

Cataraqui Source Protection Area
 Amended Proposed Assessment Report - Appendix 'E-2'
 (June 2011)

Table 1. Summary of Drinking Water Issues with possible human contributions for Intakes and Wells in the Cataraqui Area.

DWS	Substances Recommended as Drinking Water Issues						
	Chloride	Sodium	DOC	Organic Nitrogen	Nitrate	E. coli	Total Coliform
Groundwater Well							
Cana Subdivision	X	X				X	X
Lansdowne						X	X
Miller Manor Apartments	X	X			X	X	X
Westport - DRAFT						X	X
Surface Water Intake							
Brockville						X	
Gananoque (James W. King)							
Kingston Central							
Kingston West (Point Pleasant)							
Amherstview (Fairfield)							X
Bath				X		X	
Napanee (A.L. Dafoe)							
Sandhurst Shores							
Picton							
Sydenham			X				

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Table 2. Exceedances of issue benchmark values at the Cana well (Kingston) and monitoring sites.
 (Substances that exceed the benchmark and have possible human sources are listed in **bold**)

Parameter Name	n tests	Sample Type	Record length	ODWQS Guideline	Benchmark Value	n exceed	% exceed	Result Range	Data Source
Chloride	3	Raw (New well)	Jul-03	250 mg/l	250 mg/l	1	33%	184 - 266	Trow, 2007
Hardness	3	Raw (New well)	Jul-03	80-100 mg/l	80-100 mg/l as CaCO ₃	3	100%	463 - 567	Trow, 2007
Manganese	3	Raw (New well)	Jul-03	0.05 mg/l	0.05 mg/l	3	100%	0.069 - 0.096	Trow, 2007
Sodium	3	Raw (New well)	Jul-03	20, 200 mg/l	20, 200 mg/l	3	100%	66.4 - 101	Trow, 2007
Total Dissolved Solids	3	Raw (New well)	Jul-03	500 mg/l	500 mg/l	3	100%	750 - 930	Trow, 2007
<i>Escherichia coli</i>	261	Raw (Old Supply Well)	May-03 to Oct-08	0 CFU/100 ml	0 CFU/100 ml	13	5%	0 - (>2)	DWIS
Hardness	n/a	Raw (Old Supply Well)	Jun-02 to Jun-03	80-100 mg/l	80-100 mg/l as CaCO ₃	12	n/a	< 565	Trow, 2007
Sodium	1	Raw (Old Supply Well)	Oct-04	20, 200 mg/l	20, 200 mg/l	1	100%	88	DWIS
Total Coliform Bacteria	261	Raw (Old Supply Well)	May-03 to Oct-08	0 CFU/100 ml	0 CFU/100 ml	29	11%	0 - 201	DWIS
Turbidity	n/a	Raw (Old Supply Well)	Jun-02 to Jun-03	5 NTU	5 NTU	n/a	n/a	< 11	Trow, 2007
Chloride	3	Treated (Old Supply Well)	2005-2008	250 mg/l	250 mg/l	2	100%	180-260	Annual Reports
Iron	n/a	Treated (Old Supply Well)	Jun-02 to Jun-03	0.3 mg/l	0.3 mg/l	25	n/a	< 0.64	Trow, 2007
Iron	42	Treated (Old Supply Well)	2005-5008	0.3 mg/l	0.3 mg/l	n/a	n/a	<0.005 - 0.7	Annual Reports
Manganese	n/a	Treated (Old Supply Well)	Jun-02 to Jun-03	0.05 mg/l	0.05 mg/l	25	n/a	< 0.11	Trow, 2007
Manganese	43	Treated (Old Supply Well)	2005-2008	0.05 mg/l	0.05 mg/l	n/a	n/a	0.01-0.1	Annual Reports
Sodium	89	Treated (Old Supply Well)	2004-2008	20, 200 mg/l	20, 200 mg/l	89, 0	100%, 0%	84-108	Annual Reports
Sodium	1	Treated (Old Supply Well)	Jun-02 to Jun-03	20, 200 mg/l	20, 200 mg/l	1	100%	< 97.3	DWIS
Chloride	1 x 3	Monitoring wells (x3)	Jul-03	250 mg/l	250 mg/l	2	67%	1.5 - 817	Trow, 2007
Hardness	1 x 3	Monitoring wells (x3)	Jul-03	80-100 mg/l	80-100 mg/l as CaCO ₃	3	100%	259-1020	Trow, 2007
Iron	1 x 3	Monitoring wells (x3)	Jul-03	0.3 mg/l	0.3 mg/l	2	67%	0 - 0.36	Trow, 2007
Manganese	1 x 3	Monitoring wells (x3)	Jul-03	0.05 mg/l	0.05 mg/l	2	67%	0-0.46	Trow, 2007
Sodium	1 x 3	Monitoring wells (x3)	Jul-03	20, 200 mg/l	20, 200 mg/l	2	67%	8.4 - 126	Trow, 2007
Total Dissolved Solids	1 x 3	Monitoring wells (x3)	Jul-03	500 mg/l	500 mg/l	2	67%	302 - 2320	Trow, 2007
Chloride	10	Monitoring well (Juniper Ln)	Jul-Aug 1990	250 mg/l	250 mg/l	5	50%	19 - 425	Subdivision Rpt
Fluoride	10	Monitoring well (Juniper Ln)	Jul-Aug 1990	1.5 mg/l	0.75 mg/l	3	30%	0.08 - 2.05	Subdivision Rpt
Hardness	10	Monitoring well (Juniper Ln)	Jul-Aug 1990	80-100 mg/l	80-100 mg/l as CaCO ₃	10	100%	121 - 475	Subdivision Rpt
Manganese	10	Monitoring well (Juniper Ln)	Jul-Aug 1990	0.05 mg/l	0.05 mg/l	2	20%	<0.05 - 0.1	Subdivision Rpt
Sodium	10	Monitoring well (Juniper Ln)	Jul-Aug 1990	20, 200 mg/l	20, 200 mg/l	8	80%	18 - 302	Subdivision Rpt

