**AGENDA FOR THE**

**QUINTE CONSERVATION**

**EXECUTIVE BOARD MEETING**

**Date: June 20, 2024**

**Time: 3:30 pm**

**Location: Joe Eberwein Boardroom (Quinte Conservation)**

| **AGENDA** | **Pages** |
|---|---|
| 1. Call to Order<br>• Collection of Personal Information for Board Minutes | |
| 2. Approval of the Agenda (Motion to Approve) | 1 |
| 3. Approval of the Minutes of the Quinte Conservation Executive Board meeting of May 16, 2024 (Motion to Approve) | 2-8 |
| 4. Business Arising from the Minutes | |
| 5. Disclosure of Pecuniary Interests | |
| 6. Delegations | |
| 7. Consolidated Financial Statements, 2023 (Motion to Approve) | 9-43 |
| 8. Monthly Permits Summary (Motion to Approve) | 44-48 |
| 9. Monthly Planning Summary (Motion to Receive) | 49-54 |
| 10. Monthly Source Water Program Verbal Report (Motion to Receive) | |
| 11. 2023/24 Floodplain Mapping Projects (Motion to Approve) | 55-62 |
| 12. 2023 Watershed Report (Motion to Receive) | 63-125 |
| 13. Other Business | |
| 14. Date and Time of Next Meeting<br>• September 19, 2024, or earlier at the call of the chair. | |
| 15. Adjournment | |

**Minutes of the meeting of the**

**Quinte Conservation Executive Board Meeting**

| | |
|---|---|
| **Date:** | **May 16, 2024, 3:30pm** |
| **Location:** | **Joe Eberwein Boardroom (Quinte Conservation)** |
| Members Present: | **Bob Norrie** (Town of Greater Napanee), **Carrie West** (Township of Madoc), **Dave Ogden** (Tyendinaga Township), **Don Kuntze** (City of Quinte West), **Don Stewart** (Stirling and Rawdon Township), **James Flieler** (Municipality of Tweed), **Jamie Zieman** (Town of Deseronto), **John Hirsch** (County of Prince Edward), **Kathryn Brown** (City of Belleville), **Krysta-Lee Woodcock** (Stone Mills Township), **Lynn Klages** (Township of Central Frontenac), **Mike Kirby** (Centre Hastings Municipality), **Mike Stevens** (Marmora and Lake Municipality), **Norm Roberts** (Township of South Frontenac ), **Paul Carr** (City of Belleville) |
| Members Absent: | **Brent Taylor (**Twp of Tudor and Cashel), **Chris Malette** (City of Belleville), **Janice Maynard** (County of Prince Edward), **Kirby Thompson** (Addington Highlands Township), **Nathan Townend** (Loyalist Township) |
| Staff Present: | Brad McNevin (CAO), Curtis Vance (GIS/IT Systems Supervisor), Paul McCoy (Planning and Regulations Manager), Rhena Veerman (Accounting Clerk) Tammy Smith (Corporate Services Manager), Taylor Hermiston (Communications Coordinator) |
| Also Present: | Natasha Hartling |

**1.** Chair called the meeting to order at 3:30 pm.

a. **Notice Regarding Cell Phones**

Cell phones are not permitted to be turned on during the meeting, except in an event of an emergency. If the device is to be left on, it must be announced at the beginning of the meeting.

b. **Collection of Personal Information for Board Minutes**

This is addressed to anyone that is not a board member and/or staff person of Quinte Conservation: Your name will be used in the board meeting minutes and the minutes will become public information after review and approval of the board. If you are present for a delegation or hearing, the context of your presentation will be recorded in the minutes of the board meeting.

**2. Approval of the Agenda**

**MOTION QC-24-050**
**Moved By:** James Flieler
**Seconded By:** Dave Ogden

THAT, the Agenda for May 16, 2024, Executive Board Meeting be approved.

**CARRIED**

**3. Approval of the Minutes of the Quinte Conservation Executive Board meeting of April 18, 2024.**

**MOTION QC-24-051**
**Moved By:** Norm Roberts
**Seconded By:** C. Lynn Klages

THAT, the Minutes from the April 18, 2024, Quinte Conservation Executive Board Meeting be approved.

**CARRIED**

**4. Business Arising from the Minutes**

N/A

**5. Disclosure of Pecuniary Interests**

N/A

**6. Delegations**

N/A

**7. Monthly Permits Summary *(Motion to Approve)***

**MOTION QC-24-052**
**Moved By:** Mike Kerby
**Seconded By:** James Flieler

THAT, the monthly permits summary for the month of April 2024 be approved.

**CARRIED**

**8. Monthly Planning Summary *(Motion to Receive)***

**MOTION QC-24-053**
**Moved By:** Kathryn Brown
**Seconded By:** Mike Stevens

THAT, the monthly planning summary for the month of April 2024 be received.

**CARRIED**

***9.*** **Monthly Source Water Program Update *(Motion to Receive)***

**MOTION QC-24-054**
**Moved By:** Jamie Zieman
**Seconded By:** Paul Carr

THAT, the Source Water monthly report be received.

**CARRIED**

Staff gave a verbal report. Discussion regarding the number of members to sit on the Sourcewater Protection Committee (SPC) and membership in general. Staff reported that we are still waiting for an appointment of the chair of SPC and that we have no updates regarding when this will happen. Staff provided an update regarding funding and that we are still waiting for the agreement and funding. MECP staff to meet with QC about the changes. Board member asked about budget. Staff explained that the proposed budget is for a 3-year term. Chair asked for confirmation on how many SPP members there are, staff clarified that there are 6 from each sector. Quinte Conservation will be formally asking for a reduction in membership on the SPC.

**CARRIED**

***10.*** **McLeod Dam Hydro Report *(Motion to Receive)***

**MOTION QC-24-055**
**Moved By:** John Hirsch
**Seconded By:** C. Lynn Klages

THAT, the McLeod Dam Hydro report be received.

**CARRIED**

Staff gave update on the expense. Explained that increase cost to maintenance expenses was due to vibration issues and having an independent engineer in to investigate. Staff updated members that a complete failure on generator 2 has resulted in the unit being removed and sent for repair. Also stated that it is a good thing we contribute to a reserve account through Corporate finance annually for major maintenance expenses. Staff explained that access to the major maintenance account will be discussed with Corp. Finance.

**11. 2024-25 Water Management Infrastructure Capital Projects Update *(Motion to Receive)***

**MOTION QC-24-056**
**Moved By:** Kathryn Brown
**Seconded By:** Jamie Zieman

THAT, the 2024-25 Water Management Infrastructure Capital Projects Update report be received and;
FURTHER THAT, staff proceed with establishing contracts for each project when the budgets are within the approved capital budget.

**CARRIED**

Board Member asked why QC is doing another study on 3rd Depot Lake Dam. Staff offered that a complete environmental impact study is being proposed that will look at all feasible options including decommissioning. Board member asked about an acceptable water level that the dam can be set at so that QC does not have the expense of decommissioning and removing the dam. Staff explained that the study is to determine all potential options. Board member asked if we can just lower the water levels then get rid of the dam and not do the study. Staff explained that the estimate cost was far more than the 300K, if we do nothing and the dam fails then there is significant liability, further explained impacts. Staff explained that QC needs to see all possible options prior to making any decisions and this will be done through the proposed study. Board Member asked if we you asking for approval of the budget, or have we already approved this and it's an update? Staff explained that this is part of our WECI application, and we are not certain if the project will be funded but would call for matching funds. Board Member asked if we could fix the dam if the cost is this much?
Staff answered that they could not recall the exact dollar figure for repairs and stated that QC will continue to look at all options to maintain the dam and any further potential options to keep costs

down. Board Member asked if we can we put it off to the June meeting? Staff confirmed that this is not a commitment to do this work but rather an update so that we can finalize the WECI application. Board member asked about WECI funds then 3rd depot lake, asked to find out about the funds. Staff explained the options. Board asked that a motion be made to revisit the 3rd Depot Lakes Dam at the next meeting. Board member offered hesitation to revisit a decision that has been made already. Staff offered that they do not think that decommissioning 3rd lake dam was part of the original approvals at the time of Capital Asset Management Plan. Staff stated that we are now looking at all possible options. Board member asked if the WECI committee approves the project, and we decide not to go through with it do we need to return the funds? Staff offered that Quinte Conservation wouldn't submit for approval unless it was needed. Board member commented that if we have this funding, we may as well use it. Board Member asked for clarification on other dams coming in at 135k but not 3rd depot lake dam. Staff explained that these are estimates based on past work and this has not gone to tender. Board member asked if we would hope to get a least 3 tenders. Staff offered that our policy states a minimum of three. Staff also stated that the WECI committee wants to see support from the board and our municipal partners as part of the application process.

**12. Quinte Conservation Well Contractor Licence Reinstatement *(Motion to Approve)***

**MOTION QC-24-057**
**Moved By:** Mike Kerby
**Seconded By:** Dave Ogden

THAT, the Executive Board appoint Mary Gunning as the license holder for Quinte Conservation's Well Contractor Licence in accordance with the Ministry of Environment Conservation and Parks procedural guidelines.

**CARRIED**

**13. HR Core Protective Documents, Employment Agreement and Health and Safety Policy and Process Manual *(Motion to Approve)***

**MOTION QC-24-058**
**Moved By:** John Hirsch
**Seconded By: C. Lynn Klages**

THAT, the changes to the Quinte Conservation Personnel Policy, now titled "Quinte Conservation HR Core Protective Documents" dated May 2024, be approved;

AND THAT, the changes to the Quinte Conservation Health and Safety Policy and Process Manual, dated May 2024, be approved;

AND FURTHER THAT, the CAO be directed to circulate the new employment agreement, HR Core Protective Documents and Health and Safety Policy and Process Manual to staff and implement the changes.

**CARRIED**

Board Member asked why we are changing the name from Personnel Policy to HR Core Protective Document. Staff clarified that HR Covered is the company that we have hired, and they recommended the title. Board member asked if Quinte Conservation had one before and if this is just an update? Staff said yes, we have a personnel policy and when HR Covered reviewed our old policy, they informed us that we need to change it to be up to date with legislation. Staff explained that QC has never had formal employment agreements but simply had an annual employment letter that stated salary. Staff explained that HR Covered recommended that each staff member have an employment agreement whether a new employee or an existing employee. Board member asked if employees must read the whole document. Board member offered yes, if they sign it, they need to read it. Staff agreed. Board member asked about the implementation of the changes, if passed and delivered to the staff. Board member asked if there is an issue or problem, will the board hear it? Staff suggested, we can discuss that in the closed session.

**14. IN-CAMERA discussion *(Motion to Approve)***

**MOTION QC-24-059**
**Moved By:** C. Lynn Klages
**Seconded By:** Jamie Zieman

THAT, the Quinte Conservation Executive Board move into closed session to consider:
-labour relations or employee negotiations as per section 13 of the Administrative By-law

**CARRIED**

**15. Motion QC-24-060**

**MOTION QC-24-060**
**Moved By:** Norm Roberts
**Seconded By:** James Flieler

THAT, the Quinte Conservation Executive Board return to open session.

**CARRIED**

**16. MOTION QC-24-061**
**Moved By:** Jamie Zieman
**Seconded By:** John Hirsh

THAT, the Executive Board approves the compensation package outlined in the staff report titled "In-Camera" dated May 16, 2024;

FURTHER THAT, the Executive Board approves using our working reserve funds to cover the cost of the compensation package.

**CARRIED**

Discussion occurred in camera regarding the proposed compensation package.

## 17. Other Business

N/A

## 18. Date and Time of Next Meeting

The date and time of next meeting is June 20, 2024, or earlier at the call of the chair.

## 19. Adjournment (*Motion to approve)*

The meeting was adjourned at 4: 32 pm.

**MOTION QC-24-061**
**Moved By:** Mike Kirby
**Seconded By:** Mike Stevens

THAT, the meeting be adjourned.

**CARRIED**

_____
Don Kuntze, Vice Chair

**QUINTE CONSERVATION AUTHORITY**

**CONSOLIDATED FINANCIAL STATEMENTS**

**DECEMBER 31, 2023**

**QUINTE CONSERVATION AUTHORITY**

**CONSOLIDATED FINANCIAL STATEMENTS**

**DECEMBER 31, 2023**

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## QUINTE CONSERVATION AUTHORITY

**For The Year Ended December 31, 2023**

### MANAGEMENT REPORT

The accompanying consolidated financial statements of Quinte Conservation Authority are the responsibility of management and have been approved by the Board of Directors.

The consolidated financial statements have been prepared by management in accordance with Canadian Public Sector Accounting Standards. Financial statements are not precise since they include certain amounts based on estimates and judgements. When alternative accounting methods exist, management has chosen those it deems most appropriate in the circumstances, in order to ensure that the financial statements are presented fairly, in all material respects.

The Authority maintains systems of internal accounting and administrative controls of high quality, consistent with reasonable cost. Such systems are designed to provide reasonable assurance that the financial information is relevant, reliable and accurate and the Authority's assets are appropriately accounted for and adequately safeguarded.

The Authority's Board of Directors are responsible for ensuring that management fulfills its responsibilities for financial reporting and is ultimately responsible for reviewing and approving financial statements.

The Board of Directors reviews and approves the Authority's financial statements for issuance to the members of Quinte Conservation Authority. The Board of Directors meets periodically with management, as well as the external auditor, to discuss internal controls over the financial reporting process, auditing matters and financial reporting issues, to satisfy themselves that each party is properly discharging their responsibilities and to review the financial statements and the independent auditor's report.

The consolidated financial statements have been audited by Baker Tilly KDN LLP in accordance with Canadian generally accepted auditing standards on behalf of the Authority. Baker Tilly KDN LLP has full and free access to the Authority.

May 15, 2024

Chair

General Manager/ Secretary-Treasurer

**INDEPENDENT AUDITOR'S REPORT**

**To the Members of Quintet Conservation Authority**

*Opinion*
We have audited the consolidated financial statements of Quinte Conservation Authority and its local board (the Authority), which comprise the consolidated statement of financial position as at December 31, 2023, the consolidated statements of operations and accumulated surplus, change in net debt and cash flows for the year then ended, and notes to the consolidated financial statements, including a summary of significant accounting policies.

In our opinion, the accompanying consolidated financial statements present fairly, in all material respects, the consolidated financial position of the Authority as at December 31, 2023, and the results of its consolidated operations and its consolidated cash flows for the year then ended in accordance with Canadian Public Sector Accounting Standards.

*Basis for Opinion*
We conducted our audit in accordance with Canadian generally accepted auditing standards. Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Consolidated Financial Statements section of our report. We are independent of the Authority in accordance with the ethical requirements that are relevant to our audit of the consolidated financial statements in Canada, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

*Responsibilities of Management and Those Charged with Governance for the Consolidated Financial Statements*
Management is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with Canadian Public Sector Accounting Standards, and for such internal control as management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, management is responsible for assessing the Authority's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Authority or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Authority's financial reporting process.

*Auditor's Responsibilities for the Audit of the Consolidated Financial Statements*

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements.

As part of an audit in accordance with Canadian generally accepted auditing standards, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Authority's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Authority's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the consolidated financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Authority to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements represent the underlying transactions and events in a manner that achieves fair presentation.
- Obtain sufficient appropriate audit evidence regarding the consolidated financial information of the entities or business activities within the Authority to express an opinion on the consolidated financial statements. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinion.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

Chartered Professional Accountants
Licensed Public Accountants

Peterborough, Ontario
May 15, 2024

# QUINTE CONSERVATION AUTHORITY

**CONSOLIDATED STATEMENT OF FINANCIAL POSITION**
**At December 31, 2023**

| | 2023<br>$ | 2022<br>$ |
|---|---|---|
| **FINANCIAL ASSETS** | | |
| Cash | 134,275 | 45,209 |
| Accounts receivable | 1,007,065 | 1,076,440 |
| Funds held in trust (note 4) | 484,763 | 444,868 |
| **TOTAL FINANCIAL ASSETS** | 1,626,103 | 1,566,517 |
| **LIABILITIES** | | |
| Bank indebtedness (note 14) | 219,995 | 174,924 |
| Accounts payable | 456,035 | 367,473 |
| Deferred revenue (note 5) | 625,631 | 922,342 |
| Long term debt (note 4) | 1,331,922 | 1,555,245 |
| **TOTAL LIABILITIES** | 2,633,583 | 3,019,984 |
| **NET DEBT** | (1,007,480) | (1,453,467) |
| **NON-FINANCIAL ASSETS** | | |
| Tangible capital assets (note 3) | 14,737,662 | 14,676,507 |
| Prepaid expenses | 99,406 | 87,952 |
| **TOTAL NON-FINANCIAL ASSETS** | 14,837,068 | 14,764,459 |
| **ACCUMULATED SURPLUS (note 6)** | 13,829,588 | 13,310,992 |



*The accompanying notes are an integral part of these financial statements*

# QUINTE CONSERVATION AUTHORITY

**CONSOLIDATED STATEMENT OF OPERATIONS AND ACCUMULATED SURPLUS**
**For the Year Ended December 31, 2023**

| | Budget 2023 $ (Unaudited) | Actual 2023 $ | Actual 2022 $ |
|---|---|---|---|
| **REVENUES** | | | |
| Provincial grants (note 7) | 1,491,881 | 912,396 | 1,016,721 |
| Federal grants | - | - | 42,253 |
| Municipal levies - general | 2,055,117 | 2,055,117 | 1,915,747 |
| - special | 949,171 | 781,329 | 555,616 |
| Rentals and leases | 30,240 | 70,025 | 32,409 |
| Interest earned | 15,000 | 65,274 | 31,421 |
| Donations | 17,879 | 33,479 | 48,219 |
| Sales and refunds | 15,000 | 14,898 | 25,980 |
| Fees | 1,144,294 | 642,176 | 677,330 |
| Tree planting and reforestation | 310,000 | 154,163 | 305,171 |
| Gate receipts | 202,233 | 147,288 | 115,553 |
| Hydro power generation | - | 463,406 | 404,550 |
| Big Island rehabilitation | 10,406 | 10,406 | 4,845 |
| Other programs | 1,208,915 | 794,801 | 870,907 |
| Contributed tangible capital assets | - | 28,000 | - |
| **TOTAL REVENUES** | 7,450,136 | 6,172,758 | 6,046,722 |
| **EXPENSES** | | | |
| Administration (note 8) | 420,941 | 371,524 | 358,801 |
| Program operations (note 9) | 2,469,594 | 2,359,097 | 2,182,431 |
| Vehicles and equipment (note 10) | 10,276 | 28,372 | (26,915) |
| Maintenance - conservation areas | 216,569 | 221,722 | 265,574 |
| Other projects (note 11) | 3,778,883 | 2,214,598 | 2,077,713 |
| Amortization | 403,782 | 447,910 | 403,782 |
| Loss on disposal of tangible capital assets | - | 10,939 | - |
| **TOTAL EXPENSES** | 7,300,045 | 5,654,162 | 5,261,386 |
| **ANNUAL SURPLUS** | 150,091 | 518,596 | 785,336 |
| **ACCUMULATED SURPLUS - beginning of year** | | 13,310,992 | 12,525,656 |
| **ACCUMULATED SURPLUS - end of year** | | 13,829,588 | 13,310,992 |



*The accompanying notes are an integral part of these financial statements*

# QUINTE CONSERVATION AUTHORITY

**CONSOLIDATED STATEMENT OF CHANGE IN NET DEBT**
**For the Year Ended December 31, 2023**

| | Budget 2023 $ (Unaudited) | Actual 2023 $ | Actual 2022 $ |
|---|---|---|---|
| **ANNUAL SURPLUS** | 150,091 | 518,596 | 785,336 |
| Amortization of tangible capital assets | 403,782 | 447,910 | 403,782 |
| Purchase of tangible capital assets | (528,873) | (503,640) | (1,415,955) |
| Loss on disposal of tangible capital assets | - | 10,939 | - |
| Proceeds on sale of tangible capital assets | - | 11,636 | - |
| Contributed tangible capital assets | - | (28,000) | - |
| Change in prepaid expenses | - | (11,454) | (87,952) |
| **CHANGE IN NET DEBT** | 25,000 | 445,987 | (314,789) |
| **NET DEBT - beginning of year** | (1,453,467) | (1,453,467) | (1,138,678) |
| **NET DEBT - end of year** | (1,428,467) | (1,007,480) | (1,453,467) |



*The accompanying notes are an integral part of these financial statements*

# QUINTE CONSERVATION AUTHORITY

**CONSOLIDATED STATEMENT OF CASH FLOWS**
**For the Year Ended December 31, 2023**

| | 2023<br>$ | 2022<br>$ |
|---|---|---|
| **CASH PROVIDED BY (USED IN)** | | |
| **OPERATING ACTIVITIES** | | |
| Annual surplus | 518,596 | 785,336 |
| Items not involving cash | | |
| Amortization of tangible capital assets | 447,910 | 403,782 |
| Loss on disposal of tangible capital assets | 10,939 | - |
| Contributed tangible capital assets | (28,000) | - |
| Change in non-cash assets and liabilities | | |
| Accounts receivable | 69,375 | (819,365) |
| Funds held in trust | (39,895) | (26,079) |
| Prepaid expenses | (11,454) | (87,952) |
| Accounts payable | 88,562 | 55,486 |
| Deferred revenue | (296,711) | 200,028 |
| Net change in cash from operating activities | 759,322 | 511,236 |
| **CAPITAL ACTIVITIES** | | |
| Purchase of tangible capital assets | (503,640) | (1,415,955) |
| Proceeds on disposal of tangible capital assets | 11,636 | - |
| Net change in cash from capital activities | (492,004) | (1,415,955) |
| **FINANCING ACTIVITIES** | | |
| Debt principal repayments | (223,323) | (209,489) |
| **NET CHANGE IN CASH AND CASH EQUIVALENTS** | 43,995 | (1,114,208) |
| **CASH AND CASH EQUIVALENTS - beginning of year** | (129,715) | 984,493 |
| **CASH AND CASH EQUIVALENTS - end of year** | (85,720) | (129,715) |
| **Comprised of:** | | |
| Cash | 134,275 | 45,209 |
| Bank indebtedness | (219,995) | (174,924) |
| | (85,720) | (129,715) |



*The accompanying notes are an integral part of these financial statements*

## 1. NATURE OF OPERATIONS

During 2009 the Province of Ontario approved the legal formation of the Quinte Conservation Authority that amalgamated the Moira River Conservation Authority (MRCA), Napanee Region Conservation Authority (NRCA) and Prince Edward Region Conservation Authority (PERCA). The purpose of the organization is to fulfil the requirements of Conservation Authorities as prescribed by the Province of Ontario's Conservation Authorities Act.

## 2. SIGNIFICANT ACCOUNTING POLICIES

These consolidated financial statements have been prepared in accordance with the standards in the Chartered Professional Accountants Canada Public Sector Accounting (PSA) Handbook. Significant aspects of the accounting policies are as follows:

(a) Reporting entity

These consolidated financial statements reflect the assets, liabilities, revenues and expenses and accumulated surplus of the reporting entity.

The reporting entity is comprised of all organizations, committees and local boards accountable for the administration of their financial affairs and resources to the Authority and which are owned and controlled by the Authority. These consolidated financial statements include:

- Quinte Conservation Association

All interfund assets and liabilities and revenues and expenses are eliminated.

(b) Tangible capital assets

Tangible capital assets are recorded at cost which includes all amounts that are directly attributable to acquisition, construction, development or betterment of the asset. Initial costs for tangible capital assets that were acquired or developed prior to 2009 were obtained using historical cost information or using current fair market values discounted by a relevant inflation factor to the point of acquisition. The cost, less residual value, if any, of tangible capital assets is amortized on a straight-line basis, over the expected useful life of the asset, as follows:

| | |
|---|---|
| Buildings | 20-60 years |
| Machinery and equipment | 5-10 years |
| Vehicles | 10 years |
| Dams and weirs | 10-100 years |
| Trails and boardwalks | 20 years |

Tangible capital assets received as contributions are recorded at their fair value at the date of receipt and are also recorded as revenue.

Tangible capital assets categorized as assets under construction are not amortized until they are put into service.

## 2. SIGNIFICANT ACCOUNTING POLICIES, continued

(c) Recognition of Revenues and Expenses

Revenues and expenses are reported on the accrual basis of accounting. The accrual basis of accounting recognizes revenues in the period in which the transactions or events occurred that give rise to the revenue; expenses are recognized in the period the goods or services are acquired and a legal liability is incurred or transfers are due.

Government Funding

Government funding, including grants and levies, is recognized in the financial statements as revenues in the period in which events giving rise to the transfers occur, providing the transfers are authorized, any eligibility criteria have been met, and reasonable estimates of the amounts can be made.

Other revenue

Fees, gate receipts, rentals and leases, tree planting and reforestation, hydro power generation and other program revenues are recognized as revenue in the year the goods and services are provided.

Investment income is recorded when earned.

Restricted donations are recorded in the period in which the related expenses are incurred. Unrestricted donations are recorded as revenue when received or as a receivable when collection is reasonably assured.

(d) Non-financial assets

Tangible capital and other non-financial assets are accounted for as assets by the Authority because they can be used to provide services in future periods. These assets do not normally provide resources to discharge the liabilities of the Authority unless they are sold.

(e) Reserves

Certain amounts, as approved by the Board of Directors, are set aside in reserves for future operating and capital purposes. Transfers to and/or from reserves are an adjustment to the respective fund when approved.

(f) Deferred revenue

Deferred revenue represents grants, user charges and fees which have been collected but for which the related services have yet to be performed. These amounts will be recognized as revenues in the fiscal year the services are performed.

## 2. SIGNIFICANT ACCOUNTING POLICIES, continued

(g) Financial Instruments

Financial instruments are classified as either fair value or amortized cost. The following chart shows the measurement method for each type of financial instrument.

| Financial Instrument | Measurement Method |
|---|---|
| Cash | Amortized Cost |
| Accounts receivable | Amortized Cost |
| Funds held in trust | Amortized Cost |
| Bank indebtedness | Amortized Cost |
| Accounts payable | Amortized Cost |
| Long term debt | Amortized Cost |

Fair value category: The Authority manages and reports performance for groups of financial assets on a fair-value basis. Investments traded in an active market are reflected at fair value as at the reporting date. Sales and purchases of investments are recorded on the trade date. Transaction costs related to the acquisition of investments are recorded as an expense. Unrealized gains and losses on financial assets are recognized in the Consolidated Statement of Remeasurement Gains and Losses until such time that the financial asset is derecognized due to disposal or impairment. At the time of derecognition, the related realized gains and losses are recognized in the Consolidated Statement of Operations and Accumulated Surplus and related balances reversed from the Consolidated Statement of Remeasurement Gains and Losses.

Amortized cost category: Amounts are measured at the initial recognition minus principal repayments, plus or minus the cumulative amortization using the effective interest rate method of any difference between the initial amount and the maturity amount, and minus any reduction for impairment or uncollectibility. The effective interest method is a method of calculating the amortized cost of a financial asset or financial liability (or a group of financial assets or financial liabilities) and of allocating the interest income or interest expense over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash payments or receipts through the expected life of the financial instrument or, when appropriate, a shorter period to the net carrying amount of the financial instrument asset or financial instrument liability.

The following hierarchy provides an analysis of financial instruments that are measured subsequent to initial recognition at fair value, grouped into Levels 1 to 3 based on the degree to which fair value is observable:

- Level 1 - Unadjusted quoted market prices in active markets for identical assets or liabilities;
- Level 2 - Observable or corroborated inputs, other than level 1, such as quoted prices for similar assets or liabilities in inactive markets or market data for substantially the full term of the assets or liabilities; and
- Level 3 - Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets and liabilities.

## 2. SIGNIFICANT ACCOUNTING POLICIES, continued

As there are no unrealized gains or losses on financial instruments to report, the Consolidated Statement of Remeasurement Gains and Losses has not been presented in these financial statements.

(h) Use of estimates

Certain items recognized in the consolidated financial statements are subject to measurement uncertainty. The recognized amounts of such items are based on the Authority's best information and judgment. By their nature, these estimates are subject to measurement uncertainty and the effect on the consolidated financial statements or changes in such estimates in future periods could be significant. The Authority's significant estimates include:

- The amounts recorded for amortization of tangible capital assets are based on estimates of useful life and residual values.

## 3. TANGIBLE CAPITAL ASSETS

The net book value of the Authority's tangible capital assets are:

| | 2023<br>$ | 2022<br>$ |
|---|---|---|
| General | | |
| Land | 2,946,415 | 2,918,416 |
| Buildings | 640,575 | 688,343 |
| Machinery and equipment | 792,308 | 680,187 |
| Vehicles | 86,955 | 96,815 |
| Trails and boardwalks | 670,332 | 696,266 |
| Infrastructure | | |
| Dams and weirs | 9,341,664 | 9,574,267 |
| | 14,478,249 | 14,654,294 |
| Assets under construction | 259,413 | 22,213 |
| | 14,737,662 | 14,676,507 |

For additional information, see the Consolidated Schedule of Tangible Capital Assets.

During the year there were no write-downs of assets (2022 - $Nil) and no interest capitalized (2022 - $Nil).

## 4. LONG TERM DEBT

(a) The balance of long term debt reported on the Consolidated Statement of Financial Position is made up of the following:

| | 2023<br>$ | 2022<br>$ |
|---|---|---|
| Loan from Corpfinance, repayable in blended monthly instalments of $26,380 with interest at 6.412% (2021 - 6.412%), due November 1, 2028 | 1,331,922 | 1,555,245 |

(b) Interest paid during the year on long term debt amounted to $93,235 (2022 - $107,069).

(c) The funds held in trust of $484,763 (2022 - $444,868) reported on the Consolidated Statement of Financial Position is comprised of $354,928 (2022 - $340,326) debt service reserve fund described in (d) below plus $129,835 (2022 - $104,542) maintenance reserve fund.

(d) The loan is secured by a general security agreement over all assets of the McLeod Dam Hydroelectric Generating Facility operating as Quinte Conservation Association. As part of the loan agreement with Corpfinance, the Association is required to provide for a debt service reserve fund account in the amount of $158,279, representing 6 months of debt payments plus accumulated interest on the reserve. The loan agreement requires a minimum debt service coverage ratio of 1.05:1 as well as a minimum amount of working capital as defined by the agreement. Since the Association has been in non-compliance with the debt service coverage requirement and the working capital requirement in the past, Corpfinance considers the Association to be in non-compliance for the entire term of the loan. However, subsequent to the year-end Corpfinance confirmed their intention not to call the loan early and to proceed with the agreed payment schedule reflected in these consolidated financial statements.

(e) The long term debt reported in (a) of this note is repayable as follows:

| | Principal<br>$ | Interest<br>$ | Total<br>$ |
|---|---|---|---|
| 2024 | 238,071 | 78,487 | 316,558 |
| 2025 | 253,793 | 62,765 | 316,558 |
| 2026 | 270,553 | 46,005 | 316,558 |
| 2027 | 288,420 | 28,138 | 316,558 |
| 2028 | 281,085 | 9,092 | 290,177 |
| | 1,331,922 | 224,487 | 1,556,409 |

## 5. DEFERRED REVENUE

Deferred revenue consists of the following:

| | 2023<br>$ | 2022<br>$ |
|---|---|---|
| Source water protection planning | 37,964 | - |
| Dam studies matching funds projects | 139,509 | 129,460 |
| Second Depot Lake seasonal camping fees | 8,934 | 61,552 |
| Bay of Quinte Remedial Action Plan programs | 4,339 | 7,354 |
| Frink Centre projects | 49,088 | 13,635 |
| Restricted donations | 183,853 | 418,053 |
| Storm water management | - | 106,787 |
| Other | 201,944 | 185,501 |
| | 625,631 | 922,342 |

The continuity of deferred revenue is as follows:

| | 2023<br>$ | 2022<br>$ |
|---|---|---|
| Balance - beginning of year | 922,342 | 722,314 |
| Add amounts received: | | |
| Source water protection planning funding | 418,552 | - |
| Dam studies matching funds projects funding | 169,125 | 430,447 |
| Second Depot Lake seasonal camping fees | - | 70,000 |
| Bay of Quinte Remedial Action Plan programs funding | 5,263 | 17,150 |
| Frink Centre projects funding | 45,490 | 30,000 |
| Restricted donations | 3,000 | 100,000 |
| Other funding | 221,283 | 178,742 |
| | 862,713 | 826,339 |
| Less transfer to operations: | | |
| Source water protection planning | 380,584 | 38,890 |
| Dam studies matching funds projects | 159,075 | 393,474 |
| Second Depot Lake seasonal camping fees | 52,618 | 8,448 |
| Bay of Quinte Remedial Action Plan programs | 8,278 | 17,326 |
| Frink Centre projects | 10,037 | 51,836 |
| Restricted donations earned | 237,200 | 5,252 |
| Storm water management | 106,787 | - |
| Other | 204,845 | 111,085 |
| | 1,159,424 | 626,311 |
| Balance - end of year | 625,631 | 922,342 |

## 6. ACCUMULATED SURPLUS

Accumulated surplus consists of the following:

| | 2023<br>$ | 2022<br>$ |
|---|---|---|
| **Surplus/(Deficit)** | | |
| Operating | 356,739 | 282,655 |
| Quinte Conservation Association | (681,221) | (713,979) |
| | (324,482) | (431,324) |
| **Invested In Tangible Capital Assets** | | |
| Tangible capital assets - net book value | 14,737,662 | 14,676,507 |
| Long term debt | (1,331,922) | (1,555,245) |
| Unfunded capital - boat | (19,300) | (40,926) |
| Unfunded capital - WECI projects | (67,227) | (205,676) |
| | 13,319,213 | 12,874,660 |
| **Surplus** | 12,994,731 | 12,443,336 |
| **Reserves** | | |
| Working funds | 402,335 | 402,335 |
| Green energy | 57,835 | 57,835 |
| Legal | 26,103 | 26,078 |
| Bay of Quinte Stewardship | 1,380 | 1,380 |
| Future projects | 22,901 | 2,221 |
| Flinton Dam | 22,500 | 22,500 |
| Soda Hub Connection | 38,708 | 24,091 |
| Wishart Dam | 18 | 18 |
| Springside Dam | 8,120 | 8,120 |
| Arden Dam | - | 25,917 |
| Demorestville Dam | 16,243 | 16,243 |
| James Lazier Dam | 8,221 | 8,221 |
| Climate Change | 7,500 | 7,500 |
| Bay of Quinte equipment replacement | 6,259 | 16,782 |
| Source water | 138,958 | 138,958 |
| Reforestation | 77,776 | 109,457 |
| **Total Reserves** | 834,857 | 867,656 |
| | 13,829,588 | 13,310,992 |

## 7. PROVINCIAL GRANTS

Provincial grants include the following:

| | Budget 2023 $ (Unaudited) | Actual 2023 $ | Actual 2022 $ |
|---|---|---|---|
| Operations | 166,117 | 166,117 | 166,117 |
| Source water protection planning 2022/2023 | 539,919 | 376,071 | - |
| Source water protection planning 2021/2022 | - | - | 59,044 |
| Source water protection planning 2020/2021 | - | - | 213,406 |
| Dam Safety Review | - | - | 22,282 |
| Dam inspections and capital asset management | 379,974 | 247,906 | 540,215 |
| Flood plain mapping | 371,487 | 104,638 | - |
| Skootamatta operation agreement | 15,000 | 15,000 | 15,000 |
| Ackerman property project | 19,384 | 2,664 | 657 |
| | 1,491,881 | 912,396 | 1,016,721 |

## 8. ADMINISTRATION EXPENSES

Administration expenses include the following:

| | Budget 2023 $ (Unaudited) | Actual 2023 $ | Actual 2022 $ |
|---|---|---|---|
| Wages and benefits | 201,024 | 193,439 | 122,862 |
| Member costs | 10,000 | 9,794 | 9,485 |
| Office operations | 229,917 | 228,567 | 226,454 |
| Administration recovery | (20,000) | (60,276) | - |
| | 420,941 | 371,524 | 358,801 |

## 9. PROGRAM OPERATIONS EXPENSES

Program operations expenses are comprised of the following:

| | Budget 2023 $ (Unaudited) | Actual 2023 $ | Actual 2022 $ |
|---|---|---|---|
| Operation and maintenance of water control structures | 616,093 | 601,601 | 505,020 |
| Flood forecasting | 694,490 | 700,750 | 730,360 |
| Plan input | 706,182 | 593,343 | 578,021 |
| Information and interpretation | 102,749 | 107,902 | 155,403 |
| Taxes and insurance | 251,800 | 254,633 | 195,751 |
| Legal | 17,280 | 21,234 | 17,876 |
| Conservation services | 81,000 | 79,634 | - |
| | 2,469,594 | 2,359,097 | 2,182,431 |

## 10. VEHICLE AND EQUIPMENT EXPENSES

Vehicle and equipment expenses are comprised of the following:

| | Budget 2023 $ (Unaudited) | Actual 2023 $ | Actual 2022 $ |
|---|---|---|---|
| **Expenses** | | | |
| Fuel, maintenance and repairs | 42,676 | 69,737 | 45,012 |
| Small equipment purchases | 64,800 | 54,441 | 1,555 |
| | 107,476 | 124,178 | 46,567 |
| **Charges based on usage** | | | |
| Program operations | 97,200 | 95,806 | 73,482 |
| Net charges (recovery) to operations | 10,276 | 28,372 | (26,915) |

## 11. OTHER PROJECTS EXPENSES

Other projects expenses include the following:

| | Budget 2023 $ (Unaudited) | Actual 2023 $ | Actual 2022 $ |
|---|---|---|---|
| Other programs | 2,415,571 | 1,103,226 | 1,398,019 |
| Source water protection planning | 1,131,629 | 645,168 | 245,735 |
| Hydro power generation | 330,480 | 231,953 | 256,801 |
| Forest operations | 190,393 | 198,322 | 107,520 |
| Environmental day camps | 41,290 | 35,929 | 69,638 |
| | 4,109,363 | 2,214,598 | 2,077,713 |

## 12. ECONOMIC DEPENDENCE

The major sources of revenue are in the form of grants from the Province of Ontario and levies from the participating municipalities. The nature and extent of these revenues is of such significance as to affect the viability of the Authority and accordingly, it can be said that the Authority is economically dependent upon the Province of Ontario and the participating municipalities.

