



Watershed Characterization Appendices



Version 1.1
April 2008

DRAFT REPORT

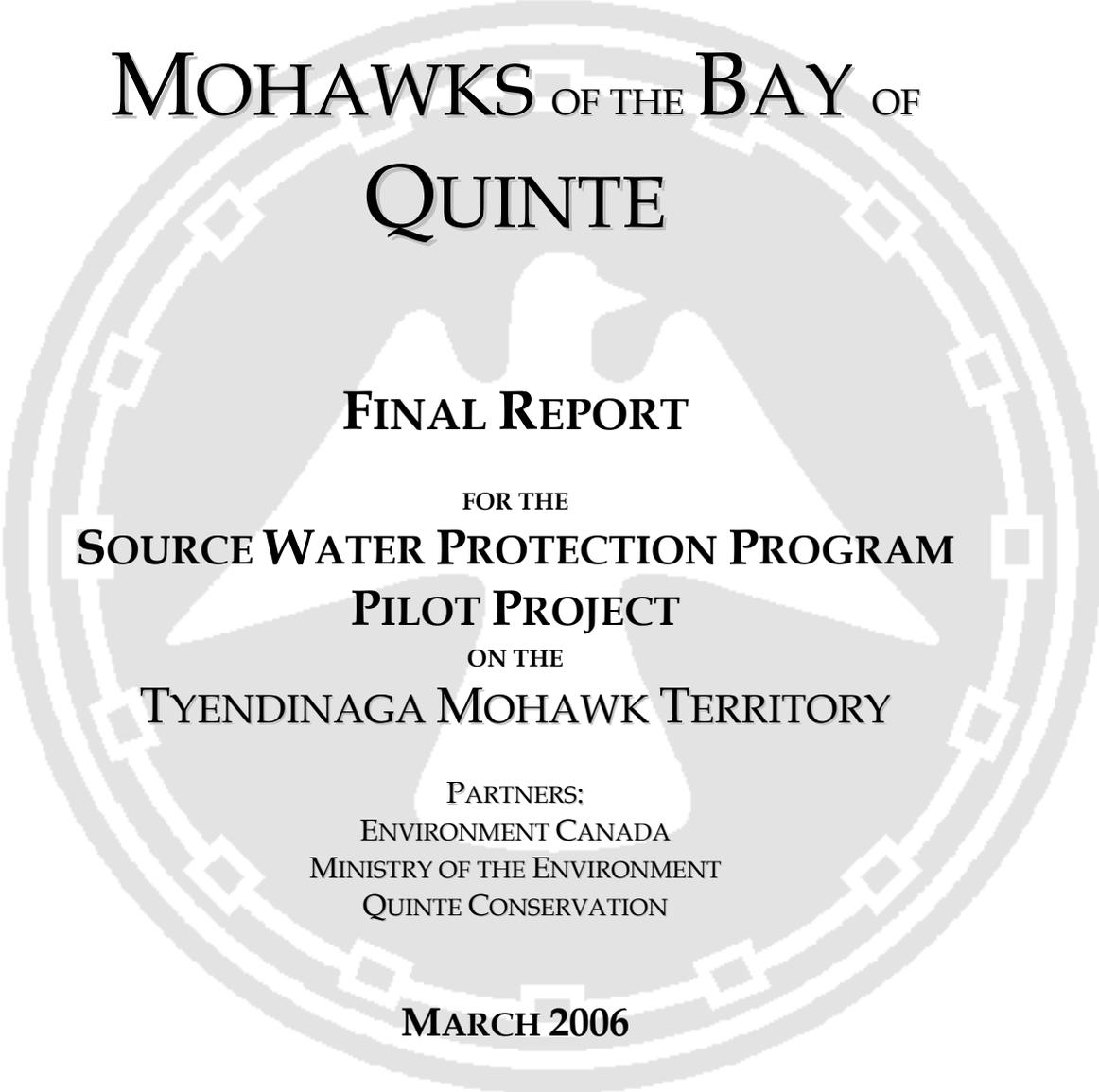
FOR CONSIDERATION OF THE

QUINTE REGION SOURCE PROTECTION

COMMITTEE

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**MOHAWKS OF THE BAY OF
QUINTE**

FINAL REPORT

FOR THE
**SOURCE WATER PROTECTION PROGRAM
PILOT PROJECT**
ON THE
TYENDINAGA MOHAWK TERRITORY

PARTNERS:
ENVIRONMENT CANADA
MINISTRY OF THE ENVIRONMENT
QUINTE CONSERVATION

MARCH 2006

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MOHAWKS OF THE BAY OF QUINTE

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ii. Background:

The Mohawks of The Bay of Quinte were contacted by the Quinte Conservation Authority in the spring of 2005 to participate in the development of the Quinte Watershed Protection Plan. Discussions were held throughout the summer with representatives from Quinte Conservation and Environment Canada.

In an effort to support the Quinte Conservation in the development of a Quinte Watershed protection plan an agreement was ratified on November 30, 2005 with Quinte Conservation outlining the conditions for the participation of the Mohawks of the Bay of Quinte in the program. Environment Canada and Ministry of the Environment provided matching funding contributions of \$25,000 each towards the costs of the study.

iii. Project Activities:

The project approach was taken as a first phase to future phases. Meetings with Quinte Conservation and Environment Canada defined the following activities as immediate priorities:

a. Review existing surface and groundwater information

- ✓ The Agreement between the Mohawks of The Bay of Quinte and Quinte Conservation was first ratified by Quinte Conservation on November 21, 2005 and then by Tyendinaga Mohawk Council on November 30, 2005. During this period MBQ staff inventoried all relevant ground and surface water reports and coordinated a meeting with Quinte Conservation staff to discuss the available reports and determine the relevant reports to copy.
- ✓ A meeting was held on November 23, 2005. The requested reports were photocopied, and forwarded to Quinte Conservation the first week of December.
- ✓ A follow up meeting was arranged for February 8, 2006 with MBQ, Quinte Conservation and XCG Consultants to discuss the findings of the Hydrogeological Study.
Discussions:
 - Confirmed GPS methodology to document septic beds. XCG explained four points of the bed were obtained to an accuracy of two (2) metres.

- GPS Coordinates obtained for 646 wells including holding tanks.
- Determined that most wells did not meet Reg 903.
- The following well deficiencies were identified:
 - Overburden wells not sealed properly.
 - Surface water infiltrating well pits.
 - Casing below surface.
 - Too close to septic beds.
- Discovered that MOE Well Records do not match to existing wells.
- Found on some sites with two wells that an abandon well is a source of contamination for the new well. Therefore, abandoned wells not decommissioned.
- Discovered treatment systems were not properly maintained. For example, Filters not changed, UV lights required replacement, etc.
- Quinte Conservation explained they are attempting to complete a watershed characterization for the entire Bay of Quinte watershed, undertake a watershed budget and also identify threats to ground and surface water.
- Quinte Regional Groundwater Study identified vulnerable areas, well head protection areas and recharge areas. Next level of study will incorporate existing water taking permits, model current water taking and establish conceptual water budget.
- Discussed the hydrogeological study. Quinte Conservation stated that the work completed to date is comprehensive and compared to surrounding municipalities the Tyendinaga Mohawk Territory is further advanced, however, the following gaps in the information was identified:
 - Combine bedrock surface figure with the groundwater elevation in bedrock figure.
 - Revise legend in Figure 30 for easier interpretation.
 - Double check Salmon R. sulphate data correlate with sulphate figure in the hydrogeological study.
 - Requested copies of Quinte Conservation interim watershed characterization study and water budget model.
 - Current groundwater and surface water study efforts can be enhanced with recording rainfall events utilizing rain gauge. This will assist with determining the influence of rainfall events on water levels in groundwater wells.

- Discussions included future water and sewer servicing of the Tyendinaga Mohawk Territory. This proved to be useful information as it will relate to the intake protection zone for the Town of Deseronto. Quinte Conservation stated they would share waterflow information gathered for the intake protection exercise to assist us in our project planning.
- Quinte Conservation requested copies of the 1991 Hydrogeological Study complete by RJ Burnside and the groundwater chemical analysis completed by Health Canada in 1995.

b. Collect surface water data.

- ✓ Quinte Conservation reps attended site visit on December 6 to establish surface water and groundwater monitoring sites.
- ✓ Water samples were collected at predetermined upstream and downstream locations on the Mud and Sucker Creeks. The samples were collected on February 14, 2006.

Observations:

- Detected metal parameters were consistently higher in the Sucker Creek samples compared to the Mud Creek samples. This may be attributable to land use in the area.
- Aluminum was the only parameter that exceeded Provincial and Federal water quality objectives. XCG analysis included a comparative to historical data on the Salmon River. The levels were found to be consistent with historic readings in the area.

c. Collect groundwater data.

- ✓ Approval for potential groundwater monitoring sites was received January 10, 2006.
- ✓ Site Meeting with Quinte Conservation and well drillers occurred January 17, 2006.
- ✓ Approval from farmers received February 2, 2006.
- ✓ Well Drilling Contractor to begin drilling on February 9, 2006.
- ✓ Groundwater samples were collected on March 2, 2006.

Observations:

- The two new wells identified as #TW1 & #TW2 on the Source Water Protection Drawing, were both non-detect for the pesticide parameters. Both of these wells are in agricultural land use areas.
- Bis(2-ethylhexyl) Phthalate parameter was detected in low concentrations. Although found in both wells, XCG Consultants believe this may be a result of the sample picking something up

from the bottles or in the lab. This is based on the fact there were no similar detects on the other parameters.

- Aesthetic parameters Hydrogen Sulphide and Iron were detected at elevated concentrations in TW #2. The elevated Hydrogen Sulphide levels detected in TW #2 is typical for that particular area however it was believed to be only found in the deeper aquifer.

d. Develop a plan for general public and internal communications which includes the source water protection process and progress information.

- ✓ A well aware workshop in partnership with Quinte Conservation and Health Canada was coordinated for March 25, 2006.
- ✓ The following people made presentations:
 - Mark Boone, Quinte Conservation
Discussions:
Mark discussed groundwater basics, what causes groundwater contamination and types of wells.
 - Keith Taylor, Quinte Conservation
Discussions:
Keith provided an overview of the Provincial Water Source Protection program, intent and goals.
 - Andrew Mack, Quinte Conservation
Discussions:
Andrew outlined watershed stewardship, and the identification and protection of wildlife habitat on your property.
 - Jim Shiner, Building Inspector, Hastings Health Unit
Discussions:
Jim described types of septic systems, installation options and discussed environmental concerns.
- ✓ Workshop date and final agenda was advertised in the February and March community newsletter.
- ✓ Twenty individuals attended from the community. Interaction with the attendees was good. Community members asked lots of questions. We

received positive feedback from the attendees. Reasons for low turnout:

- The workshop conflicted with a trade show that was held the same day.
- It was recommended to hold through the week at night as opposed to a Saturday.

iii. Meetings Summary:

1. Chief and Council briefing meeting October 19, 2005
2. Meeting with Mark Boone, Quinte Conservation November 23, 2005
3. Surface and groundwater monitoring site visits with Mark Boone, Quinte Conservation December 6, 2005
4. Groundwater monitoring site visit with Quinte Conservation and Chalk Well Drilling January 17, 2006.
5. Update meeting with Environment Canada and Quinte Conservation January 25, 2006.
6. Hydrogeological Study Review meeting with XCG Consultants, Quinte Conservation, February 8, 2006.
7. Chalk Well Drilling site confirmation with Quinte Conservation February 9, 2006.
8. Progress meeting with Environment Canada February 15, 2006.
9. Well Aware workshop March 25, 2006.
10. Meeting with Quinte Conservation to discuss potential contamination sites in the surrounding municipalities, ground and surface water sampling results on March 29, 2006.

ii. Conclusion:

Overall this pilot project was an excellent opportunity for the community to understand the importance of water source protection. Understanding the local watershed provides important information for community planning purposes, and is important to the health and safety of our members.

Tyendinaga was very comfortable working with Quinte Conservation and we moved along in the process at the same level. It wasn't a case of we know what is best for you and do these activities. We were approached, consulted and an agreement was drafted on this basis. The funding provided by the Ministry of the Environment and Environment Canada ensured that there was no burden on the band resources to participate in the process.

The following benefits achieved from undertaking the Water Source Protection Program Pilot Study provides a solid foundation for future work:

- ✓ Solid baseline surface and groundwater quality data.
- ✓ Identification of potential sources of contamination from community activities and activities from surrounding municipalities.
- ✓ Capacity building. The additional funding provided by Environment Canada facilitated the purchase of Viewlog and Site FX software, and GPS equipment to allow the community to manage GPS mapping, to manage a database of all wells and septics, and to update the database with coordinate information as new wells and septics are installed.
- ✓ Input from Quinte Conservation into the Hydrogeological Study enhanced the information presented in the final document.
- ✓ The partnership with Quinte Conservation has provided the community with a solid understanding of the importance of water source characteristics, monitoring trends in surface and ground water quality.
- ✓ Participation in the pilot project provided a forum to discuss the importance of establishing a water source protection plan for the community.

v. Potential Future Activities:

The following activities have been identified for the next phase if funding resources are available:

1. Finalize watershed characterization.
2. Monitor ground and surface water quality.
3. Identify all vulnerable areas and recharge areas.
4. Develop strategy to manage and protect vulnerable areas and recharge areas.
5. Develop strategy to manage or remediate sources of contamination.
6. Identify areas where the aquifers are strong and potentially stressed.
7. Determine extent of future participation in the Quinte region water source protection committee.

Appendix 2 - List of Quinte Conservation Dams
Section 2.3 – Quinte Conservation Dams
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Name	Easting	Northing	Waterbody	Purpose	Type	Outlet	Height	Length	Year Construction
Beaver Meadow Dam	325140.43140700000	4869543.77540000000		Conservation/wetland preservation, Recreation	Concrete Weir	Controlled Spillway (stop logs)	1.5m	2.5m	1982
Belleville Yardman	309278.34471600000	4895457.23748000000	Moira River	Flood Control					
Bellrock Dam	359947.10581200000	4926416.02536000000	Depot Creek	Waterpower, Recreation	Concrete Weir	Controlled Spillway (stop logs)			1991
Breeze Dam	337082.99283900000	4911081.20347000000	Salmon River	Flood Control, Low Flow Augmentation, Recreation	Concrete Weir	Uncontrolled Spillway(free running) & Controlled Spillway (stop logs)	2m	50m	1982
Caton's Weir	317733.39177800000	4922288.06705000000	Moira River	Recreation (maintain water level in Stoco Lake)	Concrete Weir	stop logs	1m	80m	1968
Chapman's Weir	317081.57537300000	4923453.81562000000	Moira River	Recreation (maintain water level in Stoco Lake)	Concrete Weir	uncontrolled spillway	1m	30m	
Colebrook Dam	358966.00668000000	4916208.11014000000	Napanee River	Flood Control, Recreation	Concrete Gravity	Uncontrolled Spillway(free running) & Drop Inlet (steel/concrete)	3m	37m	1980
Consecon Mill Dam	297773.78920800000	4874330.29748000000	Consecon Creek	Fire Supply, Low Flow Augmentation, Recreation	Concrete Gravity, Concrete Weir	uncontrolled spillway(free running) & controlled spillway (stop logs)	1m	20m	1975
Deerock Dam	323663.90317600000	4955975.57331000000	Skootamatta River	Recreation, low flow augmentation	Earth Filled Embankment	steep pipe	4m	120m	1969
Deloro Dam	292259.51350400000	4933106.69623000000	Moira River	low flow augmentation	concrete gravity	controlled spillway (stop logs)	6m	25m	1953

Name	Easting	Northing	Waterbody	Purpose	Type	Outlet	Height	Length	Year Construction
Demorestville Dam	323110.36304100000	4884267.19427000000	Demorestville Creek	Fire Supply, Low Flow Augmentation, Recreation	Concrete Gravity, Earth Filled Embankment	Concrete Gravity, Earth Filled Embankment	2m	10m	1978
Downey's Rapids Weir	309913.03055700000	4931254.11826000000	Moira River	Recreation (maintain water level in Moira Lake)	Concrete Weir	controlled spillway (stop logs)	1m	55m	1964
Flinton Dam	324705.40829600000	4951230.84347000000	Skootamatta River	Recreation	concrete gravity	uncontrolled spillway (free running)	2m	31m	
Hardwood Creek Dam	364991.73471400000	4925518.38958000000	Napanee River	Recreation	Concrete Gravity, Earth Filled Embankment	uncontrolled spillway (free running)	2m	32m	1965
Harry Smith Dam	305201.39013600000	4881905.71969000000	Roblin Mill Creek	Conservation/Wetland Preservation, Recreation	Concrete Gravity	Controlled Spillway (stop logs)	1m	3m	
Holgate Dam	308764.25959600000	4897463.01221000000	Moira River	Flood Control					1988
James Lazier Dam	330153.38861700000	4904353.34174000000	Salmon River	Flood Control, Historical Site, Recreation	Concrete Weir	Controlled Spillway(stop logs)	2m	20m	1981
JH McLeod Dam	309691.29833800000	4894732.46174000000	Moira River	Flood Control	Earth Filled Embankment	uncontrolled spillway(free running) & controlled spillway (stop logs)			1979
Kingsford Weir	331747.66598400000	4905218.93075000000	Salmon River	Recreation	Concrete Butress & plywood sheeting	uncontrolled spillway (free running)	<1m	30m	seasonal
Laraby Rapids Dam	340723.12829700000	4932012.97006000000	Salmon River (Beaver Lake)	Low Flow Augmentation, Recreation	Concrete Gravity	uncontrolled spillway (free running) & Controlled Spillway (stop logs)	1m	37m	1975
Lingham Lake Dam	309383.38885800000	4957739.43530000000	Black River	low flow augmentation	Masonry	controlled spillway (stop logs & steel gates)	7m	3m	
Lott Dam	309489.03534000000	4893780.14012000000	Moira River	Flood Control	concrete gravity	uncontrolled spillway(free running) & controlled spillway (steel gates)			1979

Name	Easting	Northing	Waterbody	Purpose	Type	Outlet	Height	Length	Year Construction
Lower Arden Dam	346703.74320500000	4953086.45838000000	Arden Creek	Recreation	Concrete Gravity, Concrete Weir	Uncontrolled Spillway (free running)	3m	26m	
Macaulay Mountain Dam	329424.90962300000	4874646.43125000000	Marsh Creek	Recreation	Earth Filled Embankment	Drop Inlet (steel/concrete)	4m	40m	1973
Middle Arden Dam	347085.89053400000	4953420.83729000000	Arden Creek	Recreation	Concrete Gravity	Controlled Spillway (stop logs)	3m	3m	
Milford Millpond Dam	332229.13454800000	4866846.01573000000	Black Creek	Flood Control, Fire Supply, Low Flow Augmentation, Recreation	Concrete Weir	Uncontrolled Spillway (free running), Drop Inlet (steel/concrete)	7m	20m	1981
Mulhall Dam	309076.08171800000	4895912.32923000000	Moira River	Flood Control					
Newburgh Weir	350698.11017400000	4909879.61151000000	Napanee River	Historical Site	Concrete Gravity	Uncontrolled Spillway (free running)			
O'Hara Mill Dam	299271.76638000000	4932437.11219000000	Deer Creek	Waterpower, Historical Site, Recreation	Stone-filled Timber Cribs or Sheet Pile Core	uncontrolled spillway (free running)	2.5m	2m	1850
Second Depot Lake Dam	359413.03179800000	4933559.32517000000	Depot Creek	Flood Control, Fire Supply, Low Flow Augmentation, Recreation	Concrete Gravity, Concrete Weir, Earth Filled Embankment	Controlled Spillway (stop logs)	8m	60m	1958
Skootamatta Lake Dam	323921.30836400000	4965555.11112000000	Skootamatta River	Recreation, low flow augmentation	concrete gravity	controlled spillway (stop logs)	3m	46m	1955
Springside Park Dam	344655.53707800000	4901514.14351000000	Napanee River	Municipal/Domestic Intake, Recreation	Concrete Gravity, Concrete Weir	Uncontrolled spillway (free running)	2m (8m fall)	50m	1786
Third Depot Lake Dam	358729.97099500000	4935501.36078000000	Depot Creek	Flood Control, Low Flow Augmentation, Recreation	Earth Filled Embankment	Drop Inlet (steel/concrete)	16m	91m	1975
Thirteen Island Lake Dam	369655.63187500000	4931503.78173000000	Napanee River	Recreation	Concrete Arch, Earth Filled Embankment	Pipe, Conduit, Culvert (steel, concrete, plastic)			1975

Name	Easting	Northing	Waterbody	Purpose	Type	Outlet	Height	Length	Year Construction
Upper Arden Dam	347563.57469600000	4953910.46355000000	Big Clear Lake (Salmon River)	Low Flow Augmentation, Recreation	Concrete Gravity, Concrete weir	Controlled Spillway (stop logs)	2m	15m	1980
Varty Lake Dam	355965.51817800000	4919301.47862000000	Varty Creek	Conservation/wetland preservation	Concrete gravity	Uncontrolled Spillway(free running) & Controlled Spilway (stop logs)	1m		1972
Whitney Dam	298077.57090800000	4874532.81861000000	Consecon Creek	Flood Control, Fire Supply, Low Flow Augmentation, Recreation	Concrete Gravity, Concrete weir	Uncontrolled Spillway(free running), Drop Inlet(steel/concrete)	2m	43m	1986
Wishart Dam	308696.83859600000	4896367.42097000000	Moira River	Flood Control					
Woods Dam	338663.83042600000	4914720.42333000000	Salmon River	Historical Site, Recreation	concrete gravity, concrete weir	uncontrolled spillway (free running)	2m	30m	
Switzer Dam	336819.00000000000	4911045.00000000000	Salmon River	Waterpower, Recreation	Concrete Weir	uncontrolled spillway (free running) & Controlled Spillway (stop logs)	4m	16m	1982
Bloomfield Dam	321400.00000000000	4872500.00000000000	Bloomfield Creek	Conservation/wetland Preservation, low flow augmentation, fire supply, recreation	Earth Filled Embankment	Drop Inlet (steel/concrete), Concrete Pipe	5m		1975

Appendix 3 - Quinte Region Environment Canada Precipitation Gauges

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Environment Canada Precipitation Gauges.