Table 3. Exceedances of issue benchmark values at the Lansdowne well.
 (Substances that exceed the benchmark and have possible human sources are listed in **bold**)

Parameter Name	n tests	Sample Type	Record length	ODWQS Guideline	Benchmark Value	n exceed	% exceed	Result Range	Data Source
Colour	n/a	Raw	1999-2000	5 TCU	5 TCU	n/a	100%	6 - 11	Engineer's Report
<i>Escherichia coli</i> (well 1, well 2)	299, 196	Raw	Jun-03 to Oct-08	0 CFU/100 ml	0 CFU/100 ml	3	1%, 2%	0-4, 0-1	DWIS
Hardness	n/a	Raw	1999-2000	80-100 mg/l	80-100 mg/l as CaCO ₃	n/a	100%	347-403	Engineer's Report
Hardness	2	Raw	1998*	80-100 mg/l	80-100 mg/l as CaCO ₄	2	100%	335-388	Dillon, 2001
Sodium	n/a	Raw	1999-2000	20, 200 mg/l	20, 200 mg/l	n/a	100%, 0%	30-69	Engineer's Report
Sodium	2	Raw	1998*	20, 200 mg/l	20, 200 mg/l	2, 0	100%, 0%	20.6-54	Dillon, 2001
Total Coliform Total Coliform (well 1, well 2)	196 299, 196	Raw	1999-2000 Jun-03 to Oct-08	0 CFU/100 ml	0 CFU/100 ml	74 12, 45	38% 4%, 23%	0-2 0-12, 0-33	Engineer's Report DWIS
Sodium	2	Treated	2007	20, 200 mg/l	20, 200 mg/l	2	100%, 0%	61.7 - 62.6	Inspection Report / AQWI
Total Coliform	n/a	Treated	2005	0 CFU/100 ml	0 CFU/100 ml	1	n/a	1	Inspection Report / AQWI

* Single sample record at each of 2 well sources, sampling date unknow for one record

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Table 4. Exceedances of issue benchmark values at the Miller Manor well (Mallorytown) and monitoring sites.
(Substances that exceed the benchmark and have possible human sources are listed in **bold**).