## 13. BUDGET FIGURES

The budget, approved by the Authority, for 2023 is reflected on the Consolidated Statement of Operations and Accumulated Surplus and the Consolidated Statement of Change in Net Debt. The budgets established for capital investment in tangible capital assets are on a project-oriented basis, the costs of which may be carried out over one or more years and, therefore, may not be comparable with current year's actual amounts. Budget figures have been reclassified for the purposes of these financial statements to comply with PSA reporting requirements. Budget figures are not subject to audit.

## 14. BANK INDEBTEDNESS

The Authority has a revolving credit facility agreement with its main financial institution. The amount available at any time is limited to $1,000,000 via an operating loan. Any balance borrowed will accrue interest at the bank's prime lending rate. The Authority's Executive Committee authorized the temporary borrowing limit on February 12, 2007. At December 31, 2023 there was a balance outstanding of $150,000 (2022 - $120,000).

Included in bank indebtedness in 2023 are outstanding cheques which exceeded the bank balance at December 31, 2023 by $69,995 (2022 - 54,924).

## 15. EXPENSES BY OBJECT

The expenses for the year reported on the Consolidated Statement of Operations and Accumulated Surplus by object are as follows:

| | Budget 2023 $ (Unaudited) | Actual 2023 $ | Actual 2022 $ |
|---|---|---|---|
| Salaries and benefits | 2,627,891 | 2,396,360 | 2,224,265 |
| Interest charges | - | 93,235 | 107,069 |
| Materials | 2,986,337 | 2,109,873 | 1,804,099 |
| Contracted services | 1,298,135 | 672,929 | 647,563 |
| Rents and financial | 76,100 | 45,321 | 124,898 |
| External transfers | 25,000 | 33,677 | 23,192 |
| Amortization | 403,782 | 447,910 | 403,782 |
| Internal charges | (117,200) | (156,082) | (73,482) |
| Loss on disposal of tangible capital assets | - | 10,939 | - |
| | 7,300,045 | 5,654,162 | 5,261,386 |

## 16. PENSION AGREEMENTS

Certain employees of the Authority are eligible members of the Ontario Municipal Employees Retirement System (OMERS), a multi-employer pension plan.

The Actuarial Opinion contained in the 2023 Annual Report disclosed total actuarial liabilities of $136,185 million in respect of benefits accrued for service with actuarial assets of $131,983 million indicating an actuarial deficit of $4,202 million. Because OMERS is a multi-employer plan, any pension plan surpluses or deficits are a joint responsibility of Ontario municipal organizations and their employees. As a result, the Authority does not recognize any share of the OMERS pension surplus or deficit.

The Authority's required contributions to OMERS in 2023 were $222,056 (2022 - $191,672).

## 17. COMPARATIVE FIGURES

Certain comparative figures were restated, where required, to conform with the current year presentation.

## 18. CHANGES IN ACCOUNTING POLICIES

The Authority has implemented the following sections which are now effective under the PSA Handbook: PS 1201 Financial Statement Presentation, PS 2601 Foreign Currency Translation, PS 3041 Portfolio Investments, PS 3450 Financial Instruments and PS 3280 Asset Retirement Obligations were adopted prospectively on January 1, 2023.

PS 1201 Financial Statement Presentation replaces PS 1200 Financial Statement Presentation. This standard establishes general reporting principles and standards for the disclosure of information in government financial statements. The standard introduces the Statement of Remeasurement Gains and Losses separate from the Statement of Operations. Requirements in PS 2601 Foreign Currency Translation, PS 3450 Financial Instruments, and PS 3041 Portfolio Investments, which are required to be adopted at the same time, can give rise to the presentation of gains and losses as remeasurement gains and losses.

PS 2601 Foreign Currency Translation replaces PS 2600 Foreign Currency Translation. The standard provides comprehensive requirements for the recognition, measurement, presentation and disclosure of foreign currency transactions. The adoption of this standard did not have an impact on the Authority's consolidated financial statements.

PS 3041 Portfolio Investments replaces PS 3040 Portfolio Investments. The standard provides revised guidance on accounting for, and presentation and disclosure of, portfolio investments to conform to PS 3450 Financial Instruments. The adoption of this standard did not have an impact on the Authority's consolidated financial statements.

PS 3450 Financial Instruments establishes accounting and reporting requirements for all types of financial instruments including derivatives. Financial instruments are included on the statement of financial position and are measured either at fair value or cost or amortized cost based on the characteristics of the instrument and the Authority's accounting policy choices (see Note 1. Significant Accounting Policies). The new standard provides comprehensive requirements for the recognition, measurement, presentation and disclosure of financial instruments. The adoption of this standard did not have an impact on the Authority's consolidated financial statements.

PS 3280 Asset Retirement Obligations addresses the reporting of legal obligations associated with the retirement of certain tangible capital assets, such as asbestos removal in buildings owned by public sector entities. The adoption of this standard did not have an impact on the Authority's consolidated financial statements.

# QUINTE CONSERVATION AUTHORITY

## CONSOLIDATED SCHEDULE OF TANGIBLE CAPITAL ASSETS
**For the Year Ended December 31, 2023**

| | General | | | | | Infrastructure | | |
|---|---|---|---|---|---|---|---|---|
| | Land $ | Buildings $ | Machinery and Equipment $ | Vehicles $ | Trails and Boardwalks $ | Dams and Weirs $ | Assets Under Construction $ | Totals $ |
| **COST** | | | | | | | | |
| Balance, beginning of year | 2,918,416 | 1,368,601 | 1,074,284 | 638,112 | 796,280 | 15,578,855 | 22,213 | 22,396,761 |
| Add: additions during the year | 28,000 | - | 236,047 | 15,782 | 14,611 | - | 237,200 | 531,640 |
| Less: disposals during the year | 1 | 67,721 | - | - | - | - | - | 67,722 |
| Balance, end of year | 2,946,415 | 1,300,880 | 1,310,331 | 653,894 | 810,891 | 15,578,855 | 259,413 | 22,860,679 |
| **ACCUMULATED AMORTIZATION** | | | | | | | | |
| Balance, beginning of year | - | 680,258 | 394,097 | 541,297 | 100,014 | 6,004,588 | - | 7,720,254 |
| Add: additions during the year | - | 25,194 | 123,926 | 25,642 | 40,545 | 232,603 | - | 447,910 |
| Less: disposals during the year | - | 45,147 | - | - | - | - | - | 45,147 |
| Balance, end of year | - | 660,305 | 518,023 | 566,939 | 140,559 | 6,237,191 | - | 8,123,017 |
| **NET BOOK VALUE OF TANGIBLE CAPITAL ASSETS** | 2,946,415 | 640,575 | 792,308 | 86,955 | 670,332 | 9,341,664 | 259,413 | 14,737,662 |

# QUINTE CONSERVATION AUTHORITY

## QUINTE CONSERVATION ASSOCIATION

## FINANCIAL STATEMENTS

## DECEMBER 31, 2023

**INDEPENDENT AUDITOR'S REPORT**

**To the Members of the Quinte Conservation Association**

*Opinion*
We have audited the financial statements of the Quinte Conservation Association of Quinte Conservation Authority (the Association), which comprise the statement of financial position as at December 31, 2023, the statements of operations and accumulated surplus, change in net debt and cash flows for the year then ended, and notes to the financial statements, including a summary of significant accounting policies.

In our opinion, the accompanying financial statements present fairly, in all material respects, the financial position of the Association as at December 31, 2023, and the results of its operations and cash flows for the year then ended in accordance with Canadian Public Sector Accounting Standards.

*Basis for Opinion*
We conducted our audit in accordance with Canadian generally accepted auditing standards. Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of our report. We are independent of the Association in accordance with the ethical requirements that are relevant to our audit of the financial statements in Canada, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

*Responsibilities of Management and Those Charged with Governance for the Financial Statements*
Management is responsible for the preparation and fair presentation of the financial statements in accordance with Canadian Public Sector Accounting Standards, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Association's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Association or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Association's financial reporting process.

*Auditor's Responsibilities for the Audit of the Financial Statements*

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with Canadian generally accepted auditing standards, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Association's internal control.
- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Association's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Association to cease to continue as a going concern.
- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

Chartered Professional Accountants
Licensed Public Accountants

Peterborough, Ontario
May 15, 2024

# QUINTE CONSERVATION AUTHORITY

**QUINTE CONSERVATION ASSOCIATION**
**STATEMENT OF FINANCIAL POSITION**
**At December 31, 2023**

| | 2023<br>$ | 2022<br>$ |
|---|---|---|
| **FINANCIAL ASSETS** | | |
| Cash | 63,277 | 25,407 |
| Accounts receivable | 42,382 | 65,309 |
| Funds held in trust (note 8) | 484,763 | 444,868 |
| **TOTAL FINANCIAL ASSETS** | 590,422 | 535,584 |
| **LIABILITIES** | | |
| Accounts payable | 11,723 | 12,825 |
| Due to Quinte Conservation Authority (note 3) | 1,259,920 | 1,236,738 |
| Long term debt (note 8) | 1,331,922 | 1,555,245 |
| **TOTAL LIABILITIES** | 2,603,565 | 2,804,808 |
| **NET DEBT** | (2,013,143) | (2,269,224) |
| **NON-FINANCIAL ASSETS** | | |
| Tangible capital assets (note 6) | 3,828,735 | 3,892,508 |
| **ACCUMULATED SURPLUS (note 5)** | 1,815,592 | 1,623,284 |



*The accompanying notes are an integral part of these financial statements*

# QUINTE CONSERVATION AUTHORITY

**QUINTE CONSERVATION ASSOCIATION**
**STATEMENT OF OPERATIONS AND ACCUMULATED SURPLUS**
**For the Year Ended December 31, 2023**

| | Actual 2023 $ | Actual 2022 $ |
|---|---|---|
| **REVENUES** | | |
| Hydro generation | 463,406 | 404,550 |
| Investment income | 20,551 | 11,831 |
| Other recoveries | 4,077 | 41,524 |
| **TOTAL REVENUES** | 488,034 | 457,905 |
| **EXPENSES** | | |
| Interest on long term debt | 93,235 | 107,069 |
| Maintenance and repairs | 63,304 | 80,698 |
| Amortization | 63,773 | 63,773 |
| Contract wages | 52,986 | 55,594 |
| Professional fees | 12,288 | 6,705 |
| Administration | 3,268 | 23 |
| Insurance | 6,872 | 6,712 |
| **TOTAL EXPENSES** | 295,726 | 320,574 |
| **ANNUAL SURPLUS** | 192,308 | 137,331 |
| **ACCUMULATED SURPLUS - beginning of year** | 1,623,284 | 1,485,953 |
| **ACCUMULATED SURPLUS - end of year** | 1,815,592 | 1,623,284 |



*The accompanying notes are an integral part of these financial statements*

# QUINTE CONSERVATION AUTHORITY

**QUINTE CONSERVATION ASSOCIATION**
**STATEMENT OF CHANGE IN NET DEBT**
**For the Year Ended December 31, 2023**

| | Actual 2023 $ | Actual 2022 $ |
|---|---|---|
| **ANNUAL SURPLUS** | 192,308 | 137,331 |
| Amortization of tangible capital assets | 63,773 | 63,773 |
| **CHANGE IN NET DEBT** | 256,081 | 201,104 |
| **NET DEBT - beginning of year** | (2,269,224) | (2,470,328) |
| **NET DEBT - end of year** | (2,013,143) | (2,269,224) |



*The accompanying notes are an integral part of these financial statements*

# QUINTE CONSERVATION AUTHORITY

**QUINTE CONSERVATION ASSOCIATION**
**STATEMENT OF CASH FLOWS**
**For the Year Ended December 31, 2023**

| | 2023<br>$ | 2022<br>$ |
|---|---|---|
| **CASH PROVIDED BY (USED IN)** | | |
| **OPERATING ACTIVITIES** | | |
| Annual surplus | 192,308 | 137,331 |
| Items not involving cash | | |
| Amortization of tangible capital assets | 63,773 | 63,773 |
| Change in non-cash working capital | | |
| Accounts receivable | 22,927 | (47,916) |
| Funds held in trust | (39,895) | (26,079) |
| Accounts payable | (1,102) | (8,112) |
| Due to Quinte Conservation Authority | 23,182 | (61,810) |
| Net change in cash from operating activities | 261,193 | 57,187 |
| **FINANCING ACTIVITIES** | | |
| Debt principal repayments | (223,323) | (209,489) |
| **NET CHANGE IN CASH** | 37,870 | (152,302) |
| **CASH - beginning of year** | 25,407 | 177,709 |
| **CASH - end of year** | 63,277 | 25,407 |



*The accompanying notes are an integral part of these financial statements*

## 1. NATURE OF ORGANIZATION

Quinte Conservation Association was incorporated without share capital, on October 13, 1998. During 2009 the Association assumed the construction and operations of the McLeod Dam hydroelectric generating facility. The purpose of the Association is to operate and maintain the McLeod Dam hydroelectricity generation for green energy which is used locally.

## 2. SIGNIFICANT ACCOUNTING POLICIES

These financial statements have been prepared in accordance with the standards in the Chartered Professional Accountants Canada Public Sector Accounting (PSA) Handbook. Significant aspects of the accounting policies adopted by the Association are as follows:

(a) Recognition of revenue and expenses

Revenue and expenses are reported on the accrual basis of accounting. The accrual basis of accounting recognizes revenue in the period in which the transactions of events occurred that give rise to the revenue; expenses are recognized in the period the goods or services are acquired and a legal liability is incurred or transfers are due.

Hydro generation revenues are recognized as revenue in the year the generation occurs.

(b) Use of estimates

Certain items recognized in the financial statements are subject to measurement uncertainty. The recognized amounts of such items are based on the Association's best information and judgment. By their nature, these estimates are subject to measurement uncertainty and the effect on the financial statements of changes in such estimates in future periods could be significant. The Association's significant estimates include:

- The amounts recorded for amortization of tangible capital assets are based on estimates of useful life and residual values.

## 2. SIGNIFICANT ACCOUNTING POLICIES, continued

(c) Financial Instruments

Financial instruments are classified as either fair value or amortized cost. The following chart shows the measurement method for each type of financial instrument.

| Financial Instrument | Measurement Method |
|---|---|
| Cash | Amortized Cost |
| Accounts receivable | Amortized Cost |
| Funds held in trust | Amortized Cost |
| Accounts payable | Amortized Cost |
| Due to Quinte Conservation Authority | Amortized Cost |
| Long term debt | Amortized Cost |

Fair value category: The Association manages and reports performance for groups of financial assets on a fair-value basis. Investments traded in an active market are reflected at fair value as at the reporting date. Sales and purchases of investments are recorded on the trade date. Transaction costs related to the acquisition of investments are recorded as an expense. Unrealized gains and losses on financial assets are recognized in the Statement of Remeasurement Gains and Losses until such time that the financial asset is derecognized due to disposal or impairment. At the time of derecognition, the related realized gains and losses are recognized in the Statement of Operations and Accumulated Surplus and related balances reversed from the Statement of Remeasurement Gains and Losses.

Amortized cost category: Amounts are measured at the initial recognition minus principal repayments, plus or minus the cumulative amortization using the effective interest rate method of any difference between the initial amount and the maturity amount, and minus any reduction for impairment or uncollectibility. The effective interest method is a method of calculating the amortized cost of a financial asset or financial liability (or a group of financial assets or financial liabilities) and of allocating the interest income or interest expense over the relevant period. The effective interest rate is the rate that exactly discounts estimated future cash payments or receipts through the expected life of the financial instrument or, when appropriate, a shorter period to the net carrying amount of the financial instrument asset or financial instrument liability.

The following hierarchy provides an analysis of financial instruments that are measured subsequent to initial recognition at fair value, grouped into Levels 1 to 3 based on the degree to which fair value is observable:

- Level 1 - Unadjusted quoted market prices in active markets for identical assets or liabilities;
- Level 2 - Observable or corroborated inputs, other than level 1, such as quoted prices for similar assets or liabilities in inactive markets or market data for substantially the full term of the assets or liabilities; and
- Level 3 - Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets and liabilities.

As there are no unrealized gains or losses on financial instruments to report, the Statement of Remeasurement Gains and Losses has not been presented in these financial statements.

## 2. SIGNIFICANT ACCOUNTING POLICIES, continued

(d) Tangible capital assets

Tangible capital assets are recorded at cost which includes all amounts that are directly attributable to acquisition, construction, development or betterment of the asset. Initial costs for tangible capital assets that were acquired or developed prior to 2009 were obtained using historical cost information or using current fair market values discounted by a relevant inflation factor to the point of acquisition. The cost, less residual value, if any, of tangible capital assets is amortized on a straight-line basis, over the expected useful life of the asset, as follows:

| | |
|---|---|
| Dams and weirs | 75 years |
| Machinery and equipment | 75 years |

(e) Non-financial assets

Tangible capital assets and other non-financial assets are accounted for as assets by the Association because they can be used to provide services in future periods. These assets do not normally provide resources to discharge the liabilities of the Association unless they are sold.

(f) Inter-entity transactions

The Quinte Conservation Association is controlled by Quinte Conservation Authority's Board of Directors and is consolidated with the Authority's financial statements.

Allocated costs and recovery of costs are measured at the exchange amount, which is the amount of consideration established and agreed to by the related parties.

Unallocated costs are measured at the carrying amount, which is the amount recorded in the records of the Authority.

Assets and/or liabilities transferred between the Association and Authority are measured at the carrying amount.

## 3. INTER-ENTITY TRANSACTIONS

During the year, the Association entered into transactions with Quinte Conservation Authority.

Advances received from Quinte Conservation Authority, a related party, were to fund operations. Quinte Conservation Authority is a related party due to common control. The advances are non-interest bearing with no specific terms of repayment.

In addition, Quinte Conservation Authority provides accounting and administrative services to the Association at no cost.

## 4. ECONOMIC DEPENDENCE

The major source of revenue is in the form of hydro generation sales to Veridian Connections Inc. The nature and extent of this revenue is of such significance as to affect the viability of the Association and accordingly, it can be said that the Association is economically dependent upon Veridian Connections Inc.

## 5. ACCUMULATED SURPLUS

Accumulated surplus consists of the following:

| | 2023<br>$ | 2022<br>$ |
|---|---|---|
| **Deficit** | | |
| Operating | (681,221) | (713,979) |
| **Invested In Tangible Capital Assets** | | |
| Tangible capital assets - net book value | 3,828,735 | 3,892,508 |
| Long term debt | (1,331,922) | (1,555,245) |
| | 2,496,813 | 2,337,263 |
| | 1,815,592 | 1,623,284 |

## 6. TANGIBLE CAPITAL ASSETS

The net book value of the Association's tangible capital assets are:

| | Dams & weirs<br>$ | Machinery & equipment<br>$ | 2023 Totals<br>$ | 2022 Totals<br>$ |
|---|---|---|---|---|
| **COST** | | | | |
| Balance, beginning of year | 4,723,727 | 59,230 | 4,782,957 | 4,782,957 |
| Balance, end of year | 4,723,727 | 59,230 | 4,782,957 | 4,782,957 |
| **ACCUMULATED AMORTIZATION** | | | | |
| Balance, beginning of year | 881,760 | 8,689 | 890,449 | 826,676 |
| Add: additions during the year | 62,983 | 790 | 63,773 | 63,773 |
| Balance, end of year | 944,743 | 9,479 | 954,222 | 890,449 |
| **NET BOOK VALUE OF TANGIBLE CAPITAL ASSETS** | 3,778,984 | 49,751 | 3,828,735 | 3,892,508 |

During the year there were no write-downs of assets (2022 - $Nil) and no interest capitalized (2022 - $Nil).

## 7. CONTRACTUAL RIGHTS

The Association has entered into an agreement with Veridian Connections Inc. to earn revenues for the electricity generated from the hydro electric dam which expires in 2028. The amount of revenue earned is dependent on the quantity of electrical energy supplied and the rate per kWh set by the Ontario Energy Board. The Association receives payments monthly.

## 8. LONG TERM DEBT

(a) Long term debt consists of the following:

| | 2023<br>$ | 2022<br>$ |
|---|---|---|
| Loan from Corpfinance, repayable in blended monthly instalments of $26,380 with interest at 6.412% (2022 - 6.412%), due November 1, 2028 | 1,331,922 | 1,555,245 |

(b) Interest paid during the year on long term debt amounted to $93,235 (2022 - $107,069).

(c) The funds held in trust of $484,763 (2022 - $444,868) reported on the Statement of Financial Position is comprised of $354,928 (2022 - $340,326) debt service reserve fund described in (d) below plus $129,835 (2022 - $104,542) maintenance reserve fund.

(d) The loan is secured by a general security agreement over all assets of the McLeod Dam Hydroelectric Generating Facility operating as Quinte Conservation Association. As part of the loan agreement with Corpfinance, the Association is required to provide for a debt service reserve fund account in the amount of $158,279, representing 12 months of debt payments plus accumulated interest on the reserve. The loan agreement requires a minimum debt service coverage ratio of 1.05:1 as well as a minimum amount of working capital as defined by the agreement. Since the Association has been in non-compliance with the debt service coverage requirement and the working capital requirement in the past, Corpfinance considers the Association to be in non-compliance for the entire term of the loan. However, subsequent to the year-end Corpfinance confirmed their intention not to call the loan early and to proceed with the agreed payment schedule reflected in these consolidated financial statements.

(e) The long term debt reported in (a) of this note is repayable as follows:

| | Principal<br>$ | Interest<br>$ | Total<br>$ |
|---|---|---|---|
| 2024 | 238,071 | 78,487 | 316,558 |
| 2025 | 253,793 | 62,765 | 316,558 |
| 2026 | 270,553 | 46,005 | 316,558 |
| 2027 | 288,420 | 28,138 | 316,558 |
| 2028 | 281,085 | 9,092 | 290,177 |
| | 1,331,922 | 224,487 | 1,556,409 |

## 9. CHANGES IN ACCOUNTING POLICIES

The Authority has implemented the following sections which are now effective under the PSA Handbook: PS 1201 Financial Statement Presentation, PS 2601 Foreign Currency Translation, PS 3041 Portfolio Investments, PS 3450 Financial Instruments and PS 3280 Asset Retirement Obligations were adopted prospectively on January 1, 2023.

PS 1201 Financial Statement Presentation replaces PS 1200 Financial Statement Presentation. This standard establishes general reporting principles and standards for the disclosure of information in government financial statements. The standard introduces the Statement of Remeasurement Gains and Losses separate from the Statement of Operations. Requirements in PS 2601 Foreign Currency Translation, PS 3450 Financial Instruments, and PS 3041 Portfolio Investments, which are required to be adopted at the same time, can give rise to the presentation of gains and losses as remeasurement gains and losses.

PS 2601 Foreign Currency Translation replaces PS 2600 Foreign Currency Translation. The standard provides comprehensive requirements for the recognition, measurement, presentation and disclosure of foreign currency transactions. The adoption of this standard did not have an impact on the Association's consolidated financial statements.

PS 3041 Portfolio Investments replaces PS 3040 Portfolio Investments. The standard provides revised guidance on accounting for, and presentation and disclosure of, portfolio investments to conform to PS 3450 Financial Instruments. The adoption of this standard did not have an impact on the Associations's consolidated financial statements.

PS 3450 Financial Instruments establishes accounting and reporting requirements for all types of financial instruments including derivatives. Financial instruments are included on the statement of financial position and are measured either at fair value or cost or amortized cost based on the characteristics of the instrument and the Authority's accounting policy choices (see Note 1. Significant Accounting Policies). The new standard provides comprehensive requirements for the recognition, measurement, presentation and disclosure of financial instruments. The adoption of this standard did not have an impact on the Association's consolidated financial statements.

PS 3280 Asset Retirement Obligations addresses the reporting of legal obligations associated with the retirement of certain tangible capital assets, such as asbestos removal in retired buildings by public sector entities. The adoption of this standard did not have an impact on the Association's financial statements.

# MONTHLY PERMIT SUMMARY

MAY 2024

**DEPARTMENT: Planning & Regulations** **MANAGER/TEAM LEAD: Paul McCoy**

**PREPARED BY: Sam Carney, Planning Technician**

RECOMMENDED MOTION

THAT, the monthly permit summary for the month of MAY 2024 be received.

RELATIONSHIP TO STRENTHENING OUR NATURAL ECOSYSTEMS: A CONTINUING JOURNEY, THE QUINTE CONSERVATION 2021 - 2030 STRATEGIC PLAN

This report supports the following pillar set forth in the Strategic Plan: ***Advancing Environmental Science***

| QC FILE NO. | SITE ADDRESS | WARD | TOWNSHIP | NATURAL FEATURE | WORK DESCRIPTION |
|---|---|---|---|---|---|
| **REG0032-2024** | 403 MAIN ST | PICTON | PEC | HOSPITAL CREEK | REDEV. OF PICTON HOSPITAL INCL SEWER SYSTEM, CULVERTS, DRY POND, EROSION PROTECTION, CUT & FILL |
| **REG0043-2024** | 148 OLD ORCHARD RD | AMELIASBURGH | PEC | BAY OF QUINTE | SHORELINE EROSION PROTECTION |
| **REG0050-2024** | 88 ISLAND RD | HALLOWELL | PEC | WEST LAKE & PSW | DWELLING & SEWAGE SYSTEM |
| **REG0057-2024** | 1370 HWY 49 | SOPHIASBURGH | PEC | PICTON BAY | MAINTENANCE DREDGE |
| **REG0060-2024** | 3149 DESERONTO RD | TYENDINAGA | TYENDINAGA | WETLAND | DWELLING, SHED, SOLAR PANELS & SEWAGE SYSTEM |
| **REG0063-2024** | 660 WHITNEY RD | AMELIASBURGH | PEC | ROBLIN LAKE | DWELLING DEMO & ADDITION |
| **REG0065-2024** | CTY RD 15 | SOPHIASBURGH | PEC | WATERCOURSE / WETLAND | EXCAVATION FOR PIPELINE REPAIR |
| **REG0066-2024** | FISH LAKE RD | SOPHIASBURGH | PEC | WATERCOURSE / WETLAND | EXCAVATION FOR PIPELINE REPAIR |
| **REG0067-2024** | 1770 FISH LAKE RD | SOPHIASBURGH | PEC | WATERCOURSE/ WETLANDS | EXCAVATION FOR PIPELINE REPAIR |
| **REG0068-2024** | HWY 49 | SOPHIASBURGH | PEC | WATERCOURSE / WETLAND | EXCAVATION FOR PIPELINE REPAIR |

| QC FILE NO. | SITE ADDRESS | WARD | TOWNSHIP | NATURAL FEATURE | WORK DESCRIPTION |
|---|---|---|---|---|---|
| **REG0069-2024** | ELMWOOD RD | SOPHIASBURGH | PEC | WATERCOURSE / WETLAND | EXCAVATION FOR PIPELINE REPAIR |
| **REG0070-2024** | BETHESDA RD | SOPHIASBURGH | PEC | WETLANDS | EXCAVATION FOR PIPELINE REPAIR |
| **REG0071-2024** | 352 EDWARD DR | HILLIER | PEC | WELLER'S BAY | SHORELINE RETAINING WALL REPLACEMENT & EROSION CONTROL |
| **REG0076-2024** | 71 HERITAGE EST DR | HILLIER | PEC | BAY OF QUINTE, PINE PT PSW | SHORELINE EROSION PROTECTION |
| **REG0080-2024** | 0 BRIDGE ST W | RICHMOND | NAPANEE | UNNAMED WETLANDS & WATERCOURSES | INSULATOR REPLACEMENT / WATERCOURSE CROSSING |
| **REG0081-2024** | 0 WHITE LAKE RD | HINCHINBROOKE | C. FRONTENAC | UNNAMED WETLANDS & WATERCOURSES | WATERCOURSE CROSSING / INSULATOR REPLACEMENT |
| **REG0084-2024** | 378 SALMON RIVER RD | TYENDINAGA | TYENDINAGA | SALMON RIVER | GRADING & LANDSCAPING |
| **REG0085-2024** | 2377 CTY RD 15 | SOPHIASBURGH | PEC | BAY OF QUINTE & WETLAND | DWELLING ADDITION |
| **REG0089-2024** | 152 SAGAR LN | AMELIASBURGH | PEC | ROBLIN LAKE | DEMO COTTAGE, REBUILD NEW HOME & NEW SEWAGE SYSTEM |
| **REG0090-2024** | 4377 CTY RD 13 | S. MARYSBURGH | PEC | LAKE ONTARIO & WETLAND | DWELLING & SEWAGE SYSTEM |
| **REG0094-2024** | 105 WELSH LN | ATHOL | PEC | ATHOL BAY | ADDITION |
| **REG0096-2023** | 13649 HWY 62 | HUNTINGDON | CENTRE HASTINGS | WATERCOURSE / WETLAND | GARAGE ADDITION |
| **REG0096-2024** | 163 CAMP LN | HUNGERFORD | TWEED | MOIRA LAKE | DWELLING & SEWAGE SYSTEM |
| **REG0097-2024** | 1232 SPARKS LN | HINCHINBROOKE | C. FRONTENAC | CHIPPEGO LAKE | RAISE COTTAGE & REPLACE DECKING |
| **REG0098-2024** | 5963 DAVEY DR | PORTLAND | S. FRONTENAC | VERONA LAKE FP & WETLAND | GARAGE |
| **REG0100-2024** | 658 ASHLEY ST | THURLOW | BELLEVILLE | WETLAND & KARST | REPLACE SEWAGE SYSTEM |

| QC FILE NO. | SITE ADDRESS | WARD | TOWNSHIP | NATURAL FEATURE | WORK DESCRIPTION |
|---|---|---|---|---|---|
| **REG0101-2024** | 15747 LOYALIST PKWY | HALLOWELL | PEC | WEST LAKE | DWELLING & SEWAGE SYSTEM |
| **REG0103-2024** | HOSPITAL CREEK CROSSING, NEAR 415 MAIN ST | PICTON | PEC | HOSPITAL CREEK | DIRECTIONAL DRILLING TO FACILITATE INSTALLATION OF SANITARY FORCEMAIN & WATERMAIN |
| **REG0104-2024** | 290 EDWARD DR | HILLIER | PEC | WELLER'S BAY | REPLACE DECK W/ FLAGSTONE FIRE PIT |
| **REG0105-2024** | 658 CTY RD 9 | N. FREDERICKS-BURGH | NAPANEE | WATERCOURSE | INSULATOR REPLACEMENT / WATERCOURSE CROSSING |
| **REG0106-2024** | 57 HERITAGE EST DR | AMELIASBURGH | PEC | PINE PT WETLAND | PLACEMENT OF SPOILS AS A RESULT OF MAINTENANCE DREDGE |
| **REG0107-2024** | 2254 CTY RD 3 | AMELIASBURGH | PEC | PINE PT WETLAND | PLACEMENT OF SPOILS AS A RESULT OF MAINTENANCE DREDGE |
| **REG0109-2024** | 1011 BARRY RD | MADOC | MADOC | WETLAND | WILDLIFE POND (DU PROJECT) |
| **REG0111-2024** | 164 N. BEAVER LAKE RD | SHEFFIELD | STONE MILLS | BEAVER LAKE | SEWAGE SYSTEM REPLACEMENT |
| **REG0112-2024** | 470 N. NEVILLE PT RD | SHEFFIELD | STONE MILLS | BEAVER LAKE | REPLACE DECK/DOCK & INSTALL ARMOUR STONE |
| **REG0114-2024** | 2242 CTY RD 3 | AMELIASBURGH | PEC | BAY OF QUINTE, PSW | PLACEMENT OF SPOILS AS A RESULT OF MAINTENANCE DREDGE |
| **REG0115-2024** | 1 SAGE CR (WESLEY ACRES PARK) | HALLOWELL | PEC | WEST LAKE | SUNROOM ADDITION ON TRAILER |
| **REG0116-2024** | 76 A HARMONY RD | THURLOW | BELLEVILLE | MOIRA RIVER, CORBYVILLE WETLAND | FLOOD PROTECTION BARRIER |
| **REG0119-2024** | 1661 LAKESIDE DR | AMELIASBURGH | PEC | CONSECON LAKE & PSW | IN-GROUND POOL & ACCESSORY STRUCTURE |
| **REG0120-2024** | 1798 CTY RD 12 | RICHMOND | NAPANEE | WETLAND | ENLARGE WETLAND (DU PROJECT) |

| QC FILE NO. | SITE ADDRESS | WARD | TOWNSHIP | NATURAL FEATURE | WORK DESCRIPTION |
|---|---|---|---|---|---|
| **REG0122-2024** | 1831 N. BIG ISLAND RD | SOPHIASBURGH | PEC | BAY OF QUINTE | DECK |
| **REG0124-2024** | 21 HERITAGE EST DR | AMELIASBURGH | PEC | PINE PT WETLAND | PLACEMENT OF SPOILS AS A RESULT OF MAINTENANCE DREDGE |
| **REG0127-2024** | 4272 CTY RD 1 E | CAMDEN EAST | STONE MILLS | TRIB NAPANEE RIVER | REPLACE FAILED SEWAGE SYSTEM |
| **REG0129-2024** | 2248 CTY RD 3 | AMELIASBURGH | PEC | PINE PT WETLAND | PLACEMENT OF SPOILS AS A RESULT OF MAINTENANCE DREDGE |
| **REG0130-2024** | 2174 CTY RD 3 | AMELIASBURGH | PEC | BAY OF QUINTE/PINE PT PSW | PLACEMENT OF SPOILS AS A RESULT OF MAINTENANCE DREDGE |
| **REG0131-2024** | 135 PT PLEASANT LN | N.MARYSBURGH | PEC | LAKE ONTARIO | DWELLING ADDITION |
| **REG0132-2024** | 2218 CTY RD 3 | AMELIASBURGH | PEC | PINE PT WETLAND | PLACEMENT OF SPOILS AS A RESULT OF MAINTENANCE DREDGE |
| **REG0134-2024** | 27 OTTER CREEK RD | HUNGERFORD | TWEED | UNNAMED WATERCOURSE | DWELLING, SEWAGE SYSTEM & NEW SHOP |
| **REG0135-2024** | 2228 CTY RD 3 | AMELIASBURGH | PEC | BAY OF QUINTE, PINE PT WETLAND | PLACEMENT OF SPOILS AS A RESULT OF MAINTENANCE DREDGE |
| **REG0136-2024** | 2200 CTY RD 3 | AMELIASBURGH | PEC | PINT PT WETLAND | PLACEMENT OF SPOILS AS A RESULT OF MAINTENANCE DREDGE |
| **REG0138-2024** | 194 HALLOWAY RD | SIDNEY | QUINTE WEST | UNNAMED CREEK | GARAGE & DECK |
| **REG0139-2024** | MAIN ST / MCFARLAND DR | PICTON | PEC | HOSPITAL CREEK | INSTALL 3-PHASE PRIMARY LINES UNDER HOSPITAL CREEK TO ACCOMMODATE FLIGHT PATH OF NEW HELICOPTER PAD AT HOSPITAL |
| **REG0332-2023** | 202 NEVILLE PT RD | SHEFFIELD | STONE MILLS | BEAVER LAKE | DEMO & REBUILD DWELLING |
| **REG0358-2023** | 100 BLAKELY LN | MADOC | CENTRE HASTINGS | MOIRA LAKE | INSTALL HOLDING TANK |

| QC FILE NO. | SITE ADDRESS | WARD | TOWNSHIP | NATURAL FEATURE | WORK DESCRIPTION |
|---|---|---|---|---|---|
| **REG0392-2023** | 1490 CTY RD 35 | SOPHIASBURGH | PEC | BAY OF QUINTE | REMOVE WOOD RAMP & PERMANENT DOCK & PLACE ROCK FOR EROSION PROTECTION |
| **REG0403-2022** | 2254 CTY RD 3 | AMELIASBURGH | PEC | BAY OF QUINTE | MAINTENANCE DREDGE OF EXISTING MAN-MADE CANAL |

# MONTHLY PLANNING SUMMARY

MAY 2024

**DEPARTMENT: Planning & Regulations** **MANAGER/TEAM LEAD: Paul McCoy**

**PREPARED BY: Sam Carney, Planning Technician**

## RECOMMENDED MOTION

THAT, the monthly planning summary for the month of MAY 2024 be received.