DWELLING	ID	EASTING	NORTHING	START	END
Arden	6100310	345510	4951475	1895	1911
Belleville	6150689	309399	4891295	1866	2005
Belleville OWR	6150700	310785	4893108	1959	1975
Belleville Par	6150717	312117	4893070	1929	1959
Bloomfield	6150815	322180	4870559	1896	2005
Bloomfield Wes	6150816	319506	4870632	1966	1997
Centreville	6151309	347368	4918088	1985	2005
Cloyne	6161662	328690	4964868	1967	1981
Cressy	61519JM	351926	4884643	1966	2002
Croyden	6151921	341185	4936760	1895	1908
Deseronto	6152007	334770	4892461	1882	1905
Glenora RS	6152837	335688	4875767	1958	1969
Kaladar	6153935	332161	4946250	1998	2005
Madoc	6154780	303960	4932220	1903	1969
Madoc	6154779	303960	4932220	1998	2005
Main Duck Is.	6154820	370203	4863887	1959	1986
Milford	6155148	335411	4864659	1984	1992
Mountainview	6155498	310465	4882001	1966	1969
Mountainview2	615EMR7	315753	4879998	1986	2005
Napanee	615NNPL	342898	4897819	1987	2001
Picton	6156533	330344	4870418	1915	1995
Picton A	6156535	327528	4870418	1956	1957
Point Petre	6156559	327094	4853757	1977	2005
Queensboro	6166800	308208	4941358	1914	1946
Shannonville	6157683	322877	4896476	1883	1894
South Bay	6157913	338088	4864594	1966	1967
Tweed	6159010	319804	4929908	1925	1972
Tweed Ont Hydr	6159019	315829	4930020	1983	1986
Wellington	6159449	314105	4868928	1948	1991

Appendix 4 - Evaluated Wetlands in the Quinte Region
Section 2.4 - Naturally Vegetated Areas
Watershed Characterization Page 59

List of wetlands (WET) evaluated by the OMNR using the Ontario Wetland Evaluation System (OWES) and is recognized as having ecological significance (NHIC 2005).

Area Name	Size (ha)	Zone	Easting (m)	Northing (m)	Watershed Region §	Canadian Shield
AIKENS WETLAND	42	18	303300	4896600	MRW	Off
BEAVER CREEK- WETLAND	203	18	287000	4933000	MRW	Off
BELL CREEK SWAMP	50	18	313500	4894000	MRW	Off
BELL CREEK SWAMP ADDITION	38	18	312500	4896500	MRW	Off
BELL CREEK SWAMP COMPLEX	88	18	313500	4894000	MRW	Off
BEND BAY- MOIRA LAKE- WETLAND	257	18	298000	4924100	MRW	Off
BLESSINGTON CREEK MARSH	75	18	314600	4892600	MRW	Off
CASSIDY MARSH	88	18	312500	4929000	MRW	On
CHAPMAN BOG	17	18	314900	4921900	MRW	On
CLARE RIVER- WETLAND	167	18	326000	4929000	MRW	On
CLARE RIVER WETLAND COMPLEX	77	18	325500	4929800	MRW	On
CROWE RIVER MARSH	79	18	285500	4922500	MRW	Off
DELORO- WETLAND	45	18	293900	4933200	MRW	On
DELORO WETLAND COMPLEX	92	18	293800	4932500	MRW	On
DRAG LAKE WETLAND	155	18	309400	4923600	MRW	Off
ELDORADO LAKE- WETLAND	184	18	300100	4940000	MRW	On
FOXBORO SWAMP	1269	18	308500	4905500	MRW	Off
FULLER CREEK- WETLAND	180	18	310000	4918500	MRW	Off
GOOSE CREEK FEN	252	18	332000	4925300	MRW	Off
HAZZARD LAKE- MADOC CREEK- WETLAND	187	18	304100	4938200	MRW	On
HEMITITE ROAD-	81	18	300100	4936000	MRW	On

Area Name	Size (ha)	Zone	Easting (m)	Northing (m)	Watershed Region §	Canadian Shield
WETLAND						
HUNT CLUB-WETLAND	15	18	307900	4934100	MRW	On
HUNTINGWOOD ROAD WETLAND	38	18	305100	4896000	MRW	Off
JARVIS LAKE-WETLAND	94	18	295700	4931700	MRW	On
KHOREN'S POND-WETLAND	19	18	318500	4929600	MRW	On
KILLALOE SWAMP	1157	18	309200	4949400	MRW	On
LARKINS FEN	253	18	327000	4923500	MRW	Off
LIME LAKE FEN	300	18	333000	4922000	MRW	Off
LITTLE SKOOTAMATTA CREEK- WETLAND	43	18	326000	4940000	MRW	On
LOST- WETLAND	107	18	326000	4912300	MRW	Off
MADOC WETLAND	107	18	304500	4929500	MRW	On
MARLAND LAKE (#14)-WETLAND	113	18	326000	4918500	MRW	Off
MARMORA MINES WETLAND	199	18	289500	4926500	MRW	Off
MONEYMORE-WETLAND	26	18	318500	4916500	MRW	Off
MONTROSE WOOD WETLAND COMPLEX	23	18	302900	4892200	MRW	Off
MYREHALL-WETLAND	313	18	324000	4914000	MRW	Off
OTTER CREEK-WETLAND	67	18	322400	4931400	MRW	On
PARKS CREEK-WETLAND	155	18	318000	4907500	MRW	Off
POTTER CREEK TRIBUTARY-WETLAND	4	18	306400	4891800	MRW	Off
QUEENSBOROUGH-WETLAND	36	18	306000	4941900	MRW	On
RAPIDS ROAD WETLAND COMPLEX	125	18	308200	4932100	MRW	On
RAWDON WETLAND	88	18	297400	4923500	MRW	Off
READ SWAMP	75	18	324500	4909000	MRW	Off
ROSS LAKE-WETLAND	70	18	303800	4910400	MRW	Off
SAMPSON LAKE FEN	112	18	333500	4929000	MRW	Off

Area Name	Size (ha)	Zone	Easting (m)	Northing (m)	Watershed Region §	Canadian Shield
STOCO FEN-WETLAND	500	18	322000	4926000	MRW	On
STOCO LAKE- WEST CHANNEL- WETLAND	194	18	317000	4924500	MRW	On
SULPHIDE- WETLAND	110	18	318500	4932500	MRW	On
SULPHIDE WETLAND COMPLEX	144	18	320500	4933500	MRW	On
THOMASBURG MARSH	66	18	313800	4918800	MRW	Off
THRASHER'S CORNERS- WETLAND	176	18	312600	4904000	MRW	Off
TYENDINAGA SWAMP	58	18	320800	4905200	MRW	Off
AIRPORT CREEK MARSH	29	18	332300	4893800	NRW	Off
BEECHWOOD SWAMP	192	18	339000	4903500	NRW	Off
BELLROCK-WETLAND	30	18	362700	4927000	NRW	On
BIG MARSH-WETLAND	400	18	324000	4893500	NRW	Off
BLUFF POINT-WETLAND	42	18	325000	4892000	NRW	Off
CAMDEN LAKE-WETLAND	1225	18	352000	4920000	NRW	Off
CAMERON SWAMP	2563	18	362000	4923000	NRW	Off
ENTERPRISE CREEK-WETLAND	166	18	348900	4925700	NRW	Off
HEMPFLY SWAMP	370	18	338100	4907500	NRW	Off
HINCH SWAMP	271	18	344600	4912000	NRW	Off
LITTLE HINCH-WETLAND	60	18	347400	4911400	NRW	Off
LOWER NAPANEE RIVER	206	18	341000	4896000	NRW	Off
MILSAP SWAMP	137	18	352500	4915500	NRW	Off
SPRING LAKE WETLAND COMPLEX	81	18	368200	4926700	NRW	On
SUCKER CREEK TRIBUTARIES-WETLAND	158	18	330000	4896300	NRW	Off
UPPER SUCKER CREEK SWAMP	95	18	339700	4900300	NRW	Off
VARTY LAKE-WETLAND	730	18	355500	4917000	NRW	Off
YARKER WETLAND	64	18	360500	4915000	NRW	Off

Area Name	Size (ha)	Zone	Easting (m)	Northing (m)	Watershed Region §	Canadian Shield
ALBURY SWAMP	397	18	299000	4882000	PEP	Off
AMELIASBURGH-WETLAND	107	18	302500	4880300	PEP	Off
BIG ISLAND MARSH	858	18	322000	4886000	PEP	Off
BIG SWAMP/ LITTLE SWAMP COMPLEX-WE	1981	18	318000	4877000	PEP	Off
BLACK CREEK-WETLAND	87	18	334500	4868000	PEP	Off
BLACK RIVER SWAMP	39	18	334900	4870700	PEP	Off
BLOOMFIELD CREEK-WETLAND	44	18	323700	4874700	PEP	Off
CARRYING PLACE & 12 O'CLOCK POINT M	62	18	293300	4881200	PEP	Off
CONSECON CREEK SWAMP	9	18	315200	4880700	PEP	Off
CRESSY SWAMP	128	18	348700	4882000	PEP	Off
CROFTON MARSH	17	18	313500	4881500	PEP	Off
EAST LAKE MARSH	230	18	323000	4865800	PEP	Off
FISH LAKE WETLAND	492	18	327000	4884000	PEP	Off
HUBB'S CREEK SWAMP	340	18	309300	4872500	PEP	Off
HUYCK'S BAY	245	18	302300	4868500	PEP	Off
LAKE CONSECON MARSH	189	18	298800	4874000	PEP	Off
LAKE ON THE MOUNTAIN SWAMP	140	18	333700	4876200	PEP	Off
LOST LAKE SWAMP-WETLAND	20	18	346700	4879000	PEP	Off
NORTH PORT SWAMP	27	18	329000	4889800	PEP	Off
PINE POINT WETLAND	26	18	300500	4886500	PEP	Off
PLEASANT BAY WETLAND	299	18	300000	4870400	PEP	Off
REDNERSVILLE SWAMP	32	18	303500	4886000	PEP	Off
ROSEN MARSH	58	18	335500	4873300	PEP	Off
SAWGUIN CREEK MARSH	2093	18	310300	4885700	PEP	Off
SELBY CREEK HEADWATER SWAMP	52	18	315500	4881700	PEP	Off
SLAB CREEK SWAMP	121	18	305000	4872500	PEP	Off
SOUTH BAY	231	18	336000	4862000	PEP	Off

Area Name	Size (ha)	Zone	Easting (m)	Northing (m)	Watershed Region §	Canadian Shield
COASTAL- WETLAND						
SOUTH BAY MARSH	62	18	336000	4864000	PEP	Off
WAUPOOS CREEK SWAMP	48	18	338100	4874500	PEP	Off
WELLER'S BAY WETLAND COMPLEX	363	18	293100	4877600	PEP	Off
BEAVER LAKE SWAMP	139	18	336000	4930000	SRW	Off
BEAVER LAKE- WETLAND	93	18	338500	4931000	SRW	On
BIDDY'S LAKE- WETLAND	83	18	344000	4924000	SRW	On
BIG CLEAR LAKE WETLANDS	126	18	349000	4954000	SRW	On
BLESSINGTON CREEK - WETLAND	24	18	322900	4904000	SRW	Off
EBENEZER SWAMP	54	18	331900	4908100	SRW	Off
FISHER CREEK- WETLAND	80	18	325500	4905500	SRW	Off
INGLE BOG WETLAND COMPLEX	82	18	336200	4922300	SRW	Off
KENNEBEC COMPLEX- WETLAND	2500	18	347500	4957700	SRW	On
LOWER SALMON RIVER- WETLAND	151	18	320000	4894000	SRW	Off
MUD CREEK- WETLAND	319	18	341500	4912400	SRW	Off
MUD LAKE- WETLAND	967	18	331300	4913700	SRW	Off
OTTER CREEK- WETLAND	143	18	335000	4911000	SRW	Off
PENNELL'S CREEK- WETLAND	183	18	337000	4922500	SRW	Off
ROBLIN SWAMP	171	18	340300	4916800	SRW	Off
RON'S LAKE WETLAND COMPLEX	394	18	344700	4925700	SRW	On
WESTPLAIN MARSH	19	18	336300	4916500	SRW	Off
WHITE LAKE- WETLAND	132	18	336800	4924600	SRW	Off

§ MRW - Moira River Watershed, NRW - Napanee River Watershed, PEP - Prince Edward Peninsula, SRW - Salmon River Watershed

Appendix 5 - ANSI-Life Science areas in the Quinte Region

Section 2.4.1 – Wetlands

Watershed Characterization Page 59

List of ANSI-LS areas evaluated by OMNR and classified by NHIC as having provincially or regionally significant representative ecological features (NHIC 2005).

Area Name	Size (ha)	Zone	Easting (m)	Northing (m)	Watershed Region §	Canadian Shield
DRY LAKE - LIME LAKE FENS, MARLBANK ESKER	285	18	333000	4920500	MRW	Off
ELZEVIR PEATLANDS AND BARRENS	5400	18	319000	4956000	MRW	On
GOOSE CREEK PONDS	252	18	332500	4925500	MRW	Off
KALADAR JACK PINE	350	18	331000	4946500	MRW	On
KALADAR JACK PINE BARRENS	1649	18	327000	4939000	MRW	On
LARKINS FEN	0	18	327700	4923500	MRW	Off
LINGHAM LAKE	2100	18	309000	4959000	MRW	On
MCCAW BOG AND BARRENS	1300	18	319000	4972000	MRW	On
MELLON LAKE	4000	18	331000	4936000	MRW	On
MOIRA KARST	180	18	315000	4911500	MRW	Off
MOUNT MORIAH	2600	18	307000	4953000	MRW	On
SAMPSON LAKE FEN	110	18	333500	4929000	MRW	Off
STOCO FEN	370	18	322000	4926000	MRW	On
THOMASBURG ESKER BOG	20	18	315000	4922000	MRW	On
AIRPORT CREEK MARSH	29	18	332300	4893800	NRW	Off
BEECHWOOD SWAMP	192	18	339000	4903500	NRW	Off
BELLROCK- WETLAND	30	18	362700	4927000	NRW	On
BIG MARSH- WETLAND	400	18	324000	4893500	NRW	Off
BLUFF POINT- WETLAND	42	18	325000	4892000	NRW	Off
CAMDEN LAKE- WETLAND	1225	18	352000	4920000	NRW	Off
CAMERON SWAMP	2563	18	362000	4923000	NRW	Off
ENTERPRISE CREEK-	166	18	348900	4925700	NRW	Off

Area Name	Size (ha)	Zone	Easting (m)	Northing (m)	Watershed Region §	Canadian Shield
WETLAND						
HEMPFLY SWAMP	370	18	338100	4907500	NRW	Off
HINCH SWAMP	271	18	344600	4912000	NRW	Off
LITTLE HINCH- WETLAND	60	18	347400	4911400	NRW	Off
LOWER NAPANEE RIVER	206	18	341000	4896000	NRW	Off
MILSAP SWAMP	137	18	352500	4915500	NRW	Off
SPRING LAKE WETLAND COMPLEX	81	18	368200	4926700	NRW	On
SUCKER CREEK TRIBUTARIES- WETLAND	158	18	330000	4896300	NRW	Off
UPPER SUCKER CREEK SWAMP	95	18	339700	4900300	NRW	Off
VARTY LAKE- WETLAND	730	18	355500	4917000	NRW	Off
YARKER WETLAND	64	18	360500	4915000	NRW	Off
AMELIASBURG GNEISSIC INLIER	10	18	307500	4884200	PEP	Off
BIG ISLAND COASTAL WETLAND	780	18	322000	4886000	PEP	Off
BIG SWAMP	1600	18	319000	4878000	PEP	Off

Appendix 6 - Bay of Quinte Historic Fish Species

Section 2.5.1 Fisheries – Bay of Quinte

Watershed Characterization Page 66

Fish species historically identified in the Bay of Quinte (cited in Ewaschuk 2005).

Family	Common Name	Scientific Name
Bowfins - Amiidae	bowfin	<i>Amia calva</i>
Bullhead catfishes – Ictaluridae	brown bullhead	<i>Ictalurus nebulosus</i>
	channel catfish	<i>Ictalurus punctatus</i>
	stonecat	<i>Noturus flavus</i>
Carp & Minnows – Cyprinidae	tadpole madtom	<i>Noturus gyrinus</i>
	blackchin shiner	<i>Notropis heterodon</i>
	bluntnose minnow	<i>Pimephales notatus</i>
	*bridle shiner	<i>Notropis bifrenatus</i>
	carp	<i>Cyprinus carpio</i>
	common shiner	<i>Notropis cornutus</i>
	emerald shiner	<i>Notropis atherinoides</i>
	fallfish	<i>Semotilus corporalis</i>
	fathead minnow	<i>Pimephales promelas</i>
	golden shiner	<i>Notemigonus crysoleucas</i>
	goldfish	<i>Carassius auratus</i>
	longnose dace	<i>Rhinichthys cataractae</i>
	rudd	<i>Scardinius erythrophthalmus</i>
	sand shiner	<i>Notropis stramineus</i>
	spotfin shiner	<i>Notropis spilopterus</i>
spottail shiner	<i>Notropis hudsonius</i>	
striped shiner	<i>Notropis chrysocephalus</i>	
Cods – Gadidae	burbot	<i>Lota lota</i>
Drum – Sciaenidae	freshwater drum	<i>Aplodinotus grunniens</i>
Eels (freshwater) – Anguillidae	American eel	<i>Anquilla rostrata</i>
Gars – Lepisosteidae	longnose gar	<i>Lepisosteus osseus</i>
Goby - Gobiidae	round goby	<i>Neogobius melanostomus</i>
Herring – Clupeidae	alewife	<i>Alosa pseudoharengus</i>
	gizzard shad	<i>Dorosoma cepedianum</i>
	banded killifish	<i>Fundulus diaphanus</i>
Killifishes – Cyprinodontidae	sea lamprey	<i>Petromyzon marinus</i>
Lampreys – Petromyzontidae	mooneye	<i>Hiodon tergisus</i>
Mooneyes – Hiodontidae	central mudminnow	<i>Umbria limi</i>
Mudminnow – Umbridae	blue pike	<i>Stizostedion vitreum glaucum</i>
Perches – Percidae	fantail darter	<i>Etheostoma flabellare</i>
	johnny darter	<i>Etheostoma nigrum</i>
	logperch	<i>Percina caprodes</i>
	sauger	<i>Stizostedion canadense</i>

Family	Common Name	Scientific Name	
Pikes – Esocidae	walleye	<i>Stizostedion vitreum</i>	
	yellow perch	<i>Perca flavescens</i>	
	grass pickerel	<i>Esox americanus vemiculatus</i>	
	muskellunge	<i>Esox masquinongy</i>	
	northern pike	<i>Esox lucius</i>	
Sculpins – Cottidae	mottled sculpin	<i>Cottus bairdi</i>	
	slimy sculpin	<i>Cottus cognatus</i>	
Silversides – Atherinidae	brook silverside	<i>Labidesthes sicculus</i>	
Smelts – Osmeridae	rainbow smelt	<i>Osmerus mordax</i>	
Sticklebacks – Gasterosteidae	brook stickleback	<i>Culaea inconstans</i>	
	ninespine stickleback	<i>Pungitius pungitius</i>	
Sturgeon – Acipenseridae	threespine stickleback	<i>Gasterosteus aculeatus</i>	
	*lake sturgeon	<i>Acipenser fluvescens</i>	
Suckers – Catostomidae	*bigmouth buffalo	<i>Ictiobus cyprinellus</i>	
	*greater redhorse	<i>Moxostoma valenciennesi</i>	
	northern hog sucker	<i>Hypentelium nigricans</i>	
	quillback	<i>Cariodes cyprinus</i>	
	*river redhorse	<i>Moxostoma carinatum</i>	
	shorthead redhorse	<i>Moxostoma macrolepidotum</i>	
	silver redhorse	<i>Moxostoma anisurum</i>	
	white sucker	<i>Catostomus commersoni</i>	
	black crappie	<i>Pomoxis nigromaculatus</i>	
	bluegill	<i>Lepomis macrochirus</i>	
Sunfishes – Centrarchidae	largemouth bass	<i>Micropterus salmoides</i>	
	pumpkinseed	<i>Lepomis gibbosus</i>	
	rock bass	<i>Ambloplites rupestris</i>	
	smallmouth bass	<i>Micropterus dolomieu</i>	
	Temperate basses – Percichthyidae	white bass	<i>Morone chrysops</i>
		white perch	<i>Morone americana</i>
	Trout-perches – Percopsidae	trout-perch	<i>Percopsis omiscomaycus</i>
Whitefishes, salmon and trouts – Salmonidae	Atlantic salmon	<i>Salmo salar</i>	
	brown trout	<i>Salmo trutta</i>	
	chinook salmon	<i>Oncorhynchus tshawytscha</i>	
	coho salmon	<i>Oncorhynchus kisutch</i>	
	lake herring/cisco	<i>Coregonus artedii</i>	
	lake trout	<i>Salvelinus namaycush</i>	
	lake whitefish	<i>Coregonus clupeaformis</i>	
	rainbow trout	<i>Salmo gairdneri</i>	
	round whitefish	<i>Prosopium cylindraceum</i>	
	splake	<i>Salvelinus namaycush</i> x <i>S. fontinalis</i>	