Parameter Name	n tests	Sample Type	Record length	ODWQS Guideline	Benchmark Value	n exceed	% exceed	Result Range	Data Source
Total Coliform	13	Raw (New Well)	2007-2008	0 CFU/100 ml	0 CFU/100ml	2	15%	0-2	DWIS
Chloride	n/a	Raw (Old Well A)	2002-2003	250 mg/l	250 mg/l	n/a	n/a	409	Eastern Engineering Group Inc., 2004
E. coli / Fecal coliform	n/a	Raw (Old Well A)	2002-2003	0 CFU/100 ml	0 CFU/100ml	9	n/a	90-284	Eastern Engineering Group Inc., 2004
Hardness	1	Raw (Old Well A)	2002-2003	80-100 mg/l	80-100 mg/l as CaCO ₃	1	100%	533	Eastern Engineering Group Inc., 2004
Nitrate	n/a	Raw (Old Well A)	2002-2003	10 mg/l	5 mg/l	2	n/a	5.3 - 7.4	Eastern Engineering Group Inc., 2004
Sodium	n/a	Raw (Old Well A)	2002-2003	20, 200 mg/l	20 and 200 mg/l	2	n/a	46 - 151	Eastern Engineering Group Inc., 2004
Total Coliform	n/a	Raw (Old Well A)	2002-2003	0 CFU/100 ml	0 CFU/100ml	9	n/a	2 - 80	Eastern Engineering Group Inc., 2004
Escherichia coli	26	Raw (Old Well B)	2004-2007	0 CFU/100 ml	0 CFU/100ml	1	4%	0-1	DWIS
Total Coliform	11	Raw (Old Well B)	2006	0 CFU/100 ml	0 CFU/100ml	n/a	n/a	1-27	Inspection Report 2007
Total Coliform	26	Raw (Old Well B)	2004-2007	0 CFU/100 ml	0 CFU/100ml	5	19%	0-10	DWIS
Chloride	5	Monitoring site	1989-1990*	250 mg/l	250 mg/l	3	60%	182 - 554	Dillon, 2001
Hardness	5	Monitoring site	1989-1990*	80-100 mg/l	80-100 mg/l as CaCO ₃	5	100%	559 - 819	Dillon, 2001
Nitrate	5	Monitoring site	1989-1990*	10 mg/l	5 mg/l	2	40%	0.5 - 6.2	Dillon, 2001
Sodium	5	Monitoring site	1989-1990*	20, 200 mg/l	20 and 200 mg/l	5, 1	100%, 20%	63.6 - 243.5	Dillon, 2001
Nitrate	2	Treated (Old Well B)	2006	10 mg/l	5 mg/l	n/a	n/a	2.4 - 5.7	MOE Inspection Report 2006
Sodium	1	Treated (Old Well B)	2004	20, 200 mg/l	200 mg/l	1	100%	252	MOE Inspection Report 2004
Uranium	7	Treated (New Well)	2007-2008	0.02 mg/l	0.01 mg/l	7	100%	0.011 - 0.017	DWIS

* Single record per well source, sampled on various dates, some dates not given

Table 5. Exceedances of issue benchmark values at the Westport well.

Parameter Name	n tests	Sample Type	Record length	ODWQS Guideline	Benchmark Value	n exceed	% exceed	Result Range	Data Source
Please refer to the Mississippi-Rideau Source Protection Region Assessment Report (2010, forthcoming)									

Table 6. Exceedances of issue benchmark values at the Brockville intake and PWQMN monitoring site.
(Substances that exceed the benchmark and have possible human sources are listed in **bold**).