## RELATIONSHIP TO STRENTHENING OUR NATURAL ECOSYSTEMS: A CONTINUING JOURNEY, THE QUINTE CONSERVATION 2021 - 2030 STRATEGIC PLAN

This report supports the following pillar set forth in the Strategic Plan: ***Advancing Environmental Science***

| APPL'N TYPE & QC FILE NO. | SITE ADDRESS | WARD | TOWNSHIP | NATURAL FEATURE | APPL'N DESCRIPTION |
|---|---|---|---|---|---|
| **CONSENT**, PL0061-2024 | SW BLESSINGTON RD & MCFARLANE RD | TYENDINAGA | HASTINGS CTY (TYENDINAGA) | BLESSINGTON CREEK, TRIB OF BLESSINGTON CREEK, WETLANDS & KARST | SEVER 2 RURAL PARCELS & 1 LOT ADDITION |
| **CONSENT**, PL0081-2024 | 3447 DESERT LAKE RD | PORTLAND | S. FRONTENAC | WATERCOURSES, WETLANDS & WATERBODY | SEVER 1 RURAL PARCEL RECENTLY CONSOLIDATED |
| **CONSENT**, PL0107-2024 | 1876 MONEYMORE RD | HUNGERFORD | TWEED | WETLANDS, WATERCOURSE & KARST | SEVER 1 RURAL PARCEL |
| **CONSENT**, PL0109-2024 | 453 CROSS RD | TYENDINAGA | HASTINGS CTY (TYENDINAGA) | WETLANDS & KARST | SEVER 1 RURAL PARCEL |
| **CONSENT**, PL0110-2024 | 501 & 531 COLLEGE ST E | THURLOW | BELLEVILLE | WATERCOURSE | LOT ADDITIONS (LAND SWAP) |
| **CONSENT**, PL0113-2024 | 4902 PETWORTH RD | PORTLAND | S. FRONTENAC | CAMERON SWAMP PSW, WATERCOURSES, WETLANDS & KARST | SEVER 1 RURAL PARCEL |
| **CONSENT**, PL0121-2024 | VACANT LOT S OF 6430 CTY RD 4 | SHEFFIELD | STONE MILLS | SHIBAGAU CREEK & WETLANDS | SEVER 1 RURAL PARCEL |
| **CONSENT**, PL0123-2024 | 745 OTTER CREEK RD | HUNGERFORD | TWEED | WATERCOURSE, WETLANDS & PSW | SEVER 2 RURAL PARCELS & LOT ADDITION |
| **CONSENT**, PL0125-2024 | 298 MCGILL RD | CAMDEN EAST | STONE MILLS | WETLANDS & KARST | SEVER 4 RURAL PARCELS |
| **CONSENT**, PL0127-2024 | 128 SIMPSON RD | ATHOL | PEC | WETLANDS | LOT ADDITION |

| APPL'N TYPE & QC FILE NO. | SITE ADDRESS | WARD | TOWNSHIP | NATURAL FEATURE | APPL'N DESCRIPTION |
|---|---|---|---|---|---|
| **CONSENT**, PL0129-2024 | 1225 A CP LN | KENNEBEC | CENTRAL FRONTENAC | WATERCOURSE, WETLANDS & BIG CLEAR LAKE | LOT ADDITION (LAND SWAP) |
| **CONSENT**, PL0130-2024 | 1225 B CP LN | KENNEBEC | CENTRAL FRONTENAC | WATERCOURSE, WETLANDS & BIG CLEAR LAKE | LOT ADDITION (LAND SWAP) |
| **CONSENT**, PL0140-2024 | 2285 MOIRA RD | HUNTINGDON | HASTINGS CTY (CENTRE HASTINGS) | THOMASBURG PSW, WETLANDS & KARST | SEVER 2 RURAL PARCELS |
| **CONSENT**, PL0141-2024 | 491 WOODS RD | MADOC | HASTINGS CTY (MADOC) | WATERCOURSE & WETLANDS | SEVER 1 RURAL PARCEL |
| **CONSENT**, PL0142-2024 | 708 HUNT CLUB RD | MADOC | HASTINGS CTY (MADOC) | WATERBODY & WETLANDS | SEVER 2 RURAL PARCELS |
| **CONSENT**, PL0143-2024 | 184 PALMER RD | MADOC | HASTINGS CTY (MADOC) | WATERCOURSE, WETLANDS, KARST | SEPARATE TWO PARCELS INADVERTENTLY MERGED ON TITLE |
| **CONSENT**, PL0144-2024 | 166 PIGDEN RD | MADOC | HASTINGS CTY (MADOC) | WATERCOURSES & WETLANDS | SEVER 1 RURAL PARCEL |
| **CONSENT**, PL0145-2024 | 79 ESTIS RD | CAMDEN EAST | STONE MILLS | WATERCOURSE, WETLAND & KARST | SEVER 1 RURAL PARCEL |
| **CONSENT**, PL0146-2024 | 6661 WHEELER ST | SHEFFIELD | STONE MILLS | SALMON RIVER & KARST | LOT ADDITION |
| **CONSENT**, PL0147-2024 | 1980 CTY RD 15 | SHEFFIELD | STONE MILLS | WETLANDS | SEVER 2 RURAL PARCELS |
| **CONSENT**, PL0148-2024 | 2452 CTY RD 4 | CAMDEN EAST | STONE MILLS | KARST | SEVER 2 RURAL PARCELS |
| **CONSENT**, PL0149-2024 | 2631 CTY RD 14 | CAMDEN EAST | STONE MILLS | WATERCOURSE, WETLANDS, PSW & KARST | SEVER 1 RURAL PARCEL |
| **CONSENT**, PL0150-2024 | 629 CTY RD 4 | SHEFFIELD | STONE MILLS | KARST | SEVER PARCEL INTO 2 LOTS |
| **CONSENT**, PL0240-2022 | 2663 HARMONY RD | TYENDINAGA | HASTINGS CTY (TYENDINAGA) | WATERCOURSE, WETLANDS & KARST | SEVER 1 RURAL PARCEL |
| **CONSENT**, PL0253-2023 | MELROSE RD | TYENDINAGA | HASTINGS CTY (TYENDINAGA) | SALMON RIVER, WETLANDS & KARST | LOT ADDITION |
| **MINOR VARIANCE**, PL0134-2024 | 1035 MORNING GLORY LN | PORTLAND | SOUTH FRONTENAC | VERONA LAKE | PERMISSION TO ENLARGE LEGAL NON CONFORMING DWELLING & RECOGNIZE REDUCED SETBACKS |

| APPL'N TYPE & QC FILE NO. | SITE ADDRESS | WARD | TOWNSHIP | NATURAL FEATURE | APPL'N DESCRIPTION |
|---|---|---|---|---|---|
| **MINOR VARIANCE**, PL0151-2024 | 190 5TH CONCESSION RD N | KALADAR | ADDINGTON HIGHLANDS | SKOOTAMATTA RIVER | REDUCE WATERBODY SETBACK TO CONSTRUCT OPEN DECK |
| **MINOR VARIANCE**, PL0152-2024 | 510 HENNIGER RD | ANGLESEA | ADDINGTON HIGHLANDS | SKOOTAMATTA LAKE | RELIEF FROM ACCESSORY BLDG HEIGHT FOR PROPOSED GARAGE |
| **ZBA**, PL0098-2023 | 41 WILLOW LN | ATHOL | PEC | EAST LAKE | AMEND TC-19 ZONE AND PLACE HOLDING SYMBOL |
| **ZBA**, PL0111-2024 | LABARGE RD | HUNGERFORD | TWEED | SULPHIDE PSW | REZONE SEVERED FROM RU TO RR-47 & RETAINED FROM RU TO RU-19 |
| **ZBA**, PL0114-2024 | 238 METCALF ST | HUNGERFORD | TWEED | N/A | REZONE FROM CF-12 TO R1-11 |
| **ZBA**, PL0115-2024 | 1046 MARYSVILLE RD | TYENDINAGA | TYENDINAGA | SALMON RIVER | CHANGE ZONING FROM R2-7-H TO R2-7 (REMOVAL OF HOLD) |
| **ZBA**, PL0116-2024 | 357 CALLAGHAN RD | TYENDINAGA | TYENDINAGA | WATERCOURSES, WETLANDS KARST | REZONE SEVERED FROM MA TO RR |
| **ZBA**, PL0117-2024 | 3289 BLESSINGTON RD | TYENDINAGA | TYENDINAGA | FISHER CREEK PSW, WATERCOURSES, WETLANDS & KARST | REZONE SEVERED LOT FROM MA TO RR |
| **ZBA**, PL0118-2024 | 3605 HARMONY RD | TYENDINAGA | TYENDINAGA | WETLANDS & KARST | REZONE FROM MA TO RR |
| **ZBA**, PL0119-2024 | VACANT LOT W OF 3864 HARMONY RD | TYENDINAGA | TYENDINAGA | WETLANDS, WATERCOURSE & KARST | REZONE SEVERED FROM MA TO EP/RR & RETAINED & REZONE PORTION OF RETAINED FROM MA TO EP |
| **ZBA**, PL0122-2024 | 179 SPRY RD | RAWDON | STIRLING-RAWDON | KARST | REZONE 2 LOTS FROM MA TO RR |
| **ZBA**, PL0126-2024 | 1985 READ RD | TYENDINAGA | TYENDINAGA | KARST | REZONE FROM MA-5 TO RR |

| APPL'N TYPE & QC FILE NO. | SITE ADDRESS | WARD | TOWNSHIP | NATURAL FEATURE | APPL'N DESCRIPTION |
|---|---|---|---|---|---|
| **ZBA**, PL0128-2024 | 6430 OLD HWY 2 | TYENDINAGA | TYENDINAGA | KARST | REZONE LANDS FROM MA TO SPECIAL RR ZONE TO PERMIT SECONDARY RESIDENCE WITHIN EXISTING DWELLING |
| **ZBA**, PL0131-2024 | SE OF NAPHAN RD & MARYSVILLE RD | TYENDINAGA | TYENDINAGA | WETLANDS & KARST | REZONE 1 LOT FROM MA TO MA-X AND THE OTHER LOT FROM MA TO RR-X TO RECOGNIZE A 300M SETBACK FROM MX ZONE |
| **ZBA**, PL0132-2024 | 676 FOXTON RD | THURLOW | BELLEVILLE | WETLANDS & KARST | REZONE 2 SEVERED LOTS FROM RU TO RR |
| **ZBA**, PL0133-2024 | BRENNAN RD | THURLOW | BELLEVILLE | WATERCOURSE, WETLANDS & TYENDINAGA/THURLOW EVAL. WETLANDS | REZONE SEVERED FROM RU TO RR |
| **ZBA**, PL0135-2024 | PALACE RD (BEHIND #51) | NORTH FREDERICKSBURGH | NAPANEE | KARST | REZONE FROM R2 TO CF |
| **ZBA**, PL0137-2024 | 501 CTY RD 15 | SHEFFIELD | STONE MILLS | SALMON RIVER, WETLANDS, STEEP SLOPE & KARST | REZONE LOTS 1, 2 & 4 FROM M4 TO RU ZONE & LOT 3 FROM M4 TO OS-XX TO PROHIBIT DEVELOPMENT NEAR SEWAGE LAGOON |
| **ZBA**, PL0138-2024 | 90 MILLER RD | CAMDEN EAST | STONE MILLS | KARST | REZONE 2 SEVERED LOTS FROM RU TO HR ZONE |
| **ZBA**, PL0139-2024 | 235 ACADEMY ST | CAMDEN EAST | STONE MILLS | TRIB OF NAPANEE RIVER/FP, WETLANDS & KARST | REZONE FROM RU TO HR-XX ZONE FOR MULTI UNIT RES. DEVELOPMENT ON EACH LOT |
| **ZBA**, PL0124-2024 | BEASLEY CRESCENT | PICTON | PEC | N/A | AMEND R3-63-H ZONE FOR RELIEF FROM SETBACKS, LOT AREA, HEIGHT & PKG TO CONSTRUCT TWO 50-STOREY APT BLDGS |

| APPL'N TYPE & QC FILE NO. | SITE ADDRESS | WARD | TOWNSHIP | NATURAL FEATURE | APPL'N DESCRIPTION |
|---|---|---|---|---|---|
| **SITE PLAN**, PL0112-2024 | 414 Q DEWEY RD | CAMDEN EAST | STONE MILLS | VARTY LAKE, VARTY LAKE PSW, KARST | AGREEMENT RECOGNIZING PROPOSED DEV. ON SEASONALLY MAINTAINED RD |
| **SITE PLAN**, PL0153-2024 | 525 FOXBORO-STIRLING RD | SIDNEY | QUINTE WEST | WETLANDS | REVIEW OF PROPOSED SITE PLAN (TD CONSULTING, AUG.2023) & FUNCTIONAL SERVICING REPORT (BASETECH CONSULTING INC., FEB.2024) |
| **SITE PLAN**, PLP0001-2024 | BONJOUR BLVD/HWY 7 | MADOC | HASTINGS CTY (MADOC) | N/A | REVIEW OF UPDATED SWM REPORT (WMI, DATED APR.2024) INCL. DWGS SP-1A REV 13 DATED MARCH, 2024, DWGS SS, GR, ESC 7 DS2 REV 2 DATED APR.19,2024 & PEER REVIEW COMMENT MATRIX DATED APR.19,2024 |
| **SITE PLAN**, PLP0016-2024 | 192 BELL BLVD | THURLOW | BELLEVILLE | DRAINAGE FEATURE (NOT REGULATED) | REVIEW OF SWM REPORT & FUNCTIONAL SERVICING REPORT (FEB.2024) & DWGS GSP, ECP & LG REV. 0 (UNDATED), AINLEY GROUP |
| **SITE PLAN**, PLP0020-2024 | 2332 CTY RD 41 | RICHMOND | NAPANEE | MUD CREEK PSW | REVIEW OF APPL'N, EIS, GEOTECH INVESTIGATION & DESIGN REPORT & SWM REPORT (AECOM, APR.2024) |

| APPL'N TYPE & QC FILE NO. | SITE ADDRESS | WARD | TOWNSHIP | NATURAL FEATURE | APPL'N DESCRIPTION |
|---|---|---|---|---|---|
| **SUBDIVISION, OPA & ZBA**, PLP0015-2024 | FAWCETT AVE | PICTON | PEC | N/A | REVIEW OF SWM REPORT (AINELY, SEPT.2023), SERVICING REPORT (AINLEY, OCT.2023), EIS (AINLEY, NOV.2023) & PLANNING JUSTITICATION (FOTENN, JAN.3, 2024) |
| **SUBDIVISION & ZBA**, PLP0014-2024 | 147 MCKEOWN DR | CAMDEN EAST | STONE MILLS | KARST | REVIEW OF KARST TOPOGRAPHY ASSESSMENT (GHD, OCT.17,2023), PRELIM SWM REPORT (FOREFRONT ENG., MARCH 2023) & PLANNING REPORT (MARCH 6, 2024) & ENVIRO IMPACT ASSESS. (ECOLOGICAL SERVICES, OCT.24, 2023) |

# 2023/24 FLOODPLAIN MAPPING PROJECTS

DATE: JUNE/20/2024

**DEPARTMENT: WATER RESOURCES, MANAGER/TEAMLEAD: CHRISTINE PHILLIBERT**

**PREPARED BY: MIKE SMITH, WATER CONTROL STRUCTURES TECHNOLOGIST**

## RECOMMENDED MOTION

THAT, the 2023/24 Floodplain Mapping Projects report be received and that the listed final mapping products be used for Quinte Conservation's mandatory programs and services.

## RELATIONSHIP TO STRENGTHENING OUR NATURAL ECOSYSTEMS: A CONTINUING JOURNEY, THE QUINTE CONSERVATION 2021 – 2030 STRATEGIC PLAN

This report supports the following pillar set forth in the Strategic Plan*:*

| *Accelerating Advocacy* | ***Advancing Environmental Science*** | *Boosting Well-Being* | *Strengthening Brand Recognition* |
|---|---|---|---|

## BACKGROUND INFORMATION

In 1975, the Flood Damage Reduction Program (FDRP) was announced by the federal government. The goal of the program was to identify flood vulnerable lands, so that land use policy could direct development away from the natural hazard to limit the costs associated with natural disasters. The program continued until 1996. Through this program, Quinte Conservation established floodplain maps for many watercourses in the watershed.

In recognition of increasing disaster risks and costs, the federal 2014 budget earmarked a total of $200 million dollars over five years to establish the National Disaster Mitigation Program. Quinte Conservation staff utilized this funding to improve our understanding of snow melt for our flood forecasting and warning program, improve our flood data management software, and establish our floodplain mapping priorities. Since then, a new federal funding program (Federal Hazard Identification and Mapping Program) has been established.

Under the Conservation Authorities Act, Conservation Authorities (CAs) shall provide programs and services related to the risk of natural hazards. Ontario Regulation 686/21 Mandatory Programs and Services defines the natural hazards (dynamic beaches, erosion, flooding, hazardous lands, hazardous sites, and low water or drought conditions) under CA jurisdiction. Further, the CA can provide programs and services defined in the regulation for flood forecasting and warning; drought or low water response; ice management; infrastructure; comments re applications, proposals; plan review, comments; and administering and enforcing the Act.

Natural hazard maps are essential tools for fulfilling our mandatory programs and services. The mapping is used for municipal land use planning, Quinte Conservation’s regulation O.Reg. 41/24, flood forecasting and

warning, and municipal flood response. Flood mapping and the associated models can also be used to look at the impacts of climate change and changes to dam operations on the watershed. The data used as inputs for floodplain mapping can be used to support other uses such as municipal road and sewer improvement projects, natural heritage mapping, and much more.

Quinte Conservation has natural hazard mapping for over 20 watercourses and shorelines. Staff have identified that there are also more than 10 watercourses or shorelines without any mapping. The inventory of maps includes:

- 3 that were completed in 2022,
- 4 projects are pending Executive approval,
- 5 will be 29 – 39 years old in 2024,
- 11 will be 40 - 49 years old in 2024, and
- the remaining (greater than 10) project areas have never been mapped.

As of this report, all 4 projects have been successfully completed, reviewed and approved by Quinte Conservation, MNRF, and ECCC. This report summarizes each project, the process and it's findings with the intent of review and approval by the board. Following that, the results of these projects will be utilized by Quinte Conservation.

## Project Updates

### ON22-045 Consecon Floodplain Mapping

KGS Group was retained by Quinte Conservation (QC) to update the regulatory floodplain for Consecon Lake and Creek from Melville Road, upstream of Consecon Lake, to the mouth of Consecon Creek at Wellers Bay. The study includes the collection of topographic data, site inspections, hydrologic assessments, hydraulic modeling and analyses, and mapping of the Regulatory Floodplain.

A draft version of the floodplain maps was presented in a Public Information Centre (February 12, 2024 – Consecon United Church, Consecon, Ontario) to discuss and receive feedback from the public, that was taken into consideration for the preparation of the final version of the floodplain maps. Aspects discussed in that PIC included: the role of the Whitney Dam on the Consecon Lake levels and how conditions used to be in the past, based on neighbours' recollections; locations that neighbours remembered as prone to flooding; conditions at the culverts on Highway 33 and on the areas west of the highway.

In this study, hydrologic modeling and analysis was performed using the program HEC-HMS to assess the magnitude of recurrent summer and spring flood events ranging from 2 to 500-year return periods (events with 50% to 0.2% Annual Exceedance Probability), and the flood that would result from the occurrence of the Timmins (Regional) Storm in the Consecon Lake and Creek watershed. In this watershed, the majority of the historical peak values were recorded in spring, suggesting that the largest floods could be produced by rain plus snowmelt events. The hydrologic model was calibrated using available limited hourly precipitation and flow data, with only a few low peaks observed during the summer/fall season and two major spring seasons. Snowmelt was not explicitly simulated due to limited availability of adequate data. Consecon Lake was

included in the model as a separate sub-catchment, and the flood routing that naturally occurs in the lake was not included in the hydrologic model. The model parameters were adjusted to generate simulation outputs that are a close match to historical flow records, at Allisonville. Based on the results, the model properly represented the spring flood conditions. The results also indicated that the 100-year (1% AEP) spring event produced larger floods than the Timmins Storm, and therefore, the 100-year (1% AEP) spring flood was adopted as the Regulatory flood, to be used for definition of the floodplain for the Consecon Creek Watershed. The results obtained from the 100-year (1% AEP) spring flood event will be used in developing the floodplain with the hydraulic model developed with the program HEC-RAS.

In general, the results obtained for the Regulatory Flood show that the flood would be contained within the banks of Consecon Creek, at all locations along Consecon Creek downstream of the Whitney Memorial Dam. There would be no overtopping of crossings over the creek throughout the study area, with the exception of the flow through the culverts under Hwy 33. In this area, the water level obtained with the HEC-RAS model (condition without the removed embankment at Whitney Dam) was El. 79.33 m, while the water level for lower Consecon Lake was El. 79.46 m. With either level (79.33 m or 79.46 m) the extent of the flooding would reach the backyards of some properties along Consecon Main Street and even one existing house. The water levels did not overtop Consecon Main Street.

The area between Main Street and Hwy 33 now has two buildings within the new floodplain line, and a small crossing of a driveway is shown as flooded.

Another area in which the floodline obtained in this study differs from the previous floodline is within Consecon. The floodline obtained in this study corresponds to lower water levels and less flooding. The results obtained in this study indicate that some properties, upstream of the Hwy 29 crossing, that were shown within the previous floodline would now be out of the floodline. There are, however, buildings upstream and downstream of the crossing that are adjacent to, and touched by, the new floodline. The flooding obtained in this study for the 100-year Flood (which is the Regulatory Flood) is consistent in that area with the findings of D.M. Wills (2021).

The results obtained in this study are consistent with the previous floodline in the areas around Consecon Lake. However, there is an area on the south side of upper Consecon Lake, just east of the causeway, in which the floodline obtained in this study extends farther inland than the previous one, and in doing so it would include one building in the floodplain. Since the lines are consistent elsewhere around the lake (and in some cases even reflect higher levels for the previous floodplain than with these new results) it seems that this is due to differences in the elevation data used for the two studies.

In summary there were approximately four buildings that were found to be adjacent to or within the floodplain within the study domain. There were no overtopped crossings except for the driveway from Consecon Main St over the ditch west of Hwy 33. Access by road to the two houses that share that driveway would be limited during the Regulatory Flood.

The complete reports and floodplain mapping can be found at: FHIMP Report - Additional Files

Jewell Engineering was retained by Quinte Conservation (QC) to establish updated regulatory floodplain mapping for the major lakes known as the upper lakes of Napanee River; this includes Potspoon Lake, White Lake, St. Andrew Lakes, Cole Lake, Thirty Island Lake, Thirteen Island Lake, Fourteen Island Lake, Little John Lake, Sigsworth Lake, Hambly Lake, Van Luven Lake, Howes Lake, and Verona Lake.

The Annual Exceedance Probability (AEP) Lake levels for both the rainfall and spring melt scenarios were modeled and presented. Further to the 1% AEP regulatory flood limits, the 10% AEP and 0.5% events were simulated for the snowmelt plus rain scenario. The 1% AEP plus climate change scenario was also simulated as an individual model run. The study concludes that the Napanee River Upper Lakes water levels are governed by the spring melt condition. For Reaches 2 (Cole Lake to Howes Lake) and 6 (White Lake to 13 Island Lake), their channel and wetland areas are governed by the rainfall only condition.

There are several prominent beaver dams throughout the study area. A model simulation was included to assess the potential impact of the beaver dams on the lake levels. The height of the beaver dams was based on LiDAR imagery and local survey data where available. A comparison of water levels for the 1% AEP snowmelt plus rain event with and without beaver dams is presented. The beaver dams provide an increase in storage volume prior to their intended outlet controls becoming utilized. As a result, there is some reduction in water levels in the lower reaches if the beaver dams were to maintain structural stability in a large runoff event. On the other hand, the beaver dams result in an increase the water levels at their respective upstream lake or wetland area.

An important observation was the water level measurement taken by Quinte Conservation on April 15 of 2014 at the Desert Lake Road bridge that connects Howes and Verona Lakes. This measurement occurred during a nearly 1% AEP peak flow at the Napanee Camden East gauge and provided excellent benchmark information to establish the tailwater condition and subsequent lake levels in the lower lakes (i.e. Hambly, Howes, Verona, Van Luven).

The sub-lakes and wetlands are the dominant characteristic among the river reaches between the thirteen main lakes of interest. The larger sub-lakes and wetlands were modeled using storage areas. Smaller sub-lakes and wetlands were modeled using 2D flow areas. A water level summary for the most prominent sub-lakes and wetlands is presented in Table 6-4. The names of each sub-lake and wetland in the table below correspond to the labels in the figures shown in Section 5.2 of this report.

Table 6-4: Comparison of Maximum Lake Flood Depths (m) Between 1981 and 2024 Output Results

| Lake | Starting Elevation (m) | 1% AEP Rainfall | | | 1% AEP Spring Melt | | |
|---|---|---|---|---|---|---|---|
| | | 1981 | 2024 | Diff. | 1981 | 2024 | Diff. |
| *Howes | 135.64 | 0.76 | 1.40 | 0.64 | 1.31 | 1.73 | 0.42 |
| *Van Luven | 136.20 | 0.76 | 1.01 | 0.25 | 1.31 | 1.35 | 0.04 |
| *Hambly | 135.64 | 0.76 | 1.35 | 0.59 | 1.31 | 1.66 | 0.35 |
| *Verona | 135.64 | 0.76 | 1.34 | 0.58 | 1.31 | 1.64 | 0.33 |
| Fourteen Island | 137.58 | 0.31 | 0.35 | 0.04 | 0.63 | 0.68 | 0.05 |
| Thirteen Island | 150.43 | 0.31 | 0.35 | 0.04 | 1.27 | 0.70 | (0.57) |
| Thirty Island | 153.80 | 0.22 | 1.10 | 0.88 | 0.76 | 1.40 | 0.64 |
| Potspoon | 175.92 | 0.16 | 0.22 | 0.06 | 0.48 | 0.31 | (0.17) |
| White | 167.99 | 0.12 | 0.16 | 0.04 | 0.28 | 0.36 | 0.08 |

A public information center (PIC) was held from 5:30pm to 7:00pm on February 6, 2024 at the Sydenham Public Library. The PIC included display boards for each of the draft floodplain maps, and a PowerPoint presentation was available. The PIC was hosted by Quinte Conservation staff along with the project engineers from Jewell Engineering. No major concerns were brought forward by the public and the project proceeded to finalization following the PIC.

The complete reports and floodplain mapping can be found at: FHIMP Report - Additional Files

## ON22-047 Selby Creek Floodplain Mapping

Aquafor Beech Limited (Aquafor) was retained by Quinte Conservation (QC) to establish updated regulatory floodplain mapping for key reaches along Selby Creek and its tributaries, through detailed hydrologic and hydraulic modelling, and analyses of any flood hazards. As part of the hydrologic component of the study, Aquafor developed a hydrologic model using the US Army Corps of Engineers HEC-HMS software (Ver. 4.11). Simulations were performed for the 2-year, 5-year, 10-year, 25-year, 50-year, 100-year (regulatory), and 200-year design storms, with the 200-year storm serving as a proxy for evaluating the regulatory storm under the effects of climate change.

Results from Aquafor's hydrologic model were compared, at two locations, against results from the 1981 Floodplain Mapping Study (at the most downstream junction) of the watershed and against the Master Drainage Plan (2011) (at Highway 401). The 100-year peak flows from Aquafor's model were similar to those predicted by the 1981 Floodplain Mapping Study and the 2011 Master Drainage Plan. In fact, the difference between the flows estimated by both studies was less than 5 m3/s at both the Highway 401 junction and at the watershed outlet.

A 1D HEC-RAS hydraulic model was developed comprising the main branch of Selby Creek from Airport Road to the Bay of Quinte, along with the downstream extents of three tributaries. The model was evaluated through a verification exercise and comparison with other studies. In total 48km of reaches, 659 cross-sections and 27 hydraulic structures were modelled. Following a review of the preliminary hydraulic results, a 2D HEC-RAS hydraulic model was also developed to model a spill around Airport Rd in Tyendinaga Mohawk Territory.

Pedestrian and vehicle access can be limited when a road crossing is overtopped and inundated. As per the Technical Guide – River and Stream System: Flooding Hazard Limit (OMNR, 2002), a road is impassible if the overtopping water depth is equal or greater than 0.3m. A road can be overtopped but only becomes impassable if this threshold is reached or exceeded. The product of the depth and velocity of the water on top of the roadway can also be a criteria that define an impassable road. 0.8m2/s is safety condition threshold used in this analysis as per appendix 6 of the Technical Guide – River and Stream System: Flooding Hazard Limit (OMNR, 2002). In order to define the road elevation at the crossing location, the final water surface profiles were reviewed and the lowest point elevation of the road (as defined in the existing HEC-RAS models) was selected to calculate the depth of water overtopping the road. The model identified 13/27 crossing structures as being overtopped in the 100-year flood. Of these 13 only 1 is considered to be impassable. Please refer to Table 11-1, 11-2, 11-3 and Appendix F of the Final Report for complete details.

A Public Information Centre (PIC) session was held on January 16th, 2024 to provide an overview of the project and methodology, and to present updated regulatory floodplain mapping. No formal comments were received.

The complete reports and floodplain mapping can be found at: FHIMP Report - Additional Files

## ON22-048 Salmon River Upper Lakes Flood Hazard mapping

KGS Group was retained by Quinte Conservation (QC) to update the regulatory floodplain for the Salmon River Upper Lakes Watershed, from Kennebec Lake to the outlet of Crotch Lake. The study includes collection of topographic data through site inspection and surveying, hydrologic assessments, hydraulic modeling and analyses, and mapping of the Regulatory Floodplain.

A draft version of the floodplain maps was presented at a Public Information Centre (February 14, 2024 – Kennebec Hall, Arden, Ontario) to discuss and receive feedback from the public, that was taken into consideration for the preparation of the final version of the floodplain maps. Aspects discussed in that PIC included: the role of the Upper Arden Dam in the flows that occur downstream; the occurrence of beaver dams at some locations; areas prone to flooding and historic water levels at specific locations, including the area around Horseshoe Lake, Crotch Lake and near the Cranberry Lake Rd Bridge; and the purpose of the project.

Following the discussions at the PIC, along with flood photos used to calibrate the model, the maps were updated with a new downstream boundary condition. The final floodplain maps were posted for public comment for 30 days starting on May 13th. During that time there were several questions from residents, the common questions being the purpose of the mapping, the inability to read the fine details on their property and how this will affect their ability to perform work on their property. All questions have been responded to and addressed.

Details of the hydrologic analyses carried out as part of KGS study 2024a. The study included hydrologic modeling and analysis using the program HEC-HMS to assess the magnitude of recurrent summer and spring flood events ranging from 2 to 500-year return periods (events with 50% to 0.2% AEP).

Several limitations were encountered while preparing a calibrated hydrologic model for this study. There are no hydrometric stations within the study watershed with measured flow data. Therefore, it was not possible to calibrate the model against observed flood events. To prepare a hydrologic model with reliable results to be used for floodplain mapping, the results obtained from a Regional Flood Frequency Analysis were used to verify and refine the model parameters selected to represent the characteristics of the various sub-catchments within the watershed.