Notes:

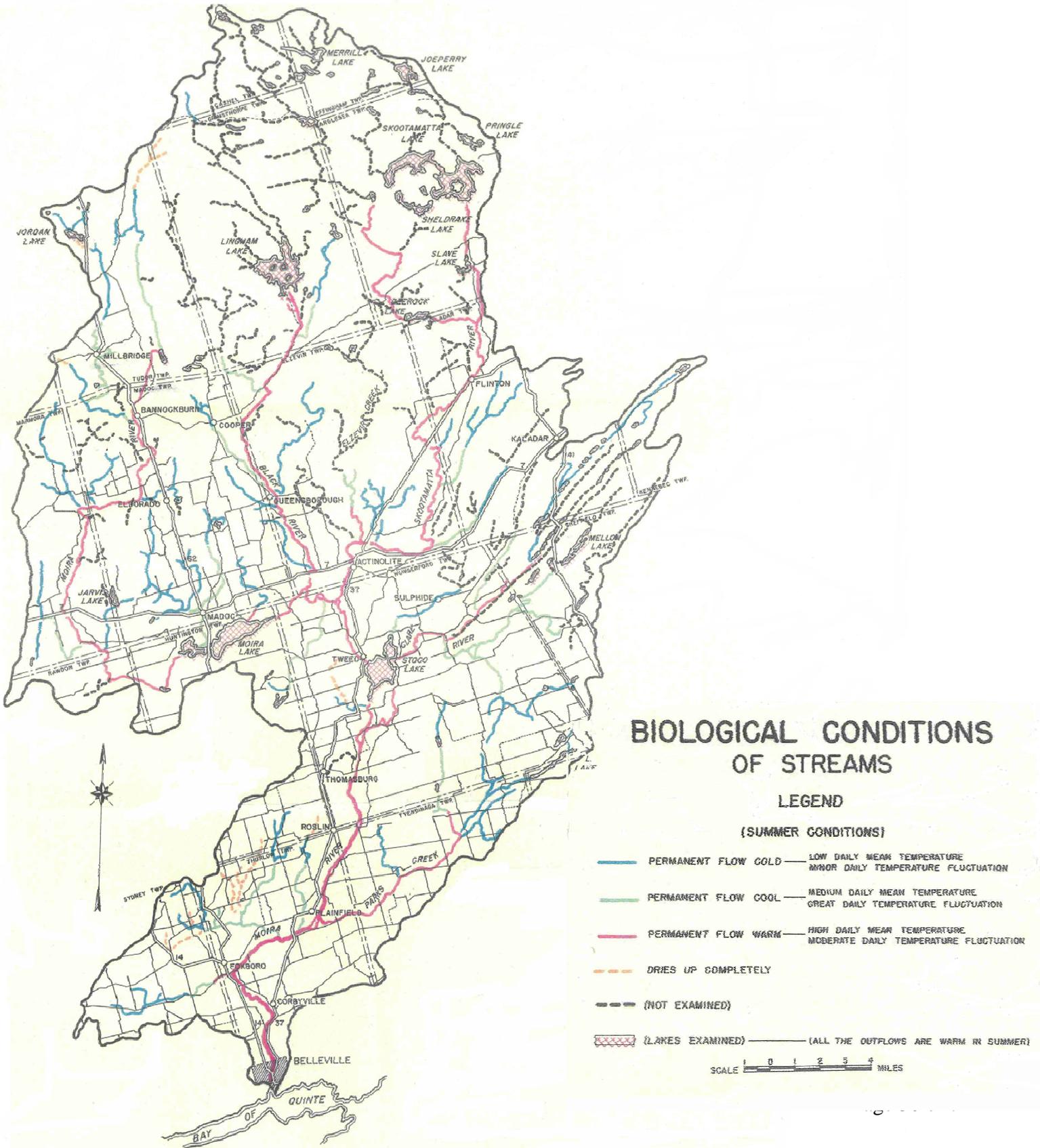
- Grey cells indicate species that were historically recorded (as cited in Hurley 1986), but were not captured during Hurley's research (Hurley 1986).
- Bold indicates species that are now extinct in Lake Ontario (Crossman and Van Meter 1979, as cited in Hurley 1986)
- Native populations of Atlantic salmon were extirpated from Lake Ontario and the Bay of Quinte in the late 1800s. Atlantic salmon populations are currently being stocked in an effort to restore Atlantic salmon to Lake Ontario and its tributaries.

A star (*) indicates fish species that are currently listed as at risk in the Bay of Quinte

(compiled from Global rank, provincial rank, COSEWIC status, MNR status.)

Appendix 7 - Moira River Watershed Classified Streams
 Section 2.5.1 Fisheries – Fisheries related temperature studies
 Watershed Characterization Page 77

Historic 1948 classification of Moira River Watershed streams based on summer water temperatures. Copied from the Moira Valley Conservation Report 1950 (Richardson 1950).



Appendix 8 - OBBN 2003 to 2007 HBI Results
Section 2.5.2 Aquatic Macroinvertebrates
Watershed Characterization Page 83

2003 to 2007 calculated HBI results, a weighted average using tolerance values based on 20 types of aquatic macroinvertebrate organism groups. Samples with HBI below 6.0 is considered unimpaired, between 6.0 and 7.0 is considered possibly impaired, and above 7.0 is considered to be nutrient enriched based on the benthic community composition. Fall 2007 samples for MRW have yet to be analyzed. Note: Moira River Watershed (MRW), Napanee Region Watershed (NRW), and Prince Edward Region Watershed (PERW).

Site ID	Waterbody Name	Authority	Date sampled	Season	HBI
CHC01	Chrysal Creek	MRW	10/31/2003	Fall	6.6
CHC01	Chrysal Creek	MRW	10/4/2004	Fall	6.3
CHC01	Chrysal Creek	MRW	10/24/2005	Fall	5.9
CHC05	Chrysal Creek	MRW	10/17/2003	Fall	4.2
CHC05	Chrysal Creek	MRW	10/5/2004	Fall	4.2
CHC05	Chrysal Creek	MRW	10/24/2005	Fall	1.9
CHC05	Chrysal Creek	MRW	10/18/2006	Fall	2.8
CLR05	Clare River	MRW	10/20/2004	Fall	5.6
CLR05	Clare River	MRW	10/27/2005	Fall	5.6
GOC03	Goose Creek	MRW	11/5/2003	Fall	5.4
GOC03	Goose Creek	MRW	10/12/2004	Fall	5.3
GOC03	Goose Creek	MRW	10/27/2005	Fall	5.2
GOC03	Goose Creek	MRW	10/12/2006	Fall	5.2
MOR09	Moira River	MRW	10/25/2004	Fall	4.6
MOR09	Moira River	MRW	10/13/2005	Fall	5.4
NTC01	Number Ten Creek	MRW	10/21/2004	Fall	6.1
NTC01	Number Ten Creek	MRW	10/19/2005	Fall	5.9
NTC02	Number Ten Creek	MRW	10/10/2003	Fall	5.3
NTC02	Number Ten Creek	MRW	10/22/2004	Fall	5.5
NTC02	Number Ten Creek	MRW	10/19/2005	Fall	5.5
NTC02	Number Ten Creek	MRW	10/18/2006	Fall	4.7
PAC01	Palliser Creek	MRW	10/1/2003	Fall	6.6
PAC01	Palliser Creek	MRW	10/1/2004	Fall	5.1
PAC01	Palliser Creek	MRW	10/25/2005	Fall	6.6
PAC06	Palliser Creek	MRW	9/26/2003	Fall	5.9
PAC06	Palliser Creek	MRW	9/29/2004	Fall	6.3
PAC06	Palliser Creek	MRW	10/20/2005	Fall	6.7
PAC06	Palliser Creek	MRW	10/13/2006	Fall	6.3
PKC01	Parks Creek	MRW	10/9/2003	Fall	4.2
PKC01	Parks Creek	MRW	10/13/2004	Fall	4.2
PKC01	Parks Creek	MRW	10/14/2005	Fall	4.6

Site ID	Waterbody Name	Authority	Date sampled	Season	HBI
PKC07	Parks Creek	MRW	10/15/2004	Fall	6.7
PKC07	Parks Creek	MRW	10/18/2005	Fall	5.7
PKC10	Parks Creek	MRW	10/7/2003	Fall	4.4
PKC10	Parks Creek	MRW	10/14/2004	Fall	4.8
PKC10	Parks Creek	MRW	10/18/2005	Fall	4.6
PKC10	Parks Creek	MRW	10/19/2006	Fall	4.7
POC01	Potter Creek	MRW	5/21/2004	spring	4.5
POC01	Potter Creek	MRW	10/26/2004	Fall	6.6
POC01	Potter Creek	MRW	10/12/2005	Fall	5.6
POC01	Potter Creek	MRW	10/10/2006	Fall	4.7
POC02	Potter Creek	MRW	10/23/2003	Fall	6.7
POC02	Potter Creek	MRW	10/27/2004	Fall	5.1
POC02	Potter Creek	MRW	10/12/2005	Fall	5.2
POC02	Potter Creek	MRW	10/10/2006	Fall	5.0
UNC03	Unknown Creek 2	MRW	10/30/2003	Fall	5.2
UNC03	Unknown Creek 2	MRW	10/6/2004	Fall	5.0
UNC03	Unknown Creek 2	MRW	10/20/2005	Fall	5.4
UNC03	Unknown Creek 2	MRW	10/17/2006	Fall	5.4
CRC01	Crooked Creek	NRW	11/4/2005	Fall	4.7
CRC01	Crooked Creek	NRW	5/30/2006	spring	5.0
CRC01	Crooked Creek	NRW	10/19/2006	Fall	4.9
CRC01	Crooked Creek	NRW	5/24/2007	spring	5.1
FIC02	Fisher Creek	NRW	5/27/2005	spring	5.2
FIC02	Fisher Creek	NRW	5/19/2006	spring	5.2
FIC02	Fisher Creek	NRW	5/7/2007	spring	5.1
NPR07	Napanee River	NRW	5/30/2005	spring	5.1
NPR07	Napanee River	NRW	5/17/2006	spring	5.8
NPR07	Napanee River	NRW	5/17/2007	spring	5.7
OTC01	Otter Creek	NRW	5/29/2006	spring	5.7
OTC01	Otter Creek	NRW	5/11/2007	spring	5.8
PNC01	Pennells Creek	NRW	5/25/2005	spring	4.1
PNC01	Pennells Creek	NRW	5/23/2006	spring	5.0
PNC01	Pennells Creek	NRW	5/11/2007	spring	5.0
SEC15	Selby Creek	NRW	5/26/2005	spring	6.7
SEC15	Selby Creek	NRW	5/18/2006	spring	5.0
SEC15	Selby Creek	NRW	5/29/2007	spring	5.6
SMR03	Salmon River	NRW	5/20/2005	spring	4.7
SMR03	Salmon River	NRW	5/16/2006	spring	4.8
SMR03	Salmon River	NRW	5/9/2007	spring	4.7
SMR05	Salmon River	NRW	5/24/2005	spring	4.9
SMR05	Salmon River	NRW	5/16/2006	spring	5.2
SMR05	Salmon River	NRW	5/9/2007	spring	4.8
SUC01	Selby Creek	NRW	5/31/2006	spring	6.8
SUC01	Selby Creek	NRW	5/28/2007	spring	6.4

Site ID	Waterbody Name	Authority	Date sampled	Season	HBI
CSC02	Consecon Creek	PERW	5/31/2004	spring	5.0
CSC02	Consecon Creek	PERW	5/11/2005	spring	4.8
CSC02	Consecon Creek	PERW	5/12/2006	spring	3.7
CSC02	Consecon Creek	PERW	5/3/2007	spring	5.6
CSC03	Consecon Creek	PERW	5/12/2006	spring	4.6
DVC03	Demorestville Creek	PERW	5/28/2004	spring	5.9
DVC03	Demorestville Creek	PERW	5/18/2005	spring	5.7
DVC03	Demorestville Creek	PERW	5/9/2006	spring	5.6
DVC03	Demorestville Creek	PERW	4/30/2007	spring	6.5
HBC01	Hubbs Creek	PERW	6/1/2004	spring	5.1
HBC01	Hubbs Creek	PERW	5/12/2005	spring	5.1
HBC01	Hubbs Creek	PERW	5/15/2006	spring	4.9
HBC01	Hubbs Creek	PERW	5/1/2007	spring	4.9
HBC02	Hubbs Creek	PERW	6/7/2004	spring	5.6
HBC02	Hubbs Creek	PERW	5/13/2005	spring	6.0
HBC02	Hubbs Creek	PERW	5/11/2006	spring	3.8
HBC02	Hubbs Creek	PERW	5/1/2007	spring	4.3
HLC01	Hillier Creek	PERW	5/25/2006	spring	6.3
HLC01	Hillier Creek	PERW	5/4/2007	spring	3.5
HLC02	Hillier Creek	PERW	9/23/2003	Fall	6.9
HLC02	Hillier Creek	PERW	5/19/2005	spring	6.5
HLC02	Hillier Creek	PERW	5/11/2006	spring	3.8
HLC02	Hillier Creek	PERW	5/2/2007	spring	6.0
WAR1	Waring Creek	PERW	5/23/2007	spring	6.7
WAR1	Waring Creek	PERW	10/26/2007	Fall	7.0
WAR2	Waring Creek	PERW	5/22/2007	spring	4.8
WAR2	Waring Creek	PERW	11/7/2007	Fall	5.1
WAR4	Waring Creek	PERW	5/18/2007	spring	4.8
WAR4	Waring Creek	PERW	10/25/2007	Fall	5.1

Appendix 9 - Rare Species in the Quinte Region

Section 2.5.3 Species and Habitats at Risk

Watershed Characterization Page 92

Section 2.6.13 Protected Areas

Watershed Characterization Page 120

Rare species identified by COSEWIC and MNR through the National Heritage Information Centre in the Quinte source protection region (NHIC 2005).

Scientific Name	Common Name	COSEWIC §	MNR ζ
Moira River Watershed			
<i>Ammodramus henslowii</i>	Henslow's Sparrow	END	END-R
<i>Aplectrum hyemale</i>	Puttyroot		
<i>Astragalus neglectus</i>	Cooper's Milkvetch		
<i>Bouteloua curtipendula</i>	Side-oats Grama		
<i>Boyeria grafiana</i>	Ocellated Darner		
<i>Buteo lineatus</i>	Red-shouldered Hawk	SC	SC
<i>Callophrys gryneus</i>	Juniper Hairstreak		
<i>Campostoma anomalum</i>	Central Stoneroller	NAR	NAR
<i>Carex conoidea</i>	Field Sedge		
<i>Carex formosa</i>	Handsome Sedge		
<i>Carex haydenii</i>	Cloud Sedge		
<i>Carex oligocarpa</i>	Eastern Few-fruited Sedge		
<i>Celithemis eponina</i>	Halloween Pennant		
<i>Celtis tenuifolia</i>	Dwarf Hackberry	THR	THR
<i>Chlidonias niger</i>	Black Tern	NAR	SC
<i>Cordulegaster obliqua</i>	Arrowhead Spiketail		
<i>Crataegus corusca</i>	A Hawthorn		
<i>Cypripedium arietinum</i>	Ram's-head Lady's-slipper		
<i>Cypripedium candidum</i>	Small White Lady's-slipper	END	END-R
<i>Dendroica discolor</i>	Prairie Warbler	NAR	NAR
<i>Draba reptans</i>	Carolina Whitlow-grass		
<i>Eleocharis rostellata</i>	Beaked Spike-rush		
<i>Emydoidea blandingii</i>	Blanding's Turtle		THR
<i>Eumeces fasciatus</i>	Five-lined Skink	SC	SC
<i>Glaucomys volans</i>	Southern Flying Squirrel	SC	SC
<i>Gomphaeschna furcillata</i>	Harlequin Darner		
<i>Gomphus desertus</i>	Harpoon Clubtail		
<i>Heterodon platirhinos</i>	Eastern Hog-nosed Snake	THR	THR
<i>Huperzia selago</i>	Fir-clubmoss		
<i>Hypoxis hirsuta</i>	Eastern Yellow Star-grass		
<i>Isoetes riparia</i>	River Bank Quillwort		
<i>Ixobrychus exilis</i>	Least Bittern	THR	THR
<i>Juncus greenei</i>	Greene's Rush		
<i>Juncus secundus</i>	Secund Rush		
<i>Lanius ludovicianus</i>	Loggerhead Shrike	END	END-R
<i>Lestes eurinus</i>	Amber-winged Spreadwing		

Scientific Name	Common Name	COSEWIC §	MNR ζ
<i>Listera australis</i>	Southern Twayblade		
<i>Muhlenbergia tenuiflora</i>	Slender Muhly		
<i>Myotis leibii</i>	Small-footed Bat		
<i>Myotis septentrionalis</i>	Northern Long-eared Bat		
<i>Najas gracillima</i>	Thread-like Naiad		
<i>Nannothemis bella</i>	Elfin Skimmer		
<i>Neomacounia nitida</i>	Macoun's Shining Moss	EXT	EXT
<i>Onosmodium molle</i> ssp. <i>hispidissimum</i>	Shaggy False Gromwell		
<i>Ophiogomphus rupinsulensis</i>	Rusty Snaketail		
<i>Opuntia fragilis</i>	Little Prickly Pear Cactus		
<i>Percina copelandi</i>	Channel Darter	THR	THR
<i>Pipistrellus subflavus</i>	Eastern Pipistrelle		
<i>Podostemum ceratophyllum</i>	Threadfoot		
<i>Polygonum careyi</i>	Carey's Smartweed		
<i>Pterospora andromedea</i>	Giant Pinedrops		
<i>Rhus copallina</i>	Winged Sumac		
<i>Scleria verticillata</i>	Low Nutrush		
<i>Seiurus motacilla</i>	Louisiana Waterthrush	SC	SC
<i>Solidago arguta</i>	Sharp-leaved Goldenrod		
<i>Somatochlora kennedyi</i>	Kennedy's Emerald		
<i>Somatochlora walshii</i>	Brush-tipped Emerald		
<i>Sporobolus heterolepis</i>	Northern Dropseed		
<i>Torreyochloa pallida</i>	Torrey's Manna Grass		
<i>Urocyon cinereoargenteus</i>	Grey Fox	THR	THR
<i>Valeriana sitchensis</i>	Marsh Valerian		
<i>Vertigo elatior</i>	Tapered Vertigo		
<i>Vertigo morsei</i>	Six-whorl Vertigo		
Napanee Region Watershed			
<i>Alisma gramineum</i>	Grass-leaved Water-plantain		
<i>Allium burdickii</i>	Narrow-leaved Wild Leek		
<i>Amelanchier amabilis</i>	Serviceberry		
<i>Ammodramus henslowii</i>	Henslow's Sparrow	END	END-R
<i>Aristida dichotoma</i>	Shinners Three-awned Grass		
<i>Bouteloua curtipendula</i>	Side-oats Grama		
<i>Bulbostylis capillaris</i>	Bulbostylis		
<i>Buteo lineatus</i>	Red-shouldered Hawk	SC	SC
<i>Callophrys gryneus</i>	Juniper Hairstreak		
<i>Carex annectens</i> var. <i>annectens</i>	Sedge		
<i>Carex bicknellii</i>	Bicknell's Sedge		
<i>Carex conoidea</i>	Field Sedge		
<i>Carex formosa</i>	Handsome Sedge		
<i>Carex gracilescens</i>	Slender Sedge		
<i>Carex juniperorum</i>	Juniper Sedge	END	END-R
<i>Carex oligocarpa</i>	Eastern Few-fruited Sedge		

