside of the area marked safe for swimming, which should be delineated with a buoy line.
- The SVCA should check the velocities at the beach to confirm that they are generally within a safe swimming range. This would not need to be completed on a regular basis if the velocities at the beach can be correlated to the flows at the upstream gauge.
- The SVCA should install a public safety boom at the Durham Upper Dam as per the recommendation provided in the B.M. Ross Public Safety Plan. The new public safety boom should be installed in

accordance with the Guidelines for Public Safety Around Dams (CDA, 2011) and Transport Canda requirements. Fencing along the shoreline between the dam wingwall and the boom anchor may be required to prevent people from easily walking around the boom. Public safety signage, compliant with the Best Management Practices for Public Safety Around Dams, MNR, 2011), should be installed along the fencing.

- Close the steel bridge above the walkway to members of the public using the lockable gates in circumstances when there is excessive ice pressure acting on the dam and bridge.

4.0 Closing

Thank you for trusting Wills to complete this review. If you have any questions or if you would like to discuss any of the information contained herein, please do not hesitate to contact the undersigned.

Respectfully submitted,

David Green, P.Eng.
Group Leader, Dam Engineering

DG/ck