The Regulatory Flood in the study area is the 100-year flood (1% AEP) as indicated in the "Technical Guide – River and Stream Systems: Flooding Hazard Limit" (MNRF, 2002). The results presented show that the peak flows generated in the spring (rain plus snowmelt) are greater than their summer counterparts. Therefore, the flood generated by the 100-year rain-plus-snowmelt event was selected as the regulatory flood event in the study area and will be used for the definition of the floodplain for the Salmon River and Upper Lakes watershed.

Two hydraulic models were adopted for the definition of the floodplain and the assessment of various flood events in the study area:

- An all-encompassing 2D model was prepared with HEC-RAS, including the Salmon River and lakes from Kennebec Lake to Crotch Lake and the Arden Creek and lakes from Big Clear Lake to the confluence with the Salmon River. The results of this model were adopted for the entire domain of the Salmon River and for Arden Creek downstream of the Lower Arden Dam, in Arden.
- A hydrodynamic 1D model was prepared with HEC-RAS for Big Clear Lake and for Arden Creek from Big Clear Lake to Arden Lake. The results of this model were adopted for the domain from Arden Lake to upstream of the Lower Arden Dam, in Arden.

The previous regulatory floodline was defined for Kennebec Lake and Big Clear Lake and did not include the channels that interconnect the lakes nor the Arden Lake, Buck Lake, Bull Lake, Horseshoe Lake, and Crotch Lake. The updated floodline is similar to the previous floodline with some exceptions at Kennebec Lake in which the updated floodline showed areas with more inundation along the north and east shoreline; the previous floodline showed an inundation area along the Big Clear Lake's south shoreline that was not flooded in the updated floodline.

There are areas around Kennebec Lake, Buck Lake, Bull Lake, and Crotch Lake, and along Arden Creek that the analysis showed as flooded by the Regulatory Flood (100-year or 1% AEP flood). Based on the available imagery, there were close to 20 buildings identified within the floodplain, as well as some road sections and possibly one bridge. There were also some buildings that would be surrounded by flooding, for which access by road would be limited.

The major local rural roads that were inundated are: Arden Rd. near HWY 7, Elm Tree Rd. in Arden, Cranberry Lake Rd. near Crotch Lake.

There are a few road and trail segments that were found to be within the floodplain: Betris Rd. near Kennebec Lake, Turner Way near Kennebec Lake, Morrison Lane near Kennebec Lake, Kay Ln. near Kennebec Lake,

Watersedge Ln near Kennebec Lake, Trans-Canada Trail near Arden Lake, Queen St near Arden Lake, Gendron Rd. near Buck Lake, Hummingbird Ln near Bull Lake, Lake Rd. near Bull Lake, Gardiners Rd. near Bull Lake, Cranberry Lake Rd. near Horseshoe Lake, Clancy Ln. near Horseshoe Lake, Horseshoe Ln. near Horseshoe Lake, Finch Ln. near Horseshoe Lake, Winding Trail near Horseshoe Lake, Big Bay Dr. near Crotch Lake

There were no bridges shown as overtopped for the Regulatory Flood. The bridge on Cranberry Lake Rd. would be close to overtopping.
The complete reports and floodplain mapping can be found at: FHIMP Report - Additional Files

## Budget and Schedule

The projects received 50% funding from the Flood Hazard Identification and Mapping Program and 50% funding from the benefiting municipalities. All of the projects were completed under budget. The project savings were related to some proposals that came in under budget, contingency funding that was not used, and completing technical review of the project findings in-house.

Draft deliverables were received by the March 1, 2024 deadline. This did not allow for technical and administrative reviews by staff ahead of the deadline. Review of the deliverables found that some of the original submissions were not completed to the standard necessary to support Quinte Conservation's mandatory programs and services. This lead to some project delays. In the case of the Upper Salmon River Lakes, an additional online public consultation was held due to a change in the mapping since the first consultation.

## Next Steps

Following Executive Committee approval, Quinte Conservation will share the final deliverables with municipalities for their use and adoption for municipal planning purposes. Quinte Conservation will also begin using the findings for our mandatory programs and services and share the information with the public through our online Property Regulation Map.

# WATERSHED MONITORING PROGRAMS 2023

DATE: JUNE/20/2024

**DEPARTMENT: WATER RESOURCES , MANAGER/TEAMLEAD: MARY GUNNING**

**PREPARED BY:**

**MARY GUNNING, AQUATIC SCIENCE COORDINATOR**

**EVAN BRITTON, ENVIRONMENTAL MONITORING LEAD**

**KAITLIN MAURER, ENVIRONMENTAL TECHNICIAN**

## RECOMMENDED MOTION

THAT, the Watershed Monitoring Programs 2023 be received.

## RELATIONSHIP TO STRENGTHENING OUR NATURAL ECOSYSTEMS: A CONTINUING JOURNEY, THE QUINTE CONSERVATION 2021 – 2030 STRATEGIC PLAN

This report supports the following pillar set forth in the Strategic Plan*:* **All Pillars**

The attached report has a section regarding our Strategic Plan and how the monitoring supports parts of all four following pillars set forth in the Strategic Plan: Accelerating Advocacy, Advancing Environmental Science, Boosting Well-Being, and Strengthening Brand Recognition.

| ***Accelerating Advocacy*** | ***Advancing Environmental Science*** | ***Boosting Well-Being*** | ***Strengthening Brand Recognition*** |
|---|---|---|---|

## BACKGROUND INFORMATION

Quinte Conservation is one of 36 conservation authorities in Ontario mandated to undertake watershed-based programs to protect people and property. Quinte Conservation monitoring department is involved with several monitoring programs that use scientific data to track changes in our watershed and to assess ecological health. The programs included in this report fall under Category 1 – Mandatory Services or Category 3 – Special Projects.

Quinte Conservation annually monitors water quality and biological conditions throughout their watersheds. To effectively manage water resources, it is important to understand how they function. Monitoring can reveal the health of our waterbodies over time and provide useful information for management decisions. The data collected annually helps with Quinte Conservation's shared goal to maintain the healthy co-existence of

the community, environment, and economy. As per the 2030 Strategic Plan in advancing environmental science, a goal is to audit existing and new data to guide monitoring and stewardship efforts.

## PROJECT DESCRIPTION

This report details the 2023 monitoring departments work on the following annual programs; Ontario Benthos Biomonitoring Network (OBBN), Provincial Groundwater Monitoring Network (PGMN), Integrated Water-Climate Change Monitoring Station, Provincial Water Quality Monitoring Network (PWQMN), and Baseflow Monitoring. Each of these programs monitors our watersheds surface or groundwater health through biological, chemical, or physical parameters.

Conservation Authorities monitor the health of the natural resources in their watersheds because it helps provide a better understanding of local environmental issues, focuses actions where they are needed and tracks progress over time. Although Quinte Conservation participates in multiple monitoring programs and monitoring partnerships, the attached report concentrates on the provincial watershed monitoring activities. Besides Watershed Report Cards, Quinte Conservation, prior to 2021 has not provided annual updates on the provincial programs in one document. Quinte Conservation's goal was to develop an annual report that provides updates on our watershed conditions through the provincial watershed monitoring programs. The objective is to present the 2023 data following the template created in 2021. This is a step towards further reporting and data management in the future.

## RATIONALE

Water quality and biological conditions of a waterbody are directly linked to the land use of the site and/or upstream of the monitoring station. By monitoring environmental conditions, we can learn the trends over time and evaluate our watershed policies and programs. Reporting annually will ensure that the data is available to municipal and watershed decision makers, which benefits the environment, wildlife, economy, recreation, and human health.

Please see the attached report titled "Watershed Monitoring Programs 2023", and corresponding appendices at : WSM Report - Additional Files

## FINANCIAL DETAILS

Monitoring programs are part of Quinte Conservation's annual budget.

## PARTNER GROUPS/CONSULTANTS

Ontario Ministry of the Environment, Conservation and Parks

Ministry of Natural Resources

Water Information System KISTERS (WISKI)

Quinte CONSERVATION

# Watershed Monitoring Programs 2023


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# Preamble

Section 29 of the *Ontario Water Resources Act* provides that, "For the purposes of this Act, the Minister [of the Environment, Conservation and Parks] has the supervision of all surface and ground waters in Ontario". The Minister may also, "conduct studies of the quality of the natural environment, meteorological studies and monitoring programs" pursuant to clause 4(1)(c) of the *Environmental Protection Act*. The Minister requires monitoring data for providing policy development, standards setting, provincial decision making, and the implementation of water management activities / programs.

Conservation authorities are governed by the *Conservation Authorities Act* which is administered by the Ministry of Natural Resources (MNR). Quinte Conservation is one of the 36 conservation authorities mandated by the Ontario government to undertake watershed-based programs to protect people and property from flooding, and other natural hazards, and to conserve natural resources for economic, social, and environmental benefits.

Bill 108, the *More Homes, More Choice Act*, 2019 introduced major amendments to the *Conservation Authorities Act.* The province is conducting a two-phase consultation process on the proposed regulations to support the *Conservation Authorities Act* (Conservation Ontario, 2022). Consultation on the first phase regulatory proposals took place from May 31 to June 27, 2021. The first phase of amendments to the regulations further defined the core mandate of conservation authorities and the programs and services they provide and improve the governance, oversight, and accountability of conservation authorities while respecting taxpayer dollars (Environmental Registry of Ontario, 2021). The agreements and memorandums of understanding as part of the second phase were due by January 1, 2024.

The three categories for programs and services under the *Conservation Authorities Act* are the following:

> Category 1: Mandatory programs and services (*defined in regulation; where municipal levy could be used without any agreement*)
>
> Category 2: Municipal programs and services provided at the request of a municipality (*with municipal funding through an MOU/agreement*)
>
> Category 3: Other programs and services an authority determines are advisable (*use of municipal levy requires an MOU/agreement with participating municipalities*)

Quinte Conservation's provincial monitoring programs that are further explained in detail through this report are grouped into the following categories:

| Category | Program |
|---|---|
| Category 1 – Mandatory + Enabling Services | Provincial Water Quality Monitoring Program (PWQMN) |
| Category 1 – Mandatory + Enabling Services | Provincial Groundwater Monitoring Program (PGMN) |
| Category 1 – Mandatory + Enabling Services | Integrated Water and Climate Stations |
| Category 3 – Special Projects | Ontario Benthos Biomonitoring Network (OBBN) |
| Category 3 – Special Projects | Baseflow Surface Water Quality Monitoring |
| Category 3 – Mandatory + Enabling Services | Information Technology Management / GIS |

Historically the data gathered from the various monitoring programs could be used, in part, to support the review of natural heritage features for *Planning Act* applications as well as ecological features and functions related to wetlands to support decision making for permits issued under Section 28 of the *Conservation Authorities Act*. Responsibility for natural heritage review was completed through individual Memorandum of Understanding's with municipal partners and the protection of wetlands through the *Conservation Authorities Act* was established through the test of "conservation of land".

In late 2022 the *CAA* was amended through the More Homes Built Faster Act (Bill 23) and the Prescribed Acts Regulation (O.Reg. 596/22) and the responsibility for commenting on and reviewing natural heritage components was stripped from Conservation Authorities. This responsibility was delegated to Municipalities, many of whom were unprepared and unstaffed for this new task.

Subsequently, in April 2024 additional amendments were made to the *Conservation Authorities Act* which resulted in the consolidation of all 36 individual regulations into a single Province wide regulation (41/24) and updated sections of the Act related to permissions for development. While wetlands remain a feature regulated by Conservation Authorities, any references to conservation of land were removed from the legislation. This has resulted in wetlands being regulated as a natural hazard, similar to flooding and erosion, and ignores any ecological functions and benefits provided by wetlands. Any data on species composition, vegetation communities, invasive species, species at risk and any other ecological aspect can no longer be used to support decisions to protect wetlands.

The monitoring data historically used by the planning and regulation programs is available to Municipalities and consultants to ensure they can complete a fulsome review of natural heritage features and ecological functions.

# Strategic Plan

Quinte Conservation recently approved a 10-year Strategic Plan, following months of hard work with consultants from Pickard and Laws Consulting Group Inc., and in collaboration with watershed municipalities and stakeholder groups. The Plan's purpose is to create a strategic direction that aligns with Quinte Conservation's core mandate and operating principles to drive the organization forward in proactively responding to changing environments and continuing to improve the services provided under the core mandate.

One of the goals included in this report is to better utilize monitoring data in relation to achieving Quinte's vision of the 2023 to 2030 Strategic Plan. Part of Quinte Conservation's role is to monitor and report on environmental changes that pose hazards for people and properties within the Quinte Region. Mitigation strategies and projects are always in progress with various partners. Monitoring programs can support watershed stewardship, management, and planning decisions by identifying degrading areas, restoration opportunities, and areas that need protection.

As identified in the 2023 to 2030 Strategic Plan, Quinte's vision for 2030, "is to advance watershed knowledge and collective actions to strengthen our natural ecosystems". Monitoring plays a critical component in advancing our watershed knowledge and strengthen our natural ecosystems. With regards to the Strategic Plan, monitoring plays a large role in achieving the goals of all four drivers associated with achieving our vision:

1. **Accelerating Advocacy**

| Strategic Goals | Watershed Monitoring Connection |
|---|---|
| **Create a functioning foundation** | - |
| **Actively reach out to all municipalities to co-establish needs and priorities** | The knowledge gained from watershed monitoring can provide a service to our municipalities by identifying areas undergoing degradation and/or identify areas in need of restoration/ protection. |
| **Establish mutually supportive relationships with all local NGOs and Associations** | This is currently ongoing through various monitoring partnerships. As the monitoring program continues and expands, more relationships will become established |
| **Initiate more collaborations with industry and academics** | The knowledge gained from watershed monitoring can provide a service to our municipalities by identifying areas undergoing degradation and/or identify areas in need of restoration/ protection. Monitoring accelerates/advocates the successes of our existing programs leading to partnerships with respective projects and objectives |

2. **Boosting Well-Being**

| Strategic Goals | Watershed Monitoring Connection |
|---|---|
| **Upgrade selected conservation areas** | - |
| **Form partnerships with private landowners to expand ecological awareness and skills** | The monitoring department performs landowner contact to access permission to monitor. In some cases, data is provided to landowners regarding the health of the neighboring monitoring site. Further opportunities exist with potential citizen scientist projects. |
| **Create revenue-generating online courses to educate the public and attract potential partners** | -Utilize online training courses to attract citizen scientists to in turn collect data that would benefit the QC monitoring programs |
| **Develop a digital log of ongoing staff activities to educate local communities about the watershed** | The monitoring staff activities will provide critical information to educate the local communities about the watershed. |

3. **Advancing Environmental Science**

| Strategic Goals | Watershed Monitoring Connection |
|---|---|
| **Audit existing and new data to guide monitoring and stewardship efforts** | This report is part of a "steppingstone" in achieving this goal. QC staff has started to analyze some current monitoring sites to audit the monitoring program. |
| **Build a lab and environmental education center to model conservation and ecological sustainability** | A lab would be beneficial to the monitoring department to process samples and house equipment. QC owns various equipment that cannot be utilized as our current spaces are inadequate for our needs. A laboratory might be included in the second phase of new storage building depending on funding. |
| **Complete Shoreline management Plan and update floodplain mapping** | Data from monitoring programs can support management plans and recommendations . |
| **Build, leverage and standardize data from citizen scientists to better understand watershed conditions in near real-time** | The need to establish citizen scientist programs continues and the monitoring staff have the resources to provide technical support for these types of programs. |

4. **Strengthening Brand Recognition**

| Strategic Goals | Watershed Monitoring Connection |
|---|---|
| **Showcase our work in sustaining and improving the health and ecology of the watersheds** | Monitoring data can provide information to showcase our work in sustaining and improving the health and ecology of the watersheds by showing water quality or biota improvements. |
| **Establish an online database of resources for a variety of stakeholders** | The provincial monitoring populates public provincial databases available to stakeholders. |
| **Promote green practices in association with community groups and partners** | Monitoring provides evidence to support green practices in the community. |
| **Improve messaging with clear and 'fresh' storytelling on the website** | Having data which supports stories provides depth, credibility, and trust. |

In addition to the goals listed above, Quinte Conservation's monitoring plays a vital role in helping with Climate Change, which is one of the five major hurdles to overcome through our 2021 to 2030 Strategic Plan. Our monitoring provides a check and balance for all departments to sense if our initiatives are having a positive impact. Without monitoring programs, there is no baseline to track changes and trends. Fundamentally, the Strategic Plan vision, "to advance watershed knowledge and collective actions to strengthen our natural ecosystems", cannot be validated without understanding the successes or failures through monitoring watershed conditions.

# Background

Over time, alterations of land uses (i.e., urban growth, agricultural practices, population increase, etc.), along with environmental changes, and impacts from climate change have had numerous effects on the watersheds in Ontario. With these changes comes immense responsibility for the conservation of environmental and natural resources. Advances in water quality have become a primary focus for monitoring the supply of water and the quality of the water within each of the watershed boundaries. Constant effort is required to reduce the impacts of flooding and provide protection to lives and properties throughout specific areas and the effects of drought on the watersheds are also under close observation to be monitored for change.

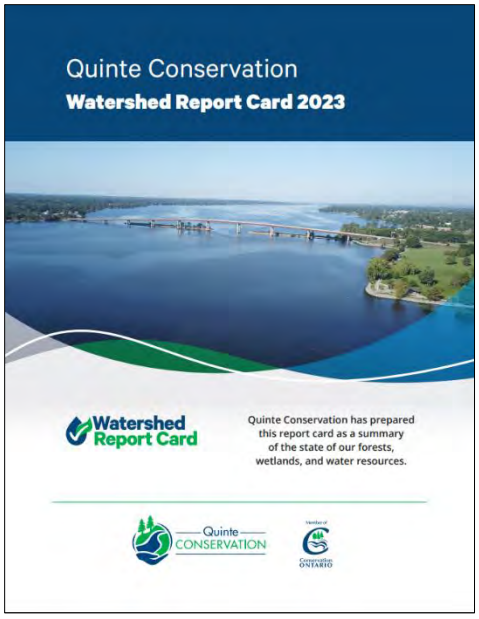



*Figure 1: Quinte Conservation Watershed Report Card 2023*

In 1946 awareness of these extensive environmental tribulations led to the passage of the *Conservation Authorities Act*. The Act allowed for the organization of a new type of agency, watershed-based conservation authorities, which are mandated to ensure the conservation, restoration and responsible management of Ontario's water, land

and natural habitats through programs that balance human, environmental and economic needs. A partnership approach is used in the process of watershed management. The purpose is to plan and manage water resources accordingly and use adaptive environmental management approaches to be efficient for the development of updated management strategies. Quinte Conservation is one of the 36 conservation authorities mandated by the Ontario government to undertake watershed-based programs to protect people and property from flooding, and other natural hazards, and to conserve natural resources for economic, social, and environmental benefits.

Quinte Conservation is involved in several monitoring programs using scientific data to understand the changes affecting our natural areas and watercourses. The information collected is used to assess the ecological health of the watershed, track trends, and alert us to potential issues. The information gathered from these programs is vital to monitor the conditions throughout Quinte Conservation watersheds.

The following programs are also critical to producing a Watershed Report Card, which is a summary on the state of the forests, surface water, and groundwater resources within the watershed.

Conservation Authorities across Ontario develop the report cards to ensure consistent reporting across the province and to provide watershed residents with information on how to protect, enhance, and improve the precious resources that surround us. Every 5 years, Ontario's Conservation Authorities report on the state of their watershed and in 2023, Quinte Conservation has released Watershed Report Card which uses data collected from 2017-2021 to summarize the state of our forests, wetlands, and water resources within the Quinte Watershed. The 2017-2021 Watershed Report Card is found in Appendix 1. Overall, the Quinte Watershed scored considerably high, with grades ranging from good to excellent and the programs used to produce the scores will be further discussed in this report. The monitoring performed by Quinte Conservation staff provides valuable information about the health of our watershed and the natural resources that watershed residents rely on every day. By monitoring these conditions, we can help improve our resources, prevent them from getting worse, and track changes over time.

# Ontario Benthos Biomonitoring Network – Biological Monitoring

*Figure 2: Photo of benthic macroinvertebrates*

The Ontario Benthos Biomonitoring Network (OBBN), designed and managed by MECP, is a provincial network used to monitor the quality of the watersheds. This is an expansive network that has been designed for a long-term rapid bioassessment of wetlands, streams, and lakes. The OBBN is a screening tool, which uses "water bugs" known as benthic (bottom-dwelling) macroinvertebrate organisms as indicators of water health. These bottom-dwellers can be seen with the naked eye (macro) and are without backbones (invertebrates). They are common inhabitants of lakes and streams and are key organisms in the process of moving energy through the food webs. These organisms are inactive with limited mobility and are long-lived; they are also sensitive to environmental impacts and react to change in water quality. The community configuration and abundance will reflect responses to various stressors in a relatively short exposure period. Certain species of macrointervebrates are more sensitive to environmental degradation than others. Through the food chain, these organisms are directly linked to fish and a change in their community can act as an early indicator of potential adjustments in the fish communities. Therefore, their community structures are significant for determining ecological health of an aquatic ecosystem and provide a good representation of environmental impacts. A river that supports a rich variety of benthic macroinvertebrate species is generally one that is in good health.

Quinte Conservation, along with other conservation authorities and organizations province wide, are involved with the OBBN and the collection of benthic macroinvertebrates to evaluate water quality within each of the watershed boundaries. The rapid bioassessment protocols have been developed to assess the biological health of the macroinvertebrate communities of streams and determine which sites are healthy from those sites where further investigation may be necessary.

The presence of different types of benthic macroinvertebrates in Quinte Conservation's watershed can tell us a lot about its health. This research helps validate other scientific findings such as water sampling. However, unlike a water quality sample that only represents a snap shot of the water conditions during the specific time the sample was taken, benthic macroinvertebrates are exposed to the water conditions as a part of their lifecycle and can represent a long-term indication of the water quality conditions.

## Sampling and Methodologies

Methodologies follow the Ontario Benthos Biomonitoring Network - Protocol Manual (C. Jones, K.M Somers, B. Craig, T.B Reynoldson, 2007). Quinte Conservation uses OBBN methodologies to assess the watercourses within the watersheds by performing the 'kick and sweep' method described within the protocol. For further information regarding procedures, please reference the OBBN protocol. In

addition to benthic macroinvertebrate collections and identifications, physical and chemical data are recorded at the site including riparian vegetation, water chemistry readings using a multiparameter YSI sonde (water temperature, dissolved oxygen, pH, and turbidity), collection areas, organic matter, macrophytes, algae and substrate information. The overall results are used to determine the water quality of the site sampled.

Quinte Conservation has a total of 49 OBBN sites located throughout the watersheds as displayed on Map 1. The Moira River watershed has 24 sites, the Prince Edward County watershed has 12 sites, and the Napanee Region watershed has 13 sites. Appendix 2.1 lists the dates that the sites were sampled. In 2023, Quinte Conservation sampled 48 sites throughout various streams of the watershed. The remaining site was not sampled as site conditions were not suitable for sampling as per the protocol (i.e., high flow). By monitoring these sites long-term, the condition of the stream and/or watershed can be observed for dramatic changes such as degradation or improvement in the water quality.

## Timing of Sampling

Samples collected from the same body of water at different times of the year will show a significant difference in the stream assessment. To eradicate this issue of seasonal difference, sampling should be performed at the same time of year. Sampling the same time every year allows for a trend analysis as environmental conditions, such as weather and flows are more comparable. Normally winter sampling conditions are difficult and unpleasant. Sampling during the spring and fall can be challenging due to low or high levels of water, whereas conditions during the summer may be characterized by high water temperatures, low dissolved oxygen concentrates and minimal water flow. To reduce the effects of the difference in seasons, the sampling should be completed in the early spring or late fall. Though most conservation authorities perform sampling in the spring, some also perform sampling in both the spring and fall. Quinte Conservation performs sampling in the spring and tries to sample the sites in the same order each year.

## Identifications

The benthic macroinvertebrate samples collected in the field are brought back to the laboratory (or office) to be processed. Processing of the samples includes the sorting, identification, enumeration, and preservation of the invertebrates in accordance with the OBBN protocol. Species identifications are performed to the family-level with the aid of a 100-x dissecting microscope. The list of species captured and identified in 2023 is included in Appendix 3.1. For the 2023 sampling year 15,755 benthic macroinvertebrates were identified by Quinte Conservation staff.

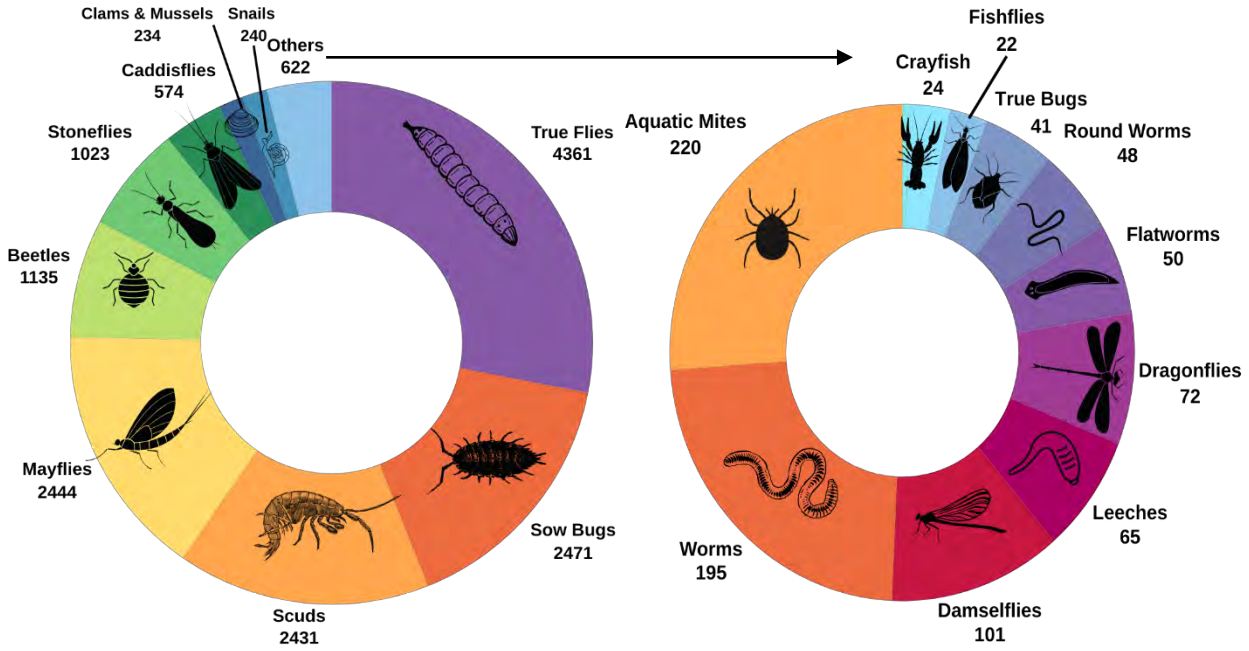
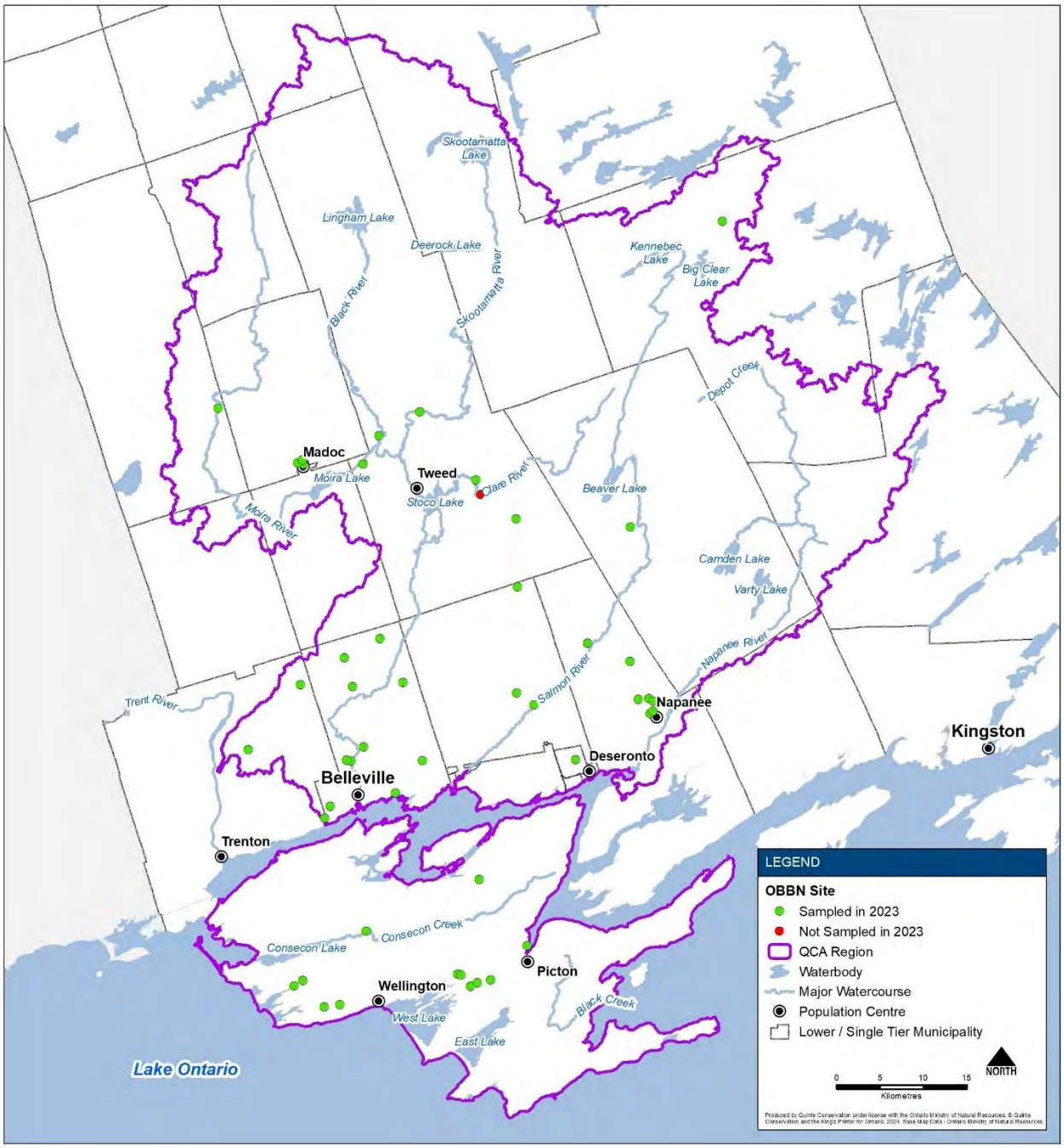



*Figure 3: 2023 OBBN benthic macroinvertebrates from Quinte Conservation sites sorted by taxonomic order. The chart on the right expands on the 'other' category from the chart on the left*




*Map 1: OBBN locations sampled in 2023*

## Hilsenhoff Biotic Index

Biotic indices are used as a classification system to evaluate environmental conditions based on the biota occupying the environment. For OBBN, the biotic index commonly used is the Hilsenhoff Biotic Index (HBI) to evaluate the stream conditions. The index estimates the overall tolerance of the community in a sampled area. The tolerance levels used are largely based on the response to organic pollution, with sensitive species having low scores (0-5) and tolerant species having high scores (5-10).

The organisms that are most sensitive to low concentrations of dissolved oxygen have lower tolerance values than organisms with greater tolerance values. Using the number of benthic macroinvertebrate individuals in each family, the tolerance value for each family and the number of individuals in a sample, the biotic index can be calculated. The resulting score will characterize the sampling site conditions. Table 1 displays the evaluation of stream conditions using the HBI scores. The calculation is as follows:

$$\mathbf{HBI} = \sum x_i t_i / n$$

$x_i$ = number of individuals in each family
$t_i$ = tolerance value for each family
$n$ = number individuals in the sample

*Table 1: Evaluation of Stream Condition using the Family Biotic Index*

| Score | Grade | Water Quality | Degree of Organic Pollution |
|---|---|---|---|
| 0.00-3.5 | A | excellent | no apparent organic pollution |
| 3.51-4.5 | B | very good | possible slight organic pollution |
| 4.51-5.50 | C | good | some organic pollution |
| 5.51-6.50 | D | fair | fairly significant organic pollution |
| 6.51-7.50 | F | fairly poor | significant organic pollution |
| 7.51-8.50 | F | poor | very significant organic pollution |
| 8.51-10.00 | F | very poor | severe organic pollution |

## Results and Discussion

On average the Napanee River Region, and Prince Edward County watersheds scored an average grade of "D", which is classified as fair water quality with *fairly significant organic pollution*. The Moira River watershed had an average grade of "C", which is classified as good water quality with *some organic pollution.* In reference to the HBI, the most common organic pollution is caused by oxygen-demanding wastes such as domestic sewage, wood fiber from pulp and paper mills, effluent from food processing plants and run off from agricultural areas. If natural systems are overloaded by large influences of organic matter, severe oxygen depletion can result in the loss of desirable aquatic life and may produce an anaerobic system (Zimmerman, M.C., 1993). The site location in the Quinte watershed with the highest score of an "A" for excellent water quality with *no apparent organic pollution* was CHC05 Chrysal Creek in the Moira River watershed. The site location with the lowest score was in the Napanee River Region, SEC09 Selby Creek with a score of "F" for very poor water quality with *very significant organic pollution.* Table 2 displays the average scores for each watershed. Table 3, 4 and 5 summarize the overall HBI results for each watershed.