Scientific Name	Common Name	COSEWIC §	MNR ζ
<i>Carex trisperma</i> var. <i>billingsii</i>	Sedge		
<i>Celithemis eponina</i>	Halloween Pennant		
<i>Celtis tenuifolia</i>	Dwarf Hackberry	THR	THR
<i>Cerastium brachypodium</i>	Mouse-ear Chickweed		
<i>Chlidonias niger</i>	Black Tern	NAR	SC
<i>Cuscuta cephalanthi</i>	Button-bush Dodder		
<i>Dendroica cerulea</i>	Cerulean Warbler	SC	SC
<i>Dendroica discolor</i>	Prairie Warbler	NAR	NAR
<i>Draba reptans</i>	Carolina Whitlow-grass		
<i>Elaphe obsoleta obsoleta</i>	Black Rat Snake		
<i>Eleocharis engelmannii</i>	Engelmann's Spike-rush		
<i>Emydoidea blandingii</i>	Blanding's Turtle		THR
<i>Eumeces fasciatus</i>	Five-lined Skink	SC	SC
<i>Euphorbia commutata</i>	Spurge		
<i>Icteria virens</i>	Yellow-breasted Chat	SC	SC
<i>Ixobrychus exilis</i>	Least Bittern	THR	THR
<i>Juglans cinerea</i>	Butternut	END	END
<i>Juncus secundus</i>	Secund Rush		
<i>Lanius ludovicianus</i>	Loggerhead Shrike	END	END-R
<i>Lestes eurinus</i>	Amber-winged Spreadwing		
<i>Lindernia dubia</i> var. <i>anagallidea</i>	False Pimpernel		
<i>Moxostoma valenciennesi</i>	Greater Redhorse		
<i>Myosurus minimus</i>	Mousetail		
<i>Myotis septentrionalis</i>	Northern Long-eared Bat		
<i>Panicum leibergii</i> var. <i>leibergii</i>	Panic Grass		
<i>Panicum rigidulum</i>	Redtop Panic Grass		
<i>Panicum villosissimum</i>	White-hair Witchgrass		
<i>Pellaea atropurpurea</i>	Purple-stemmed Cliffbrake		
<i>Peltandra virginica</i>	Arrow-arum		
<i>Platanthera flava</i> var. <i>herbiola</i>	Pale Green Orchid		
<i>Platanthera leucophaea</i>	Eastern Prairie Fringed-orchid	END	END
<i>Poa languida</i>	Drooping Bluegrass		
<i>Polygonum careyi</i>	Carey's Smartweed		
<i>Quercus ilicifolia</i>	Scrub Oak		
<i>Rallus elegans</i>	King Rail	END	END-R
<i>Rhus copallina</i>	Winged Sumac		
<i>Rotala ramosior</i>	Toothcup	END	END
<i>Seiurus motacilla</i>	Louisiana Waterthrush	SC	SC
<i>Solidago arguta</i>	Sharp-leaved Goldenrod		
<i>Somatochlora kennedyi</i>	Kennedy's Emerald		
<i>Sporobolus heterolepis</i>	Northern Dropseed		
<i>Torreyochloa pallida</i>	Torrey's Manna Grass		
<i>Triadenum virginicum</i>	Marsh St. John's-wort		
<i>Triodopsis tridentata</i>	Northern Threetooth		
<i>Utricularia geminiscapa</i>	Hidden-fruited Bladderwort		
<i>Vertigo elatior</i>	Tapered Vertigo		

Scientific Name	Common Name	COSEWIC §	MNR ζ
<i>Vertigo nylanderi</i>	Deep-throat Vertigo		
<i>Vertigo paradoxa</i>	Classification Uncertain		
<i>Williamsonia fletcheri</i>	Ebony Boghaunter		
<i>Woodsia oregana</i>	Western Cliff Fern		
Prince Edward Peninsula			
<i>Alisma gramineum</i>	Grass-leaved Water-plantain		
<i>Ammodramus henslowii</i>	Henslow's Sparrow	END	END-R
<i>Ammophila breviligulata</i>	American Beachgrass		
<i>Apalone spinifera spinifera</i>	Eastern Spiny Softshell		
<i>Arigomphus cornutus</i>	Horned Clubtail		
<i>Callophrys gryneus</i>	Juniper Hairstreak		
<i>Carex albicans</i> var. <i>albicans</i>	Sedge		
<i>Carex conoidea</i>	Field Sedge		
<i>Carex formosa</i>	Handsome Sedge		
<i>Carex gracilescens</i>	Slender Sedge		
<i>Carex oligocarpa</i>	Eastern Few-fruited Sedge		
<i>Celithemis eponina</i>	Halloween Pennant		
<i>Cerastium brachypodum</i>	Mouse-ear Chickweed		
<i>Chlidonias niger</i>	Black Tern	NAR	SC
<i>Crataegus brainerdii</i>	Brainerd's Hawthorn		
<i>Crataegus corusca</i>	A Hawthorn		
<i>Cypripedium arietinum</i>	Ram's-head Lady's-slipper		
<i>Dendroica cerulea</i>	Cerulean Warbler	SC	SC
<i>Draba reptans</i>	Carolina Whitlow-grass		
<i>Elaphe obsoleta obsoleta</i>	Black Rat Snake		
<i>Emydoidea blandingii</i>	Blanding's Turtle		THR
<i>Hibiscus moscheutos</i>	Swamp Rose-mallow	SC	SC
<i>Ixobrychus exilis</i>	Least Bittern	THR	THR
<i>Juglans cinerea</i>	Butternut	END	END
<i>Lanius ludovicianus</i>	Loggerhead Shrike	END	END-R
<i>Myosurus minimus</i>	Mousetail		
<i>Myoxocephalus thompsoni</i>	Deepwater Sculpin	THR	THR
<i>Onosmodium molle</i> ssp. <i>hispidissimum</i>	Shaggy False Gromwell		
<i>Peltandra virginica</i>	Arrow-arum		
<i>Rallus elegans</i>	King Rail	END	END-R
<i>Rosa setigera</i>	Climbing Prairie Rose	SC	SC
<i>Somatochlora walshii</i>	Brush-tipped Emerald		
<i>Stachys pilosa</i>			
<i>Triodopsis tridentata</i>	Northern Threetooth		
<i>Vallonia parvula</i>	Trumpet Vallonia		

Note:

§ COSEWIC	Definition
END	Endangered. A species facing imminent extirpation or extinction throughout its range.

EXP	Extirpated. A species no longer existing in the wild in Canada, but occurring elsewhere in the wild.
EXT	Extinct. A species that no longer exists.
IND	Indeterminate. A species for which there is insufficient information to support a status designation.
NAR	Not At Risk. A species that has been evaluated and found to be not at risk.
SC	Special Concern. A species of special concern because of characteristics that make it particularly sensitive to human activities or natural events, but does not include an extirpated, endangered or threatened species.
THR	Threatened. A species likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.
ζ MNR	Definition
END	Endangered. Any native species that, on the basis of the best available scientific evidence, is at risk of extinction or extirpation throughout all or a significant portion of its Ontario range if the limiting factors are not reversed. Endangered species are protected under the province's Endangered Species Act.
EXP	Extirpated. Any native species no longer existing in the wild in Ontario, but existing elsewhere in the wild.
EXT	Extinct. Any species formerly native to Ontario that no longer exists.
IND	Indeterminate. Any native species for which there is insufficient scientific information on which to base a status recommendation.
NIAC	Not In Any COSSARO Category. Any native species evaluated by COSSARO which does not currently meet criteria for assignment to a provincial risk category.
THR	Threatened. Any native species that, on the basis of the best available scientific evidence, is at risk of becoming endangered throughout all or a significant portion of its Ontario range if the limiting factors are not reversed.
VUL	Vulnerable. Any native species that, on the basis of the best available scientific evidence, is a species of special concern in Ontario, but is not a threatened or endangered species.

Appendix 10 - Bay of Quinte RAP Stormwater Management Design Guidelines
Section 2.6.10 Wastewater Treatment - Stormwater Management
Watershed Characterization Page 118

**BAY OF QUINTE REMEDIAL ACTION PLAN
IMPLEMENTATION AREA
STORMWATER MANAGEMENT DESIGN GUIDELINES**

REVISED – MARCH 2006

Introduction

This document provides guidance on requirements for planning, design and approvals of new urban stormwater management systems in new urban development areas in the BQRAP Implementation Area (see Figure 1). It also provides guidance with respect to design and approvals of retrofit stormwater treatment facilities within existing built-up areas. This document is intended to assist development proponents and local municipalities by helping define approval requirements.

This document supercedes and replaces the previous BQRAP SWM guidelines document of May 1993.

Stormwater Management in the Municipal Context

It is widely recognized that effective stormwater management involves a hierarchy of planning and management techniques.

The need for environmental protection, including water quality protection, is generally spelled out in a municipal Official Plan. To ensure proper planning of drainage infrastructure as part of land development planning, watershed plans or subwatershed plans are required for development areas.

Watershed/subwatershed plans help support the development of secondary plans.

To identify the necessary stormwater control measures or works within a designated development area, a master drainage plan is required. This provides design guidelines and defines proposed locations and estimated costs for any centralized stormwater control facilities. In general, planning of drainage systems for new development areas should strive to minimize the number of separate stormwater facilities, since the proliferation of relatively small on-site facilities can significantly increase the costs to local municipalities for monitoring and maintenance.

Once a plan is in place, municipalities typically set up a “cash-in-lieu” fund to allow the municipality to accumulate the funds needed to build the required stormwater facilities as needed. A policy of allowing a percentage of the development area to proceed in advance of facility construction can be implemented by the municipality, provided that regulatory agencies such as the Ontario Ministry of Environment provide approval of such an arrangement.

Since the original BQRAP stormwater guidelines (1993) have been in effect, a number of issues related to stormwater planning have been identified. For example, not all Official Plans for Bay of Quinte municipalities contain the foregoing provisions, and the Master Drainage Plan/cash-in-lieu approach is not consistent. Most smaller municipalities are allowing development with small on-site facilities, and this may be creating unforeseen maintenance requirements and unforeseen costs. A consistent and

comprehensive approach for stormwater management is needed for new development areas in the BQRAP area, and these guidelines reflect that need.

General Stormwater Drainage Guidelines

Role of the Local Municipality

1. Municipal Official Plans should recognize stormwater management in the hierarchy of planning and management techniques for new development and contain provisions for watershed plans, sub-watershed plans and master drainage plans as part of secondary plans.
2. Having identified strategies for accommodating new development via centralized stormwater facilities, municipalities should establish “cash-in-lieu” arrangements to support the construction of the required facilities when needed.

Development Design Requirements

1. Adhere to the guidelines provided in the most recent version of the Ontario Ministry of Environment’s “Stormwater Management Planning and Design Manual” (current version dated March 2003).
2. New developments should be designed to incorporate all reasonable and practical means of minimizing direct surface runoff, including:
 - Minimize the amount of impervious area
 - Maximize the amount of existing vegetated area (treed areas, grassed areas) that is retained within the development design, to help maximize opportunity for infiltration (soak away) of surface water.
 - Roof drainage should be diverted on vegetated areas to give the water opportunity to soak into the ground.
3. Drainage systems for new development should be designed using the “minor and major system” approach. The minor system typically conveys all drainage flows generated by precipitation events up to the 5-year return period, and may include ditches, culverts, catchbasins and storm sewers. The major system conveys flows in excess of the capacity of the minor system in such a way as to minimize risk to life or property. The major system may include ditches, swales and other overland flow paths (including roadways).
4. Development proponents are responsible for ensuring that the design of the drainage system complies with current municipal design standards of the local municipality.
5. Small on-site facilities are discouraged and contribution to centralized works as identified in Watershed or Master Drainage Plans are encouraged.

Stormwater Quality Control

This section applies to all developments of an area equal to or greater than one hectare.

New Urban or Rural Development

1. The development proponent is responsible for checking with the local municipality and with the conservation authority to ensure that the design of the drainage system is consistent with applicable Watershed Plans, Subwatershed Plans or Master Drainage Plans.
2. Plan and design the new development in accordance with the MOE SWM Manual, including the following steps:
 - Define and describe the type of development in terms of land use, total imperviousness, directly-connected imperviousness (i.e. how much of the total impervious area will drain directly into the minor system, versus the amount of impervious area that will drain onto vegetated area).
 - Define physical site constraints affecting drainage design and quality control options. These may include geotechnical properties of the local soil including permeability, depth to bedrock, and high water table levels.
 - To address stormwater quality concerns, follow the “treatment train” approach. Examine options for source control, conveyance control and, if necessary, end-of-pipe controls. The MOE SWM Manual provides considerable guidance on options to consider and how to evaluate them.
3. Where the development will include curbed roadways or paved parking areas drained by catchbasins and storm sewers, or otherwise includes collection of surface drainage in pipe systems, then end-of-pipe treatment of the storm sewer outflows will be needed.
4. Any required end-of-pipe stormwater treatment facilities must be designed as follows:
 - Examine options for end-of-pipe treatment using guidance provided in the MOE SWM Manual.
 - Design the end-of-pipe facility in accordance with the MOE SWM Manual. **End-of-pipe stormwater facilities must be designed to provide MOE “Enhanced” level of stormwater treatment (formerly referred to as “Level 1”) as defined in the MOE SWM Manual (March 2003).**
 - If the end-of-pipe facility is to be a treatment pond, then it must be designed to allow routine clean-out of accumulated sediment and debris, including vehicle access to allow the clean-out operation and removal of sediments for off-site disposal. The pond should be designed such it can be hydraulically isolated to allow it to be pumped out if necessary to allow maintenance or clean-out.
 - As a general requirement in the BQRAP Implementation Area, end-of-pipe stormwater facilities do not need to include active effluent disinfection using UV technology or equivalent technology.

- If the storm pipe outfall to local watercourse or waterbody can reasonably be expected to have a direct impact on water quality at a swimming beach, then active effluent disinfection may be required at the outfall. The development proponent is responsible for determining if disinfection is required through consultation with the conservation authority and the MOE Regional Office.

Retrofit Measures in Existing Built-Up Areas

1. In general, it is expected that local municipalities will be the proponents in any undertakings to implement retrofit stormwater treatment within existing built-up areas.
2. Planning and design of retrofit strategies should adhere to the same guidelines as listed above for new development situations, with the following exception:
 - Retrofit end-of-pipe treatment facilities should be designed to provide the MOE “Enhanced” (Level 1) treatment level if possible and practical. Designing to achieve the MOE “Normal” (Level 2) treatment level will generally be considered as an acceptable option. Lower levels of treatment may also be considered if the proposed location for retrofit installation poses specific site constraints or issues that make Level 1 or Level 2 treatment not feasible or practical to implement.
3. Retrofit strategies should be developed in close consultation with the conservation authority and the Ontario Ministry of Environment to ensure that final designs are acceptable from the regulatory standpoint.

Stormwater Quantity Control for New Development

1. Stormwater quantity control is necessary to ensure that flows released from the development property do not have any adverse downstream impacts on flooding or watercourse erosion.
2. New developments must be designed to adhere to the requirements of the Provincial Policy Statement (March 1, 2005) under Section 3 of the Planning Act. The Policy Statement includes requirements for protecting public health and safety by restricting land development within areas affected by flood hazards, erosion hazards or dynamic beach hazards. Refer to the Policy Statement for specific definitions and requirements.
3. Unless there is in place a Watershed Plan, Subwatershed Plan or Master Drainage Plan that stipulates otherwise, peak flows released from the development property are not to exceed the “pre-development” peak flows released from the site, for all return periods from 2 years to 100 years. The Regional Storm in the Quinte Conservation and Cataaraqui Region Conservation Authority jurisdictions is the 100-year storm. Developments in the Lower Trent Conservation jurisdiction must also safely pass the Timmins Regional Storm.
4. If the development proponent believes that higher peak flows can be released from the site without any adverse upstream or downstream impacts on flood risk or watercourse erosion, then the development proponent will be responsible for conducting all necessary hydrologic and hydraulic studies to prove that this is so to the satisfaction of regulatory authorities including the local municipality and the conservation authority. Prior to making any such submission, the

development proponent should consult with the conservation authority to determine the specific technical analyses that will be required to support higher site release flows.

Approval Submissions and Process

1. Application for approval of proposed drainage systems for new land developments must be made to the local municipality as part of the overall development approval process administered by the municipality.
2. The conservation authority will assist the municipality by reviewing proposed development plans with respect to drainage and stormwater management requirements set out in these guidelines.
3. Additional approvals may be required depending on the specific design and type of drainage system being proposed. See below.
4. Submissions to the municipality with respect to the proposed development's drainage system must include the following information:
 - a) Design and location of the "minor" drainage system and the "major" drainage system. Plans and drawings showing the engineering design, location and elevation or elevation profile of all system components including ditches, culverts, catchbasins, pipes, manholes and other structures, in accordance with the local municipalities design standards. The development proponent is responsible for obtaining and understanding the local municipal design standards.
 - b) Plan showing all contributing drainage areas and showing drainage direction for all impervious areas, including all paved surfaces, roofs and other impervious surfaces. Indicate where roof drains will discharge. Indicate surface drainage direction along roadways and within commercial/industrial parking areas.
 - c) In the case of the major drainage system, provide details including: Location of all overland flow routes including locations of outlet to storage facilities or outlets to local watercourses or waterbodies; information on estimated flow depth and flow velocity at peak flow in the 25-year, 100-year and Regional Storm events, at critical locations within the major system including road intersections or other critical locations within the development area.
 - d) Clear description of how pre-development peak flows were determined or calculated.
 - e) A plan or plans showing any and all proposed facilities for controlling site release flows to the pre-development level, including location and size of any runoff storage facilities. Provide information on maximum water storage volume and water levels in such facilities at each of the design return periods including the Regional Storm event.
5. For proposed facilities for end-of-pipe stormwater treatment, the following requirements apply:
 - a) Generally, ownership and operation end-of-pipe stormwater facilities will be assumed by the local municipality once the facility has been completed to the municipality's satisfaction and all necessary approvals for operation of the facility have been acquired. The development proponent must confirm specific requirements with the local municipality.

- b) The development proponent is responsible for obtaining any and all necessary approvals on behalf of the local municipality as the eventual owner/operator. These approvals will include but are not necessarily limited to Ontario Ministry of Environment approval (Section 53 approval under Ontario Water Resources Act). The development proponent is responsible for determining approval requirements through discussion with the conservation authority, the local municipality, and the Ontario Ministry of Environment.
- c) The MOE s.53 OWRA approval will result in MOE issuing a Certificate of Approval to the municipality for the proposed facility. Generally, the MOE C. of A. will define specific monitoring and reporting requirements. Prior to making application to MOE for this approval, the development proponent is responsible for “pre-consultation” with the MOE Regional office to determine the likely C. of A. conditions. Prior to making the C. of A. application, the development proponent must advise the local municipality of the outcome of the MOE pre-consultation and obtain the local municipality’s authorization to proceed with the C. of A. application.
- d) The development proponent is responsible for completing any necessary environmental assessment (EA) that may be required under the Ontario Environmental Assessment Act or the Canadian Environmental Assessment Act. The development proponent is responsible for determining what EA requirements apply to the project.
- e) Prior to final acceptance of the facility by the municipality, the development proponent must submit to the municipality an Operations & Maintenance Manual for the facility. This manual must clearly describe all operational and maintenance requirements, including all procedures needed to maintain compliance with the MOE C. of A. The manual should include details of any required sampling or testing of facility effluent or facility performance as may be required by the C. of A., and provide standard forms for recording and reporting necessary information. As well, the O&M Manual must include any and all relevant user manuals for any equipment necessary for operation and maintenance of the SWM facility.

Quinte Conservation
Lower Trent Conservation
Cataraqui Region Conservation Authority

Finalized March 7, 2006

Figure 1: Bay of Quinte Stormwater Management Implementation Area



Quinte Conservation
Lower Trent Conservation
Cataraqi Region Conservation Authority

Finalized March 7, 2006

Appendix 11 - PWQMN results for 7 selected parameters - 1964 to 2006

Section 3.2.1 Provincial Water Quality Monitoring Network (PWQMN) Watershed Characterization Page 140

Section 3.4 Raw Water Characterization for Drinking Water Sources Watershed Characterization Page 179

Arsenic: 1976 to 2006 concentrations of arsenic (mg/L) at the PWQMN stations, and percent of samples greater than the PWQO of 0.1 mg/L.