Parameter Name	n tests	Sample Type	Record length	ODWQS Guideline	Benchmark Value	n exceed	% exceed	Result Range	Data Source
Colour	100	Raw	1990-2007	5 TCU	5 TCU	1	1%	0.5-11	DWSP
Hardness	281	Raw	1990-2007	80-100 mg/l	80-100 mg/l as CaCO ₃	69	25%	0-136	DWSP
Hardness	1	Raw	2007	80-100 mg/l	80-100 mg/l as CaCO ₃	1	100%	115	ELO USLR (east wind)
Lead	73	Raw	1990-2007	0.01 mg/l	0.005 mg/l	1	1%	0-0.0075	DWSP
Temperature	731	Raw	2005-2007	15° Celcius	15° Celcius	237	32%	0-25	Annual Reports
Aluminum	74	Treated	1990-2007	0.1 mg/l	0.1 mg/l	44	59%	0.02-0.4	DWSP
Colour	72	Treated	1990-2007	5 TCU	5 TCU	1	1%	0.2-9	DWSP
Fluoride	153	Treated	1990-2007	1.5 mg/l	0.75 mg/l	24	16%	0-1.68	DWSP
Hardness	87	Treated	1990-2007	80-100 mg/l	80-100 mg/l as CaCO ₃	69	79%	0-137	DWSP
Lead	74	Treated	1990-2007	0.01 mg/l	0.005 mg/l	1	1%	0-0.02	DWSP
Escherichia coli *	84	IPZ-2 Monitoring Site	1988, 1994-2002	0 CFU/100 ml	100 CFU/100 ml	35	42%	2-2500	PWQMN (Butlers 102)
Fecal coliform *	63	IPZ-2 Monitoring Site	1975-1976, 1988-1994	0 CFU/100 ml	100 CFU/100 ml	39	62%	1-5500	PWQMN (Butlers 102)

* *E. coli* exceeded the 100 CFU/100 ml in 1994-2001. Fecal coliform exceeded the same benchmark in 1975, 1988-1994. Total coliform was monitoring through 1975 and 1976 only, but did not exceed 1000 CFU/100 ml.

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Table 7. Exceedances of issue benchmark values at the James W. King (Gananoque) intake and PWQMN monitoring site.
 (Substances that exceed the benchmark and have possible human sources are listed in **bold**).

Parameter Name	n tests	Sample Type	Record length	ODWQS Guideline	Benchmark Value	n exceed	% exceed	Result Range	Data Source
Colour	39	Raw	1991-2001	5 TCU	5 TCU	14	36%	0-17	DWSP
Colour	n/a	Raw	1998-2000	5 TCU	5 TCU	n/a	n/a	2-8	TSH, 2001b
Hardness	39	Raw	1991-2001	80-100 mg/l	80-100 mg/l as CaCO ₃	39	100%	114-136	DWSP
Hardness	2	Raw	Aug-07 - Sept-03	80-100 mg/l	80-100 mg/l as CaCO ₃	2	100%	111-116	ELO-USLR Study
Hardness	n/a	Raw	1998-2000	80-100 mg/l	80-100 mg/l as CaCO ₃	n/a	n/a	110-215	TSH, 2001b
Temperature	n/a	Raw	2005-2006	15° Celcius	15° Celcius	n/a	n/a	1.25-28.65	Annual Reports
Temperature	34	Raw	1991-2001	15° Celcius	15° Celcius	11	32%	0-22	DWSP
Turbidity	39	Raw	1991-2001	5 NTU	5 NTU	1	3%	0-11.2	DWSP
Turbidity	n/a	Raw	1998-2000	5 NTU	5 NTU	n/a	n/a	0.3-6.8	TSH, 2001b
Aluminum	39	Treated	1991-2001	0.1 mg/l	0.1 mg/l	24	62%	0.03-0.56	DWSP
Colour	39	Treated	1991-2001	5 TCU	5 TCU	4	10%	0.2-10	DWSP
Hardness	39	Treated	1991-2001	80-100 mg/l	80-100 mg/l as CaCO ₃	39	100%	113-143	DWSP
Selenium	39	Treated	1991-2001	0.01 mg/l	0.005 mg/l	1	3%	0-0.005	DWSP
Temperature	35	Treated	1991-2001	15° Celcius	15° Celcius	12	34%	2-22	DWSP
Trihalomethanes	39	Treated	1991-2001	0.1 mg/l	0.05 mg/l	10	26%	0.01-0.075	DWSP
Trihalomethanes (Chloroform)	39	Treated	1991-2001	0.1 mg/l	0.05 mg/l	2	5%	0.005-0.06	DWSP
<i>Escherichia coli</i> *	85	IPZ-2 Monitoring Site	1988, 1994-2002	0 CFU/100 ml	100 CFU/100 ml	6	7%	2-1230	PWQMN (Gananoque 102)
Fecal coliform *	170	IPZ-2 Monitoring Site	1972-1994	0 CFU/100 ml	100 CFU/100 ml	63	37%	1-1960	PWQMN (Gananoque 102)
Iron	222	IPZ-2 Monitoring Site	1967-1978, 1986-2007	0.3 mg/l	0.3 mg/l	14	6%	0.01-0.76	PWQMN (Gananoque 102)
Total Coliform **	145	IPZ-2 Monitoring Site	1967-1985	0 CFU/100 ml	1000 CFU/100 ml	68	47%	10-23,000	PWQMN (Gananoque 102)