*Table 2: The average HBI scores per watershed*

| Watershed | Average Score | Average Grade |
|---|---|---|
| Moira River Watershed | 4.713 | C |
| Napanee River Watershed | 5.899 | D |
| Prince Edward County | 6.071 | D |

*Table 3: Moira River Watershed HBI Scores*

| Moira River Watershed | | | | |
|---|---|---|---|---|
| Site | Waterbody | Watershed | Total Score | Grade |
| CHC05 | Chrysal | MRW | 2.494 | A |
| PKC10 | Parks | MRW | 3.232 | A |
| PKC01 | Parks | MRW | 3.684 | B |
| GOC03 | Goose | MRW | 3.734 | B |
| NTC02 | Number Ten | MRW | 3.772 | B |
| TMR01 | Moira | MRW | 3.812 | B |
| BKR01 | Black | MRW | 3.993 | B |
| POC02 | Potter | MRW | 4.086 | B |
| BEC01 | Bell | MRW | 4.277 | B |
| MOR08 | Moira River | MRW | 4.561 | C |
| SKR03 | Skootamtta | MRW | 4.733 | C |
| NBC01 | Norbelle | MRW | 4.867 | C |
| MOR12 | Moira Trib | MRW | 4.891 | C |
| DRC01 | Deer | MRW | 5.120 | C |
| CLR03 | Claire | MRW | 5.310 | C |
| UNC03 | Unknown | MRW | 5.399 | C |
| MDC00 | Madoc | MRW | 5.404 | C |
| POC01 | Potter | MRW | 5.408 | C |
| BLC08 | Blessington | MRW | 5.610 | D |
| CHC01 | Chrysal | MRW | 5.863 | D |
| NBC02 | Norbelle | MRW | 5.948 | D |
| PAC06 | Palliser | MRW | 6.097 | D |
| DRC04 | Deer | MRW | 6.099 | D |

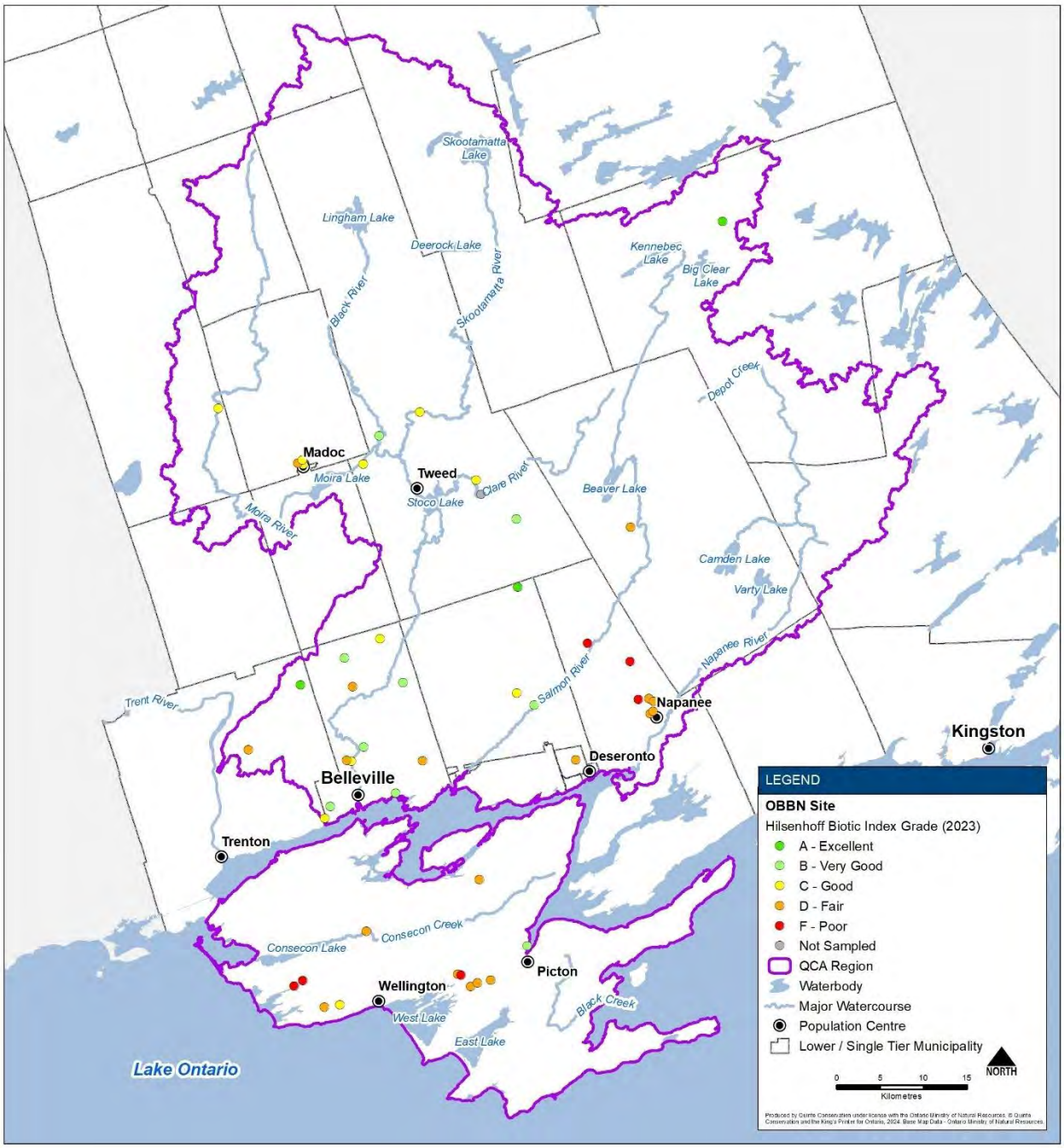
*Table 4: Napanee River Watershed HBI Scores*

| Napanee River Watershed | | | | |
|---|---|---|---|---|
| Site | Waterbody | Watershed | Total Score | Grade |
| CRC01 | Crooked | NRW | 3.444 | A |
| SMR03 | Salmon | NRW | 4.006 | B |
| SMR05 | Salmon | NRW | 4.631 | C |
| FIC02 | Fisher | NRW | 5.124 | C |
| SEC05 | Sucker | NRW | 6.028 | D |
| SEC08 | Sucker | NRW | 6.079 | D |
| PNC01 | Pennels | NRW | 6.255 | D |
| SEC01 | Sucker | NRW | 6.283 | D |
| SEC04 | Sucker | NRW | 6.454 | D |
| SEC07 | Sucker | NRW | 6.488 | D |
| OTC01 | Otter | NRW | 7.077 | F |
| SEC15 | Sucker | NRW | 7.092 | F |
| SEC09 | Selby | NRW | 7.731 | F |

*Table 5: Napanee River Watershed HBI Scores*

| Prince Edward County | | | | |
|---|---|---|---|---|
| Site | Waterbody | Watershed | Total Score | Grade |
| HPC01 | Hospital | PERW | 3.853 | B |
| HBC02 | Hubbs | PERW | 4.691 | C |
| DVC03 | Demorestville | PERW | 5.839 | D |
| WAR02 | Waring | PERW | 5.852 | D |
| WAR04 | Waring | PERW | 5.854 | D |
| WAR01 | Waring | PERW | 6.185 | D |
| BLCP03 | Bloomfield | PERW | 6.286 | D |
| CSC02 | Consecon | PERW | 6.318 | D |
| HBC01 | Hubbs | PERW | 6.423 | D |
| HLC02 | Hillier | PERW | 6.640 | F |
| BLCP06 | Bloomfield | PERW | 7.369 | F |
| HLC01 | Hillier | PERW | 7.541 | F |

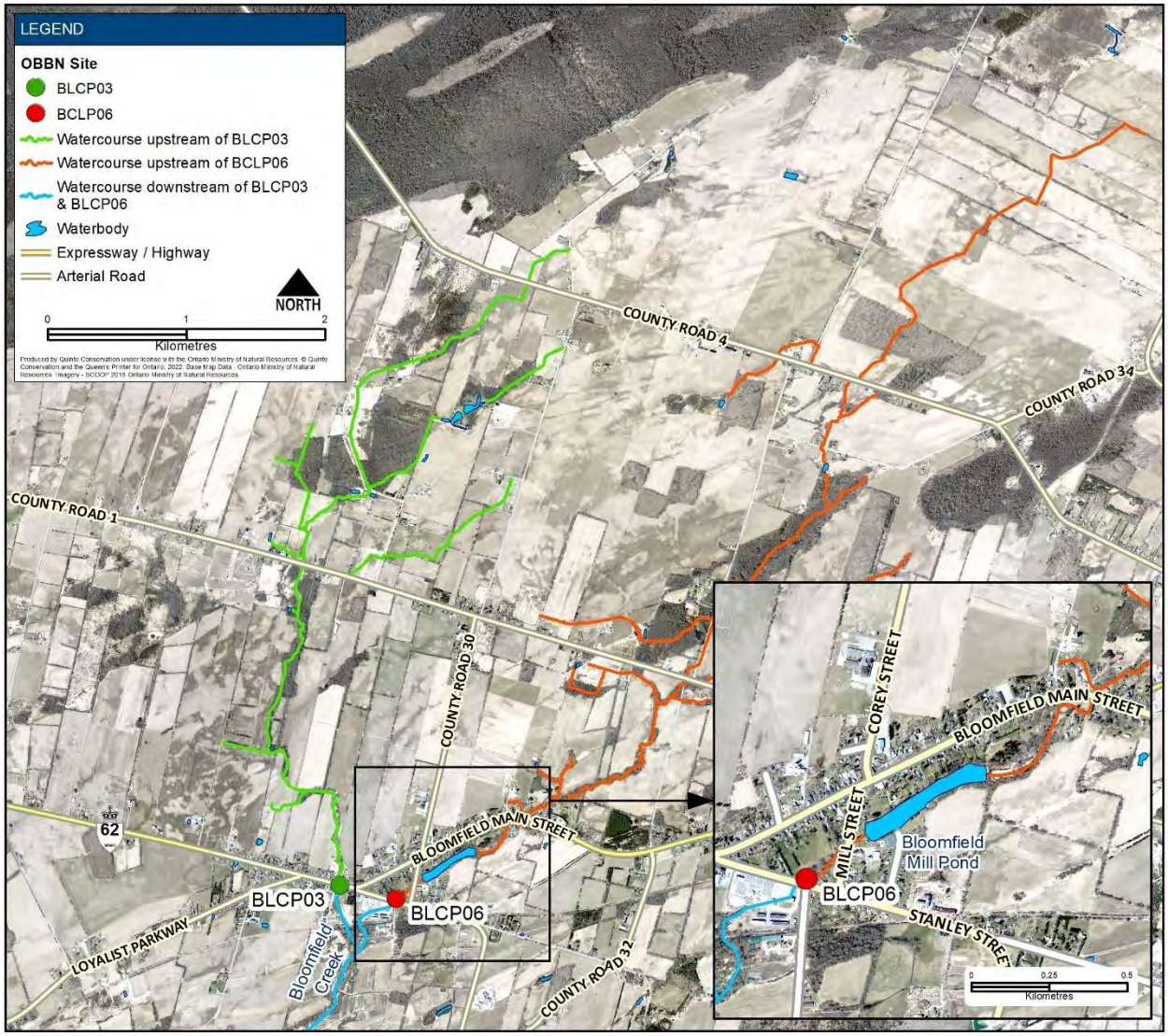
Map 2 displays the 2023 grades calculated using HBI. All the Moira River watershed sites scored a D or higher while three sites each within the Napanee and Prince Edward watersheds had a score of F.




*Map 2: OBBN Site and Associated 2023 HBI Grade*

In the 2021 Watershed Monitoring Program report there was an inquiry into the Bloomfield Creek sites because although they are part of the same sub-watershed, the sites have different upstream influences as illustrated by Map 3. In 2022 one of the sites wasn't sampled but in 2023 they both were, allowing for another score comparison. Once again BLCP06 (7.369, "F" *significant organic* pollution) has a poorer

grade than BLCP03 (6.286, “D” *fairly significant organic pollution*). In 2021 Quinte Conservation staff noted that the poorer graded BLCP06 site is influenced by being downstream of the Bloomfield Mill Pond and an urban and residential area, serviced by individual sewage systems.




*Map 3: Bloomfield Creek OBBN Sites*

The HBI score discrepancy within a sub watershed is also relevant for Chrysal Creek where site CHC05 had the highest score across all watersheds (2.494, “A” *no apparent organic pollution*) but site CHC01 had a significantly lower score (5.863, “D” *fairly significant organic pollution*). Similar to the Bloomfield Creek sub watershed, the Chrysal Creek site with a lower score in located further downstream, past residential areas and two major roadways.

Figures 4, 5 and 6 compare the trends of the past five years (2018-2023) of HBI scores at each OBBN site per watershed. It is important to note there is a one-year data gap in 2020 due to restrictions related to the Covid-19 pandemic.

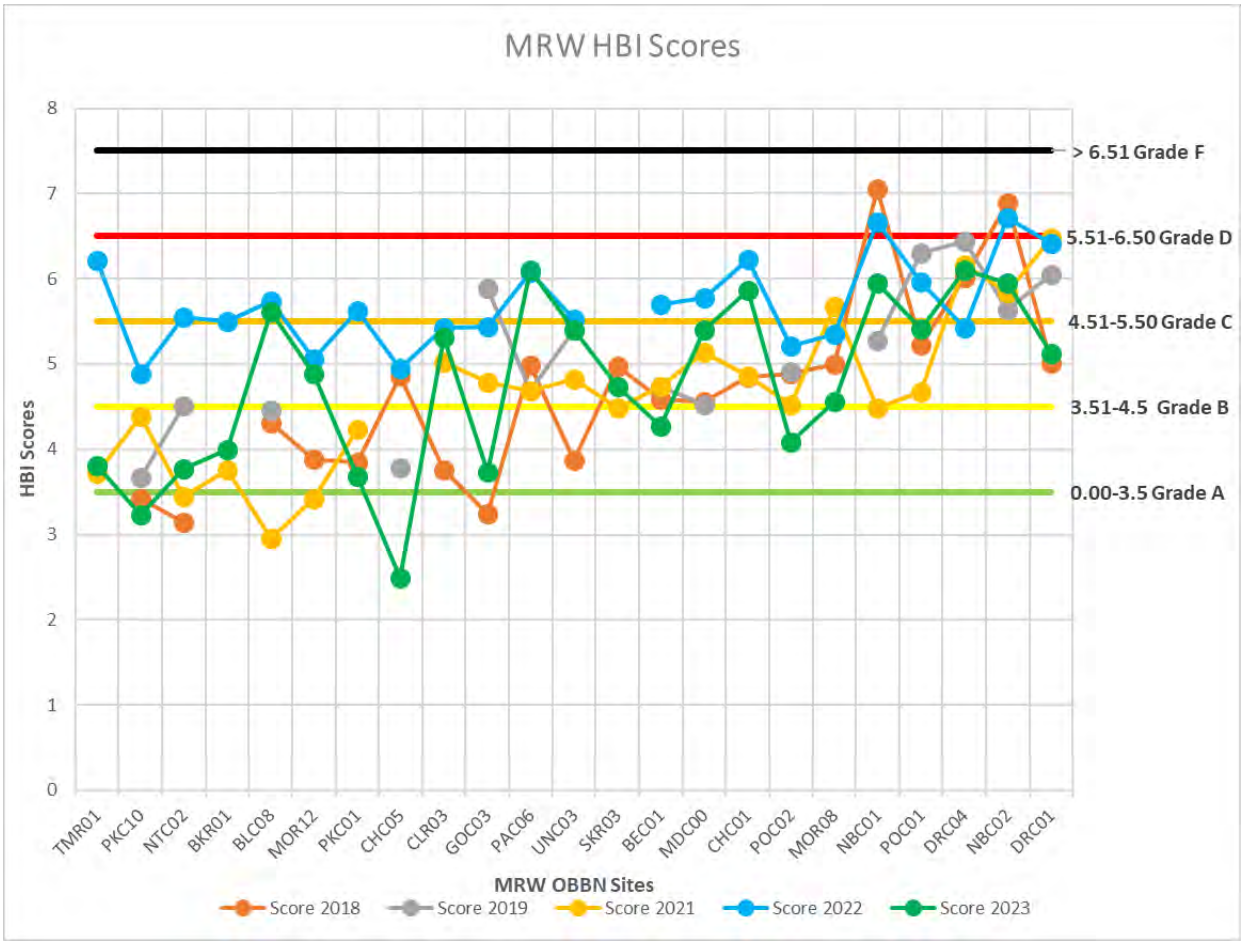



*Figure 4: MRW HBI Scores 2018-2023*

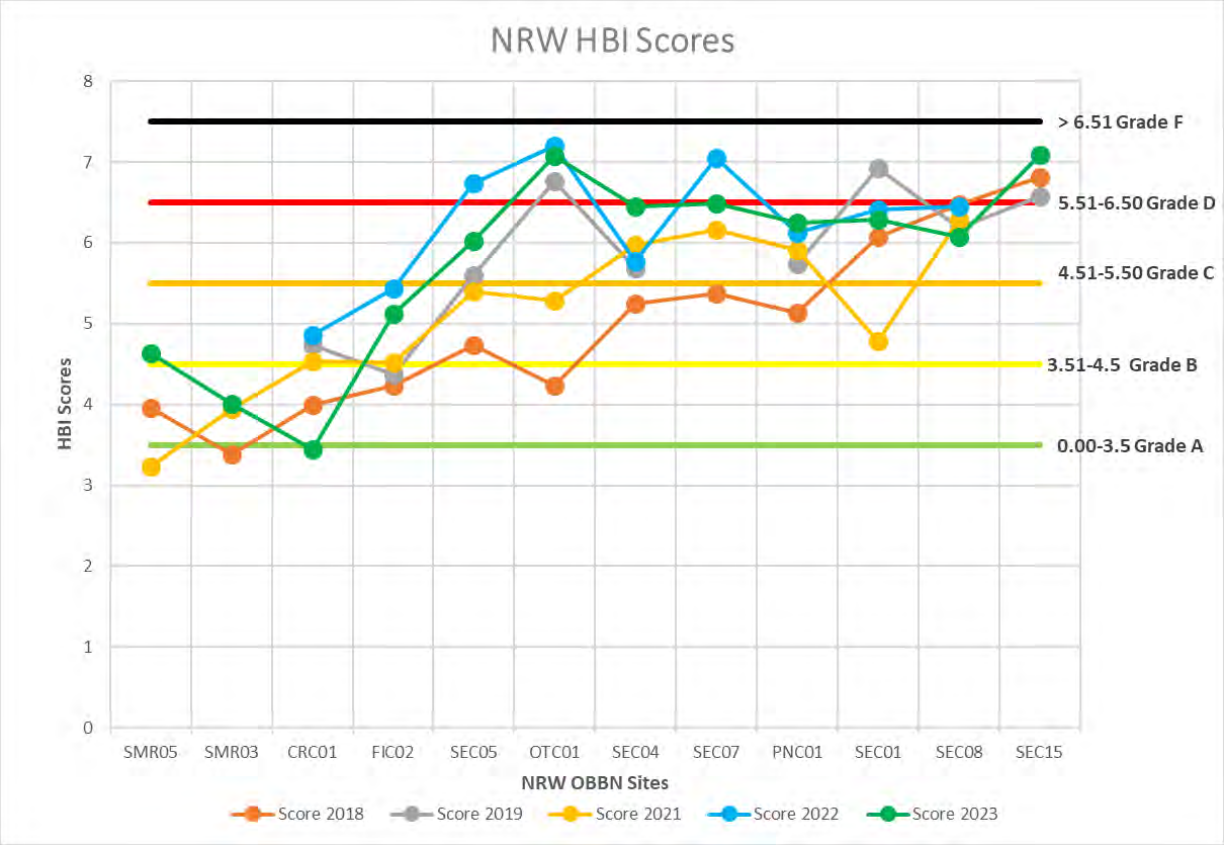



*Figure 5: NRW HBI Scores 2018-2023*

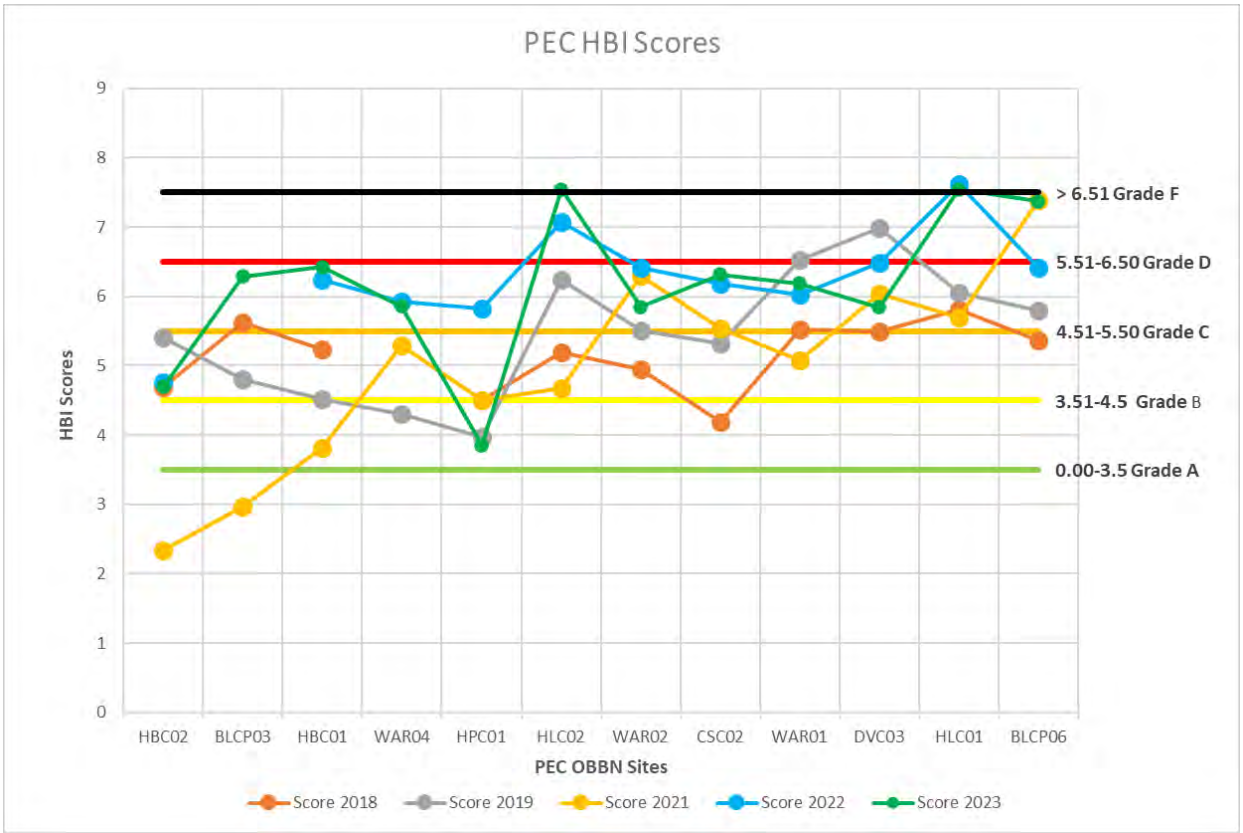



*Figure 6: PEC HBI Scores 2017-2022*

## Next Steps

Quinte Conservation staff are preparing for the 2022-2026 Watershed Report Cards. As part of the process, Quinte Conservation will be computing five-year trends for the OBBN data. A goal will be to include multi-year trends in our annual reporting and identify any key findings. As the OBBN sites have been monitored since 2003, it would be a benefit to add further monitoring to their locations, such as water temperature or fisheries. In addition, Quinte Conservation would like to explore further opportunities to present and analyze the data using models such as Hindcasting Reference Conditions in Streams developed by Bruce Kilgour and Les Stanfield which is further explained below in the Recommendations section.

# Provincial Ground Water Monitoring Network (PGMN)

A partnership program, in collaboration with the MECP, the Provincial Ground Water Monitoring Network (PGMN) is a network of almost 490 monitoring wells in all 36 conservation authorities and 10 municipalities (in areas not covered by a conservation authority). The groundwater data generated from this program assists in:

- Tracking the state of ambient groundwater quality and quantity (levels) and identifies trends over time and correlations with key factors that influence groundwater conditions.

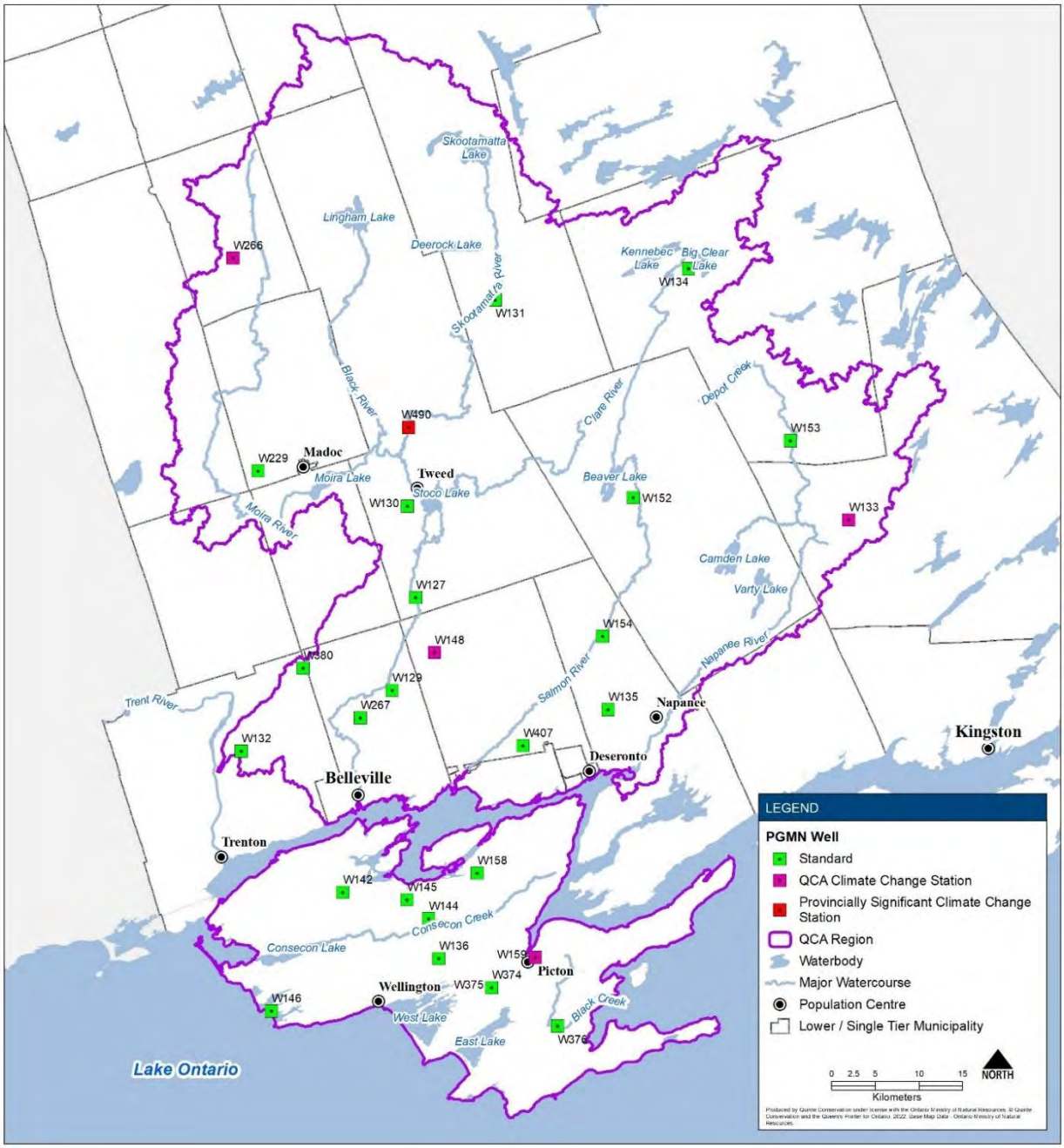
- Supports Conservation Authorities and the province in decision making related to water management, environmental approvals, compliance and policy, standard development, and public health policy /outreach; and
- Provides a baseline monitoring network from which special studies and modelling can be undertaken for environmental or human health issues of interest or concern.

This program is a cooperative effort between the MECP and Conservation Authorities. The primary functions and responsibilities of MECP for PGMN are to lead, manage, and coordinate the on-going delivery of the program. This includes but is not limited to funding program supplies (i.e., sample collection bottles, sampling filters, reagents, monitoring, and sampling equipment), transport of samples, equipment, sensors, groundwater equipment housing, parts for maintenance or repair of equipment and sensors). The MECP also provides technical support, data management and data sharing including Ontario's Open Data Catalogue Site. Quinte Conservation's role in the program is in accordance with agreed protocol specified by the Ministry including;

- maintenance of the wells and equipment,
- collecting water quality samples and associated site information,
- procuring replacement equipment and supplies based on authorisation from MECP,
- downloading data from in situ sensors and field equipment,
- performing manual water level measurements to provide a quality check of water level data,
- taking manual water level measurements,
- liaising with owners of any wells located on private lands,
- reporting water quality exceedances to private landowners and relevant agencies.

Quinte Conservation operates and maintains 29 wells (see Map 4) for which hourly water level and temperature data are collected as well as annual collection of water quality samples from select wells. Water quality samples are submitted to MECP labs for analysis of metals and general chemistry. Parameters such as pesticides and volatile organics are also monitored but on a less frequent basis. Of Quinte Conservation's 29 wells, 25 are instrumented with telemetry equipment that enables remote access of water level and temperature data via a satellite communication system (GOES). Currently, the water level data is entered and stored in the WISKI database, and Quinte Conservation staff are currently working on importing all water chemistry data into this system. This data is frequently analyzed by Quinte Conservation staff as part of water budget activities, land development review, drought and flood prediction models, flooding, and low water response programs. Some of the PGMN sites (five locations as shown on Map 4) have enhanced monitoring to assist in the detection of the impacts of Climate change. These parameters include precipitation (rain), air temperature, soil moisture and temperature, snow depth, and snow temperature. Well, W490, located at Price Conservation Area, is part of the Provincial integrated climate change monitoring network which also includes monitoring of surface water quality and flow in the adjacent Skootamatta River. The other four wells are used by Quinte Conservation (equipment provided by Quinte Conservation) as locally significant climate change

stations. The data from these stations provide useful information for assisting in determining changes to watershed conditions and potential impacts from Climate change. The collection of such data is part of Quinte Conservation's climate change strategy which includes sharing and communicating this information to the public.




*Map 4: Provincial Groundwater Monitoring Sites*

## Groundwater in the Quinte Region

Groundwater in the Quinte Region is found at relatively shallow depths in the top 10 to 30 metres of the underlying fractured bedrock. In the absence of significant soil cover, recharge to groundwater aquifers is quick and directly from infiltrating precipitation. Unfortunately, the fractured bedrock found in the Quinte Region does not store large volumes of water and regular recharge is required to replenish the supply. In the warmer summer and early fall season much of the precipitation is consumed by evapotranspiration to satisfy the demand of growing vegetation. During this period the groundwater levels decline until recharge from precipitation returns when the air temperatures cool and the growing season ends. The occurrence of drought can cause the groundwater levels to drop significantly below normal, at times resulting in disruption of water supply to residents using private wells in several locations throughout the watershed. Regular periods of rainfall are required to replenish the aquifers. Deeper aquifers, that would be less prone to drought, are generally limited in the Quinte Region. The drilling of wells to depths greater than 30 metres increases the potential of encountering naturally poor water quality with elevated levels of salt, minerals, and natural gas. Such water quality is not considered suitable for normal domestic and agricultural use. Acceptable deep groundwater quality can be found in several areas of the watershed where wells can be drilled through the limestone into the Precambrian basement rock (i.e., the region found near and north of Highway 7).

*Figure 7: PGMN Maintenance*

## Results and Discussion

The methodologies used for collecting data follow the PGMN groundwater sampling procedures, which includes downloading level logger data, measuring the static water levels, well purging, and measuring stabilization parameters and collecting samples to be analyzed for a suite of water quality parameters. For further information regarding procedures and methodologies, please reference the PGMN protocol.

Quinte Conservation has a total of 29 PGMN wells located throughout the watersheds as displayed on Map 4. In 2023, all 29 wells were visited for maintenance. The purpose of these visits was to diagnose problems, download level logger data, measure static water level, and to service, maintain, or clean equipment. Appendix 2.2 lists the dates that the wells were visited for annual maintenance. In collaboration with MECP, Quinte Conservation sampled 18 wells for water quality in 2023. Appendix 2.3 lists the dates that the wells were visited. Water quality samples were sent to the MECP Laboratory at the Environment and Monitoring Reporting Branch for analysis.

Though a suite of parameters is analyzed and compared to the Ontario Drinking Water Quality Standards (ODQWS) and Provincial Water Quality Objectives (PWQO), some of the parameters (nitrite+nitrate and chloride) are used to assign groundwater quality grades under the *Watershed Report*

*Card Program*. This procedure considers the levels of nitrite+nitrate and chloride analyzed in the groundwater samples. Chloride can occur naturally in old groundwater found in deep wells. However, given the vulnerability of the shallow groundwater found in the Quinte Region elevated levels of this parameter can sometimes be related to contamination from road salting activities, landfills, septic systems, and water softeners. Nitrite and Nitrates are indicative of nutrients that do not occur naturally in groundwater. Sources of these parameters can include septic systems as well as agricultural activities (i.e., fertilizers). Tables 6 through 9 summarize the groundwater results below. The full list of parameters analyzed for the PGMN is found in Appendix 3.2.

*Table 6: Spring 2023 Groundwater Results. Only Certain Wells Were Tested.*

| 2023 Spring Results | | |
|---|---|---|
| **Well ID** | **Chloride (mg/L)** | **Nitrate+Nitrite (mg/L)** |
| **W130** | 28.00 | 2.64 |
| **W132** | 13.70 | 0.76 |
| **W145** | 448.00 | 0.19 |
| **W229** | 54.90 | <0.04 |

*Table 7: Fall 2023 Groundwater Results*

| 2023 Fall Results | | |
|---|---|---|
| **Well ID** | **Chloride (mg/L)** | **Nitrate+Nitrite (mg/L)** |
| **W130** | 45.50 | 7.35 |
| **W130_Dup** | 45.00 | 7.41 |
| **W132** | 14.30 | 0.92 |
| **W133** | 5.63 | <0.04 |
| **W134** | 17.00 | <0.04 |
| **W136** | 17.40 | 11.90 |
| **W144** | 5.70 | 0.06 |
| **W145** | 298.00 | <0.04 |
| **W146** | 29.50 | <0.04 |
| **W152** | 10.90 | 1.77 |
| **W153** | 2.24 | 0.04 |
| **W154** | 21.40 | 0.62 |
| **W229** | 54.00 | 0.05 |
| **W266** | 28.20 | 2.05 |
| **W267** | 7.95 | 0.30 |
| **W374** | 59.50 | 1.53 |
| **W376** | 56.30 | 0.07 |
| **W380** | 1.89 | 0.04 |
| **W490** | 9.70 | 0.55 |

*Table 8: Water Quality Grades*

| Chloride (mg/L) | Nitrate+Nitrite (mg/L) | Grade |
|---|---|---|
| 0 - 62.5 | 0 - 2.5 | A |
| 62.6 - 125.0 | 2.6 - 5.0 | B |
| 125.1 - 187.5 | 5.1 - 7.5 | C |
| 187.6 - 250.0 | 7.6 - 10.0 | D |
| >250.0 | >10.0 | F |

*Table 9: 2023 Grades per Watershed*

| | MRW | NRW | PERW |
|---|---|---|---|
| **Average Chloride Grade** | A | A | A |
| **Average N Grade** | A | A | A |
| **Average Total Grade** | A | A | A |

The *Watershed Report Card Program (WRC)* is undertaken on a five-year cycle, with the most recent Quinte watershed completed for the period 2017-2021. Historically, a 5-year cycle has been used for analyzing and reporting. However, for the 2023 WRC report a minimum of a 10-year period was recommended due to the limited number of samples for these indicators. (WRC Guidelines). The results for the 2013-2023 samples 75$^{th}$ percentile are summarized in Table 10, below.