Station ID	Name	Location	Watershed	Status	No. of Obs.	Min	Max	Average	Median	% Above PWQO
6015700102	Consecon Creek	Mill Dam, Consecon	PERW	current	95	0	0	0.001	0.001	0
6015700202	Consecon Creek	Cnty Rd 2, Allisonville	PERW	discontinued	94	0	0.01	0.001	0.001	0
6015700302	Consecon Creek	Hwy 62, S of Crofton	PERW	current	95	0	0.01	0.001	0.001	0
6015900102	Slab Creek	Loyalist Parkway, HWY 33, S of Consecon	PERW	current	0					
6016300102	Bloomfield Creek	Wesley Acres Rd, dwnstrm Bloomfield	PERW	current	96	0	0	0.001	0.001	0
6016400102	Waring Creek	West Lake Road, Cnty Rd 12, S of Bloomfield	PERW	current	37	0	0	0.001	0.001	0
6017200102	Black Creek	Cnty Rd 17, Milford	PERW	current	94	0	0	0.001	0.001	0
17000600102	Cressy Creek	Cnty Rd 7, Prinyer Point, Cressy	PERW	current	0					
17000800102	Picton Creek	Macaulay Conservation Area pond	PERW	current	92	0	0	0.001	0.001	0
17000800202	Marsh Creek	Bridge St, Picton	PERW	current	39	0	0	0.001	0.001	0
17000900102	Hospital Creek	Cnty Rd 49, Main St, Picton	PERW	current	0					
17001400102	Desmorestville Creek	Cnty Rd 14, Desmorestville	PERW	current	93	0	0	0.001	0.001	0
17001600102	Sawguin Creek	Cnty Rd 28, Fenwood Gardens	PERW	current	95	0	0	0.001	0.001	0
17002600102	Moira River	Footbridge, end of Catharine St, Belleville	MRW	current	516	0	0.68	0.014	0.008	1
17002600202	Moira River	Farnham Rd, Cannifton	MRW	current	493	0	0.32	0.013	0.009	1
17002600302	Moira River	Stoco L. outlet (west channel), Cnty Rd 13	MRW	current	512	0	0.31	0.016	0.01	1
17002600402	Moira River	Stoco L. outlet (east channel), Cnty Rd 13, Stoco	MRW	current	532	0	0.24	0.016	0.01	1
17002600501	Stoco Lake	Municipal Beach, E. of Hwy 37, Tweed	MRW	discontinued	47	0	0.1	0.036	0.039	2

Station ID	Name	Location	Watershed	Status	No. of Obs.	Min	Max	Average	Median	% Above PWQO
17002600602	Moira River	Louisa St, Tweed	MRW	current	538	0	1	0.015	0.009	1
17002600702	Clare River	Greenwood Rd, upstrm Stoco Lake	MRW	current	479	0	0.06	0.004	0.001	0
17002600802	Sulphide Creek	Sulphide Rd, upstrm Stoco Lake, E of Tweed	MRW	discontinued	419	0	0.1	0.005	0.001	0
17002600902	Skootamotta River	Hwy 7, upstrm Actinolite	MRW	current	533	0	0.38	0.004	0.001	0
17002601002	Black River	Hwy 7, 3.5 km W of Actinolite	MRW	current	501	0	0.08	0.004	0.001	0
17002601101	Moira Lake	Hwy 62, S of Madoc	MRW	current	547	0	0.75	0.055	0.042	15
17002601202	Deer Creek	Seymour St, Madoc	MRW	current	486	0	0.2	0.005	0.001	1
17002601302	Moira River	Hwy 7, dwnstrm Deloro	MRW	current	535	0	8.2	0.225	0.042	34
17002601402	Moira River	at Victoria Street, Belleville	MRW	discontinued	71	0	0.04	0.002	0.001	0
17002601502	Moira River	CNR Bridge , South of Cannifton	MRW	discontinued	36	0	0.2	0.028	0.02	6
17002601602	Moira River	College Street, Belleville	MRW	discontinued	0					
17002601702	West Channel	Bethel Rd, E. of Hwy 37, Chapman	MRW	discontinued	11	0	0.08	0.018	0.001	0
17002601802	Madoc Creek	At Moira Lake, W. of Hwy 62	MRW	discontinued	32	0	0.08	0.018	0.01	0
17002601902	Moira River	Malone, upstrm Deloro	MRW	current	429	0	1	0.011	0.001	1
17002602002	Lily Creek	Highway 7, Deloro	MRW	discontinued	4	0	0	0.000	0	0
17002602102	Palliser Creek	Ashley St, Foxboro	MRW	discontinued	0					
17002602202	Palliser Creek	Scotts Church Rd, Quinte West	MRW	discontinued	0					
17002602302	Moira River	Moira Lake outlet, Rapids Rd, E of Madoc	MRW	current	48	0	0.06	0.021	0.021	0
17003100102	Salmon River	Dundas St, Hastings Cnty Rd 2, Shannonville	NRW	current	75	0	0	0.001	0.001	0
17003100202	Salmon River	At Bridge In Milltown, S. of Hwy 401	NRW	discontinued	52	0	0	0.001	0.001	0
17003500102	Napanee River	River Rd, Cnty Rd 9, dwnstrm Napanee	NRW	current	82	0	0.01	0.001	0.001	0
17003500202	Napanee River	Cnty Rd 1, dwnstrm Newburgh	NRW	current	81	0	0	0.001	0.001	0
17003500302	Napanee River	Cnty Rd 4, Camden East	NRW	discontinued	1	0	0	0.001	0	0
17003500402	Napanee River	Cnty Rd 27, Newburgh	NRW	current	128	0	0	0.001	0.001	0

Chloride: 1964 to 2006 concentration of chloride (mg/L) at the PWQMN stations, and the percent of samples greater than the ODWS of 250 mg/L (Aesthetic Objective).

Station ID	Name	Location	Watershed	Status	No. of Obs.	Min	Max	Average	Median	% Above ODWS
6015700102	Consecon Creek	Mill Dam, Consecon	PERW	current	136	3.65	47	8.520	16.125	0
6015700202	Consecon Creek	Cnty Rd 2, Allisonville	PERW	discontinued	123	2.7	41	9.229	19.09	0
6015700302	Consecon Creek	Hwy 62, S of Crofton	PERW	current	136	2.8	70.9	10.355	22.7	0
6015900102	Slab Creek	Loyalist Parkway, HWY 33, S of Consecon	PERW	current	9	3.7	32.1	10.056	24.7	0
6016300102	Bloomfield Creek	Wesley Acres Rd, dwnstrm Bloomfield	PERW	current	136	6	212	31.497	73.75	0
6016400102	Waring Creek	West Lake Road, Cnty Rd 12, S of Bloomfield	PERW	current	77	19.4	95.4	48.160	76.46	0
6017200102	Black Creek	Cnty Rd 17, Milford	PERW	current	133	1.6	18.7	5.883	11.92	0
17000600102	Cressy Creek	Cnty Rd 7, Prinyer Point, Cressy	PERW	current	11	3.1	22.3	10.927	20.8	0
17000800102	Picton Creek	Macaulay Conservation Area pond	PERW	current	135	1	63	12.411	26.03	0
17000800202	Marsh Creek	Bridge St, Picton	PERW	current	110	10.4	90.1	36.718	83.865	0
17000900102	Hospital Creek	Cnty Rd 49, Main St, Picton	PERW	current	8	17.3	122	71.150	111.22	0
17001400102	Desmorestville Creek	Cnty Rd 14, Desmorestville	PERW	current	136	1	168	11.689	32.35	0
17001600102	Sawguin Creek	Cnty Rd 28, Fenwood Gardens	PERW	current	134	1	60.2	13.674	38.455	0
17002600102	Moira River	Footbridge, end of Catharine St, Belleville	MRW	current	352	2.8	50	7.599	13.945	0
17002600202	Moira River	Farnham Rd, Cannifton	MRW	current	360	1	50	6.251	10.6	0
17002600302	Moira River	Stoco L. outlet (west channel), Cnty Rd 13	MRW	current	224	1	24.2	4.842	7.785	0
17002600402	Moira River	Stoco L. outlet (east channel), Cnty Rd 13, Stoco	MRW	current	231	1	92	5.025	7.15	0
17002600501	Stoco Lake	Municipal Beach, E. of Hwy 37, Tweed	MRW	discontinued	43	1	14	4.608	6.9	0
17002600602	Moira River	Louisa St, Tweed	MRW	current	241	1	12.2	4.222	7.2	0
17002600702	Clare River	Greenwood Rd, upstrm Stoco Lake	MRW	current	278	0.7	55	5.548	9.03	0
17002600802	Sulphide Creek	Sulphide Rd, upstrm Stoco Lake, E of Tweed	MRW	discontinued	135	2	80	6.023	9.22	0
17002600902	Skootamotta River	Hwy 7, upstrm Actinolite	MRW	current	292	0.5	36	2.585	4.845	0
17002601002	Black River	Hwy 7, 3.5 km W of Actinolite	MRW	current	198	0.6	8.4	1.829	3.205	0
17002601101	Moira Lake	Hwy 62, S of Madoc	MRW	current	348	0.3	21.8	7.947	12.43	0
17002601202	Deer Creek	Seymour St, Madoc	MRW	current	230	1	115	18.892	41.007	0
17002601302	Moira River	Hwy 7, dwnstrm Deloro	MRW	current	294	1.4	106	10.189	29.705	0
17002601402	Moira River	at Victoria Street, Belleville	MRW	discontinued	18	3.7	11.3	6.383	11.215	0
17002601502	Moira River	CNR Bridge , South of Cannifton	MRW	discontinued	42	4	10	6.333	9.95	0

Station ID	Name	Location	Watershed	Status	No. of Obs.	Min	Max	Average	Median	% Above ODWS
17002601602	Moira River	College Street, Belleville	MRW	discontinued	0					
17002601702	West Channel	Bethel Rd, E. of Hwy 37, Chapman	MRW	discontinued	0					
17002601802	Madoc Creek	At Moira Lake, W. of Hwy 62	MRW	discontinued	20	5	26	15.400	26	0
17002601902	Moira River	Malone, upstrm Deloro	MRW	current	196	2.6	19.7	7.638	14.225	0
17002602002	Lily Creek	Highway 7, Deloro	MRW	discontinued	0					
17002602102	Palliser Creek	Ashley St, Foxboro	MRW	discontinued	20	15	30	20.750	25.44	0
17002602202	Palliser Creek	Scotts Church Rd, Quinte West	MRW	discontinued	20	13.4	18.4	16.690	17.64	0
17002602302	Moira River	Moira Lake outlet, Rapids Rd, E of Madoc	MRW	current	53	4.6	14.5	10.570	13.9	0
17003100102	Salmon River	Dundas St, Hastings Cnty Rd 2, Shannonville	NRW	current	372	2	138	8.057	15.5	0
17003100202	Salmon River	At Bridge In Milltown, S. of Hwy 401	NRW	discontinued	16	3.1	7.05	4.713	6.7125	0
17003500102	Napanee River	River Rd, Cnty Rd 9, dwnstrm Napanee	NRW	current	404	2	130	12.480	22.57	0
17003500202	Napanee River	Cnty Rd 1, dwnstrm Newburgh	NRW	current	334	1	26	7.973	13.735	0
17003500302	Napanee River	Cnty Rd 4, Camden East	NRW	discontinued	32	1	26	6.103	9	0
17003500402	Napanee River	Cnty Rd 27, Newburgh	NRW	current	207	2.15	13.5	7.245	11.77	0

E. coli: 1967 to 2006 counts of *E. coli* at the PWQMN stations, and percent of samples greater than the PWQO of 100 counts.

Station ID	Name	Location	Watershed	Status	No. of Obs.	Min	Max	Average	Median	% Above PWQO
6015700102	Consecon Creek	Mill Dam, Consecon	PERW	current	58	2	720	29.759	4	3
6015700202	Consecon Creek	Cnty Rd 2, Allisonville	PERW	discontinued	54	4	810	71.167	18.5	13
6015700302	Consecon Creek	Hwy 62, S of Crofton	PERW	current	53	2	120	23.019	8	2
6015900102	Slab Creek	Loyalist Parkway, HWY 33, S of Consecon	PERW	current	8	7	320	102.380	77	50
6016300102	Bloomfield Creek	Wesley Acres Rd, dwnstrm Bloomfield	PERW	current	54	4	1120	102.890	52	33
6016400102	Waring Creek	West Lake Road, Cnty Rd 12, S of Bloomfield	PERW	current	67	4	2600	156.610	60	39
6017200102	Black Creek	Cnty Rd 17, Milford	PERW	current	58	2	290	19.448	4	5
17000600102	Cressy Creek	Cnty Rd 7, Prinyer Point, Cressy	PERW	current	0					
17000800102	Picton Creek	Macaulay Conservation Area pond	PERW	current	57	4	212	24.614	4	7

Station ID	Name	Location	Watershed	Status	No. of Obs.	Min	Max	Average	Median	% Above PWQO
17000800202	Marsh Creek	Bridge St, Picton	PERW	current	57	2	80000	2525.790	30	30
17000900102	Hospital Creek	Cnty Rd 49, Main St, Picton	PERW	current	7	8	160	68.286	68	14
17001400102	Desmorestville Creek	Cnty Rd 14, Desmorestville	PERW	current	56	2	280	33.589	10	9
17001600102	Sawguin Creek	Cnty Rd 28, Fenwood Gardens	PERW	current	58	2	368	30.534	10	7
17002600102	Moira River	Footbridge, end of Catharine St, Belleville	MRW	current	3	52	660	264.000	80	33
17002600202	Moira River	Farnham Rd, Cannifton	MRW	current	3	30	64	46.000	44	0
17002600302	Moira River	Stoco L. outlet (west channel), Cnty Rd 13	MRW	current	1	32	32	32.000	0	0
17002600402	Moira River	Stoco L. outlet (east channel), Cnty Rd 13, Stoco	MRW	current	1	48	48	48.000	0	0
17002600501	Stoco Lake	Municipal Beach, E. of Hwy 37, Tweed	MRW	discontinued	0					
17002600602	Moira River	Louisa St, Tweed	MRW	current	1	4	4	4.000	0	0
17002600702	Clare River	Greenwood Rd, upstrm Stoco Lake	MRW	current	3	16	104	47.333	22	33
17002600802	Sulphide Creek	Sulphide Rd, upstrm Stoco Lake, E of Tweed	MRW	discontinued	1	8	8	8.000	0	0
17002600902	Skootamotta River	Hwy 7, upstrm Actinolite	MRW	current	1	12	12	12.000	0	0
17002601002	Black River	Hwy 7, 3.5 km W of Actinolite	MRW	current	1	12	12	12.000	0	0
17002601101	Moira Lake	Hwy 62, S of Madoc	MRW	current	3	2	32	12.000	2	0
17002601202	Deer Creek	Seymour St, Madoc	MRW	current	1	20	20	20.000	0	0
17002601302	Moira River	Hwy 7, dwnstrm Deloro	MRW	current	3	4	16	12.000	16	0
17002601402	Moira River	at Victoria Street, Belleville	MRW	discontinued	0					
17002601502	Moira River	CNR Bridge , South of Cannifton	MRW	discontinued	0					
17002601602	Moira River	College Street, Belleville	MRW	discontinued	0					
17002601702	West Channel	Bethel Rd, E. of Hwy 37, Chapman	MRW	discontinued	0					
17002601802	Madoc Creek	At Moira Lake, W. of Hwy 62	MRW	discontinued	0					
17002601902	Moira River	Malone, upstrm Deloro	MRW	current	3	8	140	65.333	48	33
17002602002	Lily Creek	Highway 7, Deloro	MRW	discontinued	0					
17002602102	Palliser Creek	Ashley St, Foxboro	MRW	discontinued	17	17	480	154.180	124	59
17002602202	Palliser Creek	Scotts Church Rd, Quinte West	MRW	discontinued	17	4	356	159.760	140	53
17002602302	Moira River	Moira Lake outlet, Rapids Rd, E of Madoc	MRW	current	0					
17003100102	Salmon River	Dundas St, Hastings Cnty Rd 2, Shannonville	NRW	current	74	4	9500	226.650	28	20
17003100202	Salmon River	At Bridge In Milltown, S. of Hwy 401	NRW	discontinued	0					
17003500102	Napanee River	River Rd, Cnty Rd 9, dwnstrm Napanee	NRW	current	69	2	304	42.681	12	16
17003500202	Napanee River	Cnty Rd 1, dwnstrm Newburgh	NRW	current	74	4	15000	433.220	35	30

Station ID	Name	Location	Watershed	Status	No. of Obs.	Min	Max	Average	Median	% Above PWQO
17003500302	Napanee River	Cnty Rd 4, Camden East	NRW	discontinued	1	280	280	280.000	0	100
17003500402	Napanee River	Cnty Rd 27, Newburgh	NRW	current	75	4	1300	115.200	36	29

Total Kjeldahl Nitrogen: 1964 to 2006 concentrations of total Kjeldahl nitrogen (mg/L) at the PWQMN stations, and percent of samples greater than the typical Canadian concentration of 0.5 mg/L (McNeely et al 1979).

Station ID	Name	Location	Watershed	Status	No. of Obs.	Min	Max	Average	Median	% Above Typical
6015700102	Consecon Creek	Mill Dam, Consecon	PERW	current	145	0.42	2.95	0.830	0.78	96
6015700202	Consecon Creek	Cnty Rd 2, Allisonville	PERW	discontinued	132	0.36	3.4	1.005	0.88	92
6015700302	Consecon Creek	Hwy 62, S of Crofton	PERW	current	145	0.37	8.9	1.403	1.19	95
6015900102	Slab Creek	Loyalist Parkway, HWY 33, S of Consecon	PERW	current	9	0.48	1.74	1.092	1.15	89
6016300102	Bloomfield Creek	Wesley Acres Rd, dwnstrm Bloomfield	PERW	current	145	0.115	7.6	1.013	0.66	77
6016400102	Waring Creek	West Lake Road, Cnty Rd 12, S of Bloomfield	PERW	current	77	0.32	1.36	0.553	0.5	51
6017200102	Black Creek	Cnty Rd 17, Milford	PERW	current	142	0.06	1.3	0.571	0.53	56
17000600102	Cressy Creek	Cnty Rd 7, Prinyer Point, Cressy	PERW	current	11	0.4	2.24	0.903	0.68	91
17000800102	Picton Creek	Macaulay Conservation Area pond	PERW	current	145	0.12	2.13	0.432	0.33	26
17000800202	Marsh Creek	Bridge St, Picton	PERW	current	89	0.21	7.38	1.748	1.32	98
17000900102	Hospital Creek	Cnty Rd 49, Main St, Picton	PERW	current	8	0.33	0.52	0.426	0.44	25
17001400102	Desmorestville Creek	Cnty Rd 14, Desmorestville	PERW	current	144	0.32	25.5	1.095	0.83	88
17001600102	Sawguin Creek	Cnty Rd 28, Fenwood Gardens	PERW	current	143	0.36	10.8	1.145	1	93
17002600102	Moira River	Footbridge, end of Catharine St, Belleville	MRW	current	334	0.22	6.8	0.595	0.52	61
17002600202	Moira River	Farnham Rd, Cannifton	MRW	current	332	0.33	7.5	0.571	0.515	57
17002600302	Moira River	Stoco L. outlet (west channel), Cnty Rd 13	MRW	current	216	0.32	1.41	0.632	0.59	77
17002600402	Moira River	Stoco L. outlet (east channel), Cnty Rd 13, Stoco	MRW	current	225	0.24	1.6	0.602	0.56	71
17002600501	Stoco Lake	Municipal Beach, E. of Hwy 37, Tweed	MRW	discontinued	43	0.44	1.6	0.818	0.75	93
17002600602	Moira River	Louisa St, Tweed	MRW	current	234	0.32	1.8	0.579	0.54	64
17002600702	Clare River	Greenwood Rd, upstrm Stoco Lake	MRW	current	232	0.3	1.7	0.568	0.56	74
17002600802	Sulphide Creek	Sulphide Rd, upstrm Stoco Lake, E of Tweed	MRW	discontinued	129	0.3	6	0.893	0.72	91
17002600902	Skootamotta River	Hwy 7, upstrm Actinolite	MRW	current	244	0.32	1.8	0.582	0.52	64
17002601002	Black River	Hwy 7, 3.5 km W of Actinolite	MRW	current	192	0.23	1.11	0.567	0.53	59

Station ID	Name	Location	Watershed	Status	No. of Obs.	Min	Max	Average	Median	% Above Typical
17002601101	Moira Lake	Hwy 62, S of Madoc	MRW	current	291	0.13	6	0.668	0.6	78
17002601202	Deer Creek	Seymour St, Madoc	MRW	current	202	0.26	23.5	0.825	0.52	63
17002601302	Moira River	Hwy 7, dwnstrm Deloro	MRW	current	267	0.21	2.8	0.633	0.6	84
17002601402	Moira River	at Victoria Street, Belleville	MRW	discontinued	19	0.48	2.1	0.761	0.66	95
17002601502	Moira River	CNR Bridge , South of Cannifton	MRW	discontinued	41	0.42	1.2	0.640	0.6	83
17002601602	Moira River	College Street, Belleville	MRW	discontinued	0					
17002601702	West Channel	Bethel Rd, E. of Hwy 37, Chapman	MRW	discontinued	0					
17002601802	Madoc Creek	At Moira Lake, W. of Hwy 62	MRW	discontinued	19	0.36	8.8	1.530	0.9	84
17002601902	Moira River	Malone, upstrm Deloro	MRW	current	191	0.18	1.28	0.594	0.59	77
17002602002	Lily Creek	Highway 7, Deloro	MRW	discontinued	0					
17002602102	Palliser Creek	Ashley St, Foxboro	MRW	discontinued	20	0.58	1.96	0.758	0.68	100
17002602202	Palliser Creek	Scotts Church Rd, Quinte West	MRW	discontinued	20	0.2	0.4	0.267	0.26	0
17002602302	Moira River	Moira Lake outlet, Rapids Rd, E of Madoc	MRW	current	53	0.31	0.76	0.491	0.48	43
17003100102	Salmon River	Dundas St, Hastings Cnty Rd 2, Shannonville	NRW	current	384	0.15	31	0.618	0.49	50
17003100202	Salmon River	At Bridge In Milltown, S. of Hwy 401	NRW	discontinued	25	0.28	1.53	0.524	0.48	40
17003500102	Napanee River	River Rd, Cnty Rd 9, dwnstrm Napanee	NRW	current	377	0.09	3.9	0.930	0.8	90
17003500202	Napanee River	Cnty Rd 1, dwnstrm Newburgh	NRW	current	332	0.1	6.8	0.689	0.64	86
17003500302	Napanee River	Cnty Rd 4, Camden East	NRW	discontinued	34	0.32	12	1.098	0.675	85
17003500402	Napanee River	Cnty Rd 27, Newburgh	NRW	current	206	0.28	1.95	0.598	0.585	77

Total Nitrates: 1964 to 2006 concentrations of total nitrates (mg/L) at the PWQMN stations, and percent of samples greater than the ODWS of 10 mg/L.