* E. coli exceeded the 100 CFU/100 ml benchmark in 1995, 1996, and 1998. Fecal coliform exceeded in 1972-1982, 1984-1985, 1991-1992.

** 1000 CFU/100 ml is the old PWQO for Total Coliform. There is no current guideline for comparison. Total coliform exceeded this benchmark in 1967-1978, 182, and 1985.

Table 8. Exceedances of issue benchmark values at the Kingston Central intake.
 (Substances that exceed the benchmark and have possible human sources are listed in **bold**).

Parameter Name	n tests	Sample Type	Record length	ODWQS Guideline	Benchmark Value	n exceed	% exceed	Result Range	Data Source
Colour, True	102	Raw	1986-2008	5 TCU	5 TCU	8	8%	0.2 - 9	DWSP
<i>Escherichia coli</i>	3	Raw	1986-2008	0 CFU/100 ml	100 CFU/100 ml	1	33%	2 - 135	DWSP
<i>Escherichia coli</i>	485	Raw	May-03 to Oct-08	0 CFU/100 ml	100 CFU/100 ml	1	0%	0 - 100	DWIS
<i>E. coli</i> / Fecal Coliform	1583	Raw	1997-2000	0 CFU/100 ml	100 CFU/100 ml	7	0%	0 - <500	KMK Consultants Ltd., 2001a
Hardness	13	Raw	1997-2000	80-100 mg/l	80-100 mg/l as CaCO ₃	n/a	n/a	106 - 128	KMK Consultants Ltd., 2001a
Hardness	100	Raw	1986-2008	80-100 mg/l	80-100 mg/l as CaCO ₃	100	100%	112 - 182	DWSP
Temperature	98	Raw	1986-2008	15° Celcius	15° Celcius	26	27%	0.1 - 21.8	DWSP
Temperature	Continuous	Raw	1997-2000	15° Celcius	15° Celcius	n/a	n/a	0.7 - 22	KMK Consultants Ltd., 2001a
Total Coliform	71	Raw	1986-1996	0 CFU/100 ml	1000 CFU/100 ml	5	7%	1 - 75,000	DWSP
Turbidity	Continuous	Raw	1997-2000	5 NTU	5 NTU	n/a	n/a	0.1 - 5.0	KMK Consultants Ltd., 2001a
Aluminum	96	Treated	1986-2008	0.1 mg/l	0.1 mg/l	29	30%	0.03 - 0.2	DWSP
Hardness	98	Treated	1986-2008	80-100 mg/l	80-100 mg/l as CaCO ₃	98	100%	112 - 147	DWSP
Temperature	99	Treated	1986-2008	15° Celcius	15° Celcius	28	28%	0.4 - 23	DWSP
Total Coliform	1	Treated	1986-2008	0 CFU/100 ml	0 CFU/100 ml	1	100%	2	DWSP

* NDMA detection was found to arise from the analysis method (laboratory artifact) and not a true exceedance.

** Total coliform exceedances recorded under the DWSP occurred between June 1988 and April 1995 (raw water) and in 1986 (treated water). No exceedances detected in any data source between 1995 and 2008 so not considered an issue.