*Table 10: Groundwater Grades 2013- 2023 (75$^{th}$ percentile)*

| | Chloride (mg/L) | | | Nitrate+Nitrite (mg/L) | | | Avg Points | Grade | Number of Years Sampled |
|---|---|---|---|---|---|---|---|---|---|
| **Well ID** | **75th Percentile** | **Grade** | **Points** | **75th Percentile** | **Grade** | **Points** | | | |
| **W127** | 1.755 | **A** | **5** | 0.090 | **A** | **5** | **5** | **A** | 9 years (No Sample 2023) |
| **W130** | 45.250 | **A** | **5** | 8.518 | **D** | **2** | **3.5** | **B** | 9 years |
| **W131** | 41.050 | **A** | **5** | 0.057 | **A** | **5** | **5** | **A** | 7 years (No Sample 2023) |
| **W132** | 14.375 | **A** | **5** | 0.895 | **A** | **5** | **5** | **A** | 8 years |
| **W133** | 5.630 | **A** | **5** | 0.039 | **A** | **5** | **5** | **A** | 9 Years |
| **W134** | 34.175 | **A** | **5** | 0.042 | **A** | **5** | **5** | **A** | 8 Years |
| **W136** | 17.4 | **A** | **5** | 11.9 | **F** | **1** | **3** | **C** | 1 Year |
| **W144** | 8.850 | **A** | **5** | 0.053 | **A** | **5** | **5** | **A** | 8 Years |
| **W145** | 442.000 | **F** | **1** | 0.047 | **A** | **5** | **3** | **C** | 11 Years |
| **W146** | 36.000 | **A** | **5** | 0.060 | **A** | **5** | **5** | **A** | 9 Years |
| **W148** | 13.600 | **A** | **5** | 0.103 | **A** | **5** | **5** | **A** | 6 years (No Sample 2023) |
| **W153** | 2.240 | **A** | **5** | 0.069 | **A** | **5** | **5** | **A** | 9 years |
| **W154** | 21.475 | **A** | **5** | 1.080 | **A** | **5** | **5** | **A** | 10 years |
| **W229** | 128.500 | **C** | **3** | 0.050 | **A** | **5** | **4** | **B** | 10 years |

| | Chloride (mg/L) | | | Nitrate+Nitrite (mg/L) | | | Avg Points | Grade | Number of Years Sampled |
|---|---|---|---|---|---|---|---|---|---|
| Well ID | 75th Percentile | Grade | Points | 75th Percentile | Grade | Points | | | |
| **W127** | 1.755 | **A** | **5** | 0.090 | **A** | **5** | **5** | **A** | 9 years (No Sample 2023) |
| **W130** | 45.250 | **A** | **5** | 8.518 | **D** | **2** | **3.5** | **B** | 9 years |
| **W131** | 41.050 | **A** | **5** | 0.057 | **A** | **5** | **5** | **A** | 7 years (No Sample 2023) |
| **W132** | 14.375 | **A** | **5** | 0.895 | **A** | **5** | **5** | **A** | 8 years |
| **W133** | 5.630 | **A** | **5** | 0.039 | **A** | **5** | **5** | **A** | 9 Years |
| **W134** | 34.175 | **A** | **5** | 0.042 | **A** | **5** | **5** | **A** | 8 Years |
| **W136** | 17.4 | **A** | **5** | 11.9 | **F** | **1** | **3** | **C** | 1 Year |
| **W144** | 8.850 | **A** | **5** | 0.053 | **A** | **5** | **5** | **A** | 8 Years |
| **W145** | 442.000 | **F** | **1** | 0.047 | **A** | **5** | **3** | **C** | 11 Years |
| **W146** | 36.000 | **A** | **5** | 0.060 | **A** | **5** | **5** | **A** | 9 Years |
| **W266** | 28.575 | **A** | **5** | 3.293 | **B** | **4** | **4.5** | **A** | 10 years |
| **W267** | 9.125 | **A** | **5** | 0.313 | **A** | **5** | **5** | **A** | 8 years |
| **W374** | 57.475 | **A** | **5** | 1.825 | **A** | **5** | **5** | **A** | 8 years |
| **W376** | 68.800 | **B** | **4** | 0.058 | **A** | **5** | **4.5** | **A** | 9 years |
| **W490** | 9.150 | **A** | **5** | 0.532 | **A** | **5** | **5** | **A** | 7 Years |

## Chloride

When comparing the sampling results from the historic 75$^{th}$ percentiles (between 2013-2022) with the 2023 sample results, there were no significant changes from the average grades. When the 2023 results are compared to the 2013-2022 75$^{th}$ percentile there were improvements at two wells, W229 moving from a C to an A grade, and W376 moving from a B to A grade.

*Table 11. Comparison of 2013-2022 Chloride (mg/l) 75TH Percentile to the 2023 results*

| Chloride (mg/L) | | | | | | |
|---|---|---|---|---|---|---|
| **Well ID** | **2013-2022 75th Percentile** | **Grade** | **Points** | **2023 Results** | **Grade** | **Points** |
| **W130** | 45.60 | **A** | **5** | 45.25 | **A** | **5** |
| **W132** | 14.10 | **A** | **5** | 14.30 | **A** | **5** |
| **W133** | 4.66 | **A** | **5** | 5.63 | **A** | **5** |
| **W134** | 35.15 | **A** | **5** | 17.00 | **A** | **5** |
| **W136** | | | | 17.40 | **A** | **5** |
| **W144** | 8.90 | **A** | **5** | 5.70 | **A** | **5** |
| **W145** | 452.50 | **F** | **1** | 298.00 | **F** | **1** |
| **W146** | 43.28 | **A** | **5** | 29.50 | **A** | **5** |
| **W152** | 18.52 | **A** | **5** | 10.90 | **A** | **5** |
| **W153** | 2.23 | **A** | **5** | 2.24 | **A** | **5** |
| **W154** | 21.50 | **A** | **5** | 21.40 | **A** | **5** |
| **W229** | 137.00 | **C** | **3** | 54.00 | **A** | **5** |
| **W266** | 28.70 | **A** | **5** | 28.20 | **A** | **5** |
| **W267** | 9.15 | **A** | **5** | 7.95 | **A** | **5** |
| **W374** | 55.15 | **A** | **5** | 59.50 | **A** | **5** |
| **W376** | 70.80 | **B** | **4** | 56.30 | **A** | **5** |
| **W380** | 1.38 | **A** | **5** | 1.89 | **A** | **5** |
| **W490** | 7.78 | **A** | **5** | 9.70 | **A** | **5** |

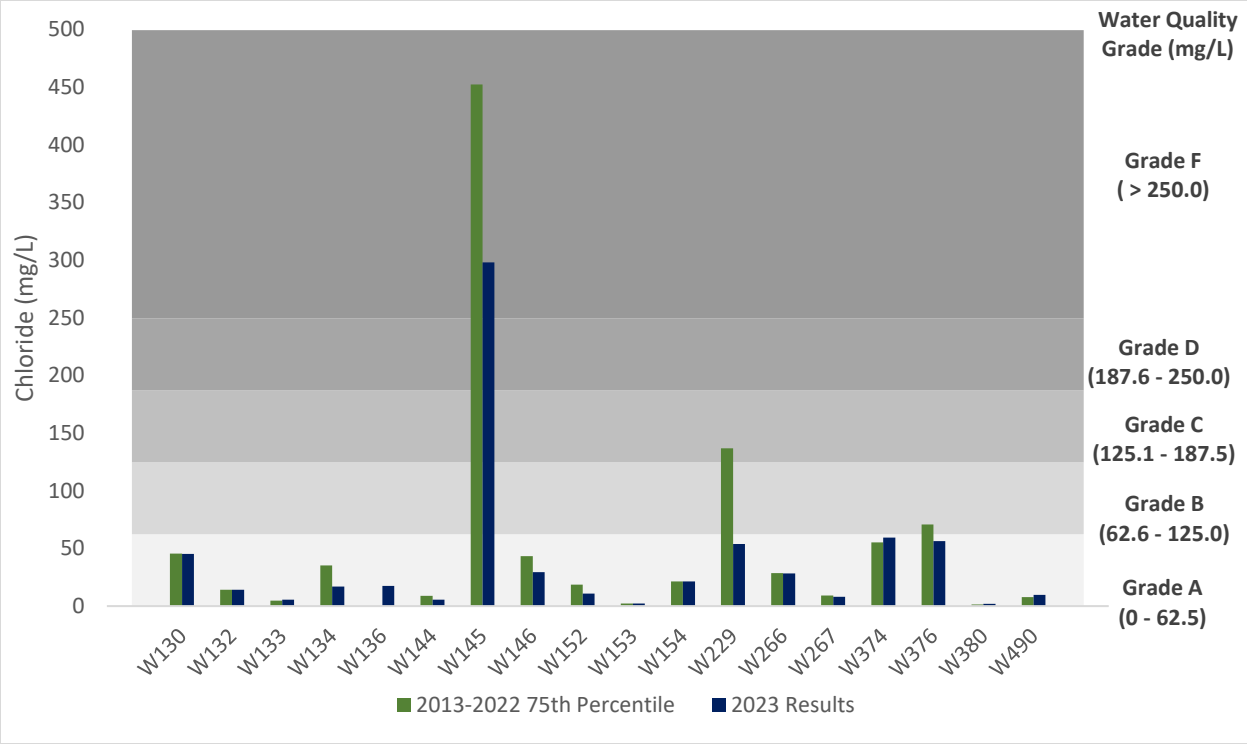



*Figure 8: Comparison of 2023 results to 2013- 2022 75th Percentile Chloride Levels*

## Other Exceedances

In addition to the PWQO, Quinte Conservation compares the water quality results to O.Reg. 169/03: Ontario Drinking Water Quality Standards (ODWQS) and Health Canada (HC) guidelines and aesthetic objectives (HC*AO), displayed in Table 12.

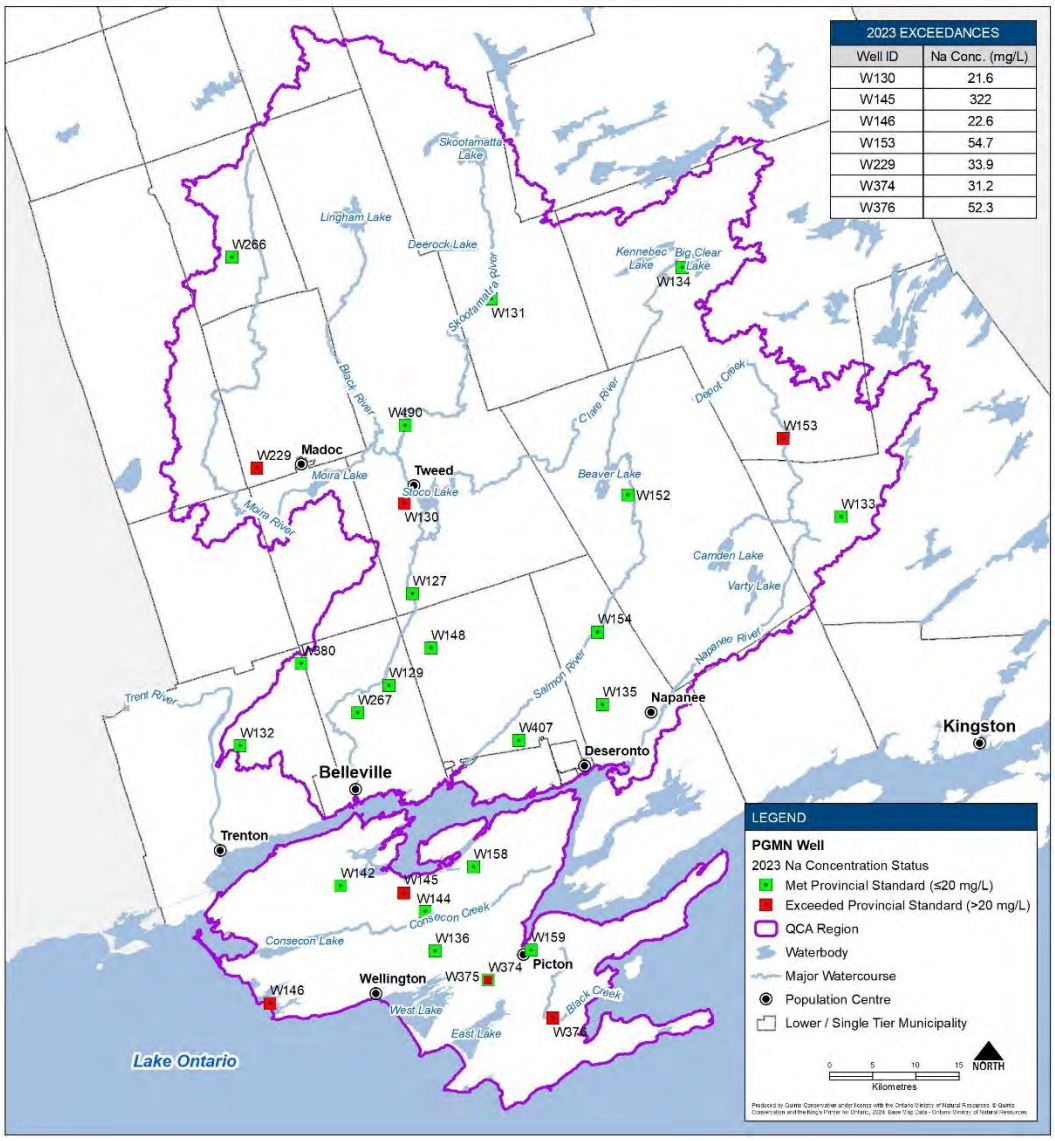
*Table 12: Water Quality Guidelines for Select Parameters. Guideline Expressed as Maximum Acceptable Concentration (MAC) in mg/L.*

| Parameter | ODQSQ | Health Canada | Health Canada Aesthetic Objective | PWQO |
|---|---|---|---|---|
| Aluminum | | 2.9 | | |
| Antimony | 0.006 | | | |
| Arsenic | 0.01 | | | |
| Barium | 1.0 | | | |
| Boron | 5.0 | | | |
| Cadmium | 0.005 | | | |
| Chloride | | | 250 | 20 (for low sodium diets) |
| Chromium | 0.05 | | | |
| Copper | | 2.0 | 1.0 | |
| Fluoride | 1.5 | | | |
| Iron | | | 0.3 | |
| Lead | 0.005 | | | |
| Manganese | | 0.12 | | |
| Nitrate | 10 | | | |
| Nitrogen; nitrite | 1.0 | | | |
| pH (scalar) | | | 7.0-10.5 | |
| Selenium | 0.05 | | | |
| Sodium | | 20 | 200 | |
| Solids; dissolved | | | 500 | |
| Strontium | | 7.0 | | |
| Sulphate | | | 500 | |
| Uranium | 0.02 | | | |
| Zinc | | | 5.0 | |

Nitrate was the only parameter that exceeded the ODWQS as listed in Table 12. W136 had a nitrate level of 11.9mg/L and will be further discussed in the Nitrate+Nitrite section below. Strontium, Manganese, and Sodium were the only HC guidelines exceeded. The Strontium HC MAC at 7.0mg/L was exceeded by four wells, W130 (spring, fall, and fall duplicate), W229 (spring and fall), W133, and W134 with the highest level of 23mg/L from W229. The Manganese HC MAC at 0.12mg/L was exceeded by two wells, W144 at 1.02mg/L and W376 at 0.223mg/L.

The Health Canada aesthetic objective (AO) for sodium in drinking water is 200 mg/L. However, a lower level of 20 mg/L is used for the local Medical Officer of Health to notify people that may be on sodium restricted diets. This information may be communicated to local physicians for their use with patients

on sodium restricted diets (MECP, 2006). When a PGMN well reports an exceedance of a health-related parameter such as sodium there is a protocol for Quinte Conservation to notify the ministry and owners of wells located on private lands. This protocol is found in Appendix 4. Map 5 illustrates the well locations that exceeded the low sodium diet Health Canada 20mg/L guideline in 2023.




*Map 5: Well Locations That Exceeded the Health Canada Low Sodium Diet Guideline of 20mg/L in 2023*

High levels of chloride can sometimes be found in the shallow aquifers of the Quinte region as this shallow groundwater is highly vulnerable to contamination from activities occurring near the ground surface. This was particularly evident from the results of samples collected from well W145. This well is shallow in nature and located in close proximity to a provincial highway. Long-term trends for the W145 show a correlation between elevated chloride levels and snow depth suggesting more severe winters result in increased chloride levels from road salt applications.

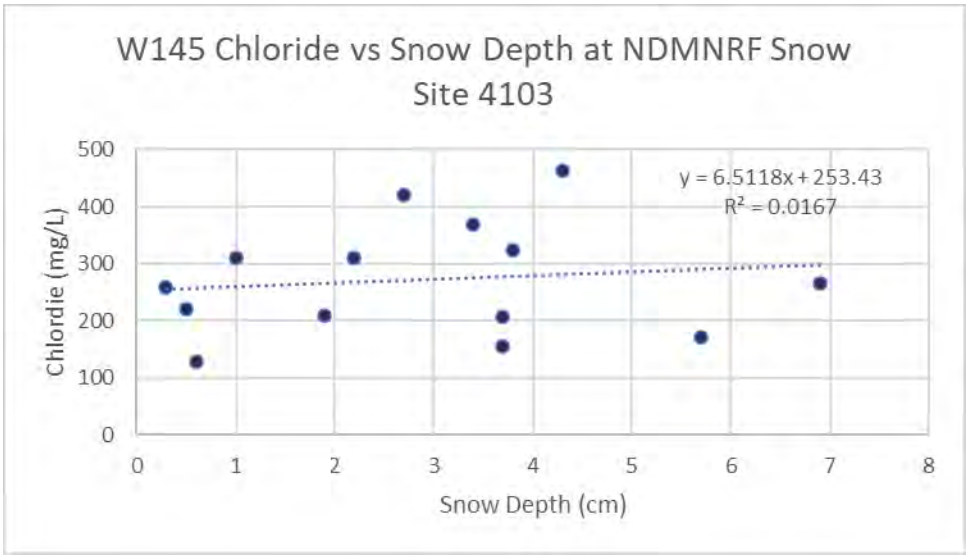
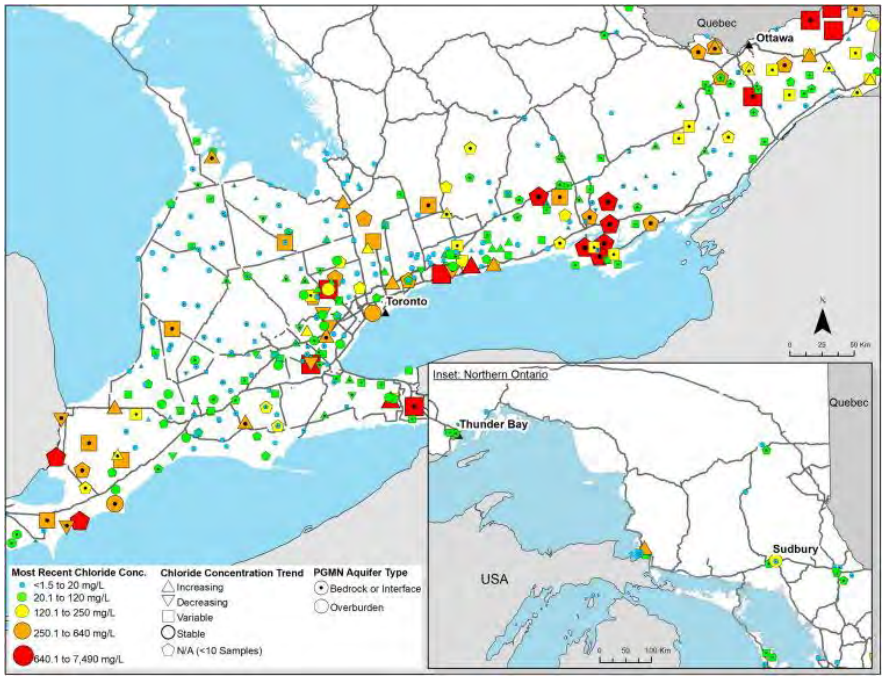



*Figure 9: W145 Chloride by year in relation to snow depth*

In 2023, W145 was sampled in the spring and fall. The spring sample was taken on May 9th, 2023, after snow melt and the chloride level was still elevated at 448 mg/L, comparable to fall 2022 at 501 mg/L and fall 2023 at 298 mg/L. Since sampling began at W145 in 2005 there have been 19 samples taken with an average chloride level of 286 mg/L, an exception being an outlier of 4.4 mg/L was reported in 2016.

The sodium and chloride levels located in deeper wells within the Quinte Conservation watershed are naturally occurring due to mineral deposits. Chloride concentrations in a natural source are a result of the dissolution of the minerals that comprise the aquifer and the residence time of the groundwater in the pores or fractures of the aquifer will influence the natural composition of the groundwater, including the chloride concentration (Sorichetti, 2022). The PGMN wells within the Quinte Conservation watershed with high concentrations of chloride are classified as bedrock or interface aquifers.




*Map 6: Map depicting locations PGMN groundwater wells in Ontario. Symbols indicate trends in groundwater (overburden and bedrock) $Cl^-$ concentrations (2002 – 2020) and most recently measured concentrations at each well; 2019 – 2020 (n = 347), 2010 – 2018 (n = 107); 2002 – 2009 (n = 53). Trend analysis consisted of visual interpretation and Mann-Kendall analysis for wells with greater than 10measurements (Sorichetti, 2022).*

## Nitrates+Nitrite

All but one well sampled in 2023 were below the PWQO's for Nitrite+Nitrate (N) (10 mg/L). With most wells having a grade of A or higher as illustrated in Table 13, the exceptions are W130 and W136. High levels of these parameters can be associated with leaching of contaminants from excessive amounts of fertilizers and manure or septic systems.

*Table 13: Comparison of 2013-2022 Nitrate+ Nitrite (mg/l) 75$^{TH}$ Percentile to the 2023 results. Grade changes between the two periods are highlighted in orange.*

| Nitrate+Nitrite (mg/L) | | | | | | |
|---|---|---|---|---|---|---|
| **Well ID** | **2013-2022 75th Percentile** | **Grade** | **Points** | **2023 Results** | **Grade** | **Points** |
| **W130** | 8.518 | **D** | **2** | 7.380 | **C** | **3** |
| **W132** | 0.895 | **A** | **5** | 0.920 | **A** | **5** |
| **W133** | 0.039 | **A** | **5** | <0.04 | **A** | **5** |
| **W134** | 0.042 | **A** | **5** | <0.04 | **A** | **5** |
| **W136** | | | | 11.900 | **F** | **1** |
| **W144** | 0.050 | **A** | **5** | 0.060 | **A** | **5** |
| **W145** | 0.047 | **A** | **5** | <0.04 | **A** | **5** |
| **W146** | 0.060 | **A** | **5** | <0.04 | **A** | **5** |
| **W152** | 0.930 | **A** | **5** | 1.770 | **A** | **5** |
| **W153** | 0.075 | **A** | **5** | 0.040 | **A** | **5** |
| **W154** | 1.080 | **A** | **5** | 0.620 | **A** | **5** |
| **W229** | 0.056 | **A** | **5** | 0.050 | **A** | **5** |
| **W266** | 3.410 | **B** | **4** | 2.020 | **A** | **5** |
| **W267** | 0.289 | **A** | **5** | 0.300 | **A** | **5** |
| **W374** | 1.830 | **A** | **5** | 1.530 | **A** | **5** |
| **W376** | 0.045 | **A** | **5** | 0.070 | **A** | **5** |
| **W380** | 0.070 | **A** | **5** | 0.040 | **A** | **5** |
| **W490** | 0.442 | **A** | **5** | 0.550 | **A** | **5** |

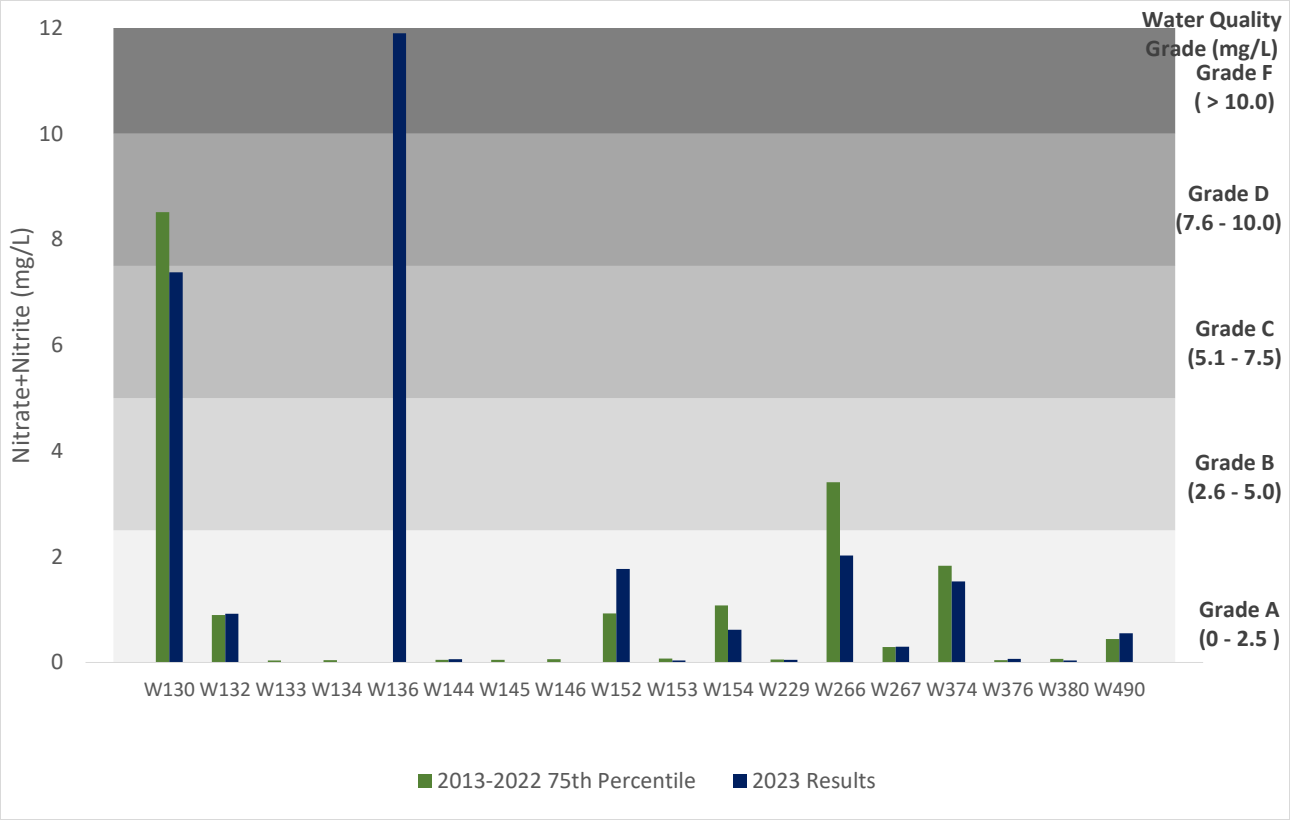



*Figure 10: Comparison of 2023 results to 2013-2022 75th Percentile Chloride Levels.*

W136 is located next to a provincial highway and 2023 was the first year it was sampled since 2005, the Nitrite+Nitrates was above the PWQO at 11.9mg/L. Wells W130 and W132 are in areas where the land use is predominantly agriculture. The leaching of fertilizers and manure may be a potential source of these elevated levels, however further investigation is warranted. W130 has had consistent elevated levels since sampling began in 2004, across the 16 years of data collected the average Nitrate+Nitrite level is 7.23 mg/L (SD ± 2.03 mg/L). Starting in 2023, at the request of MECP certain wells will start with spring sampling. The 2023 spring sampling of W130 had a Nitrate+Nitrite levels of 2.64 mg/L, the lowest value recorded to date at this location. In 2021 an elevated level of Nitrate+Nitrite at W132 was observed, 6.14 mg/L, well above the historic mean of 0.875 mg/L. The fall 2022 and spring and fall 2023 levels were consistent with the historic mean, depicted in Figure 10.

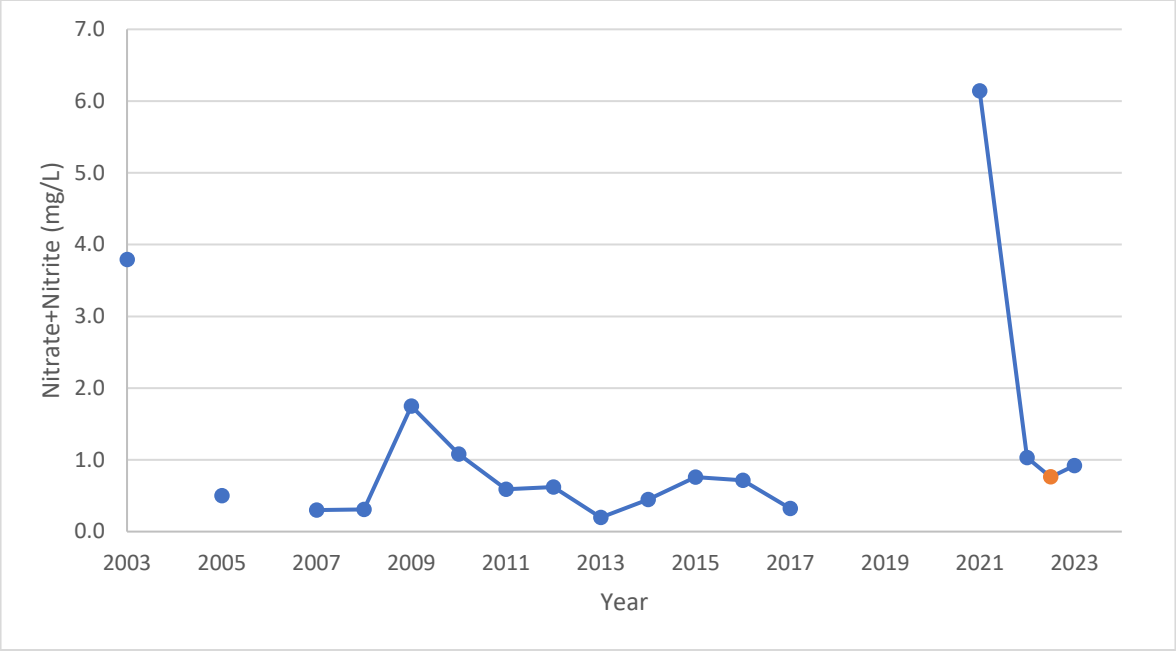



*Figure 11: W132 Frankford Road Nitrate+Nitrite (mg/L) levels from 2003-2023. Fall Sampling Represented with Blue and Spring Sampling Represented with Orange*

## Low Water - Drought Monitoring

The water levels from the PGMN wells are used regularly to assist in advising watershed residents regarding groundwater conditions during periods of low water or drought. As 25 of the PGMN wells in the Quinte Region are equipped with telemetry instrumentation, the groundwater levels can be viewed in near real time via satellite communications. There is currently no provincially approved groundwater indicator for drought. However, the aquifers in the Quinte Region are very prone to impact from drought as they do not have a high storage capacity and require regular recharge from rainfall to replenish the supply. The availability of ground water levels in PGMN wells dating back to 2002 is beneficial in assessing the long-term trend as well as periods of low or drought. This information is used to communicate to the local residents that rely on private wells and local aquifers for water supply. In 2022, Quinte Conservation did not declare any Low Water Condition. Since inception of the Low Water Response Program in the year 2000, low water or drought conditions have been declared in 13 of the 21 years of declared drought. These events typically occur during the dry summer months for an average length of 18 weeks. Approximately half of the events reached Level 2 status (moderate drought) with the most severe being a Level 3 event in 2016 which lasted for 30 weeks. The occurrence of the low/drought events can be detected in the water levels of the PGMN wells. A hydrograph of one well (well number 134), installed into the fractured bedrock aquifer is shown in Figure 11. The low water years are readily detectable in the levels of groundwater when compared to Figure 11, this is particularly evident for the Level 2 and 3 low water events.

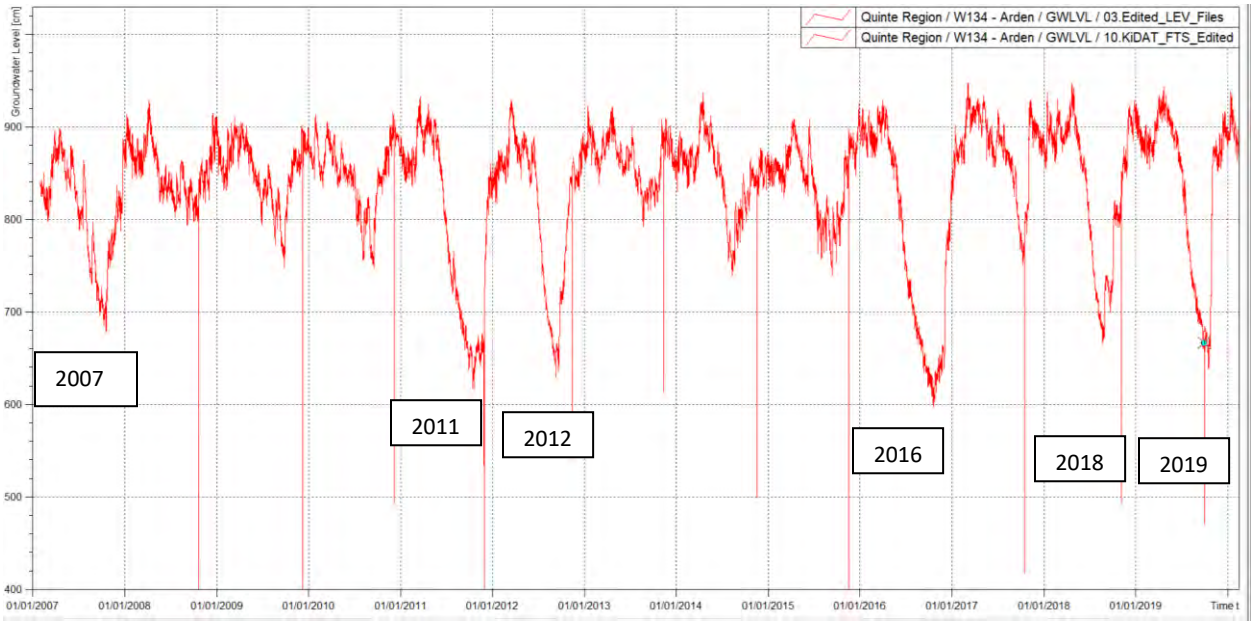



*Figure 12: Groundwater Hydrograph – Shallow Fractured Bedrock Aquifer*

Climate change is expected to have an impact on the water resources of the Quinte region including increased frequency and severity of drought (BluMetric, 2019). The data from the PGMN program will be important in sharing information with the public, detecting the impacts from climate change and management of the water resources. Given the drought prone conditions and heavy groundwater reliance of the Quinte watershed population (50 % of the residents rely on groundwater for their water source) sharing information with the public about groundwater levels is important. During low water events Quinte Conservation provides regular updates on not only precipitation and stream flow conditions but also groundwater levels.

## Next Steps

The intent of this report is to be the first step in creating a format for future annual reporting. The PGMN data is a large dataset over a long period of time, and the data management has been inconsistent presenting challenges in our ability to report. The goal is to consolidate all PGMN data into WISKI to better assess long-term trends in both groundwater levels and water quality and to compare trends with parameters such as precipitation (rain and snow), temperature, stream flow, etc. In addition, Quinte Conservation staff intend to use the PGMN groundwater level data to review the water budget on a regular cycle to track changes.