Station ID	Name	Location	Watershed	Status	No. of Obs.	Min	Max	Average	Median	% Above ODWS
6015700102	Consecon Creek	Mill Dam, Consecon	PERW	current	91	0.005	0.592	0.085	0.3375	0
6015700202	Consecon Creek	Cnty Rd 2, Allisonville	PERW	discontinued	78	0.005	1.02	0.126	0.54675	0
6015700302	Consecon Creek	Hwy 62, S of Crofton	PERW	current	89	0.005	3.75	0.107	0.373	0

Station ID	Name	Location	Watershed	Status	No. of Obs.	Min	Max	Average	Median	% Above ODWS
6015900102	Slab Creek	Loyalist Parkway, HWY 33, S of Consecon	PERW	current	9	0.005	0.192	0.064	0.1572	0
6016300102	Bloomfield Creek	Wesley Acres Rd, dwnstrm Bloomfield	PERW	current	90	0.005	8.8	2.684	6.496	0
6016400102	Waring Creek	West Lake Road, Cnty Rd 12, S of Bloomfield	PERW	current	78	0.885	5.59	3.007	5.2405	0
6017200102	Black Creek	Cnty Rd 17, Milford	PERW	current	87	0.005	1.38	0.193	0.787	0
17000600102	Cressy Creek	Cnty Rd 7, Prinyer Point, Cressy	PERW	current	11	0.005	3.76	0.529	2.455	0
17000800102	Picton Creek	Macaulay Conservation Area pond	PERW	current	90	0.005	1.9	0.084	0.26875	0
17000800202	Marsh Creek	Bridge St, Picton	PERW	current	89	0.035	11.8	2.097	6.58	1
17000900102	Hospital Creek	Cnty Rd 49, Main St, Picton	PERW	current	8	0.005	0.91	0.254	0.8512	0
17001400102	Desmorestville Creek	Cnty Rd 14, Desmorestville	PERW	current	91	0.005	0.9	0.064	0.44	0
17001600102	Sawguin Creek	Cnty Rd 28, Fenwood Gardens	PERW	current	89	0.005	2.84	0.357	1.316	0
17002600102	Moira River	Footbridge, end of Catharine St, Belleville	MRW	current	152	0.005	0.665	0.103	0.364	0
17002600202	Moira River	Farnham Rd, Cannifton	MRW	current	165	0.005	0.745	0.125	0.397	0
17002600302	Moira River	Stoco L. outlet (west channel), Cnty Rd 13	MRW	current	97	0.005	0.368	0.063	0.212	0
17002600402	Moira River	Stoco L. outlet (east channel), Cnty Rd 13, Stoco	MRW	current	98	0.005	0.29	0.057	0.1871	0
17002600501	Stoco Lake	Municipal Beach, E. of Hwy 37, Tweed	MRW	discontinued	0					
17002600602	Moira River	Louisa St, Tweed	MRW	current	97	0.005	2.61	0.100	0.203	0
17002600702	Clare River	Greenwood Rd, upstrm Stoco Lake	MRW	current	145	0.005	2.11	0.049	0.136	0
17002600802	Sulphide Creek	Sulphide Rd, upstrm Stoco Lake, E of Tweed	MRW	discontinued	39	0.005	0.23	0.054	0.1455	0
17002600902	Skootamotta River	Hwy 7, upstrm Actinolite	MRW	current	114	0.005	2.49	0.077	0.16525	0
17002601002	Black River	Hwy 7, 3.5 km W of Actinolite	MRW	current	97	0.005	2.75	0.098	0.231	0
17002601101	Moira Lake	Hwy 62, S of Madoc	MRW	current	153	0.005	0.455	0.077	0.368	0
17002601202	Deer Creek	Seymour St, Madoc	MRW	current	96	0.005	3.08	0.185	0.71725	0
17002601302	Moira River	Hwy 7, dwnstrm Deloro	MRW	current	140	0.005	0.615	0.117	0.3955	0
17002601402	Moira River	at Victoria Street, Belleville	MRW	discontinued	16	0.04	0.435	0.164	0.40125	0
17002601502	Moira River	CNR Bridge , South of Cannifton	MRW	discontinued	0					
17002601602	Moira River	College Street, Belleville	MRW	discontinued	0					
17002601702	West Channel	Bethel Rd, E. of Hwy 37, Chapman	MRW	discontinued	0					
17002601802	Madoc Creek	At Moira Lake, W. of Hwy 62	MRW	discontinued	0					
17002601902	Moira River	Malone, upstrm Deloro	MRW	current	123	0.005	3.21	0.164	0.41	0
17002602002	Lily Creek	Highway 7, Deloro	MRW	discontinued	0					
17002602102	Palliser Creek	Ashley St, Foxboro	MRW	discontinued	20	0.015	7.14	0.848	2.9695	0

Station ID	Name	Location	Watershed	Status	No. of Obs.	Min	Max	Average	Median	% Above ODWS
17002602202	Palliser Creek	Scotts Church Rd, Quinte West	MRW	discontinued	20	0.005	3.37	2.544	3.2845	0
17002602302	Moira River	Moira Lake outlet, Rapids Rd, E of Madoc	MRW	current	53	0.005	2.48	0.103	0.2302	0
17003100102	Salmon River	Dundas St, Hastings Cnty Rd 2, Shannonville	NRW	current	193	0.005	1.08	0.095	0.29	0
17003100202	Salmon River	At Bridge In Milltown, S. of Hwy 401	NRW	discontinued	9	0.015	0.78	0.156	0.566	0
17003500102	Napanee River	River Rd, Cnty Rd 9, dwnstrm Napanee	NRW	current	186	0.005	1.43	0.276	0.68875	0
17003500202	Napanee River	Cnty Rd 1, dwnstrm Newburgh	NRW	current	193	0.01	1.48	0.179	0.4972	0
17003500302	Napanee River	Cnty Rd 4, Camden East	NRW	discontinued	1	0.14	0.14	0.140	0	0
17003500402	Napanee River	Cnty Rd 27, Newburgh	NRW	current	193	0.005	1.17	0.105	0.293	0

Total Phosphorus: 1964 to 2006 concentrations of total phosphorus (mg/L) at the PWQMN stations, and the percent of samples greater than the Interim PWQO of 0.03 mg/L.

Station ID	Name	Location	Watershed	Status	No. of Obs.	Min	Max	Average	Median	% Above Interim PWQO
6015700102	Consecon Creek	Mill Dam, Consecon	PERW	current	199	0.008	0.28	0.032	0.024	33
6015700202	Consecon Creek	Cnty Rd 2, Allisonville	PERW	discontinued	183	0.006	0.69	0.071	0.036	60
6015700302	Consecon Creek	Hwy 62, S of Crofton	PERW	current	199	0.007	1.57	0.164	0.088	84
6015900102	Slab Creek	Loyalist Parkway, HWY 33, S of Consecon	PERW	current	9	0.01	0.089	0.039	0.03	56
6016300102	Bloomfield Creek	Wesley Acres Rd, dwnstrm Bloomfield	PERW	current	198	0.008	4.58	0.424	0.084	85
6016400102	Waring Creek	West Lake Road, Cnty Rd 12, S of Bloomfield	PERW	current	77	0.01	0.134	0.037	0.024	39
6017200102	Black Creek	Cnty Rd 17, Milford	PERW	current	194	0.004	0.67	0.043	0.036	60
17000600102	Cressy Creek	Cnty Rd 7, Prinyer Point, Cressy	PERW	current	11	0.065	0.331	0.164	0.154	100
17000800102	Picton Creek	Macaulay Conservation Area pond	PERW	current	195	0.001	0.64	0.038	0.02	33
17000800202	Marsh Creek	Bridge St, Picton	PERW	current	111	0.01	2.85	0.223	0.134	97
17000900102	Hospital Creek	Cnty Rd 49, Main St, Picton	PERW	current	8	0.008	0.041	0.023	0.0225	25
17001400102	Desmorestville Creek	Cnty Rd 14, Desmorestville	PERW	current	195	0.002	3.75	0.064	0.03	51
17001600102	Sawguin Creek	Cnty Rd 28, Fenwood Gardens	PERW	current	194	0.008	1.75	0.122	0.0665	85
17002600102	Moira River	Footbridge, end of Catharine St, Belleville	MRW	current	380	0.005	0.46	0.033	0.023	35
17002600202	Moira River	Farnham Rd, Cannifton	MRW	current	360	0.007	1.4	0.033	0.023	33
17002600302	Moira River	Stoco L. outlet (west channel), Cnty Rd 13	MRW	current	220	0.004	0.85	0.036	0.028	46

Station ID	Name	Location	Watershed	Status	No. of Obs.	Min	Max	Average	Median	% Above Interim PWQO
17002600402	Moira River	Stoco L. outlet (east channel), Cnty Rd 13, Stoco	MRW	current	229	0.002	0.167	0.029	0.025	36
17002600501	Stoco Lake	Municipal Beach, E. of Hwy 37, Tweed	MRW	discontinued	43	0.02	0.17	0.054	0.048	93
17002600602	Moira River	Louisa St, Tweed	MRW	current	235	0.007	0.359	0.028	0.023	33
17002600702	Clare River	Greenwood Rd, upstrm Stoco Lake	MRW	current	295	0.006	0.31	0.026	0.022	21
17002600802	Sulphide Creek	Sulphide Rd, upstrm Stoco Lake, E of Tweed	MRW	discontinued	130	0.003	3.5	0.077	0.0355	63
17002600902	Skootamotta River	Hwy 7, upstrm Actinolite	MRW	current	304	0.001	0.161	0.025	0.02	20
17002601002	Black River	Hwy 7, 3.5 km W of Actinolite	MRW	current	194	0.006	0.141	0.021	0.019	15
17002601101	Moira Lake	Hwy 62, S of Madoc	MRW	current	346	0.005	0.637	0.038	0.0295	50
17002601202	Deer Creek	Seymour St, Madoc	MRW	current	227	0.005	12.876	0.148	0.02	29
17002601302	Moira River	Hwy 7, dwnstrm Deloro	MRW	current	287	0.008	1.895	0.076	0.028	48
17002601402	Moira River	at Victoria Street, Belleville	MRW	discontinued	20	0.011	0.111	0.023	0.016	15
17002601502	Moira River	CNR Bridge , South of Cannifton	MRW	discontinued	40	0.016	0.16	0.045	0.0375	75
17002601602	Moira River	College Street, Belleville	MRW	discontinued	0					
17002601702	West Channel	Bethel Rd, E. of Hwy 37, Chapman	MRW	discontinued	1	0.052	0.052	0.052	0	100
17002601802	Madoc Creek	At Moira Lake, W. of Hwy 62	MRW	discontinued	19	0.018	2.9	0.471	0.24	89
17002601902	Moira River	Malone, upstrm Deloro	MRW	current	194	0.006	0.16	0.021	0.018	14
17002602002	Lily Creek	Highway 7, Deloro	MRW	discontinued	0					
17002602102	Palliser Creek	Ashley St, Foxboro	MRW	discontinued	20	0.024	0.076	0.043	0.039	85
17002602202	Palliser Creek	Scotts Church Rd, Quinte West	MRW	discontinued	20	0.006	0.024	0.013	0.012	0
17002602302	Moira River	Moira Lake outlet, Rapids Rd, E of Madoc	MRW	current	53	0.009	0.058	0.020	0.018	13
17003100102	Salmon River	Dundas St, Hastings Cnty Rd 2, Shannonville	NRW	current	434	0.002	10.5	0.053	0.02	21
17003100202	Salmon River	At Bridge In Milltown, S. of Hwy 401	NRW	discontinued	80	0.002	0.16	0.025	0.021	19
17003500102	Napanee River	River Rd, Cnty Rd 9, dwnstrm Napanee	NRW	current	426	0.002	1.3	0.097	0.059	81
17003500202	Napanee River	Cnty Rd 1, dwnstrm Newburgh	NRW	current	245	0.01	0.74	0.044	0.032	57
17003500302	Napanee River	Cnty Rd 4, Camden East	NRW	discontinued	33	0.018	0.82	0.058	0.032	58
17003500402	Napanee River	Cnty Rd 27, Newburgh	NRW	current	263	0.004	0.19	0.026	0.023	28

Turbidity: 1964 to 2006 concentrations of Turbidity (FTU) at the PWQMN stations, and percent of samples greater than the ODWS of 5.0 FTU.

Station ID	Name	Location	Watershed	Status	No. of Obs.	Min	Max	Average	Median	% Above ODWS
6015700102	Consecon Creek	Mill Dam, Consecon	PERW	current	188	0.40	52	2.39	1.40	8
6015700202	Consecon Creek	Cnty Rd 2, Allisonville	PERW	discontinued	184	0.26	53	2.68	1.40	8
6015700302	Consecon Creek	Hwy 62, S of Crofton	PERW	current	188	0.01	122	4.62	1.82	21
6015900102	Slab Creek	Loyalist Parkway, HWY 33, S of Consecon	PERW	current	0					
6016300102	Bloomfield Creek	Wesley Acres Rd, dwnstrm Bloomfield	PERW	current	185	0.01	985	13.11	3.30	37
6016400102	Waring Creek	West Lake Road, Cnty Rd 12, S of Bloomfield	PERW	current	67	0.52	22	4.05	2.50	25
6017200102	Black Creek	Cnty Rd 17, Milford	PERW	current	187	0.02	19	2.91	2.20	13
17000600102	Cressy Creek	Cnty Rd 7, Prinyer Point, Cressy	PERW	current	0					
17000800102	Picton Creek	Macaulay Conservation Area pond	PERW	current	183	0.33	63	4.36	2.30	22
17000800202	Marsh Creek	Bridge St, Picton	PERW	current	99	0.33	147	8.89	6.10	58
17000900102	Hospital Creek	Cnty Rd 49, Main St, Picton	PERW	current	6	0.37	3.7	1.34	1.00	0
17001400102	Desmorestville Creek	Cnty Rd 14, Desmorestville	PERW	current	185	0.08	161	3.24	1.30	12
17001600102	Sawguin Creek	Cnty Rd 28, Fenwood Gardens	PERW	current	183	0.29	67	3.98	2.10	17
17002600102	Moira River	Footbridge, end of Catharine St, Belleville	MRW	current	280	0.43	160	3.25	1.70	9
17002600202	Moira River	Farnham Rd, Cannifton	MRW	current	289	0.38	38	2.38	1.50	7
17002600302	Moira River	Stoco L. outlet (west channel), Cnty Rd 13	MRW	current	166	0.51	8.0	2.02	1.62	4
17002600402	Moira River	Stoco L. outlet (east channel), Cnty Rd 13, Stoco	MRW	current	168	0.58	8.4	1.84	1.51	2
17002600501	Stoco Lake	Municipal Beach, E. of Hwy 37, Tweed	MRW	discontinued	9	1.50	21.0	4.17	1.80	11
17002600602	Moira River	Louisa St, Tweed	MRW	current	167	0.55	9.7	1.51	1.23	1
17002600702	Clare River	Greenwood Rd, upstrm Stoco Lake	MRW	current	258	0.41	17.5	2.12	1.77	3
17002600802	Sulphide Creek	Sulphide Rd, upstrm Stoco Lake, E of Tweed	MRW	discontinued	106	0.86	35	3.46	2.80	12
17002600902	Skootamotta River	Hwy 7, upstrm Actinolite	MRW	current	231	0.56	6.9	1.67	1.43	1
17002601002	Black River	Hwy 7, 3.5 km W of Actinolite	MRW	current	169	0.54	11.4	1.53	1.30	1
17002601101	Moira Lake	Hwy 62, S of Madoc	MRW	current	283	0.59	16.0	2.48	1.79	9
17002601202	Deer Creek	Seymour St, Madoc	MRW	current	189	0.37	22.0	2.14	1.53	6
17002601302	Moira River	Hwy 7, dwnstrm Deloro	MRW	current	230	0.39	12.2	2.06	1.80	3
17002601402	Moira River	at Victoria Street, Belleville	MRW	discontinued	17	0.62	2.6	1.64	1.79	0
17002601502	Moira River	CNR Bridge , South of Cannifton	MRW	discontinued	0					

Station ID	Name	Location	Watershed	Status	No. of Obs.	Min	Max	Average	Median	% Above ODWS
17002601602	Moira River	College Street, Belleville	MRW	discontinued	0					
17002601702	West Channel	Bethel Rd, E. of Hwy 37, Chapman	MRW	discontinued	0					
17002601802	Madoc Creek	At Moira Lake, W. of Hwy 62	MRW	discontinued	0					
17002601902	Moira River	Malone, upstrm Deloro	MRW	current	188	0.38	9.88	1.86	1.41	4
17002602002	Lily Creek	Highway 7, Deloro	MRW	discontinued	0					
17002602102	Palliser Creek	Ashley St, Foxboro	MRW	discontinued	20	1.44	9.1	4.35	3.82	30
17002602202	Palliser Creek	Scotts Church Rd, Quinte West	MRW	discontinued	20	0.57	3.57	1.32	0.96	0
17002602302	Moira River	Moira Lake outlet, Rapids Rd, E of Madoc	MRW	current	52	0.35	15.9	1.50	1.055	2
17003100102	Salmon River	Dundas St, Hastings Cnty Rd 2, Shannonville	NRW	current	331	0.59	22	2.89	2.3	9
17003100202	Salmon River	At Bridge In Milltown, S. of Hwy 401	NRW	discontinued	80	0.80	7.7	3.16	2.7	15
17003500102	Napanee River	River Rd, Cnty Rd 9, dwnstrm Napanee	NRW	current	325	0.74	34.6	5.14	4	38
17003500202	Napanee River	Cnty Rd 1, dwnstrm Newburgh	NRW	current	282	0.40	35	2.83	2.2	9
17003500302	Napanee River	Cnty Rd 4, Camden East	NRW	discontinued	1	3.53	3.53	3.53	0	0
17003500402	Napanee River	Cnty Rd 27, Newburgh	NRW	current	264	0.47	27	2.01	1.62	3

Appendix 12 - PWQMN parameters from 1964 to 2006 for the Quinte Region

Section 3.2.1 Provincial Water Quality Monitoring Network (PWQMN) Watershed Characterization Page 146

Parameter Name and Unit	PARM	CAS #
ACIDITY, TOTAL (mg/L)	ACDT	
ALKALINITY, TOTAL (mg/L)	ALKT	
ALUMINIUM, UNFILTERED TOTAL (mg/L)	ALUT	7429-90-5
ALUMINIUM, UNFILTERED TOTAL (ug/L)	ALUT	7429-90-5
AMMONIUM, TOTAL FILTER.REAC (mg/L)	NNHTFR	
AMMONIUM, TOTAL UNFIL.REAC (mg/L)	NNHTUR	
ANTIMONY, UNFILTERED TOTAL (mg/L)	SBUT	7440-36-0
ARSENIC, UNFILTERED TOTAL (mg/L)	ASUT	7440-38-2
BARIUM, UNFILTERED TOTAL (mg/L)	BAUT	
BARIUM, UNFILTERED TOTAL (ug/L)	BAUT	
BERYLIUM, UNFILTERED TOTAL (mg/L)	BEUT	7440-41-7
BERYLIUM, UNFILTERED TOTAL (ug/L)	BEUT	7440-41-7
BOD, 5 DAY, TOTAL DEMAND (mg/L)	BOD5	
CADMIUM, UNFILTERED TOTAL (mg/L)	CDUT	7440-43-9
CADMIUM, UNFILTERED TOTAL (ug/L)	CDUT	7440-43-9
CALCIUM, UNFILTERED REACTIVE (mg/L)	CAUR	
CALCIUM, UNFILTERED TOTAL (mg/L)	CAUT	
CARBON, DISSOLVED INORGANIC (mg/L)	DIC	
CARBON, DISSOLVED INORGANIC (no scale)	DIC	
CARBON, DISSOLVED ORGANIC (mg/L)	DOC	
CARBON, UNFILTERED TOTAL (mg/L)	CCUT	
CHEMICAL OXYGEN DEMAND (mg/L)	COD	
CHLORIDE, UNFIL.REAC (mg/L)	CLIDUR	
CHLOROPHYLL-A, CORRECTED (ug/L)	CHLRAC	
CHLOROPHYLL-A, TOTAL (ug/L)	CHLRAT	
CHLOROPHYLL-B, TOTAL (ug/L)	CHLRBT	
CHROMIUM, UNFILTERED TOTAL (mg/L)	CRUT	7440-47-3
CHROMIUM, UNFILTERED TOTAL (ug/L)	CRUT	7440-47-3
COBALT, UNFILTERED TOTAL (mg/L)	COUT	7440-48-4
COBALT, UNFILTERED TOTAL (ug/L)	COUT	7440-48-4
COLIFORM, TOTAL M/F BCKGRD (Cnts)	TCMFBK	
COLIFORM, TOTAL MF (Cnts)	TCMF	

Parameter Name and Unit	PARM	CAS #
COLOUR, APPARENT (HCU)	COLAP	
CONDUCTIVITY, 25C (no scale)	COND25	
CONDUCTIVITY, 25C (umhos/cm)	COND25	
CONDUCTIVITY, 25C (uS/cm)	COND25	
CONDUCTIVITY, AMBIENT (umhos/cm)	CONDAM	
COPPER, UNFILTERED TOTAL (mg/L)	CUUT	7440-50-8
COPPER, UNFILTERED TOTAL (ug/L)	CUUT	7440-50-8
CYANIDE, AVAIL, UNFIL.REAC (mg/L)	CCNAUR	57-12-5
CYANIDE, FREE, UNFIL.REACTIVE (mg/L)	CCNFUR	57-12-5
DISSOLVED OXYGEN (mg/L)	DO	
E COLI MF BY FC-BCIG (Cnts)	ECBMF	
ESCHERICHIA COLI MF (Cnts)	ECMF	
FECAL COL/FC-BCIG/MTEC (Cnts)	FCBMF	
FECAL COLIFORM MF (Cnts)	FCMF	
FECAL STREPTOCOCCUS MF (Cnts)	FSMF	
FLUORIDE, UNFILTERED REACTIVE (mg/L)	FFIDUR	
FLUORIDE, UNFILTERED REACTIVE (no scale)	FFIDUR	
GROSS ALPHA-HIVOLS-RPL (Bq/L)	GROSSA	
GROSS B-HIVOLS-RPL (Bq/L)	GROSSB	
HARDNESS, TOTAL (mg/L)	HARDT	
IRON, FILTERED TOTAL (mg/L)	FEFT	7439-89-6
IRON, UNFILTERED TOTAL (Cnts)	FEUT	7439-89-6
IRON, UNFILTERED TOTAL (mg/L)	FEUT	7439-89-6
IRON, UNFILTERED TOTAL (ug/L)	FEUT	7439-89-6
LEAD, UNFILTERED TOTAL (mg/L)	PBUT	7439-92-1
LEAD, UNFILTERED TOTAL (ug/L)	PBUT	7439-92-1
MAGNESIUM,FILTERED REACTIVE (mg/L)	MGUR	
MAGNESIUM,UNFILTERED TOTAL (mg/L)	MGUT	
MANGANESE,FILTERED TOTAL (mg/L)	MNFT	
MANGANESE,UNFILTERED TOTAL (mg/L)	MNUT	
MANGANESE,UNFILTERED TOTAL (ug/L)	MNUT	
MERCURY, UNFILTERED TOTAL (mg/L)	HGUT	
MERCURY, UNFILTERED TOTAL (ug/L)	HGUT	7439-97-6
METHYLENE BLUE, ACT.SUBST. (mg/L)	MBAS	
MOLYBDENUM,UNFILTERED TOTAL (mg/L)	MOUT	7439-98-7
MOLYBDENUM,UNFILTERED TOTAL (ug/L)	MOUT	7439-98-7
NICKEL, UNFILTERED TOTAL (mg/L)	NIUT	
NICKEL, UNFILTERED TOTAL (ug/L)	NIUT	