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Table 9. Exceedances of issue benchmark values at the Kingston West (Point Pleasant) intake.
 (Substances that exceed the benchmark and have possible human sources are listed in **bold**).

Parameter Name	n tests	Sample Type	Record length	ODWQS Guideline	Benchmark Value	n exceed	% exceed	Result Range	Data Source
Colour	n/a	Raw	1998-2000	5 TCU	5 TCU	n/a	n/a	2 - 6	KMK Consultants Limited, 2001b
Hardness	n/a	Raw	2003-2008	80-100 mg/l	80-100 mg/l as CaCO ₃	n/a	n/a	15-136	Annual Reports
Hardness	n/a	Raw	1998-2000	80-100 mg/l	80-100 mg/l as CaCO ₃	n/a	n/a	85 - 111	KMK Consultants Limited, 2001b
Temperature	n/a	Raw	2007-2008	15° Celcius	15° Celcius	n/a	n/a	0.4 - 22.2	Annual Reports
Aluminum	5	Treated	2004-2008	0.1 mg/l	0.1 mg/l	5	100%	0.18-0.51	Inspection Reports
Total Coliform	n/a	Treated	2004-2008	0 CFU/100 ml	0 CFU/100 ml	2	n/a	absent/present	AQWI Reports

Table 10. Exceedances of issue benchmark values at the Fairfield (Amherstview) intake.
 (Substances that exceed the benchmark and have possible human sources are listed in **bold**).

Parameter Name	n tests	Sample Type	Record length	ODWQS Guideline	Benchmark Value	n exceed	% exceed	Result Range	Data Source
Colour	n/a	Raw	2000-2006	5 TCU	5 TCU	n/a	n/a	0 - 17	Annual Reports
Colour	95	Raw	1999-2000	5 TCU	5 TCU	n/a	n/a	0 - 25	CH2M Hill, 2001b
Hardness	12	Raw	2006-2008	80-100 mg/l	80-100 mg/l as CaCO ₃	9	75%	85-133	Annual Reports
Hardness	1	Raw	1999-2000	80-100 mg/l	80-100 mg/l as CaCO ₃	n/a	n/a	112	CH2M Hill, 2001b
pH	n/a	Raw	2000-2006	6.5-8.5	6.5-8.5	n/a	n/a	7.5 - 8.6	Annual Reports
Temperature	n/a	Raw	2000-2006	15°C	15°C	n/a	n/a	0.7 - 24	Annual Reports
Temperature	112	Raw	1999-2000	15°C	15°C	n/a	n/a	1.3 - 25	CH2M Hill, 2001b
Total Coliform Bacteria	259	Raw	2003-2008	0 CFU/100 ml	1000 CFU/100 ml	4	2%	0-1480	DWIS
Total Coliform Bacteria	n/a	Treated	Sept-07 and Oct-08	0 CFU/100 ml	0 CFU/100ml	2	n/a	present	DWIS

Note: Increasing trend observed for total coliform in the raw water at the Fairfield Intake. See Figure 1, Appendix G-3

Table 11. Exceedances of issue benchmark values at the Bath intake.
 (Substances that exceed the benchmark and have possible human sources are listed in **bold**).

Parameter Name	n tests	Sample Type	Record length	ODWQS Guideline	Benchmark Value	n exceed	% exceed	Result Range	Data Source
Colour	108	Raw	1998-2000	5 TCU	5 TCU	n/a	n/a	0-18	CH2M Hill, 2001a
Colour	96	Raw	2000-2007	5 TCU	5 TCU	n/a	n/a	0.14-16	Annual Reports
DOC	8	Raw	1999-2000	5 mg/l	5 mg/l	n/a	n/a	1.8-21.3	CH2M Hill, 2001a
Eschericia coli	96	Raw	2000-2007	0 CFU/100 ml	100 CFU/100 ml	n/a	n/a	0-218	Annual Reports
Eschericia coli	251	Raw	2003-2008	0 CFU/100 ml	100 CFU/100 ml	2	1%	0-218	DWIS
Hardness	6	Raw	1999-2000	80-100 mg/l	80-100 mg/l as CaCO ₃	n/a	n/a	104-121	CH2M Hill, 2001a
Organic Nitrogen	7	Raw	1999-2000	0.15 mg/l	0.15 mg/l	7	100%	0.18-0.33	CH2M Hill, 2001a
pH	96	Raw	2000-2007	6.5-8.5	6.5-8.5	n/a	n/a	6.83 - 8.85	Annual Reports
Turbidity	108	Raw	1998-2000	5 NTU	5 NTU	n/a	n/a	0-25.7	CH2M Hill, 2001a
Total Coliform Bacteria	171	Treated	Jun-03 to Oct-08	100 CFU/100ml	present	1	1%	0-1	DWIS