One of the key findings from reviewing our most recent data is the need to further investigate elevated wells with spring sampling to contribute to knowledge of the baseline Chloride and Nitrate+Nitrite levels of each well. Although water quality sampling is under the direction of the province, Quinte Conservation would recommend another round of water quality monitoring for pesticides and volatile organic compounds.

# Integrated Water–Climate Change Monitoring Initiative

Quinte Conservation has been continuing our efforts to better understand the effects of a changing climate through continued monitoring and assessment of our watershed. Assessment of the vulnerability of sub-watersheds to climate change was completed and found that some sub-watersheds are highly sensitive due to potential for low water conditions, drought, shallow wells drawing from an aquifer of low storage capacity and low baseflow in our local streams and rivers. As a result of this work, Quinte Conservation is fortunate to have one of seven provincially significant climate change monitoring stations. This station was established in the Skootamatta watershed (Well 490) near Tweed through partnership with the province in 2012. In addition, four other stations were established throughout the region all with an enhanced level of monitoring. These stations provide useful information for assisting in determining changes to watershed conditions and potential impacts (Quinte Conservation, 2016). The Ontario Ministry of Natural Resources published a report in 2007 identifying the key impacts Climate change would have in the Quinte Region. These impacts include warmer temperatures, decreased precipitation, increased evapotranspiration, less snow/ice cover, increase in extreme weather events, change in distribution of flows in surface water, less ground water recharge, and less baseflow (BluMetric, 2019).

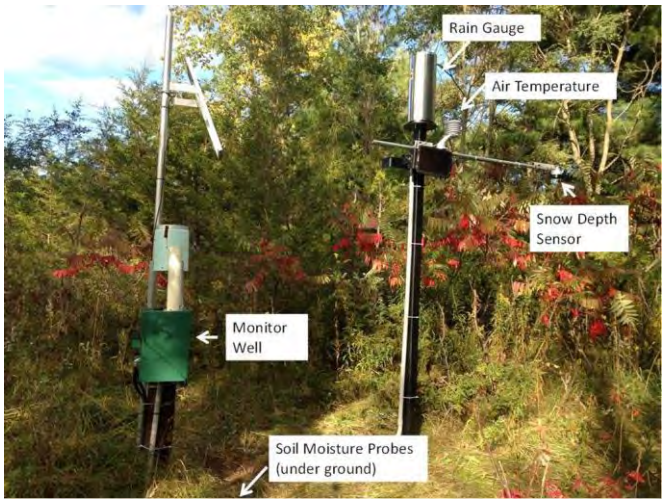



*Figure 13: Climate Change Monitoring Station*

The Climate Change Stations collect valuable data that can be overlapped to illustrate a broader 'picture' of specific regions. Much of the data from these stations are used in day-to-day operations such as the flood forecasting and low water response programs, however the data is of significant value in establishing long-term trends to help detect changes on the watershed conditions. Such data is very useful in informing watershed residents about changes and the need to adapt to a changing climate.

## Results and Discussion

Stream sampling at the Integrated Water-Climate Change Monitoring sites includes collection of samples 10 to 12 times per year. Stream water levels are continuously monitored at these sites by the Ministry of Natural Resources (MECP, 2022).

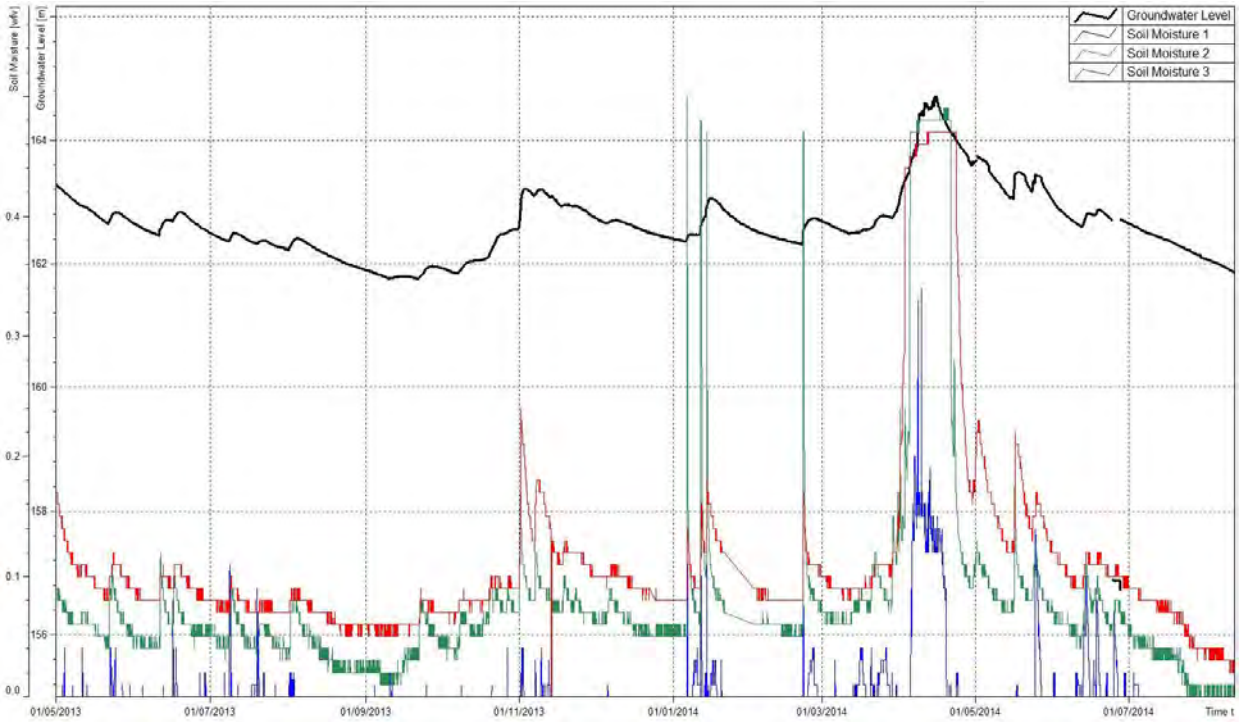



*Figure 14: Example how QC Water Resources Team can use the monitoring data in WISKi*

Figure 13 illustrates an example of how Quinte Conservation uses the data to compare soil moisture at varying depths below the ground and the groundwater levels using the WISKi data management platform. Precipitation can also be added to this graph to provide even more information. Groundwater recharge and/or discharge can be analyzed using graphs such as this one.

Using these stations, Quinte Conservation monitors the water resources of the watershed to help assess changes to these resources and potential impacts from climate change. These stations are in addition to many other existing monitoring stations, which include groundwater, rain, stream flow, steam water quality, and benthic. Recently, new water level gauges have been added to 12 lakes throughout the watershed. These gauges will help in monitoring changes to lake levels but also in managing water levels in times of flooding and drought.

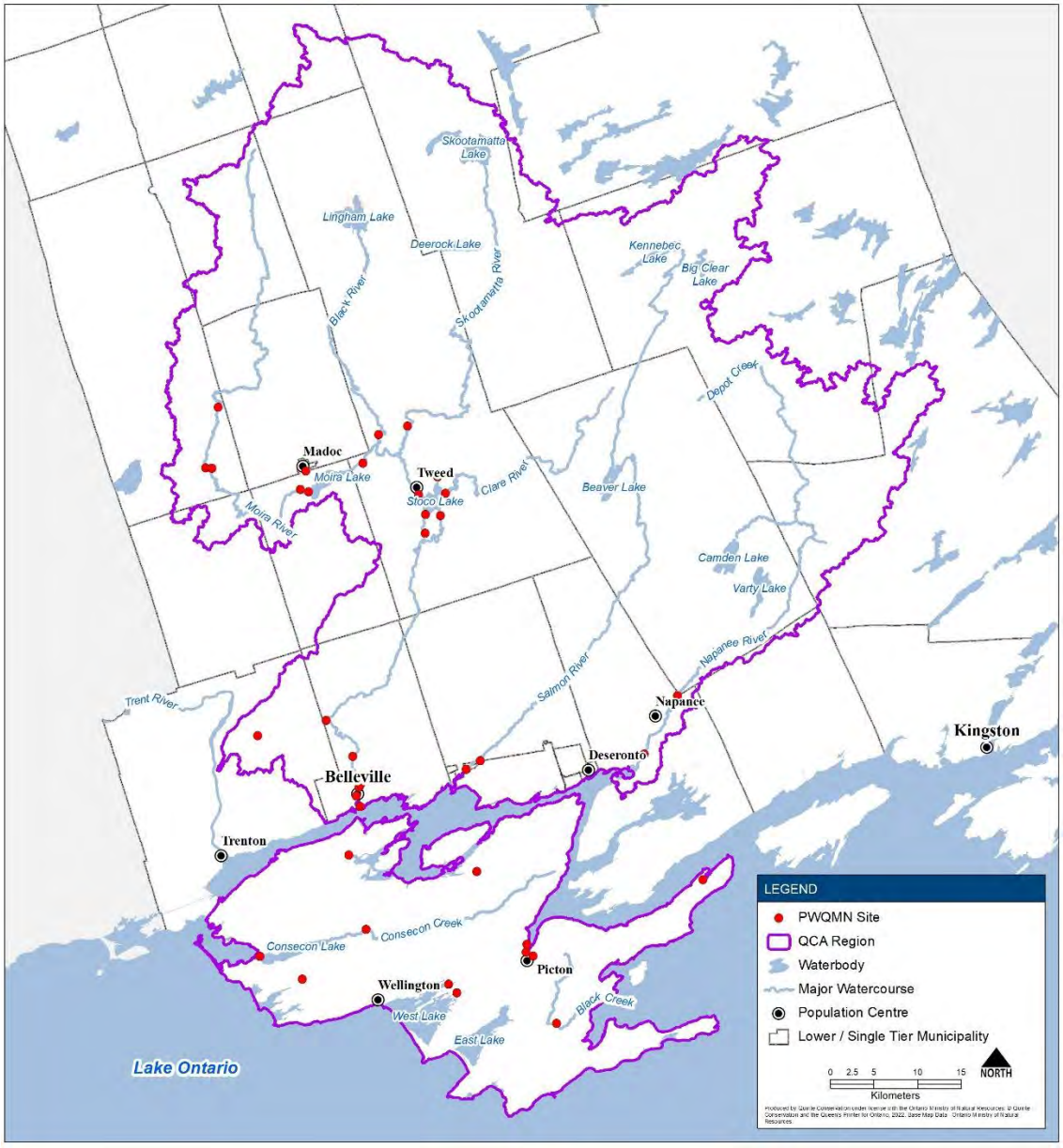
## Provincial Water Quality Monitoring Network (PWQMN)

*Figure 15: PWQMN Sampling*

In collaboration with the MECP, the Provincial Water Quality Monitoring Network (PWQMN) program collects monthly water quality information from rivers and streams at strategic locations throughout Ontario. Quinte Conservation have been participating in this program for more than 50 years and continue to monitor water quality in the Moira River, Napanee Region, and the Prince Edward Region watersheds. Surface water quality samples are collected from twenty-eight monitoring sites in these regions from April to October. The dates of the 2023 PWQMN sampling events can be found in Appendix 2.4. The water samples are sent to the MECP where they are analyzed for various general chemistry parameters, a full list of analytes can be found in Appendix 3.2. The objective of the program is to report the long, medium, and short-term monitoring of the water quality of Ontario streams. Using this data, staff can also identify temporal and spatial trends in stream water quality and inform MECP on environmental compliance, investigations, assessments, policy, and program decision making.

The primary functions and responsibilities of MECP for PWQMN is to lead, manage and coordinate the on-going deliverance of the program. This includes but is not limited to funding program supplies (i.e., sample collection bottles, reagents), analyzing water quality samples, transport of samples, equipment, sensors, parts for maintenance or repair of equipment and sensors). MECP is also responsible for providing technical support, training, data management and data sharing including Ontario's Open Data Catalogue Site. Whereas Quinte Conservation's role in the PQWMN is in accordance with protocols specified by the MECP including, collecting water quality samples, deploying, operating, and removing equipment at monitoring sites, calibrate and conduct routine maintenance equipment, ensure equipment is functioning as required, in accordance with protocols, and will inform the MECP of any concerns or issues for timely resolution.

The water quality data that Quinte Conservation collects for this program is regularly added to Water Information Systems (WISKI) and the MECP's Provincial Stream Water Quality Monitoring Network database. The information represents the wealth of historic and current surface water quality information and allows individuals to view and search water quality data.




*Map 7: Provincial Water Quality Monitoring Sites*

## Results and Discussion

This discussion focuses on the last 5 years of data; however, it is worth noting that Quinte Conservation did not sample PWQMN in 2020 due to the Covid-19 pandemic therefore, there is a one-year data gap.

### Phosphorus

Phosphorus is a naturally occurring and an important nutrient in the environment but can be elevated due to anthropogenic practices such as the use of detergents, fertilizers, and sewage systems. High concentrations contribute to excessive algae growth and low oxygen levels in streams and lakes.

Using the 75th percentile is a good balance of representing the vast majority of measurements, and not being impacted by outliers. While not as stable as the median, the 75th percentile is a good choice for seeing medium- to long-term trends (WRC, 2023).

Ontario has a Provincial Water Quality Objective (PWQO) goal of 30 µg/L for phosphorus. Of Quinte Conservation's 28 PWQMN stations, 17 fall at or under this objective, while nine stations have averages that exceed the objective value. The stations that exceeded the limit were all in Prince Edward County and are Demorestville Creek, Sawguin Creek, Bloomfield Creek, Consecon Creek, Cressy Creek, Slab Creek, Marsh Creek Picton, Waring's Creek, and Hospital Creek. Similar to 2022, all PWQMN sites within the Moira River and Napanee Region watersheds had total phosphorus averages below the PWQO limit of 30 µg/L, shown in Figure 15.

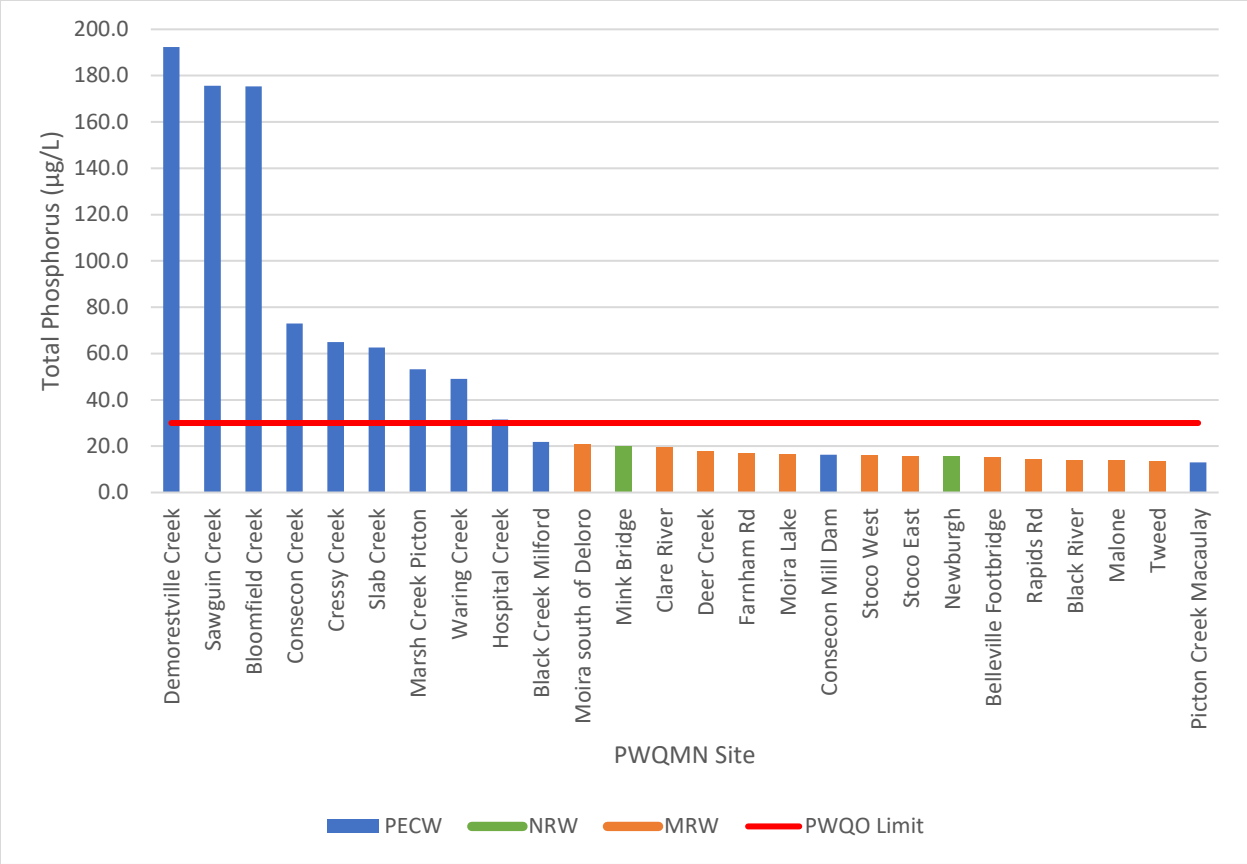



*Figure 16: Average Total Phosphorus at PWQMN Sites for 2023 Compared to PWQO Target of 30 µg/L, Colored by Watershed*

Of the twelve PERW sites, ten of these sites accounted for the ten highest phosphorus levels. Demorestville Creek had the highest phosphorus levels in 2023, while the lowest levels were recorded at the Picton Creek Macaulay CA station. All stations except three had 2023 values that were lower than the 2017-2022 average, the three stations with a value higher than the average were Demorestville Creek (249.8% increase), Bloomfield Creek (142.3% increase), and Slab Creek (12.3% increase). Figure 16 depicts by station the average total phosphorus in 2023 in comparison to the station historical average (2017-2022).

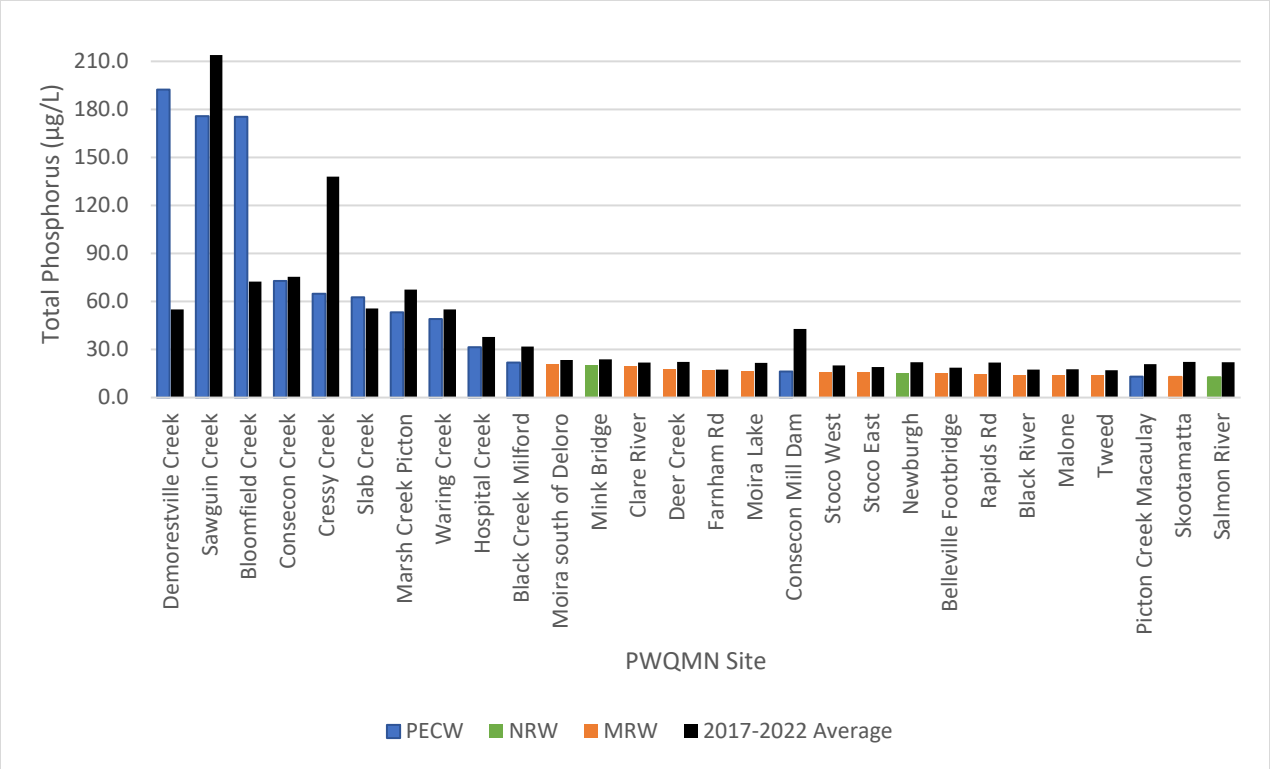
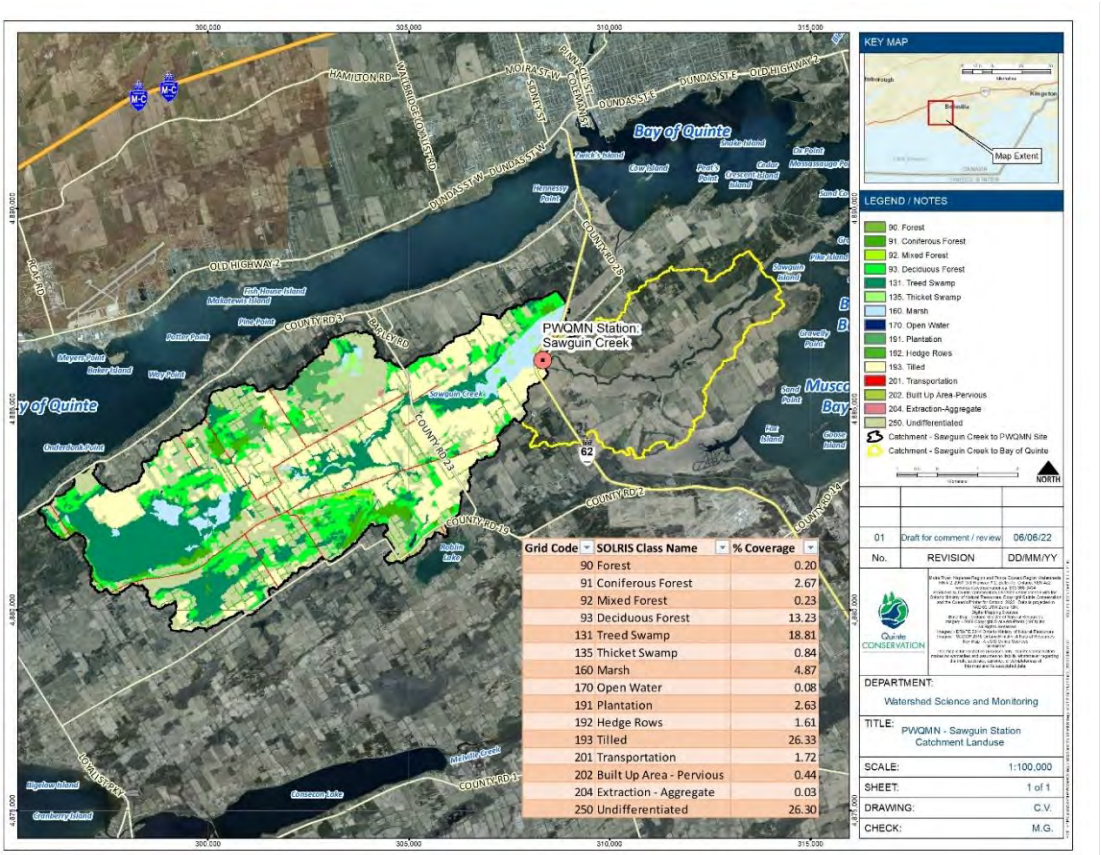



*Figure 17: Average Total Phosphorus (µg/L) at PWQMN Sites for 2023 Compared to 2017-2022 Average, Colored by Watershed. (2020 was not sampled)*

### *Sawguin Creek Marsh*

The 2021 report raised concerns about a spike in total phosphorus at Sawguin Creek Marsh. As illustrated by Figure 18, the primary land use in the Sawguin Creek watershed is tilled agriculture fields, followed undifferentiated (i.e., includes some agricultural features not included in tilled (i.e., orchards, vineyards, perennial crops and idle land > 10 years – out of agricultural production) as well as urban brown fields, hydro and transportation right-of- ways, upland thicket and openings within forests), and the third dominant land use is treed swamp. It is undetermined if the source was anthropogenic or naturally occurring.




| Grid Code | SOLRIS Class Name | % Coverage |
|---|---|---|
| 90 | Forest | 0.20 |
| 91 | Coniferous Forest | 2.67 |
| 92 | Mixed Forest | 0.23 |
| 93 | Deciduous Forest | 13.23 |
| 131 | Treed Swamp | 18.81 |
| 135 | Thicket Swamp | 0.84 |
| 160 | Marsh | 4.87 |
| 170 | Open Water | 0.08 |
| 191 | Plantation | 2.63 |
| 192 | Hedge Rows | 1.61 |
| 193 | Tilled | 26.33 |
| 201 | Transportation | 1.72 |
| 202 | Built Up Area - Pervious | 0.44 |
| 204 | Extraction - Aggregate | 0.03 |
| 250 | Undifferentiated | 26.30 |

*Figure 18: Sawguin Creek Watershed Land use*

Although still elevated the phosphorus level at Sawguin Creek Marsh decreased in 2022 and 2023 from 2021. Figures 18 and 19 illustrates that the target of PWQO 30 µg/L at Sawguin Creek has been exceeded since 2005. However, there was a ten-year period between 2009-2019 phosphorus levels average was 95.5 µg/L with a standard deviation of 30.84 µg/L as indicated in Figure 18. PWQMN was not sampled in 2020 but in 2021 our data indicates a significant spike.

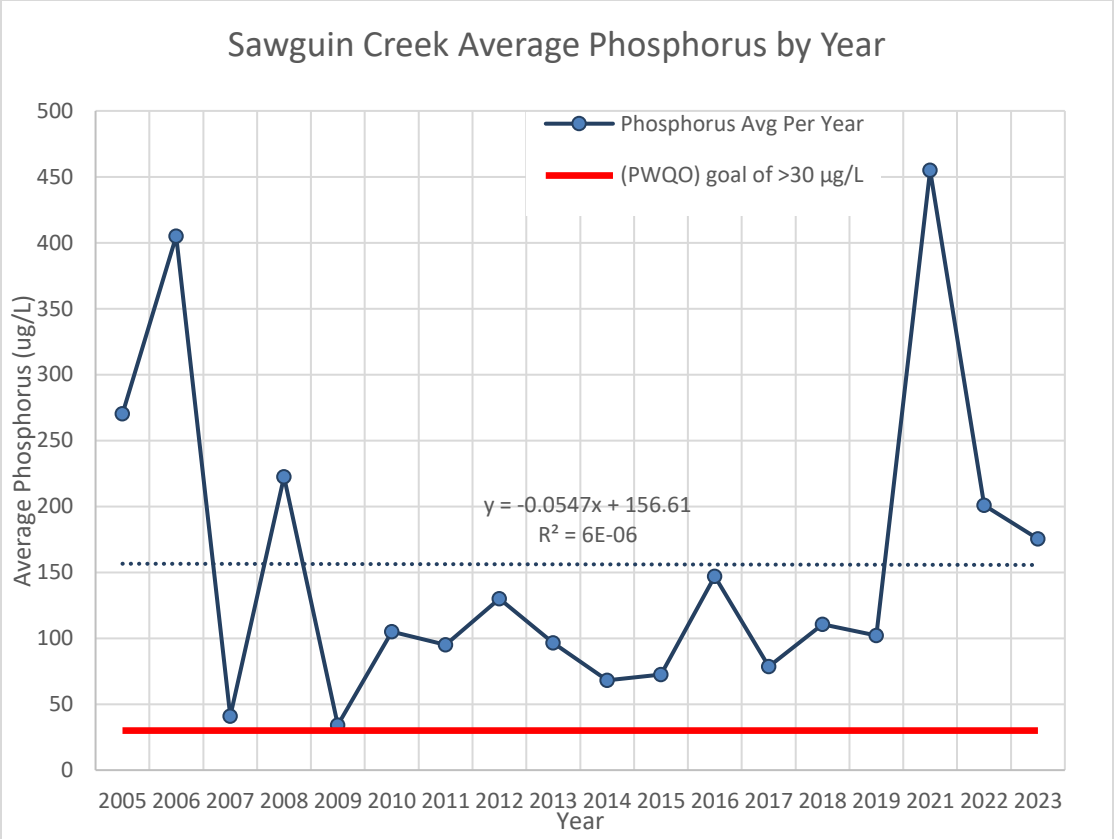



*Figure 19: Sawguin Creek Average Phosphorus by Year*

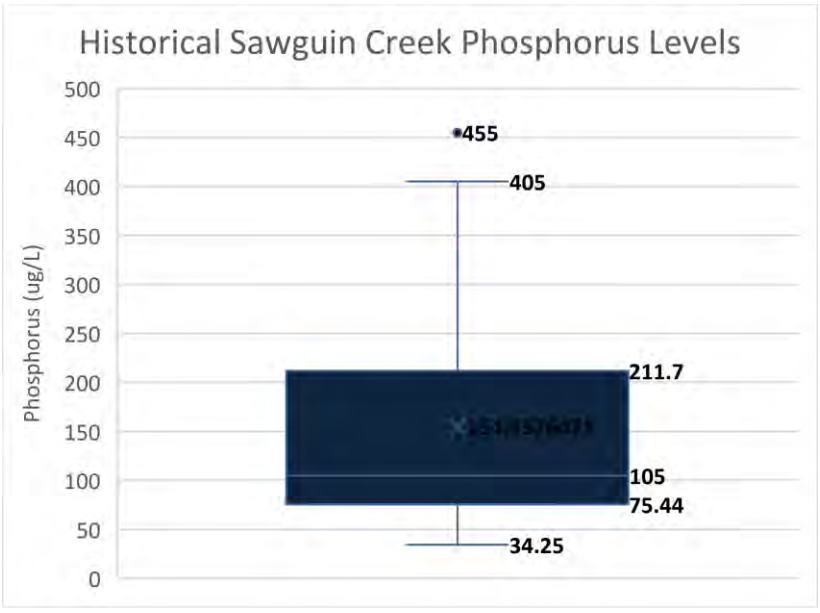



*Figure 20: Historical Sawguin Creek Phosphorus Levels*

Looking further into the 2021 data, the increase in phosphorus is heavily skewed from the September sampling event as illustrated in Figure 20. This elevation was not seen in 2022 but in 2023 there was a September elevation again. There is no historical data from October, but the 2023 October sample suggested the spike is isolated to September, further investigation in future years could be warranted.

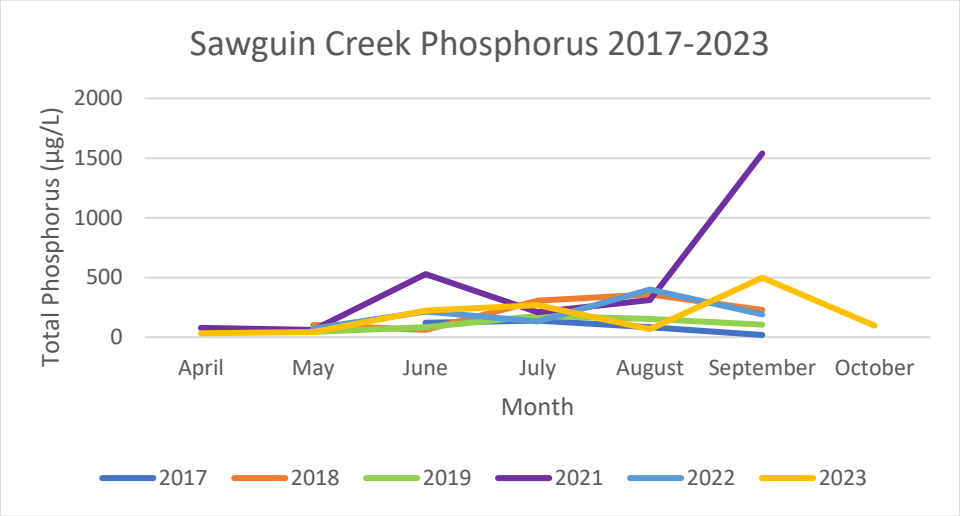



*Figure 21: 2017-2023 Sawguin Creek Phosphorus by Month. 2020 was not sampled*

### *Cressy Creek*

Cressy Creek typically has elevated levels of phosphorus, however in 2022 we saw a 95% increase from the 2017-2021 average. In 2023 the average phosphorus level was 43% lower than the 2017-2021 average. Similar to Sawguin Creek Marsh, the primary land use is tilled agriculture fields, followed undifferentiated (i.e., includes some agricultural features not included in tilled (i.e., orchards, vineyards, perennial crops and idle land > 10 years – out of agricultural production) as well as urban brown fields, hydro and transportation right-of- ways, upland thicket and openings within forests), and the third dominant land use is deciduous forest.

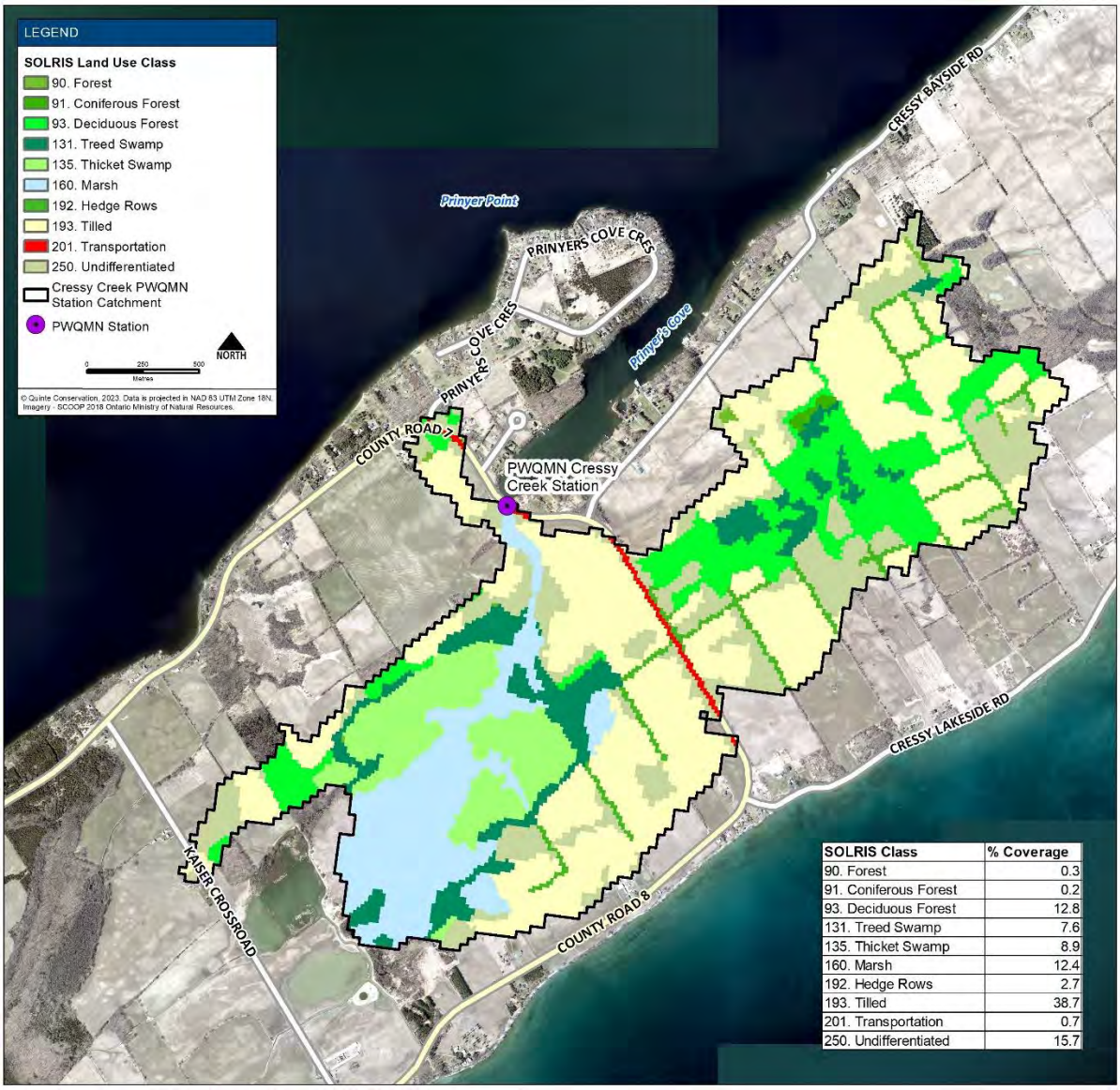



*Figure 22: Cressy Creek Watershed Land use*

Quinte Conservation samples PWQMN from April to September and a comparison of the years 2017-2022 shows a slight spike in phosphorus levels in July for 2017-2019 and 2022. The July spike in 2022 was 276% higher than the average July spike 2017-2021. The 2022 May, June, July, and September phosphorus levels were higher than the previous 5 years (Figure 22).