Parameter Name and Unit	PARM	CAS #
NITRATE, FILTERED REACTIVE (mg/L)	NNO3FR	
NITRATES TOTAL, FILTER.REAC (mg/L)	NNOTFR	
NITRATES TOTAL, UNFIL.REAC (mg/L)	NNOTUR	
NITRITE, FILTERED REACTIVE (mg/L)	NNO2FR	
NITRITE, UNFILTERED REACTIVE (mg/L)	NNO2UR	
NITROGEN,TOT,KJELDAHL/UNF.REA (mg/L)	NNTKUR	
PCB TOTAL (ng/L)	P1PCBT	
PCB TOTAL (ug/L)	P1PCBT	
PH (-LOG H+ CONC) (no scale)	PH	
PH FIELD (no scale)	FWPH	
PHENOLICS, UNFILTERED REACTIVE (ug/L)	PHNOL	
PHOSPHATE,FILTERED REACTIVE (mg/L)	PPO4FR	
PHOSPHORUS,UNFILTERED TOTAL (mg/L)	PPUT	7723-14-0
POTASSIUM,UNFILTERED REACTIVE (mg/L)	KKUR	
POTASSIUM,UNFILTERED TOTAL (mg/L)	KKUT	
PSEUDOMON.AERUGINOSA MF (Cnts)	PSAMF	
RADIUM 226-HIVOLS-RPL (Bq/L)	RAD226	
RESIDUE,FILTERED (mg/L)	RSF	
RESIDUE,FILTERED,ASHED (mg/L)	RSFA	
RESIDUE,PARTICULATE (mg/L)	RSP	
RESIDUE,PARTICULATE ASHED (mg/L)	RSPA	
RESIDUE,TOTAL (mg/L)	RST	
RESIDUE,TOTAL,ASHED (mg/L)	RSTA	
SELENIUM, UNFILTERED TOTAL (mg/L)	SEUT	7782-49-2
SILICATES,UNFILTERED REACTIVE (mg/L)	SIO3UR	
SILVER, UNFILTERED TOTAL (mg/L)	AGUT	7440-22-4
SODIUM, UNFILTERED REACTIVE (mg/L)	NAUR	
SODIUM, UNFILTERED TOTAL (mg/L)	NAUT	
SOLIDS; DISSOLVED ESTIMATED (mg/L)	RSFEST	
SOLVENT EXTRACTABLES (mg/L)	SOLEXT	
STREAM CONDITION (no scale)	FWSTRC	
STREAM FLOW (m3)	FWFLOW	
STRONTIUM, UNFILTERED TOTAL (mg/L)	SRUT	
STRONTIUM, UNFILTERED TOTAL (ug/L)	SRUT	
SULPHATE, UNFILTERED REACTIVE (mg/L)	SSO4UR	
SULPHATE, UNFILTERED REACTIVE (no scale)	SSO4UR	
TEMPERATURE, WATER (deg C)	FWTEMP	
TITANIUM, UNFILTERED TOTAL (mg/L)	TIUT	

Parameter Name and Unit	PARM	CAS #
TITANIUM, UNFILTERED TOTAL (ug/L)	TIUT	
TRITIUM, (HYDROGEN 3) (Bq/L)	HH3	
TURBIDITY (FTU)	TURB	
TURBIDITY (JTU)	TURB	
URANIUM, UNFILTERED TOTAL (ug/L)	UUUT	7440-61-1
VANADIUM, UNFILTERED TOTAL (mg/L)	VVUT	7440-62-2
VANADIUM, UNFILTERED TOTAL (ug/L)	VVUT	7440-62-2
ZINC, UNFILTERED TOTAL (mg/L)	ZNUT	7440-66-6
ZINC, UNFILTERED TOTAL (ug/L)	ZNUT	7440-66-6

Appendix 13 - PWQMN Water Chemistry Results (surface water)
 Section 3.2.4 Lake Partner Program – Total Phosphorus
 Watershed Characterization Page 157
 Secchi Disk Depth
 Watershed Characterization Page 158

Lake Partner Program results for the Quinte Region, 2002 to 2005
Average total phosphorus (µg/L)

Lake Name	Township	Watershed	Shield Lake	Site No.	Volume	Site Description	Sampling Period	# of Obs.	Min	Max	Average TP
Oligotrophic Lakes (<10 µg/L)											
BEAVER LAKE	STONE MILLS	NRW	Yes	2	960	W Basin, deep spot	5/16/2005	1	9.25	9.25	9.3
BIG CLEAR LAKE	C FRONTENAC	NRW	Yes	2	20	N Bay, deep spot	2002 to 2005	4	7.65	11.95	9.6
FOURTEEN ISLAND LAKE	S FRONTENAC	NRW	Yes	1	13	Main Basin, W end	2002 to 2003	2	9.35	10.35	9.9
HORSESHOE LAKE	C FRONTENAC	NRW	Yes	1	561	Mid Lake, deep spot	2004 to 2005	10	7.05	12	9.4
SKOOTAMATTA LAKE	ADDINGTON H	MRW	Yes	5	695	Foot of Narrows	2003 to 2004	2	8.4	8.75	8.6
SKOOTAMATTA LAKE	ADDINGTON H	MRW	Yes	3	695	Sheldrake Bay	2003 to 2004	2	9	9.45	9.2
Mesotrophic Lakes (10 to 20 µg/L)											
BAY OF QUINTE	SOPHIASBURG	PERW	No	1	745	Salmon R. Outlet deep s	5/6/2005	1	17.4	17.4	17.4
BEAVER LAKE	STONE MILLS	NRW	No	1	292	E Basin, deep spot	2004 to 2005	3	9.15	15.3	13.0
BIG CLEAR LAKE	C FRONTENAC	NRW	Yes	1	398	Main Basin, deep spot	2002 to 2005	4	9.25	18.2	12.0
CADE LAKE	SHEFFIELD	NRW	Yes	1	959	Deep spot	5/23/2005	1	18.75	18.75	18.8
COLE LAKE	S FRONTENAC	NRW	Yes	1	290	N end, deep spot	2002 to 2005	18	13.1	25.7	18.4
COLE LAKE	S FRONTENAC	NRW	Yes	2	290	S end, deep spot	2002 to 2005	19	14.2	35.85	19.0
CRANBERRY LAKE	C FRONTENAC	NRW	Yes	1	291	Deep spot	5/31/2005	1	11.65	11.65	11.7
CROTCH LAKE	C FRONTENAC	NRW	Yes	1	561	Mid Lake, deep spot	2004 to 2005	11	8.55	13.05	10.9
GARRISON LAKE	C FRONTENAC	NRW	Yes	1	887	Deep spot	5/22/2005	1	10.15	10.15	10.2
HAMBLY LAKE (SILVER)	S FRONTENAC	NRW	No	1	25	Mid Lake, deep spot	2002 to 2005	21	9.8	22.45	13.5
HUNGRY LAKE	C FRONTENAC	NRW	Yes	2	836	Mid Lake, deep spot	5/30/2005	1	11.7	11.7	11.7
JORDAN LAKE	TUDOR AND C	MRW	Yes	1	82	Mid Lake, deep spot	2004 to 2005	2	14.75	17.6	16.2
KENNEBEC LAKE	C FRONTENAC	NRW	Yes	3	336	W end-Salmon River Mout	2002 to 2005	4	10.35	14.05	12.3
KENNEBEC LAKE	C FRONTENAC	NRW	Yes	1	199	E end, deep spot	2002 to 2005	4	10.75	23.5	15.4
POTSPHOON LAKE	S FRONTENAC	NRW	Yes	2	836	Mid Lake, deep spot	6/1/2005	1	11.3	11.3	11.3
POTSPHOON LAKE	S FRONTENAC	NRW	Yes	1	708	Mid Lake, deep spot	2002 to 2005	4	11.15	19.55	14.4
SHEFFIELD LONG LAKE	SHEFFIELD	NRW	Yes	1	220	Deep spot	5/17/2005	1	13.1	13.1	13.1
SKOOTAMATTA LAKE	ADDINGTON H	MRW	Yes	6	695	Upper lake	2002 to 2004	3	9.6	10.85	10.1
SKOOTAMATTA LAKE	ADDINGTON H	MRW	Yes	1	40	Upper Basin	2002 to 2004	4	10.8	14.65	12.4
ST. ANDREW LAKES	C FRONTENAC	NRW	Yes	1	95	N lake, deep spot	2002 to 2005	22	3.8	20.2	13.4
THIRTEEN ISLAND LAKE	C FRONTENAC	NRW	Yes	3	4	N end, deep spot	2002 to 2005	25	8.95	23.9	13.1
THIRTY ISLAND LAKE	C FRONTENAC	NRW	Yes	1	802	Mid Lake, deep spot	2003 to 2005	3	9.1	11.6	10.5
Eutrophic Lakes (>20 µg/L)											
HUNGRY LAKE	C FRONTENAC	NRW	Yes	1	492	Deep spot	5/22/2005	1	28.2	28.2	28.2
MOIRA LAKE	CENTRE HAST	MRW	No	1	55	E Basin, Watson Cove	2002 to 2005	23	11.95	35.4	23.3
MOIRA LAKE	CENTRE HAST	MRW	No	2	55	S/W Basin - Two Loons	2004	2	19.5	27.65	23.6
WEST LAKE	HALLOWELL	PERW	No	3	225	Sheba's Island	2002 to 2005	18	12.45	36.5	23.5
WEST LAKE	HALLOWELL	PERW	No	1	225	Wellington	2003 to 2005	9	15.2	36.6	24.3

Secchi Disk Distances (m)

Lake Name	Township	Station #	Site #	Site Description	# of Obs.	Min (m)	Max (m)	Average (m)
Fair to Good Clarity Lakes								
BAY OF QUINTE	SOPHIASBURGH	6937	1	Salmon R. Outlet deep spot	1	4.0	4.0	4.0
BAY OF QUINTE	SOPHIASBURGH	6937	2	Bay of Quinte- Muscote Bay	2	2.0	3.0	2.5
BEAVER LAKE	STONE MILLS	7039	1	E Basin, deep spot	2	3.5	3.8	3.7
BIG CLEAR LAKE	C FRONTENAC (KENNEBEC)	365	1	Main Basin, deep spot	5	4.5	5.7	5.0
BIG CLEAR LAKE	C FRONTENAC (KENNEBEC)	365	2	N Bay, deep spot	10	4.5	4.9	4.7
COLE LAKE	S FRONTENAC (HINCHINBROOKE)	7052	2	S end, deep spot	5	1.6	2.3	2.02
CROTCH LAKE	C FRONTENAC (KENNEBEC)	7221	1	Mid Lake, deep spot	1	2.3	2.3	2.3
FOURTEEN ISLAND LAKE	S FRONTENAC	1547	1	Main Basin, W end	3	5.2	6.0	5.6
HAMBLY LAKE (SILVER)	S FRONTENAC	6975	1	Mid Lake, deep spot	9	3.4	4.9	4.2
HORSESHOE LAKE	C FRONTENAC (KENNEBEC)	7222	1	Mid Lake, deep spot	1	2.5	2.5	2.5
HOWES LAKE	S FRONTENAC	7071	1	Mid Lake, deep spot	1	4.3	4.3	4.3
KENNEBEC LAKE	C FRONTENAC (KENNEBEC)	6977	3	W end-Salmon River Mouth	7	2.4	3.9	3.0
KENNEBEC LAKE	C FRONTENAC (KENNEBEC)	6977	1	E end, deep spot	9	1.1	4.2	2.8
MOIRA LAKE	CENTRE HASTINGS	6997	1	E Basin, Watson Cove	9	1.8	3.9	2.8
MOIRA LAKE	CENTRE HASTINGS	6997	2	S/W Basin - Two Loons	1	2.1	2.1	2.1
POTSPOON LAKE	S FRONTENAC (BEDFORD)	6625	1	Mid Lake, deep spot	2	4.3	6.1	5.2
SKOOTAMATTA LAKE	ADDINGTON HIGHLANDS	4986	1	Upper Basin	6	2.4	3.8	3.4
SKOOTAMATTA LAKE	ADDINGTON HIGHLANDS	4986	3	Sheldrake Bay	2	3.2	3.5	3.4
SKOOTAMATTA LAKE	ADDINGTON HIGHLANDS	4986	4	Lower Basin, deep spot	2	2.9	3.6	3.3
SKOOTAMATTA LAKE	ADDINGTON HIGHLANDS	4986	5	Foot of Narrows	2	2.8	3.6	3.2
SKOOTAMATTA LAKE	ADDINGTON HIGHLANDS	4986	2	Jacques Bay	2	2.9	3.3	3.1
SKOOTAMATTA LAKE	ADDINGTON HIGHLANDS	4986	6	Upper lake	2	2.9	3.0	3.0
ST. ANDREW LAKES	C FRONTENAC (HINCHINBROOKE)	7014	1	N lake, deep spot	10	2.7	4.6	3.6
STOCO LAKE	TWEED (HUNGERFORD)	5170	1	N end, deep spot	2	2.1	2.1	2.1
THIRTEEN ISLAND LAKE	C FRONTENAC(BEDFORD)	7024	3	N end, deep spot	9	3.1	6.1	4.7
THIRTEEN ISLAND LAKE	C FRONTENAC(BEDFORD)	7024	1	S/E end, deep spot	5	4.0	5.2	4.5
THIRTY ISLAND LAKE	C FRONTENAC(BEDFORD)	7253	1	Mid Lake, deep spot	1	6.4	6.4	6.4
Poor Clarity Lakes (<2m)								
COLE LAKE	S FRONTENAC (HINCHINBROOKE)	7052	1	N end, deep spot	6	1.6	2.3	2.0
SHEFFIELD LONG LAKE	SHEFFIELD	7395	1	Deep spot	1	1.7	1.7	1.7
WEST LAKE	HALLOWELL	7031	1	Wellington	4	1.3	2.7	1.9
WEST LAKE	HALLOWELL	7031	3	Sheba's Island	8	0.8	3.1	1.4

Appendix 14 - Example #1 of Provincial Groundwater Monitoring Network (PGMN) Water Quality Results with a list of parameters tested

Section 3.4 Raw Water Characterization for Drinking Water Sources
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GA129							
Parameters	18-Aug-03			15-Sep-05			DWS
	Value	M.D.L	Units	Value	M.D.L.	Units	mg/L
Fluoride	0.13		mg/L	0.2	0.1	mg/L	1.5
Sulphate	23		mg/L	21	1	mg/L	500
Aldicarb	0.0025	<=W	mg/L				0.009
Barban	0.002	<=W	mg/L				
Bendiocarb	0.0015	<=W	mg/L				0.04
Butylate	0.002	<=W	mg/L				
Carbaryl	0.0002	<=W	mg/L				0.09
Carbofuran	0.002	<=W	mg/L				0.09
Chlorpropham	0.002	<=W	mg/L				
Diallate	0.002	<=W	mg/L				
Eptam	0.002	<=W	mg/L				
Propham	0.002	<=W	mg/L				
Propoxur	0.002	<=W	mg/L				
Triallate	0.0015	<=W	mg/L				0.23
Calcium	86.6		mg/L	97.2	0.02	mg/L	
Hardness	270		mg/L	278	1	mg/L	80-100
Magnesium	13		mg/L	8.59	0.01	mg/L	
Potassium	1		mg/L	1	0.1	mg/L	
Sodium	3.2		mg/L	5.1	0.2	mg/L	20
Chloride	2.7		mg/L	6	1	mg/L	250
2,3,4,5-tetrachlorophenol	0.00002	<=W	mg/L				
2,3,4,6-tetrachlorophenol	0.00002	<=W	mg/L				0.1
2,3,4-trichlorophenol	0.0001	<=W	mg/L				
2,4,5-T	0.00005	<=W	mg/L				0.28
2,4,5-trichlorophenol	0.0001	<=W	mg/L				
2,4,6-trichlorophenol	0.00002	<=W	mg/L				0.005
2,4-D	0.0001	<=W	mg/L				0.1
2,4-D-propionic acid	0.0001	<=W	mg/L				
2,4-DB	0.0002	<=W	mg/L				
2,4-dichlorophenol	0.002	<=W	mg/L				0.9
Bromoxynil	0.00005	<=W	mg/L				0.005
Dicamba	0.00005	<=W	mg/L				0.12
Diclofop-methyl	0.0001	<=W	mg/L				0.009
Dinoseb	0.00002	<=W	mg/L				0.01
Pentachlorophenol	0.00001	<=W	mg/L				0.06
Picloram	0.0001	<=W	mg/L				0.19
Silvex	0.00002	<=W	mg/L				

Carbon; dissolved inorganic	64.2		mg/L				
Carbon; dissolved organic	1.5		mg/L	7.4	0.5	mg/L	5
Silicon; reactive silicate	5.64		mg/L				
Solids; dissolved	348		mg/L				
Aminomethylphosphonic acid	0.005	<=W	mg/L				
Glyphosate	0.002	<=W	mg/L				0.28
Anions	5.91		meq/L	5.86		meq/L	
Cations	5.56		meq/L	5.82		meq/L	
Conductivity	535		uS/cm	493		umho/cm	
Conductivity Estimated	555		uS/cm	540		umho/cm	
Ion balance calculation	6.4		%	0.295		%	
Solids; Dissolved Estimated	293		mg/L				
Langeliers index calculation	0.87		none				
Langeliers index calc. (4°C)				-0.590		S.I.	
Langeliers index calc. (20°C)				-0.190		S.I.	
Saturation pH Estimated	7.04		none				
Saturation pH (4°C)				7.54			
Saturation pH (20°C)				7.14			
pH	7.91		none	6.95		pH Units	
Aluminum	0.0002	+/-0.0002	mg/L	< 0.01	0.01	mg/L	0.1
Antimony	0.00033	+/-0.00012	mg/L	< 0.001	0.001	mg/L	0.006
Arsenic	0.0001	+/-0.0001	mg/L	< 0.001	0.001	mg/L	0.025
Barium	0.0769	+/-0.0064	mg/L	0.055	0.001	mg/L	1
Beryllium	0.00005	+/-0.00005	mg/L	< 0.002	0.002	mg/L	
Boron	0.01	+/-0.003	mg/L	0.008	0.005	mg/L	5
Cadmium	0.00001	+/-0.00005	mg/L	< 0.0001	0.0001	mg/L	0.005
Chromium	0.0022	+/-0.0005	mg/L	< 0.002	0.002	mg/L	0.05
Cobalt	0.00002	+/-0.00002	mg/L	< 0.005	0.005	mg/L	
Copper	0.0004	+/-0.0004	mg/L	0.002	0.002	mg/L	1
Iron	0.478	+/-0.078	mg/L	0.355	0.005	mg/L	0.3
Lead	-0.00001	+/-0.00005	mg/L	< 0.0005	0.0005	mg/L	0.01
Manganese	0.011	+/-0.001	mg/L	0.021	0.001	mg/L	0.05
Molybdenum	0.00054	+/-0.0002	mg/L	< 0.01	0.01	mg/L	
Nickel	0.0005	+/-0.0004	mg/L	< 0.01	0.01	mg/L	
Selenium	0	+/-0.001	mg/L	< 0.001	0.001	mg/L	0.01
Silver	0	+/-0.00005	mg/L	< 0.001	0.001	mg/L	
Strontium	0.287	+/-0.023	mg/L	0.147	0.001	mg/L	
Thallium	0.00007	+/-0.00005	mg/L	< 0.0002	0.0002	mg/L	
Titanium	0	+/-0.0005	mg/L	< 0.005	0.005	mg/L	
Uranium	0.00112	+/-0.00009	mg/L	< 0.001	0.001	mg/L	0.02
Vanadium	0.00007	+/-0.00007	mg/L	< 0.005	0.005	mg/L	
Zinc	0.0017	+/-0.0008	mg/L	< 0.005	0.005	mg/L	5
1,2,3,4-tetrachlorobenzene	0.000001	<=W	mg/L				
1,2,3,5-tetrachlorobenzene	0.000002	<=W	mg/L				
1,2,3-trichlorobenzene	0.000005	<=W	mg/L				
1,2,4,5-tetrachlorobenzene	0.000001	<=W	mg/L				
1,2,4-trichlorobenzene	0.000005	<=W	mg/L				
1,3,5-trichlorobenzene	0.000005	<=W	mg/L				