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Table 12. Exceedances of issue benchmark values at the A.L. Dafoe (Napanee) intake.
 (Substances that exceed the benchmark and have possible human sources are listed in **bold**).

Parameter Name	n tests	Sample Type	Record length	ODWQS Guideline	Issue Benchmark Value	n exceed	% exceed	Result Range	Data Source
Colour	39	Raw	1992 - 2001	5 TCU	5 TCU	14	36%	0.5 - 12.5	DWSP
<i>Escherichia coli</i>	104	Raw	1999-2000	0 CFU/100 ml	100 CFU/100 ml	n/a	n/a	0-510	TSH, 2001a
Hardness	39	Raw	1992 - 2001	80-100 mg/l	80-100 mg/l as CaCO ₃	39	100%	114-143	DWSP
Hardness	2	Raw	2007	80-100 mg/l	80-100 mg/l as CaCO ₃	2	100%	110-125	ELO-USLR Study
Taste and Odour compounds	61	Raw	Jan 2001 - Oct 2006	Inoffensive	4 ng/l (geosmin), 7 ng/l (MIB)	13, 6	21%, 10%	<2-18, <2-19	DWSP
Temperature	34	Raw	1992 - 2001	15° Celcius	15° Celcius	11	32%	0.4 - 22	DWSP
Temperature	n/a	Raw	2005-2008	15° Celcius	15° Celcius	n/a	n/a	1.6-26.7	Annual Reports
Total Coliform Bacteria	104	Raw	1999-2000	0 CFU/100 ml	1000 CFU/100 ml	n/a	n/a	2 - (>5000)	TSH, 2001a
Turbidity	39	Raw	1992 - 2001	5 NTU	5 NTU	1	3%	0.2 - 11.2	DWSP
Aluminum	39	Treated	1992 - 2001	0.1 mg/l	0.1 mg/l	24	62%	0.039 - 0.56	DWSP
Chloroform	39	Treated	1992 - 2001	0.1 mg/l as THM	0.05 mg/l (as THM)	2	5%	0 - 0.06	DWSP
Colour	39	Treated	1992 - 2001	5 TCU	5 TCU	4	10%	0.2 - 10	DWSP
Hardness	39	Treated	1992 - 2001	80-100 mg/l	80-100 mg/l as CaCO ₃	39	100%	113 - 143	DWSP
Temperature	35	Treated	1992 - 2001	15° Celcius	15° Celcius	12	34%	2.0 - 22	DWSP
Total Coliform	n/a	Treated	2005-2008	0 CFU/100 ml	0 CFU/100 ml	1	n/a	0-1	AQWI
Trihalomethanes (THM)	39	Treated	1992 - 2001	0.1 mg/l	0.05 mg/l	10	26%	0 - 0.08	DWSP

Note: *Escherichia coli* and total coliform was excluded from the list of issues because detailed data was not available to demonstrate the exceedance. Microbiological parameters did not exceed relevant benchmarks in data sets from other sources.

Table 13. Exceedances of issue benchmark values at the Sandhurst Shores intake.
 (Substances that exceed the benchmark and have possible human sources are listed in **bold**).