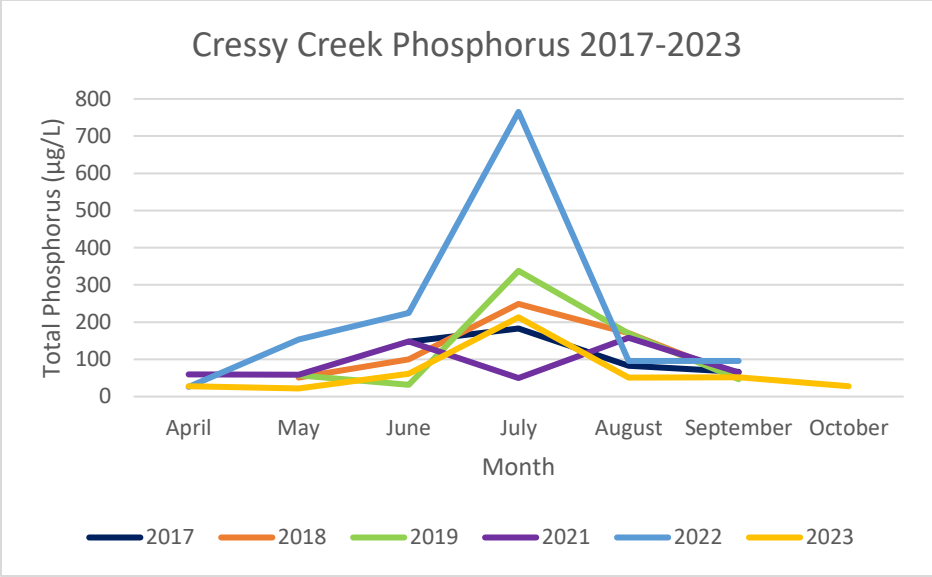



*Figure 23: Cressy Creek phosphorus levels by month from 2017-2022. 2020 was not sampled.*

### *Demorestville Creek*

Demorestville Creek saw a significant increase in average total phosphorus levels in 2023, up 340% from the 2017-2022 average. This can be attributed to a July measured level of 696 µg/L, over 23 times the PWQO limit.

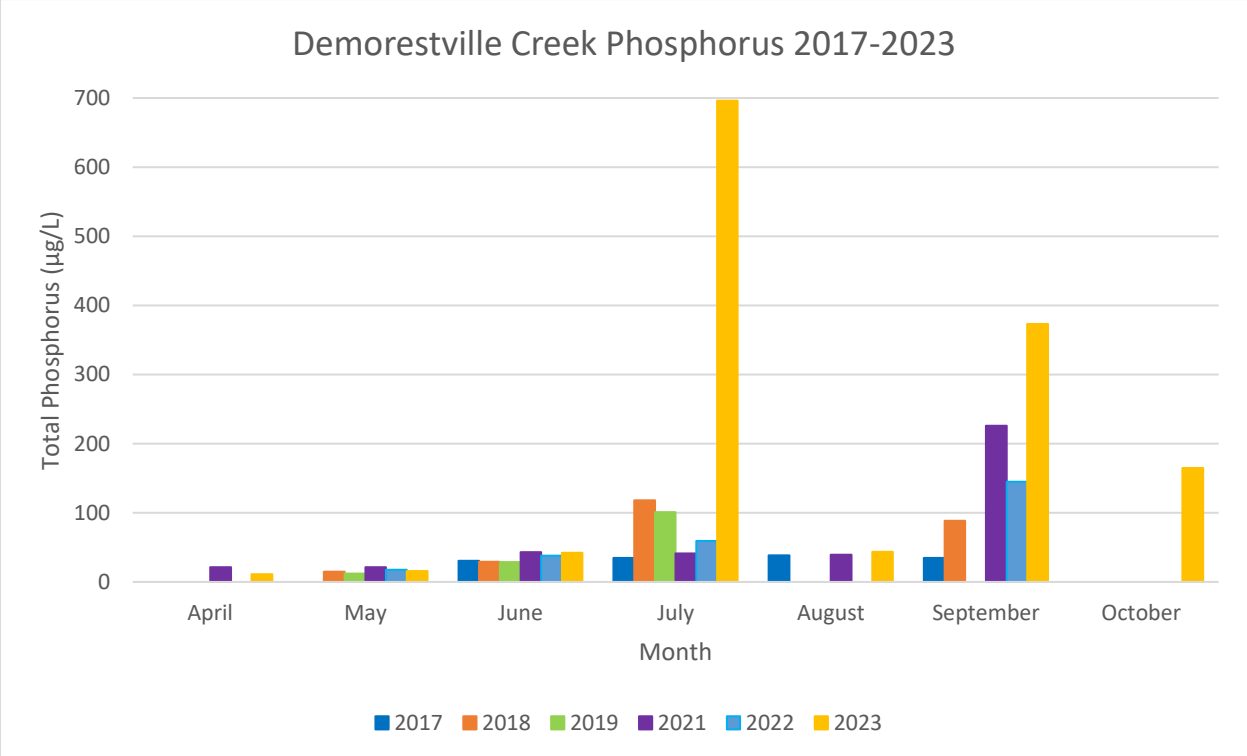



*Figure 24: Demorestville Creek phosphorus levels by month from 2017-2023. 2020 was not sampled.*

## Conductivity

Conductivity is an excellent indicator of potentially impacted water, and high conductivity can be an indicator of road runoff, agricultural runoff, or sewage leakage.

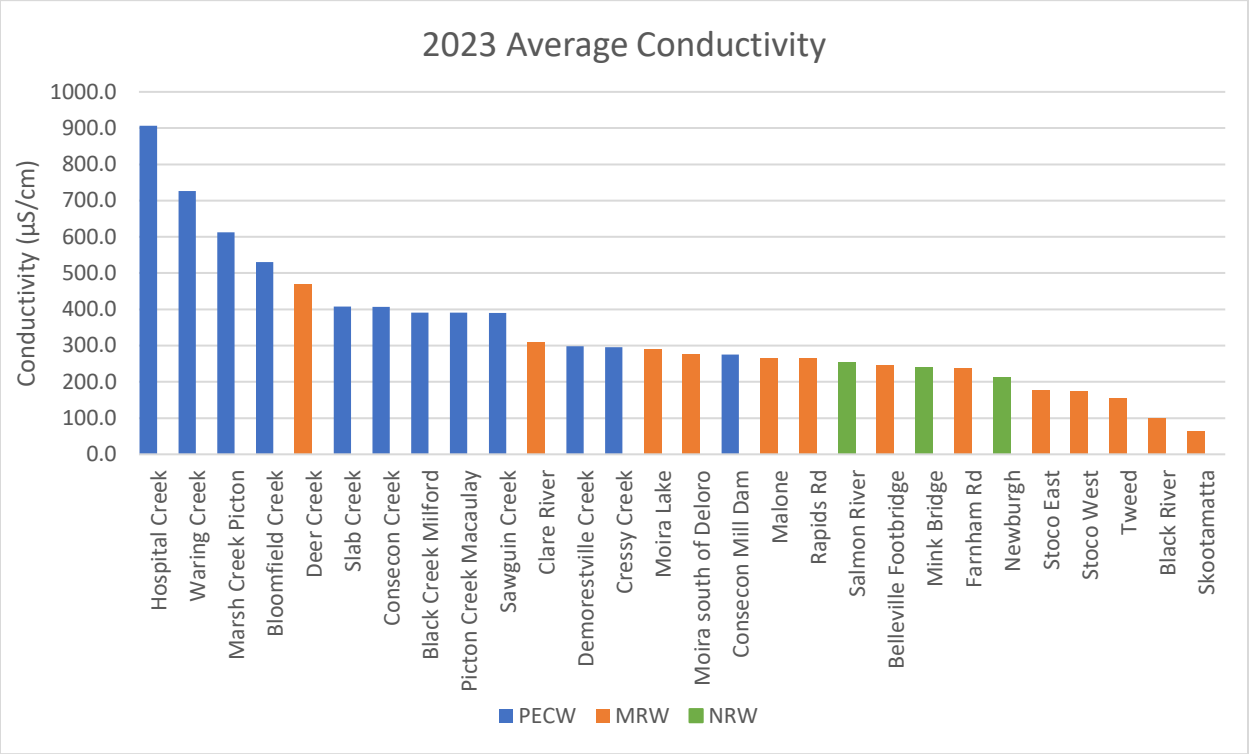



*Figure 25: 2023 Average Conductivity at PWQMN Sites*

Conductivity values at the Quinte Conservation PWQMN sampling sites remained consistent with the historical average, there are no significant deviations to note. Similar to previous years, PERW sites typically had higher conductivity averages, with the highest conductivities being recorded at Marsh Creek, Waring's Creek, and Hospital Creek. This is not unexpected given the urban development in the areas surrounding these sites. The lowest conductivity values were recorded at Skootamatta, which is consistent with previous years, likely due to the relatively pristine conditions, and sparse development surrounding this site.

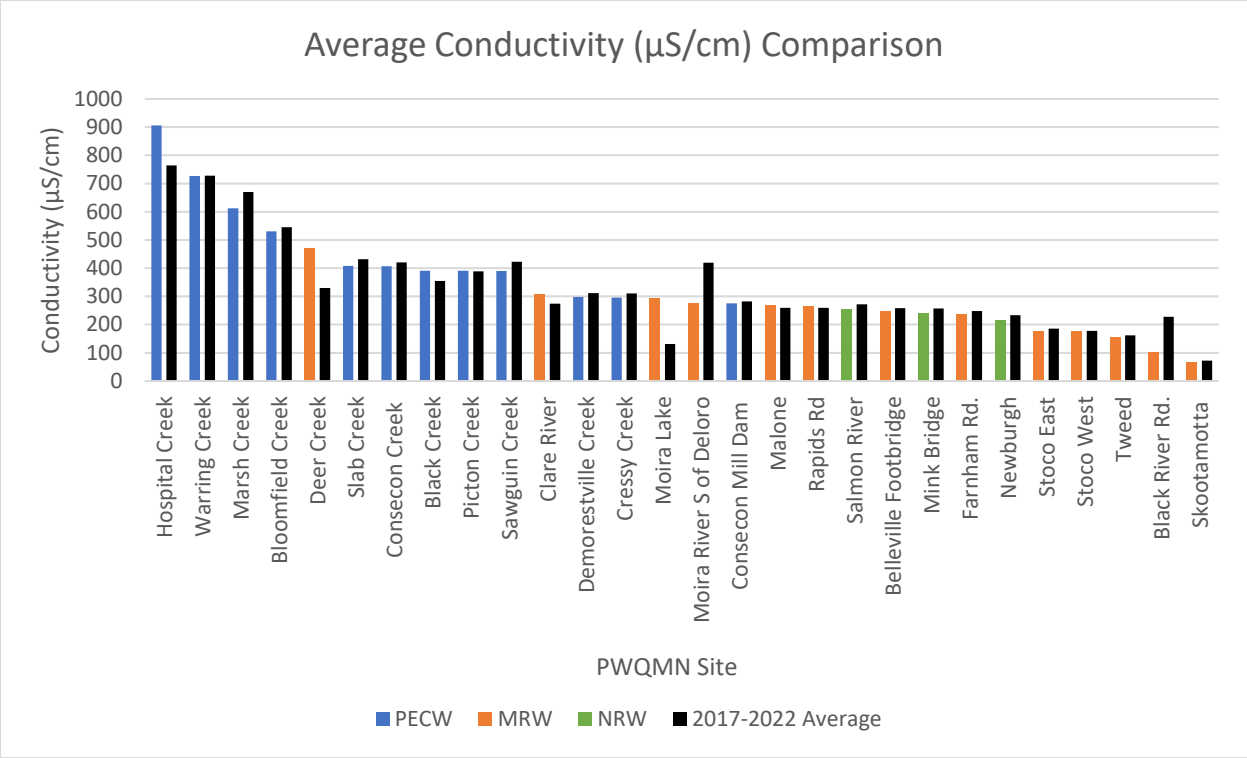



*Figure 26: Average Conductivity Comparison for PWQMN Sites*

## Nitrite+Nitrates

Nitrite+Nitrates are naturally occurring compounds that are formed when Nitrogen combines with oxygen. Nitrite+Nitrates typically occur in water in levels that are not harmful, however elevated levels of Nitrite+Nitrates is an indicator of agricultural or sewage runoff and can contribute to eutrophication.

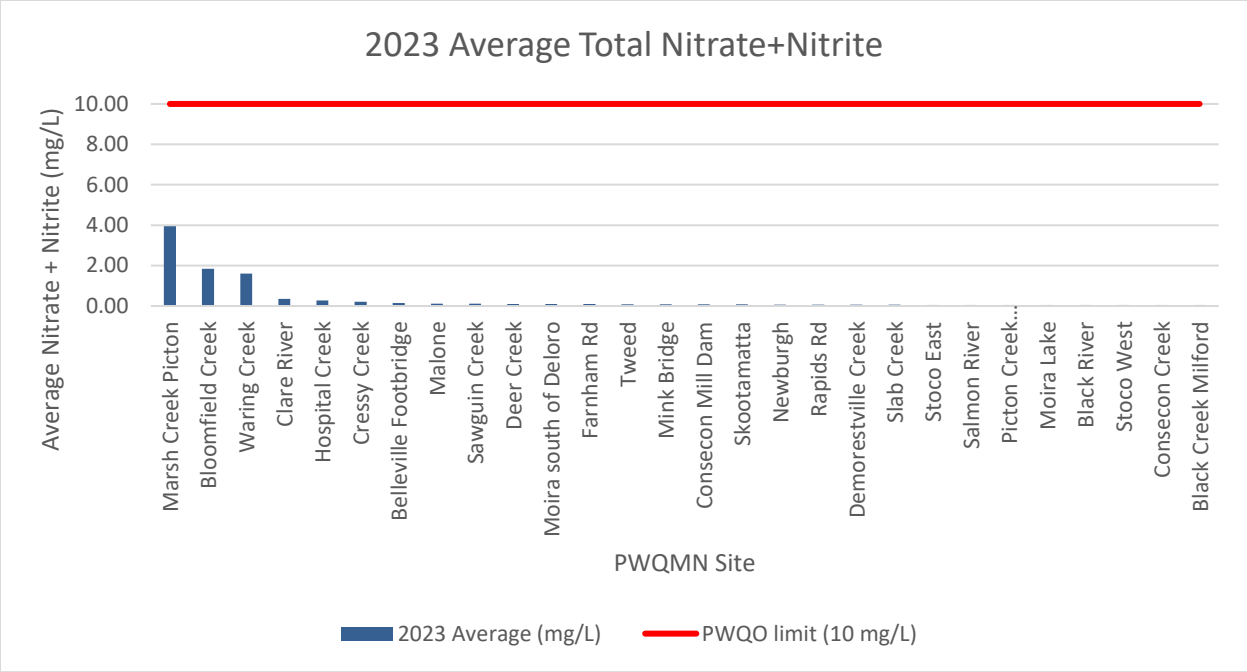



*Figure 27: 2023 Average Total Nitrite+Nitrates at PWQMN Samples Sites*

Nitrite+Nitrates levels remained consistent with previous years, as most sites had levels well below 1mg/L. Quinte Conservation had 3 sites that exceed 1 mg/L (Marsh Creek, Bloomfield Creek, and Waring's Creek). All these sites had an exceedance of 1mg/L in the previous years. The Bloomfield Creek PWQMN site is located downstream of the benthic sites discussed above in the OBBN section. It is noteworthy that at each of these three sites that have been historically elevated, none exceeded the 10mg/l PWQO limit.

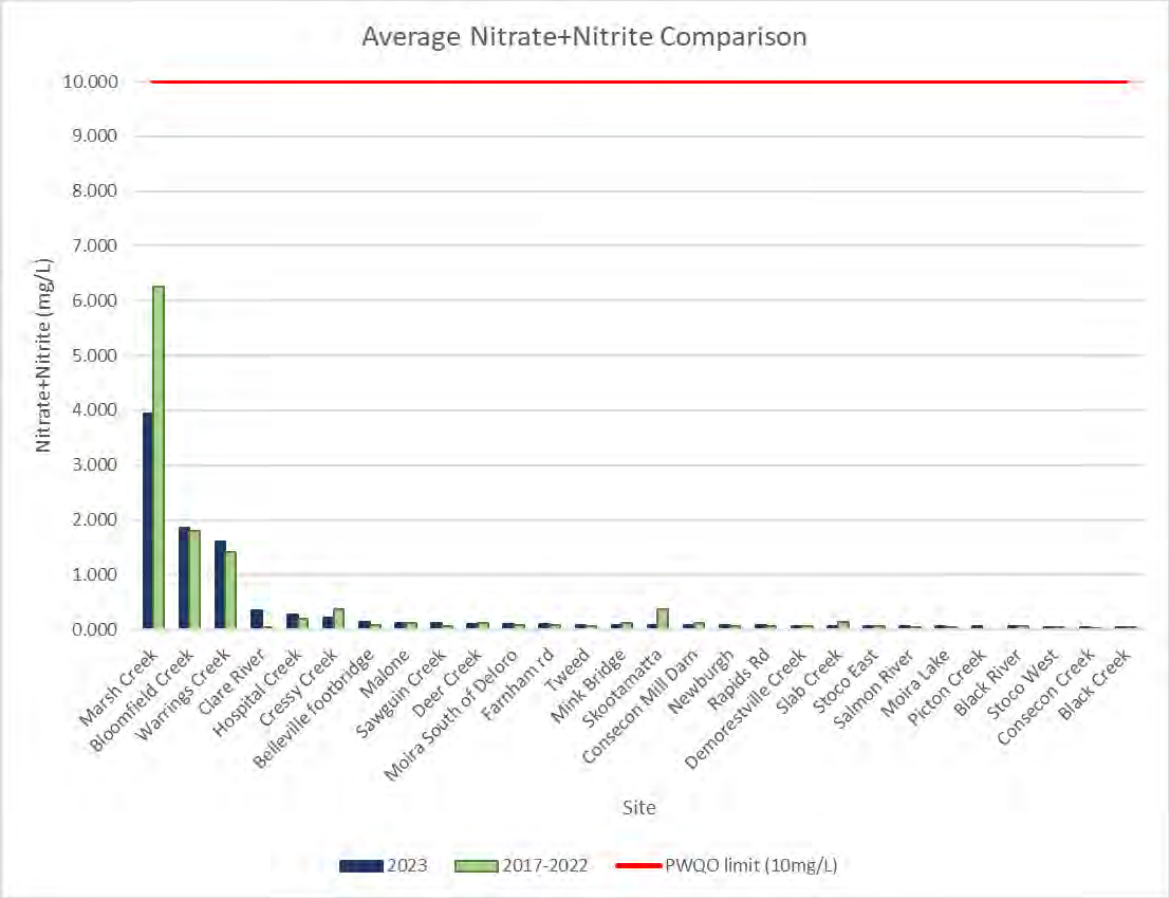



*Figure 28: Average Nitrite+Nitrates comparison 2017-2022 to 2023 (2020 was not sampled.*

## Next steps

The PWQMN is a long running, successful provincial program. The plethora of data from the PWQMN program could be better utilized to determine areas for improvements in water quality as a result of a project, or department work. Areas that are seeing degradation may require land use improvements. Water quality data would be a useful tool for the development of a more holistic planning of watersheds/sub-watersheds. Stewardship could get project and restoration project ideas by referencing degraded water quality stations. In addition, water quality information could be utilized by Communications for media campaigns or social media. Municipalities could use this date for planning processes. The development of this report is a step in the right direction to provide Quinte Conservation staff and departments with useful information. In 2021-2022 MECP performed a provincial cluster analysis. A cluster analysis is a statistical method to organize items into groups or clusters based on how closely associated they are with each other. This study was performed to determine if any sites were unnecessary, all Quinte Conservation monitored sites that were included in the analysis were deemed necessary, Appendix 6 contains the analysis.

# Baseflow Monitoring

Baseflow is a portion of streamflow that is not generated from the precipitation or runoff from a storm event. Rather, the flow results from persistent sources (e.g., groundwater, lakes, wetlands, swamps) that infiltrate into the soil and eventually move to the stream channel (LTC, 2022). As part of our watershed monitoring program, 30 sub watersheds are monitored for baseflow at approximately 330 sites. This data has been collected since 2008 biannually or annually in the summer months. Initially the program was created to collect data to establish baseline conditions and to improve the understanding of the watershed conditions in respect of the water budget and groundwater recharge estimates. However, this data may also be used in assessing areas of the watershed for fisheries, water quality data interpretation, and drought management.

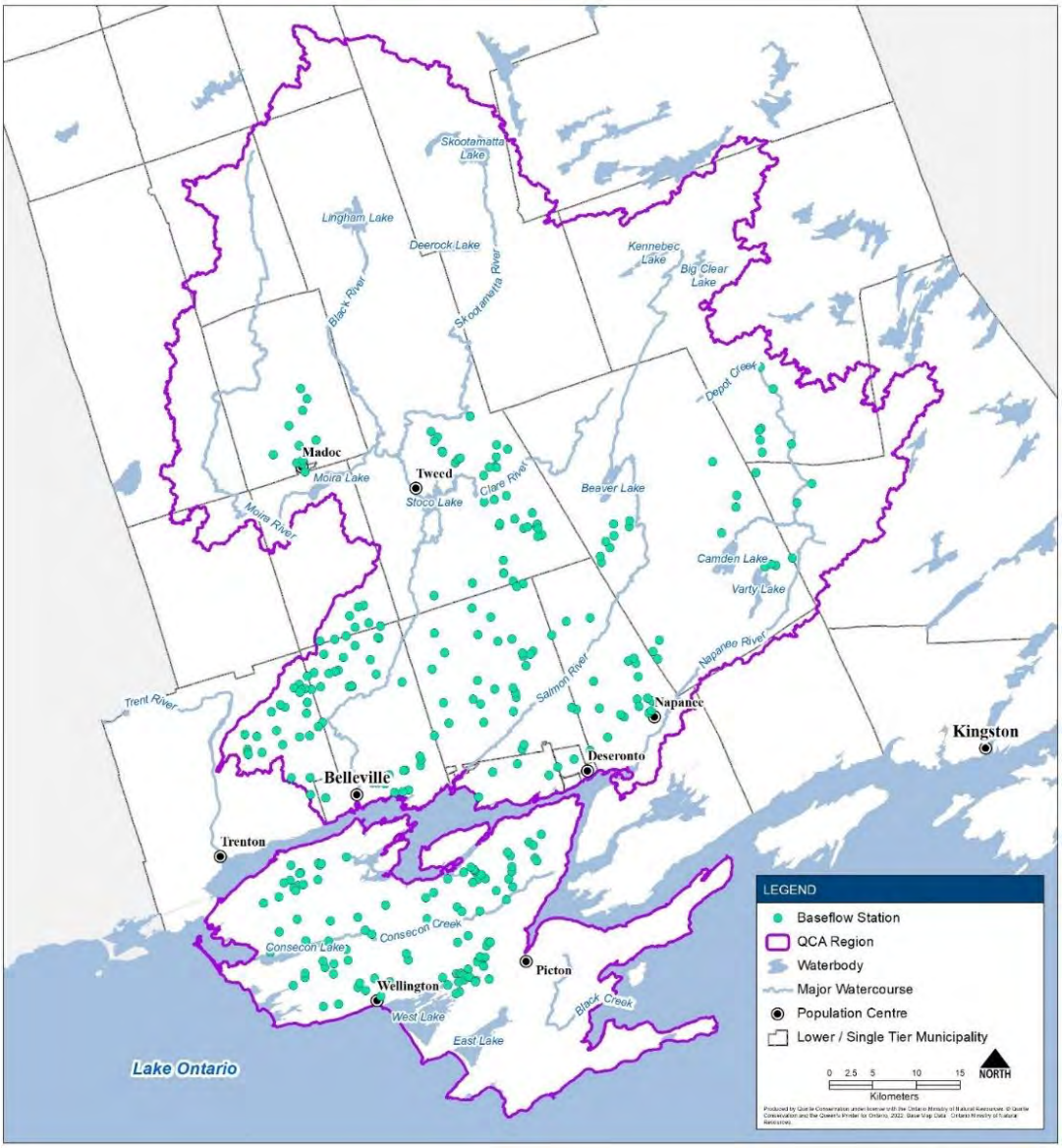



*Figure 22. Baseflow monitoring stations*

## Sampling and Methodologies

Typically, a sub-watershed is completed during the same day by starting at the top (i.e., headwaters) of the watershed and moving to the bottom (i.e., outlet) with measurement of flow at road crossings. The data is collected using either a pygmy or flow tracker meter following Ontario Stream Assessment Protocol (OSAP). Due to physiology of the region, the predominant fractured rock setting many of the region's streams run dry or have very low flow during the summer months. Baseflow is the lowest water level a creek will reach during its dry season. This is important because it can easily display information about a creek. Observation of a creek's water level throughout the year determines the classification of source water i.e., precipitation, groundwater, or surface water. Classifying creeks by source water allows patterns to develop in sampling. Groundwater fed creeks generally flow all summer long providing enough velocity to take readings. Soil, bedrock structure, elevation, velocity, volume and surrounding vegetation among other influential factors will shape the course of a waterway. Watersheds located in permeable soils will be less influenced by precipitation as it can absorb into the soil.

## Discussion

In 2023, 22 of 30 baseflow sub-watersheds were sampled and the dates of the surveys are listed in Appendix 2.5. The remaining sub-watersheds were not sampled due to time constraints, flow was relatively higher in 2023 than previous years and sub-watersheds took longer than previous years to complete. Site locations have been logged and sorted starting at the site closest to the outflow point of the watershed. Sites continue upwards in flow value and distance from the mouth of a creek. The largest flow value should be displayed with the first site location, unless the site characteristics were unfavourable. Due to the variations in site locations and site characteristics some sites were capable of multiple measurements at different times during the summer. In the case where a creeks baseflow was too minimal to take a reading the site location and date was noted.

### Next Steps

Baseflow is critical for water supply, habitat, and quantity. It is important that we better understand our baseflow conditions for drought, climate change, and watershed management. An initial review of the baseflow program is underway to investigate further uses of the data. An inventory was performed on the baseflow sampling sites using the previous five years (2015-2019) as well as both sampling events from 2021 where data was recorded for each site as 'flow' (with flow value) 'no measurable flow', or 'not sampled'. Staff reviewed the likelihood of each site providing useful and unique data, accessibility, geographic uniqueness, and representation. The goal is to reduce the number of redundant sites (i.e., sites that have never been able to be accessed because the site is too deep to sample, sites that have never yielded meaningful data, or reducing sites that are clustered within a small geographic radius and produce historically identical results) while maintaining the distribution of sites and certainty that the data covers monitoring needs. Although this data has been collected since 2008, the data management has been inconsistent, presenting challenges in using the data in a meaningful way. Staff's intent is to get the dataset imported into WISKI to perform analysis and to have the data readily available to the Water Resources Department. In addition, Quinte Conservation is planning to use the "hindsight"

modelling for the data to make it more useable for staff, which is further explained in the Recommendation section. A goal for the Watershed Monitoring Programs 2023 report is to compete

## Data Management - Water Information Systems (WISKI)

WISKi is a centralized database that allows Quinte Conservation to store, share, visualize, and analyze over three million data points collected every year. Staff rely on WISKI daily to monitor specific environmental variables in near real-time. The types of information that is collected range from ground water levels to snow depth measurements and everything in between. This data is used to make informed decisions for the safety of the public and ecological integrity of the watershed. Quinte Conservation also hosts and is also part of the Eastern WISKI Hub (the Hub), which is a cooperative group of 10 Eastern Conservation Authorities (CAs) who share resources relating to WISKI and its use.

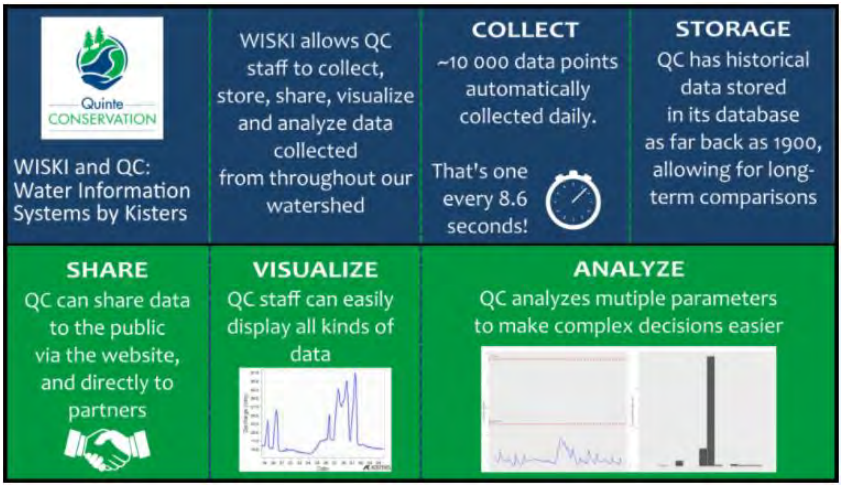



*Figure 29: WISKI Infographic*

The Hub was created to maintain a consistent, common process for collecting, compiling, and utilization of monitoring data, including hydrometric, meteorological, groundwater, and water quality data. One of the most important emerging trends is that data needs to be universally shared and easily understandable so that as data becomes more accessible, it is interpreted correctly. The 10 CAs that are members of the Hub all have slight variations on what data they collect and how they collect it, so data standards needed to be put in place. This will allow for more cohesiveness across Eastern Ontario and the ability for more sharing to occur between the CAs, ultimately allowing the public and natural environment to benefit. In addition, Quinte Conservation provides support services for the other Hub members, assisting with data upload, new user training, and data migration for new members. This was exemplified when the Central Lake Ontario Conservation Authority (CLOCA) was added to the Hub in mid-2019.

## Recommendations

The following recommendations are complementary to Quinte Conservation's existing monitoring programs that are provided by other conservation authorities and that Quinte Conservation might decide to utilize as part of Quinte Conservation's operating principles in relation to the Strategic Plan.

The Ontario Stream Assessment Protocol (OSAP) consists of various methodologies for the standardized assessment of wadable streams. Methodologies include identifying monitoring sites, evaluating benthic macroinvertebrates, fish communities, physical habitat, geomorphology, hydrology, and water temperature (Stanfield, L., 2010). OSAP is a valuable tool as it provides standardized monitoring that is used across the province, used for multiple purposes, and is stored in a common database. Quinte Conservation currently follows the OSAP protocol to assess baseflow conditions as described above Baseflow Monitoring Section In the past, Quinte Conservation has participated in studies using OSAP for fish community studies, geomorphology, and water temperature. Other conservation authorities perform routine OSAP monitoring and incorporate the data into their watershed report cards. The OSAP monitoring provided by conservation authorities is based on funding and resources available. Quinte Conservation staff have a goal of incorporating additional routine OSAP methodologies into the regular monitoring program to benefit the member municipalities and local resources. Quinte Conservation staff feel that the organization could benefit from the collection of fisheries, geomorphology, and temperature data at Quinte Conservation's existing OBBN sites. The benefits of these datasets will be briefly discussed below.

Fish are key components of aquatic ecosystems. Different fish species are sensitive to environmental change and are good indicators of watershed health. Quinte Conservation is a part of the Bay of Quinte watershed, which supports a world-class walleye and bass fishery providing this region with numerous economic benefits (BQRAP, 2021). It would be a benefit for Quinte Conservation to collect fisheries data using the OSAP methodologies for multiple reasons such as, watershed health, changes in fish community composition over-time, and obtaining Quinte Conservation specific fish species records throughout the watersheds. The fisheries data would be complimentary to management decisions related to Quinte Conservation's watersheds. Quinte Conservation monitoring staff are often approached by various consultants, organizations, and other internal departments regarding fish species locations within our watersheds. Quinte Conservation has the equipment to perform the fisheries monitoring, however, has not been part of our routine monitoring but should be considered as the data compliments other programs and department's needs.

Water temperatures in waterbodies are an important quality parameter that can easily be monitored. Many aquatic organisms depend on a certain range in water temperatures to maintain health or to sustain life. In addition, water temperatures play a key role in chemical processes. By monitoring water temperatures in our watersheds, we can assess chemical, biological, and physical properties of the water. Stream temperatures can be influenced by exchanges between nearby ground water. For example, cold water can indicate groundwater recharge. The resulting data using OSAP methodologies can be used to assess the suitability of a stream for fish communities, classify thermal regimes, and estimate the maximum summer water temperature of a site (Stanfield, L., 2010). Historically, Quinte Conservation participated in annual water temperature monitoring. Once temperature loggers are purchased, it would be beneficial to start monitoring water temperatures again as a cost-effective way to collect data that is complimentary to existing programs.

# Conclusions

This report is intended to be a living document that will be built upon as part of the annual reporting of watershed monitoring programs. In addition, this report is crucial in determining Quinte Conservation's success for meeting the vision of the strategic plan and provides an audit of our existing monitoring programs to identify data gaps, determine if areas are experiencing degradation, and identify areas in need of restoration or protection.

Quinte Conservation is involved in several monitoring programs that collect scientific data to understand the changes affecting natural areas and water courses. Through these programs and services, it supports protection of the region's natural resources and contributes to a healthy environment that meets the physical, emotional, and economic needs of residents and municipal leaders within the watersheds.

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