2,3,6-trichlorotoluene	0.000005	<=W	mg/L				
2,4,5-trichlorotoluene	0.000005	<=W	mg/L				
2,6-dichlorobenzyl chloride	0.00001	<=W	mg/L				
Aldrin	0.000001	<=W	mg/L				0.0007
Dieldrin	0.000002	<=W	mg/L				0.0007
Endosulphan I	0.000002	<=W	mg/L				
Endosulphan II	0.000005	<=W	mg/L				
Endosulphan sulphate	0.000005	<=W	mg/L				
Endrin	0.000005	<=W	mg/L				
Heptachlor	0.000001	<=W	mg/L				0.003
Heptachlor epoxide	0.000002	<=W	mg/L				0.003
Hexachlorobenzene	0.000001	<=W	mg/L				
Hexachlorobutadiene	0.000001	<=W	mg/L				
Hexachlorocyclopentadiene	0.000001	<=W	mg/L				
Hexachloroethane	0.000001	<=W	mg/L				
Methoxychlor	0.000005	<=W	mg/L				0.9
Mirex	0.000005	<=W	mg/L				
Octachlorostyrene	0.000001	<=W	mg/L				
Oxychlorane	0.000002	<=W	mg/L				
PCB; total	0.00002	<=W	mg/L				
Pentachlorobenzene	0.000001	<=W	mg/L				
Permethrin		NDNA	mg/L				
Piperonyl Butoxide		NDNA	mg/L				
Pyrethrin 1		NDNA	mg/L				
Pyrethrin 2		NDNA	mg/L				
Toxaphene	0.0005	<=W	mg/L				
Trifluralin	0.000005	<=W	mg/L				0.045
a-BHC (hexachlorocyclohexane)	0.000001	<=W	mg/L				
a-Chlordane	0.000002	<=W	mg/L				
b-BHC (hexachlorocyclohexane)	0.000002	<=W	mg/L				
g-BHC (hexachlorocyclohexane)	0.000001	<=W	mg/L				
g-Chlordane	0.000002	<=W	mg/L				
op-DDT	0.000005	<=W	mg/L				
pp-DDD	0.000005	<=W	mg/L				
pp-DDE	0.000002	<=W	mg/L				
pp-DDT	0.000005	<=W	mg/L				
Azinphos-methyl	0.00005	<=W	mg/L				0.02
Chlorpyrifos	0.0001	<=W	mg/L				0.09
Diazinon	0.0002	<=W	mg/L				0.02
Dichlorvos	0.0005	<=W	mg/L				
Dimethoate	0.0005	<=W	mg/L				0.02
Ethion	0.0002	<=W	mg/L				
Malathion	0.0005	<=W	mg/L				0.19
Methylparathion	0.0002	<=W	mg/L				
Mevinphos	0.0002	<=W	mg/L				
Parathion	0.0001	<=W	mg/L				0.05
Phorate	0.0001	<=W	mg/L				0.002
Reldan	0.0005	<=W	mg/L				

Ronnel	0.0001	<=W	mg/L				
Temephos	0.0001	<=W	mg/L				0.28
Terbufos	0.0002	<=W	mg/L				0.001
Diquat	0.0001	<=W	mg/L				0.07
Paraquat	0.0001	<=W	mg/L				0.01
Phenolics; 4-AAP	0.0003	<T	mg/L				
Chlorobromuron	0.002	<=W	mg/L				
Chlorotoluron	0.002	<=W	mg/L				
Difenoxuron	0.002	<=W	mg/L				
Diuron	0.002	<=W	mg/L				0.15
Fluometuron	0.002	<=W	mg/L				
Linuron	0.002	<=W	mg/L				
Metobromuron	0.002	<=W	mg/L				
Metoxuron	0.002	<=W	mg/L				
Monolinuron	0.002	<=W	mg/L				
Monuron	0.002	<=W	mg/L				
Neburon	0.002	<=W	mg/L				
Siduron	0.002	<=W	mg/L				
Nitrogen; total Kjeldahl	0.05	<=W	mg/L				
Phosphorus; total	0.03	<T	mg/L	< 0.01	0.01	mg/L	
Alachlor	0.0005	<=W	mg/L				0.005
Ametryne	0.00005	<=W	mg/L				
Atratone	0.00005	<=W	mg/L				
Atrazine	0.00005	<=W	mg/L				
Atrazine+de-alkylated atrazine	0.0002	<=W	mg/L				
Butachlor	0.0002	<=W	mg/L				
Cyanazine	0.0001	<=W	mg/L				0.01
De-ethylated atrazine	0.0002	<=W	mg/L				
De-ethylated simazine	0.0002	<=W	mg/L				
Metolachlor	0.0005	<=W	mg/L				0.05
Metribuzin	0.0001	<=W	mg/L				0.08
Prometone	0.00005	<=W	mg/L				
Prometryne	0.00005	<=W	mg/L				0.001
Propazine	0.00005	<=W	mg/L				
Simazine	0.00005	<=W	mg/L				0.01
Terbutryne	0.0002	<=W	mg/L				
1,1,1-trichloroethane	0.00005	<=W	mg/L				
1,1,2,2-tetrachloroethane	0.0002	<=W	mg/L				
1,1,2-trichloroethane	0.0001	<=W	mg/L				
1,1-dichloroethane	0.00005	<=W	mg/L				
1,1-dichloroethene	0.00005	<=W	mg/L				
1,2-dibromoethane	0.0001	<=W	mg/L				
1,2-dichlorobenzene	0.00005	<=W	mg/L				0.2
1,2-dichloroethane	0.00005	<=W	mg/L				0.005
1,2-dichloropropane	0.00005	<=W	mg/L				
1,3-dichlorobenzene	0.00005	<=W	mg/L				
1,4-dichlorobenzene	0.00005	<=W	mg/L				0.005
Benzene	0.00005	<=W	mg/L				0.005

Bromodichloromethane	0.0002	<=W	mg/L				
Bromoform	0.0005	<=W	mg/L				
Carbon tetrachloride	0.0002	<=W	mg/L				0.005
Chlorobenzene	0.00005	<=W	mg/L				
Chloroethene	0.00005	<=W	mg/L				
Chloroform	0.0001	<=W	mg/L				
Dibromochloromethane	0.0002	<=W	mg/L				
Dichloromethane	0.0002	<=W	mg/L				0.05
Ethylbenzene	0.00005	<=W	mg/L				0.0024
Styrene	0.00005	<=W	mg/L				
Tert-butyl methyl ether	0.00005	<=W	mg/L				
Tetrachloroethylene	0.00005	<=W	mg/L				0.03
Toluene	0.00005	<=W	mg/L				0.024
Trichloroethylene	0.00005	<=W	mg/L				0.05
Trihalomethanes; total	0.0005	<=W	mg/L				
cis-1,2-dichloroethene	0.00005	<=W	mg/L				
m-xylene	0.00005	<=W	mg/L				0.3
o-xylene	0.00005	<=W	mg/L				0.3
p-xylene	0.00005	<=W	mg/L				0.3
trans-1,2-dichloroethene	0.00005	<=W	mg/L				
Nitrogen; ammonia+ammonium	0.05	<=W	mg/L				
Nitrate + Nitrite (as nitrogen)	0.05	<=W	mg/L	0.4	0.1	mg/L	10
Nitrite (as nitrogen)	0.005	<=W	mg/L				1
Nitrate (as nitrogen)							
Alkalinity (as CaCO3)	268		mg/L	260	3	mg/L	
Carbonate (as CaCO3)				< 3	3	mg/L	
Bicarbonate (as CaCO3)				260	3	mg/L	
Ammonia (N) - Total				< 0.05	0.05	mg/L	
TDS (ion sum calc.)				298		mg/L	

Appendix 15 - Example #2 of Provincial Groundwater Monitoring Network (PGMN) Water Quality Results with a list of parameters tested

Section 3.4 Raw Water Characterization for Drinking Water Sources
Watershed Characterization Page 179

GA374							
Parameters	4-Aug-04			5-Oct-05			DWS
	Value	M.D.L	Units	Value	M.D.L.	Units	mg/L
Fluoride	0.08		mg/L	< 0.1	0.1	mg/L	1.5
Sulphate	24.5		mg/L	22	1	mg/L	500
Aldicarb	0.0025	<=W	mg/L				0.009
Barban	0.002	<=W	mg/L				
Bendiocarb	0.0015	<=W	mg/L				0.04
Butylate	0.002	<=W	mg/L				
Carbaryl	0.0002	<=W	mg/L				0.09
Carbofuran	0.002	<=W	mg/L				0.09
Chlorpropham	0.002	<=W	mg/L				
Diallate	0.002	<=W	mg/L				
Eptam	0.002	<=W	mg/L				
Propham	0.002	<=W	mg/L				
Propoxur	0.002	<=W	mg/L				
Triallate	0.0015	<=W	mg/L				0.23
Calcium	81.8		mg/L	75.1	0.02	mg/L	
Hardness	275		mg/L	255	1	mg/L	80-100
Magnesium	17.2		mg/L	16.3	0.01	mg/L	
Potassium	1.45		mg/L	1.4	0.1	mg/L	
Sodium	11.4		mg/L	14.7	0.2	mg/L	20
Chloride	31.6		mg/L	27	1	mg/L	250
2,3,4,5-tetrachlorophenol	0.00002	<=W	mg/L				
2,3,4,6-tetrachlorophenol	0.00002	<=W	mg/L				0.1
2,3,4-trichlorophenol	0.0001	<=W	mg/L				
2,4,5-T	0.00005	<=W	mg/L				0.28
2,4,5-trichlorophenol	0.0001	<=W	mg/L				
2,4,6-trichlorophenol	0.00002	<=W	mg/L				0.005
2,4-D	0.0001	<=W	mg/L				0.1
2,4-D-propionic acid	0.0001	<=W	mg/L				
2,4-DB	0.0002	<=W	mg/L				
2,4-dichlorophenol	0.002	<=W	mg/L				0.9
Bromoxynil	0.00005	<=W	mg/L				0.005
Dicamba	0.00005	<=W	mg/L				0.12
Diclofop-methyl	0.0001	<=W	mg/L				0.009
Dinoseb	0.00002	<=W	mg/L				0.01
Pentachlorophenol	0.00001	<=W	mg/L				0.06
Picloram	0.0001	<=W	mg/L				0.19
Silvex	0.00002	<=W	mg/L				
Carbon; dissolved inorganic	56		mg/L				

Carbon; dissolved organic	0.6		mg/L	3.0	0.5	mg/L	5
Silicon; reactive silicate	5.3		mg/L				
Solids; dissolved	381	CRO	mg/L				
Aminomethylphosphonic acid	0.005	<=W	mg/L				
Glyphosate	0.002	<=W	mg/L				0.28
Anions			meq/L	5.66		meq/L	
Cations			meq/L	5.77		meq/L	
Conductivity	586			559		umho/cm	
Conductivity Estimated			uS/cm	551		umho/cm	
Ion balance calculation			%	0.906		%	
Solids; Dissolved Estimated			mg/L				
Langeliers index calculation			none				
Langeliers index calc. (4°C)				-0.319		S.I.	
Langeliers index calc. (20°C)				0.0812		S.I.	
Saturation pH Estimated			none				
Saturation pH (4°C)				7.75			
Saturation pH (20°C)				7.35			
pH	8.11			7.43		pH Units	
Aluminum	0.0006	+/-0.0006	mg/L	0.01	0.01	mg/L	0.1
Antimony	0.0004	+/-0.00013	mg/L	< 0.001	0.001	mg/L	0.006
Arsenic	0.001	+/-0.0001	mg/L	< 0.001	0.001	mg/L	0.025
Barium	0.156	+/-0.012	mg/L	0.124	0.001	mg/L	1
Beryllium	0.00009	+/-0.00005	mg/L	< 0.002	0.002	mg/L	
Boron	0.013	+/-0.003	mg/L	0.016	0.005	mg/L	5
Cadmium	0.00002	+/-0.00005	mg/L	< 0.0001	0.0001	mg/L	0.005
Chromium	0.0039	+/-0.0005	mg/L	< 0.002	0.002	mg/L	0.05
Cobalt	0.00004	+/-0.00004	mg/L	< 0.0001	0.005	mg/L	
Copper	0.0008	+/-0.0005	mg/L	< 0.002	0.002	mg/L	1
Iron	0	+/-0.006	mg/L	0.034	0.005	mg/L	0.3
Lead	0.00191	+/-0.00038	mg/L	0.0006	0.0005	mg/L	0.01
Manganese	0.00004	+/-0.00005	mg/L	< 0.001	0.001	mg/L	0.05
Molybdenum	0.00269	+/-0.00029	mg/L	< 0.01	0.01	mg/L	
Nickel	0	+/-0.0002	mg/L	< 0.01	0.01	mg/L	
Selenium	0.001	+/-0.001	mg/L	< 0.001	0.001	mg/L	0.01
Silver	0.00001	+/-0.00005	mg/L	< 0.0001	0.001	mg/L	
Strontium	0.269	+/-0.022	mg/L	0.225	0.001	mg/L	
Thallium	0.00002	+/-0.00005	mg/L	< 0.0002	0.0002	mg/L	
Titanium	0.001	+/-0.0005	mg/L	< 0.005	0.005	mg/L	
Uranium	0.00031	+/-0.00005	mg/L	0.0003	0.001	mg/L	0.02
Vanadium	0.000152	+/-0.00009	mg/L	< 0.005	0.005	mg/L	
Zinc	0.006	+/-0.0009	mg/L	< 0.005	0.005	mg/L	5
1,2,3,4-tetrachlorobenzene	0.000001	<=W	mg/L				
1,2,3,5-tetrachlorobenzene	0.000002	<=W	mg/L				
1,2,3-trichlorobenzene	0.000005	<=W	mg/L				
1,2,4,5-tetrachlorobenzene	0.000001	<=W	mg/L				
1,2,4-trichlorobenzene	0.000005	<=W	mg/L				
1,3,5-trichlorobenzene	0.000005	<=W	mg/L				
2,3,6-trichlorotoluene	0.000005	<=W	mg/L				

2,4,5-trichlorotoluene	0.000005	<=W	mg/L				
2,6-dichlorobenzyl chloride	0.00001	<=W	mg/L				
Aldrin	0.000001	<=W	mg/L				0.0007
Dieldrin	0.000002	<=W	mg/L				0.0007
Endosulphan I	0.000002	<=W	mg/L				
Endosulphan II	0.000005	<=W	mg/L				
Endosulphan sulphate	0.000005	<=W	mg/L				
Endrin	0.000005	<=W	mg/L				
Heptachlor	0.000001	<=W	mg/L				0.003
Heptachlor epoxide	0.000002	<=W	mg/L				0.003
Hexachlorobenzene	0.000001	<=W	mg/L				
Hexachlorobutadiene	0.000001	<=W	mg/L				
Hexachlorocyclopentadiene	0.000001	<=W	mg/L				
Hexachloroethane	0.000001	<=W	mg/L				
Methoxychlor	0.000005	<=W	mg/L				0.9
Mirex	0.000005	<=W	mg/L				
Octachlorostyrene	0.000001	<=W	mg/L				
Oxychlorane	0.000002	<=W	mg/L				
PCB; total	0.00002	<=W	mg/L				
Pentachlorobenzene	0.000001	<=W	mg/L				
Permethrin	0.0001	<=W	mg/L				
Piperonyl Butoxide	0.0001	<=W	mg/L				
Pyrethrin 1	0.0001	<=W	mg/L				
Pyrethrin 2	0.0001	<=W	mg/L				
Toxaphene	0.0005	<=W	mg/L				
Trifluralin	0.000005	<=W	mg/L				0.045
a-BHC (hexachlorocyclohexane)	0.000001	<=W	mg/L				
a-Chlordane	0.000002	<=W	mg/L				
b-BHC (hexachlorocyclohexane)	0.000002	<=W	mg/L				
g-BHC (hexachlorocyclohexane)	0.000001	<=W	mg/L				
g-Chlordane	0.000002	<=W	mg/L				
op-DDT	0.000005	<=W	mg/L				
pp-DDD	0.000005	<=W	mg/L				
pp-DDE	0.000002	<=W	mg/L				
pp-DDT	0.000005	<=W	mg/L				
Azinphos-methyl	0.00005	<=W	mg/L				0.02
Chlorpyrifos	0.0001	<=W	mg/L				0.09
Diazinon	0.0002	<=W	mg/L				0.02
Dichlorvos	0.0005	<=W	mg/L				
Dimethoate	0.0005	<=W	mg/L				0.02
Ethion	0.0002	<=W	mg/L				
Malathion	0.0005	<=W	mg/L				0.19
Methylparathion	0.0002	<=W	mg/L				
Mevinphos	0.0002	<=W	mg/L				
Parathion	0.0001	<=W	mg/L				0.05
Phorate	0.0001	<=W	mg/L				0.002
Reldan	0.0005	<=W	mg/L				
Ronnel	0.0001	<=W	mg/L				

Temephos	0.0001	<=W	mg/L				0.28
Terbufos	0.0002	<=W	mg/L				0.001
Diquat	0.0001	<=W	mg/L				0.07
Paraquat	0.0001	<=W	mg/L				0.01
Phenolics; 4-AAP	0.0146		mg/L				
Chlorobromuron	0.002	<=W	mg/L				
Chlorotoluron	0.002	<=W	mg/L				
Difenoxuron	0.002	<=W	mg/L				
Diuron	0.002	<=W	mg/L				0.15
Fluometuron	0.002	<=W	mg/L				
Linuron	0.002	<=W	mg/L				
Metobromuron	0.002	<=W	mg/L				
Metoxuron	0.002	<=W	mg/L				
Monolinuron	0.002	<=W	mg/L				
Monuron	0.002	<=W	mg/L				
Neburon	0.002	<=W	mg/L				
Siduron	0.002	<=W	mg/L				
Nitrogen; total Kjeldahl	0.05	<=W	mg/L				
Phosphorus; total	0.02	<=W	mg/L	0.02	0.01	mg/L	
Alachlor	0.0005	<=W	mg/L				0.005
Ametryne	0.00005	<=W	mg/L				
Atratone	0.00005	<=W	mg/L				
Atrazine	0.00005	<=W	mg/L				
Atrazine+de-alkylatedatrazine	0.0002	<=W	mg/L				
Butachlor	0.0002	<=W	mg/L				
Cyanazine	0.0001	<=W	mg/L				0.01
De-ethylated atrazine	0.0002	<=W	mg/L				
De-ethylated simazine	0.0002	<=W	mg/L				
Metolachlor	0.0005	<=W	mg/L				0.05
Metribuzin	0.0001	<=W	mg/L				0.08
Prometone	0.00005	<=W	mg/L				
Prometryne	0.00005	<=W	mg/L				0.001
Propazine	0.00005	<=W	mg/L				
Simazine	0.00005	<=W	mg/L				0.01
Terbutryne	0.0002	<=W	mg/L				
1,1,1-trichloroethane	0.00005	<=W, DS	mg/L				
1,1,2,2-tetrachloroethane	0.0002	<=W, DS	mg/L				
1,1,2-trichloroethane	0.0001	<=W, DS	mg/L				
1,1-dichloroethane	0.00005	<=W, DS	mg/L				
1,1-dichloroethene	0.00005	<=W, DS	mg/L				
1,2-dibromoethane	0.0001	<=W, DS	mg/L				
1,2-dichlorobenzene	0.00005	<=W, DS	mg/L				0.2
1,2-dichloroethane	0.00005	<=W, DS	mg/L				0.005
1,2-dichloropropane	0.00005	<=W, DS	mg/L				
1,3-dichlorobenzene	0.00005	<=W, DS	mg/L				
1,4-dichlorobenzene	0.00005	<=W, DS	mg/L				0.005
Benzene	0.00005	<=W, DS	mg/L				0.005
Bromodichloromethane	0.0002	<=W, DS	mg/L				

Bromoform	0.0005	<=W, DS	mg/L				
Carbon tetrachloride	0.0002	<=W, DS	mg/L				0.005
Chlorobenzene	0.00005	<=W, DS	mg/L				
Chloroethene	0.00005	<=W, DS	mg/L				
Chloroform	0.0001	<=W, DS	mg/L				
Dibromochloromethane	0.0002	<=W, DS	mg/L				
Dichloromethane	0.0002	<=W, DS	mg/L				0.05
Ethylbenzene	0.00005	<=W, DS	mg/L				0.0024
Styrene	0.00005	<=W, DS	mg/L				
Tert-butyl methyl ether	0.00005	<=W, DS	mg/L				
Tetrachloroethylene	0.00005	<=W, DS	mg/L				0.03
Toluene	0.00005	<=W, DS	mg/L				0.024
Trichloroethylene			mg/L				0.05
Trihalomethanes; total	0.0005	<=W	mg/L				
cis-1,2-dichloroethene	0.00005	<=W, DS	mg/L				
m-xylene	0.00005	<=W, DS	mg/L				0.3
o-xylene	0.00005	<=W, DS	mg/L				0.3
p-xylene	0.00005	<=W, DS	mg/L				0.3
trans-1,2-dichloroethene	0.00005	<=W, DS	mg/L				
Nitrogen; ammonia+ammonium	0.05	<=W	mg/L				
Nitrate + Nitrite (as nitrogen)	2.92		mg/L		0.1	mg/L	10
Nitrite (as nitrogen)	0.005	<=W	mg/L	< 0.1	0.1	mg/L	1
Nitrate (as nitrogen)				4.2	0.1	mg/L	
Alkalinity (as CaCO3)	236			208	3	mg/L	
Carbonate (as CaCO3)				< 3	3	mg/L	
Bicarbonate (as CaCO3)				208	3	mg/L	
Ammonia (N) - Total				< 0.05	0.05	mg/L	
TDS (ion sum calc.)				298		mg/L	