Parameter Name	n tests	Sample Type	Record length	ODWQS Guideline	Benchmark Value	n exceed	% exceed	Result Range	Data Source
Colour	n/a	Raw	2005-2008	5 TCU	5 TCU	n/a	n/a	0 - 80*	Annual Reports
Colour	n/a	Raw	1999 - 2000	5 TCU	5 TCU	n/a	n/a	3 - 9	TSC, 2001c
Hardness	n/a	Raw	1999 - 2000	80-100 mg/l	80-100 mg/l as CaCO ₃	n/a	n/a	12 - 128	TSC, 2001c
Hardness	1	Raw	2007	80-100 mg/l	80-100 mg/l as CaCO ₃	1	100%	116	ELO-USLR Study
Iron	n/a	Raw	1999 - 2000	0.3 mg/l	0.3 mg/l	n/a	n/a	nd - 0.3	TSC, 2001c
pH	n/a	Raw	2005-2008	6.5 - 8.5	6.5 - 8.5	n/a	n/a	7.1 - 8.9	Annual Reports
Temperature	n/a	Raw	2005-2008	15° Celcius	15° Celcius	n/a	n/a	1.5 - 25	Annual Reports

* Result given in ACU, not TCU so not able to compare to benchmark.

Table 14. Exceedances of issue benchmark values at the Picton (XCG, 2009a) intake.

Parameter Name	n tests	Sample Type	Record length	ODWQS Guideline	Benchmark Value	n exceed	% exceed	Result Range	Data Source
Please refer to the Quinte Source Protection Region Assessment Report (2010)									

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Table 15. Exceedances of issue benchmark values at the Sydenham intake (XCG, 2009b).
(Substances that exceed the benchmark and have possible human sources are listed in **bold**).

Parameter Name	n tests	Sample Type	Record length	ODWQS Guideline	Benchmark Value	n exceed	% exceed	Result Range	Data Source
Colour	8	Raw	2007-2008	5 TCU	5 TCU	n/a	n/a	<2-9	Annual Reports
Colour	n/a	Raw	2008	5 TCU	5 TCU	n/a	n/a	6-8	MOE Inspection Report
Colour	1	Raw	2002	5 TCU	5 TCU	1	100%	>10	Sydenham WTP Pilot Study
DOC	4	Raw	2008	5 mg/l	5 mg/l	n/a	n/a	4.0-5.3	Annual Reports
DOC	n/a	Raw	2008	5 mg/l	5 mg/l	n/a	n/a	4.0-21.4	MOE Inspection Report
Hardness	2	Raw	2007	80-100 mg/l as CaCO ₃	80-100 mg/l as CaCO ₃	n/a	n/a	127-143	Annual Reports
Hardness	14	Raw	2006-2007	80-100 mg/l as CaCO ₃	80-100 mg/l as CaCO ₃	14	100%	115 - 383	XCG Sampling
pH	1	Raw	2007	6.5 - 8.5	6.5 - 8.5	0	0%	7.34	Annual Reports
pH	23	Raw	2006-2007	6.5 - 8.5	6.5 - 8.5	17	74%	6.29 - 8.76	XCG Sampling
Temperature	26	Raw	2006-2007	15° Celcius	15° Celcius	14	54%	6.0 - 25.8	XCG Sampling
Turbidity	continuous	Raw	2006-2008	5 NTU	5 NTU	n/a	n/a	0.24 - 19.97	Annual Reports
Turbidity	1	Raw	1988	5 NTU	5 NTU	1	100.0%	19	Sydenham WTP Pilot Study
Turbidity	3227	Raw	2002	5 NTU	5 NTU	11	0.3%	0 - 213	Sydenham WTP Pilot Study
Trihalomethanes	36	Distribution	2006-2008	0.1 mg/l	0.05 mg/l	35	97%	0.0302 - 0.255	DWIS
Trihalomethanes	5	Distribution	2006-2008	0.1 mg/l	0.05 mg/l	4	80%	0.0243 - 0.1496	Annual Reports
Trihalomethanes	5	Distribution	2007	0.1 mg/l	0.05 mg/l	1	100%	0.085	MOE Inspection Report

Figure 1. Total coliform concentration in raw water over time at the Fairfield Water Treatment Plant, as reported under the Drinking Water Information System (MOE).

